



Vertically Integrated Nationally Appropriate Mitigation Actions (V-NAMAs)

Policy recommendations, case studies and tools for the integration of sub-national actors in national mitigation actions

On behalf of:



Federal Ministry for the
Environment, Nature Conservation,
Building and Nuclear Safety

About this folder

Cities and sub-national governments have key competences and influence in sectors with high greenhouse gas emissions such as transport, buildings, waste management, energy generation and energy use. In many cases, however, the planning, implementation and reporting of climate mitigation measures are not effectively integrated between national and sub-national levels. Based on initial experiences with vertically integrated Nationally Appropriate Mitigation Actions (V-NAMAs), this folder presents policy recommendations, case studies, and tools aimed at strengthening the involvement of sub-national governments in mitigation actions.

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V-NAMA Project

The publication is a product of the V-NAMA Project, implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and funded by the International Climate Initiative (IKI) on behalf of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). The project supports national governments in their efforts to mobilize sub-national actors to help achieving national mitigation targets. Within this context, Indonesia and South Africa have piloted a multi-level government approach in the waste management and public building sector addressing the challenge of vertical integration in the development and implementation of Nationally Appropriate Mitigation Actions (NAMAs).

International Climate Initiative (IKI)

Since 2008, the International Climate Initiative (IKI) of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) has been financing climate and biodiversity projects in developing and newly industrializing countries, as well as in countries in transition. These efforts provide various co-benefits, particularly the improvement of living conditions in partner countries. Priority is given to activities which support creating international climate protection architecture, transparency, and innovative and transferable solutions that have an impact beyond the individual project. The IKI cooperates closely with partner countries and supports consensus building for a comprehensive international climate agreement and the implementation of the Convention on Biological Diversity.





Vertically Integrated Nationally Appropriate Mitigation Actions (V-NAMAs)

Policy and Implementation Recommendations

Sub-national governments have an increasingly important role to play in actions which contribute to the implementation of national government climate change strategies and commitments. Integrating efforts across multiple levels of government effectively ("vertical integration") can be challenging depending on the context but the rewards in terms of improved efficiency and impact can be great. Drawing on recent research and practitioner insights, a range of recommendations are presented here to enhance the design and implementation of Nationally Appropriate Mitigation Actions (NAMAs) through improving vertical integration. Recommendations include:

ENGAGE

1. Engage sub-national government in the design of NAMAs
2. Strengthen dialogue between national and sub-national government
3. Align NAMAs with existing national and sub-national processes and priorities

Introduction

Sub-national governments are important leverage points for climate change mitigation as they often have a high degree of influence over key sectors where greenhouse gas emissions are released such as buildings and land-use, transport and waste. Cities in particular account for the majority of global emissions and local governments can exert considerable political and economic influence over policies and practices affecting those emissions.

Sub-national governments can strengthen and reinforce national policies to help reach higher ambitions. Many set

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4. Link mitigation actions with benefits valued by sub-national government
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higher mitigation targets than national government and can have greater flexibility to deliver mitigation actions. Due to their proximity to local communities they are also uniquely placed to identify local needs, bring together key stakeholders and to exploit synergies across investment priorities.

For these reasons, sub-national governments have an increasingly important role to play in implementing actions which support national government climate change strategies and commitments under the United Nations Framework Convention on Climate Change (UNFCCC).

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However, coordinating the design and implementation of such actions effectively across multiple levels of government can be challenging. Often the absence of coordinated, vertically aligned processes can result in slow or inconsistent implementation of mitigation actions. While decentralisation or devolution are often viewed as essential to sustainable development and widely lauded as components of good governance, they are also broadly recognised as processes fraught with complexity and potential failure. Proactive leadership from national government can stimulate mitigation action at lower levels, but translating a comprehensive climate strategy into complex layers of multi-level governance is no easy task. It can require the involvement and coordinated effort of multiple levels of government, with each level engaged in a particular role corresponding to its mandate.

Vertical integration therefore comes at a cost; it increases complexity and may not be appropriate in all contexts or at all stages in the design and implementation of mitigation action. Nevertheless, a growing body of knowledge now suggests that improving integration of efforts between layers of government, although challenging, is a prize worth pursuing for the potential enhanced impact it can bring also to mitigation efforts such as Nationally Appropriate Mitigation Actions (NAMAs).

As growing emphasis is placed on the actions of sub-national governments in raising national ambition for a strong global deal on climate change, the role of vertical integration for achieving this goal is increasingly recognised. With the emergence of new international initiatives to support enhanced sub-national action (e.g. the new Global Environment Facility (GEF) integrated sustainable cities programme or the numerous new city initiatives announced during the UN Climate Summit in September 2014), the importance of vertical integration for increasing the efficiency and effectiveness of sub-national and national government mitigation efforts is perhaps greater than it has ever been.

The following recommendations distil key lessons from emerging practice to help guide governments and international donors to improve NAMA design and implementation through strengthening vertical integration. They are clustered into three key activities: *engaging*; *motivating* and *enabling* better vertical integration.

The recommendations are built on current research and practitioner insights in the fields of climate change mitigation, low emissions development and green growth, including the earlier baseline study undertaken for the V-NAMA project. They also draw on early lessons and experiences from the V-NAMA pilots in South Africa and Indonesia, case studies from which are included in the accompanying folder.

Understanding “Vertically Integrated NAMAs”

Also called “sub-national integration” or a “multi-level governance approach”, vertical integration refers to different levels of government – from national or federal to state, provincial and local government – jointly addressing improvement and mutually reinforcing coordinated approaches for planning, implementation and reporting. Considering that each level of government has its specific mandate and responsibilities, effective vertical integration between different levels of government is increasingly important, especially in the context of addressing climate change mitigation.

Nationally Appropriate Mitigation Actions (NAMAs) are a set of policies and actions that developing countries undertake to deliver their commitment to reduce greenhouse gas emissions under the United Nations Framework Convention on Climate Change (UNFCCC). They acknowledge that different countries may take different action based on their respective responsibilities and capabilities.

The concept of a Vertically Integrated NAMA (V-NAMA) is a relatively new one and is applied to NAMAs which incorporate this element of vertical integration, as described above.

The V-NAMA Project

The V-NAMA Project supports national governments in their efforts to mobilize sub-national actors to help achieve national mitigation targets. It is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and funded by the International Climate Initiative (IKI) on behalf of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB).

As partner countries of the project, Indonesia and South Africa have piloted a multi-level government approach in the waste management and public building sectors. This approach addresses the challenge of vertical integration in the development and implementation of Nationally Appropriate Mitigation Actions (NAMAs).

The present recommendations are part of the V-NAMA Folder, which also includes case studies and tools aimed at strengthening the involvement of sub-national governments in mitigation actions.

Creating the conditions for vertical integration

There are a range of challenges and barriers identified which prevent vertical integration in climate action. Recent analyses highlight a number of common issues relevant for NAMA design and implementation including:

Weak engagement

- Knowledge and information gaps between national and sub-national governments, preventing effective communication and coordination of mitigation action.
- Institutional differences in culture, priorities or political ideology between national and sub-national government; national policy sometimes impairing or blocking sub-national governments' action.
- Institutional weaknesses such as lack of effective communication and coordinating mechanisms, institutional congestion causing duplication and fragmentation of resources, weak governance structures or institutional capacity constraints.

Poor motivation

- Lack of clear, formal mandate or political incentives for sub-national governments, due to misalignment between national and sub-national priorities, negative impacts

for certain sub-national stakeholders, barriers caused by vested interests or institutional bias preventing support.

Lack of resources and capacity

- Insufficient public budgets due to unstable or weak revenues.
- Lack of access to affordable finance (international finance in particular) and high investment costs often due to creditworthiness concerns at sub-national level.
- Difficulty mobilising international and private finance without the backing of national government particularly for small to medium sub-national governments.
- Lack of skilled staff and technical expertise to incorporate mitigation into sub-national governments' planning and implementation particularly in developing countries.
- Lack of data and information due to it not being collected, organised or shared appropriately. In particular, the lack of emissions data at a local level is a common barrier, as is the lack of consistency and comparability in sub-national governments' emissions accounting methods.

Understanding these barriers and finding solutions creates the conditions for more effective vertical integration between national and sub-national government. At the same time, improving vertical integration can help to overcome

The South African V-NAMA „Energy Efficiency in Public Buildings Programme“ (EEPBP)

Since 2012, GIZ has been supporting partners in the South African government to develop a “Vertically integrated National Appropriate Mitigation Action” (V-NAMA) focussing on energy efficiency in public buildings. Energy efficiency in buildings is an area where local governments can have a key influence and is one of eight priority areas identified in South Africa's national Climate Change Response Strategy.

The V-NAMA proposal development process has helped national government, provinces and municipalities to overcome barriers in their vertical coordination. It has also lead to increased horizontal coordination between different sectoral departments within the same sphere of government.

Once implemented, the Energy Efficiency in Public Buildings Programme (EEPBP) V-NAMA will strengthen private sector engagement with provinces and municipalities, enhance the effectiveness of national subsidy programmes and contribute to transformational change in the management of public buildings.

The Indonesian „Vertically integrated Municipal Solid Waste Management NAMA“ (VIMSWa-NAMA)

Since 2012, GIZ has been supporting partners in Indonesia to develop “Vertically integrated Nationally Appropriate Mitigation Action” (V-NAMA) focussing on municipal solid waste management (MSWM). MSWM is a sector where local governments have key competencies and is one of five priority areas identified in Indonesia's National Action Plan for reducing Greenhouse Gas Emissions. The V-NAMA involves municipal stakeholders and helped to establish links between all vertical levels of government, in particular between the national and the municipal level. The program developed a bankable NAMA-proposal that meets MRV requirements, but the process of developing VIMSWa-NAMA has gone far beyond simple proposal preparation. It has helped to enable national and sub-national governments to work together more effectively, jointly developing appropriate strategies for investments, operation and management. At the same time, the process has helped to coordinate the various activities undertaken in the sector and to capture their combined impact, strengthening the monitoring of progress towards Indonesia's national climate mitigation target. It has also enabled stronger private sector engagement and leveraged additional public budget for the sector, and provides a blueprint for more ambitious mitigation approaches in other sectors.

some of these barriers. As more countries begin to put their climate strategies into practice it becomes even more important to successfully engage, motivate and enable sub-nationals to inform and implement national climate action.

Recommendations

Over the following pages a range of recommendations is presented for improving vertical integration between national and sub-national governments in the development and implementation of NAMAs. The extent and type of integration which is optimal will vary from country to country and depend on the existing governance arrangements and the nature and extent of the mitigation actions planned. For this reason, the following recommendations should be considered pragmatically to avoid creating additional bureaucratic burden on the NAMA process. The recommendations draw on current research and practitioner insights together with lessons from the V-NAMA pilots in South Africa and Indonesia.

The recommendations do not aim to articulate model policies but rather highlight key activities for consideration during the NAMA design process and many cut across the various stages of NAMA development presented in the GIZ NAMA Tool (see conclusion). The recommendations are clustered into the three key activities for promoting vertical integration: *engaging*, *motivating* and *enabling*. Each recommendation includes a brief supporting rationale (first paragraph) which explains the basis for the recommendation. Further issues and practitioner lessons are also included for consideration when implementing these recommendations (second paragraph).

ENGAGE

Engagement requires a conscious effort to open new, or deepen existing dialogue between national and sub-national governments. It requires national government to first listen and understand the sub-national government view and can require major effort as top-down thinking is often deeply engrained into the relationship between national and sub-national government. Understanding the sub-national government view then enables NAMA design to be more closely aligned with both national and sub-national processes and priorities.

1. Engage sub-national government in the design of NAMAs

Engaging sub-national government in the design of NAMAs helps strengthen national level coordination of sub-national government action and can enable bottom-up leadership. This can be achieved through ensuring strong sub-national government involvement in national steering committees responsible for NAMA design and enabling effective vertical dialogue between national and sub-national government. Developing NAMAs based on activities already demonstrated by sub-national government can increase buy-in and confidence by reducing the risk of implementing un-tested approaches at a national level. Good examples of this can be found in Brazil where effective approaches using municipal building codes to promote the deployment of passive solar power in the city of Sao Paulo and innovative approaches to waste management in the city of Belo Horizonte went on to influence development of national policy and implementation across many other sub-national governments.

While ownership of the V-NAMA starts at the national level, the sequencing and management of engaging sub-national governments is important. Engaging sub-national governments too early can lead to failed expectations and disengagement while previous bad experiences may make sub-national government wary or cynical of involvement. It is therefore important to manage expectations and provide clear roles and responsibilities to ensure effective and timely communication of risks and benefits to maintain sub-national government engagement. Providing funds for piloting (e.g. for testing approaches, which are planned to become part of the NAMA design) from an early stage of preparing NAMAs can mitigate disengagement and effectively motivate sub-national government engagement in the early stages. The V-NAMA experience in Indonesia and South Africa has shown that national governments prefer to control the selection of sub-nationals to participate

in a vertically integrated NAMA process in a top-down fashion. This does not have to be so: a competitive and transparent process could be considered, whereby sub-national actors are selected based on their motivation and demonstrated willingness to commit their own efforts.

2. Strengthen dialogue between national and sub-national government

Establishing or strengthening formal and informal dialogue channels between national and sub-national government helps to enable effective coordination of NAMA design and implementation. Where possible existing channels should be utilised or adapted rather than creating new ones. Enabling such dialogue can be particularly beneficial at the design stage to ensure effective understanding of sub-national government priorities and to also ensure that innovative solutions they may offer are considered in the design of the NAMA. It is also important during the implementation stage to enable sub-national government to feedback successes and challenges faced (beyond normal MRV – Measurable, Reportable, Verifiable – arrangements). Formal channels might include for example ensuring sub-national governments are effectively engaged in national government planning meetings for NAMA design and implementation or related sectoral working groups and inter-ministerial bodies. Other approaches can involve establishing semi-formal channels like the German Bund-Länder exchange on climate change, which enables on-going dialogue and exchange between federal and state governments to discuss challenges in regard to climate and energy policy.

Experience from the V-NAMA pilots suggests that establishing vertical dialogue between sub-national and national government requires continuous attention (e.g. through the work of national V-NAMA teams and providing resources for workshops and capacity building) but is highly appreciated by sub-national participants. Adequate resources should therefore be identified to support these activities if such dialogue is to be effective. Designing NAMAs which align donor, national and sub-national government priorities can be challenging and informal communication channels which help to foster understanding and reach consensus can play an important role in such negotiations. Furthermore, national and sub-national government employees may rarely meet or share common social or institutional perspectives and this can be an obstacle to the creation of such informal dialogue. Providing opportunities for building social relationships between such individuals can help to overcome this. For example,

during the development of the Colombian Transit Oriented Development (TOD) NAMA, national and sub-national government colleagues joined an overseas study tour together which as well as providing inspiration, enabled more informal communication and greater collaboration in designing the NAMA.

3. Align NAMAs with existing national and sub-national processes and priorities

Aligning NAMAs with existing national and sub-national government processes and development priorities can strengthen commitment to implementation and avoid NAMA activities being side-lined by changing political or service delivery priorities. Integrating NAMA implementation into, or coordinating in parallel with future plans, processes or institutional reforms at the sub-national level can also offer unique opportunities to implement mitigation measures. For example national government plans in Kyrgyzstan for reforming and modernising domestic heating included the transfer of ownership of facilities from national to sub-national government, offering a unique opportunity for a NAMA to implement renewable energy and energy efficiency measures during the transition. Similarly the South African V-NAMA pilot fosters the implementation of a near-term priority flagship programme of the national climate change response strategy. The Indonesian V-NAMA pilot contributes to one out of five priority areas of the national action plan of greenhouse gas emission reduction. In both countries, increased vertical integration has also led to enhanced horizontal coordination among the line ministries involved. Once established coordinating mechanisms such as the technical committee on V-NAMA in Indonesia or the interdepartmental task-team on energy efficiency in South Africa can also be used for other purposes, the ministries can benefit from. In Georgia, preliminary research at the national level identified the buildings sector as a priority for mitigation action. Studies on sustainable energy action plans provided by cities seconded this prioritisation and helped to define the scope of the NAMA development process. It is also important that sub-national and national MRV approaches are well aligned and that indicators used are jointly agreed.

Aligning the priorities of national government, sub-national government and donors during NAMA design is not always easy and there is a risk that existing or new priorities may take over. Engaging sub-national government in transparent collaborative processes such as the multi-criteria NAMA prioritisation approach developed in Lebanon may help to reach agreement and aligning with

benefits valued by sub-national government may help to keep it a higher priority. In attempting to ensure effective alignment of national and sub-national MRV approaches, national government can easily over-burden sub-national government with excessive and complex data collection. Jointly agreeing MRV indicators to be used at sub-national level can help to avoid this risk and ensure a more efficient MRV process.

MOTIVATE

Effective engagement and dialogue with sub-national government reveals the many political and economic pressures they are under, delivering on many fronts with often limited resources. From there it follows naturally that sub-national governments need to see tangible benefit from a V-NAMA before they will be persuaded to commit limited staff, resources and political capital to such a new initiative. This motivation might be financial or reputational; it might require alignment with local priorities or promise to improve the re-election chances of the mayor. Supporting national priorities and commitments is often insufficient motivation to secure the full involvement and support of sub-national government. Therefore more creative ways to persuade or incentivise involvement are often required.

4. Link mitigation actions with benefits valued by sub-national government

To ensure political support for delivering mitigation action, sub-national government and other sub-national stakeholders may need to be incentivised politically or via other co-benefits that they value. Linking mitigation actions to benefits which are priorities for sub-national government and are popular with voters can generate political capital – which in turn creates incentives for sub-national government leaders to support mitigation action. For example, in the transport sector, this could be reduced congestion, travel time and cost, along with improved air quality. Others might include job creation and economic growth, energy access and security or health improvements and resilience to climate change. Recognition or reputational incentives for individual sub-national government political leaders and staff can also be powerful incentives, particularly when linked to individuals' electoral or career prospects. Similarly instigating national or regional competitions which bestow reputational benefits on sub-national government such as publicity or improved investment prospects can also serve as powerful incentives for action. For example, in Indonesia, the “Adipura” or “Clean City award issued by the Ministry of Environment”, despite not offering financial support, is a powerful tool being used by national government to drive environmental improvements in municipalities.

Stakeholder mapping is required to identify which benefits are valued by whom, to consider the impact of NAMAs on different stakeholders and the potential influence that these stakeholders may have over NAMA implementation (the private sector in particular). Mapping national and

sub-national stakeholders should be undertaken sensitively, e.g. in regard to “key stakeholders” or “supporters” and “detractors”, to avoid any perceptions of it being politically divisive as this could jeopardize support for mitigation action. Care must also be taken to ensure that co-benefits are compatible with proposed mitigation actions, that they do not lead to unintended rebound effects and that NAMA activities are not overly co-opted to achieve other political aims. There may also be trade-offs between co-benefits, mitigation measures and related costs. In the waste sector for example, on one hand a landfill-gas recovery project may present ‘low-hanging fruit’ in terms of mitigation, but benefits spilling over to local communities could be quite limited. On the other hand, initiatives aligned with “3R” (reduce, reuse, recycle) such as composting, while potentially more costly and longer to implement, could offer broader co-benefits to society.

5. Provide mandates and powers to motivate sub-national government to act

Providing legal or political mandates for sub-national government to design or implement NAMAs is important to ensure that sub-national governments give it sufficient priority and are legally or politically enabled to deliver. For example in Vietnam, all 63 sub-national governments are mandated to develop their own provincial green growth action plans and coordinate implementation to deliver the national strategy. In France, regional climate action plans assign ownership of scenario building and emission inventory development to sub-national government and in Indonesia, provinces break down the national action plan for reducing GHG emissions to their territory in order to develop a regional action plan with regional mitigation priorities. Transferring revenue and expenditure powers to sub-national government can result in more efficient resource use adapted to local conditions through more active stakeholder participation. For example, in the UK, City Deals made between sub-national and national government together with regional devolution of spending are being used to strengthen implementation of mitigation action.

The ability to devolve and recognize powers for the implementation of NAMAs will depend heavily on the cultural and political context in the country and sector. If achieved, then devolving powers to sub-national governments can be an efficient way to delegate responsibilities for implementing NAMAs and allows sub-national government to play a more proactive role, encouraging innovation in local implementation of mitigation actions. However, devolving

responsibility without also providing resources to deliver can lead to un-funded mandates and an increasing strain on sub-national government which could hinder effective implementation of NAMAs. Therefore sufficient funding and skills and knowledge capacity may also be required (see ENABLE recommendations).

6. Use targets and regulation to motivate sub-national government implementation

Assigning responsibilities for sub-national governments to deliver shared mitigation action through the introduction of top-down targets, regulations and guidance is a common approach to policy implementation and can be an effective way for national government to promote mitigation action across multiple sub-national governments in an integrated way. Regulatory approaches that allow sub-national governments to go further than national regulations can also be a powerful tool, as there may be stronger incentives for ambitious action and fewer barriers at the sub-national level. However, sub-national governments should be involved in the development of relevant regulations (in particular around buildings, transport and waste) at the national level to ensure they take account of the diversity of implementation contexts and capacity at sub-national government level.

In Vietnam, provinces and cities are able to self-determine targets to deliver the national green growth strategy, with national government requiring the inclusion of just two common indicators to ensure some level of national consistency.

7. Create financial incentives to motivate sub-national government engagement

Financial incentives can help encourage stronger engagement and more effective sub-national government implementation. Grant-based funds to prepare mitigation plans, develop MRV systems, build sub-national capacity and pilot mitigation approaches are usually required as a first step. Mechanisms such as performance-based incentives which reward or penalise implementation performance, such as step-wise payment of grants, can represent a second phase of mitigation actions. Designing NAMAs to implement actions which lead to sub-national government budget savings, such as reduced energy costs from building energy efficiency, or increased income, for example from higher or newly introduced waste management service fees or selling of recyclables, can also provide a powerful motivation. These are often one of the main entry points

for local climate action, as practical experience from the local level, including developed countries, shows. While doing so, special focus must be given to the ring-fencing of savings, so that a municipality benefitting directly from the reduced energy bill, can retain or carry the savings over to the following year and can use them for other investments.

Capacity to implement mitigation actions may vary among sub-national governments and financial incentives will need to be designed to accommodate this. For example, in Rwanda, the national climate fund (FONERWA) did not initially receive many applications from sub-national government, largely due to capacity limitations. To remedy this, additional capacity support was provided to assist sub-national government in making applications to the fund. National and sub-national laws, regulations and fiscal arrangements may also vary and will consequently need to be taken into account when designing appropriate and effective financial incentives. For example, in the Indonesia V-NAMA, an incentive mechanism known as DAK (special allocation fund) is proposed, which provides national budget to fund specific activities at sub-national level in accordance with national priorities. Whilst appropriate to the Indonesia context, this may not be simply replicated in a country like South Africa.

ENABLE

Engaging and motivating sub-national government is necessary to ensure their willingness to be involved in NAMA design and implementation, but it also requires them to have capability in terms of resources and capacity. Sub-national involvement requires funding which can include a blend of local, national and international sources which distribute risks and rewards in ways each party can draw tangible benefit from the NAMA. Even when sufficient funding is available, lack of capacity is often identified as a key constraint. Information, skills, knowledge and implementation capability are core requirements in effective V-NAMA and will often require strengthening through training, external support and peer-to-peer learning.

8. Create the conditions to ensure sub-national government has sufficient funding

Identifying appropriate ways to channel finance and ensure sub-national government has sufficient funding is essential to enable implementation of NAMAs. This can be achieved in a variety of ways, from providing direct funding, subsidies and grants, to enabling fiscal transfers, discounted finance to “pump-prime” credit lines or other approaches enabling access to affordable private and public loans. For example, India’s national urban development program provides co-financing for cities to improve efficiency in urban infrastructure, and Germany, Sweden and Japan all provide grants or budget support for delivering mitigation action. In South Africa, as part of the V-NAMA development, an improved energy efficiency funding mechanism has been designed for municipalities including adjustments to existing programmes to further speed up the flow of funds to sub-national governments. In Indonesia a discussion has been initiated with the national Climate Change Trust Fund on how to give cities access to climate finance for improving their waste management (and thereby reduce GHG emissions). Establishing effective funding channels (e.g. particularly for international finance sources) might involve working through existing national finance entities or by setting up new dedicated institutions. For example, in Peru the state-owned development bank COFIDE has mobilised international and private sector finance to support innovative low carbon transportation initiatives at the municipal level and in Thailand, a highly successful Energy Efficiency Revolving Fund extended credit lines to thirteen local public and commercial banks to supply low-interest loans for energy efficiency improvements. Examples of new dedicated institutions include Rwanda’s national climate change fund (FONERWA), South Africa’s Green Fund or

the UK's Green Investment Bank which all provide dedicated facilities for sub-national governments to implement climate mitigation action.

Transferring fiscal powers to the sub-national government can be an effective tool for incentivising involvement and raising revenue to cover additional operational costs incurred through NAMA implementation. However this will depend on national laws and fiscal arrangements and whether the national government has an appetite for such devolution of tax powers. National government continues to struggle to implement national programmes including NAMAs because in many cases climate finance mechanisms to accompany the programs still need to be developed. At sub-national government level, the line between what is climate finance or 'regular' budget, and what comes from national or international sources, is of limited relevance, as long as there is a tangible incentive and access is not too burdensome. Experience from the V-NAMA pilots highlights the importance of involving the Ministry of Finance or National Treasury to address questions of national climate finance, how to blend national with international and local funding, and how to effectively channel finance to sub-national governments. Leveraging private sector investment is also a key consideration and full scaling-up may only be feasible if the V-NAMA opens the door to increased private sector involvement (e.g. energy service companies ESCos in South Africa). One such approach is the co-creation of businesses whose revenues and operation can support NAMA implementation, for example, through the sale of secondary raw materials and recovery of recyclables (e.g. paper and plastic) or through the generation of added value products such as horticultural compost from diverted municipal organic waste.

9. Support sub-national government in accessing data and information

Providing information and data resources together with technical and political assistance for sub-national governments is often necessary to enable them to access, collect and analyse data and information necessary for designing, implementing and Measuring Reporting and Verification (MRV) of NAMAs. This includes jointly agreeing appropriate indicators to use for MRV and might also involve building sub-national or national capacity (e.g. in ministries or the office for national statistics) to collect new data or re-analyse existing data needed by sub-national government. For example, in the UK, the Homes Energy Efficiency Database gathers multiple data sets on housing conditions from different sources and combines them into

an accessible database for sub-national governments to access strategic data to guide their energy efficiency planning, while also providing an overview for national government strategy.

Abilities to collect new data or re-analyse existing data may vary in feasibility and cost depending on the context. In some cases it may be more cost effective for the NAMAs to build existing skills and knowledge capacity in sub-national government to undertake this (see following recommendation). Another approach might be to enable multiple sub-national governments to pool resources (e.g. budget and analytic capacity) to share data and generate common data-sets useful to all. Legal or institutional barriers (e.g. civil liberty or data protection concerns) may be held up as barriers to prevent the sharing of data useful to NAMA implementation. However it is often possible to negotiate new ways of sharing data which provide useful detail without compromising anonymity.

10. Support sub-national government in developing or accessing skills and knowledge

Developing existing sub-national government skills and knowledge capacity or providing additional technical assistance is important to enable effective engagement in NAMA design and implementation. Where multiple sub-national governments are involved, consideration could be given to developing sub-national government training opportunities or facilities at national level. For example in Bangladesh, a national training centre was developed to support sub-national government staff to build capacity and implement sub-national waste management programmes. Providing subsidies for recruiting dedicated sub-national government staff to support implementation of NAMAs should also be considered. For example, the German National Climate Initiative (NKI) provides sub-national governments with up to a 40% subsidy for employing municipal climate managers. Similarly, one element of the South African V-NAMA proposal is the provision of energy efficiency managers for provinces or municipalities to help them establish shared savings contracts with private energy service companies. Leveraging existing skills and knowledge at other regional or national institutions should also be considered. For example, in Brazil, a collection of private banks led by the national development bank provides capacity support to sub-national governments in undertaking the complex technical and financial processes necessary for effective urban renewal, infrastructure projects and public private partnerships.

While developing existing capacity is a preferable approach as it helps strengthen sub-national government capacity for longer-term impact, it may be dependent on there being capacity to develop in the first place. In some sub-national governments capacity may be so weak that suitable staff may not be available to train, in which case providing additional technical assistance (e.g. through trained national government staff, national “service centres” or external consultants which carry out procurement tasks for sub-national governments) may be the next best option in addition to building longer-term institutional capacity. To address variation in capacity among sub-national governments, the South Africa V-NAMA developed a two window approach. This approach offers intensive ‘hand-holding’ for less experienced sub-national governments which consists mainly of technical and procurement support, while sub-national governments with more experience in energy efficiency projects are being offered a package of financial incentives, such as subsidies and loans, which in future may be linked more strongly to their actual performance. A basic understanding of the general NAMA approach and specific mitigation actions is also necessary to ensure that sub-national government stakeholders can really speak and influence the NAMA design and implementation processes.

11. Enable knowledge sharing and learning among sub-national governments

Establishing and maintaining mechanisms for sub-national governments to share knowledge and lessons with other sub-national governments engaged in similar mitigation action can help improve efficiency, effectiveness and motivation to deliver. For example, in Sweden, networks of municipalities such as the Swedish Eco-municipalities work together to reduce their emissions by motivating each other, exchanging experience and sharing information. In the Indonesian V-NAMA pilot, the good practice example of the Malang Waste Bank, a bank to which citizens can sell their recyclables and use the payment, for example, for their utility bills, attracted interest for replication by other pilot municipalities and the private sector. In the South African V-NAMA pilot, good practice examples from eThekweni (Durban) and Cape Town demonstrated to practitioners from other provinces and municipalities the mitigation potential and co-benefits of increased energy efficiency in public buildings.

Where multiple sub-national governments are involved in implementation then national government can play an important orchestrating role establishing communication

channels between them. Established international, regional and city networks can also provide useful channels for sub-national governments to share knowledge with and learn from sub-national governments in other countries. For example, ICLEI as an international association, the South African Cities Network (SACN) and the Association of Indonesian Municipalities (APEKSI) were used for knowledge sharing purposes in the two V-NAMA pilots. Greater success is likely to be achieved by using local champions and pioneers which operate under the same or similar framework conditions to give the right context in transferring lessons.

Conclusions

The extent and type of vertical integration that is optimal in any given country context should be considered pragmatically. Integrating and involving sub-national government more fully in NAMA design and implementation can add cost and complexity. However a growing body of knowledge suggests that the benefits in terms of reduced risk, improved impact and efficiency can in many cases outweigh such costs.

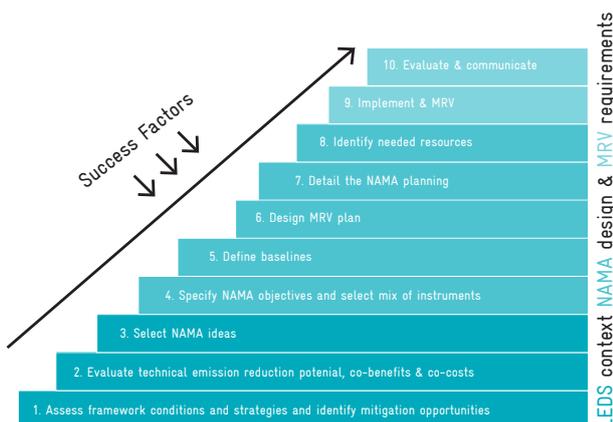
As described in the recommendations presented here, the engagement of sub-national governments throughout the different steps of the NAMA design process has the potential to increase the transformational capacity of the NAMA and the impact of its implementation in terms of mitigation results and other sustainable development benefits. In relation to the steps outlined in the GIZ NAMA tool (Details, see Tools and Resources document included in the accompanying folder), engagement of sub-national government can make a valuable contribution throughout, for example:

- Assessing framework conditions, strategies and potential mitigation opportunities (e.g. via closer knowledge of delivery conditions and practicalities on the ground);
- Selecting NAMA ideas (e.g. successful approaches already working at sub-national level such as the Mexican Low Emissions Schools NAMA case included in the accompanying folder);
- Defining baselines (e.g. greenhouse gas emissions, public sector service delivery gaps and finance needs);
- As well as Planning; Identifying resources; Implementation and MRV.

Effective vertical integration throughout NAMA design and implementation can help ensure NAMAs are sensitive to local needs, priorities and capacity, and that they utilise a wider range of change processes across policy, technology, finance, service provision and consumption.

The folder accompanying these recommendations includes a selection of case studies and further tools and resources which elaborate on many of the examples presented in these recommendations. The case studies provide early insights into the practical implementation of vertical integration drawn from the V-NAMA pilots in South Africa and Indonesia, along with other insights from both developing and developed country contexts.

10 Steps to a NAMA



International Climate Initiative (IKI)

Since 2008, the International Climate Initiative (IKI) of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) has been financing climate and biodiversity projects in developing and newly industrializing countries, as well as in countries in transition. These efforts provide various co-benefits, particularly the improvement of living conditions in partner countries. Priority is given to activities which support creating international climate protection architecture, transparency, and innovative and transferable solutions that have an impact beyond the individual project. The IKI cooperates closely with partner countries and supports consensus building for a comprehensive international climate agreement and the implementation of the Convention on Biological Diversity.

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On behalf of:



Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

Federal Republic of Germany

In collaboration with:



Published by

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Registered offices
Bonn and Eschborn, Germany

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Waste Management V-NAMA in Indonesia

Development of vertically integrated Nationally Appropriate Mitigation Action (V-NAMA) in the municipal solid waste management sector in Indonesia

Waste management is a sector where local governments have key competencies and is one of five priority areas identified in Indonesia's National Action Plan for reducing Greenhouse Gas Emissions (RAN-GRK). Since 2012, GIZ has been supporting partners in Indonesia to develop "Vertically integrated Nationally Appropriate Mitigation Action" (V-NAMA) focussing on municipal solid waste management (MSWM). The V-NAMA involves municipal stakeholders and helps to establish links between all vertical levels of government, in particular between the national and the municipal level. This program aims to develop a bankable NAMA-proposal that meets MRV requirements, but the process of developing the V-NAMA has gone far beyond simple proposal preparation. It has helped to enable national and sub-national governments to work together more effectively, jointly developing appropriate strategies for investments, operation and management. At the same time, the process has helped to coordinate the various activities undertaken in the sector and to capture their combined impact, strengthening the monitoring of progress towards Indonesia's national climate mitigation target. It has also enabled stronger private sector engagement and leveraged additional public budget for the sector, and provides a blueprint for more ambitious mitigation approaches in other sectors.

Background

Waste Management and Climate Change

Despite post-consumer waste being a relatively small contributor to global greenhouse gas (GHG) emissions with a share of less than 5% worldwide, it is a growing source of emissions especially in emerging economies. Population growth and increased consumption in these economies goes hand-in-hand with increased demand for

Country	Indonesia, in five pilot municipalities
Sector	Municipal Solid Waste Management
Duration	May 2012 – April 2015
Framework	The Indonesian V-NAMA programme forms part of the BMUB-IKI-global project 'V-NAMAs – Vertically integrated NAMAs for the involvement of sub-national actors in national mitigation strategies'. It is funded by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB).
Implementing agency	Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ)
Partners	National: Ministry of National Development Planning (BAPPENAS), Ministry of Public Works and Housing, Ministry of Environment, Ministry of Home Affairs, Ministry of Energy and Mineral Resources Sub-national: Provincial governments and local governments at the pilot locations Jambi, Malang, Kendari, Pekalongan, Sidoarjo

products and increased production of municipal waste. Organic waste in anaerobic condition will produce methane (CH₄) which has a much higher global warming impact than CO₂ emissions.

On behalf of:

The waste sector provides an interesting focus for mitigation actions due to its large potential for emissions reduction along with other development benefits. However, as municipal solid waste management is rarely a profitable activity, less climate change-friendly and sometimes even hazardous or illegal practices are common.

Indonesia and Climate Change Mitigation

Indonesia is a large country with many land use conversion challenges, a growing population, increasing energy consumption and waste generation. Indonesia plays a significant role in the global climate change landscape and since 2007, when it hosted the 13th Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC) in Bali, the country has made considerable progress in addressing climate change issues. In 2011, the Indonesian President announced a national voluntary target to combat climate change: reducing national GHG emissions by 26% from the business-as-usual level by 2020 based on unilateral actions, and up to 41% with adequate international support. This commitment was incorporated in the Presidential Decree No 61/2011 and an accompanying National Action Plan on GHG Emission Reduction (RAN-GRK). This document underpins line ministries activities to directly and indirectly reduce GHG emissions and serves as a guideline for provincial governments in formulating regional action plans for reducing emissions (RAD-GRK). Five priority areas of RAN-GRK are Agriculture; Forestry and Peat land; Energy and Transportation; Industry; Waste management.

The waste sector's share of total Indonesian emissions (9-11%) is still much smaller compared to that of other sectors such as forestry and agriculture. However, the MSWM sector is a growing source of GHG emissions. This is largely due to a lack of proper infrastructure and comprehensive approaches to waste minimization. Less than 3% of final disposal sites are operated as sanitary landfills and only a small fraction of waste is prevented through 3R ("reduce-reuse-recycle"). This poor performance is directly reflected in higher GHG emissions.

The strategies described in RAN-GRK for the solid waste management sector in order to minimize uncontrolled emission growth and the severe impacts it can cause include: solid waste reduction through 3R, waste management process at the final disposal, improvement/construction/rehabilitation of the final disposal and waste to energy (WTE). Moreover, all provinces are expected to develop their own local action plan (RAD-GRK) appropriate to their situation and condition.

Description of Activities

To support the delivery of these ambitious targets, the government of Indonesia partnered with GIZ in the project 'V-NAMAs – Vertically integrated NAMAs for the involvement of sub national actors in national mitigation strategies', financed through the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). The aim of the partnership is the development of a vertically-integrated municipal solid waste management NAMA, which helps to realise the GHG mitigation potential in the Indonesian MSWM-sector (Details about the NAMA proposal: see box below).

The V-NAMA development process is roughly divided into three phases: *preparation*, *development*, and *search for funding and pre-implementation*.

Preparation phase (May 2012 – May 2013)

The preparation phase started with the recruitment of staff and programme inception activities including the establishment of contacts with stakeholders, an initial stock-take of MSWM and national climate change policies and actions (e.g. regulation analysis, stakeholder analysis, internationally funded MSWM programmes). Stakeholder consultations began at the national level, identifying key stakeholders, and their priorities. This process included:

- An analysis of existing problems and barriers preventing more climate-friendly MSWM.
- Establishment of a Technical Committee including representatives from line ministries involved in the mitigation of GHG emissions in the MSWM sector: the Ministry of National Development Planning (BAPPENAS), Ministry of Environment, Ministry of Public Works and Housing and the Ministry of Home Affairs. Later the Ministry of Energy and Mineral Resources also joined as authority for WTE projects and the related feed-in tariff is located here.
- Selection of pilot project locations and partner municipalities was made by the Technical Committee. The selection was undertaken using a range of criteria to assess prospective pilot municipalities, including a) ongoing local efforts to improve MSWM with evidence of significant investments, capacity development or institutional innovations, e.g. notable waste management underpinned by 'Adipura' (clean city) award or significant private sector involvement. b) participation in an internationally funded SWM programme such

as the German Development Bank (KfW) 'Emissions reduction in cities' programme, GIZ PAKLIM, c) other considerations such as the role of SWM in the RAD-GRK and the variety of geographical areas covered, the size and type of project locations and the institutional arrangements represented. Based on these criteria, the five locations finally selected were:

- Jambi municipality in Jambi province;
- Kendari municipality in South East Sulawesi province;
- Malang municipality in East Java province;
- Pekalongan municipality and regency in Central Java province;
- Sidoarjo district in East Java province.

Four of these municipalities were at the same time participating in a programme implemented by KfW on 'Emissions Reduction in Cities', which has the provision of an interest reduced loan for the construction of sanitary landfills and accompanying measures as core elements (see below).

Various interaction programmes were initiated, starting with field-trips by the V-NAMA team to all five pilot municipalities to introduce the project and the vertically integrated approach. These trips also enabled initial assessment of the current SWM system and identification of priorities for mitigation actions in the waste sector. Planning workshops with the local governments officials and local stakeholder dialogues at each pilot location were undertaken, where sometimes for the first time all relevant stakeholders came together and discussed pressing issues concerning MSWM in their city/regency.

These were then followed by a central stakeholder dialogue, where the representatives of the five pilot municipalities first met, exchanged ideas and further developed their mitigation strategies in the MSWM sector in consultation with the national government.

The stakeholder dialogues formed an important part of the preparation phase to identify the appropriate actions at each location to mitigate their GHG emission from the municipal solid waste sector. Some stakeholders, especially public authorities, received direct feedback on their actions for the first time and were given the opportunity to reply. This enabled effective clarification and problem solving to take place in a collaborative way.

The main objective for developing a V-NAMA in the MSWM sector was to overcome barriers to GHG mitigation in that sector. These barriers were identified as:

Economic/financial barriers:

- Lack of local government funding for managing MSW;
- Lack of incentive/disincentive instruments for climate friendly improvements in the MSW sector;
- Lack of successful business models to enable local governments to effectively use available resources and ensure sustainability of the system;
- Low willingness of citizens to pay fees for waste management services;
- National government provides funds for the construction of MSW facilities such as sanitary landfill and 3R facilities. The municipality is responsible for the operation and maintenance, but the municipalities often lack the capacity (financially and staff-wise) and commitment for adequate operation and maintenance;
- In some cases, there are bio-digesters or composting plants installed, but these lack operational capacity and there is no sustainable market for the compost or biogas;
- Lack of private sector participation.

Institutional barriers:

- Lack of horizontal and vertical coordination between different line ministries, departments and other governance entities;
- Lack of climate change policy knowledge-transfer from national to sub-national level;
- Relatively new decentralization processes with weak bottom-up participation;
- Lack of institutional capacity for addressing climate change in MSW;
- Dispersed responsibility and unclear allocation of tasks between different line ministries and local government departments and between national and sub-national level;
- Inadequate data and poor knowledge management;
- Inadequate technical and administrative capacity at the local level;
- Some municipalities carry out GHG reducing activities in the waste sector, but the lack of an effective MRV-system prevents national government from including these emissions reductions in national GHG accounting.
- National line ministries have to meet certain quantitative targets with regard to GHG mitigation, Millennium Development Goals, pollution and other social aspects. This includes a GHG mitigation target broken down to the waste sector and a '100-0-100' work programme (100% access to safe water, 0% slum areas, 100% access to sanitation). However, there is no system or guidelines established for how the municipalities and provinces should collect, assemble and forward the data or how data should be analysed and verified after.

- Municipalities are often unable to operate infrastructure and their MSWM-system in accordance with national laws and regulations.

Political barriers:

- Lack of political will to introduce regulation and tipping fees.
- Low enforcement of existing laws, due to lack of punitive measures;
- Low priority of SWM in local governments' budget allocation.

Social barriers:

- MSWM is a highly sensitive issue, in particular around public acceptance from local communities located close to landfill sites;
- Lack of education and awareness of MSWM;
- Threat to the activities of existing informal recycling businesses and landfill scavenger settlements;
- Lack of community involvement in MSWM.

To overcome these barriers across the diverse and varied SWM systems operating across the five pilots areas, a focus on implementation of specific measures in each of the municipalities was favoured instead of a more general approach. The information to develop these 'locally appropriate mitigation actions' was gathered from the planning workshops and local stakeholder dialogues undertaken in each pilot area. While in one city, the establishment of a waste bank might be considered the most effective measure to reduce GHG emissions, generating energy from landfill gas might be more appropriate in another. Different measures have different implications for national funding, support and oversight arrangements and successful implementation is therefore heavily dependent on national government's ability and willingness to accommodate such changes.

The results of these field-visits, dialogues and planning workshops in the preparation phase were then integrated into a step-wise work plan with clear distribution of roles and responsibilities as well as timelines. This 'Concept Note' then formed the basis for an implementation agreement.

V-NAMA development phase (June 2013 – Nov. 2014)

The V-NAMA development phase included elaboration of a number of individual elements, building upon each other. These elements form the basis of a concept that addresses the aforementioned barriers and leads to transfor-

mational change and enhanced private-sector engagement. In the case of Indonesia, the core elements consisted of:

- *Local SWM and GHG baseline studies:* These studies helped to assess the present situation in the five pilot locations in regard to the MSWM and GHG emissions in general. A detailed understanding of the status quo in each area is important to guide the development of effective tailor-made solutions. In these studies, workshops were undertaken, where local stakeholders together with national experts analysed the composition of waste to provide a baseline. In other workshops the role of local communities, the informal sector and gender aspects were roughly assessed. The financial features of the local MSWM-system were another aspect: Where does the money come from and how much? What is it being used for? Which investments and operations are well financed and where is there a lack of funding and why? The capacity building needs in different groups of stakeholders were also assessed and existing good-practice (such as the Waste Bank in Malang or pilots in regard to WTE in Kendari) were documented.
- *Business as usual (BAU) scenario analysis:* Based on the data gathered, consultants developed BAU scenarios for each city, taking into account the different population and economic growth rates, the local MSWM-infrastructure and the capacity to operate the MSWM-system.
- *GHG mitigation options analysis:* The analysis of mitigation options was divided into two parts: The first part included the analysis of concrete areas of intervention, which in the case of Indonesia included:
 - waste reduction at the source based on 3R activities and composting;
 - solid waste as alternative fuels and raw materials, such as RDF (refuse derived fuel) for cement industry;
 - landfill gas (LFG) usage as alternative energy source;
 - anaerobic digestion;
 - landfill mining;
 - reduction of open burning and open dumping to the vacant land and water body;
 The GHG emissions reduction potential of these measures was then assessed for each of the pilot municipalities.

The second part of the options analysis included a cost estimation which also incorporated analysis of co-benefits and risks of the different options.

- *Incentives system development:* When it comes to finances in the Indonesian MSWM-sector, there are two major gaps: a lack of funding for infrastructure and equipment, and a lack of funding for operation and maintenance of the local MSWM-system. In relation to infrastructure and equipment, the national level supports the municipalities with the construction of MSWM facilities, such as sanitary landfills (downstream) and 3R-facilities. While operation and maintenance should remain the full responsibility of the local governments, additional support for infrastructure and equipment from national, private and/or international sources is needed to establish a well-functioning MSWM-system, which uses its full potential for GHG emissions reduction. The incentives system developed therefore consists of a national programme for infrastructure and equipment and a capacity building programme to enable the municipalities to increase fees etc. to finance the operation and maintenance of the infrastructure provided. Non-financial incentives should also be considered, such as the Adipura award that has already proven as a reputational incentive that could improve the MSWM in a city/regency.
- *MRV-system design:* The MRV system developed for the V-NAMA on MSWM had to follow two main principles: it should be integrated into the MRV-system of the RAN-GRK and RAD-GRK-processes and other GHG emission reduction interventions should also be able to make use of it. In other words, the system should be in line with the MER (Monitoring, Evaluation and Reporting) system developed by BAPPENAS and the MRV system developed by the Ministry of Environment. In that way it aims to have a transformational impact beyond the NAMA and helps the Indonesian government to integrate the impact of a broad range of mitigation actions into national GHG accounting. It was also important that the MRV-system should be designed and implemented in a way that the local government could directly make use of.
- *Capacity Building and institutional strengthening strategy:* Capacity building in the V-NAMA in MSWM should enable the national and the local governments to more effectively fulfil their tasks. On local level, the most urgent issue is to enable local governments to increase their MSWM budget, reduce costs and spend money in the most efficient way (with particular focus on GHG emission reductions) as well as the human capacity of the local governments. This includes institutional development and strengthening of operating entities, technical

operations, monitoring and planning as well as development of strategies for how best to involve informal and formal private sector actors.

At the national level, horizontal cooperation and coordination between the line ministries and knowledge exchange and coordination mechanism for communication with the sub-national level should be strengthened. Support should also be given for the development of incentive and support programmes which fit the needs of the local governments and are prioritized for GHG emission mitigation.

Together with project partners, the V-NAMA team prepared a capacity building roadmap and a detailed implementation plan. Training materials for the national and local level on the role of cities in climate change, climate finance for cities and MSWM under climate change aspects were also developed and were piloted with participants from national and local government.

These NAMA elements were jointly developed with the various V-NAMA stakeholders and were discussed in a number of workshops between June 2013 and October 2014. They form the basis of the VIMSWa-NAMA proposal (Vertically integrated Municipal Solid Waste Management-NAMA) which is to be presented to the international (donor) community for support.

Pre-implementation and search for funding phase (ongoing)

In Indonesia, NAMAs are currently under preparation in various sectors including transport, energy, forestry and the cement industry. The national government under the coordination of BAPPENAS and supported by the Indonesian Climate Change Trust Fund (ICCTF) decided to promote these NAMAs in a coordinated way, using publications and events together with one-on-one promotion activities to draw attention in the international donor community. The VIMSWa-NAMA proposal has been presented at the ICCTF Climate and Development Investment Forum, Jakarta in September 2014 and at the UNFCCC-COP20 in Lima, Peru in December 2014.

Additionally the Indonesian V-NAMA approach concept has been presented at various international events in India, Poland, Thailand, Vietnam, Austria, Brazil and Ethiopia. Some of these events and presentations have been held not only by partners from national governments, but also municipal level including the mayors of Kendari and Jambi.

The overlap of four out of five pilot municipalities of the V-NAMA project with KfW's solid waste programme 'Emissions Reduction in Cities – Solid Waste Management' lead to constant cooperation between the GIZ V-NAMA team and the KfW, being intensified during the 'search for funding and pre-implementation phase'. Purpose was the alignment of the two projects and to make best use of synergies since several of the identified gaps for an effective MSWM-system in the pilot municipalities are being addressed by KfW.

Lessons Learnt

The Indonesian government and its development partners are currently preparing many NAMA concepts in a structured and coordinated way, which paves ways to compare success factors and differences of the V-NAMA approach to other NAMA developments.

Success factors

1. The V-NAMA started with a bottom up-process and analysed in a first phase the needs of local governments e.g. during the planning workshops, local stakeholder dialogues and field trips. The result in the V-NAMA approach was a comparatively high ownership and motivation at municipal level also enabling municipalities to benefit from capacity building and knowledge exchange during the V-NAMA development phase.
2. Support and involvement from national government is critical for successful development of NAMAs which involve sub-nationals, e.g. for the development of well-fitting financial support mechanisms, MRV or capacity building.
3. Vertical coordination goes hand-in-hand with improved horizontal coordination between ministries involved in MSWM: BAPPENAS, Ministry of Public Works and Housing, Ministry of Environment and Ministry of Energy and Mineral Resources. The establishment of the Technical Committee was beneficial for the cooperation between ministries, particularly for coordinating roles, authorities and responsibilities. The Technical Committee structure is now also used for waste sector-related issues beyond the V-NAMA and has helped to improve horizontal coordination.
4. Building trust in local government is a key factor influencing private sector investment. During the development of the V-NAMA, Unilever signed a Memorandum of Understanding on further collaboration to replicate best-practice in other municipalities. This demonstrates that V-NAMA as a nationally coordinated approach for local climate action could help to build

The VIMSWa-NAMA proposal

Framework

The V-NAMA proposal contributes to the RAN-GRK and RAD-GRK (national and local action plans for GHG emissions reduction). The proposal is closely aligned with the solid waste programme 'Emissions Reduction in Cities – Solid Waste Management', currently under implementation financed by the Government of the Republic of Indonesia, KfW and the Swiss State Secretariat of Economic Affairs (SECO). The programme comprises of the construction of sanitary landfills in five municipalities (four of which overlap with the five V-NAMA pilot municipalities) including sorting and composting facilities, landfill gas extraction and flaring and leachate collection and treatment facilities. Out of the overall investment budget of approximately €100m EUR, KfW provides on behalf of the German government an interest reduced loan of €75m EUR; SECO finances accompanying measures including capacity building for municipalities in the amount of €7.6m EUR.

Objective

The project aims at developing a vertically integrated approach to mitigate the GHG emission in the MSWM sector in Indonesia by applying financing mechanisms for infrastructure investments and operations (including reduction of slum-areas).

Concept and methodical approach

The VIMSWa-NAMA proposal comprises financial and technical components. Together with the KfW activities, it aims at addressing financial and operational gaps preventing effective MSWM (and subsequent GHG emission reductions) in five pilot municipalities:

The financial components: With the above mentioned interest reduced loan from KfW, the Indonesian government supports the construction of five sanitary landfills, including composting and sorting facilities, of which are four being located in VIMSWa-NAMA pilot municipalities. As core element of the VIMSWa-NAMA, the Indonesian national government in cooperation with local governments develops and pilot-tests a

trust and deliver benefits for multiple stakeholders. In this case, Unilever would gain CSR (Corporate Social Responsibility) and EPR (extended producer responsibility) benefits and better access to secondary raw materials; Municipalities improve their MSWM-system and realise investments or even generate income; and national government has a privately financed mitigation action which contributes to the national mitigation target.

performance based funding mechanism for climate-friendly upstream and downstream MSWM-infrastructure and equipment. This new financing mechanism focuses on financing local government investments in upstream infrastructure and equipment. Five municipalities (Jambi, Malang, Kendari, Pekalongan, Sidoarjo) will pilot and test the mechanism by investing in defined and custom-made infrastructure projects which include: Increasing service coverage including provision of MSWM collection and transportation vehicles; 3R activities and composting, including home-recycling and home-composting and solid-waste-bank; anaerobic digestion; sanitary landfill with LFG capture, including flaring, direct use of LFG and LFG to electricity conversion (WTE); reduction of open burning and open dumping. Interventions particularly contribute to the national programme of Ministry of Public Works and Housing to provide MSWM services for slum areas. In an additional phase, the financing mechanism could be rolled out and replicated in other municipalities.

The technical components: Accompanying measures on municipal level will be carried out by KfW in four out of five VIMSWa-NAMA pilot municipalities, with the aim of reducing financing needs for operation and maintenance and at the same time supporting the municipalities to increase their MSWM-budget (from retribution, fees and other incomes). Similar measures will be carried out in Kendari, not being part of the "Emissions reductions in cities program" of KfW.

At national level, the VIMSWa-NAMA proposal concentrates on accompanying measures such as review and update of existing laws and regulations and the improvement of horizontal cooperation between different line-ministries involved. The technical component also comprises the establishment of a MRV-system for the MSWM-sector. Firstly, the MRV-system will be developed, then it will be piloted and tested with the activities carried out in the five pilot municipalities. Finally the system will be applied to other interventions in the MSWM-sector across Indonesia. This MRV system should be in line with the MER (Monitoring, Evaluation and Reporting) system

developed by BAPPENAS and the MRV system developed by the Ministry of Environment.

Financial and Mitigation ambition

The overall budget of VIMSWa-NAMA accounts for around €20m EUR (not including the activities carried out under the 'Emissions Reduction in Cities'-programme of KfW). The project aims at allocating significant contributions from Indonesian public sources, especially the national budget, user contributions (fees) and private funds (income generation from waste).

The potential GHG emission reduction from the proposed mitigation actions of the five pilot municipalities is expected around 52,000 t CO₂eq per year after all investment measures are implemented (not including the mitigation effects from the KfW-activities).

Transformational change

All these measures will lead to transformational changes mainly by promoting a paradigm shift from "collect-transport-dispose" to the 3R ("reduce-reuse-recycle") concept that focuses on waste minimization. Other transformational changes include performance based finance transfer mechanisms from national to local level, and development of GHG reducing investment and capacity building projects in national and sub-national government. Applying vertically integrated approaches will also provide an entry point to address climate change issues related to the MSWM and provide a blueprint for the involvement of sub-national stakeholders into national mitigation strategies in other sectors.

Sustainable development co-benefits

Besides strengthening local institutions and improving vertical integration and coordination between different levels of government, the proposed activities are expected to have significant development co-benefits (environmental, economic and social co-benefits) and are strongly aligned with national development priorities such as a 100% access to sanitation (including SWM) by 2019.

Lessons learnt

1. Initially, to take account of the anticipated variation in engagement and support that would be required working with the different municipalities, the V-NAMA project planned to separate the pilot areas into two groups based on the level of advancement in their MSWM-system. Over time, it became clear this was not necessary as the areas initially assessed as less advanced

became the more motivated partners in the project. The V-NAMA approach allowed enough flexibility to change plans and to work together with all five municipalities at the same time.

2. The NAMA development team had to exercise several changes of priorities addressed by stakeholders. For example, subsequent to commencing the design of the V-NAMA a 5-year development plan 2014-2019 intro-

duced an objective for the Ministry of Public Works and Housing to reduce urban slum areas to 0% by 2019.

The ministry as a key partner in the project on national level therefore searched for opportunities to use the V-NAMA to support this objective. For concept development, it is advisable to allow integrating and addressing new priorities as they emerge, without losing the overarching aim to reduce GHG emissions.

3. The V-NAMA development process can be rather lengthy and it is important to keep local partners motivated. This can be achieved by ensuring the process itself delivers value for local partners. For example, local partners benefitted especially from the planning workshops and local stakeholder dialogues, which provided a platform for constructive discussions and mutual improvement of the local MSWM-system. The V-NAMA development process also helped provide data, e.g. in regard to the estimation of GHG emissions or waste composition, which the municipalities could also use for other purposes.
4. The example of Unilever and other companies that approached the V-NAMA project demonstrates that the V-NAMA process draws attention to and can potentially lead to private sector involvement. However, much work remains to be undertaken in the process to ensure the needs of both municipalities and companies are satisfied.
5. It was very important to conduct local stakeholder dialogues for stakeholders at the local level to agree on a way forward at municipal level. In this process the partners in local government were the ones to identify and invite the relevant stakeholders. The events involved

a lot of conflict around previously unaddressed topics as this was, in most cases, the first time local government had received feedback from their communities and other stakeholders on MSWM. Effective facilitation enabled the conversations to be channeled into a constructive dialogue to jointly develop solutions.

6. In a similar way, the initial dialogue between sub-national and national government involved conflict for similar reasons, and also here the process enabled the issues to be effectively channeled into a constructive dialogue that benefits all related parties.
7. The development of a NAMA with so many stakeholders involved requires an iterative process and inevitable changes of the concept over time. This makes it more challenging to approach potential funding institutions at an early stage as bankable actions and clear budget demands cannot be presented. It would help in the future to begin discussions with input from potential funders to improve the probability of finding suitable funding opportunities during the NAMA preparation process.

Recommendations

1. Try to involve the private sector but also make clear that there are certain obstacles and barriers to overcome before viable business cases can be developed.
2. Partner with other international and bilateral development organizations to avoid uncoordinated overlaps
3. Start early enough to get in contact with possible donors and do not hesitate to present unfinished project proposals to them for feedback.



Published by

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

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Building Energy Efficiency V-NAMA in South Africa

Development of vertically integrated Nationally Appropriate Mitigation Action (V-NAMA) to improve energy efficiency of public buildings in South Africa

Energy efficiency in buildings is an area where local governments can have a key influence and is one of eight priority areas identified in South Africa's national Climate Change Response Strategy. Since 2012, GIZ supported partners in the South African government to develop a "Vertically integrated National Appropriate Mitigation Action" (V-NAMA) focussing on energy efficiency in public buildings. The V-NAMA proposal development process has helped national government, provinces and municipalities to overcome barriers in their vertical coordination. It has also lead to increased horizontal coordination between different sectoral departments within the same sphere of government. Once implemented, the Energy Efficiency in Public Buildings Programme (EEPBP) V-NAMA will strengthen private sector engagement with provinces and municipalities, enhance the effectiveness of national subsidy programmes and contribute to transformational change in the management of public buildings.

Background

Buildings are a major contributor to greenhouse gas (GHG) emissions, accounting for around 40% of global energy consumption, which in turn generates around 30% of all energy-related GHG emissions. Investments in energy efficiency measures for buildings generally can have large net economic benefits with negative abatement costs. Investments in energy efficiency enjoy relatively quick returns and become even more profitable in the face of rising energy prices.

Control over building codes and energy efficiency standards is an area where municipalities around the world generally have a high degree of influence. This makes them key actors in any efforts to reduce GHG emissions by im-

Country	South Africa, in four pilot provinces and nine municipalities
Sector	Energy Efficiency in Public Buildings
Duration	May 2012 – April 2015
Framework	The South African V-NAMA programme forms part of the BMUB-ICI-global project 'V-NAMAs – Vertically integrated NAMAs for the involvement of sub-national actors in national mitigation strategies'. It is funded by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB).
Implementing agency	Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ)
Partners	National: Department of Energy (DoE), Department of Public Works (DPW), Department of Environmental Affairs (DEA) Provinces: Eastern Cape, Free State, Gauteng, KwaZulu Natal Municipalities: Nelson Mandela Bay, Cris Hanj, Mangaung, Matjhabeng, Ekurhuleni, Randfontein, eThekwinj, Ilembe, Kwadu-Kuza

proving energy efficiency in buildings. Despite this, there are still many barriers and challenges to overcome, when it comes to implementation.

On behalf of:



Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

South Africa has pledged a voluntary mitigation target to reduce its GHG emissions by 34% in 2020 and 42% in 2025 below business as usual (BAU), premised upon developed countries meeting their commitment to provide financial, capacity-building, technology development and technology transfer.

The National Climate Change Response Strategy (White Paper) of 2011 includes eight “Near-Term Priority Flagship Programmes”. Three of these flagship programmes focus on climate change adaptation, and five cover mitigation, including the Renewable Energy Flagship Programme; the Energy Efficiency and Energy Demand Management Flagship Programme; the Transport Flagship Programme; the Waste Management Flagship Programme; and the Carbon Capture and Sequestration Flagship Programme.

The Energy Efficiency and Energy Demand Management Flagship Programme focusses on energy efficiency, spanning industry, commercial and residential public buildings.

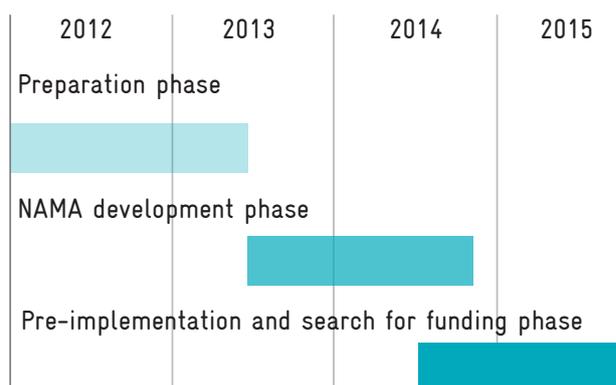
In 2005, South Africa passed legislation setting a 15% reduction target for energy intensity in public buildings. The country aims to address energy efficiency through a variety of projects, programmes and initiatives, including the National Energy Efficiency Demand Side Management (EEDSM) Programme for efficiency measures in municipalities. Private sector involvement in provincial and municipal energy efficiency activities has so far been limited to infrastructural obligations only except for one case involving a guaranteed savings contract.

Description of Activities

To implement the Energy Efficiency and Energy Demand Management Flagship Programme, the government of South Africa partnered with GIZ in the project ‘V-NAMAs – Vertically integrated NAMAs for the involvement of sub national actors in national mitigation strategies’, financed through the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). The V-NAMA development process can be divided into three phases: *preparation, development, and search for funding* and *pre-implementation*.

Preparation phase (May 2012 – May 2013)

The preparation phase started with the recruitment of staff and programme inception activities including the establishment of contacts with stakeholders, and an initial stock-take of public buildings and national climate change policies and actions.



Further activities included:

- Baseline analysis of energy efficiency in public buildings in South Africa, focussing on energy consumption and efficiency potential as well as on main barriers and proposed solutions.
- Formation of a preliminary steering structure for the programme. This steering structure included representatives of the Department of Environmental Affairs (DEA), the Department of Public Works (DPW) and the Department of Energy (DoE) with support from GIZ and was located within an Interdepartmental Task Team on Energy Efficiency in Public Buildings.
- Based on the baseline analysis, four provinces were selected to participate in the programme, including: Eastern Cape, Free State, Gauteng and Kwazulu-Natal. Selection criteria used included: (1) Energy consumption levels and hence the potential to reduce GHG emissions; (2) Political commitment; (3) Alignment with other related programmes in the country; (4) Balance of urban and rural context; and (5) Moderate support needs (related to finances and capacity).

The preparation phase culminated in a stakeholder workshop in April 2013, which firstly included discussion and refinement of the components of the V-NAMA programme based on the experiences, and specific conditions and needs of the selected provinces and municipalities. Secondly, it resulted in the enlargement of the programme steering structure. Thirdly, a step-wise work plan with clear distribution of roles and responsibilities and timelines was elaborated into a ‘Concept Note’ which was agreed on by all parties. This was then followed by council resolutions in the participating provinces and municipalities to provide political backing to the project.

The main objective for developing the V-NAMA shifted away from concrete energy efficiency measures in selected buildings, towards more systemic energy efficiency solutions enabling transformational change of the whole

public buildings sector, a key focus being how to overcome barriers for increased private energy efficiency investments in public buildings.

- *Economic/financial barriers:*

- Especially barriers for private sector investments due to low mutual trust between governments and private sector companies;
- Ineffective incentive mechanisms for energy efficiency measures in provinces and municipalities;
- An energy services sector with a weak capital base;

- *Institutional barriers:*

- Absence of a vertically co-ordinated system
- Insufficient capacity at national but also provincial and municipal level to implement energy efficiency support programmes for provinces and municipalities;
- Lack of reliable data (e.g. estimations for public buildings' electricity consumption range from 4.2 to 9.7 Terawatt hours in 2010);

- *Political barriers:*

- Policy constraints, including ineffective subsidy mechanisms and regulatory hurdles for provinces and municipalities to enter into contracts with the private sector.

V-NAMA development phase (June 2013 – Nov 2014)

The V-NAMA development phase included the elaboration of a number of individual elements, each building upon the other. These elements form the basis of a concept that addresses the aforementioned barriers and leads to a transformational change of the energy efficiency in public buildings subsector. In the case of South Africa, the core elements consisted of:

- *Baseline development:* A sample of about 260 public buildings was selected for the installation of smart meters, 80 of these being provincial and municipal buildings. The purpose of which was to record and monitor their current energy consumption. In a second step, 87 building managers and other officials from the participating provinces and municipalities conducted building energy audits and set energy consumption baselines for government buildings (two provincial and two municipal buildings in each pilot-province). These tasks were supported by experts from an Energy Service Company (ESCO). The baseline development was designed in such a way, that it could at the same time serve as training and capacity building for the officials involved. The estimated energy savings for individual measures in pre-selected public buildings with focus on lighting, air conditioning, water heating and behavioural change amounted to 20-30%. (Theoretical)

pay-back periods for these measures amounted to 0.3-3 years.

- *Business model development:* Existing and potential business models were analysed and evaluated to establish which would be the most feasible to trigger increased energy efficiency investments in South African public buildings. Different models included:
 - Shared and guaranteed savings contracts with private ESCOs;
 - Fee-for-service contracts;
 - NAMA bonds and carbon tax revenues.

The analysis concluded that shared savings contracts would have the highest potential to tap energy efficiency and GHG mitigation potentials in public buildings. To undergo a reality check, two volunteering municipalities (eThekweni and Graaf-Reinet) agreed on piloting the shared-savings model with assistance from consultants. This test helps

- to discover obstacles for the establishment of the business model; and
- served as proof-of-concept for the first V-NAMA element to be implemented.

- *Incentives system:* the South African government already supports energy efficiency measures with a number of different incentives, including EEDSM (see above) and

Energy Performance Contracts

Technical and economic risks can be transferred to an Energy Service Company (ESCO). In this model, an ESCO guarantees a certain amount of savings in energy consumption and thus energy costs to the municipality by implementing and maintaining energy efficiency measures.

For this, the ESCO receives an agreed fixed regular (e.g. monthly) payment during the contract period. If the savings are not achieved, the ESCO has to pay the difference to the municipality. The upfront investment required for the energy efficiency measures can either be financed by the municipality ("guaranteed savings agreement") or the ESCO ("shared savings agreement", in this case the municipality does not have to contribute to the upfront investment) or a hybrid of the two.

In any case, realizing the potential of energy cost savings will repay the upfront investment. The benefit of both models is that the municipality can transfer the risk of not achieving the projected savings to the ESCO.

various programmes managed by the state-owned energy provider Eskom, since enhanced energy efficiency is a national priority.

The existing incentive schemes underwent a SWOT-analysis with the result, that the EEDSM Programme implemented by the Department of Energy and financed through the division of revenue act would be the best starting point for an effective V-NAMA-incentive mechanism. EEDSM had already allocated R180m ZAR/€12m EUR (fiscal year 2012/13) for municipal energy efficiency activities in the field of buildings, street lights and other public infrastructure. Due to a lack of capacity at the local level and a lack of support structures at national level, only a limited share of the budget is allocated by the municipalities. Together with stakeholders from all spheres of government and building on good practice examples from other countries (e.g. incentives mechanisms of the German government's national climate initiative NKI), an improved incentive system was developed for the V-NAMA proposal.

- *MRV-system development:* Energy consumption baselines for buildings based on UNEP's Common Carbon Metric ($\text{kg CO}_2/\text{m}^2/\text{year}$) and the comparison of consumption patterns before and after carrying out efficiency measures form the core of the project MRV system. The main criteria for the development of the MRV system were its applicability and integration into existing Monitoring and Evaluation (M&E)-systems. Since energy consumption in South Africa means almost always electricity consumption through the state-owned monopoly Eskom, the electricity mix is the same everywhere in the country and consumption can easily be translated into greenhouse gas emissions (emissions factor: $0.95 \text{ t CO}_2/\text{MWh}$).

The installed smart meters not only record consumed electricity but can also provide daily, weekly or annual load profiles covering the consumption of individual parts or sub-distribution-networks of buildings and can submit the recorded data to a central database for further analysis.

At the request of municipal stakeholders it was decided that to support behavioural change and enhance local ownership, easy access to such data must always be provided to the actual owner of the building (e.g. the province or municipality).

The EEPBP-NAMA Proposal

Framework

The V-NAMA proposal forms part of the Energy Efficiency and Demand Management Flagship Programme of the South African Climate Change Response Strategy and scales up practical implementation of this flagship.

Name and objective

During discussions with stakeholders, the issue came up not to use the term 'sub-nationals' for provinces and municipalities since it would subliminally suggest that the national level is of higher rank. Also the term 'provinces and municipalities' was dismissed, since role of the national level would not be adequately taken into account. The stakeholders decided to call the V-NAMA project outline 'Energy Efficiency in Public Buildings Programme (EEPBP)' and subsequently formulated the following objective: "All South African spheres of government (national level, provinces and municipalities) have contributed to the national GHG mitigation and energy efficiency targets by applying cost-effective mechanisms for energy efficiency interventions in public buildings".

Concept and methodical approach

Despite energy efficiency investments being cost effective with relatively quick returns, international financial support for EEPBP is required to introduce new business models that catalyse and de-risk private sector involvement and increase public funding leverage. Moreover, international technical support is needed to increase capacity, to strengthen institutions and to help overcome structural barriers.

Consequently, EEPBP includes the following three components:

A financial component: Here the national ministries will establish an Energy Efficiency (EE) Fund hosted by the Development Bank of Southern Africa (DBSA) that provides a unified financial service platform for provinces and municipalities to implement energy efficiency and serves to:

- blend public, private and international funding sources;
- offer financial services to provinces/ municipalities and private ESCOs;
- mitigate certain risks, such as payment risks in public-private shared savings contracts;

A policy component: Here, the national Department of Energy, in association with Department of Public Works and Department of Environmental Affairs, with assistance from GIZ, will:

- develop best practice examples including monitoring provisions for energy performance-based contracts between public sector and ESCOs;
- develop a standardized approach for public institutions to sign contracts with ESCOs; and
- create the structure for a Green Building Project Management Office to pilot Energy Performance Certificates and other standards in public buildings.

A capacity building component: where the above mentioned departments, with assistance from GIZ, will

- establish a support mechanism (staff, capacity building, financial support, services) for public institutions that want to apply for funding for energy efficiency interventions in public buildings. Access to this support is differentiated according to their capacity (a 'Two-Windows' approach); and
- provide funding and capacity building for Energy Efficiency Managers, which support the implementation of shared savings contracts and other energy efficiency instruments.

The main elements of the proposal include:

- A central fund as a clearly defined resource for provinces and municipalities to apply for grants and other subsidies. The fund is hosted in the Development Bank of Southern Africa (DBSA) which has extensive experience in managing similar mechanisms and in working together with all spheres of the South African government.
- A number of support mechanisms to overcome capacity barriers. Some of these mechanisms are influenced by elements of the German National Climate Initiative (NKI), under which the Federal Ministry for the Environment (BMUB) provides support for local climate change action. This includes the communal Energy Efficiency Managers (based on the NKI instrument 'Climate Protection Managers' with a wider range of tasks) and installation of a 'national helpdesk', especially for less experienced provinces and municipalities (based on the NKI 'Service Center for Municipal Climate Protection').
- Enabling the private sector to invest in public buildings by providing services to provinces and municipalities on one side and removing various obstacles to energy service companies on the other.

Financial and Mitigation ambition

In a period of 5 years and with a budget of €14.5m EUR of international support (€10m EUR for the financial assistance and €4.5m EUR for the technical assistance), leveraging investments from the private sector and other sources in a 1:1 ratio, an estimated 1,000 public buildings could reduce their energy consumption by 20-30%. This would lead to a greenhouse gas mitigation reduction of 95,000 t CO₂eq/year. The EEPBP concept is designed in a way that after establishment, private sector investments should continue without further support, so that the full cost-effective energy efficiency potential of South African public buildings (estimated at 0.8 to 2.8 Mt CO₂eq/year) can be realised.

Additionally, two alternative scenarios, a limited option with a €5m EUR budget and an extended option with a €25m EUR budget have been developed and other options are possible, so to meet donor or investor specific priorities.

Sustainable development co-benefits

When it comes to cooperation with provinces and municipalities, co-benefits are often a strong motivator for action. Implementation of the V-NAMA seeks to realise a number of accompanying co-benefits in various sectors, which include:

- Reduction of energy costs which translates to direct public budget savings;
- Improvement of public service quality by retrofitting existing infrastructure;
- Improved coordination between different spheres of government and sector departments;
- Direct and indirect contribution to reducing energy scarcity and avoiding load-shedding and black-outs;
- Removing barriers for private sector investments and job-creation in many different regions of the country, different sectors, different sized companies and at different skill levels

- *Institutional Strengthening*: Encouraging investment in energy efficiency measures for existing buildings via incentives is important but another important element considered was the establishment of certain energy efficiency standards for existing and new public buildings. Support for the development, application and compliance of these standards could be provided by a Green Building Project Management Office under the Department of Public Works and its regional branches for which a concept has been developed.
- *Capacity Building*: Strengthening of institutional capacity was integrated into the activities for baseline development (see above).

Capacity building was also identified as required in the following areas:

- For energy efficiency project development including understanding of efficiency and financing options (grants, private sector involvement) at the provincial and municipal level;
- Guidance and support for provincial and municipal 'clients' at the national level;
- To enhance the effectiveness of technical energy efficiency measures (e.g. replacement of inefficient electrical equipment etc.);
- To support behavioural change of building users.

Interim results of these NAMA elements were discussed and jointly developed with different stakeholders over the aforementioned period. The key event to evaluate, adjust and bind the elements together into a V-NAMA proposal was a stakeholder workshop with representatives from all spheres of government and the preselected provinces and municipalities which took place in June 2014. The results of this workshop culminated into a NAMA project outline (see box above) which was submitted to possible financing institutions to request implementation support.

Pre-implementation and search for funding phase

The V-NAMA proposal (EEPBP Project Outline) was agreed between the three national partner ministries (DoE, DPW and DEA), the pre-selected provinces and municipalities and all other stakeholders involved (DBSA, GIZ etc.) on 15 July 2014, which serves as the starting date for this next phase.

The search for funding and the implementation of first elements of the concept go hand in hand and influence each other. This phase speaks to:

- The availability of an international funding source for this specific program;

- The identification of elements which can be implemented by the country's own means helps to prove the feasibility of the concept which could enhance its attractiveness to funding organisations;
- demonstration to the provinces and municipalities that concept preparation is followed by concrete action;
- How the national level can use this action to demonstrate action towards reaching its voluntary mitigation target and as part of delivery of its Climate Change Response Strategy.

Shared-savings energy contracts are being tested in two selected municipalities, eThekweni (KwaZulu-Natal province) and Graaf-Reinet in Cacadu district municipality (Eastern Cape province).

The role of Energy Efficiency Managers on local level and the support structures around the Energy Efficiency fund at national level were supported by private facilitators for the purpose of this experimental arrangement.

These pilots explore how to:

- overcome the regulatory barriers for private sector investments;
- bundle attractive building packages for ESCo investment; and
- gather all necessary information and identify all relevant stakeholders needed for effective energy efficient retrofit projects.

The results of these implementation pilots will be shared with other municipalities in a nationwide workshop.

While these aforementioned implementation actions are financed through the V-NAMA proposal development budget, there are other actions which are – for the time being – free of international funding needs and implementation is well underway. These include actions around Green Building Standards and Promotion such as the formulation of a concept for a Green Building Project Management Office and Green Building Policy. They have been fed into the parliamentary process with reference to the EEPBP (V-NAMA) concept.

The implementation of these actions has been accompanied by other promotional activities including presentation of the concept to other potential donors on various occasions, including: the South African National Climate Change Dialogue in November 2014 and the international climate conference COP20 in Lima/Peru in December 2014. These actions are planned to culminate in the upload of the V-NAMA concept to the UNFCCC NAMA registry. With this upload South Africa aims to demonstrate how it

is actively working towards implementation of its Climate Change Response Strategy.

It is hoped that all these actions ultimately lead to an international organisation providing funds for the full implementation of the EEPBP program.

Lessons learnt

Success factors

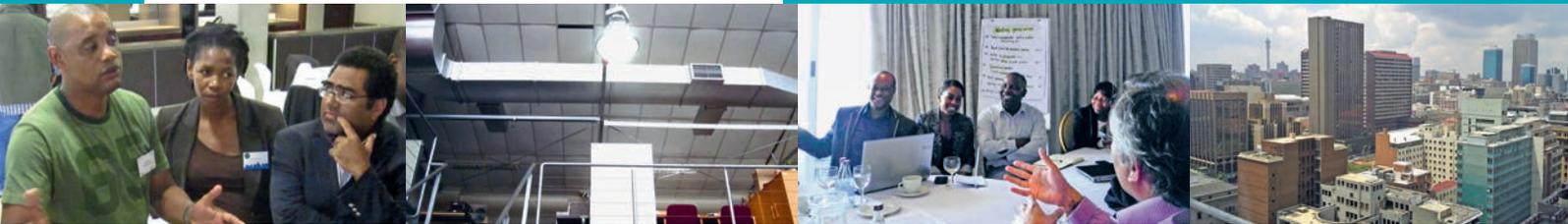
1. An intensive stock-take at the outset is important as it:
 - helps to access new partners in both provincial and municipal spheres of government;
 - helps to overcome (as far as possible) the lack of data, which at municipal and provincial level is often substantial;
 - helps to bring all stakeholders involved to the same level of knowledge (using well-connected, experienced national consultants to assist in this task helps to ensure useable outputs).
2. Jointly developing a Concept Note helps to avoid lengthy discussions on the way forward at later stages of the project. Issues that should be covered include: available options and preferences; risks; potentials; opportunities and challenges, in other words “getting to know what is there, where you want to go and how to get there in a structured way”.
3. Allowing appropriate time for the two aforementioned processes is necessary when it comes to a collaboration between so many different stakeholders from various spheres and different departments of government. Building trust and confidence as a basis for joint activity takes time. It is important for advisors (GIZ in this case) to take a neutral role and respect political sensitivities since possible conflicts between stakeholders involved are not always clear at the outset.
4. Helping all stakeholders to understand each other’s motivations, priorities and possible benefits from the project, is important to enable the development of a concept that will enjoy wide support. NAMA development shouldn’t be seen as an additional burden but rather it should emphasise the “nationally appropriate” aspect as a way to solving existing challenges and support planned or ongoing action. In the case of the EEPBP, it was designed in a way that helps the Department of Energy to bring its Energy Efficiency Demand Side Management Programme to another level. At the same time, it supports the Department of Public Works to fulfil its tasks in the field of buildings maintenance and the promotion of Green Buildings standards. For the Department of

Environmental Affairs, it contributes to the implementation of the Climate Change Response Strategy and helps to show a proof of action in reaching towards the voluntary mitigation target. For the provinces and municipalities involved in EEPBP it can serve as a regional investment and job-creation program, which at the same time improves local service quality.

5. When it comes to the collaboration with three national departments, four provinces and nine municipalities, it is necessary to identify a group of key stakeholders who will drive the process and motivate the others to follow. The role of key stakeholders can change over time and some might become more important while others might lose interest or become less important.

Lessons learnt

1. Processes at the local level are more immediate, concrete and hands-on than at national level. That’s why in the case of vertically integrated NAMAs, more emphasis should be given to the implementation of actions during proposal development to maintain engagement and interest of local actors. In other words: try not only to take but also to give, showing the positive impacts of participating and putting efforts and staff hours from a limited budget into the project. Small measures like the installation of smart meters or the participation in a training event or delegation trip can help to keep stakeholders motivated and give a first answer to the question “what is in for me?”
2. Coordination of effective dialogue in such a vertically integrated project is particularly important due to the larger number of stakeholders from varied spheres of government involved. Since many donors and development cooperation projects follow multi-level-approaches and work together with different spheres of government, also the number of development programs and international development agencies may increase. This, in turn increases the need for alignment, coordination and sharing of information (especially planned activities and data) to avoid conflicts. A detailed stakeholder analysis and mapping at the outset and frequent exchange meetings help to achieve this.
3. Being open to vertical integration and collaboration between different spheres of government also leads to enhanced horizontal cooperation.
4. Developing V-NAMA proved both challenging but successful and the aim of tapping mitigation potential at local level is achievable.



Recommendations

1. Decide and clarify early, what role national government plays: is it for the political and financial framework conditions or, as in this case, will national buildings and their mitigation potential form part of the NAMA.
2. Ensure you allow time and resource for coordination and facilitating effective dialogue between the large and diverse group of stakeholders engaged in the project.
3. To keep all stakeholders motivated throughout the process, 'taking' (data, list of buildings, time for workshops etc.) should be well balanced with 'giving' (capacity building, opportunities to attend international conferences, pilot projects or other incentives like the installation of smart meters).
4. Create a flow of vertical communication that is regular using data flows, committees, and standardised processes.

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Published by

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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Transit Oriented Development NAMA in Colombia

Nationally Appropriate Mitigation Action (NAMA) for transformational urban development linking transport and land-use planning at the local level

Already a leader in implementing Bus Rapid Transit (BRT) systems, Colombia is now taking a more holistic approach to tackle traffic and greenhouse gas (GHG) emissions over the long-term. Through coordination of transport systems and land-use planning, integration with housing policy and inter-institutional cooperation which includes sub-national governments and the private sector, Colombia's Transit Oriented Development (TOD) Nationally Appropriate Mitigation Action (NAMA), now under implementation, is using climate funds to catalyze transformational urban development.

Background

Transport is the fastest growing sector in terms of energy consumption in Colombia, causing traffic, air pollution problems and increasing GHG emissions in many cities. The main driver is the rapid growth of private motor-vehicle use. The situation is aggravated, in part, because urban development has not been oriented towards public transport. The GHG inventories of several Colombian cities show that the transport sector accounts for 50% of their GHG emissions (e.g. Santiago de Cali and San Jerónimo de Montería). In terms of air pollution, in metropolitan regions such as Bogotá, mobile sources are responsible for more than 95% of carbon monoxide (CO) and nitrogen oxides (NOx) emissions.

Mass transit and non-motorized transport shares are decreasing. Many transit systems are not achieving the projected ridership and some are already operating below cost recovery levels. Some cities have established fare compensation funds to avoid fare increases that would make it unaffordable to the poor and less competitive compared to other transport modes. This scenario is undermining the sustainability of urban transport in Colombia.

Country	Colombia, with a focus on at least three cities.
Sector	Transport, Urban planning, Housing
Duration	March 2015 - 2019
Framework	This NAMA is financed by the Joint Germany-UK NAMA Facility with a budget of €14.7 million.
Coordinating entity	Board of the Centre for the Promotion of Transit-Oriented Development (CIUDAT)
Implementing agency	Financial implementation by Findeter (Colombian development bank); Technical implementation by Center for Clean Air Policy (CCAP)
Partners	National: Colombian Government Ministries (Ministry of Transport, Ministry of Environment, Housing and Territorial Development, National Planning Department (DNP), Ministry of Housing, City and Territory). Sub-national: Local Governments (e.g. Cali, Manizales, Medellín). Other: Private developers, university researchers and non-governmental organizations

International Policies

Colombia is a party to the United Nations Framework Convention on Climate Change (UNFCCC). It ratified the *Kyoto Protocol* in 2000 as a developing country without a binding target, and participates in the Clean Development Mechanism (CDM). Colombia has made no formal commitment to reduce emissions.

On behalf of:



In collaboration with:

National Policies

In 2002 the Government of Colombia adopted the *National Public Transport Policy*, which led to the implementation of Colombia's BRT systems, internationally recognized as a model for inexpensive and sustainable urban transport. Through this national policy, 15 Colombian cities received financial, institutional, and technical support to implement public transport systems. To date the national government invested \$4.5 billion USD in this policy. With local government co-financing, total public investment amounts to \$7.3 billion USD.

In 2011, the national government launched the *Colombian Low Carbon Development Strategy* (ECDBC), recognizing that although Colombia's GHG emissions are currently low relative to developed countries, projected economic growth scenarios suggest that emissions will grow significantly if no mitigation action is taken. Under the ECDBC framework, a *Mitigation Action Plan for the Transport Sector* was developed which includes the TOD NAMA as one of the priority actions. It merges the national policy objectives for both affordable housing and sustainable transport by enhancing the benefits of public investments in transit and leveraging funds for low-income housing. In 2012, Colombia approved a law on Public-Private Partnerships (PPP) to attract private investment for public interest development projects. The PPP law allows for proposals initiated by either the private or public sector. For privately-initiated proposals the public sector can finance up to 20% of total project investments.

Local Policies

Colombia's territory is divided administratively into 32 departments, which in turn are subdivided into over 1,100 municipalities. Almost every major city in Colombia is currently updating its land use master plan (POT), which will define the urban development and growth model implemented over the next 12 years. For example, the POT update of Bogotá, the capital city of Colombia, includes policies and rules to strengthen the link between land use and transportation planning. Several cities such as Bogotá, Medellín, Cali and Manizales have created special urban redevelopment entities (ERUs) to lead, promote and coordinate urban renewal projects. However, coordination of ERUs with the BRT transit agency, other local secretariats, and national entities is currently limited, pointing to the need for enhanced vertical integration for successful delivery of TOD districts.

Barriers to national implementation

Despite national and local efforts, a range of barriers to TOD implementation remain, including:

- Limited policy integration among sectors;
- Limited technical capacity at the local level for TOD projects and policies;
- Insufficient institutional coordination among public entities (national, regional, local) in interventions;
- Lack of continuity and inconsistent 'Rules of the Game';
- Limited public-private collaboration.

The TOD NAMA was designed to help address many of these most significant barriers.

Description of Activities

Transit Oriented Development focuses public and private investment around transit stations and corridors, in a process which is sensitive to community needs. TOD results in more compact development through high-density, mixed land use and human-scale design, locating facilities within walking distance of transit stations. Key features of TOD include: high-quality public spaces; variety of housing types and prices; frequent, reliable, fast and comfortable transit; and measures discouraging the use of private cars.

The Colombia TOD NAMA aims to reduce emissions, improve quality of life, promote social equity and economic prosperity by delivering high-quality TOD enhancement projects, blending low-income and market-rate housing with commercial uses to create vibrant neighborhoods.

The Center for Clean Air Policy (CCAP), a non-profit organization supporting NAMA initiatives around the world, led the development of the TOD NAMA in a process that lasted two years. Securing international financing, in November 2013, was a key milestone for the implementation of the NAMA.

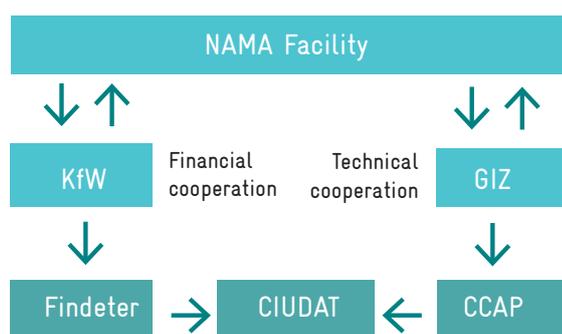
A specialized independent facility, housed within the Colombian national development bank (Findeter), is being created for the implementation of the NAMA: Centre for the Promotion of Transit-Oriented Development (CIU-DAT). Its core functions will be to ensure:

- *Technical and financial assistance* to catalytic transit neighbourhoods, including: project development; Public-Private Partnerships; finance and funding proposals; value capture mechanisms; TOD "pipeline" of sites, districts and corridors.
- *Policy coordination* analysis and advisory for integration of national and local policies on transportation, land use and housing.
- *Evaluation of results and benefits* including GHG mitigation, economic and social impact at the local level.
- *Development of a financial sustainability plan* to identify funding sources beyond the NAMA support.

The TOD NAMA will be managed under a trust fund scheme overseen by a Board responsible for strategic steering and definition of selection criteria for investment and technical assistance (e.g. competitive selection of TOD project proposals). The Board will include senior national government partners as well as Findeter and CCAP.

The establishment of CIUDAT's organizational and operational structure is currently ongoing, as is signing partnerships and defining the types of loans to be provided, guarantee mechanisms and a system for monitoring and evaluation of funded projects. The indicators used to assess the NAMA's implementation progress and its results will be selected by CIUDAT in consultation with the NAMA funders. Existing information systems can serve as a source of data, e.g. Information, Evaluation and Monitoring of Urban Transport System (SISSETU), operated by the Ministry of Transport and used in cities that develop BRT programs co-financed nationally. Sub-national data collection systems also exist, such as the mobility surveys conducted by the Bogotá District Department of Transportation. While there are a variety of reliable data sources in Colombia, it is necessary to strengthen institutions that promote primary information gathering in cities across the country which lack technical and financial resources (3% of budget).

Figure 1 – TOD NAMA operationalization diagram [Source: Adapted from presentation by the Colombian Ministry of Environment and Sustainable Development]



Business model and outcomes

The TOD NAMA will create a portfolio of at least three investment projects for Catalytic Transit Neighborhoods in Colombia's largest cities, to serve as demonstration cases to promote and replicate the TOD model to at least 20 other transit districts. The TOD NAMA aims to shift public investment and to create a project pipeline to attract and leverage additional domestic and international private funds. Potential opportunities for public and private investment include: Metro, bicycle and pedestrian infrastructure, public space, redevelopment, transformation of existing

station areas, redesign of car-oriented infrastructure and the improvement of informal settlements.

The total budget for the TOD NAMA is €14.7 million EUR over four years, to fund CIUDAT staff, technical consultants, and overhead. The expectations for replication of this model anticipate \$8 billion USD future investments in public transport and social housing. Findeter estimates that Bar-ranquilla could save \$1 billion USD in infrastructure costs by steering future development to TOD. Findeter's Sustainable Cities Initiative documented \$1.5 billion USD in infrastructure investment. According to various literature, public investments in TOD can attract up to 20 times their value in private investment. CIUDAT will design and structure advanced land-based mechanisms, such as land-based value capture, special tax districts, tax increment financing, business improvement districts and congestion/pollution charges. These are key instruments to create higher densities along transit corridors and to finance public transit and public infrastructure from capitalization of accessibility and urban renewal benefits.

TOD project proposals will be selected for technical and financial assistance through a competitive process. Evaluation criteria will include transformational potential, degree of readiness to allow early investments in infrastructure articulation with national programs, and financial viability. Nineteen potential locations have been identified so far, including: Bogotá (San Bernardo Metro and BRT station), Barranquilla (mixed-use Parque de la Paz), Cali (Corridor Verde), Medellín (private sector plan for Entre Orillas Metro station) and Manizales (pedestrian zones).

The TOD NAMA is expected to reduce growth in motor-vehicle use by 25% and mitigate 3.6 to 5.4 MMt CO₂eq annually, by 2040, due to changes in land use and travel patterns. These estimates consider the range of TOD performance and penetration presented in literature for North America and Latin America (20-50% VKT reduction). Additional assumptions include improvement of vehicle efficiency by 20% in all scenarios and continued significant investments in transit infrastructure and operations. The rise of private car ownership due to rising incomes is expected to continue despite TOD spreading throughout Colombia. The expected long-term co-benefits of the Colombian TOD NAMA include total infrastructure cost-savings due to TOD compact urban form, financial sustainability of mass transit systems, reduced traffic, better access to jobs and services, social inclusion, reduced household transportation costs, retail sales growth, more green spaces, better quality of life and improved competitiveness.

Lessons Learnt

As Local Governments are responsible for final investment decisions in their cities, the Colombian TOD NAMA, illustrates the importance of promoting vertical alignment between the different levels of government to obtain truly transformational, coherent and comprehensive action on the ground in what pertains to transit districts. The main lessons regarding vertical integration of policies are:

- Bring together the Ministries and National Entities with related mandates and ensure policy alignment;
- Build relationships, establish trust and dialogue between the different levels of government;
- Understand stakeholders' priorities and shape the NAMA to reflect these, including the current state of cities and their investment needs;
- Empower local authorities to ensure their commitment to national policies;
- Promote capacity building at the local level;
- Identify barriers in implementing the project and formulate alternative solutions to tackle them;
- Consider existing actions which result collaboration between national, local and private sector entities;
- Promote actions involving the private sector to significantly increase investment capability;

In addition, some lessons learnt regarding the specific NAMA process include:

- Clear responsibilities are needed for effective implementation of the NAMA;
- Integrate the NAMA into existing well-structured policies, such as the ECDBC;

- Ensure realistic and clear understanding of the expected GHG reduction and co-benefits;
- Define clear objectives and criteria for selection of projects that will be part of the NAMA.

Recommendations

Just as Bogotá's BRT served as a model for other Colombian and international cities, the TOD NAMA's demonstration projects and the investment facility's project-pipeline, together with a more integrated policy framework, will create conditions for the replication and up-scaling of TOD at local, regional and national level.

TOD is a compelling model that can be applied in many contexts to address locally-articulated needs. The potential for international replication of this NAMA is huge and lessons learned through this Colombian TOD NAMA can assist other nations in enhancing transit oriented development in their cities.

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Published by

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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Acknowledgements:
ICLEI wishes to thank CCAP and Paolo Cozzi for the collaboration offered on the development of this case.

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Low Emissions Schools NAMA in Mexico

Scaling-up a local climate change education programme into a Nationally Appropriate Mitigation Action (NAMA)

The Low Emissions Schools Programme is a NAMA focused on the educational sector in Mexico. It connects education and climate change through promoting sustainable development practices in schools and the wider community, including the measurement of school-level greenhouse gas (GHG) emissions. This case provides an example of how local climate action can successfully be piloted and scaled-up to a National Appropriate Mitigation Action (NAMA).

Background

In 2010, Mexico accounted for 1.3% of global GHG emissions, placing it as 11th highest emitter worldwide. In 2012 the country passed its pioneering *Climate Change General Law* to guide and provide a mandate for national climate change policy over the coming decades. The law strengthened and expanded existing institutional arrangements to cover the entire country and requires action to incorporate federal, state and municipal levels in implementing the national objective of reducing emissions and achieving sustainable development.

The Low Emissions School Programme

Across Mexican society there is still considerably limited awareness of the challenges presented by climate change, the need for improved resource efficiency and the role which individual actions can play in addressing these. Children and young people can play a key role in helping to address these challenges through increasing awareness and transforming their behaviour, as their habits are less firmly entrenched than that of adults.

Acknowledging the potential catalytic role which young people can play, the *Low Emission Schools Programme* established in 2013, engaged schoolchildren aged between 10 and 16 to learn about reducing greenhouse gases in their

Country	Mexico, in 5 pilot states
Sector	Education
Duration	June 2013 – up to 2018
Framework	This programme is supported by the Federal Ministry for Economic Cooperation and Development (BMZ), Foreign & Commonwealth Office (FCO) UK, German Ministry of Foreign Affairs (15 June 2013 to 31 December 2014).
Coordinating entity	General Directorate of Climate Change Policy of the Mexican Ministry of Environment, Natural Resources (SEMARNAT)
Implementing agency:	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
Partners:	National: SEMARNAT (Mexican Ministry of Environment and Natural Resources) States: Distrito Federal, Morelos and Veracruz through Environmental and Education Ministries on state level Implementation in 36 schools

schools and to make more efficient use of resources. As a consequence the schools have begun to significantly reduce their emissions as well as cutting costs. At the same time, the children and young people also transfer this knowledge to their families, friends and communities facilitating wider awareness raising and behaviour change across the community.

The Low Emissions Schools NAMA

As education is a key focus for development activity in Mexico, aligning this with climate change mitigation activity through the *Low Emissions School Programme* provided a good fit to scale-up the pilot programme into a NAMA.

The *Low Emissions Schools NAMA* is supported by sub-national climate change policies and national climate change laws and has been successfully integrated into:

- the Special Programme for Climate Change 2013-2018 (PECC) that serves as the main policy instrument derived from the Climate Change General Law and identifies opportunities to reduce emissions by 2018 across all governmental sectors.

The NAMA Registry

Since October 2013 GHG mitigation initiatives being developed in Mexico can be registered in a domestic registry for Nationally Appropriate Mitigation Action (NAMA). The purpose of this NAMA Registry is to centralize information, assist in the international registration process and channel possible support. Submission to the registry is voluntary and independent of adoption of the United Nations Framework Convention on Climate Change (UNFCCC) NAMA registry. Recognition of GHG reductions is undertaken through the National Registry of Emissions (RENE) once the NAMA is certified. Registration of a NAMA in the domestic registry requires that it satisfy of the following criteria:

- Be aligned to the **National Development Plan**;
- Contribute to transformational changes towards a sustainable growth in the country and be replicable;
- Potential to develop a Monitoring Reporting and Verification (MRV) system;
- Potential to be financial sustainable;
- Brief description of the actors involved, with preference for proposals involving multiple sectors (public, private, academic, social organizations);
- Identification of mitigation potential (including calculations for Business as Usual and expected GHG emissions reductions benefits), methodologies and mechanisms to MRV along with potential data sources;
- Implementation plan, including estimated costs for implementation and identified financial sources.

- the Climate Change Action Plan of Mexico City and Veracruz (not yet passed);
- in the national and international (planned) NAMA registry.

Description of Activities

The *Low Emission Schools Programme* aims to empower students to effectively influence their communities' action on climate change and sustainability, while at the same time reducing GHG emissions originating from their school. It aims to promote sustainable practices resulting in GHG emission reductions in the key areas of: energy, waste, transport, water, material consumption and land-use. As co-benefits it also aims to educate and empower young people and their communities around climate change issues.

The programme is delivered through actions led by the educational community and implemented by local non-governmental organisations that visit the schools on a regular basis. Each school creates a Green Team composed of students, parents and school staff. Together they are in charge of implementing the annual emission reduction action plan. Additionally, the programme is accompanied by a series of climate change awareness raising workshops. So far, more than 4,500 students and 1,000 adults have participated in these workshops.

In the pilot phase (2013-2014) the programme has been implemented in five federal states, where key stakeholders from the Environment and Education Ministry at state-level are responsible for its implementation. The programme is largely driven by a top-down process but does allow for bottom-up participation as schools can voluntarily apply to be part of the programme. The pilot was funded through a combination of support from:

- Federal Ministry for Economic Cooperation and Development (BMZ): €210,000 EUR (Apr 2013 – Oct 2014);
- UK Foreign & Commonwealth Office (FCO): €107,000 EUR (Apr 2013 – Oct 2014);
- German Ministry of Foreign Affairs: €75,000 EUR (Jun 2014 – Dec 2014);

During the pilot, some of the mitigation actions could be implemented without requiring much money. In some cases communities and private companies operating locally supported the project (e.g. by providing trash cans to schools for waste separation).

As a next step, the project team designed a robust and well-structured management and governance plan and established a Steering Committee including representatives from:

- Federal Environment and Energy Ministries
- State Education and Environment Ministries
- Civil Society (non-governmental organisation PIDES)

Scaling the programme up by developing it into a NAMA aims to enable:

- Tracking of GHG emissions in schools;
- Strengthening existing Mexican environmental education programs;
- Supporting a comprehensive approach to climate change mitigation and adaptation in schools and educational communities;
- Transforming students into climate change agents in their local communities.

The estimated level of funding required to implement the NAMA is \$62.77m USD for an implementation period of 6 years. During this time it is envisaged to scale the project from its implementation in 5 states and 36 schools up to 18 states and 10,000 schools, covering approximately 5% of the sector.

MRV-approach and mitigation potential

All the implemented actions are reported and tracked on a web-based platform (www.ganalealco2.com). This internet platform serves not only as a sustainable and cost-efficient MRV-system but also as an interactive portal for environmental education. On this website the CO₂ emission-calculator-tool allows for stable monitoring and evaluation. The tool allows students to get to know the GHG emission baseline of their school and track the changes. Furthermore, schools share their results, experiences and best practices, thus empowering more students and improving methodologies continuously. After a review by the NGO, an annual report is sent to the National Registry that is operated by the General Directorate of Climate Change Policy, SEMARNAT.

For the pilot, it is envisaged that the total impact will be around 900 t CO₂eq per year (on average: 25 t CO₂eq per school).

Lessons Learnt

- **Media involvement:** The project received attention from many sides and achieved a high level of exposure through both conventional and social media. This helped to encourage stronger stakeholder involvement in the project.

- **Participatory approach and multiplier effect:** Participation and empowerment of the educational community were important pillars of the project. The students were the driven force in connecting the project to their communities, in the words of one participant: *“the project became almost like a social movement. Eventually, it was not about big numbers in GHG emissions reduction, it was more about changing attitudes”*. The interactive website not only served as a good MRV-system, but also as a networking platform to share experiences to help other schools, for example in developing new ideas.
- **Adaptable approach:** The project is potentially easily replicable for other (public) institutions.
- **Invest time in a good management plan:** It takes time to set up an effective management plan after the pilot phase. Learning and refining from the pilot phase simplifies processes, making them more likely to success when scaled-up. A good management plan is also needed to ensure effective collaboration between all the different government levels, to get private donors involved and to help access national funds.
- **Networking:** To get the project on the national agenda was very much an informal process. It involved good timing, building the right relationship with different stakeholders (such as the representatives from the ministry) and making it popular.
- **Effective communication to integrate all levels of governance:** The different levels of government have to sit at the same table and needed to communicate and participate equally in the process. The steering committee provided the focus for this as it is a good place to facilitate closer working relationship between the different levels.
- **Assigning clear roles:** The tasks of the different political levels involved have to be clearly assigned. Strong federal control with sub-national participation/coordination may be one approach; another may involve devolving budget responsibilities, or oversight to the sub-national level. Either way, roles and responsibility should be clearly identified.
- **MRV system:** Invest time in establishing a stable and robust MRV system and keep improving it. The web-based MRV system used in the project helped to gain robust data and to aggregate individual data to provide a more comprehensive overview. It is important that the system is not too complex, and can be fed from everywhere in the country. The monitoring and reporting was undertaken by the students on their own, giving them a strong sense of ownership. The auto-control function prevents unrealistic data being entered and periodic visits to the school provided verification of the data.



Recommendations

The Low Emission Schools Program aims to promote sustainable practices in schools. Similar programs can be found in many different countries, but this is a good first example of successful up-scaling of local climate action to support national climate mitigation action and the formulation of a NAMA. The following recommendations may be useful for considering in other similar projects:

- Multi-actor, participatory approaches facilitate the process of making a project visible and popular because working with different stakeholders (e.g. policy makers, NGOs, civil society) facilitates awareness rising and enable wider awareness of the project by the public.
- Approaches to linking the different political levels should be considered and addressed right from the outset.

- Establishing a steering committee can provide an effective forum to get the stakeholders involved all sat around the table and engaged in dialogue to support the project.
- The tasks, responsibilities and roles of different political stakeholders and actors should be clearly assigned and addressed from the outset.
- Start building a robust MRV-system right from the start as it takes time to establish.

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www.facebook.com/Ganalealco2

NGO PIDES

<http://www.changemakers.com/users/pides-ac-plataforma-integral-de-desarrollo-sustentable>



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Published by

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Municipal Level Carbon Emissions Assessment in Tunisia

Advancing the city-level greenhouse gas (GHG) emissions assessment of the municipality of Sfax into a Nationally Appropriate Mitigation Action (NAMA)

As Tunisia's second largest municipality and widely known as a hot-spot for environmental pollution, the city of Sfax decided to undertake the country's first GHG emissions assessment at city level. This assessment, applying the Bilan Carbone® tool, now forms the basis for a municipal transport Nationally Appropriate Mitigation Action (NAMA). The case provides an example of bottom-up climate action led by a municipality and demonstrates the important role which cities can play as pioneers and "pushers" for climate action and innovation at national level.

Background

The seaport of Sfax in western Tunisia accommodates a vibrant industrial centre and a busy commercial shipping port. Over recent years, the city has begun investing in environmentally sound industrial production and developing climate change policy to improve its reputation as an environmental pioneer and green city. This has also included the creation of a sustainable development observatory as part of its regional development strategy.

To enable effective measurement of its progress in these efforts, the municipality sort to undertake an assessment of its greenhouse gas (GHG) emissions. With assistance from GIZ, the Bilan Carbone® tool, developed by the French Agency for Environment and Energy Management (ADEME), was selected and used.

National Background

Despite not being a major contributor to global greenhouse gas emissions, Tunisia is increasingly aware of its vulnerability to climate change impacts and was consequently among the first countries to ratify the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. Supported by GIZ, the Ministry of Infrastructure,

Country	Tunisia, in Sfax and its greater region
Sector	Crosssectoral GHG Accounting
Duration	December 2012 – September 2013
Framework	The Bilan Carbone® Project by ADEME was part of the GIZ project 'Supporting the implementation of the UNFCCC' (financed by German Federal Ministry of Economic Cooperation and Development (BMZ)). Cost of Bilan Carbone® 33,000 €.
Coordinating entity	Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ)
Implementing agency	Technical Service of the Municipality of Sfax
Partners	National: National Agency for Energy Conservation (ANME) Municipality: Sfax

Spatial Planning and Sustainable Development has established a National Strategy on Climate Change. The strategy has not yet been adopted as politically binding, but serves as a guideline for the country's efforts in implementing climate change adaptation and mitigation policies. For example, Tunisia is currently improving its water management system and the country incorporated climate change measures into its forest management guidelines. In the field of climate change mitigation, Tunisia has developed NAMAs focused on energy, agriculture, cement and wastewater and has been an active participant in the Clean Development Mechanism (CDM). Tunisia aims to define a long-term mitigation target in its first biennial update report (BUR) in December 2014 based on a consolidated national greenhouse gas inventory.

On behalf of:

Description of Activities

The Bilan Carbone® tool was provided by the National Agency for Energy Conservation in Tunisia (ANME), with support from GIZ. The tool provides a detailed overview of the main sources of local GHG emissions in the city of Sfax and its greater region.

Objectives

The carbon assessment aimed to:

- Identify the biggest sources of GHG emissions of Sfax and its greater region;
- Determine sectoral distribution of GHG emissions in order to propose mitigation actions that might evolve into local NAMAs;
- Provide capacity to local actors in the measurement and analysis of GHG emissions;
- Strengthen Sfax's efforts to transform from a pollution hot spot to a green city.

Methodology & Findings

Two different modules of the Bilan Carbone® tool were used to measure GHG emissions in Sfax and its wider region.

Firstly, for the city of Sfax itself, the module for local authorities was applied. This assesses emissions for each individual service under the city's control and then aggregates the data to produce a total emissions figure. For Sfax, the total emissions were calculated to be 5.2 million t CO₂e (see table):

Figure 1 – Bilan Carbone of Municipality of Sfax

Sector of activity	Emissions	
	t CO ₂ e	% Total
Energy	64,419	1%
Industry	791,110	15%
Tertiary sector	142,752	3%
Housing	318,299	6%
Fishing and agriculture	634,778	12%
Freight transport	2,155,936	42%
Passenger transport	640,428	12%
Buildings and railway system	5,515	0.1%
Waste management	415,019	8%
Total :	5,168,256	100%

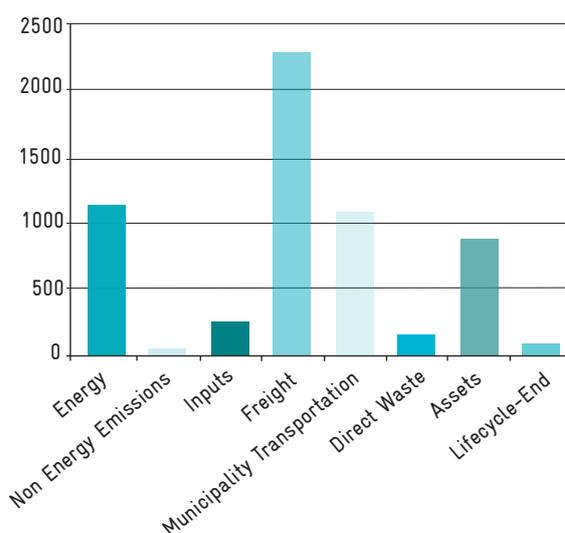
Secondly, for the wider Sfax region (covering seven municipalities including the city), the module for territorial GHG emission measures was used. This module divides

the total emissions into fields of activities. However, due to some limitations in accessing data, some estimations were required.

Total GHG emissions for Sfax and its greater region are around 6.1 million t CO₂e compared to 5.2 million for the city alone. The most important source of emissions in both cases is from freight transportation which is responsible for 37% of the region's total emissions (and 42% in the city).

Figure 2 –

Bilan Carbone® GHG emissions by Category, in tCO₂



Approach

Data collection required cooperation with a large number of actors in the respective sectors, through a process coordinated by the technical service of the municipality of Sfax. Officers in the city authority were also trained in using the tool and guided to identify areas of mitigation potential.

Resulting Action plan

On the basis of the Bilan Carbone® assessment, working groups identified four key areas for reducing GHG emissions: transportation, waste management, energy/industry and governance.

The measures to be undertaken in each sector have been classified on a time scale (priority actions, short term actions, long term actions and actions requiring further research). Based on this, an action plan has been developed, which if successfully implemented should lead to GHG reductions of 10% in comparison to the 2010 reference scenario.

Priority actions include:

- Waste management (waste recovery and its transformation into biogas);
- Industry (consolidate energy audits);

Short term actions include:

- Transportation (reorganisation of freight traffic routes, reorganisation of the taxi transport system, delivery of urban transport programme 'Plan de Déplacement Urbain');
- Waste management (waste separation, recycling)
- Energy (energy audits in the tertiary sector, water heating with renewable energies, fridge replacement programme);

Long term actions include:

- Transportation (an ecologically viable public transport system);
- Waste management (management of controlled landfills, composting system);
- Traffic infrastructure (ring roads for travelling distance reduction, flyovers to avoid traffic jams);

Actions requiring further reflection include:

- Bus system and parking facility improvements;
- Waste collection optimization;
- Roof isolation for private housings;
- Road maintenance

NAMA

In Sfax and its wider region, freight and passenger transport together account for more than half of local greenhouse gas emissions. Consequently, the city of Sfax in cooperation with GIZ decided to develop a NAMA in the transport sector. The German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) through its International Climate Initiative (IKI) is co-financing the development of the NAMA together with the city of Sfax and the ANME.

The NAMA will build on the knowledge gained from the current GHG emissions assessment with further information from traffic censuses and simulations which will lead to concrete measures and confirm or adapt the transport sector activities proposed in the action plan. Some actions identified on the basis of the results of the carbon assessment are already underway and form a first stage of NAMA implementation. These include:

Timeline and step-wise action towards the outcomes

October 2010	Seminar on the activities and initiatives of the municipality of Sfax in the building's energy efficiency sector. First contact with GIZ. The municipality of Sfax shows great interest in realizing a carbon assessment for their city and the region in order to boost the development of its territorial policy.
May 2011	First workshop conducted by an international expert. Presentation of different tools for the carbon assessment. The Bilan Carbone® tool selected as the most suitable for the case of Sfax.
Summer 2011	Request to ADEME (France) for using the Bilan Carbone® tool. ADEME already signed a contract with the National Agency for Energy Conservation (ANME) in Tunisia; decision of GIZ to work in cooperation with ANME. Selection of a French consultancy with Bilan Carbone®-experience.
December 2012	Kick-off workshop.
Since December 2012	Data acquisition by the municipality of Sfax, in cooperation with ANME in the industry and tertiary sectors along with other regional and national institutions and actors.

In cooperation with the regional project 'Coopération des villes et des municipalités' (CoMun) (BMZ/GIZ):

June 2013	Request for a fundraising guidelines that identifies and evaluates co-financing opportunities for local climate projects by the municipality of Sfax. Guidelines were presented at the project's final workshop.
September 2013	Study trip of a delegation of governmental actors from Sfax to Munich, Germany. Exchange of knowledge various topics including: greenhouse gas accounting tools used by the two cities; development and financing of measures to reduce greenhouse gas emissions; strategies for sustainable transportation; construction of energy efficient buildings and waste management.
September 2013	Final workshop including a presentation of the Bilan Carbone® assessment and an action plan established by working groups including all actors involved in the measures being implemented.
Spring 2014	Project on waste recovery and its transformation into biogas starts. Cooperation between the Municipality of Sfax and BMUB/GIZ, supported by the Tunisian National Agency for Waste Management.
April 2014	Development of transportation NAMA in Sfax starts. Agreement between the ANME, the municipality of Sfax and BMUB/GIZ on the co-financing of the project. The Tunisian institutions are financing complementary studies which are necessary for the execution of the action plan, especially the creation of the NAMA and the realization of the urban transport program ('Plan de déplacement urbain').

- Urban transport program for the wider Sfax region;
- Feasibility study for eight interchanges (bridges/flyovers with different exits in order to improve circulation fluidity) on the city's ring road;
- The NAMA also promises to delivery further benefits.

The NAMA also promises to delivery further benefits including:

- Health and wellbeing co-benefits from improving the region's transport system such as reduced air pollution and improved safety;
- Contribution to delivery of the national emissions reduction target through implementing local actions which have greenhouse gas mitigation effects.

Capacity development and visibility

Additional to achieving its primary purpose of providing GHG emissions assessment and enabling the identification of future actions to be taken, the Bilan Carbone® approach actively involved municipal staff and other stakeholders in the carbon assessment process. This has resulted in important capacity development at the local level, enabling the municipality of Sfax to position itself in the international framework on climate change and to join the "Covenant of Mayors".

Lessons Learnt and Recommendations

- The principal challenge for a carbon assessment at the local level is ensuring access to **valid information on greenhouse gas emissions**. Municipalities in Tunisia do not have the necessary information easily at their disposal, so the city of Sfax had to collect the data in cooperation with other actors and institutions. This was a time consuming task and there might be shortcomings in the accuracy of the data.
- It is necessary to **create a team within the municipality** that conducts the carbon assessment and makes sure that it will continue in the future. Training and education have to be provided in order to keep the actors motivated for the continuation of the work begun with the Bilan Carbone®. In the case of Sfax, the municipality recruited a young academic to keep this activity going in cooperation with the municipality's technical service.
- In order to ensure the implementation of concrete actions in a developing country municipality, **advice by GIZ or other development organizations** is highly recommended. Support is especially required in fund raising and delivery of the actions proposed in the action plan.
- The **carbon assessment is just a starting point** towards designing and delivering climate policy. Indeed, it serves as a first diagnosis, which proves useful only if its results lead to the implementation of concrete actions.



Published by

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

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Vertical Integration of Climate Policy in Japan

Institutional arrangements for effective vertical integration of climate mitigation policy and delivery

Japan undertakes a wide variety of efforts to improve vertical integration of climate change mitigation policy across different levels of government. The country's national law mandates that large cities develop and implement climate action plans and a nationwide programme selects and promotes advanced locally-led initiatives, such as those taken by the Tokyo Metropolitan Government. National government also provides financial support together with guidelines and tools for greenhouse gas (GHG) emissions quantification and an annual survey to assess progress.

Background

International and national levels: The *Kyoto Protocol* was adopted in 1997 in Kyoto, Japan, at the 3rd session of the Conference of the Parties (COP3) to the United Nations Framework Convention on Climate Change (UNFCCC). Developed countries committed to numerical reduction targets of their GHG emissions over the first commitment period (2008 – 2012). At this time, Japan committed to reduce its GHG emissions by 6% below its 1990 levels of 1.23 Gigatonnes of carbon dioxide equivalent (Gt CO₂e). Also in 1997, Japan convened a Global Warming Prevention Headquarters which included the national government's entire Cabinet. Having developed its domestic governance framework for implementation, Japan ratified the *Kyoto Protocol* in 2002. After the protocol came into force in 2005, the Japanese Government approved the *Kyoto Protocol Target Achievement Plan*, which stipulated the measures and policies to achieve Japan's reduction target. This plan was revised in 2008 after an extensive consultation process which included experts, local governments, the private sector, non-governmental organizations, and citizens.

Country	Japan in six cities
Sector	Low Carbon Development
Duration	since 1997 (ongoing)
Framework	Law on the Promotion of the Measures to Cope with Global Warming and Local Governments under the Omnibus Local Autonomy Law (2008)
Coordinating entity	Global Warming Prevention Headquarters comprised of the entire Cabinet
Implementing entity	47 prefectures and 467 Global Warming Countermeasure Regional Councils
Partners	Prefectural and Municipal Centers for Climate Change Actions in 45 Prefectures, 461 Global Warming Countermeasure Local Councils and 6.842 volunteers

Reductions in national GHG emissions did not progress as planned. In 2012, Japan emitted 1.34 GtCO₂e (excluding land use and land use change - LULUCF), corresponding to an increase of 8.8% compared to the base year. Japan used the Joint Crediting Mechanism (JCM) to generate credits to achieve its emission reduction target, by facilitating the diffusion of advanced low carbon technologies, products, systems, services, and infrastructures for GHG mitigation in developing countries.

On 22 September 2009, at the United Nations Summit on Climate Change, Japan announced a GHG reduction target of 25% by 2020, compared to 1990 emissions, on

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the premise of an effective international agreement with ambitious targets by all major economies. However, Japan has withdrawn from this voluntary pledge after the Fukushima nuclear accident in March 2011. In 2013, at COP19 in Warsaw, Japan announced its intention to pledge a reduction of 3.8% by 2020, in relation to the 2005 GHG emissions, which translates to an increase compared to 1990 emissions.

Regional and local levels: Japan has a two-tier system of local autonomy: prefectures as regional government units and municipalities as local government units. As of October 2012, Japan had 47 prefectures and 1,719 municipalities (including cities, towns, and villages), with local assemblies serving as their legislatures. Their executive branches are headed by a governor in the case of prefectures and by a mayor in municipalities. In Japan, local autonomy is guaranteed by the Constitution of 1946. The *Local Autonomy Act* (Act No.67 of 1947) is the national legislation which defines the responsibilities of Local Governments in Japan. This law was extensively amended by the *Law for the Improvement of Relevant Laws for the Promotion of Decentralization enacted in 1999 (the Omnibus Local Autonomy Law)*, which made clear the division of responsibilities between national and local government, and abolished the system of delegated functions: local governments were given actual responsibility for all affairs handled by them.

Description of Activities

Law: Recognizing the importance of active efforts from local public administrations, the *Act on Promotion of Global Warming Countermeasures* revised in 2008, requires prefectures and large municipalities to formulate and implement a *Local Government Action Plan* in accordance with the natural and social conditions of their local areas, to be integrated with related policies, including regional plans and city plans.

Planning: The *Action Plan for Achieving a Low-Carbon Society*, approved in 2008, provided an initial outline for the transformation of urban/regional structures and socio-economic systems from a mid- and long-term perspective. Key activities include: i) planning implementation of compact low-carbon urban structures; ii) promotion of district energy systems, including measures at both the block and district levels; iii) improving the thermal environment in cities through urban green space; iv) housing retrofitting; v) low-carbon transport and logistics system design, e.g. Light Rail Transit (LRT) systems for passengers and comprehensive urban and regional transportation strategies for freight; vi) use of local renewable energy resources.

Guidance for Measurement, Reporting and Verification of GHG emissions mitigation: The national government developed a manual for local governments to use in order to formulate their plans. Plans should include quantification of local GHG emissions, mitigation measures, quantified targets and a defined system for periodic inspection and evaluation. For each measure and for each facility, the results should be compared with past performance and, when necessary, lead to revision of the action plan. The scope of the *Local Government Action Plan* should include all administrative affairs under the responsibility of the local governments, as defined in the *Local Autonomy Act*, such as operation of waste management, water supply and sewerage systems, publicly-owned mass transport systems, public schools and hospitals, government buildings and other facilities. With regards to outsourcing, local governments should request contractors to take necessary measures to achieve possible GHG emission reductions. Based on the *Green Purchasing Act*, local governments should also work on green procurement by drawing up policies for promoting purchasing of eco-friendly goods and services.

As of October 2012, area-based *Local Government Action Plans* had been drafted by 37 prefectures as well as for 200 municipalities, while 91 additional municipalities planned to draft them within the 2012 (fiscal year).

Transparency and accountability: Local governments should publish their GHG emissions results annually. The national government then compiles and verifies the results publicized by local governments, and publishes an annual assessment report.

Institutional arrangements and partnerships: Prefectural and Municipal Centres for Climate Change Action have been designated in 45 prefectures, and 461 Global Warming Countermeasure Regional Councils have been established in 47 prefectures through establishment of partnerships with existing organizations. Furthermore, 6,914 volunteers have been commissioned by 46 prefectures and six cities to promote climate change mitigation activities.

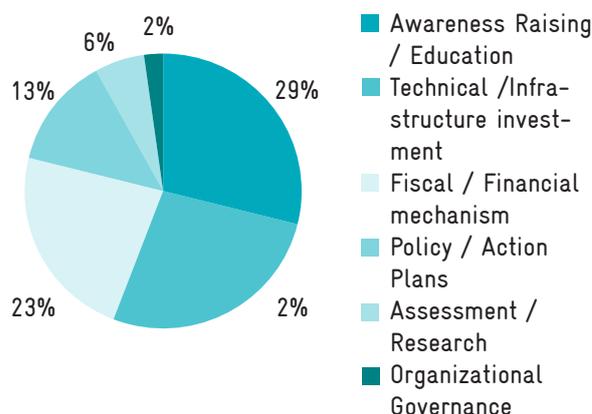
Financing: National financial and budgetary support for the implementation of action plans by local governments is provided through the *Global Warming Countermeasures Promotion Programme for Regions*, and the *Renewable Energy Promotion Project* (Green New Deal Fund) extended in 2013.

Champion cities as demonstration cases: A more bottom-up process was also established, to build on the inge-

nuity, cutting-edge technologies and particular characteristics of individual cities and regions and foster fine-tuned and well integrated locally-led measures. Under the *Action Plan for Achieving a Low-Carbon Society*, a nationwide process began to select cities that challenge themselves with pioneering efforts in creating a model low-carbon city. The Promotion Council for Low Carbon Cities, which is formed of local public administrations and other entities eager to create a low-carbon society, was established in December 2008 as a venue for nationally promoting the distinguished cases (membership of 231 organizations as of 1 April, 2013). As of December 2011, twelve cities had been selected. Support and monitoring of results will be conducted on these cases. Showcasing the development of these advanced model areas is expected to facilitate their replication across the country. In addition, partnerships for exchange of experiences will be formed with cities overseas that are aggressively addressing environmental measures.

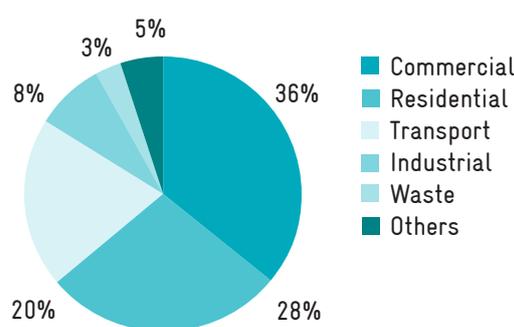
The Japan Registry: Japan's Local Government Climate Registry was launched on 9 February 2012, using the carbonn Cities Climate Registry, cCCR (since renamed carbonn Climate Registry, cCR), a global database of local climate action which promotes transparency and dissemination of good practices. The Japan Registry is operated by the ICLEI – Local Governments for Sustainability (ICLEI) Japan Office, supported by the Ministry of the Environment of Japan (MOEJ) and the British Embassy in Tokyo. In November 2012, the Japan Registry participants constituted 60% of the total local community emissions reported to the cCCR, demonstrating Japan's strong leadership in this area. As of March 2014 the Japan Registry captured information from 35 prefectures and 98 municipalities. This represents 87% of the country's population and approximately 80% of its reported GHG emissions. ICLEI members in Japan report and revise their performance every year. Of the 133 local governments reporting in cCR, 108 entities committed to reduce GHG emissions of their own operations, and 105 entities committed to reduce GHG emissions of their communities. Most of the community-scale commitments are short to medium-term (target year between 2010 and 2030) and range from 1 to 30% GHG emission reductions. Long-term commitments typically take 2050 as a target year with GHG emission reductions ranging from 30 to 80%. To achieve the community mitigation targets, 52 implemented measures have been reported in the cCR (status identified as "in progress" or "completed"). With the exception of one measure reported as being financed through sub-national funds, all other measures were financed by the local governments' own budgets.

Figure 1 – Mitigation measures reported by Japanese Local Governments in the cCR (as of March 2014)



Local climate action in focus: The Tokyo metropolitan region and capital city of Japan is home to more than 10% of the country's population while covering only 0.6% of the total land area. According to the community-scale GHG emissions inventory reported by the Tokyo Metropolitan Government (TMG) in the cCR, the region accounts for over 5% of Japan's total GHG emissions (2010). Buildings (essentially the residential and commercial sectors) represent more than 50% of the city's total energy use and GHG emissions.

Figure 2 – GHG emissions of Tokyo metropolitan region (2010) reported in cCR (tCO₂e)



The TMG considered this when introducing its local action program for GHG emissions reduction in 2000. It reported two programs and one financial mechanism in the cCR:

- *Green buildings program (GBP):* recognizing that the national energy efficiency standards for buildings were not tailored to Tokyo's local characteristics and that most of the targeted buildings in Tokyo were not provided with incentives to go beyond minimum requirements, the GBP introduced by the TMG in 2000 includes: i) a local green buildings standard, ii) requiring the constructing or expansion of large buildings which exceed a total floor area threshold (5,000 m² since 2010, 10,000 m² from

2002 to 2010) to follow the green buildings standard; and iii) a system for the evaluation of buildings and publication of the results (rating mechanism for non-residential buildings and for condominiums) which ensures that green buildings are given higher market value.

- *Cap-and-Trade Programme (C&T)*: Introduced in 2002, this was the world's first C&T to cover large urban facilities and buildings. It applies to facilities with large energy consumption (fuel, heat and electricity needs exceeding 1,500 m³ of oil equivalent per year). These represent less than 1% of all the business entities located in Tokyo, but account for about 40% of all CO₂ emissions from the industrial and commercial sectors in the region. Mandatory emission reductions apply and obligations can be fulfilled through energy efficiency measures, using renewable energy and trading of emission reduction credits. The C&T has large implementation costs and is supported by a fund established by the TMG (\$610m USD). The results have been remarkable. In 2012, total CO₂ emissions from facilities covered by the C&T had already reduced by 22%.
- *Carbon Reduction Reporting Program for Small- and Medium-Sized Facilities*: Over 34,000 small-and-medium sized facilities are reporting through this program

With these measures in place, the TMG committed between 2005 and 2006 to two community-scale reduction targets to be achieved by 2020. Firstly, to increase the use of renewable energy by 20% (relative to 2011), and secondly, to decrease GHG emissions by 25% below 2000 levels.

Lessons Learnt and Recommendations

The Japanese model is recognized as helpful but is sometimes criticized for being too top-down, and not sufficiently tailored to address local needs. The local governments

establish their local climate plan according to the guidance provided, but apply less effort to implementing it. Only a limited number of cities could make the best use of the national support for their own initiatives. However, despite this, the Japanese experience can still teach us a lot. A number of key lessons and recommendations include:

- Political leadership at local level is essential to successfully drive and implementation of innovative GHG emissions mitigation policies and programmes in prefectures and municipalities;
- A combination of legally-binding requirements and publicity around performance can have large impacts.
- For good results, mitigation measures should be adjusted to the local context and build on local partnerships;
- While some programmes, such as the GBP, are relatively easy to implement, they require in-depth knowledge of the local context (technical, socio-economic and political);
- Accurate data collection on the ground and maintaining historical records are essential to monitor and evaluate measures.

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Published by

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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Vertically Integrated Nationally Appropriate Mitigation Actions (V-NAMAs)

Tools and Resources

Introduction

A wide range of practical tools and resources exist to support political decision-makers at all levels of government in making well-informed choices for planning and implementing climate action. By using such tools, planners and decision-makers can be more effectively guided through the processes needed to establish and implement environment and climate sensitive policies and strategies at local, regional and national level.

We provide here an overview of some key tools and resources specifically relevant for efforts to enhance integration of climate action between national and sub-national levels. They include training and planning tools developed by GIZ and ICLEI together with other sector focused support (e.g. sector-specific handbooks and training).

The *first* section provides policy makers with information on tools to better understand the relatively new fields of:

- Nationally Appropriate Mitigation Actions (NAMAs);
- Measurement, Reporting and Verification (MRV) plans and systems; and
- Low-Emission Development Strategies (LEDS);

The *second* section contains information on relevant programmes, tools and services, developed by ICLEI and in the *third* section, information is included on sector-specific handbooks covering various sectors such as: waste management, buildings, and transport systems.

GIZ Tools

The series of tools described here provide developers and implementers of NAMAs and LEDS with brief step-by-step instructions and guidance on how to develop them. Additionally information on the successful establishment of a MRV-system is also included. The tools that were developed by GIZ include success factors, relevant steps and strategies for the development and potentially for the future implementation of LEDS, NAMAs and MRV systems, while keeping the provincial and local levels in mind.

Two GIZ-implemented programmes that are supporting the Federal Ministry for Economic Cooperation (BMZ) in the global climate negotiations and the secretariat of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) of the International Partnership on Mitigation and MRV, respectively, have collaborated to develop these three tools. The tools were supported by the International Partnership on Mitigation and MRV. They are publicly available at:

www.mitigationpartnership.net



International Partnership
on Mitigation and MRV

The tools also form the basis for two-day trainings with presentations and working groups, which GIZ is now offering to interested partners. For more information:

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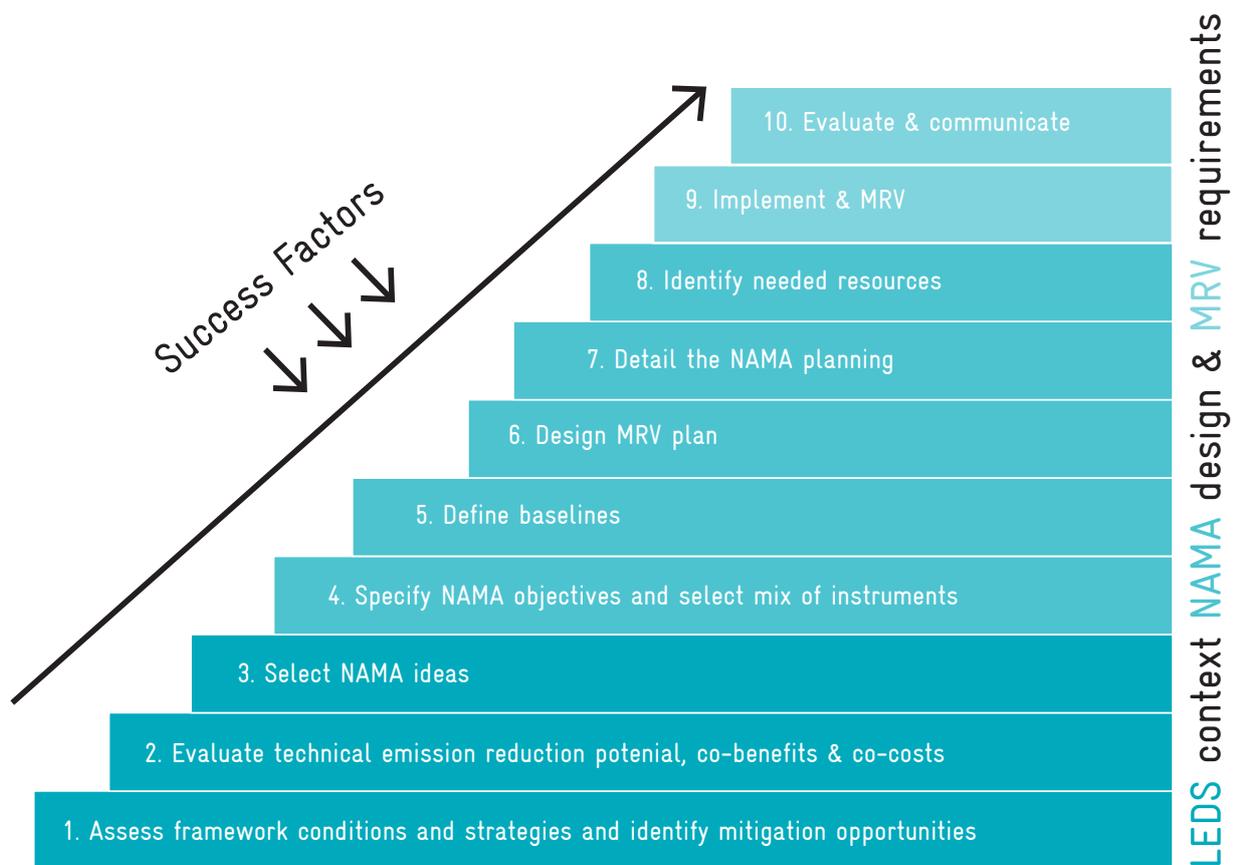


Federal Ministry for the
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In collaboration with:

ICLEI
Local
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for Sustainability

10 Steps to a NAMA



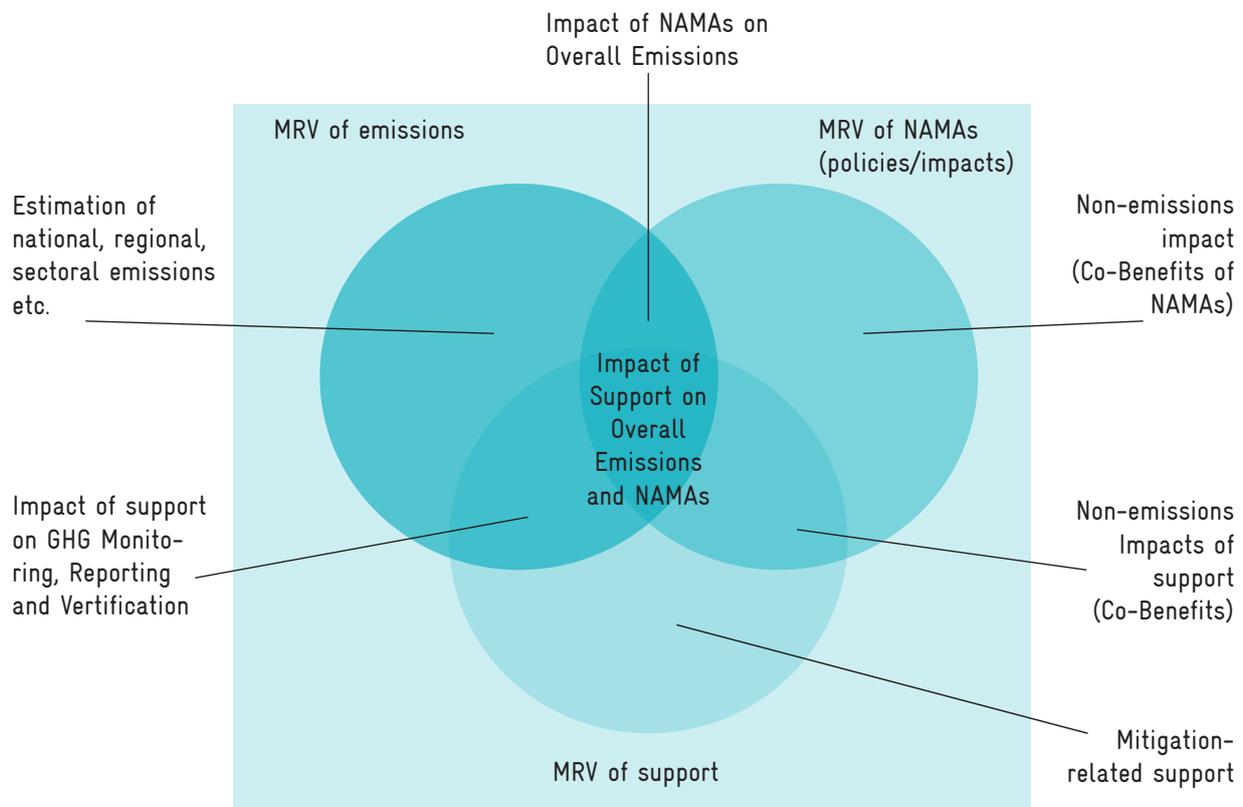
NAMA-Tool

An increasing number of developing countries have ambitious national climate strategies and have proposed to develop and implement NAMAs. The NAMA-Tool guides practitioners through the process of developing and implementing NAMAs with brief step-by-step instructions. It guides users to relevant information, knowledge, instruments, and publications available.

The tool presents the process of NAMA development in ten steps: This approach is designed to supply users with data and accessible instruments for each aspect of the NAMA development process. The tool is designed to help prepare for implementation of NAMAs, but is first and foremost a navigation tool, guiding practitioners through the process of developing a NAMA. It is not an instrument for the implementation of NAMAs itself and does not provide sector

specific instructions, but includes links to sector-specific expertise and handbooks. References to available sector-focused handbooks are discussed in greater detail below. As cities have extensive influence over key greenhouse gas (GHG) emissions sectors (e.g. buildings, transport, waste) the NAMA-Tool will address the integration of multiple levels of government in the process of NAMA design and implementation and will show how sub-national levels can successfully contribute to delivering national GHG mitigation targets.

The National MRV-System: Interaction between MRV of emissions, NAMAs and Support



MRV-Tool

Measurement, Reporting and Verification (MRV) is a term used to describe the process which governments take to collect data on emissions and mitigation actions, to compile this information in reports and inventories, and to subject these to some form of international review or analysis. Like the NAMA-Tool, the MRV-Tool is constructed as a step-by step guide. It provides developers and implementers of NAMAs with instructions on how to develop a MRV system that also covers the city and local level.

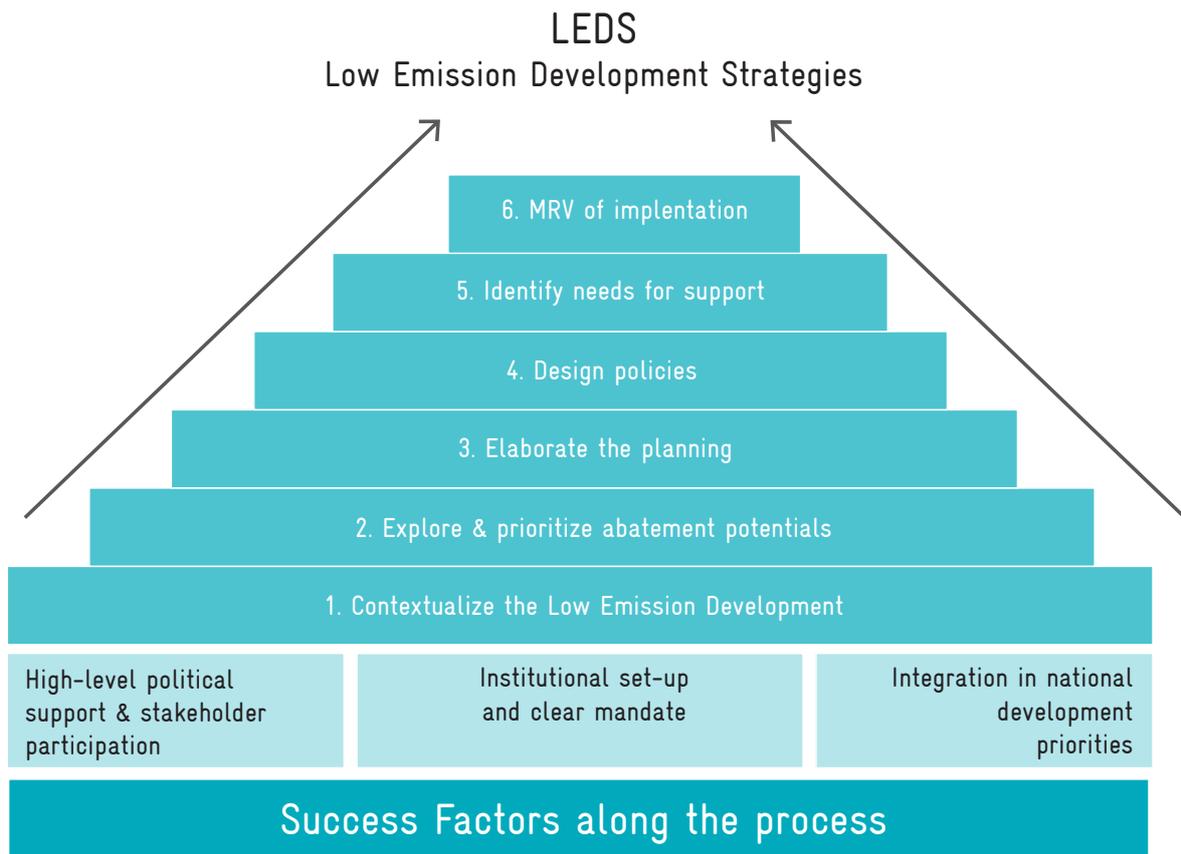
In this regard, the tool will provide an introduction to GHG Measurement, Reporting and Verification for local governments. It will provide sub-national GHG inventories and resources for local GHG-MRV to showcase the relevance of sub-national climate actions and appropriate climate mitigation actions at city level. Some of the described inventories for sub-national climate mitigation such

as the *carbons Cities Climate Registry (cCCR)*, *HEAT+* and the *Global Protocol on Community-Scale Greenhouse Gas Emissions (GPC)* to account and report emissions on city level are discussed in more detail below.

The MRV-Tool is structured into three key sections covering:

- MRV of Emissions
- MRV of NAMAs
- MRV of Support

This structure was applied to supply users with more data and accessible instruments for certain aspects of the development of MRV systems.



LEDS-Tool

Low-Emission Development Strategies (LEDS) are long-term national strategies for reducing emissions while promoting sustainable development. They can provide an overall framework for the development of NAMAs. The LEDS-Tool guides practitioners, developers and implementers step-by-step through the process of developing and implementing a LEDS. The process is structured into six steps: The six step approach is designed to lead users to relevant information about accessible instruments for the various aspects of LEDS development.

ICLEI Tools: focused on sustainable urban development

ICLEI provides programmes and a broad range of tools to help cities develop more sustainable urban management, covering the topics of urban design, eco-budgeting, urbanisation, sustainability management and eco-procurement. ICLEI offers different tools, methods and instruments to assess various kinds of information regarding adaptation and mitigation and to enable and facilitate assessing GHG emissions at sub-national level.



GreenClimateCities

GreenClimateCities (GCC) is a climate change mitigation programme that offers local governments a clear and flexible methodology covering three phases: Analyse, Act and Accelerate. It outlines how low emissions options can be identified and integrated into urban development policies, plans and processes providing local government with:

- a process and tested methodology, tools, guidance and technical support;
- multi-disciplinary expertise built on more than 20 years of experience;
- a global network of cities committed to Low Emissions Development;
- platforms to improve local-national dialogue and co-operation to effectively plan, implement, monitor and evaluate local climate action;

See: <http://www.iclei.org/our-activities/our-agendas/low-carbon-city/gcc.html>

ICLEI: Local Governments for Sustainability

ICLEI is an association of cities and local governments, helps cities to act on climate change mitigation and adaptation by offering standards and guidelines for accounting and reporting greenhouse gas (GHG) emissions, and planning for future local climate actions. www.iclei.org



Carbonn Climate Registry

The Carbonn Climate Registry (cCR) is the world's largest global database of local and sub-national climate actions. It provides an online platform for cities and local governments worldwide to publicly register their GHG emissions reduction commitments, to self-report GHG emission reduction and climate adaptation targets and to showcase their actions and achievements. Thus, cCR promotes transparency, accountability and comparability of local climate action for local and other sub-national governments. The Bonn Center for Local Climate Action and Reporting (carbonn) hosts the cCR and ensures that it remains compliant with the global frameworks such as the Global Protocol for Community-scale Greenhouse Gas Emissions (GPC 2.0), moving towards a standard for community level GHG accounting and reporting.

See: <http://carbonn.org/>

City-level carbon accounting framework: GPC

The Global Protocol on Community-Scale Greenhouse Gas Emissions (GPC) is a city level carbon accounting framework developed jointly with the World Resources Institute, the World Bank Group, the UN-HABITAT and the United Nations Environment Programme (UNEP). It harmonises GHG emissions measurement and reporting processes for cities of all sizes and geographies, and allows them to plan and finance climate action. GPC sets out requirements, and provides guidance for calculating and reporting community-scale GHG inventories, consistent with the 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National GHG Inventories. See: <http://www.ghgprotocol.org/city-accounting>



HEATplus
HARMONIZED EMISSIONS ANALYSIS TOOL

GHG emissions inventory tool: HEAT+

ICLEI's Harmonized Emissions Analysis Tool plus (HEAT+) GHG emissions inventory tool is a web-based software tool for local governments to account and manage emissions. By inputting active data and emission factors, the multilingual online emissions inventory tool helps to account and report GHG emissions, common air pollutants (CAP) and other volatile organic compounds (VOC). HEAT+ enables cities and towns to:

- Prepare a baseline inventory;
- Forecast emissions, e.g. Business-as-Usual (BAU) scenario;
- Prepare climate action plans;
- Track commitments;
- Measure and quantify progress against targets through monitoring inventories;
- Inform policy decisions;
- Report to the Carbon₂₁ Climate Registry (cCR)

It is consistent with IPCC guidelines. The tool can be accessed from: <http://heat.iclei.org>

Handbooks on sector-focused sub-national involvement

Sub-national authorities have key competencies and influence in various sectors relevant for GHG emissions reductions such as waste management, buildings, and transport systems.

This chapter gives a short overview of available handbooks that provide relevant sector-specific instructions focusing on the city level. Some of the handbooks explore vertically integrated and multi-governance approaches.

Training: Urban Waste Management

Within GIZ's Sector Network "Transport - Environment - Energy - Water in Asia" (TUEWAS), a Working Group on Cities and Climate Change, initiated in 2009, supports the development of integrated approaches to mitigate climate change and to adapt to its impacts in cities. The group developed a *Capacity Building Tool for Local Partners* and a *Training Series on Cities and Climate Change* focusing on practice-oriented and interactive learning. The main audience includes middle and senior-level administration officials, consultants and practitioners in the field of climate change, urban development and environmental management as well as high-level decision makers and elected representatives. One of the five trainings currently available focuses on *Urban Waste Management and Climate Change*. This training explores options to integrate mitigation and adaptation to climate change into municipal solid waste management strategies. The four other trainings focus on: Introductory Knowledge on Cities and Climate Change, Local Urban Governance for Climate Action, Financing Climate Actions in Cities and Flood Risk Management in Cities.

For more information: climate@giz.de

To learn more about a multi-level government approach and involving sub-national actors in mitigation actions in waste management, the accompanying Indonesian Case Study outlines an effective approach.

Handbook on Cities and Buildings

Buildings offer unique and significant potential for emission reductions and provide many effective and expedient opportunities for GHG mitigation, often with co-benefits. The *Climate Finance for Cities & Buildings - A Handbook for Local Governments*, prepared by ENERGIES 2050 for the UNEP, aims to raise awareness among local stakeholders and policy makers regarding carbon and climate finance mechanisms and their potential and application in the built environment. It also aims to help local authorities to use carbon mechanisms as an opportunity to increase their energy performance, be resource efficient, and be consistent with their climate strategies while creating additional revenue.

The handbook can be downloaded from: <http://www.unep.org/publications/>

To learn more about multi-level governance approaches and involving sub-national actors in mitigation actions in energy efficiency in buildings, the accompanying South African case study on energy efficiency in public buildings at provincial and municipal level also offers further insights.

Handbook on Transport NAMAs

The *TRANSfer* Handbook provides practical guidance on how to develop NAMAs in the transport sector. It comprises a generic section with general information on transport NAMAs concerning policy identification, MRV and financing and a further chapter on co-benefits. The purpose of the handbook is to provide practitioners working in the transport sector around the world with practical step-by-step guidance on how to design and implement climate change mitigation actions in this complex sector. Therefore, this handbook was designed to become a 'living document' aiming to always reflect the latest state-of-play. The final handbook will also comprise a number of case studies based on practical experiences from partner countries: Mexico, Indonesia, Colombia, Chile, South Africa and Costa Rica.

More information and the full document can be accessed at: <http://transport-namas.org/resources/handbook/>

V-NAMA Webinar Discussion Series

To assess options for integrated multi-level governance mitigation strategies, the BMUB-IKI-project 'V-NAMAs', implemented by GIZ and in collaboration with ICLEI, organized a webinar discussion series '*Involving sub-national and city governments in national climate change mitigation strategies*'. The series of webinars aimed to facilitate knowledge sharing among stakeholders working on vertically integrated Nationally Appropriate Mitigation Actions (V-NAMAs) addressing the sub-national dimension. The webinars identify and discuss many of the barriers, challenges and incentives for involving sub-national and city governments in national mitigation actions and provide insights into financing options for sub-national climate action along with current challenges and trends in emissions accounting and monitoring (MRV) at the local level.

Recordings and presentations from each session can be found on GIZ Global Campus 21 (JAVA required): <https://gc21.giz.de/ibt/var/app/wp342P/1966/>

Sessions include:

- Financing options, financing challenges, solutions for sub-national climate action
- Sector specific information: waste management in Indonesia
- Municipal climate protection management in Germany
- MRV for sub-nationals: GHG emissions monitoring and reporting for sub-nationals
- Implications of the UN Climate Summit for vertically integrated climate action.



Published by

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

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All photos and graphs: © GIZ

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Internationale Zusammenarbeit (GIZ) GmbH

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