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BEST PRACTICES IN MONITORING AND EVALUATION OF URBAN CLIMATE ADAPTATION

A LITERATURE REVIEW



October 2019

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Prepared for:

United States Agency for International Development
Adaptation Thought Leadership and Assessments (ATLAS)

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ACRONYMS

ACT	Adapting to Climate Change in Time
ADEME	French Environment and Management Agency
AMAT	Adaptation Monitoring and Assessment tool
BRACED	Building Resilience and Adaptation to Climate Extremes and Disaster
CCATF	Climate Change Adaptation Task Force
CIF	Climate Investment Fund
DFID	United Kingdom Department for International Development
EEA	European Environment Agency
GEF	Global Environment Fund
GHG	Greenhouse gasses
GIZ	<i>Gesellschaft für Internationale Zusammenarbeit</i> (Germany international development agency)
HSY	<i>Helsingin seudun ympäristöpalvelut</i> (Helsinki Region Environmental Services Authority)
ICLEI	Local Governments for Sustainability (formerly, International Council for Local Environmental Initiatives)
IIED	International Institute for Environment and Development
IPCC	Intergovernmental Panel on Climate Change
M&E	Monitoring and evaluation
MRV	Monitoring Reporting and Verification (Kenya)
NCCAP	National Climate Change Action Plan (Philippines)
NYC	New York City
ORR	Office of Recovery and Resiliency
PPCR	Pilot Program for Climate Resilience
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WBG	World Bank Group

EXECUTIVE SUMMARY

BACKGROUND

Increasingly, cities are taking control of assessing their local or regional vulnerability to climate variability and extreme weather events and implementing adaptation strategies to reduce their vulnerability. Cities will need a framework to measure and assess their adaptation activities and guide improvements to their strategies. At the international and national levels, adaptation monitoring and evaluation (M&E) is further along in development than in cities, and could serve as a guide.

To build resilience at the speed necessary to meet looming climate related impacts, cities need to act quickly and adjust during planning or implementation of adaptation actions. Improving adaptation M&E will help to ensure that cities are not wasting time and money on ineffective adaptation actions.

There is a range of approaches to vulnerability assessment and adaptation M&E, and there is a need to identify good practices or standards in the design of city-level adaptation M&E frameworks. This literature review and review of adaptation frameworks provides guidance on developing robust, practical, and resource-efficient urban adaptation M&E systems. The intended audience comprises adaptation practitioners, the climate adaptation M&E field, and the development community at large.

KEY MESSAGES

There are M&E approaches that are working at all scales of application. Key elements of these approaches include:

- **Good practice in M&E generally also applies to M&E for adaptation actions.** Results-based frameworks with well-thought-out logic frames are the gold standard and are useful in clarifying a results chain that can achieve a city's core purpose.
- **Planning and design are crucial, but iterations and flexibility to adjust are vital.** Adaptation goes beyond implementing projects and expands to building systemic resilience. Building systemic resilience is even more complex across the integrated set of urban systems. Due to this complexity, the design and planning phase of adaptation M&E is crucial to building a strong foundation, but the reality is that frameworks will need to be flexible and evolve to meet a city's rapidly changing needs.

CHALLENGES CITIES FACE IN IMPLEMENTING M&E FRAMEWORKS

- ❖ Limited institutional capacity to assess climate change vulnerability and to evaluate, prioritize, and implement adaptation responses.
- ❖ Absence of a well-defined pathway to respond to vulnerability findings in municipal planning, infrastructure investment, and adaptation activities.
- ❖ Limited budget and access to additional financial resources necessary to implement investments and monitor activities.
- ❖ Limited ability to monitor and measure the effectiveness of adaptation responses in the short and long term.

- **Swift action is as important as getting a strong foundation.** Most cities do not have the resources (human or financial) or the luxury of time to design a robust results-based framework *before* starting to assess implementation of adaptation strategies. Implementation of (in some cases life-saving) adaptation projects is a priority, and progress cannot stop to design a framework. Consequently, cities are encouraged to establish a few key components and start small, building on existing data and institutional structures while planning for a more robust framework.
- **Proper institutional structures will ease and enhance implementation.** Technical design, data quality, and strong indicators are important, but equally if not more important is creating an institutional arrangement that will support adaptation M&E. The leading agency should have the political importance and power to convene all other relevant agencies, community organizations, and the private sector. The support structure for that agency should facilitate cross-sector coordination, encourage multi-stakeholder engagement, and have the flexibility to adjust and change shape as the city framework grows and evolves.
- **Codifying adaptation M&E helps ensure success.** The process of adaptation monitoring and reporting needs to be built into the governance requirements of the city. A policy, regulation, or law that demands regular reporting on climate action progress incentivizes monitoring and evaluation. This incentive gives the lead agency a mandate for action and encourages participation in data collection and sharing with other key stakeholders (some that may be nongovernmental).

METHODOLOGY

The literature review identified adaptation M&E frameworks for analysis by using the following criteria:

- Information on the process and application of the framework was available publicly
- Focused on climate change adaptation (not disaster response or other related topics)
- Relevant to urban context and sectors
- Applied recently (within the last 5 years) or recent iterations have been published
- Robustly cited and referenced

Frameworks from international development organizations, national governments, and cities were explored.

INTRODUCTION

Cities are increasingly taking a lead role in assessing their vulnerability to climate impacts and acting to protect their residents, safeguard economic growth, and build resilience. An increasing number of cities have completed climate risk/vulnerability assessments and developed climate adaptation or resilience plans (e.g., New York City, Rotterdam, Cape Town, Melbourne) but fewer have moved beyond the planning stage. Cities that have begun implementing adaptation actions need to track their effectiveness, but few cities have formal adaptation M&E systems due to a lack of capacity, funding, and technical expertise (EEA [European Environment Agency], 2016). Similar challenges are faced at the national scale, where M&E systems are developed by international consultants and funded through donor organizations. As adaptation moves beyond implementing discrete climate-resilient projects and scales to building systemic resilience (World Bank, 2019, p. 16), integrated, intentionally designed M&E will be necessary. The evidence base for urban adaptation M&E is slowly being built by pioneering cities such as those mentioned in this report. Implementation of adaptation plans and actions has increased since the early 2000s, when both cities and national governments first established targets and strategies, and governments are in the early stages of establishing M&E systems, with national governments leading the field. This review takes advantage of the strong foundation of general adaptation M&E literature and draws on more recent urban-focused research, literature reviews, and case studies.

Limitations

Due to limited urban experience globally, initiatives which monitor and measure adaptation response in nonurban contexts were also examined, including national governments and international development organizations or donors. This report is not intended to be an exhaustive review of all adaptation M&E initiatives worldwide; 15 M&E frameworks were reviewed, and 10 were chosen for the report based on the criteria detailed in the Criteria for Literature Review section. Time and resource constraints limited this report to publicly available information. For more details on the reviewed frameworks, see linked source material in the references section, and tools and additional frameworks or resources in Annex C.

CHALLENGES FACING URBAN ADAPTATION M&E

Most cities have the experience and agencies to monitor and report project results, and these data can be mined for adaptation outcomes (EEA, 2016). However, citywide adaptation M&E is a substantially different and challenging undertaking. There is extensive agreement on the challenges that face any entity in planning and implementing adaptation actions (GIZ, 2014a; ADEME, 2013; Villanueva, 2011; ACT, 2013).

Below is a collection of challenges cities may face in implementing adaptation M&E based on a review of existing frameworks and the literature; not all are tailored to the city experience, but where possible, an urban perspective is given. The key messages later in the report will source solutions to some of these challenges.

The way in which cities experience climate related challenges will be different from one another and other geographies, and the solutions that can mitigate these challenges may vary as well. The desired outcome of adaptation actions (contributing to building a city's overall resilience) is often experienced over **long timescales**, and adaptation is a process, not an end-goal (Clean Air Partnership, 2015). The shorter political and project timescales that national and city governments work in, and the need to show results on investments are a mismatch with the length of time it takes to realize the effects of adaptation actions. As a result, process indicators (progress on plans and mainstreaming of adaptation) currently dominate urban M&E frameworks, and output, outcome, and effectiveness evaluation is minimal (van Minnen et al., 2018). While adaptation is often experienced over long timescales, the time in which a city can effectively respond will likely be shortening in the coming decades as urban sprawl and rapid urbanization speed up the pace of development and the speed at which climate and weather-related impacts are felt increases (Xu et al., 2018).

Uncertainty and variability are factors in all aspects of planning and at all scales. However, with the urban environment changing more rapidly and at a micro-scale (street by street) (EEA, 2016), the uncertainty of baseline conditions makes monitoring of impacts difficult. Both the physical and social resilience of a city can adjust rapidly over time and across neighborhoods, making it hard to set and keep accurate baselines for monitoring, to be confident of the impact of projects, and to attribute credit for certain outcomes to specific actions.

Success in adaptation is hard to define, as there is no common benchmark. There is even uncertainty around the appropriateness of adaptation goals or targets, and the unknown and unintended impacts that will result from successful achievement of targets. Maladaptation, in which adaptation actions worsen a development issue or transfer impact to another area or social group (Turner et al., 2014, p.20) can occur even if an action is deemed successful. This makes progress toward achieving targets a questionable measure of success (Turner et al., 2014, p. 19). Additionally, projects that achieve a measure of adaptation are not always categorized or named as adaptation projects; they may be in the health, economic development, urban planning or other sectors. This further challenges the identification and measurement of adaptation successes. This challenge can be addressed by classifying adaptation projects as those that respond to a specific climate risk identified through a rigorous, evidence-based climate risk (or vulnerability) assessment process. Projects that have been planned or implemented outside of this assessment process can be reclassified as adaptation projects if they address identified climate risks.

Attribution of outputs or outcomes to specific adaptation actions is not always clear. Climate change is a complex, systemic problem, and untangling socioeconomic factors from interventions to isolate particular impacts is often impossible (EEA, 2016). In urban areas a variety of factors influence adaptation outcomes: population flux, economic trends, political shifts, cultural and religious norms, conflict, and development changes (DFID-BRACED, 2015). In addition, the outcomes from adaptation projects are often the avoidance of negative impact, which is difficult to measure (Clean Air Partnership and ICLEI, 2015).

There is a lack of **standard M&E adaptation metrics and language** and an inconsistency of application that may confuse those new to adaptation M&E. A standard metric measuring resilience, like reduced greenhouse gas emissions for mitigation, is unlikely. A further complication is the lack of consistent definitions for M&E terms (e.g., output, outcome, impact) as they relate to climate adaptation (GIZ, 2014a). The lack of commonly accepted definitions can slow down design of results-based frameworks and cause misunderstanding among stakeholders.

The responsibility and costs of **adaptation actions span all sectors and departments in a city**. Adaptation is essentially everyone's responsibility, making it challenging and expensive to plan, lead, and coordinate the M&E effort. Although adaptation actions are mostly implemented at the local level, there are many stakeholder interested in monitoring and aggregating local adaptation outcomes, from the regional, national, and international scale to the private sector. The city-led approach is inherently a bottom-up approach, but will be part of a multilevel pyramid in which adaptation is one of many development goals (Price-Kelly et al., 2015). Additionally, personnel across a city government need to have a basic understanding of climate change and M&E and have formal training on M&E and climate change principles, particularly in relevant departments outside of the environment agency, such as planning, finance, engineering/public works, and health.

MEASURING RESILIENCE

Climate adaptation is among the factors contributing to the larger goal of improving resilience at the household, community and national scales. In the last two decades, a better understanding of the meaning and measurement of resilience has developed. There are many measurement frameworks as well as tools that support assessment of development factors that impact resilience including climate, disaster risk, poverty, and health (see Annex C for a list of resilience measurement frameworks). While this report specifically discusses methods for measuring climate adaptation in urban contexts, it is important to understand how climate adaptation is related to resilience, and why measuring climate adaptation is an essential element in measuring resilience more broadly.

USAID defines resilience as “the ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses¹ in a manner that reduces chronic vulnerability and facilitates inclusive growth” (USAID, 2012). This definition illustrates that resilience is multi-level and multi-faceted, covering topics such as: socioeconomics, governance, health, infrastructure, environmental issues, and climate, weather- and disaster-related risk reduction and response. The definition also illustrates that resilience is not focused on recovery from discrete shock events, but rather it is about increased adaptive capacity, improved ability to address and reduce risk, and improved social and economic conditions of vulnerable populations that together provide the foundation for these populations to avoid the most severe elements of these shocks, minimizing the need for the expenditure of scarce household resources and social capital on recovery (see Figure 2 for the conceptual framework). Under this broad umbrella, climate adaptation activities are important contributors to building resilience. USAID has also developed a resilience measurement framework (figure 1) that contains three key components: resilience capacities, shocks and stresses, and well-being outcomes (Vaughan et al., 2018).

Figure 1. Simplified resilience measurement framework

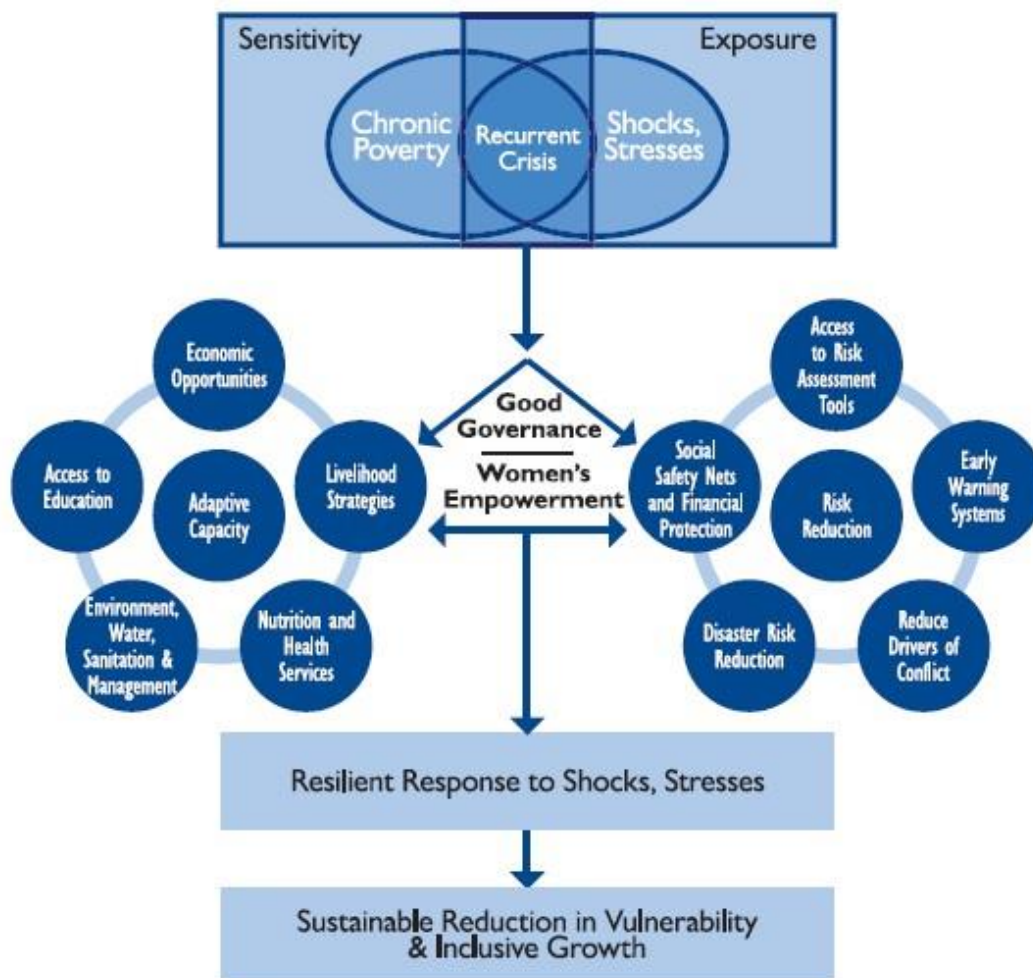


Source: Vaughan et al., 2018

¹ A shock is an unexpected, high-impact event like a destructive weather event, flash violence, or currency shock. A stress is a slow onset event or introduction of unpredictability or change such as land degradation or high levels of migration (Vaughan et al., 2018).

This framework illustrates how measuring resilience capacities (e.g., climate adaptation) in connection with a shock or stress (e.g., climate change and variability), can help city managers understand the impacts of their adaptation activities on development and well-being outcomes.

Figure 2. USAID's conceptual framework for resilience



Source: USAID, 2012

CLIMATE AND RESILIENCE

The impacts of climate change vary greatly across regions and impacts on urban areas are just as varied. The European Energy Agency urban adaptation report lists reported climate change impacts and results in urban settings (EEA, 2016, pp.19–21), and shows that the diversity and uncertainty of climate hazards, combined with the complexities of rapid urbanization, demand an integrated approach to measurement (ARUP, 2014).

Frameworks differ slightly in the way they position climate and climate change. Some identify climate change as a “challenge,” a “pressure,” a “risk,” or a “complicating factor” for resilience. These related but different definitions change the way climate is addressed in each of the

frameworks. In USAID’s conceptual framework, climate change is “a major stress that must be considered in designing strategies to build resilience” (USAID, 2012); failure to do so can have a negative effect on well-being outcomes. However, climate change is also impacting the frequency and intensity of climate-related shocks (e.g. hurricanes, droughts, floods). This creates a need for layered and complex resilience measurement that can capture climate impacts as both stresses and shocks.

To illustrate this concept, consider an urban region where an El Niño-related event causes heavy rains that lead to flooding. Climate is a stress to the urban system, contributing to long term changes in risk (on average, more intense rainfall), but in this instance it also contributes to a one-time shock. The impact of the flooding has an outsized impact on rapidly urbanized informal neighborhoods. A reduction in rural agricultural opportunities caused by the unpredictability of seasonal rains or other stresses related to climate variability and change was a contributing factor to the rural–urban migration of people to these neighborhoods. Further, those living without basic services in informal neighborhoods have a much lower resilience capacity. This example illustrates the integrated nature of climate and related impacts with other development issues in an urban context and demonstrates the need for a broad and deep assessment of all components of resilience across scales. Ultimately, climate- and weather-related impacts will affect the ability of cities to deliver vital services, and the impacts are not just isolated to one service but cause cascading effects that spread outward to the region and country (EEA, 2016, p. 16).

MEASURING RESILIENCE AND MONITORING ADAPTATION

Measuring resilience and monitoring adaptation² are inextricably linked. An understanding of a city’s baseline resilience and potential shocks and stresses is necessary for developing goals or targets for adaptation, which set the foundation for M&E. In turn, measuring and tracking resilience shape city adaptation actions and inform investment decisions.

Measuring changes in resilience demands an understanding of the outcomes of adaptation actions, which requires robust M&E. Successful adaptation actions anticipate and shape responses to shocks and stresses, strengthening the capacities of cities and their inhabitants and, therefore, increased resilience.

² Adaptation is defined by the IPCC as “adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. [Adaptation] refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change.” (IPCC 2001)

LITERATURE REVIEW AND FRAMEWORK ANALYSIS

CRITERIA FOR LITERATURE REVIEW SELECTIONS

The report relied on a number of published framework reviews (Bours et al., 2013; ADEME, 2013; van Minnen et al., 2018; GIZ, 2014a; Turner et al., 2014). These reviews either focused on national frameworks or on a mix of national and international frameworks.

The selection of the frameworks was guided by the following criteria:

- Information on the process and application of the framework was available publicly
- Focused specifically on climate change adaptation (not disaster response or other related topics)
- Relevant to urban context and sectors
- Applied recently (within the last 5 years) or recent iterations have been published
- Robustly cited and referenced

SUMMARY AND ANALYSIS OF FRAMEWORKS

The frameworks have been grouped by city, national, or international organization/donor application. Most frameworks within a group are designed with similar technical approaches. For example, the majority of international development organizations use a results-based framework with a theory of change and logic model approach, the national government systems follow a combination of results-based and process-focused approaches, and the city M&E systems (to the extent any have a technical approach) use mainly process-based approaches with some economic evaluation (e.g., expenditures to date). Thus, there are common approaches and key differences that can be highlighted within each group. For a deeper analysis of approaches to adaptation M&E, see Villanueva (2011).

FRAMEWORK ASSESSMENT COMPONENTS

- ❖ Approach
- ❖ Purpose
- ❖ Scale of application
- ❖ Indicators and baselines
- ❖ Data collection and reporting
- ❖ Policy environment and institutional arrangement

Tables 1–3 describe these components at each level: international development/donor, national government, and city government.

INTERNATIONAL DEVELOPMENT ORGANIZATIONS AND DONOR FRAMEWORKS

The frameworks reviewed include the following:

- [World Bank Group \(WBG\): Operational Guidance on M&E for Climate Disaster Resilience-Building Operations](#)
- [Climate Investment Fund \(CIF\): Pilot Program for Climate Resilience \(PPCR\) M&E Framework](#)
- [Global Environment Fund \(GEF\): Least Developed Country Fund and Special Climate Change Fund M&E Framework](#)
- [UK Department for International Development \(DFID\): Building Resilience and Adaptation to Climate Extremes and Disaster \(BRACED\) M&E Framework](#)

ADAPTATION M&E BY INTERNATIONAL ORGANIZATIONS

- ❖ Represents the best practice in the field
- ❖ Usually requires aggregation across multiple different and complex projects
- ❖ Robust and rigorous to provide assurance and validation on how funding is used

Table 1. Common components of international development organizations and donor adaptation M&E frameworks reviewed

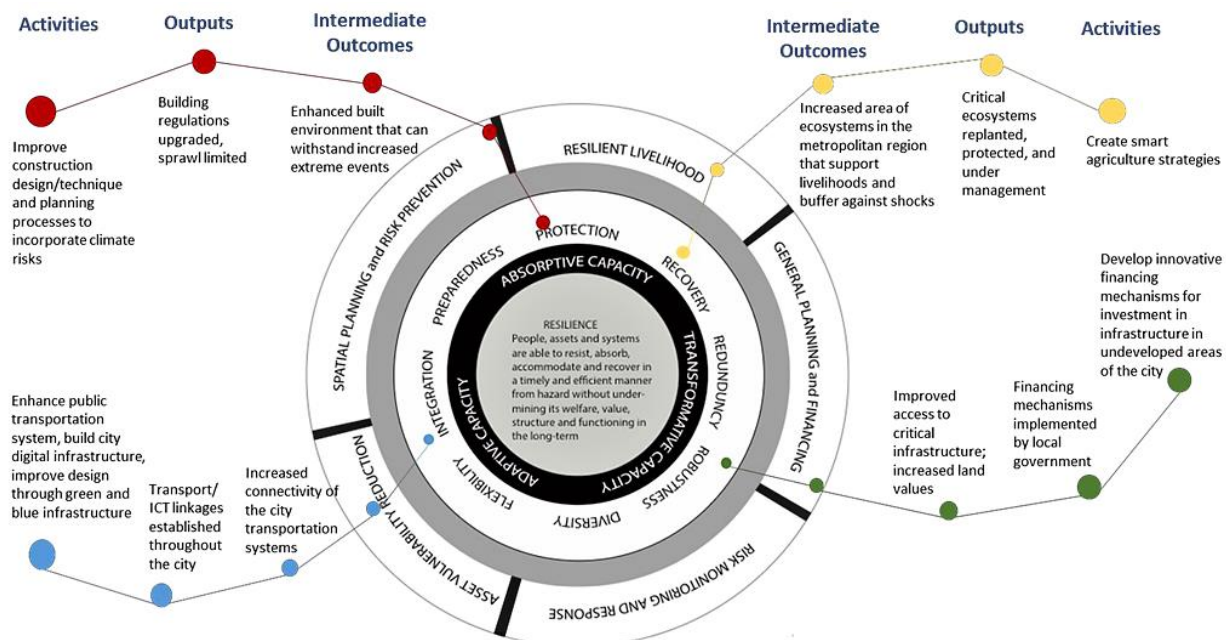
COMPONENT	DESCRIPTION OF COMMONALITIES
Approach	Results-based framework using an established “theory of change” based on organizational or fund objectives; this structure cascades down to guide project-level M&E set up by the implementing agencies.
Purpose	Tracking and reporting on results, learning, and knowledge sharing for improvement of program/project design
Scale of application	Portfolio-level tracking at global level, aggregation up from project level
Indicators and baselines	A mix of quantitative and qualitative indicators are used. Baselines are required for most indicators.
Data collection and reporting	Internal evaluation and external reporting drive M&E. Most have annual reports or feed into annual results reports for a donor agency. Computerized systems for collecting or reporting data is not described in the framework document.
Policy environment and institutional arrangement	<p>Accountability and a duty to prove effectiveness to donors are the “policies” that drive the M&E frameworks.</p> <p>Project-level M&E is done by implementing agencies and stakeholders, which feed results up to an intermediary (such as a knowledge manager or country director appointed by the agency); those results are transmitted to the donor agency for portfolio aggregation.</p> <p>Each of the frameworks provide strong knowledge management, training, and capacity-building resources to project teams, using the M&E process to facilitate learning.</p>

The World Bank Group: Monitoring and Evaluation in Climate Disaster Resilience-Building Operations (2017)

Summary. The framework has a distinctive logic frame using a concentric approach (figure 3), differing from the traditional linear approach. This more complex framework is designed to cascade down results-based values to sector- and project-level M&E and provide a range of outputs and outcomes based on one core value of resilience.

Approach. The WBG has a portfolio of projects with resilience, disaster risk management, and adaptation components. A 2013 evaluation by the internal Independent Evaluation Group found that adaptation results frameworks in the WBG were not outcome oriented and emphasized spending over results (World Bank, 2017). The new approach was designed to clearly define outcomes and connect to resilience objectives using a layered logic frame. The overarching results framework is centered on a clear, agreed-upon definition of resilience as the *impact* identified, and includes the three resilience capacities of adaptive, absorptive, and transformative resilience. These capacities lead to eight longer-term *outcomes* which are then grouped by resilience themes and resilient practices at the WBG. This layered approach allows teams to identify appropriate resilience outcomes for their sector focus, creating different pathways to the core impact of resilience. This provides flexibility and guidance to project teams but requires a moderate level of technical knowledge to apply appropriately, which may make it difficult for cities to replicate.

Figure 3. Options for Pathways to Resilience - World Bank Group M&E Framework Concentric Logic Model



Source: World Bank, 2017, p.19

Purpose. To track and report on outcomes and learn from the design of resilience-related projects. The guidance document aligns with other donor M&E frameworks within which the WBG reports, including frameworks reviewed here, such as the Climate Investment Fund PPCR and the GEF frameworks, as well as Green Climate Fund and The Adaptation Fund, which all fund WBG-led operations.

Scale of application. The WBG operational guidance takes a cascading approach to setting a results-based framework to align across levels: it establishes a results framework for the Sustainable Development Vice Presidency and provides guidance on sector-specific frameworks and good practice for project-level M&E for resilience operations. It allows sectors and project teams the flexibility to establish their own theory of change while allowing aggregation at the global level. This is a useful example in the urban context, where sector-level ownership of adaptation M&E will be essential.

Indicators and baselines. Teams can plug in sector-specific or project-specific activities, outputs, and intermediate outcomes and use these to select indicators. The organization provides example indicators that demonstrate a preference for quantitative indicators, with qualitative indicators used to provide context. All indicators are required to be SMART.³ The framework allows for proxy⁴ indicators for longer-term outcomes that go beyond the timeline of the project. Teams establish a baseline for each indicator, and the framework provides guidance on setting baselines using projections, reconstruction, normalization, and contextualized baselines. These examples and guidance on baseline setting and targeting are useful, but complex, requiring M&E expertise.

Data collection and reporting. Reporting is tied to project cycle reporting and donor reporting, which have different timescales. Teams report on indicators at the midpoint and endpoint of projects, and data are collected at the project level by project teams and stakeholders. The WBG does not provide prescriptive data collection tools but does reference other tools developed by donor funds (for example, the Climate Investment Fund PPCR scorecards mentioned in the next framework).

Policy environment and institutional arrangement. The WBG requires corporate-level reporting of lending levels for climate-related activities. This policy necessitates the close monitoring of project outcomes. The institutional arrangements differ across projects, but reporting is done at the sector or practice group level and aggregated up to the corporate reporting (World Bank, 2017).

³ Specific, Measurable, Attributable, Realistic, and Time-bound

⁴ Defined by the World Bank as “indicators that signal the ability or capacity of people, assets, and systems to be more resilient without directly measuring outcomes” (World Bank, 2017).

Climate Investment Fund: Pilot Program for Climate Resilience (PPCR)

Summary. The PPCR framework uses a scorecard approach to data collection for indicators, which converts qualitative narrative to quantitative data for aggregation. There are limited indicators, but a robust stakeholder engagement process incorporates capacity building and iterative learning and provides a good model for achieving multiple purposes with one framework.

Approach. The PPCR fund integrates climate risk management and resilience into core development planning in 18 developing countries. The results-based framework monitors and reports across all 18 countries. The framework includes a linear logic frame that identifies “improved climate resilient development consistent with other CIF objectives” as the final outcome. In 2018, PPCR published an updated, simplified framework with five core indicators (figure 4). The approach is country-driven; PPCR develops Strategic Programs for Climate Resilience that are based on the logic frame but reflect each country’s context.

Purpose. To report outcomes to donors and collect lessons learned for improving project design.

Scale of application. The framework aggregates up from project level to country level and then to global scale.

Indicators and baselines. Indicator scorecards developed by PPCR are data collection tools used in stakeholder consultation processes (“scoring workshops”) in PPCR countries. The workshops are time- and resource-intensive but reflect a commitment to capacity building and learning. The stakeholder group in each country has the flexibility to define a scoring criterion for indicators, which are defined by sub-questions. Countries set the score from 0 to 10, using the sub-questions as guidance for assessing their baselines. This flexibility honors a country’s unique context but limits comparison or benchmarking between countries. Baselines and targets for indicators 1 and 2 are set at the project level by stakeholders, ensuring appropriate buy-in. Indicators 3–5 have baselines set to zero as they measure new activity created under a PPCR project.

Data collection and reporting. Annual reporting is done at the project, country, and portfolio level. As noted, data collection is done at the project level and country level through stakeholder workshops. The workshops are capacity-building and knowledge-sharing activities that over time will enhance the technical know-how of local stakeholders. With annual reporting, stakeholders can quickly assess lessons learned and adjust implementation midproject for multiyear projects.

Figure 4. The aggregated indicators used across all PPCR projects



Source: CIF, 2018

Policy environment and institutional arrangement. The multi-stakeholder M&E system is owned at the country level where aggregated annual results are reported to the PPCR for portfolio aggregation. As implementers of the projects, multilateral development banks feed project information to the PPCR unit in each agency. The minimization of indicators down to five eases coordination and reporting in this multi-stakeholder system (Climate Investment Funds, 2018).

Global Environment Fund (GEF): Least Developed Country Fund and Special Climate Change Fund M&E Framework

Summary. The GEF finances adaptation as the financial mechanism for the UN Framework Convention on Climate Change (UNFCCC). To support aggregation and alignment for adaptation M&E, GEF developed the quantitative, Excel-based Adaptation Monitoring and Assessment Tool (AMAT), which collects data on outputs and outcomes from agencies and implementing partners in line with the GEF theory of change and logic frame.

Approach. The organization uses a results-based framework incorporating the Millennium Development Goals as objectives for aggregating reporting from project results. The framework outlines a set of impacts, and a main indicator for each objective, with outcomes and outputs under each. All these components were placed into the tool (figure 5), which is essentially a reporting template Excel document with guidance on the GEF logic frame.

Figure 5. Snapshot of GEF's Adaptation Monitoring and Assessment Tool

Project baselines, targets and outcomes						
Indicator	Unit of measurement	Baseline at CEO Endorsement	Target at CEO Endorsement	Actual at mid-term	Actual at completion	Comments (e.g. specify unit of measurement)
Objective 1: Reduce the vulnerability of people, livelihoods, physical assets and natural systems to the adverse effects of climate change						
Indicator 1: Number of direct beneficiaries	number of people					
	% female					
	vulnerability assessment (Yes/No)					(if a vulnerability assessment has been carried out for the targeted population, please describe)
Outcome 1.1: Vulnerability of physical assets and natural systems reduced						
Indicator 2: Type and extent of assets strengthened and/or better managed to withstand the effects of climate change	ha of land					
	km of coast					
	km of roads					
	other					(add rows as needed)
Outcome 1.2: Livelihoods and sources of income of vulnerable populations diversified and strengthened						
Indicator 3: Population benefiting from the adoption of diversified, climate-resilient livelihood options	number of people					(describe livelihood options, add rows as needed)
	% female					
	% of targeted population					
Outcome 1.3: Climate-resilient technologies and practices adopted and scaled up						
Indicator 4: Extent of adoption of climate-resilient technologies/practices	number of people					(indicate what technology and add rows as needed)
	% female					
	% of targeted					
	number of ha					
	% of targeted					

Source: GEF, 2014

Purpose. AMAT was developed to measure progress toward achieving the outputs and outcomes for GEF's portfolio of global adaptation projects based on the fund's results framework.

Scale of application. The tool aggregates data up to the portfolio level across a large number of projects from across the globe.

Indicators and baselines. The tool presents an objective and a set of indicators matched to outcomes under each objective. Three objectives and 14 indicators are tied to 14 outcomes in the framework and tool. The tool is submitted at project approval with baseline information for each indicator, then at midterm and project completion with data on indicator results. The GEF has aligned core indicators with those tracked by the Green Climate Fund and the PPCR where possible for ease of use by implementers. The organization has simplified the framework and tool, reducing the number of indicators from 52 to 14. The AMAT tracks quantitative data, such as population benefiting from an action, hectares of land strengthened, and number of people adopting a technology. The intent is to standardize data in order to easily aggregate and track them over time. This singular focus on quantitative data could miss the context and clarity on attribution that qualitative indicators can provide, but it allows for easy benchmarking. In the newest update to the framework, GEF is moving toward establishing tools and methodologies that can capture qualitative information.

Data collection and reporting. As noted above, AMAT (like the PPCR scorecard) is used to collect and report data to ensure consistency for midterm and project completion reports and annual monitoring reviews. The GEF notes that their framework and tool do not replace more in-depth project monitoring frameworks that give qualitative data and context, and GEF acknowledges that the framework gives a limited picture of project results. This is an interesting example for cities, which may benefit from prescribing a limited number of quantitative indicators aligned with a results framework, allowing them to aggregate and report on limited project results and leave more detailed M&E to project development and reporting.

Policy environment and institutional arrangement. Like the other frameworks, implementers report on project results to the GEF, which aggregates the information and reports to their donors. Individual project arrangements may differ, however (Global Environment Fund, 2018; Global Environment Fund, 2014).

Department for International Development (DFID): Building Resilience and Adaptation to Climate Extremes and Disaster (BRACED)

Summary. BRACED uses a flexible example of the common top-down approach used by most international organizations. The framework developed by the program uses a concept called "evaluative monitoring" (described below), which emphasizes context and reflective monitoring of an expanded set of factors. The framework focuses heavily on qualitative data.

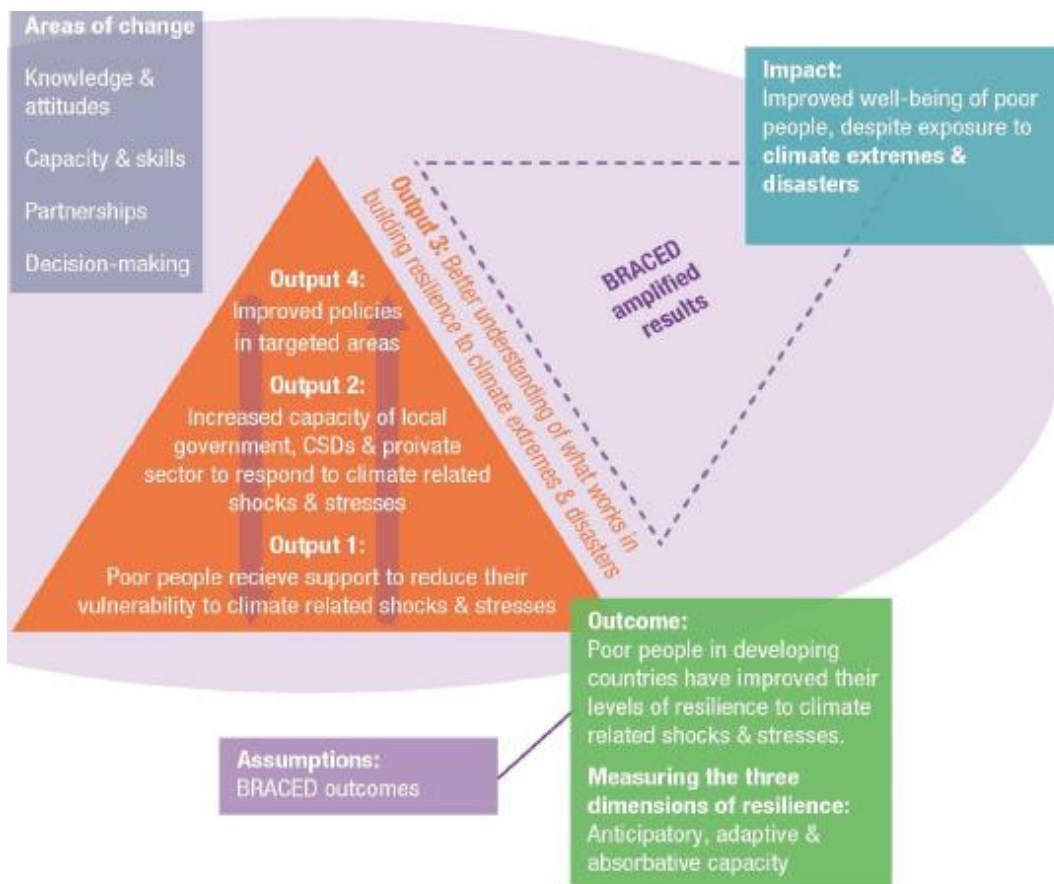
Approach. The BRACED program helps people become more resilient to climate extremes in South and Southeast Asia and in the Africa Sahel. In 2014, BRACED established a theory of

change and a logic frame that projects can use to design project M&E (figure 6). Using this as guidance, each of the 15 BRACED projects developed its own theory of change and logic frame. In 2015 BRACED updated the M&E framework to include more qualitative indicators and an updated logic frame, strengthening the causal links between outputs, outcomes, and impacts by identifying Areas of Change that link project outputs to resilience outcomes, and in the long run to impacts.⁵ The outcomes are the 3 As—capacities to anticipate, to absorb, and to adapt.

Purpose. To guide project developers in designing M&E frameworks that produce robust evidence of building resilience, and to capture lessons learned.

Scale of application. Project-level guidance that aggregates and reports on a regional portfolio.

Figure 6. Section of BRACED theory of change



Source: DFID-BRACED, 2015, p.25

⁵ Areas of change include changes in knowledge, understanding and commitment, changes in skills and practices, in collaboration and coordination in partnerships, and changes in decision-making processes to ensure inclusive participation.

Indicators and baselines. Within this framework, projects can identify their own indicators; BRACED does not dictate indicators to projects. In their shift to a more qualitative focus, BRACED developed evaluative monitoring, which addresses the issue of attribution and recognizes that many factors influence change. BRACED defines evaluative monitoring as “a monitoring approach with an evaluation lens that enables you to provide critical information that monitoring and reporting against project indicators alone does not give.” (DFID-BRACED, 2015). This monitoring tests the framework’s theory of change, encouraging teams to reflect on the accuracy of their theory during the project. Teams identify all the factors (institutional, cultural, financial, political, social, policy, and gender) that may influence project success upfront and set baselines for those that most affect the adaptation outcomes. Evaluative monitoring can complicate and lengthen M&E because it adds components and baselines to track, but it provides crucial additional information that can help pinpoint the reasons for the success or failure of adaptation actions. BRACED developed two portfolio-wide reporting indicators that all projects must report on: “the number of people supported to cope with the effects of climate change”, and “the number of people whose resilience has improved as a result of BRACED support.”

Data collection and reporting. The BRACED framework is more flexible and adaptive than other international donor frameworks, and the program established strong foundational documents that provide close guidance and tools for implementing partners, for example, evaluative monitoring templates and a tool reference guide to support M&E teams in data collection and execution of evaluative monitoring.

Policy environment and institutional arrangement. There are 15 implementing partners for BRACED projects (for example, development agencies and nonprofit organizations) that report outcomes to a Knowledge Manager and Fund Manager consortium, which aggregates results from the 15 projects and reports to DFID, the donor. The framework lays out the roles of each stakeholder, its primary interests, and its primary responsibility. This clarity of purpose and accountability reduces complexity and confusion in multi-stakeholder programs. Because of the flexibility of the BRACED approach, close contact with implementing partners and clear lines of reporting help ensure that projects are monitoring and reporting on appropriate indicators (DFID-BRACED, 2015).

NATIONAL GOVERNMENT ADAPTATION M&E FRAMEWORKS

The frameworks reviewed include the following;

- [The Philippines: National Climate Change Action Plan \(NCCAP\) Results-Based Monitoring and Evaluation System](#)
- [Kenya: MRV+ National System](#)
- [Norway: Adaptation Strategy Tracking](#) (this is Norway’s Seventh National Communication which details their adaptation progress in chapter 6, additional resources detailing Norwegian approach referenced in summary)

The majority of national adaptation frameworks have been developed by international consultants for compliance with Paris Agreement commitments or to monitor governments' national climate change action or adaptation plans. Therefore, most of them follow best practices in M&E similar to international organizations and donors—they are results-based and include a theory of change and logic frame. The frameworks reviewed in this report track a range of quantitative and qualitative outputs and outcomes, and in some cases, process indicators as well. Despite the similarities in design, the application at the national scale provides lessons for applying M&E frameworks in urban settings.

CHALLENGES ENCOUNTERED BY NATIONAL GOVERNMENTS, SIMILAR TO CITIES

- ❖ Technical capacity
- ❖ Data availability and access
- ❖ Complexity of multi-sector, multi-stakeholder plans

The sectors vary across country frameworks, but most include all sectors relevant to climate (e.g., agriculture, water, industry, energy, and environmental habitat). All the frameworks have some component of engagement with local counties, cities, or regions to collect data and aggregate outcomes up to the national level.

Table 2. Common components of national government adaptation M&E frameworks reviewed

COMPONENT	DESCRIPTION OF COMMONALITIES
Approach	Results-based framework using an established “theory of change” based on national goals established in climate action plans and to some extent development data that are already being collected
Purpose	Monitoring and reporting on national climate adaptation plans and reporting on international commitments
Scale of application	National-level aggregation from local or regional M&E
Indicators and baselines	Most countries aim to leverage existing M&E systems or existing data to create indicators for adaptation.
Data collection and reporting	Reporting on progress toward national development goals and informing project design
Policy environment and institutional arrangement	<p>National Ministry of Environment or an equivalent agency manages aggregation and coordination and supports local application of the system. An interministerial or cross-sectoral technical working group supports coordination, data sharing, and stakeholder engagement. All frameworks have a policy, law, or regulation that guides or enforces the necessary data sharing, monitoring, and reporting.</p> <p>Most national governments work closely with local agencies to collect project data but do not define who or how local governments collect and report data.</p>

The Philippines: National Climate Change Action Plan (NCCAP) Results-Based Monitoring and Evaluation System

Summary. The Philippines system attempts to phase in a framework that harmonizes and integrates existing climate change M&E systems across the subnational and national level to reduce complexity and leverage overlap.

Approach. The M&E framework was developed using WRI/GIZ guidance (Spearman and McGray, 2011) as a results-based system with a theory of change linking the NCCAP core activities to adaptation outcomes and outputs. Implementation of the framework is divided into sequential time periods: each period has a different type or level of M&E that can feasibly be implemented within the country's constraints. Starting with the short term (through 2016), there was a focus on outputs and short-term outcomes. The intermediate term (through 2022) focuses on evaluation of longer-duration activities, and the long term (up to 2028, the end of the planning period) focuses on continued monitoring and periodic evaluation of output–outcome linkages and impacts. This phased approach will allow the country to build capacity, knowledge, and systems at each step to support implementation.

Purpose. To report on the National Climate Change Action Plan and on the country's international commitments. The country needed a framework to monitor progress of both mitigation and adaptation and a reporting system aligned with its existing medium-term development plan. Integrating mitigation and adaptation and linking with existing planning documents helps put climate change actions into the government mainstream instead of into a silo.

Scale of application. It is a national framework that aggregates project results up from the local level and reports on international commitments.

Indicators and baselines. The country develops indicators on an ongoing basis that measure achievements in line with the Sustainable Development Goals (SDGs) and the objectives of the national action plan. The Philippines is taking a phased approach, drawing initial indicators from existing development plans and data and then easing into more complex data-gathering and coordination. The country starts with data from secondary sources, vulnerability mapping and assessments, simulation models of future impacts, and

PHILIPPINES RBMES INDICATOR FACT SHEET COMPONENTS

- ❖ Level of result
- ❖ Definition of indicator and description of concept
- ❖ Computation
- ❖ Unit of measurement
- ❖ Interpretation of indicator value
- ❖ Unit of analysis
- ❖ Geographical coverage
- ❖ Linkage with other NCCAP Priorities
- ❖ Linkage with existing M&E systems in government
- ❖ Frequency of measurement
- ❖ Data source
- ❖ Lead and contributing agency
- ❖ Feasibility of Indicator (rating and explain)

Source: Government of Philippines, 2015, p. 26

other literature or studies. The majority of indicators are currently process focused, reflecting the challenging context of data availability and intra-agency coordination. The country is developing climate change vulnerability indices and resilience indices to help inform future standardized indicators that will be tracked across national and subnational levels.

Data collection and reporting. A key challenge for national governments and for the Philippines is harmonizing adaptation M&E with all other M&E systems that collect data at the national and local level. The country is considering redesigning the National Integrated Climate Change Database and Information Exchange System to incorporate this data in a future phase.

Policy environment and institutional arrangement. The Philippines published the NCCAP in 2011, following the 2009 Climate Change Act, which establishes a roadmap for adaptation and mitigation actions between 2011 and 2028. The M&E framework incorporates this policy. A Climate Change Commission, overseen by the Office of the President, is leading the work. This high level of prominence and policy driver will ease implementation and signal the importance of the effort to stakeholders (Government of Philippines, 2015; GIZ, 2017a).

Kenya: MRV+ National System

Summary. The Kenyan MRV+ (Monitoring, Reporting and Verification) system is a robust, layered system to improve the flow of financial resources to the country and track synergies and conflicts between adaptation and mitigation. The system has many stakeholders and is significant for the way it has navigated the institutional mechanisms and complex governance of the country.

Approach. The system was born from the National Climate Action Plan and is a results-based framework based on the International Institute for Environment and Development’s (IIED) Tracking Adaptation and Measuring Development (TAMD) framework. In the plan, a theory of change was developed and indicators were proposed international climate finance as the driver for the system.

Purpose. The key purpose is to attract climate funding to fill the large gap in development financing by tracking progress and outcomes of the National Climate Action Plan and support implementation and achievement of targets.

Scale of application. It is a national system that aggregates results from the county level, where much of the political power and control in the country rests.

Figure 7. Two tracks for developing indicators, top-down and bottom-up approach based on IIED guidance



Source: Government of Republic of Kenya, 2012

Indicators and baselines. The Kenya framework identifies two indicator tracks for monitoring, in line with IIED's guidance (figure 7). The first track monitors and evaluates the capacity of institutions to undertake climate risk management, which is useful in governments where there is limited capacity for management of climate action. Improving capacity will ultimately improve outcomes. The second track focuses on the effectiveness of interventions and their impact on broader development efforts (GIZ, 2017b). There are nine indicators within these two tracks using data aggregated from the county level, four indicators at the sector level, and four at the national level. All indicators are quantitative, include process and outcome indicators, and mix existing development indicators (Human Development Index) with new adaptation-focused process indicators (for example, number of counties budgeting and implementing adaptation programs). GIZ reports that the government is already tracking more than 6,000 indicators for development, and the goal of the system was to take advantage of this data, not ask for more data (GIZ, 2017b).

Data collection and reporting. The levels of governance for the MRV+ system are positioned in agencies where there is political leverage to collect data, coordinate activity, and mandate actions, which is key for success. However, Kenya is struggling in data collection. Despite the numerous planning workshops, Implementation is slowed by the complexity of the system, the large number of stakeholders with limited capacity for data collection, and a lack of shared understanding of approaches between different levels of government. Financial resources for more training and stakeholder engagements are needed, according to CDKN (Climate Development and Knowledge Network, 2018).

Policy environment and institutional arrangement The National Climate Change Response Strategy (NCCRS) and the National Climate Change Action Plan govern the country's response to climate change, and they established the National Performance and Benefit Measurement Framework (NPBMF). Significant political power rests with the county government in Kenya, and the bulk of the MRV effort will be at the county level but coordinated through the national Ministry of Environment and Forestry (Climate Development and Knowledge Network, 2018). The governance structure for the program is complex and involves more than 100 stakeholders (GIZ, 2017b), including working groups, forums, and coordination groups at the national and county level (Government of Republic of Kenya, 2012). This provides an opportunity for robust input, but may overburden the system with bureaucracy. With this type of complex, multi-level system, the responsibilities for MRV actions have to be clear among all the stakeholders. Kenya's system is robust, but the large number of actions (and tracking indicators) combined with the complex governance structure has slowed implementation (GIZ, 2017b; Climate Development and Knowledge Network, 2018; Government of Republic of Kenya, 2012).

Norway: Adaptation Strategy Tracking

Summary. The Norwegian system diverges from the common components found in national adaptation M&E systems and identified above in this report. The approach is not currently labeled an M&E system by the country but is more akin to an iterative learning approach

(GIZ,2014a). It is characterized by frequent stakeholder engagement and surveys that monitor changes and cumulate in frequent (every 5–7 years) vulnerability and adaptation assessments.

Approach. In 2013, Norway published a white paper on “Climate Adaptation in Norway” to be used as an adaptation strategy and policy framework. The system for assessments was developed from this document. Norway has taken a measured and phased approach to developing a full M&E system, and the current system focuses on using existing reporting structures and data. The system does not include an evaluation component, but Norway has been iteratively collecting data and context information and regularly feeding it into the design and redesign of policies and projects. As GIZ points out (2014a), this is essentially evaluation, similar to the BRACED framework’s definition of evaluative monitoring, but without the title.

ENABLING LOCAL ACTION WITH KNOWLEDGE

Norway’s focus on disseminating knowledge has shaped urban-level action on adaptation. The national government released guidelines for municipalities on integrating climate change adaptation into their planning processes.

Through the Norwegian Center for Climate Services, the national government provides municipalities with a foundation of knowledge for implementing adaptation action in municipalities through sectoral authorities

Source: Government of Norway, 2018, p.184

Purpose. Primarily learning and knowledge dissemination. Norway started building the current system based on what the country valued most—a solid knowledge and evidence base on vulnerability.

Scale of application. It is a national approach with intense engagement with local government on local context and conditions.

Indicators and baselines. Early piloting of adaptation projects, even before the first assessment was completed, informed development of the data collected and indicators tracked. The system does not have a full list of indicators or a theory of change like the other results-based systems. It is built around frequent national assessments of resilience and requires minimal monitoring inputs and little in additional funding—except for financing of repeated national assessments (which can be costly). The few indicators are process indicators, which are reported annually to parliament to track implementation progress. The national government supplements this data with stakeholder engagement surveys to develop qualitative narrative that puts into context the changes in vulnerability that are shown in the assessments.

Data collection and reporting. The national assessments are informed by all levels of government, and data are provided by cities and regions via regular surveys of municipal actions. Data are pulled from annual budget cycle reporting, structured quantitative surveys, and consultations, and are shared on a national online adaptation web-based platform. As noted, reporting is done annually to parliament.

Policy environment and institutional arrangement. The national government coordinates and reports adaptation efforts. It supports implementation and disseminating knowledge, while implementation of projects is completed at the regional and local level. Disseminating knowledge is core to the system, and several levels of government have authored white papers, guidance, and trainings on adaptation planning and implementation for Norwegian partners (GIZ, 2014b; Government of Norway, 2018).

CITY ADAPTATION M&E FRAMEWORKS

The majority of cities, even in developed countries, have not implemented a full M&E framework in alignment with best practices—results-based and rooted in a theory of change and logic frame. Some cities are participating in established national frameworks as key local stakeholders and implementers of most adaptation projects (Philippines, Kenya, Norway). Results from these cities are not yet available. Yet cities are creating structures for monitoring and evaluating their progress in building resilience and adapting to climate change as they are acting quickly to implement much-needed adaptation projects. While examples of cities implementing robust M&E frameworks for adaptation are scarce, there are a growing number of tools and resources for planning a city M&E framework (see Annex C).

The three systems reviewed here are all from developed countries:

- [Helsinki Adaptation Strategy M&E](#)
- [Rotterdam Climate Proof Program](#)
- [New York City’s OneNYC Plan](#), covered in-depth as a case study in Annex A.
- A fourth system—[Cagayan de Oro’s climate adaptation M&E plan](#)—is covered in an in-depth case study in Annex B, and examines the process for developing an M&E system.

The intention was to review M&E frameworks that are city-led and applied at the local level with some public record of lessons learned. The frameworks differ because of the unique structure and needs of each city, but there are common approaches that can be identified.

Table 3. Common components of city government adaptation M&E frameworks reviewed

COMPONENT	DESCRIPTION OF COMMONALITIES
Approach	There is no one technical approach, but all cities have started with minimal basic structures and plans to increase complexity and breadth of M&E in the future.
Purpose	A focus on public reporting, awareness building in communities, and tracking of public commitments that are published in city adaptation strategies, with a secondary internal learning and knowledge-sharing component.
Scale of application	Local or regional scale
Indicators and baselines	Cities are using existing data to inform limited indicators; most are process indicators. Some outcome indicators are being developed.
Data collection and reporting	The focus on public reporting has led to the development of IT systems and web platforms that easily share data with the public.
Policy environment and institutional arrangement	Responsibility for management of adaptation M&E typically rests with a purpose-created office close to the mayor or an environmental agency. Technical working groups represent sector agencies, utilities, community groups, and private sector.

Helsinki: Adaptation Strategy M&E

Summary. The Helsinki strategy is an exceedingly simple process-based indicator system with the sole purpose of publicly conveying progress on projects identified in the Helsinki Adaptation Strategy. The Helsinki system demonstrates that starting small and using trusted communication media to convey progress is a useful approach that establishes public trust and participation in improving resilience.





Approach. The Helsinki Region Environmental Services Authority (HSY) monitors the implementation of the region’s adaptation strategy, the Helsinki Metropolitan Area Climate Change Adaptation Strategy, published in 2012. Collecting data by project developers, the government publishes process indicators showing progress toward completing actions identified in the region’s adaptation strategy.

Purpose. Build awareness of adaptation efforts internally and for the public, and learn from implementation (EEA, 2016).

Scale of application. The M&E system is applied at the regional scale, beyond one city’s borders. Aggregation of progress is reported at the metropolitan scale, which can be challenging, as climate risk generally does not align neatly with city boundaries, and the actions of a city impact the resilience capacity of neighboring cities.

Indicators and baselines. Instead of quantitative indicators, the system uses a widely known regionally trusted scale of happy faces to communicate progress on process indicators. HSY created a monitoring table (purportedly to be updated annually, although only one table for 2012–2014 is available online) that details the adaptation policy, the actions taken, the actors involved, and the status, indicated by four varieties of “Oiva faces” (figure 8). The Oiva system is a food safety inspection system that displays safety inspection results in the form of happy faces on the outside of food establishments in Finland. The Helsinki strategy is focused only on process (or progress). There are no impact indicators for the metropolitan region to evaluate outcomes of the strategy.

Figure 8. Helsinki Oiva Faces

	Excellent: e.g. plan/project/measure implemented and carried out
	Good: e.g. work or process in progress
	Requires improvement: e.g. planned work, project not started yet
	Poor: e.g. work not started at all

Source: Helsinki Region Environmental Services Authority, 2011

Data collection and reporting. Data collection is done at the city authority level in the region and is shared through a twice-yearly meeting of a technical working group. The HSY also mines data reporting by cities on progress of implementation. Other regional cities are not as far along in planning and implementation of adaptation strategies, and HSY uses the program to share

data, build capacity, and demonstrate good practice, helping to mainstream climate adaptation action into the regional practice.

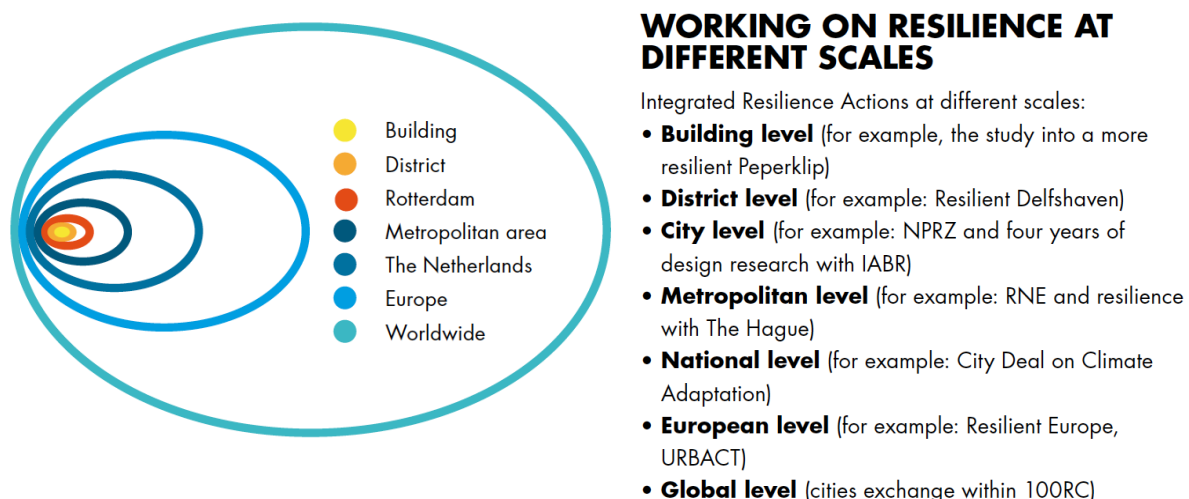
Policy environment and institutional arrangement. The Helsinki region is made up of multiple city authorities with control over their own adaptation strategies and their own targets through the environment programs of each city. The HSY coordinates and aggregates up information about their progress and provides support and guidance on implementation of projects (Helsinki, 2011; EEA, 2016).

Rotterdam Resilience Strategy

Summary. The Rotterdam Resilience Strategy and M&E framework is the most robust structure of the three cities reviewed. The M&E framework for M&E of the resilience strategy includes multiple outcome monitoring indicators across hazard types. The city set an aggressive goal of being “100 percent climate-proof” by 2025, established through a citywide Rotterdam Adaptation Strategy. The strategy focuses on urban development through two overarching goals: building a resilient city and mainstreaming adaptation into everyday decision-making. The Rotterdam approach is a good example of a city that has established a strong framework for M&E that aligns with a core city strategy.

Approach. The framework is tied specifically to the adaptation strategy and involves five dimensions: risks, targets, effort, effect (of implemented projects), and speed. These dimensions are monitored and evaluated for each hazard across different scales: citywide, district level, project level, or across projects (figure 9).

Figure 9. Rotterdam’s approach to working on resilience at multiple scales



Source: Government of Rotterdam, 2016, p. 125

Purpose. Mainstreaming adaptation into governance, closely tracking response and resilience to frequent hazards, and learning about successful implementation. Rotterdam’s focus on mainstreaming and hazards aligns with the risks the city faces: around 90 percent of the city is below sea level (EEA, 2016, p. 84) and flooding is a frequent threat.

Scale of application. The framework is applied at the city scale in Rotterdam.

Indicators and baselines. Indicators are being developed for the hazards in the adaptation strategy: flooding from the river, flooding from the sea, flooding from rain, and heat. An indicator will be developed for each of the five dimensions; for example, river flooding indicators will be developed for changing flood *risk*, achieving *targets*, the *effort* made (inputs and outputs), the *effectiveness* of flood prevention (outcome), and the *speed* with which action is being taken. As of 2016, the city noted that many indicators would be process related as actions are ramping up for implementation. The city may face challenges with the target of “climate-proof” by 2025, as this fixed end does not reflect the reality of resilience as an evolving and changing state, and adaptation as an iterative process. By 2025, the city may be climate-proof against this era’s climate impacts, but risks will continue to change the baseline vulnerability, and the city will need to keep adapting.

Data collection and reporting. The framework is complex and likely is more applicable for cities with robust data, strong data collection processes, and a high level of capacity in all implementing departments/agencies. However, the extensiveness of the dimensions being monitored will give the Rotterdam government a complete picture of its risk exposure and preparedness. Some of the indicators can be tracked using existing data, but others will require new data sources.

Policy environment and institutional arrangement. For each hazard type that the city faces, a “Hazard Coordinator” has been appointed to work with all relevant agencies, utilities, and private sector stakeholders to collect data and track implementation of projects. This focus on organizing the governance around each hazard will support mainstreaming of climate considerations in all agencies and build technical capacity for each hazard (EEA, 2016).

KEY MESSAGES

The key messages for urban adaptation M&E are from the literature review and foundational research on the design of adaptation M&E frameworks (specifically, GIZ, 2014a; ADEME, 2013). The messages cover:

- Framework design: results based, aligned with existing systems and simplified, purpose-driven, iterative, and well-planned
- Framework implementation: data collection, well-defined technical terms, and stakeholder engagement
- Ensuring success of the framework: drivers for cooperation, a defined range of outcomes, transparency, aggregation mapping, organizational structure, and incorporating evaluative monitoring

BEST PRACTICES FOR DESIGNING A FRAMEWORK

Frameworks should be results based

There is no standard approach for urban adaptation M&E frameworks. However, from the review of adaptation M&E at other levels, a results-based framework with a strong theory of change, logic frame, and explicit inputs, outputs, and outcomes is a best practice that defines the results chain and provides the foundation for a successful M&E system. However, context is crucial: An off-the-shelf framework will likely not work for all cities, so they must build their own results-based frameworks that reflect local context. In the meantime, however, cities can use existing data collection and monitoring systems to monitor and evaluate adaptation actions as they are implemented.

Align the adaptation M&E system with existing systems and minimize duplication or additional features that overburden agencies

It is likely that M&E systems are already in place in many cities; few cities will be starting from nothing. Engagement with all city government agencies can reveal such systems and brainstorm creative ways to use them (Philippines, New York City). Several frameworks were created to integrate mitigation and adaptation M&E (Kenya, Philippines), which allows for the identification of conflicts and synergies between the two. The C40 Cities Climate Leadership Group created a tool highlighting potential challenges and opportunities in the integrated implementation of mitigation and adaptation actions.⁶ The case studies in the C40 tool make a strong argument for integrated M&E that can monitor and evaluate mitigation and adaptation actions together, leading to better attribution, a deeper understanding of trade-offs, and potential for shared or reduced costs (ADEME, 2013).

⁶ More information on the C40 tool can be found here https://www.c40.org/blog_posts/new-tool-will-help-cities-understand-interactions-between-mitigation-and-adaptation-actions. For actions identified by a city, the tool presents synergies, trade-offs, risks of mal-investment, and piggybacking opportunities.

Purpose drives framework design

The purpose of an adaptation M&E framework is widely variable and reflects city context. M&E systems aim to answer the questions “Are we doing things right?” and “Are we doing the right things?” (Pringle, 2011, p. 5). But these questions can lead to dramatically different designs. For example, according to the European Environment Agency (EEA, 2016), Rotterdam’s core question is “Are we adapting fast enough?” due to its precarious location in an extremely sensitive flood-prone area. As a result, process indicators and short-term outcome monitoring are important. From the literature review, other purposes for adaptation M&E include accountability, learning, informing policy design, reporting for donors, accessing climate financing, and tracking risk (ADEME, 2013). Differences in purpose may require adjustments or development of unique components, institutional governance structures, and indicators that reflect city context (Pringle, 2011).

Framework design is evolving and incremental

Like adaptation itself, design and application of an M&E system should be iterative. Ideally, design of an M&E framework should be included during the planning of a city’s adaptation strategy, but that is not always possible. Cities must work within time and resource constraints, and reality is often much different from the ideal. Most cities start small with simple plans and limited indicators, for example, one progress indicator for all proposed projects (Helsinki). Cities can then scale up over time as capacity increases and more data are gathered (GIZ, 2014a; New York City case study). This helps limit the amount of startup funding needed and allows for adjustments. The key point is to align the adaptation strategy or guiding document with the M&E framework, and as each evolves, update them regularly to stay in alignment.

Indicator development should be well-planned, use a stepwise approach, and be initiated early in the planning process

“Indicators quantify information so that its significance is more readily apparent, and they simplify information about complex phenomena so as to improve communication” (Clean Air Partnership and ICLEI, 2015, p. 47).

There are multiple indicator selection processes and sets of indicators identified in the literature (ADEME, 2013; Clean Air Partnership and ICLEI, 2015; Pringle, 2011). Below is a selection of best practices identified from the reviewed frameworks and the literature.

- Indicator selection should be guided by the M&E framework and purpose.
- Indicators should be chosen through a participatory stakeholder engagement process (PPCR).
- Stakeholders should first examine existing data and think creatively about using the data to inform adaptation indicators (New York City).
- Qualitative indicators should complement quantitative metrics to create a narrative around the data that will clarify attribution of projects or policies to adaptation outcomes (World Bank, 2017; Pringle, 2011).
- Where possible, employ dynamic baselines and establish regular revisiting of indicator baselines to determine if they are still relevant and accurate (EEA, 2016).

- Develop a mini logic frame for each indicator and provide guidance on calculating or collecting data (Kenya, PPCR).
- Provide a structure or grouping of indicators aligned with local climate adaptation strategies and plans (Rotterdam).

EASING AND ENHANCING IMPLEMENTATION

Find the right balance between robust and practical data collection

Cities should carefully balance data needs with data availability when designing indicators. The literature review found contrasting experiences to illustrate this point. Some cities started with limited, existing data and then adjusted up to include adaptation-focused data (New York City), while large donor organizations (PPCR, GEF) started with hundreds of indicators and adjusted down to just a couple of dozen or fewer. Stakeholders should be selective in identifying the data they absolutely need for the M&E framework and not overburden agencies with additional data collection. Engaging stakeholders to think creatively about using existing data to support indicators can minimize adding to the data collection burden (PPCR).

Establish shared definitions and explicitly define technical terms

While there are common terms in the M&E field, the application of these terms in adaptation M&E is not consistent. Additionally, most city officials are not M&E experts, and the nuance between terms like outcome and output are not widely understood. Targeted stakeholder consultations or workshops for participating agencies can help build capacity and create a shared understanding of M&E terms (BRACED). Scorecards or guidance notes for indicator reporting also provide a level of standardization that can ease aggregation and reporting (PPCR, BRACED).

Input to and ownership of M&E is needed across all sectors of local government, and stakeholder engagement is an opportunity for capacity building

Coordination and reporting for M&E indicators may be done through a central administration unit, but sector-level input and guidance are needed to design and implement relevant theories of change within each sector (World Bank). Technical knowledge and skill within the sectors are key to understanding what adaptation will look like in each sector and what data are reasonable and available for supporting indicators. City infrastructure is often impacted by a range of vulnerabilities that are not related to climate change, but will be exacerbated by it; for example, deterioration caused by age, over usage, and lack of maintenance. Applying a theory of change approach at the sector level (and project level) can help clarify the type of outcome that is expected depending on the existing conditions, and test assumptions about the impact of interventions on resilience (World Bank, 2017; EEA, 2016). Stakeholder engagement, working groups, and workshops are opportunities to build capacity of key M&E staff. As shown in many of the systems reviewed, the continual process of identifying and reporting on indicators and supporting data collection with guidance documents builds the knowledge of all stakeholders (Kenya, Norway).

ENSURING SUCCESS

Create a regulatory or legal driver for adaptation M&E

Across most of the frameworks, there was a policy or regulatory driver that encouraged or mandated cooperation and coordination from stakeholders. A local or national climate change law is present in many of the national and city frameworks reviewed (Kenya, Norway, Philippines, New York City). This creates an enabling environment and encourages collaboration, providing an opportunity to better mainstream climate change action into governance. Local governments often do not have the jurisdiction or authority to collect or access data on all indicators on their own (see New York City case study), particularly for sectors that are controlled by national government or involve private utilities or service companies. A formal mandate will allow local government to request cooperation on data collection (GIZ, 2014a).

Define success as a range of outcomes, keeping in mind shifting baselines

Successful adaptation may often mean the avoidance of disaster or stabilizing rapidly deteriorating circumstances, or just making a situation “less bad.” This means thinking strategically about defining success and identifying outcomes that include a range of possibilities as conditions shift. For example, as sea levels rise the definition of successful adaptation to flooding from storms in the short term may mean hardening infrastructure to floods, but in the long-term may mean safe retreat from flood-prone areas. In some cases, mapping different outcomes to different time periods will give the flexibility to incorporate changing baselines into M&E (Turner et al., 2014, p. 20).

A shared monitoring system and/or interactive online platform for data sharing can increase transparency

Technology eases the coordination and data collection burden and can feed data directly into a public-facing platform to continuously update the public on progress or outcomes. Public data-sharing platforms provide transparency on how funds are being spent (New York City).⁷ Graphics of adaptation can engage the public and internal stakeholders, raise awareness about the city’s efforts (Helsinki), and help to mainstream climate adaptation and resilience considerations (ADEME, 2013).

Map out aggregation levels based on the purpose of the framework

A citywide adaptation M&E framework may need to aggregate horizontally (across sectors or themes) and vertically (from projects and neighborhoods). Mapping out the level of aggregation (which sectors are involved, which stakeholders to engage) will help clarify the level of indicator standardization needed. For example, PPCR has five standard indicators with the same metrics in order to aggregate up to the global scale. In Norway, the framework is vertically aggregated (from municipal to regional level) but does not require standardized metrics because the purpose is learning and knowledge sharing. Scorecards can also help to put metrics to

⁷ Boston also has a public-facing adaptation project tracking site: <https://www.boston.gov/departments/environment/climate-ready-boston#tracker>

qualitative indicators for aggregating vertically. A key challenge is incorporating the lessons from experiences within the project cycle, when aggregation and reporting take time to complete (Price-Kelly et al., 2015).

Establish an organizational structure and institutional mechanisms that support and ease implementation of the framework

Building resilience and adaptation M&E requires behavioral and organizational change (Clean Air Partnership and ICLEI, 2015). Government and institutions must shift their organizational structure to be more collaborative and coordinated in their efforts. Robust M&E systems require transparent governance with clear roles and responsibilities. Key roles include:

- A coordination entity with enough influence and power to convene stakeholders and request data
- A technical working group with representation from each sector, including important community groups, the private sector, utilities, and academia
- A champion or expert in each department or implementing agency
- Clear data-sharing policies and procedures that include templates or excel sheets pre-populated for indicator data collection (Kenya, PPCR)
- Structure and funding for capacity building and outreach to build awareness and incorporate lessons learned (PPCR)

Ensure evaluation is not an afterthought: incorporate aspects of evaluative monitoring into the M&E framework

Evaluation is not yet a strong part of any national or subnational adaptation M&E framework, and in frameworks that do include it, it is not treated uniformly (Philippines, Kenya) (GIZ, 2014a). Evaluation should be planned for and thought through as thoroughly as monitoring, and the evaluation plan should reflect the results framework. The success of evaluation is dependent on the data collected during monitoring (ACT, 2013). Evaluation periods should be planned to take advantage of policy design and proposal processes so that lessons learned through adaptation M&E can inform new policy/project design. This requires knowledge sharing to be built into M&E design. To better understand attribution, practicing the evaluative monitoring characterized in the BRACED framework can enrich understanding of adaptation successes and failures (DFID-BRACED, 2015).

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ANNEX A – CASE STUDY: NEW YORK CITY

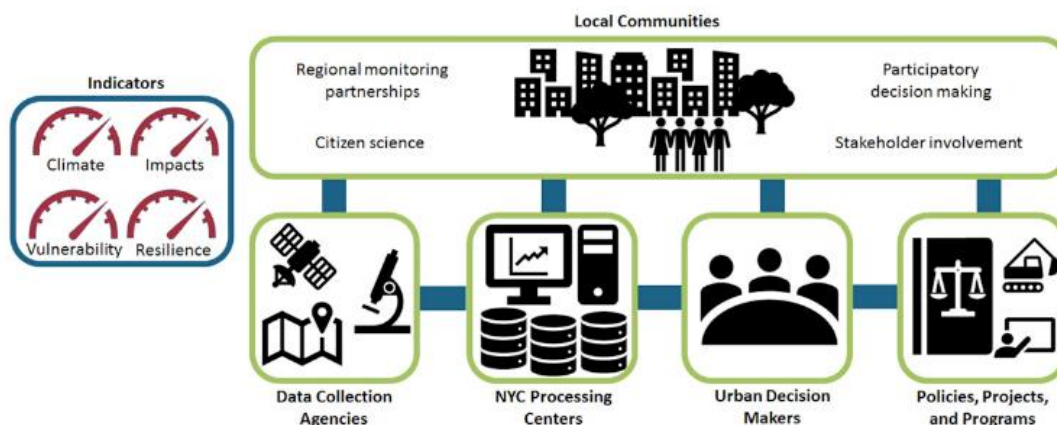
ONE NYC: MONITORING NEW YORK CITY’S CLIMATE CHANGE ADAPTATION MEASURES

SUMMARY

New York City is in the middle phase of developing a framework for adaptation M&E but has already established a structure and reporting requirements for monitoring current adaptation actions. In the near term, the city is focused on project progress monitoring through OneNYC. The OneNYC report is the city’s integrated climate change mitigation and adaptation action plan, and it established the structure for monitoring and reporting on adaptation indicators. Currently, the city is focused on data collection for limited quantitative indicators and is oriented toward recurring climate risk assessments.

In 2010 the New York City Panel on Climate Change published a report establishing climate trends and projections for the region, identifying a risk-management framework for the city’s infrastructure, and proposing monitoring climate change risk and resilience measures. The report suggested establishing Flexible Adaptation Pathways, described as response strategies that adjust over time based on frequent climate risk assessments and evaluation of adaptation strategies. This concept addresses the issue of shifting baselines and focuses on flexibility and adjustments from lessons learned. In 2015 the panel published an updated report recommending the city establish a Climate Resiliency Indicators and Monitoring System to collect and analyze the data needed for the Flexible Pathways. The process of examining existing indicators and proposing their harmonization and expansion is ongoing, and the panel recently publish an update for 2019. This report will support the city government’s process of developing a proposed New York City Climate Change Resilience Indicators and Monitoring system.

Figure 10. Prototype structure for the planned resilience M&E system in NYC



Source: Blake et.al, 2019, p. 235

PURPOSE

The primary purpose of the current system is to publicly report on adaptation-related indicators in the OneNYC plan. The planned Resilience and Indicators Monitoring system (figure 10) is designed to feed data into climate resilience assessments and provide lessons learned.

INDICATORS AND BASELINES

The city developed climate resilience indicators by engaging with stakeholders to identify data that are already being collected and assessed (figure 11), and analyzed how the data could be adapted for use as resilience indicators: for example, using the number of heat advisories a year, or impact indicators, like heat-related morbidity and excess mortality from extreme heat events; social vulnerability indicators like disparity in households without air conditioning; and resiliency progress indicators, like percentage of flood-affected areas with improved storm drainage or acres of restored coastal wetlands.

The section of the One NYC Plan devoted to adaptation and resilience is Vision 4, “Our Resilient City.” Goals are presented as developing resilience in four categories—for Neighborhoods, Buildings, Infrastructure, and Coastal Defenses—and indicators were developed for each goal. Each goal has a number of initiatives underneath it, and there are no indicators for the individual initiatives; only the progress of implementation is tracked. The elevation of indicators to the goal level eases the data collection and monitoring and reporting process. The city is planning to expand these indicators and add more granular detail. The 2019 report by the New York City Panel on Climate Change cites a number of possible indicators for the energy and transportation sectors, the sectors with the most readily available data (Blake et al. 2019, p.231).

The indicators per goal are as follows:

Neighborhood resilience:

- Increase in the capacity of accessible emergency shelters to 120,000
- Increase the rate of volunteerism among New Yorkers to 25 percent by 2020

Building resilience:

- Increase the number of flood insurance policies across the city
- Increase the square footage of buildings upgraded against flood risk
- Increase the number of elevated homes in the Build-it-Back program

Infrastructure resilience:

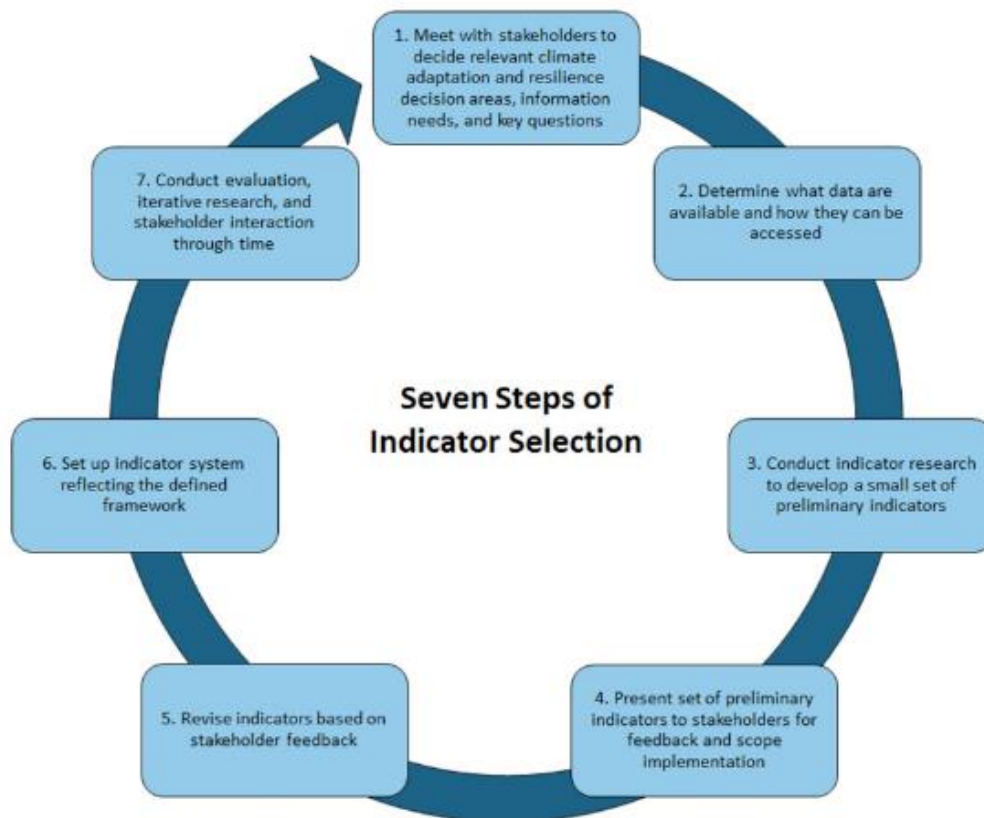
- System Average Interruption Frequency Index (SAIFI) per 1,000 customers
- Customer Average Interruption Duration Index (CAIDI) in hours
- Increase the percentage of hospital and long-term care beds benefitting from facility retrofits for resilience

Coastal Defense resilience

- Increase in linear feet of coastal defenses completed
- Increase acres of coastal ecosystems restored

A new version of OneNYC in development is attempting to make initiatives and goals more data driven to capture specific measurable concepts that link to resilience. The city has been wary of committing to indicators that do not have an existing method for establishing baselines or tracking. As a result, process indicators that enable data collection (for example, the purchase and placement of flood sensors) are the current focus.

Figure 11. Indicator selection process used by New York City



Source: Blake et. al. 2019, p.232

DATA COLLECTION AND REPORTING

Data is collected through a wide range of agencies, utilities and in some cases, the private sector. The city is trying to move toward monitoring of climate risk through site-based instruments and remote sensing. For example, the city currently relies on a tally of 311 reporting, which is inherently imprecise and unreliable. As noted, the city is considering purchasing flood sensors that can remotely sense and measure incidence of flooding, and it is working to find the right process for locating, placing, and maintaining the sensors.

The system of data collection and integration is multilayered and complex, requiring inter- and intra-governmental coordination. Some data are difficult to collect because of ownership and privacy concerns. For example, Con Edison (power company) is a close partner with the city, but is sensitive about sharing data regarding power outages. The city currently relies on 311 reporting for this indicator even though there are more reliable data.

Annual progress reports provide updates on limited quantitative indicators, which is supported and enhanced by qualitative data and narrative with photos. This combination of quantitative and qualitative reporting provides context and supports a fuller picture of progress toward achieving initiatives. It also makes the report highly engaging and reader friendly to a general audience. For example, the report includes photos of awareness-building actions and community engagement meetings along with reporting on intermediate milestones in important large, long-term projects, like a seawall. In addition, stories about individual New Yorkers punctuate the report, identifying benefits that are accruing from resilience actions. For example, workers are participating in construction training and get new jobs on construction sites building back infrastructure damaged by Hurricane Sandy. These anecdotes give depth to the story of NYC's successes in building resilience and provide personal interest and an example of benefits for individuals. It can be difficult to align the qualitative and quantitative indicators to show a fuller picture of progress. It is important to tie the narrative stories to direct outcomes in the public reporting, clarifying the attribution of non-infrastructure projects to outcomes.

Annual reporting is augmented with a public project implementation tracking platform, the OneNYC Resilience and Recovery Project map,⁸ which provides real-time detailed project data. The map identifies thousands of projects that impact resilience across the city with data on cost and implementation. The OneNYC plan is complex and has a large number of actions and subactions. The public project map provides straightforward, hyper-local information on neighborhoods building resilience in a visual, easily digestible format.

POLICY ENVIRONMENT AND INSTITUTIONAL ARRANGEMENT

The Mayor's Office of Recovery and Resilience (ORR), created in 2014, is tasked with coordinating all efforts related to resilience actions under OneNYC. New York City has used the development of local laws to mandate reporting on climate change, both mitigation and adaptation. Local law 17, established in 2008, requires creation of a comprehensive environmental sustainability action plan for NYC (OneNYC) and put in place a governance framework for sustainability. The ORR is a part of this structure, along with the Mayor's Office for Sustainability, which focuses on mitigation. The proximity of these offices to the Mayor's Office elevates the political importance of the offices and eases coordination.

The ORR coordinates and facilitates a technical working group, the Climate Change Adaptation Task Force (CCATF). The CCATF includes stakeholders from all government agencies, utilities, and the private sector. It allows the ORR to share the latest climate science and lessons learned

⁸ Access the map and explore progress on projects here <https://www1.nyc.gov/site/orr/projects/projects.page>.

on implementation of adaptation actions across all sectors. This is accomplished through quarterly meetings and periodic workshops.

The ORR and NYC's broader adaptation planning work is advised by the New York City Panel on Climate Change, a panel of experts convened by former Mayor Michael Bloomberg in 2008. The panel includes climate scientists, experts from academia and the private sector, and has produced three reports on climate projections, risk, and adaptation. Within one year of publication of Intergovernmental Panel on Climate Change assessment reports, the panel is required to produce projections and interpretations of climate science for the region. This ensures that relevant and updated climate science is available to all city agencies to use for planning and project development, giving them the ability to create and monitor baseline data. The panel also advises ORR on communication approaches. This approach leverages expertise and knowledge outside of ORR (which has a small team) to deliver highly technical work and expand their own internal efforts. It also ensures a diversity of perspectives outside the public sector that can strengthen the approach to adaptation. Smaller cities can also engage with academia to support interpretation of global climate science for local application. The OneNYC plan has a specific focus on working closely with communities across the city on measuring neighborhood resilience challenges and co-producing community-based adaptation actions. Going beyond traditional engagement or consultation, the city government is committed to including community groups as full partners in adaptation action development.⁹

⁹ Cited in this case study: Solecki et al., 2015; New York City Office of Recovery and Resilience, Tomi Vest and Susanne DesRoches, personal communication, January 8, 2019; The City of New York. (2017). "OneNYC 2017 Progress Report.

ANNEX B – CASE STUDY: CAGAYAN DE ORO, PHILIPPINES

DEVELOPING A MONITORING AND EVALUATION SYSTEM FOR CAGAYAN DE ORO’S LOCAL CLIMATE CHANGE ACTION PLAN

SUMMARY

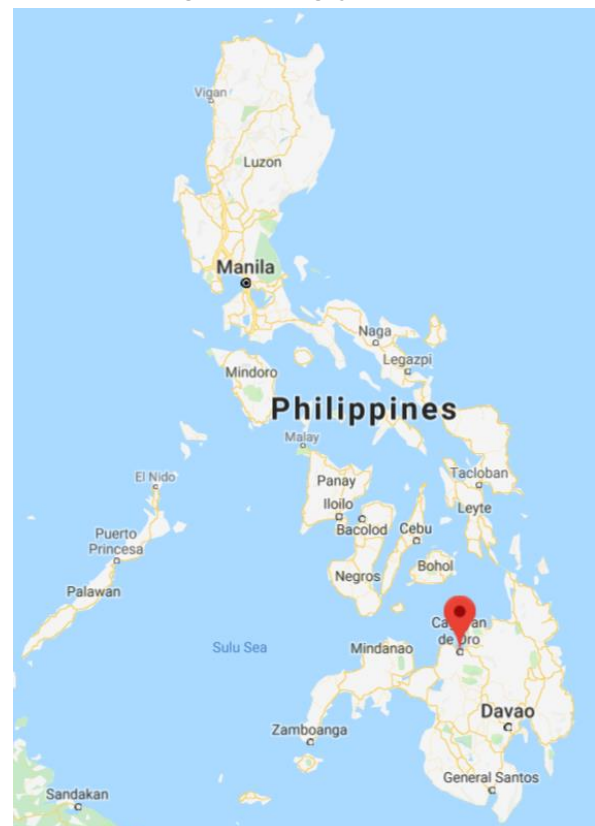
Following the 2010 National Framework Strategy on Climate Change, the Government of the Philippines developed its first National Climate Change Action Plan (NCCAP) and an accompanying Results-Based Monitoring and Evaluation System (RBMES) to structure its climate change adaptation (CCA) efforts. The government also passed the 2012 Climate Change Act, which requires cities and other local government units (LGUs) to develop their own Local Climate Change Action Plans (LCCAPs).

The midsized city of Cagayan de Oro (CDO), located on the island of Mindanao, faces a number of natural hazards that will likely be exacerbated by climate change, including storm surge, flooding and landslides. The USAID Adaptation Thought Leadership and Assessments (ATLAS) project identified CDO as an ideal candidate to pilot CCA M&E efforts, as city officials completed a revision of the city’s LCCAP in 2019, and reform-minded leaders were eager to incorporate results-based M&E processes into the city’s CCA activities.

PURPOSE

City officials in CDO developed the LCCAP with the support of UN HABITAT between 2018 and 2019. LCCAP development required the collaboration of nine city departments as part of an LCCAP Technical Working Group. Following the national guidelines, the LCCAP included the latest climate vulnerability assessment data and a list of the city’s projects, programs and activities (PPAs) that have a CCA component. National guidelines do not stipulate the format for an LCCAP M&E plan; therefore, city officials were given the freedom to choose the format. City officials wanted an M&E plan that would allow them to scale up over time as the M&E capacity of staff

Figure 12. Cagayan de Oro



increased, an M&E plan that would allow city officials to assess the outputs and outcomes of CCA activities in order to make informed decisions about allocating a limited budget, and an M&E system that was results-based, which could be a model for the government as officials sought to improve M&E efforts citywide.

ASSESSMENT FINDINGS

ATLAS conducted group and individual assessments of M&E capacity using an adapted version of the [MEASURE Evaluation project’s Monitoring and Evaluation Capacity Assessment Toolkit \(MECAT\)](#).¹⁰ The MECAT evaluates national health systems; therefore, ATLAS adapted the toolkit to assess the capacity of a secondary city to meet its CCA goals. The results of the assessment demonstrated that while some individual (and mostly senior) staff had knowledge of and experience with M&E, the city overall has limited capacity in many critical aspects of M&E. Most notably, there was no routine monitoring system to gather citywide or cross-cutting data and no capacity to conduct evaluations. As summarized in Table 1, 8 of 12 domains (areas of competency evaluated using MECAT) received a score of zero or one, meaning the city either had no components/competencies present under that domain, or only one component/competency present under the domain. Mixed scores indicate that the city had at least two components/competencies present.

Table 4. Summary of scores for the 12 domains of the M&E systems assessment

ZERO SCORES FOR THE DOMAIN	ZERO SCORES, WITH ONE EXCEPTION	MIXED SCORES FOR THE DOMAIN
Evaluation and Research	Organizational M&E Plan	Organizational Capacity
Data Quality Assessment	Survey and Surveillance	Human Capacity for M&E
Costed M&E Work Plan	Data Demand and Use	Partnerships and Governance
	Routine Monitoring	Culture
	Databases	

Challenges in CCA planning

While the MECAT pointed to limited M&E capacity in CDO, key informant interviews pointed to structural challenges in the way the national government rolled out the LCCAP requirement: the LCCAP has no designated management structure, no funding requirement and no reporting requirements. The national government requires municipalities to create an LCCAP, and after that, management of the plan is left entirely to the municipality. As a result, in CDO, while climate change is mainstreamed, there is no designated authority responsible for overseeing the LCCAP or for achieving results on a day-to-day basis, and no dedicated source of funding for adaptation investments. The LCCAP names nine departments and 22 individuals who are responsible for the plan’s activities, and the departments manage these efforts independently with no obligation to prioritize or report CCA-related performance. In the absence of a coordinating department and an M&E plan, the LCCAP did not develop new objectives and

¹⁰ The Monitoring and Evaluation Capacity Assessment Toolkit (MECAT) guides an assessment of an organization’s M&E capacity, identifies gaps and indicates areas to strengthen the organization’s capacity for improving the M&E system. MECAT’s assessment process uses four methods: (1) participatory group assessment; (2) individual self-assessment; (3) key informant interviews; and (4) a desk review.

activities; rather, the plan consisted of current activities from other city plans, such as the City’s Comprehensive Land Use Plan, the Comprehensive Development Plan and departmental annual work plans.

The purpose of M&E is to support decision-making by managers and measure the effectiveness of activities. The lack of management structure, funding and reporting requirements for the LCCAP limits the usefulness of any M&E that CDO might conduct.

Differing practical application of M&E

M&E in CDO deals strictly with financial and physical accomplishment reporting and does not measure the effectiveness of activities through output and outcome indicators. CDO has a City Project Monitoring and Evaluation Committee (CPMEC) that meets regularly. However, the committee is chaired by the city accountant and it reviews projects for financial performance and ensures that work is verified before payments are authorized. Accordingly, M&E staff support the CPMEC financial review but do not conduct higher-level monitoring of activity outputs and outcomes or evaluation. Given this focus on financial and progress reporting, city staff lack capacity in results-based M&E, and the M&E system does not have mechanisms for capturing output and outcome data.

Focus on disaster risk reduction and management

Both the national government and CDO city government put more emphasis on disaster risk reduction and management (DRRM) than on CCA (see Table 2). The city has a fully staffed City Disaster Risk Reduction and Management Department (CDRRMD) that holds quarterly management meetings. The CDRRMD is supported by a nationally mandated disaster fund, which is funded at the municipal level through a set-aside of 5 percent of the budget. The CDRRMD also has its own implementation plan with a robust M&E plan—which received USAID support—and is required to report up to the national level. However, despite these advantages, the CDRRMD has yet to operationalize its routine monitoring indicators, struggles to collect necessary data from other departments and does not conduct evaluations. This suggests that developing an M&E system for the less well-resourced issue of CCA—particularly in the absence of a strong mandate and coordinating body—will be a significant challenge.

Table 5. Comparison of climate and disaster plans’ potential for monitoring and evaluation

	LCCAP	DRRMP
Authority	No individual or central coordinating department functionally managing LCCAP	CDRRMD department head clearly mandated to implement DRRMP
Funding	No dedicated funding source	Local Disaster Risk Reduction and Management Fund
Staffing	No dedicated staff	Staffed to implement DRRM
Demand	No demand for results	Demand from multiple levels (national, regional and local)
Reporting Requirements	No progress reporting requirement	Quarterly meetings; reporting requirement through the Office of Civil Defense
M&E Status	No M&E plan	M&E plan exists but not implemented

M&E FRAMEWORK

To account for low capacity and less than ideal institutional and regulatory arrangements, ATLAS developed a proposed M&E framework based on the national equivalent—the RBMES—which was developed to measure the results of the . This framework is in keeping with national government expectation as stated in the RBMES that LGUs will measure their own progress toward achieving CCA objectives (Government of Philippines, 2015). Thus, the suggested LCCAP M&E system follows the RBMES example, using a logical framework approach to organize interventions and planned results to enable analysis.

ATLAS also used the national RBMES as a starting point—with its two ultimate outcomes, seven strategic priorities and seven intermediate outcomes—to develop LCCAP objectives. ATLAS compared CDO’s planned actions (PPAs listed in the LCCAP) to the national framework and selected the most relevant national outcomes and priorities (Table 3). This process aligned the M&E plan to national objectives and priorities, and reduced the number of LCCAP objectives to an actionable number—from 32 “Enhanced Development Objectives” and 18 “Climate Objectives” to two ultimate outcomes and five intermediate outcomes. If the national government requires LGU reporting in the future, the LCCAP M&E Plan will be organized to facilitate reporting. As in the RBMES, the LCCAP M&E System includes a range of indicators (quantitative and qualitative; output and outcome) to give a full understanding of the impact chain.

Table 6. NCCAP strategic priorities aligned with CDO LCCAP PPAs and policies

NCCAP Ultimate Outcomes	Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change				Successful transition toward climate smart development
NCCAP Strategic Priorities	Food Security	Water Sufficiency	Ecological & Environmental Stability	Human Security	Climate Smart Industries and Services
NCCAP Intermediate Outcomes	Availability, stability, accessibility to safe and healthy food ensured amidst CC	Water resources sustainably managed and equitable access ensured	Enhanced resilience and stability of natural systems and communities	Reduced risk to the population from CC and disasters	Climate-resilient industries and services developed, promoted and sustained.
LCCAP PPAs and Policies	<u>PPAs</u> <ul style="list-style-type: none"> • 6—Integrated Coastal Resource Management (ICRM) Plan • 7—Agroforestry (SALT) • 10—Agricultural infrastructure (water storage / irrigation) • Fisheries management ordinance 	<u>PPAs</u> <ul style="list-style-type: none"> • 2—Reforestation • 8—Green pocket parks • 10—Agricultural infrastructure (water storage /irrigation) • Rainwater harvesting rules • Drainage plan • Groundwater extraction policy • Recharge interceptors for slope-side construction design 	<u>PPAs</u> <ul style="list-style-type: none"> • 1—Eco Park • 2—Reforestation • 4—Coastal reforestation & wave breakers • 6—ICRM Plan • 8—Green pocket parks • 9—Conversion of flood danger zones • Marine ordinance 	<u>PPAs</u> <ul style="list-style-type: none"> • 3—Resettlement action plan • 9—Conversion of flood danger zones • Conversion of danger zones into ecoparks and detention ponds ordinance 	<u>PPAs</u> <ul style="list-style-type: none"> • 5—Transport Study • Tourism master plan toolkit

RESULTS MATRIX AND INDICATORS

Following the national RBMES framework, the proposed M&E system for the LCCAP developed by ATLAS uses a results matrix to show the connection between “Ultimate Outcomes,” “Intermediate Outcomes” and “Output Areas” organized by strategic priority, with corresponding indicators (Table 4). Each indicator proposed for the LCCAP M&E system is fully described using an Indicator Fact Sheet, the template for which is drawn from the RBMES. Keeping the same format as the national M&E system helps streamline training efforts and minimize confusion.

Table 7. LCCAP results matrix

LCCAP Ultimate Outcome	Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change (NCCAP)			
Ultimate Outcome Indicators	<i>Percent population living in areas deemed high risk to hazards</i>			
LCCAP Strategic Priorities	Human Security	Ecological & Environmental Stability	Food Security	Water Sufficiency
LCCAP Intermediate Outcomes	Reduced risk to the population from CC and disasters	Enhanced resilience and stability of natural systems and communities	Availability, stability, accessibility to safe and healthy food ensured amidst CC	Water resources sustainably managed and equitable access ensured
Intermediate Indicators	<ul style="list-style-type: none"> • <i>Number of deaths and injuries due to extreme weather events</i> • <i>Value of property damage due to extreme weather events</i> 	<ul style="list-style-type: none"> • <i>Percent forest cover</i> • <i>Number of hectares of mangrove cover</i> • <i>Percent healthy coral</i> • <i>Percent heavy rainfall events leading to flooding</i> 	<ul style="list-style-type: none"> • <i>Number of hectares of marine protected areas</i> • <i>Percent change in catch for fisherman</i> • <i>Crop losses during drought event</i> 	<ul style="list-style-type: none"> • <i>Number of hectares under irrigation</i>
Output Areas (PPAs/Policies)	<ul style="list-style-type: none"> • Resettlement/ Conversion of danger zones (PPAs 3, 9) 	<ul style="list-style-type: none"> • Reforestation (PPAs 1, 2, 8, 9) • Rehabilitation of marine area and rivers (PPAs 4, 6, marine ordinance) 	<ul style="list-style-type: none"> • Agricultural infrastructure (PPA 10) • Agroforestry (PPA 7) • Sustainable fishing (PPA 6, fisheries mgmt. ordinance) 	<ul style="list-style-type: none"> • Reforestation (PPAs 2, 8) • Agricultural infrastructure (PPA 10) • Water management policies
Output Indicators	<ul style="list-style-type: none"> • <i>Number of households in danger zones</i> • <i>Number of vulnerable residential houses not compliant with the building code</i> 	<ul style="list-style-type: none"> • <i>Number of trees planted</i> • <i>Number of community planting efforts</i> • <i>Number of hectares marine area rehabilitated</i> • <i>Number of meters of riverbank rehabilitated</i> • <i>Number of environmental policies analyzed, drafted, approved and implemented</i> 	<ul style="list-style-type: none"> • <i>Number of irrigation or retention ponds constructed</i> • <i>Number of climate-resilient seeds/seedlings distributed</i> • <i>Number of farmers trained in SALT</i> • <i>Fisheries ordinance analyzed, drafted, approved and implemented</i> 	<ul style="list-style-type: none"> • <i>Number of trees planted</i> • <i>Number of community planting efforts</i> • <i>Number of irrigation structures constructed</i> • <i>Number of water management policies analyzed, drafted, approved and implemented</i>

DATA COLLECTION AND REPORTING

In general, quantitative and qualitative data should be collected by the department in charge of managing the PPA, using the methods and processes established by the LGU department or relevant national government department or office, as applicable. Field data in CDO is typically collected on paper, and digitization of these records is infrequent and spotty. The city will need to begin collecting data in a database, by either moving to a tablet-based system, or manually entering data from paper records into the database. For now, data storage and security measures will likely be limited to maintaining a standard Excel-based indicator tracking tool in each office to ensure data are recorded uniformly across all offices.

Currently, the city does not report on LCCAP results, although there is a requirement under the 2012 Climate Change Act to produce “annual progress reports on the implementation of their respective local action plan.” CDO does compile and publicly release a “City Mayor’s Annual Report” however, which details the city’s accomplishments, particularly on infrastructure. Given that a number of activities in the LCCAP are infrastructure projects, and all have a positive impact in reducing the community’s risk, the city ultimately would like to incorporate output and outcome data from LCCAP activities into the mayor’s report.

KEY MESSAGES

The CDO case study illustrates three important points:

- *Cities cannot develop a CCA M&E system without having M&E systems and processes in place.* That does not mean a city that lacks robust M&E systems should not bother with CCA M&E, but rather city officials need to incorporate M&E for CCA activities into efforts to improve broader monitoring and evaluation systems. It is important to carefully assess a city’s M&E capacity and develop a plan customized to the city’s institutional arrangement and capacity.
- *Support from the national government—including funding, regulations, guidance, and training—is an important element of success for cities in developing countries to create and implement climate adaptation plans.* The assessment in CDO revealed additional challenges within the LCCAP development and rollout that were important to note when designing an M&E system and will be essential to address going forward. This mismatch between expectations and capacity at the national and sub-national levels is a common issue in decentralized systems.
- *Cities and organizations that support cities need to take a pragmatic approach to designing M&E systems that work with existing capacity.* As noted in the literature review, cities will have different purposes driving their M&E efforts, and different capacities. The inclination of officials and consultants is often to develop an M&E plan based on international best practice, with little thought to how the city will use a complex plan. The experience in CDO shows that the city needs an approach that scales up over time as city staff build capacity and city officials work toward a results-based citywide system.

ANNEX C: ADDITIONAL TOOLS AND RESOURCES

URBAN M&E TOOLS

- The Global Covenant of Mayors for Climate and Energy Monitoring and Reporting template and scoreboard is an Excel-based tool with suggested process-based, vulnerability, impact, and outcome indicators.
<https://www.globalcovenantofmayors.org/participate/tools-for-cities/>
- C40 cities have developed two related (although not specifically M&E-focused) tools for city adaptation action, and one M&E focused guide. Tools are available at:
<https://resourcecentre.c40.org/>
 - Adaptation and Mitigation Interaction Assessment tool
 - The Climate Action Planning Framework (has adaptation-focused guidance)
 - Measuring Progress In Urban Climate Change Adaptation: MER Framework
- UKCIP AdaptME Toolkit <https://www.ukcip.org.uk/wizard/adaptme-toolkit/>
- RESIN is a project supporting decision-making for climate resilient cities and infrastructure in Europe. It created an E-guide for adaptation planning and implementation. <http://www.resin-cities.eu/resources/e-guide/>
- The World Bank Resilience Rating Tool, in development for launch in 2019 (World Bank, 2019)
- International Institute for Environment and Development's (IIED) Tracking Adaptation and Measuring Development (TAMD) framework: <https://www.iied.org/tracking-adaptation-measuring-development-tamd>
- GIZ's Adaptation M&E toolbox: <https://www.adaptationcommunity.net/monitoring-evaluation/toolbox/>

TOOLS FOR MEASURING RESILIENCE

Frameworks that focus on climate impacts in the urban context are limited, but recently a focus on urban resilience has resulted in frameworks that provide a structure and indicators for measuring the resilience of cities. All include climate in their assessment. These frameworks provide a starting point for understanding the resilience of a city and the shocks and stresses it faces now and in the future. Frameworks include:

- [USAID Urban Resilience Measurement Approach Guide](#)
- [ARUP City Resilience Index](#)
- [The World Bank's City Strength Diagnostic](#)
- [Notre Dame Global Adaptation Initiative](#)
- [Rockefeller 100 Resilient Cities \(RC\) City Resilience Framework](#)
- [New York City Panel on Climate Change 2019 Report](#)

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