JICA Climate Change Policy Brief No.2

Refining Technical Readiness for Municipal-level Climate Actions

– Empirical Lessons and Insights from Technical Support Activities in Southeast Asian Cities –

Koji Fukuda
Chief Technical Advisor,
JICA SPI-NAMA Project

Key Messages

- Understanding practical, tangible developmental benefits attached to climate actions is the starting point to enable proactive municipal engagement in developing countries. Adopting an approach/perception to harness climate change as an avenue to enhance overall appeal and values of cities may be useful.
- Setting up technical elements of a municipal climate change plan with proper mainstreaming, GHG inventory and monitoring framework are the key to ensure the effectiveness of climate response.
- Given the observed trend for rapid urbanization, incorporating municipal climate mainstreaming effort into both local socio-economic development plans and relevant thematic plans (e.g. urban planning, power development, land use) is deemed critical in maximizing linkages for climate actions with developmental benefits, while minimizing potential carbon lock-in risk.

1. Background

Fueled by the Paris Agreement coming into force in 2016, efforts to pursue more robust and ambitious targets under the post-2020 climate regime are gaining ground in the context of country Nationally Determined Contributions (NDCs). Successfully realizing such goals requires not only efforts on the part of traditional state actors per se, but also those of non-state actors.
The role of municipalities, including cities is gaining more traction these days thanks to the global political impetus of landmark initiatives, as epitomized by the UN Global Compact, Global Covenant of Mayors and supporting platforms. Such movements not only help strengthen the collective global effort to achieve the ultimate objective of the Convention per se, but more importantly, they help municipalities to proactively confront the multi-faceted challenges of climate change; mitigate the GHG emissions for cities as emerging large GHG emitters following the global urbanization trend[1], and adapt for climate-resilient municipal development by minimizing damage on socio-economic activities and infrastructure caused by extreme weather events within its physical boundary.

Mindful of the observed inclusion and the growing presence of non-state actors in climate governance, the Japan International Cooperation Agency (JICA) has been supporting municipal-level climate change capacity building activities, particularly in Southeast Asian cities, as well as supporting national-level capacity building to plan and implement climate actions. This Brief draws on the lessons from JICA's municipal-level climate change technical assistance in developing countries and explores practical approaches to help refine a city's technical readiness.

2. Comparative Advantages of Municipal Climate Actions

While current global political momentum to promote the role of municipalities helps encourage climate actions, engagement of municipalities in developing countries remains at a developmental stage – most of the early movers are the major cities of more advanced developing countries, with a tendency to prioritize adaptation measures.

To stimulate more proactive engagement in climate actions by municipalities developing country, the first step involves facilitating self-realization of practical, tangible benefits, which helps answer the underlying question of why they should take climate actions in the first place, sometimes even ahead of their national endeavors.

While the appetite for climate actions varies across municipalities, the following observed elements can be generalized as comparative advantages to adopt autonomous and proactive engagement:

- ✓ **Enhancing Value and Municipal Appeal:** Municipal-wide climate responses, through mitigation and adaptation measures, help elicit developmental benefits such as reduced energy consumption, more resilient infrastructure and transformation of lifestyles, which collectively enhance overall sustainability and value addition. Adopting an approach to harness climate change as an avenue to enhance the appeal and values of municipalities could facilitate a political buy-in by stakeholders to see "benefits" taking climate actions and toward more proactive engagement.
- ✓ **Visibility of Developmental Impacts of Climate Actions In-situ:** As many economic activities contributing to GHG emissions (e.g. large-scale infrastructure development, daily operation of municipal administrative services such as provision of utilities, public transport and waste management) all take place within municipal physical boundaries, positive developmental impacts of climate-related measures are visible in-situ.
- ✓ **Reducing Transaction Cost for Consensus-building and Implementation:** Compared to the national level, municipal physical boundaries are smaller and working relationships among sectoral agencies tend to be relatively easier. Such conditions reduce transaction costs and enable actions to be implemented on the ground.
- ✓ **Space for Piloting Policies and Measures:** One of the strengths of municipalities taking climate action is the fact that its physical boundary offers an excellent testing ground for various policies and measures to see what thrives and what fails in a local context. Such opportunities increase as the city enjoys more fiscal autonomy thanks to enhanced tax revenues in line with rapid growth.
- ✓ **Diplomatic Benefits:** Proactive diplomatic gesture generates a signal that municipal leaders are both aware of and progressively tackling the emerging agenda of climate change, which attracts the attention of the international community. Such gesture could spawn possible enhanced investment opportunities and increase the visibility of the domestic efforts to a potentially wider audience beyond the city level.

Apart from motivations to harvest practical benefits, perceptional and behavioral changes are often driven by external shocks that impose negative externalities on municipal discourse. For instance, the large-scale flooding of the Chao Phraya River that hit Northern and Central Thailand in 2011 inflicted significant economic damage on the Bangkok Metropolitan Region (BMR). Such external shock, in turn, helped nurture a stronger sense of awareness and underlined the need for municipal stakeholders to develop climate-compatible policies to enhance its resilience.

1 By 2030, urban areas are projected to house 60% of people globally. (UN-HABITAT, 2016)

3. Technical Readiness and Essential Tools to Enable Effective Municipal-level Climate Actions

Establishing a robust technical basis remains key to constructing municipal-level climate readiness. Development of a municipal climate change plan, mainstreaming into developmental plans, preparing the GHG inventory and the monitoring framework constitute a major part of such basis, all of which help ensure evidenced-based actions and their effectiveness at city-level. This section provides operational insights to these elements by identifying the empirical challenges observed, and the good practices and efforts of selected Southeast Asian cities.

3.1 Formulation of a Robust Municipal Climate Plan

The municipal climate policy document, usually in the form of an Action Plan, master plan or strategy according to the local context, underpins the definition of climate measures and guides local stakeholders via defined roles and responsibilities.

The robustness of such climate plan depends on the extent to which policy-makers incorporate the following elements upon formulation od the plan within a multi-stakeholder environment:

- ✓ Setting out the scope, vision and modality;
- ✓ Connecting policy and science by setting numerical targets based on scientific scenario analysis;
- ✓ (Mitigation) Developing a methodological approach to quantify the reduction of GHG emissions;
- ✓ (Adaptation) Prioritizing adaptation areas; identifying measures and coordination scheme;
- ✓ Setting up a cross-cutting institutional implementation framework;
- ✓ Developing tools for both qualitative and quantitative monitoring; and
- ✓ An outreach strategy to ensure multi-stakeholder engagement, particularly in the private sector.

3.1.1 Observed Empirical Challenges

For mitigation, inscribing a numerical target into municipal plans remains both a technical and political challenge, as setting such target requires understanding of cost-effective priority measures, and consensus among key stakeholders, especially implementing entities. Such target setting must be approached carefully with viability, adequacy and fairness. Existing municipal climate change plans in developing countries tend to be qualitative in nature without a numerical target, without sufficient evidence from background scientific analysis, hampering efforts to gauge mitigation contribution in specific units (e.g. tCO_2-eq). Conversely, adaptation suits non-quantitative tracking systems.

Selecting measures in the climate change plan limited to jurisdictional boundaries or entire physical boundaries also poses a design challenge. The physical boundary of a municipality usually houses multiple authorities operating in parallel – municipalities with direct mandates over certain activities, while other areas directly controlled by other entities such as line ministries or private entities.

On the adaptation side, based on the qualitative nature of adaptation in general, appreciating the impact of adaptation measures based on qualitative sources of information/data presents a challenge for nurturing the understanding of municipal stakeholders.

3.1.2 Country Experiences and Good Practices

The Low Carbon Blueprint development by Iskandar city of Malaysia, in collaboration with JICA's research[2], presents best practice used to formulate a municipal mitigation plan, as it demonstrates both mainstreaming and clear action sequences to enable a transition from planning to implementation; from clarifying the long-term vision, setting a numerical target based on Low-Carbon City Scenarios, disaggregation and selection of priority measures to fulfill its target within a multi-stakeholder setup and crystalizing those elements into the city's policy document, Low-Carbon Society Blueprint 2025, to be endorsed by the Prime Minister, which ultimately resulted in budget allocation for implementation (JICA 2016; Ho et al. 2016, UTM 2014).

Experiences from the Bangkok Metropolitan Administration (BMA) in formulating the Climate Change Master Plan, now entering its second phase 2013-2023 following the first phase from 2007-2012[3], also offers practical insights as an early mover in the region (JICA 2015). some of the components included are:

(1) Setting up a municipal political cooperation framework through the Bangkok Declaration on Mitigation of Climate Change, adopted by 35 institutional stakeholders, as the basis for formulating its city plan;
(2) Harnessing Yokohama City's Vision 2050 to develop its own vision of climate-resilient low-carbon development;
(3) Inscribing a GHG emission-reduction target alongside quantification of GHG emissions within the plan;
(4) Aligning with and referencing national and sectoral policies to formulate an approach to BAU and target setting for cities;

2 JICA-JST joint research on the Development of Low Carbon Society Scenarios for Asian Regions in Malaysia (2011-2016)

3 Bangkok Action Plan on Global Warming Mitigation 2007-2012

(5) Setting the scope by covering all socio-economic activities within its physical boundary beyond sources of GHG emissions which the city can directly control (public offices, schools, municipal water treatment facilities and means of transport). Emissions from commercial buildings, residences, national facilities and transport infrastructure are also covered; and
(6) Efforts made to draft the plan by the officials themselves and domestic resources while avoiding overreliance on outsourcing such as consultancies for write-up.

The approaches taken for adaptation are also are included, inter alia:
(7) Selecting priority areas to set its focus on adaptation – flood, bank erosion and draught/saline intrusion;
(8) Setting adaptation measures according to the scale of impact at different times (1-3 years short-term, 3-5 years mid-term, 5-10 years long-term) and adaptation types (prevention, impact minimization, change/reconstruction); and
(9) Facilitating linkage between adaptation measures and daily administrative operations of the municipality.

3.2 Mainstreaming as a Means of Providing a Proper Status for the Municipal Climate Change Plan

The key objectives of climate mainstreaming include: 1) ensuring the effectiveness of the plan itself by anchoring climate actions as part of municipal socio-economic developmental priorities and 2) minimizing potential carbon lock-in risk by maximizing linkages for climate actions with sectoral investment plans and relevant thematic plans (e.g. urban planning, power development and land use).

3.2.1 Observed Empirical Challenges

Municipal climate plans often end up as stand-alone research activities without obtaining proper authorization for end products. This raises issues of legitimacy, which hampers the sustainability of such plans.

Winning sectoral stakeholders' support also presents a challenge, as nurturing self-awareness of the benefits attached to the proposed plan and actions to strengthen ongoing/future initiatives under developmental goals takes time, and involves repetitive advocacy.

Because climate change is a relatively new agenda item, the climate plan would be a new policy document on top of existing sectoral or thematic policies and plans –often creating policy congestion within municipalities and requiring streamlining to minimize overlaps.

3.2.2 Country Experiences and Good Practices

Iskandar city ensured sustainability of its Blueprint 2025 by winning high-level political endorsement, which allowed it to obtain a budget commensurate upon implementation. Such political embracement was achieved through constant commitment on the part of the high-level leaders involved in the processes.

3.3 Municipal-level GHG Inventory Preparation

Appropriately understanding the sources and sinks of GHG emissions within city boundaries using the GHG inventory is also an integral part of climate planning and the formulation of effective mitigation responses. At present, municipal GHG inventory preparation in developing countries remains in a nascent stage, with most experiences limited to cities in more advanced developing countries, such as Johannesburg and Rio de Janeiro.

While there is no established approach for municipal inventory preparation, essential steps commonly applicable to diverse contexts could be generalized as follows:

- ✓ Setting the scope of a city-level inventory in line with the city's climate plan and physical boundary;
- ✓ Assessing the availability of both relevant statistics and data holders;
- ✓ Establishing a data collection and sharing system;
- ✓ Selecting a methodological approach (e.g. IPCC GL, GPC, other) in line with the city's context and capacity;
- ✓ Setting a calculation format;
- ✓ Systematizing the validation of inventory results; and
- ✓ Formalizing the city-level inventory preparation procedure.

While the workflow resembles that of the national GHG inventory, one key difference is the reliance on bottom-up activity data rather than national statistics.

3.3.1 Observed Empirical Challenges

The municipal GHG inventory presents numerous practical challenges and the lack of a legal basis for development and data sharing also emerges as an initial, yet major barrier. Such legal basis not only secures resource allocation for inventories, but also ensures data sharing and submission by data holders. In the absence of a legal basis, inventory development and data sharing tend to rely on informal personal networks of stakeholders.

Limited availability of data for inventories also presents a challenge. Since municipal statistics are prepared for specific developmental objectives, gaps often emerge with the data requirement for the inventory, including the lack of time-series consumption data and the level of disaggregation required to calculate emissions. In some cases, data may be available but not effectively recognized or collected by the municipal authority.

Quantitative treatment of activity data within the municipal boundary and overall incentives to prepare city-level statistics also present technical challenges. As the scope of many socio-economic activities transcends the city boundary, such as the movement of vehicles and flows of goods and energies, there is a need for expert judgement to set reasonable and agreeable assumptions for GHG emission calculations specific to city boundaries.

Ensuring the sustainability of a city-level inventory also presents a challenge. In the absence of technical procedural guidance and staff arrangements, the inventory is likely to end up as a one-off activity with a short-term and ad-hoc arrangement. Particularly in cities known for their high turnover rate of officers, the inherent risk of losing institutional memory and know-how remains unless the involvement of multiple officers and proper transfer of duties are carefully configured.

3.3.2 Country Experiences and Good Practices

Ho Chi Minh City (HCMC) has prepared its GHG inventory over the past few years, supported by JICA's technical assistance[4], particularly through the Climate Change Bureau (CCB) as its focal point. The process adopted a tailored approach to accommodate the city's context and barriers, including, inter alia:

(1) Preparing two sets of inventories for domestic and international audiences; focusing first on that based on GPC as international good practice, and the other one based on ten priority sectors of the city's Climate Change Action Plan(CCAP);
(2) Ensuring data collection from data holders via an official letter issued by the HCMC People's Committee;
(3) Step-wise capacity building; starting with collaborative work among city stakeholders and JICA experts to prepare an inventory (FY2013), to autonomous preparation by city stakeholders alone for subsequent years (FY2014, FY2015);
(4) Applying realistic assumptions and alternative methodologies to e.g. LULUCF where access to 20-year time-series data required by IPCC GL2006 and GPC is unavailable;
(5) Ensuring work can be replicated in other cities by synthesizing the process as a technical manual;
(6) Ensuring the inventory process remains sustainable by a parallel effort by cities to institutionalize the inventory process under city's regulation.

The Bangkok Metropolis adopted a different approach. Given that Bangkok is the leading megacity in Thailand, generating 24% of national GHG emissions, its quantification simply involved pro-rating the national GHG inventory according to the activity volume and ratio. Later, the transport sector shifted to build quantification based on fuel sales statistics by provinces. Another element involved using the term footprint for their inventory to avoid conceptual confusion with a national-level inventory.

Common good practice has also been shared by both HCMC and Bangkok Metropolis over setting up a functional inter-agency coordination platform. HCMC has been operating its own Climate Change Steering Board since 2012, answering directly to the City's People's Committee, whereas the Bangkok Metropolis also has its Steering Committee under the auspices of the Bangkok Metropolitan Administration (BMA) to coordinate diverse interests and facilitate collective political decisions.

3.4 Setting a Monitoring Framework (MRV)

The monitoring framework provides a proper means to track progress and attainment; both for the municipal-level plan as a whole and specific measures. While the targeted stringency of such framework depends on the capacity, objectives and resource endowment, efforts to establish a robust monitoring framework for cities/municipalities in developing countries remain at a developmental level. The key steps for design and operationalization of such framework can be synthesized as follows:

- ✓ Clarifying the purpose of monitoring/MRV and the scope of mitigation actions to be monitored (e.g. monitoring numerical targets, the progress of actions and carbon credit management);
- ✓ Consensus-building for a methodological approach and the data requirement to quantify the emission-reduction amount;
- ✓ Setting a monitoring cycle in line with the administrative timeframe;
- ✓ Setting up an implementation framework, including clear roles and responsibilities for stakeholders;
- ✓ Measures to sustain the cycle; and
- ✓ Establishing a follow-up arrangement to secure a space for gradual improvement over time.

3.4.1 Observed Empirical Challenges

The major challenges observed for monitoring/MRV at municipal level are twofold; justification (why do it) and technical design (how).

For the former challenge, similar to the municipal GHG inventory, the lack of a legal basis emerges as the initial barrier. This basis also helps justify why data holders have to share specific activity data and also engage in reporting activities at a designated focal point agency.

4 JICA "Support the Planning and Implementation of NAMAs in a MRV Manner (SPI-NAMA)" (2015 - Present)

Incentives to conduct monitoring/MRV are often insufficiently understood by implementing entities. For administrative officers, such monitoring clearly helps raising awareness among taxpayers and their leaders of progress in the municipal climate plan and specific mitigation actions. From the implementing entities however, including those in the private sector, monitoring incurs additional transaction cost and the practical benefits provided in exchange are not well understood.

For the latter challenge, lack of guidance and/or criteria to define scope of mitigation actions for monitoring/MRV often leaves behind conceptual ambiguity and hampers stakeholders from prioritizing actions and effective monitoring. Setting out the scope of mitigation actions also manifests itself in the form of a methodological monitoring approach.

Stakeholders for monitoring/MRV in cities are usually bound by multiple relevant reporting obligations with an established reporting protocol under the city's governance system, and climate monitoring/MRV presents an additional reporting obligation, limiting the appetite and feasibility for such reporting unless effectively harmonized with the existing protocol and format.

Resource requirements also remain a universal challenge. Monitoring is resource-intensive in nature and often requires manual treatment, from downstream installation of data loggers/devices, data reading and collection in-situ, compilation of the calculated results for reporting and upstream assessment and validation of the reported results. Arranging the deployment of human resources and the timing and budget or an outsourcing scheme, provided by respective implementing and oversight entities shall enable operationalization.

Lack of clarity over the vertical linkage with a national monitoring framework presents another structural challenge. The functional relationship between municipal-level monitoring/MRV and national-level monitoring/MRV, usually in the form of aggregate sector-based MRV, is often clear, and the questions remain as to how municipal climate efforts can be adequately reflected in the national target achievement.

Also, as a cross-cutting challenge over the inventory and MRV, the potential impact of privatization of state-owned enterprises in developing countries on the accessibility of data should not be undermined. Utility companies are the epitome, where the municipal authority usually acquires energy consumption data by energy types (e.g. liquids, LPG, natural gas, coal) from those companies.

3.4.2 Country Experiences and Good Practices

In parallel with city-level GHG inventory formulation, HCMC of Vietnam also engaged in piloting city-level monitoring/MRV of its mitigation measures within its physical boundary. Individual actions, both those already invested and planned, are selected from energy, transport and waste sector for monitoring. The approach to such monitoring included, among other things:

(1) Establishing a monitoring framework and procedures based on the existing reporting channel in-situ;
(2) Tailoring and selecting a realistic methodological approach to gauge the amount of GHG emission reduction according to data accessibility and availability;
(3) Utilization of a simplified format for pilot reporting;
(4) Ensuring replicability to other cities by synthesizing the process as a technical manual;
(5) Ensuring sustainability by institutionalizing the process under city's regulation.

BMA's experience in establishing a monitoring framework also provides practical insights. For mitigation with quantitative tracking of the numerical target:

(6) Gradual improvement through learning-by-doing is key. The tracking of its first Action Plan 2007-2012, setting out a 15% emission-reduction target compared to BAU, while also revealing technical issues over the striking consistency of quantification approaches across sectors and organizing data sources for individual measures to enable measurement. Such challenges were adjusted in the design of its second-phase Master Plan 2013-2023.
(7) Adopting simplified tracking procedures according to the nature of mitigation measures. Since identified measures are not intended for carbon credit acquisition or carbon offset in general, the procedure waived third-party verification and any complicated methodological approach.

For adaptation measures:

(8) Adopting qualitative monitoring and evaluation to monitor its plan encompassing current and future measures over selected areas of vulnerability.

4. Ways Forward

This Policy Brief aims to explore practical approaches to refine the technical readiness of the municipality as a non-state actor, focusing particularly on climate planning/mainstreaming, GHG inventory and monitoring framework development at a municipal level, drawing on lessons from JICA's past and ongoing support for cities in developing countries.

It is important to note that the municipal climate response in developing countries remains at its developmental stage and some of the case studies presented in the Brief are drawn from early movers. Developing the technical capacity will take time

and requires gradual nurturing in the form of a learning-by-doing process, following the footsteps of many municipalities and cities in developed countries. The climate plan that municipalities adopt should, first and foremost, convey the development priorities of the municipality/city to enhance both its sustainable growth and overall appeal. Such mutual learning processes could be further expedited through enhanced city-to-city cooperation.

References

C40 Cities Climate Leadership Group (2016). Unlocking Climate Action in Megacities.

C.S.HO et al. (2016) 'Science to Action' of the Sustainable Low Carbon City–region in Enabling Asia to Stabilize the Climate, Springer, Singapore.

JICA (2015). Final Report–Technical Cooperation Project on the Bangkok Master Plan on Climate Change 2013-2023 in the Kingdom of Thailand.

JICA (2016). Final Report–Development of Low Carbon Society Scenarios for Asian Regions 2010-2016. Malaysia.

JICA (2017) Progress Report–Project to Support the Planning and Implementation of NAMAs in a MRV Manner
(Capacity Enhancement of Local Governments)

UTM (2014). Low Carbon Society Blueprint for Iskandar Malaysia 2025–Summary for Policymakers. 3rd Edition.

UN-HABITAT (2016). The Worlds' Cities in 2016.

This Policy Brief was prepared by Koji Fukuda, with comments and suggestions from Masato Kawanishi (JICA Senior Advisor).

Nibancho Center Building 5-25, Niban-cho, Chiyoda-ku,
Tokyo 102-8012 Japan

https://www.jica.go.jp/english/our_work/climate_change/index.html

e-mail: gegoc@jica.go.jp