THE LOW CARBON CITY DEVELOPMENT PROGRAM (LCCDP) GUIDEBOOK

A Systems Approach to Low Carbon Development in Cities

DRAFT FOR CONSULTATION
This Guidebook was developed by the World Bank and DNV KEMA Energy & Sustainability to provide guidance to cities and urban practitioners on designing and implementing a Low Carbon City Development Program (LCCDP) that complies with the LCCDP Assessment Protocol. An LCCDP is a systems-approach to low carbon development, including a framework and comprehensive set of requirements, that helps cities to plan, implement, monitor and account for low carbon investments and climate change mitigation actions across all sectors over time. The main content of the Guidebook is presented in four sections that correspond to the stages of LCCDP development: Initiation, Planning, Execution, and Assessment/ Evaluation.

Presented herein is the draft of the Guidebook for consultation. Going forward, a stakeholder consultation process is planned to help improve subsequent versions of the Guidebook, as well as to further link its content to case studies, tools, initiatives and programs offered by organizations and practitioners in the urban development space. For more information on how to provide feedback, please contact Lorraine Sugar (lsugar@worldbank.org) and Maite Lasa (Maite.Lasa@dnvkema.com).
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While this is a draft for consultation, errors and omissions remain the sole responsibility of the World Bank and DNV KEMA Task Teams.
# ACRONYMS AND ABBREVIATIONS

<table>
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<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>APrA</td>
<td>Buenos Aires Environmental Protection Agency or Agencia de Protección Ambiental</td>
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<td>BAU</td>
<td>business-as-usual</td>
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<td>BRT</td>
<td>bus rapid transit</td>
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<td>CDM</td>
<td>Clean Development Mechanism</td>
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<td>CER</td>
<td>certified emission reduction</td>
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<td>CME</td>
<td>Coordination and Management Entity</td>
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<td>CO₂/CO₂e</td>
<td>carbon dioxide/carbon dioxide equivalent</td>
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<tr>
<td>ER</td>
<td>emission reduction</td>
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<td>GGBP</td>
<td>Greener, Greater Buildings Program</td>
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<td>GHG</td>
<td>greenhouse gas</td>
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<td>GPC</td>
<td>Global Protocol for Community-Scale GHG Emissions</td>
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<td>IME</td>
<td>Information Management Entity</td>
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<td>KPI</td>
<td>key performance indicator</td>
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<td>LCCDP</td>
<td>Low Carbon City Development Program</td>
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<td>LEDS</td>
<td>low-emission development strategies</td>
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<tr>
<td>MRV</td>
<td>monitoring, reporting and verification</td>
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<td>MWG</td>
<td>Multi-Sector Working Group</td>
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<tr>
<td>NAMA</td>
<td>nationally appropriate mitigation action</td>
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<tr>
<td>NGO</td>
<td>non-governmental organization</td>
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<tr>
<td>RICAPS</td>
<td>Regionally Integrated Climate Action Planning Suite</td>
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<tr>
<td>TAE</td>
<td>Technical Advisory Entity</td>
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<tr>
<td>UNFCCC</td>
<td>UN Framework Convention on Climate Change</td>
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<td>URA</td>
<td>Urban Risk Assessment</td>
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<tr>
<td>VCS</td>
<td>Verified Carbon Standard</td>
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<td>VCU</td>
<td>verified carbon unit</td>
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<td>VVE</td>
<td>Validation and Verification Entity</td>
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<tr>
<td>WBCSD</td>
<td>World Business Council on Sustainable Development</td>
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<td>WRI</td>
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INTRODUCTION: THE LOW CARBON CITY DEVELOPMENT PROGRAM

BACKGROUND

Cities and Sustainable Development

According to the United Nations Population Fund, the world is undergoing the largest wave of urban growth in history, with more people living in cities than in rural areas. By 2030, over 60% of the population is expected to be living in cities. Megacities—cities with more than 10 million inhabitants—are on the rise and becoming a topic of frequent discussion in urban development discourse. However, most new urban growth will occur in smaller towns and cities in developing countries, which have fewer resources to respond to the magnitude of the urban population increase.

This projected growth is unprecedented and poses great challenges for cities to provide a high quality of life to their residents—now and in the future. In fact, in many cases, rapid urbanization is concentrating socioeconomic poverty and environmental degradation in cities. Today, cities face increasing development needs in infrastructure, land use, social cohesion and basic service provisions. Consequently, sectors, such as transportation, water, sewage infrastructure, education, food systems, energy supply and health services, are under severe pressure from increasing population and limited resources.

Despite the magnitude of the current challenges, cities must also incorporate a long-term component into their planning processes, as future pressures increase in severity due to population growth and additional environmental degradation. A sustainable development approach will ensure that the needs of citizens today are met without compromising the ability of future generations to meet their needs. Such an approach implies that, in addition to the efficient management of available resources, cities must take into consideration additional risks posed by climate change. For example, sea-level rise and more frequent extreme meteorological episodes may affect coastal cities, while severe drought and desertification may impact landlocked cities.

Cities are also responsible for a high proportion of global carbon emissions, which are the main driver of anthropogenic climate change. A recent UN-HABITAT report showed that the world’s cities cover only two percent of the total land area, but account for a staggering 70% of greenhouse gas (GHG) emissions.\(^1\) Emissions in cities come mainly from fossil fuel combustion for power generation, transport, industrial activities, municipal waste, and water generation and degradation. In addition, if urban expansion is not appropriately planned, land-use

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change and deforestation can lead to a release of carbon dioxide (CO₂) from natural carbon stocks, such as forest cover. Thus, cities will have to consider both mitigation and adaptation measures.

**The Role of Cities in Establishing Best Practices**

The implications of an “urban carbon footprint” stretch far beyond city boundaries as locally emitted GHGs freely mix in the atmosphere and contribute to global climate change. While climate change is a global problem largely affected by local actions, a variety of local contexts, interests and priorities explain the difficulties in reaching an international agreement on climate change.

The current lack of national and international consensuses on climate change presents an opportunity for cities to take a leadership role in climate change mitigation, and to link climate change to local developmental priorities. By doing so, a city can reduce its carbon footprint while providing a better quality of life for its citizens and a more attractive environment for business. Well-planned, compact cities can be highly resource efficient and lead to lower per-capita GHG emissions. Cities can invest in green economic sectors, such as transport, buildings and waste management, thereby creating jobs and supporting long-term economic growth, which can affect millions of people. As major actors in the flow of goods and services, urban residents can be leaders in creating demand for environmentally-friendly products and sustainable consumption.²

An increasing number of cities and regions have begun taking action to address GHG emissions. In recent years, urban political leaders have been more involved in climate change policy making, with many pledging action beyond or even acting in the absence of national commitments. For example, London called for a 60% reduction in emissions from 1990 levels by 2025,³ New York City is aiming for a 30% reduction from 2005 levels by 2030,⁴ and Tokyo’s Climate Change Strategy called for a 25% reduction from 2000 levels by 2020.⁵ Through the US Mayors’ Climate Protection Agreement, more than one thousand mayors agreed to meet or exceed Kyoto Protocol targets even though the US has not ratified the Protocol. The World Mayors’ Council on Climate Change, an alliance of over 80 committed local government leaders concerned about climate change, advocates for enhanced engagement of local governments in multilateral efforts to address climate change and global sustainability issues.

**The Low Carbon Development Approach in Cities**

Cities can engage in sustainable development and lead on climate change mitigation by considering a low carbon development approach. While no universal definition for low carbon development exists, “using less carbon for growth” is a common feature among low carbon development initiatives. These approaches also remain faithful to the principles of sustainable development, which aim to reconcile ecological limits with the goals of economic development and social justice.

Low carbon development in cities—or low carbon city development—allows municipalities to take advantage of integrated planning in a manner that ensures emission reduction (ER) strategies and

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socioeconomic growth are not mutually exclusive. Similarly, mitigation and adaptation measures can also be complementary. While planning for low carbon socioeconomic growth, cities should plan for the impacts of climate change, which will inevitably occur given the current atmospheric carbon concentrations. A long-term vision can be created where economic goals across sectors align and balance with carbon reduction goals. Such an integrated approach not only makes planning more efficient, but also offers an opportunity to bring together multiple stakeholders and raise awareness regarding the benefits of simultaneously pursuing socioeconomic growth and carbon reduction.

At the municipal level, a city can integrate low carbon city development as part of its strategic planning and sustainable development through designing and implementing a Low Carbon City Development Program (LCCDP), as outlined in this Guidebook. An LCCDP is a pioneering model for low carbon and green growth in cities that demonstrates leadership despite uncertainty in the current international climate change policy debate. It allows a city to incorporate innovative and cutting-edge practices that exist at the nexus of low carbon development and green growth into city planning. There are several organizations and partners around the world that are undergoing initiatives to reduce the carbon footprints of cities. The LCCDP is a new approach that builds upon and complements existing efforts in low carbon development and harnesses environmental markets for the unique situation in cities, and was first undertaken by the City of Rio de Janeiro (see CASE STUDY A).

THE LOW CARBON CITY DEVELOPMENT PROGRAM

An LCCDP is a framework and set of comprehensive requirements to help a city plan, implement, monitor and account for low carbon investments and climate change mitigation actions across all sectors over time. Transparency and flexibility should govern the design, planning and implementation of any LCCDP, which enables a city to demonstrate the achievement of self-set mitigation goals through bottom-up mitigation action accounting. Furthermore, a successful LCCDP allows for including a diverse set of municipally-driven and cross-sectoral low carbon actions over the Program’s lifetime, including policies and offset projects.

The Program also provides the necessary framework for future climate finance to play a role in catalyzing investments in low carbon city development, while also setting the stage to allow municipalities to participate in future emissions trading systems. The design and implementation elements suggested here will provide potential funders or donors with the necessary assurances that the Program and interventions will accomplish the intended goals and targets. On the other hand, under the Program, the city can choose to issue carbon credits for specific interventions that apply pertinent methodologies. The proceeds from selling these credits can then be used to finance other interventions that lack the necessary resources.

An LCCDP offers an alternative to individual, project-based approaches to low carbon development, which are not generally well suited for cross-sectorial situations in complex environments across the large geographic areas that are typical of cities. Holistic approaches and comprehensive solutions that include different technologies and interventions are more appropriate. Thus, low carbon city development must be part of the broader municipal planning process. An integrated plan can also help overcome barriers that are common in urban projects, especially in developing countries, such as high transaction costs, limited access to
CASE STUDY A: The Rio de Janeiro Low Carbon City Development Program

The Rio de Janeiro Low Carbon City Development Program (Rio LCCDP) was implemented with technical assistance from the World Bank and was tailored to the city’s unique circumstances. The Rio LCCDP is an ambitious, cross-sectoral climate change program implemented by the Municipality of Rio. Several economic and social growth plans and initiatives are being undertaken, particularly in preparation for the 2014 FIFA World Cup and the 2016 Summer Olympic Games. The Rio LCCDP acts as a channel to help distill the carbon reduction potential from these various initiatives, and allows the City of Rio de Janeiro to demonstrate the achievement of self-set mitigation goals through bottom-up mitigation accounting in a transparent manner. As such, the Rio LCCDP helps to create a low carbon lens through which future municipal investments are evaluated, and ensures investments contribute to a legacy of urban sustainability.

The Rio LCCDP was independently certified by DNV KEMA Energy & Sustainability in accordance with the newly developed LCCDP Assessment Protocol. The certification process ensured that the Program complied with international standards for GHG ERs accounting and environmental management systems. Programs that comply with the LCCDP Assessment Protocol are also certified according to the following standards:

- ISO 14064-2: the standard for quantification, monitoring and reporting of GHG ERs or removal enhancements;
- ISO 14001: the standard for certification of environmental management systems; and
- The GHG Protocol (Project Accounting Protocol and Guidelines).

Through compliance with these standards, the Rio Program prepares the city to participate in climate finance at both sub-national and international levels. In this sense, the LCCDP builds upon previous examples of enhancing climate finance opportunities for cities, including the City-Wide Approach to Carbon Finance. The Rio LCCDP learned from this approach and was designed specifically for cities based on the underlying standard behind the Clean Development Mechanism (CDM) and Verified Carbon Standard (VCS), which is ISO 14064-2. As a result, the LCCDP has set a new precedent in the accreditation of city-level climate change programs, and has created an accreditation pathway specifically designed for cities, which can also be adopted by future carbon finance programs.

References

start-up capital, limited institutional capacity, complex methodologies for quantifying ERs, and high monitoring costs due to multiple stakeholders. The leadership shown by cities in developing LCCDPs may contribute to a bottom-up push from city-level policies to nationwide climate change
The benefits of an LCCDP and other low carbon development initiatives are not exclusive to climate change mitigation. Additional co-benefits can provide strong political and economic incentives to advocate for sustainable development, especially where climate change is not necessarily a priority over more immediate development needs (see BOX A). Sustainable urban planning, which includes integrated urban transport systems, affordable urban housing, and creating public green spaces, promotes low carbon growth and brings socioeconomic co-benefits. Community building within a city reduces insecurity, crime and violence, and increases the value of municipal land and private property (see CASE STUDY B). Sustainable urban planning that considers urban expansion can prevent land-use change and deforestation as well.

CASE STUDY B: Co-benefits of Low Carbon Development: Bogota and Urban Happiness

Former Mayor of Bogota, Enrique Peñalosa, is well known for driving radical urban improvements with far-reaching benefits. During his tenure as mayor from 1998 to 2001, he promoted a citizen-centric model of urban development, supported projects that restricted private car use, and built bicycle pathways, pedestrian paths and parks. Also during this period, construction began on Bogota’s internationally renowned bus rapid transit (BRT) system, TransMilenio, and more than 100,000 trees were planted through urban-greening efforts. However, while these projects and policies are environmentally sustainable and low carbon in nature, this was not the primary motivation.

“His policies may resemble environmentalism, but they are no such thing. Rather, they were driven by his conversion to hedonics, an economic philosophy whose proponents focus on fostering not economic growth but human happiness.” (Montgomery, 2007)

Bogota’s demonstration of achieving co-benefits of urban projects and policies—improved security, human happiness and urban livability, to name a few—has helped shape the paradigm of sustainable, low carbon development for cities around the world.

Reference:
Politicians and policymakers make strategic use of these co-benefits in different ways. Some countries, such as China, are focusing on green growth, which emphasizes the co-benefits of a low carbon growth path and the necessity of moving towards a low carbon economy. Green growth strategies take countries’ economic growth ambitions as their...
starting point and seek to find low carbon or less resource-intensive paths to that growth. The global impacts of reducing emissions may not be immediately felt by stakeholders; however, by emphasizing co-benefits and the broader goals of promoting a green economy, a city can effectively communicate the local benefits and importance of its LCCDP.

An LCCDP provides a systems approach to developing and achieving a municipality’s goals for sustainable development and green, low carbon growth. The LCCDP must operate in tandem with the city’s other socioeconomic development goals, thereby requiring an integrated effort at various municipal government levels, as well as integration with other municipal systems and planning practices. The LCCDP outlines the entities responsible for planning, implementation, day-to-day activities and evaluation, as well as establishes the processes and strategies to ensure the municipality’s goals are met. When designed and evaluated in accordance with the LCCDP Assessment Protocol, the LCCDP will have the necessary components in place to be successfully launched and implemented. The Assessment Protocol will also ensure that the appropriate steps have been taken and relevant risks managed in preparation for the Program’s launch.

THE LCCDP ASSESSMENT PROTOCOL

The LCCDP Assessment Protocol (the Protocol) provides guidance on all requirements an LCCDP should fulfill. It is a useful and efficient diagnostic and planning tool that ensures an LCCDP is designed in a manner that will guarantee success in meeting its objectives and targets.

The Protocol was first used by DNV KEMA to validate the Rio de Janeiro LCCDP (see CASE STUDY A), and was based on DNV KEMA’s experience in developing climate action plans and LEDS, implementing and evaluating energy-efficiency programs in municipalities, and working in carbon markets. The Protocol consists of 44 predefined requirements that an LCCDP should comply with before its implementation, and ensures that the LCCDP is well designed, consistent in its strategy, and relevant to the participating municipality’s development objectives and targets. The 44 requirements are grouped into eight categories where the municipality should spend considerable time establishing city-wide policies and processes to prevent potential pitfalls when implementing an LCCDP. The requirements are considered critical to successful implementation as they cover important aspects of planning, implementation and evaluation.

The Protocol is also the standard against which a third party will validate the design of an LCCDP prior to implementation. The validation process is a transparent, independent assessment where the audit team documents the Program’s compliance, or non-compliance, with each requirement. The assessment ensures that the LCCDP design includes all necessary elements for the Program’s success, supports the LCCDP’s transparency, and creates added value by obtaining external expert opinions on design and potential risks. The assessment may also help identify new opportunities for improvement.

A central tenant of the Protocol is its flexibility, and applicability to as many low carbon city development initiatives as possible. The Protocol considers the variety of strategies and philosophies that exist behind sustainable development and green growth programs pursued by different cities.
municipalities—irrespective of the context, priorities or resources that different cities may have.

**CORE ELEMENTS OF THE LCCDP AND THE LCCDP ASSESSMENT PROTOCOL**

The following core elements are essential to any LCCDP and correspond to the eight categories of the Protocol.

- **Participating Municipalities and Scope of the LCCDP:** A clear scope and boundaries of an LCCDP help set the stage for developing the Program’s objectives and targets. These requirements ensure that the scope, geographical boundaries and timeframe for Program implementation are adequately described. This category also evaluates stakeholder involvement, the role of public authorities, provisions that guarantee program implementation regardless of possible political changes, and how to correctly measure ERs.

- **Program Policy, Objectives and Targets:** These requirements assess the commitment of the municipality towards its Program, whose objectives must be compatible with other city policies and commitments. They also evaluate the extent to which project and policy interventions will contribute to the goals and objectives, and ensure that an implementation timeline for all internal processes is adequately drafted.

- **Roles, Responsibilities and Authorities:** The city should identify the responsibilities necessary to ensure the Program’s design, planning and implementation, and establish which entities are best suited for each role and responsibility. These requirements ensure that the municipality has the necessary resources available to establish, implement and develop an LCCDP. The Program must include a description of the main roles and responsibilities of the participating authorities.

- **Documentation, Document Control and Control of Records:** Documentation procedures and systems are required to effectively manage the overall Program and components. These procedures and systems will help guarantee that the interventions are adequate, the information is conveniently housed and managed, the proper evaluation mechanisms are in place, and the LCCDP has an adequate information management system set up.

- **Policy and Project Interventions Developed under the Program:** A wide range of initiatives, including policies and projects, may be eligible for inclusion under an LCCDP, as long as they meet the defined set of eligibility criteria. An LCCDP should use various sets of criteria to propose, approve and quantify ERs from interventions, including the associated responsibilities and authorities in charge of the processes.

- **Monitoring and Reporting on Program Performance:** Once implemented, an LCCDP will periodically review individual interventions, as well as the Program as a whole, to enable the city to adjust the Program to better achieve its targets and objectives. The municipality shall establish, implement and maintain procedures to periodically review and evaluate overall Program performance at planned intervals to ensure continuing suitability and effectiveness.

- **Verification of Interventions under the Program:** ERs from policies and projects under the Program should be verified by an independent third party against ISO 14064 or other relevant standards.

Each of the above elements for developing an LCCDP contains the required actions necessary for successful implementation and evaluation. This ensures that the requirements at each phase of LCCDP development, execution and evaluation are satisfied, regardless of complexity. Protocol requirements are described in a how-to format throughout
Introduction: The Low Carbon City Development Program

The Low Carbon City Development Program (LCCDP) is a framework designed to help cities reduce their carbon footprint and promote sustainable development. This program provides a roadmap for cities to develop and implement low carbon development plans. The Guidebook aims to assist the reader through the process of designing and implementing an LCCDP. By following this Guidebook, municipalities can ensure their LCCDP will comply with all necessary requirements to achieve validation in accordance with the Protocol before implementation, which will contribute to the Program’s success in reaching its targets in an efficient and transparent manner. The Guidebook has been designed to provide a clear and concise roadmap to take the reader through the main LCCDP components and processes.

Regardless of a municipality’s previous experience in undertaking a similar process, the Guidebook serves as a step-by-step guide to Program development; helps identify key actors and roles in LCCDP development; and describes how to coordinate between these entities at each stage of Program design and implementation. The Guidebook will help link the reader to the necessary design and implementation elements required for an LCCDP, as well as provide case study examples and suggestions for success.

Target Audience of this Guidebook

This Guidebook is intended to support those interested in promoting low carbon development and urban sustainability, including:

- **Public officials** interested in developing and implementing a low carbon development and green growth strategy within their municipality;
- **Donors and non-governmental organizations (NGOs)** interested in supporting the design and implementation of LCCDPs;
- **Financing organizations and private companies** interested in learning about potential investment opportunities within low carbon development plans in cities; and
- **Consultants** who will support LCCDP planning, implementation and evaluation, as well as **third parties** who will conduct the assessment of the Program against the LCCDP Assessment Protocol.

Those who use this Guidebook and the Protocol will bring a range of expertise and knowledge in developing and implementing a low carbon city development framework at the municipal level. Therefore, the Guidebook has been designed with the greatest flexibility possible to support a wide range of cities in designing and implementing their LCCDPs. These guidelines are not intended to constrain the participation of cities based on their development level, access to resources or strength of local institutions. The Guidebook allows municipalities to begin from different starting points and develop Programs with varying levels of sophistication. For example, a city may approach the LCCDP development from a top-down perspective, where the strategy for city-wide carbon mitigation cascades from the policy and/or legislative level to the project level. Another city may have previously initiated several offset projects on a sector-by-sector basis, and then decided to implement a city-wide program to ensure a cohesive carbon mitigation strategy. Thus, the Guidebook serves as a roadmap for any city that wishes to initiate a low carbon development effort.

Nevertheless, cities must be aware of the barriers they might face when implementing an LCCDP, such as scale limitations due to city size (e.g., cost-benefit ratio), high transaction costs, limited access to start-up capital, or limited institutional capacity of the local administration. The requirements for an LCCDP described in this Guidebook and the LCCDP
Assessment Protocol can help a city navigate and address these barriers.

Structure of the Guidebook
The structure of this Guidebook follows the same systems-approach framework of an LCCDP. It goes through each step of the design and implementation process, and helps prepare the reader to meet the Protocol requirements specified at each step. Each section corresponds to an LCCDP step and includes the following subsections detailing relevant concepts and elements to be developed.

1. INITIATION discusses all elements that a municipality needs to consider when first embarking on low carbon development, including aspects required when initiating the specific LCCDP design, such as mission, scope and stakeholder input.

2. PLANNING details the steps and elements required to plan Program implementation, such as objectives, targets, roles and responsibilities, and describes how to plan interventions that will ensure objectives and targets are met.

3. EXECUTION describes the day-to-day operations and systems of Program implementation, and includes descriptions of how interventions are incorporated into the LCCDP, as well as how relevant information and documentation are managed.

4. ASSESSMENT/EVALUATION explains the assessment and evaluation processes that the Program as a whole, as well as the individual interventions, must go through to ensure targets and objectives are met. This phase also allows for adjusting the Program in response to the results of the assessment/evaluation, if needed.

CONCLUSION
The socioeconomic development of and environmental challenges facing cities are increasing as urban populations rise exponentially, especially in developing countries. By taking the lead on low carbon development, cities have the opportunity to engage in sustainable development and address local issues, while contributing to the reduction of GHG emissions. With low carbon development strategies, cities can position themselves as major players in climate change mitigation, and can set an example for the development of national ER policies.
The systematic approach offered by an LCCDP enables a city to overcome the barriers faced in single project implementation. It provides a common framework and solution to identify, implement and measure adequate interventions that will not only contribute to lower emissions, but will also address urban development needs. Accordingly, LCCDPs are designed to be flexible enough to accommodate different contexts, priorities and visions across cities.

Due to the diversity of cities and interventions available, the LCCDP Assessment Protocol consists of a set of standardized requirements developed to ensure that LCCDPs are well designed and implemented to achieve their targets and objectives. This Guidebook will help orient cities to harness the Protocol requirements as a framework to design a successful LCCDP.
SECTION 1: INITIATION

Achieving maximum carbon reduction potential in a city requires aligning municipal carbon reduction intentions with resulting mitigation initiatives. Establishing the right framework for an LCCDP early on ensures a coherent program design and can help avoid the need to alter the Program once implementation has begun. This chapter will discuss the groundwork that precedes and supports a successful LCCDP design when it is first initiated.

The success of an LCCDP relies heavily on integrating the Program’s mission and scope with the broader socioeconomic development goals of the city. A common understanding of these elements at the municipal level, particularly among the agencies that will be involved in implementation, supports clarity on the types of interventions that can be included under the Program.

Certain elements, such as an emissions inventory, can help provide a clearer picture of the distribution of emissions in the city, the highest emitting sectors and future emissions scenarios. This information can be particularly useful in later stages of Program design, such as planning objectives and targets.

MISSION

The Program mission establishes three important characteristics of an LCCDP: 1) it communicates the Program’s purpose; 2) it designates the timeframe in which the municipality will seek to achieve its sustainable/low carbon development goals; and 3) it serves as an opportunity for the municipality to identify itself as the “owner” of the Program. By providing the Program’s long-term strategic direction,
the mission establishes the framework within which the objectives, targets and implementation plan are discussed and defined.

When determining the mission, it is important not only to articulate the overall purpose of the LCCDP, but also to place sustainable/low carbon development goals in the context of the city’s broader socioeconomic growth policies. The mission should describe the city’s vision for the role carbon mitigation will play in short- and long-term social and economic development plans, as well as for how sustainable/low carbon development can be an avenue for green and inclusive economic growth. The LCCDP mission must be complementary to city-wide and cross-sectoral development goals in order to promote the sustainability and longevity of the Program.

**SCOPE**

While the LCCDP mission describes purpose and context, the scope details how the municipality will develop the Program and its strategy to realize sustainable/low carbon development benefits. A city-wide GHG inventory can help the municipality define its Program scope. For some cities, the scope will focus on ER strategies for the top emitting municipal sectors. For other cities, the focus will remain on city-wide carbon mitigation strategies. Therefore, the scope should: 1) elaborate on the sustainable/low carbon development strategy that the Program will undertake; and 2) identify the inclusion date, i.e., the date from which interventions can be included under the Program (see BOX B).

**BOUNDARIES**

Clearly defined Program boundaries help avoid the risk of inaccurately counting cross-boundary ERs (such as reductions from renewable electricity

**BOX B: Inclusion Date of an LCCDP**

One of the challenges a municipality will face while establishing the scope of the LCCDP is determining (and justifying) the inclusion date, i.e., the date from which interventions can be included under the Program.

An inclusion date that has been set too early (i.e., several years prior to development of the LCCDP) may cause stakeholders to question whether the ERs from these interventions are a result of extra efforts, or whether the Program is attempting to capture past ERs from measures that would have been implemented even without a low carbon development strategy in place.

On the other hand, an inclusion date that falls too late may disqualify ERs from activities that are a consequence of the municipal government’s focus on a low carbon development strategy and should be counted towards fulfilling the Program’s ER goal.

A review of the current mitigation activities can help the municipality find a balance in determining the inclusion date. The city should assess whether the implementation of current mitigation activities were driven by a focus on sustainable/low carbon growth—that is, they are a result of the city’s response to climate change—or whether they are measures that would have been implemented anyway to fulfill other objectives of the municipality.
Section 1: Initiation

Geographic Boundaries—the spatial extent of the Program boundary, which in most instances, is confined to the governing boundaries of the municipality. However, there are occasions when defining the geographic boundary warrants further scrutiny. For example, a Program that includes a mass transit system that spans multiple cities may be considered in one of the following three ways. One, the intervention may fall under a municipal alliance that fulfills the mission and scope of the Program, and, therefore, the Program’s geographical boundary is beyond generated within the municipality that is consumed by a neighboring municipality) and decrease the risk of double counting ERs (see BOX C). Often, defining boundaries is the most controversial issue related to city mitigation policies and projects, and must be considered carefully.

The boundaries that should be established as part of Program initiation can be separated into the following three categories:

1. Geographic Boundaries—the spatial extent of the Program boundary, which in most instances, is confined to the governing boundaries of the municipality. However, there are occasions when defining the geographic boundary warrants further scrutiny. For example, a Program that includes a mass transit system that spans multiple cities may be considered in one of the following three ways. One, the intervention may fall under a municipal alliance that fulfills the mission and scope of the Program, and, therefore, the Program’s geographical boundary is beyond

**BOX C: Examples of Double Counting**

Double counting ERs can occur in several instances, some of which are described below.

- Two cities may claim the same ERs from an intervention that spans the municipal boundaries of both cities. Thus, defining the geographic boundaries of the LCCDP will allow each city to appropriately claim its own ERs from the intervention.
- Project interventions may participate in offset programs, such as the VCS, CDM or Gold Standard. When establishing whether the intervention is eligible to be included under the LCCDP, confirming whether or not it is seeking registration with any other carbon finance programs is necessary. The municipality will be able to track and define whether each ER unit will be counted towards the municipality’s reduction target or sold as a carbon asset, thereby preventing double counting.
- Avoiding double counting ERs from policy interventions are similar to offset projects, though more complex. For example, policy interventions included under a municipality’s LCCDP may be part of crediting nationally appropriate mitigation actions (NAMAs), and may also include Renewable Energy Certificates, which are used in both compliance and voluntary markets. Whether emission reductions from a policy intervention will be sold on a market or counted towards reduction targets must be determined when assessing eligibility.
- Double counting can also arise when considering ERs at various geographical/governance scales, from local to regional to national. The municipality can consider a nested approach as one option to address the challenges of creating a transparent carbon accounting system that spans multiple scales. Some standards, such as the VCS, have developed methodologies that apply this approach to REDD+ initiatives. While the nested approach is fairly new, it has the potential to address many of the complexities of carbon accounting for mitigation activities that occur across multiple scales in a transparent manner.

Operational Timeline—the period in which the Program is considered to be active and under implementation. The operational timeline should align with the designated timeline of the Program mission. ERs from interventions included under the municipality’s LCCDP should not extend beyond the timeline that the municipality has identified to achieve its overall sustainability/low carbon development goals.

CASE STUDY C provides an example of establishing the mission, scope and boundaries from the Rio de Janeiro LCCDP.

**STRATEGIES TO WITHSTAND CHANGES IN GOVERNMENT LEADERSHIP**

One of the biggest challenges for the long-term implementation of an LCCDP is ensuring continuity through changes in leadership and shifting municipal priorities. One strategy to withstand leadership changes is to enact legislation that specifically states that the highest priority objectives and targets of the Program are independent from any changes to the municipal administration. Even with

CASE STUDY C: Defining the LCCDP Mission and Scope: Example from Rio de Janeiro

The mission and scope of an LCCDP helps to articulate the motivation, purpose and timeframes associated with the Program and its interventions. For example, the Rio de Janeiro LCCDP’s mission and scope are as follows:

“The scope of the Program is to develop a cross-sectoral, low carbon, climate change mitigation program intensively over the next two to four years, with a longer-term implementation period expected (e.g., 20 years). The Program includes interventions with financial commitment confirmed on or after January 1, 2007, as this is the year in which the City of Rio de Janeiro first started taking action in response to global climate change, catalyzed by the publication of the IPCC Fourth Assessment Report on Climate Change.” (Rio Prefeitura, 2013).¹

**Reference:**  
a law to support the continuity of Program implementation, mitigating all risks of an administration change with legislation alone is not possible. Gaining broad support and “buy-in” for sustainable development initiatives from stakeholders and political forces in the municipality can serve as an additional safeguard for the Program (and its interventions already underway) from the impacts of an administration change.

**CASE STUDY D: Community Driven Development in Indonesia**

**Stakeholder engagement**

Engaging external stakeholders in low carbon development programs can lead to: more inclusive project preparation; better buy-in, uptake and accountability; and stronger and longer lasting outcomes from interventions.

A continuous stakeholder consultation plays an important role in many program processes, including the initial planning, administration, implementation and maintenance of projects. Fostering participation and buy-in from diverse actors in complex programs, such as the LCCDP in Rio de Janeiro, can be done by ensuring that knowledge about the program and information about its activities, including how and when to participate and inform on the project’s status, is widely disseminated to all stakeholders, including the public. This kind of stakeholder engagement has many benefits in terms of program outcomes, process and coordination. It can enhance project sustainability by strengthening the responsiveness of those involved in planning, coordination and implementation, including beneficiary groups, and can strengthen the institutional relationships between communities, local and national government bodies, and other organizations.

**Consultative approach for program evaluation**

A consultative approach has been useful in previous cases to assess success of key outputs and intended/unintended effects on individuals, communities and institutions. This approach was applied in evaluating the Urban Community Driven Development Program in Indonesia to: assess the role of community driven development; clarify links with local government; assess the efficacy of program facilitators; and judge the adequacy of government and control mechanisms, certain projects and program financing.

Lessons from this approach are applicable to the LCCDP in Rio de Janeiro, given its wide range of external stakeholder involvement, and the potential for linkages with local, state and federal governments. Engaging stakeholders in the Program’s assessment helps to affirm their roles and promote accountability.

**Reference:**

Seeking input from a variety of stakeholders when establishing an LCCDP, including from community members, the private sector, NGOs and municipal authorities, helps to ensure that both the populations impacted by the Program and the institutions responsible for planning and implementation are involved in the decision-making process. Early and structured stakeholder engagement will offer insight into LCCDP feasibility, as well as help align the Program mission, scope and boundaries with existing conditions in the municipality. In particular, stakeholder engagement can help identify potential synergies and overcome implementation barriers (see CASE STUDY D).

If no existing requirements are in place, various models for stakeholder consultations may offer guidance, including requirements for environmental impact assessments, CDM registration, and registration with a socially-oriented carbon registry, such as the Gold Standard or the Climate, Community and Biodiversity Standard.

Typically, stakeholder consultations may include:

- At least one public hearing/meeting, announced through both local media and targeted invitations to ensure stakeholders without media access are appropriately informed.
- A 30–90 day public comment period for Program documents, which are available online.
- Interviews and/or focus groups with specific stakeholders.

After stakeholder consultations, the following should also be prepared along with the Program documents: a brief description of the stakeholder consultation process; a summary of the comments received; and a report describing how comments were integrated into the LCCDP design. Stakeholder consultations can also be conducted periodically as part of the ongoing improvement of the LCCDP.

**MUNICIPAL COMMITMENT**

Once the LCCDP mission and scope have been defined, the municipality’s formal commitment to Program delivery must be established, which provides an opportunity for the municipality to reaffirm its pursuit of a mitigation and sustainable development strategy. In addition to garnering commitment for the Program’s goals, the municipality should establish its commitment to continually reviewing and evaluating the Program’s progress towards its objectives and targets.

Municipal commitment may be established through a variety of means, such as a legal instrument, a signed agreement or a public declaration. Examples of legal instruments include a local environmental law, a specific climate change law, or a municipal planning law that elicits stakeholder participation in the design and planning processes. Commitment can also include a signed agreement with other stakeholders, such as the private sector and civil society organizations, who make a voluntary commitment to the Program. A public declaration that supports sustainable development is the most basic form of municipal commitment and is best accompanied by a legal instrument and/or signed agreement.

As with stakeholder consultations, documenting approval towards the municipal commitment is important, as is the process to gain approval from the various municipal entities involved in developing and implementing the LCCDP. To achieve broader support, the municipality’s commitment to low carbon city development should be communicated to all stakeholders, especially those who participated in earlier stakeholder engagement processes, and the public.
The municipality will have to assess what constitutes a sufficient level of commitment to achieve the Program’s mission and scope. Other considerations and tips for establishing municipal commitment to an LCCDP include:

- **Creating a cross-department team**—This could include departments that will fulfill future Program Roles (discussed later in the Guidebook), which can help garner consensus and commitment from the municipal entities that will be involved in Program implementation. This cross-department team can also serve as a mechanism to enhance resilience to changes in the municipal government.

- **Clarifying resources and timelines**—The municipality should clarify the amount of resources dedicated to the Program, both in terms of human and fiscal resources, in the near and long term. The level of involvement required by various local government entities should also be clear. The municipality should establish a timeline by which Program implementation should begin (the timeline should allow for a thorough implementation planning process) and ensure that the responsible municipal entities are sufficiently supported and held accountable for achieving the timeline.

- **Abiding by existing laws**—When declaring its commitment towards low carbon city development, the municipality should ensure that its commitment reflects its primary environmental, social and economic impacts. The commitment must comply with all applicable legal requirements to which the municipality subscribes (local, federal, international, etc.), particularly those that relate to ERs.

**EMISSIONS INVENTORY**

During LCCDP design, the municipality will need to determine objectives and targets, including measuring success and progress in terms of ERs (as well as co-benefits achieved). An emissions inventory can significantly contribute to setting adequate objectives and targets, as well as help to identify high-emitting sectors on which to focus intervention efforts.

A municipality’s emissions inventory can be a central tool in the design and evaluation of an LCCDP that aims to systematically reduce carbon emissions, and provide details on the sources and magnitude of a city’s emissions. Sophisticated emissions inventories, with high data quality and preparation resources, can also include the timeframe and geographical distribution of emissions. Forecasting future emissions—that is, emissions that would occur in the absence of the LCCDP—is also useful because it represents a business-as-usual (BAU) scenario. Based on this scenario, assessing potential ERs from Program interventions in a targeted manner is possible.

While an emissions inventory is extremely valuable during Program design, the LCCDP Assessment Protocol does not require a city to have an emissions inventory prior to launching the Program, principally because embarking on a low carbon development path should not be constrained or delayed. However, the Protocol requires that the municipality outline future steps to build an emissions inventory to help evaluate progress towards low carbon city development.

Some considerations and tips for conducting a citywide emissions inventory include the following:

- **Using an internationally recognized methodology**, such as the Global Protocol for Community-Scale GHG Emissions (GPC).9 The GPC was

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These inventories are commonly updated every two years, which can help reduce calculation time. City-level GHG inventory-monitoring systems can also be vertically layered with inventory systems at the regional or national level to share data and promote harmonization. When the most recent update includes any change to methodologies or data sources, it is best practice to go back and recalculate past inventories to ensure consistency in baselines and emission trends over time.

- **Identifying key sectors**—The emissions inventory can be used to identify key emitting sectors. Further exploring these sectors can help identify the factors contributing to city-wide emissions or provide background for further analysis, such as marginal cost abatement curves that show the potential for reducing emissions and associated costs.

- **Establishing future scenarios**—Once a baseline emissions level has been established, preparing scenarios of emissions over time is possible by considering the potential impacts of various interventions. For example, a scenario can be developed by choosing feasible interventions within a priority sector with good ER potential, and estimating emissions and implementation costs. The scenario can then be compared with the baseline to assess potential reductions, as well as with other scenarios to understand which combination of interventions will yield the best results in terms of mitigation and costs (see CASE STUDY E). Building scenarios often requires sound technical, financial and legal knowledge.

**CONCLUSION**

Municipalities need to consider important elements when first deciding to embark on a low carbon city development path. An LCCDP must

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be developed with a long-term view to achieving its overall mission. A robust initiation process that clearly defines the Program’s mission, scope and boundaries will help avoid large changes to the LCCDP during its implementation. The mission should be undertaken in tandem with other municipal policies that support socioeconomic growth, and, therefore, the involvement and explicit commitment from all levels of local government and stakeholder groups is required. Wherever possible, the city should develop policy and/or legislative mechanisms that protect the Program from administrative and political changes in order to support the Program’s continuity and prevent politicizing its goals and objectives. Lastly, a GHG emissions inventory, while not a prerequisite, will provide very useful information for setting realistic and accurate targets and objectives in the LCCDP planning phase.

**CASE STUDY E: New York City’s GHG Emissions Inventory and Scenario Modeling**

Running an emissions inventory is a fundamental, preparatory step in planning a low carbon program, while serving other functions that ensure buy-in and position the program for success. An inventory that follows an internationally recognized methodology also lends legitimacy to a program.

Beyond providing a baseline from which to assess the program’s success, an inventory should strive for objectives that include managing GHG risks and identifying reduction opportunities, public reporting and participation in voluntary/mandatory programs, participating in GHG markets, and providing information for recognition of early voluntary action.

The New York City model

New York City provides an exemplary model for an emissions inventory. The Mayor’s office of Long-term Planning and Sustainability compiles and reports an annual GHG inventory, comparing it to the city’s 2005 emission levels published in their first climate action plan, PlaNYC, in 2007. By monitoring against the initial inventory, the city has been able to inform its policymaking and actions and report and demonstrate performance in a transparent and engaging manner for external stakeholders and the general public.

The initial inventory of the city’s emissions profile revealed that nearly 75% of emissions in New York City are related to heating, cooling, powering and lighting its buildings. Understanding this profile, the city initiated the Greener, Greater Buildings Program (GGBP) that has updated the city’s energy code, required lighting updates, and established a benchmarking process for building owners, among other activities. The GGBP is estimated to ultimately reduce emissions by almost 5%, the largest single effect of any policy in reducing emissions.

Reference:

SECTION 2: PLANNING

Following the decision to develop a LCCDP and determine its mission and scope, planning must be undertaken. The planning phase focuses on moving the LCCDP from the concept level towards implementation, and requires setting objectives and targets, assigning roles and responsibilities, and building a feasible strategy and portfolio of interventions to meet the objectives and targets. As with many programs, the LCCDP’s success depends greatly on robust planning at the outset.

In this section of the Guidebook, clarity will be provided on how to set adequate objectives and targets, including developing a strategy and timeline for achieving them. This section will also discuss assigning and communicating responsibilities to municipal agencies or third-party entities for effective Program management. Several stages and associated responsibilities need to be managed in planning and implementing an LCCDP, which requires not only technical and financial capabilities, but also a clear distribution of roles and responsibilities. For example, it is essential to first identify the municipal entity with the sufficient authority to coordinate and supervise the overall LCCDP, as well as monitor and enforce compliance with its requirements.

This section will also elaborate on the two types of interventions that can be developed under an LCCDP: policy and project interventions. Planning an effective portfolio of interventions will help the Program reach its targets. Prospective interventions should initially be screened to ensure they fulfill certain eligibility criteria, as well as undergo a feasibility assessment and a risk assessment. The planning process is best initiated by selecting a Coordination and Management Entity (CME), and should be well documented in a Program Document (see BOX D).

As the implementation of interventions begins, relevant information will be generated that will grow...
have already adopted advances in technology and other best practices may not require capacity building or support: achieving a greater leap in ERs may require extensive investments, which may not meet the cost-benefit requirements for the Program.

**Objectives**

The Program objectives should be linked to the Program mission, and should provide further details on what the Program is designed to accomplish once it is implemented. Program objectives differ from Program targets, which identify specific ER goals.

For example, Program objectives can address the following questions:

- Why is it important to quantify ERs for the municipality?
- How will the Program support green and inclusive growth in the municipality?
- What role does carbon mitigation have in future municipal plans and initiatives?
- Which interventions can be included under the Program and when can ERs be counted towards the Program target?

**Targets**

Program targets identify specific ER goals. Clear and specific targets help to measure the success

**SETTING OBJECTIVES AND TARGETS**

The LCCDP objectives and targets should be measurable and consistent, reflect the mission and scope, and be aligned with the municipality’s commitment to the Program. The objectives and targets should be developed using a cross-sectorial approach and, if an emissions inventory exists, should reflect carbon performance goals for the major emitting sectors or for the city as a whole.

In the absence of an emissions inventory, the municipality should consider the status of each sector through an assessment that evaluates the adoption of new technology and best practices. This assessment can serve to orient the objectives and targets by identifying priority sectors that will require more attention and additional resources to achieve ERs in a cost-effective way. Sectors that

**BOX D: Tips for embarking on LCCDP Planning**

At the onset of the LCCDP planning process, the following should be undertaken:

- **Identify the Coordination and Management Entity**, which is responsible for defining the LCCDP objectives and targets, and will play a key function in assigning Program Roles and responsibilities, as well as in managing the portfolio of interventions.

- **Begin recording in a Program Document**, which will play a key role in communicating and maintaining the institutional memory of LCCDP design. This document should be archived along with the document that expresses the municipality’s commitment to the Program. For a template Program Document, see ANNEX C.
of an LCCDP, and can set city-wide ER goals, sector-based ER goals, or a combination of the two. It is recommended that short-, medium- and longer-term targets are set (e.g., targets to be reached in 2 years, 5 years and 15 years, respectively) to serve as a mechanism for continuous evaluation of the Program and its effectiveness. The targets, at a minimum, should comply with all applicable legal requirements, particularly in cities that are subject to mandatory national or regional ER targets. Targets can be set in absolute or relative terms.

- **Absolute ER targets** involve a commitment to reduce GHG emissions by a specified amount. The municipality identifies a base year and quantifies its emissions levels through a city-wide GHG inventory, and can then use the base year as a reference point for its carbon reduction goals.

- **Relative ER targets** frame ERs in terms of the amount of emissions relative to a certain factor, such as ERs “per unit of output” or “per unit of input.” This is a good alternative for municipalities with limited resources that may not be able to develop a city-wide emissions inventory prior to implementing an LCCDP. Identifying a base year when developing relative targets is not necessary. Instead, the municipality can develop an emissions inventory during the implementation process in tandem with collecting data on progress towards the relative ER goals. Relative targets are best for Programs with objectives linked to the development of new technologies and other efficiency improvements. It is important to note that while relative emissions can decrease, absolute overall emissions in the municipality can increase.

The municipality must be clear about whether it is setting an absolute or relative target so that appropriate interventions can be developed and implemented. The municipality should avoid using both targets, which may lead to confusion. The GHG Protocol Mitigation Goals Accounting and Reporting Standard\(^\text{11}\) is a good resource for other important considerations and examples for setting targets, including types, level, length and boundaries of targets (e.g., 50% reduction relative to 2010 emissions; total ERs of 200 tCO\(_2\)e; or 50 tCO\(_2\)e reduced from a baseline scenario).

Programs that include emissions-trading schemes and offset generation, which involve buying and selling ER units, require quantification in absolute terms in order to track the destination of ERs in a clear and transparent manner. If ERs are retired, they can count towards meeting the LCCDP targets. However, if they are sold, they will be accounted for by the buyer and therefore cannot count towards the LCCDP targets. Clarity on the destination of each ER unit will avoid double counting and dual ownership, which is essential for the Program’s credibility.

**PROGRAM ROLES AND RESPONSIBILITIES**

A successful LCCDP will have clearly defined roles and responsibilities that reflect the needs, objectives and targets of the Program. A general description of the main roles is provided below, and other assignments and responsibilities may be specified as the Program evolves and complexity increases. The coordination and management role should be assigned as soon as possible so that the entity is involved in Program development from the onset.

When identifying the actors and agencies that will fulfill each of the Program Roles, no conflict of interest should prevent the agency from effectively carrying out its role. The agencies that take on the

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Program Roles should have sufficient authority to carry out their responsibilities, but should not have the authority to undermine the role of other agencies involved in Program implementation. The institutional architecture of the Program Roles is flexible, as long as the process for assigning responsibility is clear.

**Roles and Responsibilities**

This Guidebook identifies four roles (outlined below) that are critical to the successful implementation and efficient coordination of an LCCDP. The responsibilities of each of these roles are intertwined; therefore, communication and accurate information flow between these roles is necessary for the Program's success.

- **Coordination and Management Entity (CME)** – This is the central body that will oversee Program coordination and management, and should be assigned first. It plays a crucial role, as it will manage the execution of every phase of the process (design, planning, implementation and evaluation).

  The CME should be designated with the authority to manage the Program’s political, institutional and administrative coordination, and, therefore, must be assigned to an agency at a sufficiently high level to ensure it has coordinating authority across all municipal departments. This entity should be authorized to make requests of municipal departments, as well as enforce and monitor compliance. It should also coordinate reports on Program performance, and make recommendations for improvement.

- **Multi-Sector Working Group (MWG)** — This working group is comprised of representatives from across sectors that advise the CME on crucial input during the planning and implementation phases. The MWG deliberates and assesses the eligibility of potential interventions to be included under the Program, and advises on whether to include the intervention under the Program based on sector expertise, knowledge of existing municipal activities and institutional arrangements, and an understanding of on-the-ground realities within the municipality. Therefore, the MWG should consist of representatives from different sectors to ensure a broad range of perspectives and criteria are considered in the assessment process. The MWG can also provide input on what methodology should be applied to an intervention, as well as recommend whether to retire or sell the ERs.

  The MWG is closely linked to the CME and multiple possibilities exist for a structured relationship between the two. The entity assigned as the CME could possibly have the resources and capacity to also fulfill the MWG responsibilities. Another possibility is that the CME serves as a Secretariat to the MWG to coordinate meetings. The MWG can also consider input, or have members, from other stakeholder
groups outside the municipal government. In any case, MWG opinions, recommendations and decisions must be reported to the CME, which should then be held accountable for efficient follow-up.

- **Technical Advisory Entity (TAE)—**This entity provides technical input to help the proposed interventions move forward through the Program process. Interventions are chosen by the CME based on MWG recommendations. The TAE then identifies and recommends an appropriate methodology to quantify ERs and the appropriate asset class to pursue (i.e., CDM, VCS, Gold Standard, if applicable), and estimates the financial information needed to evaluate cost-effectiveness. In this process, the TAE can gather input from the MWG, the Information Management Entity (IME) and the Validation and Verification Entity (see IME and VVE descriptions below) to ensure that the selected methodologies are aligned with the objectives, data availability and any monitoring requirements of the Program. The TAE is responsible for conducting the initial estimate of potential ERs to be generated by the intervention and reporting this information back to the CME for input into its decision-making process.

Since the TAE is responsible for providing recommendations on the technical aspects of Program implementation, this role should reside with an entity that is separate from the CME and have staff with a high level of technical expertise. Furthermore, by separating the Program’s political and technical coordination, the municipality can prevent the technical recommendations from being perceived as political actions.

- **Information Management Entity (IME)—**This entity coordinates and manages all Program-related information and data. It houses the Program’s monitoring, reporting and verification (MRV) system and should be allocated strategically within the municipality’s existing data collection structure. The IME must have the necessary mandate to access data; for example, an alternative is to use existing reporting obligations of public agencies, such as those for the national communications to the UNFCCC. The IME should establish clear information and documentation management systems that track individuals responsible for implementing procedures, as well as ensure that everyone involved in the LCCDP is aware of procedures. Among its other tasks, the IME should keep track of the interventions developed, ERs achieved, and transactions retiring or selling reductions. If required by specific methodologies or regulatory systems, the IME will generate annual monitoring reports that a VVE can use to verify ERs. The IME reports to the CME on data results and data input compliance from the respective municipal departments.

The IME assignment will depend greatly on existing municipal data collection practices and capacity within the municipality. This role can be assigned to an external entity that is mandated to collect data from municipal departments and report to the CME or it may be adopted by the CME, if it has the necessary capacity and capability.

- **Validation and Verification Entity (VVE)—**This external body carries out essential quality control measures to ensure that each ER generated under the Program is real and properly counted. The VVE validates/verifies the ERs generated by interventions according to its assigned methodology, and evaluates the appropriateness of new methodologies under the Program. The VVE can also certify ERs according to the regulatory standard of a chosen asset class (i.e., CDM, VCS, Gold Standard, if applicable). To avoid any conflicts of interest, the VVE must operate externally and independently of the CME and any of the other Program Roles.
Guidelines for Assigning Roles and Responsibilities

Determining which municipal entities will take on each Program Role requires insight into the specialized skills, infrastructure and resources that will be required to fulfill the responsibilities. Once Program implementation has begun, each municipal entity that has taken on a Program Role will need to fully understanding its new responsibilities and corresponding expectations, as well as how to interact with other municipal entities during each step of the process.

As explained above, it is not necessary for each role to be taken by a separate municipal entity. One municipal entity, which is strategically located within the local administration and has sufficient capacity and expertise, could possibly take on more than one role (or all roles aside from the VVE). Each municipality must organize the responsibility structure of its LCCDP in a way that is both appropriate for its resource availability and capacity, as well as for leveraging existing expertise or political positioning.

However, some considerations and guidelines must be taken into account to avoid potential conflicts of interest stemming from assigning incompatible roles to the same entity. In this regard, the assignment of each role should be subject to the following guidelines:

- The responsibilities and requirements of each role must be completed or delegated by the assigned entity.
- The CME and IME assignments are fixed in the short term to maintain Program continuity.
- The composition and attendance of the MWG may vary from intervention to intervention, but the MWG will always report to the CME.
- The TAE and VVE assignments may vary from intervention to intervention, and must be clearly stated every time a new intervention enters the Program. For any intervention, TAE and VVE roles must be assigned to different entities to ensure integrity in the audit process and avoid conflicts of interest. The VVE must always be external to the CME.

While the responsibilities and requirements of each role are fixed, the specific assignments of each role may change over time to reflect changes in the municipal administration and/or structures (i.e., with CME or IME) or on an intervention-by-intervention basis (i.e., TAE and VVE). Some examples of how these roles may be assigned in a municipality are shown in BOX E.

Identifying Characteristics of Municipal Agencies to Adopt Program Roles

Identifying the CME

The most effective CMEs will be located within the Offices of the Mayor, and assigned through the Chief of Staff and advisory team. Another good choice for a CME is an existing office that advises and implements actions related to mitigation of or adaptation to climate change. If such an entity does not exist, the CME’s role can be assigned to another office or a new office can be created. In all cases, confirming that the chosen entity fulfills a series of characteristics that will help it succeed is advisable. For example, does the agency have:

- A high standing in local government, so others will follow its leadership?
- Legal authority for planning and executing strategic interventions, as well as for managing municipal resources?
- A sufficient budget to accomplish the necessary LCCDP tasks (either from its own budget or through other agencies involved in the LCCDP)?
- Political support from high-level officials to design and implement the LCCDP?
- Trust from the public and other agencies within the local administration?
BOX E: Examples for Assigning Program Roles and Responsibilities.

Municipalities have a diversity of departments and political economies that can influence the assignment of Program Roles. Some examples for how roles may be organized are outlined below.

1. In small municipalities, the CME could also carry out the MWG and IME functions, and seek technical input from an external TAE entity.
2. Municipalities with a strong technical information management department could combine the IME and TAE functions.
3. Big municipalities could assign each role to a different entity and contract external agencies for the IME and TAE roles.
4. In theory, a high-level, centrally located, well-staffed and well-funded low carbon city development agency with municipal-wide authority and expertise could fulfill the CME, MWG, IME and TAE roles.

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- The leadership and technical capabilities needed to coordinate and manage the LCCDP?

**Identifying the MWG**

In most cases, a new group will need to be created to fulfill the MWG responsibilities and advise the CME. Its membership should include representatives from the different sectors in the municipality, to ensure that a broad range of perspectives and insights are considered. Specific people should also be appointed to the MWG to create the sense of compromise and continued commitment to the working group. Some questions that may help confirm the capacity of the MWG include whether it has:

- Members representing different urban sectors that will undergo mitigation and adaptation actions?
- Members that are appointed and supported by the sector or entity they represent?
- Members that can make decisions and commitments on behalf of their represented entity or sector?
- Access to the technical and socioeconomic information that will enhance understanding of the challenges and provide the best advice?
Identifying the TAE
The TAE should have staff with the technical capabilities needed to identify and recommend methodologies, estimate ERs, and conduct cost-benefit and risk assessments of the proposed interventions. Entities that may be suitable for this role include consultants, universities, research institutions or non-governmental think tanks. Engaging multiple TAEs through the course of the Program can create diverse capabilities and benefit from multidisciplinary analysis. Answering the following questions can help determine whether the selected entity is appropriate for the role. Does the TAE have:

- A sufficient number of well-trained technical personnel who are available to accomplish the necessary duties?
- The necessary infrastructure, in terms of access to information and information management (computing facilities, software, etc.)?
- Trust from the public and from the entities participating in the LCCDP?
- The legal authority to participate in this role?

Identifying the IME
The IME coordinates and manages all Program information and data, and existing organizations may be able to accomplish these tasks, either within the municipal structure or externally. The LCCDP will introduce new and unique duties, such as managing the MRV system, and the selected entity may need to adjust its internal capabilities and resources accordingly. The IME will also collaborate with the VVE during validation/verification, and should oversee the management of data and information generated as part of the LCCDP. When selecting the IME, the municipality should address whether the IME has:

- The mandate to collect data from various municipal departments, as well as collaborate with external stakeholders?
- The necessary staff, in terms of availability and capabilities, to carry out the IME responsibilities?
- The necessary infrastructure, in terms of access to information and information management systems (computing facilities, software, etc.)?
- Trust from the public and from the entities participating in the LCCDP?
- A sufficient budget to accomplish the IME tasks?

Assessing Agency Capabilities and Availability of Resources
Designing and implementing an LCCDP requires certain capabilities and local resources. Each case may vary depending on the Program scope, but the general requirements to consider when undertaking an LCCDP are described below.

1. Human resources—The entities involved in the Program must have sufficient capacity in terms of quantity, qualification, training and availability. Well-trained personnel are necessary to undertake the Program’s daily operations, and the municipality is advised to create a matrix to match tasks with the required personnel and skill sets. A training program can help develop...
skills and transfer knowledge among Program staff.

2. **Sufficient budget**—The municipal budget should be sufficient to accomplish all the necessary tasks of the LCCDP. Information on the available and allocated budget can be provided to the IME on a regular basis to help track costs.

3. **A documentation system**—A documentation system will ensure Program personnel are aware of procedures and who holds responsibility. The system should establish the duties related to record keeping, data collection and the MRV system, which are fundamental for the Program.

4. **Legal mandates and terms of reference**—The previous responsibilities of entities participating in the Program should be reviewed, and legal mandates and terms of references should be prepared if they do not exist for the new LCCDP responsibilities.

5. **Sufficient infrastructure**—The entity must have sufficient infrastructure and equipment to complete tasks, particularly in terms of computing capacities, data access and information dissemination. An LCCDP requires large quantities of data, as well as produces information that should be provided to different stakeholders through, for example, the Internet and other media.

In some cases, the capacity required for certain Program Roles already exists within the municipality. CASE STUDY F provides an example where one municipal department tasked with undertaking actions related to climate change, which was initially unrelated to their primary sector/area of expertise.

### Intervention Planning

**Policy Interventions** and **Project Interventions** are two types of interventions that can be developed under an LCCDP.

- **Policy interventions** are top-down municipal carbon mitigation actions implemented at the municipality’s administrative level. Therefore, the intervention boundary is typically the municipality’s geographic boundary. Policy interventions are dependent on a number of administrative and political processes. Coordinating them and gaining support from the relevant municipal entities can lengthen the intervention registration process. These delays can lead to unpredictable yearly ER rates, which may impact the contribution of the policy interventions on Program targets.

- **Project interventions** are bottom-up carbon mitigation activities that reduce GHG emissions from specific sources within a designated sector and geographical area. Project interventions may be implemented throughout the city or fall within a geographic subsection of the city. In general, when compared to policy interventions, projects tend to have a clearer and more easily quantifiable BAU emissions profile that is reduced as a result of project activities.

A **policy intervention** may lead to various **project interventions**. For example, a city-wide energy efficiency policy that includes regulations (e.g., building codes, household energy efficiency, etc.) provides the impetus for a city-wide project to replace outdated household appliances with more energy-efficient ones. In such cases, exercising caution when counting ERs towards the LCCDP targets is important. For example, ERs from the appliance replacement project may be attributed either to the project or to the overall energy-efficiency policy, but not both (which would constitute double counting ERs). For a carbon reduction project that has the necessary financial commitment and meets other eligibility criteria, barriers to implementation may be easier to overcome with project interventions than with policy interventions. CASE STUDY G provides further examples of policy interventions that may lead to other project interventions.

The Buenos Aires Environmental Protection Agency (APrA – Agencia de Protección Ambiental) is part of the Argentinian Ministry of Environment and Public Space and is tasked with protecting air, water and soil quality in Buenos Aires. APrA’s functions range from managing urban pests to designing programs and policies that address environmental problems. In 2009, the City of Buenos Aires created the “Interdisciplinary Team for Climate Change” (Equipo Interministerial de Cambio Climático) to develop an Action Plan that would allow the city to prepare and take measures to prevent future climate change impacts. In 2010, the team, headed by APrA, developed the Buenos Aires 2030 Action Plan, which is a dynamic and flexible tool designed to inform integrated policy-making processes for both climate change mitigation and adaptation between 2010 and 2030.

In May 2012, APrA’s Climate Change Operations Team convened a meeting to launch the Urban Risk Assessment (URA) of the City of Buenos Aires. The URA is a flexible framework that seeks to strengthen coherence and consensus regarding how cities can plan for natural disasters and climate change; as such, it lays the groundwork for collaboration across multilateral agencies, the private sector, and both national and city governments. Thus, the initial meeting to launch the URA process convened representatives from multiple government ministries and agencies, including those responsible for infrastructure, planning, civil defense, modernization, sustainable mobility, financing, treasury, international relations and cooperation, metropolitan police, and census and statistics. During the meeting, agencies identified key areas in which each could contribute to reducing urban risk in Buenos Aires, beginning with gathering the necessary data to identify at-risk areas and enabling other agencies to develop actions to respond to risk. The meeting provided an opportunity to highlight each agency’s skillset and area of expertise. As a result, two previously unrelated agencies were recognized as providing added value to the process: the Census and Statistics Agency through its yearly data gathering process which helps identify vulnerable inhabitants and areas within the city; and the Ministry of Modernization through its recently-developed Open Data Initiative as a platform to share and exchange information to do urban risk data analysis. While neither was associated with the climate change agenda prior to the URA process, the meeting provided an opportunity to illustrate the ability of agencies working in other sectors to play a significant role in urban climate change adaptation and mitigation plans.

References:
CASE STUDY G: Future Proofing Cities: Examples of Interventions

The report *Future Proofing Cities* looks at risks and opportunities for inclusive urban growth in developing countries, and offers examples from 129 cities and 100 suggested solutions. The actions usually have varying degrees of difficulty in terms of implementation and/or cost, and range from changes to city codes and creating incentives to education and outreach programs. Some measures apply to the entire community, such as incentivizing solar installations throughout residential and commercial properties. Other measures apply only to municipal operations, such as instituting a minimum fuel-efficiency standard for the municipal vehicle fleet. These examples draw from cities’ climate planning efforts or memberships with city organizations, other planning or sustainability programs, and any planning or project activities related to energy, water conservation, recycling, etc.

Examples of types of interventions

- Codes and Standards
- Government Program or Policy
- Incentives
- Procurement
- Mandatory Requirements
- Development Policy

Examples of specific interventions

- Upgrading labor force skills to promote flexibility and innovation in responding to climate- and resource-related shocks
- Land management policies and property rights
- Pedestrian- and bike-oriented development plans
- Vehicle quota systems to reduce private vehicle use
- Energy-efficient street lighting
- Solar consciousness in newly-built neighborhoods
- Mitigation of urban heat island effects through urban greening
- Flood resistant infrastructure design
- Grey-water harvesting
- Micro-generation of electricity
- Low-cost enhanced efficiency cook stoves

Reference:

Eligibility, Feasibility and Risk

Planning an effective Portfolio of Interventions requires screening all intervention options according to their eligibility, feasibility and risk profile. The Program’s Eligibility Criteria is a first check that the intervention is suitable for inclusion. The Intervention Feasibility Assessment and the Intervention Risk Assessment go into further detail to determine an intervention’s potential contribution to the Program’s objectives and targets.

These tools support the development of a diverse and balanced Portfolio of Interventions with a high probability of achieving its ER potential. Through this three-tiered assessment process, the municipality can identify a set of suitable interventions.
and develop a comprehensive strategy to manage risks in the short and long term. It also serves as a preventative measure against double counting and dual ownership, and can help municipalities take advantage of any synergies that may exist across interventions and sectors. Overall, an optimal Portfolio of Interventions will include interventions with different levels of implementation risks, different starting dates, and both policy and project interventions in different sectors.

The Intervention Feasibility Assessment and the Intervention Risk Assessment are useful tools both ex-ante (i.e., before implementation) to determine adequacy and potential of proposed interventions, as well as ex-post (i.e., after implementation) to determine portfolio performance as part of the periodic control and evaluation process (described in Section 4).

After conducting the initial eligibility, feasibility and risk assessments, the municipality will have a greater understanding of:

1. The composition of an optimal Portfolio of Interventions;
2. The estimated ER potential of the entire Portfolio of Interventions, as well as an estimate for the individual policy and project interventions; and
3. Barriers to implementation in the short (1–3 years) and long term (greater than 3 years).

Eligibility Criteria

The Eligibility Criteria are a set of requirements an intervention must follow in order to be registered under the municipality’s LCCDP, which should be developed in the early stages of Program development. If the intervention does not fulfill or is not transparent about all the eligibility criteria, it should not be included under the Program. Through this mechanism, the municipality can ensure that interventions fulfill certain requirements of the LCCDP Assessment Protocol, particularly those pertaining to preventing double counting and dual ownership of an intervention and its ERs.

While the specific eligibility criteria may change depending on unique conditions in the municipality, in general each intervention must be:

1. **Within the pre-defined intervention inclusion parameters**, which are criteria that determine whether an intervention can be included under the Program. Examples include financial commitment on or after the Program inclusion date (defined as part of the LCCDP scope), the intervention’s inclusion in the municipality’s long-term plan, the existence of a formalized contract (for interventions implemented by an external organization), a well-defined mechanism for implementation, intervention targets that align with Program objectives and targets, etc. The intervention inclusion parameters should be determined based on existing conditions in the city and municipal processes.

2. **Transparent about registration with carbon finance or carbon offset programs** (VCS, Gold Standard, CDM, etc.), which may impact the ownership of the intervention’s ERs. Disclosure of an intervention’s registration, or intention to register, with such programs will inform the ownership criteria (see #4 below), as well as the decision to retire or sell ERs. This proactively prevents double ownership and double counting by disclosing...
if the ERs produced are already allocated to another program or entity.

3. Located within the city’s geographical boundaries, which ensures that laws and regulations of the municipality apply to the intervention.

4. Under the ownership and/or control of the municipality, even partially, through either direct implementation or agreement. For example, the intervention may be implemented:
   a. directly by a municipal department;
   b. by a municipal department through a sub-contractor;
   c. by a municipal department through a public-private partnership;
   d. by a civil society organization in cooperation with a municipal department; or
   e. through financial or other incentives introduced by the municipality to encourage behavior change (the intervention, in this case, does not include a physical activity).

The agreement will be required to include a clause specifying the transfer of ER ownership to the municipality or specifying the terms of shared ownership, including any revenue-sharing arrangement. The terms must reflect that, while ERs from an intervention may be owned by multiple parties in various shares, each individual ER is owned exclusively by only one party.

6. In a sector governed by the municipality, which can often vary from city to city. Some examples based on the sectoral scopes permitted under the CDM are:
   a. Energy industries (renewable/non-renewable)
   b. Energy distribution
   c. Energy demand
   d. Manufacturing industries
   e. Chemical industries
   f. Construction
   g. Transport
   h. Mining/Mineral production
   i. Metal production
   j. Fugitive emissions from fuel (solid, oil and gas)
   k. Fugitive emissions from production and consumption of halocarbons and sulfur hexafluoride
   l. Solvents use
   m. Waste handling and disposal
   n. Afforestation and reforestation
   o. Agriculture
   p. Forest conservation/REDD+

6. Not legally mandated by higher levels of government, such as state or federal. If a legal mandate does exist, evidence should be presented to show it has not been enforced to date and that enforcement will improve as a result of the LCCDP.

7. Result in ERs, of any quantity, that are beyond what would occur in a baseline scenario, i.e., it must add carbon reduction value (see BOX F). Accordingly, the BAU and baseline emissions are not the emissions scenario that would have occurred without the existence of the LCCDP. In some cases, interventions that may have been initiated prior to the official adoption of the LCCDP may also add carbon reduction value (see BOX F).

8. In compliance with all environmental and legal requirements of the city, state and national governments, which ensures that the intervention embodies environmental and legal due diligence.

**Intervention Feasibility Assessment**

The Intervention Feasibility Assessment is an ongoing assessment of the potential contribution of each intervention to the Program’s objectives and targets. Periodic reviews of the Intervention Feasibility Assessment will keep the content up-to-date as the Program evolves, thus serving as an evaluation tool that reflects the current status of the LCCDP. During
the Intervention Feasibility Assessment will serve as an initial scoping of potential interventions before the Program is launched. Future interventions will be further defined and assessed in subsequent iterations, particularly because the Portfolio of Interventions is expected to continue to expand throughout the Program’s lifetime. The municipality should determine in the Planning stage how frequently potential interventions under the Program will be assessed (i.e., quarterly, bi-annually, etc.).

The Intervention Feasibility Assessment will give the municipality a better picture of the resources required to implement the interventions, particularly to help create balance in the Portfolio of Interventions. A balanced Portfolio will include interventions that are easy to implement, as well as those that require considerable investment in terms of human resources, time, finances and/or technology. An initial Intervention Feasibility Assessment can help to avoid portfolios that are unrealistically capital intensive or will not generate enough ERs. In addition, examining the Portfolio in terms of its contribution to green and inclusive growth (i.e., environmentally sustainable and socially inclusive economic development) can help overcome political barriers to implementation by leveraging co-benefits (see BOX G). A balanced Portfolio of Interventions allows the municipality to move forward with a number of its planned interventions, even if it is unable to immediately acquire sufficient resources for the more ambitious options.

In the Planning stage, the initial Intervention Feasibility Assessment is a high-level scoping of the potential interventions under the Program. The information available at this stage is unlikely to be detailed or have high accuracy and/or precision, which is appropriate for the initial scoping exercise. As the Program goes through the Execution and Assessment/Evaluation stages, each intervention will undergo more extensive processes of data collection and analysis (such as the Intervention Registration Process) that will feed into future iterations of the Intervention Feasibility Assessment.

In the first Intervention Feasibility Assessment, the following information should be assessed for each potential intervention:
1. **Estimated annual ER potential**

The potential volume of ERs per year should be estimated based on ex-ante calculations; that is, before the intervention is implemented (ex-post calculations will verify whether the ERs have in fact been achieved). In the Planning stage, this can be a general estimate and categorized into low, medium or high volumes (e.g., less than 15,000 tCO₂e/year, 15,000–50,000 tCO₂e/year and 50,000 tCO₂e/year, respectively), based on comparable mitigation activities as points of reference. In the Execution stage, each intervention will undergo more rigorous calculations to estimate ERs, which involve using an appropriate methodology to determine baseline and project emissions. Periodic updates of the Intervention Feasibility Assessment with more precise ER estimates will provide the municipality with better information to help determine whether it is implementing an appropriate mix of interventions.

It is important to remember that at the time of conducting the Intervention Feasibility Assessment, these values are expected to be estimates and to assist with planning an appropriate Portfolio of Interventions that is likely to achieve the Program’s targets. They are not intended to be a confirmation of actual ERs achieved by the intervention (which is calculated ex-post).
2. A risk rating that reflects the intervention’s ability to achieve ERs
Uncertainty related to whether an intervention will be successfully implemented and achieve all of its estimated ERs will always exist. The Intervention Risk Assessment (described below) should be used to determine the intervention’s risk rating, and guide the municipality through identifying and evaluating the potential risks faced during the design and implementation of the intervention. In subsequent iterations of the Intervention Feasibility Assessment, percentage risk discount rates could be used to provide a better picture of the impact of risk on ER potential.

3. An indication of whether ERs will be retired or sold
Each unit of ER generated by the intervention has only one final destination: the sum of units retired and units sold must equal 100% of the ERs generated by the intervention. ERs that are sold may not be double counted towards the Program’s ER targets. Therefore, an early indication of the percentage of ERs that will be retired toward the targets is essential to estimate an intervention’s contribution to the Program targets (described below).

4. The estimated contribution to the Program targets
An intervention’s estimated contribution to the Program’s targets is calculated using the following three factors: the estimated ER potential; the risk rating; and the percentage of ERs that will be retired. The initial Intervention Feasibility Assessment may include a qualitative estimated contribution (i.e., low, medium or high) based on the less detailed/precise data that is available. In the subsequent iterations, however, the contribution can be calculated as the product of the ERs/year, the risk discount rate and the percentage of ERs retired. It may also include targeted milestones for the short-, medium- and long-term implementation periods.

**Intervention Risk Assessment**
The Intervention Risk Assessment helps municipalities to identify and evaluate the risks that may hinder the successful implementation of an intervention, thereby impacting its ability to reach its potential ERs. When completed for all interventions, the Intervention Risk Assessment provides a snapshot of the overall level of risk for the entire Portfolio of Interventions. It enables the municipality to create a risk matrix that can be used to track interventions and actions needed to address and manage the identified risks. The municipality can then balance the Portfolio of Interventions against its risk management strategy and risk appetite.

**Risk Types and Risk Levels** differ between policy and project interventions. For example, policy implementation is dependent on a number of administrative and political processes and, as a result, may require a longer period of time. Project interventions are less likely to face the same administrative and political barriers; therefore, they may experience a more straightforward path to implementation. Risk types, such as management or delay risk, will have different impacts on policy and project interventions, as well as on the portfolio as a whole.

Each municipality is strongly encouraged to identify risk types that are specific to the on-the-ground context for implementing its LCCDP (some guiding examples are shown in Table 1). It is good practice to develop a Portfolio of Interventions that distributes and diversifies the risk throughout all of the identified risk types. This ensures that some interventions can still be implemented should certain risks come to fruition.
The Intervention Feasibility Assessment and Intervention Risk Assessment are examples of low-cost, data-minimal tools to help assess and prioritize interventions. These Assessments represent the minimum requirements a city should undertake when developing an LCCDP. Beyond these assessments, more detailed cost-benefit analyses and intervention prioritization exercises during the Planning stage can also help develop an effective Portfolio of Interventions, and many planning tools designed for cities can be useful. Two examples are shown in CASE STUDY H and CASE STUDY I.

<table>
<thead>
<tr>
<th>Risk Type</th>
<th>Explanation of risk and justification of assignment of risk levels</th>
<th>Risk Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management risk</td>
<td>If a private company is implementing, there is a risk of change in management or other conditions that may affect project implementation. At a policy level, municipal council approval might be required.</td>
<td>Low/Medium/High</td>
</tr>
<tr>
<td>Financial risk</td>
<td>If an intervention has been identified, defined and planned, financial constraints could lead to major delays and potential cancellation of the project. The policy’s budgetary commitment must also be reviewed.</td>
<td>Low/Medium/High</td>
</tr>
<tr>
<td>Delay risk</td>
<td>This is a periodic evaluation-related query. An intervention may be facing extreme delays or potential cancellation due to a variety of reasons, the most important being public opinion or emerging environmental/social issues.</td>
<td>Low/Medium/High</td>
</tr>
<tr>
<td>Commercial risk</td>
<td>For activities implemented by an external organization, such as a private sector company or an NGO, the municipality will have to enter into a formal contract.</td>
<td>Low/Medium/High</td>
</tr>
<tr>
<td>Ownership risk</td>
<td>Program design should include mechanisms to clearly specify who owns the ERs, which can be done through a contract (in the case of a project) or implementation guidelines (in the case of a policy).</td>
<td>Low/Medium/High</td>
</tr>
<tr>
<td>Market risk</td>
<td>If the project developer (the municipality or private entity) depends on carbon revenue for project implementation, low prevailing prices or perceived difficulty in raising revenues from ER sales may prompt the developers to abandon the project.</td>
<td>Low/Medium/High</td>
</tr>
<tr>
<td>Quality risk</td>
<td>ERs for all future interventions will be assessed ex-ante based on the feasibility study or design plans. Any change in the designs or plans may reduce or affect the ER volume.</td>
<td>Low/Medium/High</td>
</tr>
</tbody>
</table>

**PROGRAM IMPLEMENTATION PLAN**

The LCCDP requires that a number of procedures and systems be in place in order to operate efficiently in the long term, especially as the Program expands and grows in complexity. A Program Implementation Plan helps facilitate the implementation of these procedures and systems, as well as sets timelines and provides a framework for evaluating the success of Program implementation.

The Program Implementation Plan should be a dynamic document that can be adjusted over time to meet the needs of the municipality throughout the operational lifetime of the Program. Periodic
The Program Implementation Plan should outline the municipality’s overall strategy to implement the LCCDP, including the following:

- Designating authority and work flow between Program Roles
  The level of authority, communication channels and reporting lines associated with each Program Role should be explicit in order to facilitate effective management of the Program. This structure should be documented within the Program Implementation Plan and revisited during the established evaluation periods to ensure that the information and work flows are functioning as intended and meeting the Program needs of the municipality.

- Method and timeframe to achieve objectives and targets
  The municipality should determine its short- (0–5 years), medium- (5–10 years) and long-term (10+ years) goals for achieving Program objectives and targets. These goals can be refined by modeling ER potential in different scenarios, ranging from not implementing additional mitigation actions to implementing a very...
aggressive Portfolio of Interventions. Alternatively, the municipality can work backwards from the ultimate Program targets, setting short-, medium- and long-term targets in a phased manner (for this method, it is important to note that often achieving GHG reductions at exponential levels in the short term is possible, with the reduction potential tapering off in the long term). The stepwise goals for achieving targets can be set through a sector-by-sector approach, an intervention-by-intervention approach, or a combination of the two.

- **Benchmarks for the Program interventions**
  The Program interventions should have short-, medium- and long-term benchmarks, which will feed into the goals for achieving the Program objectives and targets. During the evaluation process, these benchmarks will allow the municipality to determine whether the intervention is having its intended effect in terms of achieving ERs. Ahead of the Program launch, benchmarks should be established for those interventions that will be implemented immediately (not necessarily for the entire Portfolio of Interventions).

  - **Timeline for stakeholder engagement, including a reasonable comment period**
    The municipality should outline its timeline for stakeholder engagement. Each intervention should undergo a stakeholder consultation process prior to its design to provide additional assurance that the municipality has selected an appropriate range of intervention types. The municipality will have the opportunity to improve the intervention design through this feedback process. Stakeholder engagement can also increase public awareness of the LCCDP itself.

In addition to clarifying the strategic elements above, the Program Implementation Plan should include a short- and long-term timeline for defining specific procedures related to:

- Documentation
- The MRV system for the Program

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**CASE STUDY I: Intervention Prioritization: RICAPS Tool**

The Regionally Integrated Climate Action Planning Suite (RICAPS) is a user-friendly, excel-based tool developed by DNV KEMA to help prioritize mitigation actions in US communities, cities and counties. It proposes an initial menu of about 40 effective measures for GHG reduction. The menu of measures can help cities evaluate them via a numerical scoring system. The first step is to indicate the level of importance of several key factors, such as ultimate benefit, cost to implement and ease of implementation. These factors are divided into three categories—benefit, cost and feasibility—and represent 16 key performance indicators (KPIs). These KPIs may be quantitative, such as estimated GHG reduction in metric tons, or qualitative, such as “probability of community support or opposition.” The tool then provides a cost-benefit analysis for each selected measure. Once data regarding a set of defined assumptions are entered for each measure, the worksheet automatically calculates a value for each KPI (for example, 750 MtCO₂e GHG Reduction). KPI scores are weighted, and each measure receives a total score on a scale of 1 to 5.

**Reference:**
CONCLUSION

Successful implementation of an LCCDP relies on effective planning. The objectives and targets of the Program should reach across all municipal sectors, especially those that have been identified as the highest emitting sectors. As these overall targets are developed, care should be taken to ensure that they are measurable, consistent and can be achieved within the operational lifetime of the Program.

Four Program Roles ensure effective Program coordination and implementation. The municipality should first determine the agency that will serve as the central body and have accountability for the Program’s progress (i.e., the CME). The CME will take the lead on setting Program objectives and targets aligned with the Program mission and scope. Due to the complex nature of implementing an LCCDP, the municipality must be clear about

Table 2: Example timeline in a Program Implementation Plan

<table>
<thead>
<tr>
<th>Task</th>
<th>Short Term (0–6 months)</th>
<th>Medium-Long Term (6 months+)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documentation</td>
<td>Determine how program and intervention documentation will be handled and where it will be housed.</td>
<td>Develop documentation procedures that correspond to key activities in the Program MRV system.</td>
</tr>
<tr>
<td>Program MRV System</td>
<td>Determine the data collection and data flow process. Assign responsibility to house data.</td>
<td>Design and implement MRV databases, software and data delivery protocols to create consistency throughout the Program.</td>
</tr>
<tr>
<td>Program Registry</td>
<td>Determine how ERs generated and verified are handled. Document the decision to retire or sell, as well as the coordination of the retirement or sale. Determine where documentation tracking final destination will be housed.</td>
<td>Determine where retired ERs will reside and the procedure for selling ERs.</td>
</tr>
<tr>
<td>Periodic Evaluation of Program and Intervention Feasibility Assessment</td>
<td>Develop initial Program Implementation Plan and determine when the first reevaluation of the Program will occur. Develop timeline for initial Intervention Feasibility Assessment and evaluation of all new projects. Determine frequency of reevaluation.</td>
<td>Determine the frequency of the periodic evaluation to ensure it meets the planning needs of the municipality.</td>
</tr>
<tr>
<td>Registration of Interventions</td>
<td>List initial interventions to be registered under the Program and projected timeline for registration.</td>
<td>List additional interventions to be registered under the Program and projected timeline for registration.</td>
</tr>
</tbody>
</table>
Section 2: Planning

the necessary Program Roles and responsibilities, and identify the appropriate entities to adopt such roles. The relationship between the entities holding the Program Roles will vary due to the size and resources of the municipality; however, to a certain extent, responsibilities will be consistent across all LCCDPs. Regardless of the how the roles are structured within the municipality, it is critical that they are appropriately documented and communicated both within the municipal administration and to external stakeholders.

A thorough planning process can help the municipality to establish a balanced and diverse Portfolio of Interventions, which can limit implementation barriers and distribute risk evenly. Prior to incorporating specific interventions in the Program, the interventions must fulfill the Eligibility Criteria. The Intervention Feasibility Assessment and the Intervention Risk Assessment are two useful tools to screen potential interventions and assess their contribution to the Program objectives and targets.

Finally, an important part of the planning process is to define a Program Implementation Plan to facilitate implementation. The Plan also serves to help establish the documentation procedures and systems, define timelines for achieving city-wide ERs, and provide a framework for evaluating the success of Program implementation.
SECTION 3: EXECUTION

Two main components will require active management once the Program is up and running: the registration of interventions; and the management of information generated within the Program. The Execution section describes the principles and processes for intervention registration, as well as MRV of interventions. Finally, this section provides an overview of the Program Registry’s characteristics.

The development, approval, implementation and evaluation of the interventions can be divided into two key sub-processes: the Intervention Registration Process; and the Intervention MRV Process. These processes are interrelated and flow as follows:

1. Confirm Eligibility
   - CME
   - MWG
2. Quantify ERs
   - TAE
3. Decision Making (Retire or Sell)
   - CME
   - MWG
4. Validate/Verify
   - VVE
5. Monitor, Report, Quality Control
   - IME

The development, approval, implementation and evaluation of the interventions can be divided into two key sub-processes: the Intervention Registration Process; and the Intervention MRV Process. These processes are interrelated and flow as follows:
During the Intervention Registration Process, every new intervention will undergo an in-depth assessment to: determine whether it fulfills the eligibility criteria; determine an appropriate methodology to measure ERs; and establish whether the ERs will be retired or sold. The Intervention MRV Process outlines how information and data is managed and then verified to determine the intervention’s contribution to the Program targets and objectives. The Program Registry serves as the “bank account” of ERs generated under the Program.

**INTERVENTION DESIGN AND REGISTRATION**

**Principles of Intervention Design**

Several critical principles must be taken into consideration when designing a Program intervention, such as:

- **Interventions must be aligned with Program objectives.** Knowing where an intervention stands in relation to targets and objectives (such as whether ERs are retired or sold) will indicate the level of accuracy and detail needed in its design.
- **The scope of the intervention must be clearly set.** The scope includes elements, such as geographical boundaries and type of GHGs to be reduced.
- **ER assumptions should be conservative.** Maintaining conservativeness avoids overstating the intervention’s impact and ensures that ERs are not overestimated.\(^{12}\)
- **A baseline should be developed for each intervention.** The baseline or a BAU emissions scenario will be the starting point from which ERs are calculated. In general, the baseline or BAU scenario represents the emissions that would have occurred in the absence of the intervention.
- **The methodology to be used in the ER calculations should be defined.**
- **The result of successful implementation should be defined.** Success can be defined in a number of ways, including by the intervention reaching an ER threshold. The municipality should determine the estimated timeline for reaching ex-ante ER targets.

The Intervention Registration Process captures each of these principles in a comprehensive set of criteria and assigns them to the various Program Roles. Each intervention is defined by an Intervention Design Document that includes a description of the intervention, the initial results of its Intervention Feasibility Assessment, and the completed checklists and information that demonstrate fulfillment of all criteria required in the Intervention Registration Process. The Intervention (Program/Project) Design Document should demonstrate how the intervention meets the following GHG accounting principles: relevance, completeness, consistency, comparability and transparency. This should be a dynamic document that is revisited and updated as the intervention is implemented.

**The Intervention Registration Process**

- The Intervention Registration Process consists of four stages: Confirm Eligibility; Quantify ERs; Decision Making (Retire or Sell); and Validation/Verification (also repeated during the Intervention MRV Process). Advancing from one stage to the next requires satisfactory fulfillment of the corresponding criteria, which is ensured by completing a criteria checklist that is approved by the CME. The specific criteria are defined during the design phase of Program development, common to all interventions, and validated against the

LCCDP Assessment Protocol by a third party prior to Program implementation.

**Confirm Eligibility**
This step of the Intervention Registration Process revisits the initial intervention planning and Intervention Feasibility Assessment that was completed during the development of the Portfolio of Interventions. In this more rigorous process, eligibility is established by the CME based on input by the MWG, which assesses intervention eligibility based on the Eligibility Criteria. As described previously, the Eligibility Criteria are a set of requirements an intervention must follow in order to be registered under the municipality’s LCCDP. If the intervention does not fulfill or is not transparent about all the eligibility criteria, it should not be included under the Program. Through this mechanism, the municipality can ensure the interventions fulfill certain requirements of the LCCDP Assessment Protocol, particularly those related to prevention of double counting and dual ownership of an intervention and its ERs. The Eligibility Checklist is an actual checklist of the LCCDP’s Eligibility Criteria against which all interventions must be assessed during this step of the Intervention Registration Process.

**Quantify ERs**
Once an intervention has been deemed eligible to be included under the Program, it must undergo an ex-ante assessment of the ERs it will generate. This assessment is completed by the TAE, and includes successful completion of the ER Assessment Criteria through the following steps:

- A methodology that complies with the Methodology Assessment Criteria (see below) should be recommended.
- The intervention should comply with the applicability conditions of the chosen methodology.
- The initial estimate of ERs to be generated should be provided and available data and/or reasonable estimates should be used.
- A monitoring plan shall be provided.
• A recommendation shall be provided as to which asset class to pursue for the ERs. If the recommendation includes carbon assets, such as certified emissions reductions (CERs) or verified carbon units (VCUs), an assessment of the feasibility and fulfillment of the criteria imposed by the relevant regulatory body shall be provided.

The ER Assessment Criteria, as established for the municipality’s LCCDP, should be provided in the form of an ER Assessment Checklist.

A methodology establishes the baseline scenario and the requirements for quantifying the ERs of the intervention over time. The Methodology Assessment Criteria uses documented and approved criteria to determine whether a particular methodology should be included under the LCCDP. It includes the following set of principles and elements:

1. Integrity and avoidance of politically and ethically contentious issues
2. Applicability of methodology for the specific intervention type
3. Appropriate definition of the intervention’s physical boundary
4. Procedure for determining the baseline scenario
5. Method for calculating the baseline and intervention emissions
6. Adequacy of the monitoring methodology, data and parameters
7. Relationship to methodologies already in use by interventions under the Program

These principles and elements ensure that calculations for the baseline and intervention emissions are more or less standardized across all interventions. It is another mechanism to avoid double counting of ERs, but it also helps prevent different project interventions from counteracting one another and increases consistency among interventions. It allows the municipality to ensure that the claimed ERs, with a reasonable level of assurance, add carbon reduction value and are real, verifiable and conservative in nature.

According to these criteria, methodologies developed for and approved by the Boards of carbon finance programs, such as the CDM, Gold Standard and VCS, can be accepted under the LCCDP. When assessing these methodologies, it is necessary to be confident that the assumptions, value and procedures used to determine the ERs in the methodology are in sync with the Program guidelines on conservativeness. Interventions that seek to generate carbon assets, such as CERs or VCUs, will be required to fulfill all of the criteria imposed by the relevant regulatory body. Another element that requires considerable attention in this regard is the definition of additionality,\(^\text{13}\) which is used by these programs.

Regarding the above-mentioned programs, the monitoring methodology is often included along with the baseline methodology. The monitoring requirements and metrics of these methodologies should be aligned with the Program’s monitoring requirements. This ensures that performance evaluation of individual interventions can aggregate to assess overall Program performance.

Establishing a baseline for a policy can be more complex than for project interventions, and the WRI’s GHG Protocol Policies and Actions Standards is a good source of recommendations and guidelines in this regard. Alternatively, the baseline may

be estimated from similar mitigation policies or projects that have been implemented in other cities or countries with similar conditions.

If an applicable methodology for a particular intervention does not exist, the TAE can identify or develop an alternate one based on global best practices. The new methodology must be assessed according to the principles of the Methodology Assessment Criteria, captured in a Methodology Assessment Checklist, and must receive recommendations from both the MWG and a VVE.

Decision Making: Retire or Sell ERs
Following an initial assessment of the expected amount and asset class of the intervention, a decision must be made to either retire the ERs towards the municipality’s self-set ER target or sell the ERs to an outside buyer. The decision to retire or sell follows the Retire or Sell Decision Criteria, which includes:

- Specifying the amount of ERs generated by the intervention that will be retired and counted towards the municipality’s self-set target;
- Specifying the amount of ERs generated by the intervention that will be sold;
- Ensuring the sum of ERs retired and ERs sold equals 100%; and
- Confirming that each ER unit generated by the intervention has only ONE final destination—it will either be retired or sold.

This should be provided in a Retire or Sell Decision Checklist.

Validate/Verify:
Before registration, the intervention should undergo validation to ensure quality and integrity. Validation/verification may be conducted at a frequency determined by the CME or the relevant carbon asset regulatory body, if applicable, depending on the methodology used and the chosen asset class. In some cases, validation and verification will be a one-time assessment, while in other cases, a validation process will evaluate the design of a specific procedure and a later verification process will evaluate that results are accurately measured according to that design. As described further below in the MRV section, verifications and/or validations related to ER accounting will always be done by an independent third party, which will check the following Validation/Verification Criteria (which should be captured in a Validation/Verification Checklist):

- The intervention must comply with the Eligibility Criteria.
- The intervention must comply with the ER Assessment Criteria.
- The intervention must comply with the Retire or Sell Decision Criteria.
- The intervention must be on track to produce/be producing ERs as planned.
- The intervention must fulfill all criteria imposed by the relevant carbon asset regulatory body (if applicable).

Table 3 summarizes each step of the Intervention Registration Process and the responsibilities of each role.

**MONITORING, REPORTING AND VERIFICATION**

**Principles of Monitoring, Reporting and Verification**
Information and documentation management is a key factor to demonstrate success of the Program as a whole and of each intervention individually. It is therefore very important that the information generated under the Program is accurate, adequately stored and accessible. Information and documentation systems can be supported by software tools and can ensure that all metrics are consistent and comparable across interventions as necessary.
The Low Carbon City Development Program (LCCDP) has taken an increasingly prominent role in LEWDs. MRV frameworks provide assurance to stakeholders that the Program meets clear standards and that its implementation is carefully monitored, progress is reported and results verified. However, creating an effective MRV framework for an LCCDP requires setting a practical and achievable one in accordance with the municipality’s resources and capabilities, while maintaining the high standards necessary for ensuring real mitigation.\(^{14}\)

The scope of the MRV system related to an LCCDP is to monitor, on a regular basis, the key characteristics of program activities and interventions that can have a significant impact on low carbon city development. It also includes documenting and reporting of information to monitor performance and conformity with the Program and intervention objectives and targets. In addition, the MRV process should include provisions for the verification of ERs by a third party. Once verification of monitoring and reporting activities is complete, whether

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*Advancing from one stage to the next requires approval by the CME.

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14. Many sources of relevant information are available on how to establish effective MRV systems, such as the “Measuring, Reporting, Verifying: A Primer on MRV for Nationally Appropriate Mitigation Actions,” the “GHG Protocol Policies and Actions Standards” or the “GHG Protocol Mitigation Goals Accounting and Reporting Standard.”
the ERs generated have met the compliance criteria (against the methodology, standard, etc.) must be determined. Verification of ERs must be distinct from the actual issuance of ER credits.

Considering the above, an MRV system is used for four core functions:

- Tracking the implementation of interventions;
- Monitoring ERs produced by the interventions;
- Assessing and issuing carbon assets; and
- Measuring progress towards Program targets.

The MRV process serves to evaluate the Program by looking: individually at each intervention’s performance; and at the Program’s performance as a whole. Each intervention undergoes its own MRV process to quantify ERs generated. In the case of project interventions, the municipality establishes the monitoring and reporting requirements based on the methodologies approved under the Program. The methodology provides the formula for ex-ante ER estimates, which is validated by a third party prior to implementing the intervention. ERs are then verified and, depending on the asset class pursued, validation and verification may be merged into one independent evaluation. By comparing estimates with actual ERs, the municipality can determine whether the intervention is on track to meeting its projected ERs over its lifetime.

While GHG reduction benefits can be relatively easily quantified for project interventions, quantification will be more challenging for policy interventions as the causal links between policies and resulting emissions are not always clear. Therefore, different sets of indicators must be considered in order to monitor their effects and whether the interventions are meeting their objectives. The MRV structure should be flexible to include a broad set of indicators and metrics that are relevant and applicable to all interventions under the Program, while also remaining relevant to the specific intervention.

To evaluate overall Program performance, the metrics and indicators for each intervention’s MRV should mimic those established at the Program level. This will allow data to be easily aggregated for all interventions, and is particularly important since the Program allows different methodologies to be used and most already request the MRV process to be implemented in a specific manner. Hence, the IME must ensure that individual MRV processes allow for data aggregation.

Principles of Monitoring and Measurement

Generally, monitoring will be associated with measuring emissions. Other elements, however, may also require monitoring. Two primary categories of metrics should be considered in monitoring whether the objectives are met:

- Quantitative metrics, which can be measured using standard measurement units and may include financial, technical and process data.
- Qualitative metrics, which cannot be measured using standard measurement units, but may include financial, technical and process data.

This can be further categorized as inputs towards mitigation or outputs of mitigation activities in terms of real measurable GHG reductions. For example, inputs might include the number of interventions implemented, units constructed or funds disbursed in an effort to reduce GHG emissions. Outputs refer instead to the causal relationship between an action and the actual GHG reduction, e.g., the amount of diesel fuel replaced by natural gas in a public transport intervention, from which it is possible to calculate actual ERs.

The range of metrics applied to a program can, and in many instances should, include quantitative
and qualitative, as well as input and output metric types. An example of performance metrics used in implementing Climate Action Plans in the US is described in CASE STUDY J below.

**CASE STUDY J: Performance Metrics**

Some counties in the US are implementing Climate Action Plans designed by DNV KEMA, which, although not as exhaustive and programmatic as the LCCDP, have many interesting elements and approaches that can be useful when designing an LCCDP. Solano County, for example, has identified 31 measures (projects or policies) to address climate change and sustainable development. In order to track the performance of these measures when implemented, quantitative indicators have been designed according to the target set for each specific measure. The following measures/indicators might not be entirely applicable to all cities but provide a good approximation of metrics to track the performance of interventions.

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Develop a comprehensive energy efficiency program that provides outreach, financing and other forms of assistance to residential, commercial, agricultural and industrial uses</td>
<td>% of building owners that have performed an energy efficiency retrofit achieving 10% improvement from 2005 efficiency. Target: 30% of Residential by 2015 and 40% of Residential by 2020.</td>
</tr>
<tr>
<td>2. Adopt green building and energy efficiency ordinances to require green building practices, programs and design elements</td>
<td>New residential units and commercial buildings exceeding Title 24 energy performance by 15%. Target: 50% by 2016 and 100% by 2020.</td>
</tr>
<tr>
<td>4. Partner with relevant public and private actors to increase building and process energy efficiency in agricultural processing and industrial energy businesses</td>
<td>Percentage of industrial and agricultural processing facilities that increase energy efficiency by 15%. Target: 15% by 2017 and 20% by 2020.</td>
</tr>
<tr>
<td>5. Increase public transit ridership by expanding express bus service and improving transit stop amenities and transit connections</td>
<td>Increase in transit mode (i.e., bus, rail, ferry). Target: 1% by 2020.</td>
</tr>
</tbody>
</table>

Reference:
1. DNV KEMA – Solano County CAP.
CASE STUDY L: Automated Information Management Systems

Palo Alto, California, is one of the first cities in the US to put in place an automated system for tracking municipal GHG emissions and resource use (electricity, gas, fuel, water and solid waste).

To achieve the city’s ER goals, a “carbon budget” was established for each of the city’s 13 departments. Each department was responsible for planning and managing initiatives to achieve GHG reductions. For example, since all resource use is ultimately converted to GHG emissions, the Parks Department may earn GHG savings by reducing water use, whereas the Police Department may earn savings by reduced vehicle use. Each department initially attempted to independently plan and manage their carbon emissions using spreadsheets and other calculation tools, but this quickly became unwieldy. A unified approach was needed with the ability to link to common metering data stored in the city’s enterprise management and billing system.

Through this software, the city’s cost-savings and emissions goals are now monitored and managed, department by department, on a monthly basis. In the first year of usage, the city has saved money and its GHG emissions are lower as a result of a cleaner mix of transportation fuel and reductions in resource use. In 4–5 months, the system had been loaded with about 100,000 monthly data points by department and spanning from 2005 through the first quarter of 2009. These included solid waste and paper use figures and monthly municipal meter readings for electricity, natural gas and fleet fuels. By September 2009, Palo Alto’s system was managing resource use and emissions data for more than 60 municipal operations, and in the future, the city may investigate expanding this capability to all businesses and residences.

Implementing the program was relatively easy from a technical perspective. The most challenging aspect was establishing detailed departmental baselines, which involved identifying, aligning and allocating current resource use among specific city departments. Palo Alto’s core project team included three or four part-time staff, working over a few months with help from the software provider. An automated interface has been developed to load usage data captured in Palo Alto’s billing system into the carbon management system.

Reference:

Data collection systems that are transferable across intervention types and sectors facilitate comparison and results aggregation. Consequently, they should be developed as an integrated part of Program design and implementation.

Principles of Reporting
Reporting systems can be anchored with the CME, potentially employing open access databases, which would be an option that would ideally link with the Program Registry.

At the Program level, reporting should focus on delivering an analysis of the results and compliance of the Program to the CME at regular intervals. The reporting process should include:

- Tracking the level of objective achievement
- Tracking capacity-building efforts related to Program planning and implementation
- Tracking assistance and finance flowing to the municipality from the national level, public funding and private financing
• Communicating intervention proposals and requests for funding
• Avoiding duplication of activities in participating municipal agencies
• Providing information to the Program Registry

At the intervention level, the MRV structure should also be positioned to extract quantitative information related to the implementation of interventions. This can be linked to systems related to financial reporting. The functions need not be merged, but records must provide the linkages between funding, disbursement for interventions and ERs achieved. Reporting can generally be divided into direct and indirect emissions reporting.

Some municipalities may not have sufficient resources or systems to provide the necessary reporting (for example, see CASE STUDY L). Capacity shortfalls will have to be addressed by accommodating external assistance within these existing administrative structures. In the short term, ensuring actual reporting with the provision of full-time technical assistance may be necessary.

Principles of Verification
Verification confirms that monitoring and reporting is in line with the requirements of the Program. In many climate change mitigation programs and methodologies, the MRV frameworks require external, independent verification (third party). In some MRV systems, verification can be conducted by the implementing organization itself or by government inspectors. In some cases, the entity responsible for the implementation of interventions undertakes an internal verification process or audit to evaluate the status of the interventions and progress towards the overall Program objectives and targets. In other cases, the municipality assumes responsibility for verification.

When developing an MRV system for a LCCDP, the verifying body should remain independent from the body that is coordinating and managing the Program, which may be a challenge for municipal bodies. Once verification of the monitoring and reporting activities is complete, it is possible to determine whether the intervention has met the compliance criteria, and to confirm compliance. Many GHG mitigation programs clearly separate the role of verification of the emission with the actual issuance of the ER. This is done, in part, to provide an opportunity for an additional control check.

Governance of MRV Systems
Each participating municipality develops policies and legislation in its own way, which will be reflected in planning and designing the LCCDP and in implementing MRV systems. Each municipality will have its own legal framework, which regulates operation and control of the Program and its ability to interact with other mitigation programs (e.g., interventions applying CDM, VCS, etc.).

Embedding MRV in the Program requires considering a number of key elements that have direct impact on the effectiveness of the MRV system, such as:

• Which municipal entity has the authority and control over the MRV system and what does that entail?
• Which municipal entity is responsible for implementing which parts of the MRV system?
• Under which system should third parties be accredited (will a municipal entity award accreditation?) and what needs to be demonstrated in order to achieve accreditation?
• Which municipal entity will endorse compliance with the requirements?
• When and at what frequency must reporting be submitted and/or verified?
• Which organization issues proof of compliance or allowance or credits?
• What are the consequences of non-compliance?
Participating municipalities will have differing abilities and capacities for establishing institutions necessary to perform the MRV tasks. That said, emissions reporting should not be a mainstream administrative task undertaken by municipal entities that might be overseeing the intervention. Financial reporting, on the other hand, may be more straightforward, and carried out by departments of finance.

Three levels of institutional maturity should be considered regarding the implementation of MRV systems for an LCCDP.

- Full capacity, i.e., MRV systems in place (or to be put in place) that are sufficient for reporting and immediately underpin both the Program and its interventions.
- Good capacity, but still requiring capacity building to support verification of Program activities and status of intervention implementation.
- Limited capacity that requires significant capacity building both for the Program and intervention MRV processes.

Developing MRV capacity may require institutional development, education, training and capacity development for relevant evaluation/MRV units. Additionally, in order to have an effective MRV system that is taken seriously by all stakeholders, the municipality should consider penalties, which would be imposed when the implementing entity does not follow the Program rules and has failed its MRV. In some instances, the entity will have to pay a penalty for non-compliance, while in others, the penalty is that the offsets generated are not recognized and, therefore, will not be issued.

The penalty system will normally allow the penalized entity to seek recourse on decisions that it believes are incorrect. As such, the penalty system and levels are well defined within the MRV part of the legislation, as most systems rely on the national court system to settle any disputes in relation to the level and validity of the penalty.

The Intervention MRV Process

The Intervention MRV Process captures the MRV principles described above in a process and assigns tasks to the various Program Roles.

The steps of the Intervention MRV Process are as follows:

1. Top-down Regulatory Mandate to Deliver Data
   The CME provides a top-down regulatory mandate to the municipal departments to deliver requested data to the IME. The CME also monitors and enforces compliance.

2. Data Delivery
   The IME works with the municipal departments to ensure the necessary data is delivered to quantify ERs and fulfill monitoring plans for the interventions. When fed into the Program MRV, this raw data should provide an early picture of how the overall Portfolio of Interventions is performing. This will give the municipality a sense of progress made towards objectives and targets and allow for an opportunity to recalibrate in order to meet the desired goals by adding new interventions that can focus on sectors, geographic areas and ER targets.

3. Data Analysis
   The IME conducts analyses according to the chosen methodology to quantify the ERs generated by the interventions, which will enable the municipality to determine whether the intervention is being implemented successfully. If the intervention is not meeting expectations, the municipality will have to review implementation barriers to see whether any adjustments are needed in order to promote
behavior change or further support the introduction of new technology, etc.

4. Results and Compliance Reporting
Once data has been delivered and analyzed, the IME then reports back to the CME on results and compliance. This report should document both expected and unexpected impacts on the environment, society and economy of the municipality, as well as include any transboundary ER impacts. This occurs at predefined and regular intervals.

5. Verification of ERs
Prior to credit issuance, the ERs must undergo verification to ensure quality and integrity. Upon initiation by the CME, a VVE conducts the assessment according to the Validation/Verification Criteria. The validation/verification process may be conducted at a frequency determined by the CME or the relevant carbon asset regulatory body, if applicable.

**PROGRAM REGISTRY**

A Program Registry provides a platform to create, verify, track and trade/retire ER units, and serves as the bank account of ERs produced by the Program. The Registry helps prevent double counting and dual ownership and ensures that each ER has only one final destination: retired, and counted toward the Program’s ER targets; or sold, and therefore not counted towards the Program targets.

The Program Registry should have a consistent method of identifying each ER unit, such as a serial
number or other tagging system, which also identifies the ER’s asset class. ER transactions will be tracked in the Program Registry as well, and the Registry should also be integrated with regional- or federal-level registries.

The information tracked in the Registry must be credible and trustworthy, and the municipality should consider how to support transparency. The level of scrutiny, or precision, of data supporting the verification of ERs required in the registration process will correspond to the ER’s asset class. For project interventions, this is likely to be more clearly defined through the methodology used to quantify the ERs. However, policy interventions are not likely to have as clear requirements. The municipality should consider a detail/precision threshold, or benchmark, for including ER units in the Registry to maintain consistency and credibility.

Once Program implementation is underway, the Registry may also serve as the repository of the results of the periodic city-wide GHG inventory. The Registry could be housed in the inventory in a separate database, and could become an even more powerful tool in informing periodic Program improvements.

The municipality can structure the Registry to be public, partly public or private. For the purposes of the LCCDP, municipalities should consider a public or partly public Registry so that interested stakeholders can access the information.

In addition to determining the Registry’s characteristics, the municipality should clarify which entity will be responsible for maintaining the Registry (i.e., where it will be housed). Placing the Registry with an institution that has experience with documentation and record keeping will be beneficial—either within the municipality, with another level of government or with an external entity. Also, as highlighted in the Planning section, the municipality should determine the timeline for implementing the documentation procedures and for making the Registry operational.

CONCLUSION

Creating a diverse and balanced Portfolio of Interventions under the LCCDP requires that each municipality guide the development, approval, implementation and evaluation of the interventions. As discussed, this can be divided into two key sub-processes: the Intervention Registration Process (development, approval and implementation); and the Intervention MRV Process (data collection and verification).

During the Intervention Registration Process, every new intervention should undergo an in-depth assessment to determine whether it fulfills a number of specific criteria and, consequently, can contribute to the Program targets and objectives. This process serves as a preventative measure against double counting and dual ownership of the interventions and their ERs. It is also an opportunity to generate information that will feed back into the Intervention Feasibility Assessment in order to identify and manage the risks that can impact successful implementation of the intervention.

Establishing guidelines for information management and MRV systems intended to support the LCCDP implementation is not necessarily straightforward and, most likely, no two municipalities will follow the same pathway. Coordinating and managing data is a critical aspect of the MRV system, and the municipality’s capacity needs should be addressed prior to the Program’s launch, either through building skills and expertise of municipal staff or through hiring external technical expertise.
The MRV pathways cannot be viewed in isolation, and should be interwoven within the entire LCCDP process. As will be discussed in the next section, Assessment/Evaluation, through integrating the MRV system within Program implementation, the municipality can create feedback loops that will allow for timely Program adjustments as needed. This supports a Program that stays relevant to the needs of the municipality and effectively meets its objectives and targets.
SECTION 4: ASSESSMENT AND EVALUATION

This section describes the feedback mechanisms that ensure continual Program improvement over time in order to best meet objectives and targets. This stage allows the municipality to assess and learn from the information generated during the previous sections, and is an important part of the systems approach that helps ensure that LCCDP planning and implementation produces successful results.

In this Guidebook, an Assessment is conducted to determine the feasibility of implementing the LCCDP and the initial Portfolio of Interventions, prior to execution. On the other hand, Evaluation is an ongoing process that happens during or after implementation and consists of a review of the Program and its stages to determine whether these elements are meeting, or are on track to meet, the Program’s established objectives and targets.

Opportunities for feedback provide insight into whether LCCDP implementation will be, or has been successful, and can therefore proceed as planned, or whether any changes are required to ensure that the Program will eventually reach its objectives and targets within the established timeframe.

ASSESSMENT OF AN LCCDP AGAINST THE LCCDP ASSESSMENT PROTOCOL

The LCCDP Assessment Protocol, which can be found in full in Annex A, is a list of criteria that, if fulfilled, will confirm whether the Program has the necessary components to be successfully launched.
and implemented. This Guidebook outlines the necessary steps and considerations needed to design and implement an LCCDP that fulfills all requirements of the Assessment Protocol. Once the municipality has developed the LCCDP, an independent and objective assessment of the Program design against Protocol requirements provides an opportunity to improve the Program, as well as to show transparency and obtain stakeholder buy-in.

In 2012, the City of Rio de Janeiro and the World Bank requested an independent third-party review of the design of the Rio de Janeiro Low Carbon City Development Program to assess whether, as documented, it was technically sound and likely to contribute to the achievement of its objectives and targets. Leveraging its expertise in LEDS, working in carbon markets, and designing climate action plans for cities and counties, DNV KEMA developed a protocol with 44 requirements customized for LCCDPs.

The LCCDP Assessment Protocol is aligned with ISO 14064–2, ISO 14001 and the WRI and World Business Council for Sustainable Development (WBCSD) GHG Protocol. Through a review of the Program documents and other information relevant to Program design, the assessment confirms whether the Program meets the requirements related to the following themes: scope and boundary; objectives and targets; eligibility criteria; roles, responsibilities and authorities; control of records; monitoring and reporting of performance; and compliance with relevant regulations. Flexibility is core to the Protocol design in order to meet the needs of cities globally, regardless of their scale, in developing city-wide low-emission strategies.

The LCCDP Assessment Protocol was created to be an international standard applicable to any LCCDP. As described throughout the Guidebook, the Protocol’s requirements help ensure that the Program developers are aware of the key elements that contribute to meeting Program objectives and targets. By including elements, such as stakeholder engagement, compliance with regulations, and assessment and evaluation processes, the municipality can overcome some of the barriers to implementation and potentially gain access to new financing sources.

The Protocol is the standard against which a third party will validate a municipality’s LCCDP. Third-party validation occurs after LCCDP design, but prior to implementation, thus setting the Program up for success. The validation process is a transparent assessment process in which the audit team documents how each requirement has been fulfilled, or, alternatively, if improvement is needed. Validation ensures that the Program design adequately addresses the 44 requirements of the Protocol.

Commissioning a third-party assessment of the Program supports increased transparency, as well as creates additional value through gaining the perspective of external experts on the design, implementation and potential barriers to success. This external perspective can help identify new opportunities not previously explored by the Program design team, as well as add credibility to the Program design, objectives and targets, as well as garner greater support from the municipality’s stakeholders.

The typical third-party assessment of an LCCDP will include:

1. Desk Review of the Program Documentation
   a. Design documents provided by the municipality (i.e., the Program Document and any supplementary information): The Program Document provides an overview of the Program design, including such elements as the mission, scope, objectives, targets, implementation
plan, and roles and responsibilities. Supplementary information may be provided to offer further insight into those aspects not covered in the Program Document.

b. Standards, methodologies and tools for assessment (i.e., the LCCDP Assessment Protocol): An LCCDP should be assessed against the LCCDP Assessment Protocol, which is the standard to be used for this type of program. The Protocol is based on relevant norms, such as: ISO 14064–2:2006 Specification with guidance at the project level for quantification, monitoring and reporting of GHG ERs or removal enhancements; ISO 14001:2004 Environmental Management Systems – Requirements and guidance for use; and GHG Protocol (Project Accounting Protocol and Guidelines). Program developers should use the Protocol to inform the technical design of the LCCDP (as described in this Guidebook). As new norms appear and new challenges arise, the Protocol may be updated or expanded. For example, GHG inventories can be assessed according to the GPC.

c. Documentation used to validate/cross check the information provided by the municipality: This can include the municipality’s strategic plan, regulations impacting the Program, modeling of ER scenarios, and the city-wide GHG inventory.

2. Follow-Up Interviews with Program Stakeholders

Follow-up interviews should be conducted during a site visit to the municipality. The number of days for stakeholder interviews will depend on the size of the municipality, as well as on the complexity of the LCCDP. Stakeholders can confirm or clarify the information in the Program Documentation and provide further information as needed. The interviews should reflect a broad representation of stakeholders (NGOs, government officials, community members, etc.).

3. Resolution of Outstanding Issues

Once the assessment has been conducted, the municipality should resolve any outstanding issues that need either clarification or action. This provides an opportunity for improvement prior to the third party reaching its final conclusion. The third party should indicate non-conformity if: the Program does not fulfill a requirement of the LCCDP Assessment Protocol; or there is a risk that the provisions proposed in the Program Document cannot be implemented as designed.

4. Final Conclusion

A positive conclusion confirms that the LCCDP has fulfilled all 44 requirements satisfactorily. A negative opinion indicates that at least one issue could not be resolved with potentially negative implications on the Program’s ability to meet its objectives and targets.

INTERVENTION AND PROGRAM EVALUATION AND ADJUSTMENT

The Evaluation process of an LCCDP is carried out in two steps: 1) an ongoing evaluation of the Portfolio of Interventions, which includes a review of the results of the Intervention Feasibility Assessment; and 2) a periodic evaluation of the Program and adjustment based on the Program’s performance.

The evaluation of the Portfolio of Interventions compares updated data generated during the MRV process with the original estimations determined during the Intervention Feasibility Assessment, which will demonstrate whether the Portfolio has performed as expected and, if not, will identify areas where adjustments are needed. During the first years of implementation, the Portfolio of Interventions may need to be reviewed more often (i.e., every 6 months) in order to reflect any changes to the Program Implementation Plan. However, as Program implementation continues, the municipality
The second step is an evaluation and adjustment of the overall Program. The aggregated performance of the Portfolio of Interventions can provide an overall understanding of the Program’s performance against targets and objectives. Program evaluation should dive deeper and explore the suitability of the Program design in meeting the municipality’s needs.

CASE STUDY M: Moving Mountains: Cape Town, South Africa

Moving Mountains, Cape Town’s Action Plan for Energy and Climate Change, addresses the challenges the city faces in trying to be a low carbon and resilient city. In order to accomplish this, Cape Town has begun to reduce what is considered to be a high-carbon footprint when compared to similar cities. In doing so, it has to contemplate challenges, such as energy security, rapid urbanization and associated energy poverty, and evaluate urban sprawl patterns and growing population numbers in areas vulnerable to climate change. Given the rapidly changing circumstances in the city, Cape Town has readjusted its climate change policy and practice on many occasions to ensure its approach is relevant and effective.

Cape Town adopted its Integrated Metropolitan Environmental Policy in 2001, identifying a need for an active shift from BAU to a focused sustainability agenda. This approach highlighted the need for integration to increase the City’s commitment to resource conservation. In 2003, after the City’s State of Energy report was released, the City developed the 2006 Energy and Climate Change Strategy, which established a clear vision with measurable targets and objectives for all energy activities and responded to the energy supply and demand profile developed in the State of Energy report. As a result of the 2006 Strategy, the City included “Energy for a sustainable city” as one of eight priority areas within its five-year Integrated Development Plan. This led to the creation in 2008 of an Energy Committee that reports directly to the Executive Mayor. In 2009, the Executive Management Team Subcommittee on Energy and Climate Change was established. As part of this evolving process, a full Council voted on the Energy and Climate Action Plan and approved it in May 2010, making Cape Town’s commitments operational and providing a flexible framework that allows the city to prioritize, budget for, implement, monitor and evaluate its energy and climate change program. The Action Plan is managed and coordinated across all directorates by the City’s Energy and Climate Change Unit, and includes 11 objectives with targets and detailed implementation plans that involve 40 programs and over 120 projects.

As emerging data and analysis have revealed new challenges that must be overcome in order to accomplish low carbon, resilient growth, Cape Town has remained flexible. The City has undergone significant institutional changes to ensure proper alignment, ownership, accountability and adequate resourcing for the Action Plan to be successful.

References:
This will allow for the Program to undergo revision and adjustment as needed. Program evaluation and adjustment should be done considering results against scope, objectives, targets, relevance to evolving market conditions and incentive instruments, and status of the Program Implementation Plan.

The municipality should establish, implement and maintain a procedure for periodic updates and evaluation of compliance with the plans and targets of the Program, and, when applicable, with legal requirements for achieving ERs. Evaluation parameters and frequency should be established before Program implementation. This process of continual evaluation and improvement ensures that the Program stays relevant over its operational lifetime. For an illustrative example, see CASE STUDY M below.

**CONCLUSION**

Setting the necessary procedures to allow for ex-ante assessment and ex-post evaluation and adjustment at the Program and intervention levels are key aspects of an LCCDP. Municipalities and entities responsible for LCCDP implementation should consider these phases very relevant to ensure the Program is fulfilling initial expectations and, if not, to take the necessary corrective measures. It will also provide credibility among stakeholders and potential funding partners.

Validation of the Program by a third party against the Protocol’s requirements will provide initial guarantees that the framework has been correctly set and all necessary elements have been correctly designed. This first demonstration of transparency will be important to gain stakeholder buy-in and commitment throughout the Program’s implementation.

Evaluation of the Program and its interventions will be largely determined by the quality of the MRV system and other processes followed during implementation. Measures of performance, compared against initial targets, will provide useful information on how the program is evolving, as well as where adjustments may be needed.

This Guidebook discusses all essential elements that must be considered for a successful LCCDP. The case studies are intended to provide additional references and sources of information where specific approaches to program elements have been taken by other cities, counties or even countries, if applicable. With an LCCDP that is designed and implemented following this Guidebook, and then validated by a third party according to the LCCDP Assessment Protocol, the municipality is on the right track towards quantifiable, transparent and effective low carbon city development.
ANNEX A: LCCDP Assessment Protocol

PARTICIPATING MUNICIPALITIES AND SCOPE OF THE LOW CARBON CITY DEVELOPMENT PROGRAM

1. The Low Carbon City Development Program (LCCDP) shall assist the Municipality in achieving sustainable development through the implementation of an LCCDP that includes specific reduction targets based on a municipal-wide emissions inventory that upon implementation allows for periodic evaluation.

2. The Municipality has defined the scope of the LCCDP within the possible contributions to sustainable development and the development of a low carbon Municipality, including the start date and length of the Program.

3. The boundary for the LCCDP, in terms of a geographical area within which the Program will be implemented, is defined.

4. The LCCDP shall have been developed and implemented with the approval of the Municipal authorities.

5. The LCCDP shall include provisions to ensure that future political changes will not affect the existence of the Program.

6. The LCCDP includes a process for involving local stakeholders in developing policies and projects under the Program, including a public comment period.

7. The LCCDP aims to develop measures for reducing greenhouse gas (GHG) emissions that add carbon reduction value, which is demonstrated as outlined below.

When in the absence of the Program:

i. the proposed voluntary measure would not be implemented; or

ii. the mandatory policy/regulation would not be enforced systematically and non-compliance with those requirements is widespread in the Municipality.

OR
When the Program:

iii. leads to a greater level of enforcement of the existing mandatory policy/regulation; or
iv. allows for emission reductions (ERs) exceeding the mandatory reductions required under existing policy or regulations.

8. The Municipality has taken into account an initial GHG emissions level, which is defined in either absolute or relative terms and serves as the baseline for implementation of the GHG ER objectives and targets to contribute to low carbon city development.

   The Municipality has developed, or over time intends to develop, a municipality-wide GHG inventory to evaluate the effectiveness of the actions implemented towards real low carbon city development. The GHG inventory shall provide sectoral data, including the most representative sectors present in the Municipality. The GHG inventory includes data allowing for the reasonable calculation of a business-as-usual (BAU) emissions growth.

9. The Municipality has established a process for calculating the GHG emissions inventory and updating it periodically. This process includes: definition of responsibilities and authorities; data collection and consolidation; quality control; and periodic review. The GHG inventory shall be third-party verified.

**PROGRAM POLICY, OBJECTIVES AND TARGETS**

10. The Program identifies the responsibility for defining the Municipality policy, objectives and targets for low carbon city development.

11. The Program defines a Municipality commitment declaration towards low carbon city development and, within the scope of the Program, that:

   a. is appropriate to the Municipality, and its main environmental, social and economic impacts;
   b. includes a commitment to continued improvement;
   c. considers strategies for decoupling GHG emissions from economic growth within the largest emitting economic sectors as defined within the Municipal city inventory;
   d. includes a commitment to comply with applicable legal and other requirements;
   e. subscribes to its own ER commitments;
   f. provides the framework for setting and reviewing low carbon city development objectives and targets;
   g. ensures ERs are not double counted;
   h. is documented, implemented and maintained;
   i. is communicated to all stakeholders; and
   j. is available to the public.

12. The Municipality shall establish, implement and maintain documented low carbon city development objectives and targets.

13. Objectives and targets shall be measurable, where practicable, and consistent with the low carbon city development declaration, including commitments to:

   i. reduce GHG emissions;
   ii. comply with applicable legal requirements related to GHG emissions, and with other requirements to which the Municipality subscribes; and
   iii. continual improvement.

14. The Program’s objectives and targets shall cover different major emitting sectors as defined by the Municipality’s GHG inventory. The final decision process to establish the objectives and targets shall consider, among other things, a cost-benefit analysis of the potential achievement through intervention in different sectors, technological options, financial, sectorial
development goals and business requirements, and views of interested parties.

Upon developing policies or projects outside of the top emitting sectors, the Municipality should execute a cost-benefit analysis of the potential achievement through the intervention in lower-emitting sectors compared to higher-emitting sectors. This analysis shall include:

1. technological options;
2. financial considerations;
3. potential contribution to sustainable economic development; and
4. stakeholder input.

15. The achievement of the Program objectives and targets is planned through the implementation of a portfolio of policies and projects over a defined time period. The portfolio shall represent a combination of cost-effective, implementable actions, representative of the major GHG emitting sectors based on the Municipality-wide inventory.

16. The Municipality shall establish, implement and maintain a plan(s) for achieving its objectives and targets, which shall include:
   a. designation of responsibility for achieving objectives and targets at relevant functions and levels of the Municipal organization;
   b. the means and timeframe for achievement;
   c. benchmarks for selected policies and projects; and
   d. a process for stakeholder engagement, including a reasonable public comment period.

17. The Plan shall include the following aspects for the implementation of policies and projects to be incorporated in the Program:
   a. timeline for incorporation;
   b. estimated mitigation potential;
   c. analysis of implementation barriers, which allow planning to be classified in short- (1–3 years) and long-term (>3 years) execution;
   d. periodic (e.g., annual) targets for the each policy/project;
   e. monitoring and reporting system; and
   f. assessment processes (e.g., third-party verification) for progress achieved by each policy/project.

18. The Municipality shall ensure the availability of resources essential to establish, implement, maintain and improve the LCCDP. Resources include human resources and specialized skills, organizational infrastructure, technology and financial resources.

19. Roles, responsibilities and authorities shall be defined, documented and communicated in order to facilitate effective management.

20. The Municipality shall appoint a Coordinating Management Entity (CME) that, irrespective of other responsibilities, shall have defined roles, responsibilities and authority for:
   a. ensuring an LCCDP is established, implemented and maintained in accordance with the requirements of this Protocol;
   b. ensuring ERs are not double counted; and
   c. reporting to a selected entity appointed by the Municipality on the performance of the Program for review, including recommendations for improvement.

21. The CME shall establish an operational and management system, including documented procedures when appropriate, for Program implementation.

Program documentation shall include or refer to other documents that include:
a. documentation of the Program boundary in terms of a geographical area within which all policies and projects will be implemented;
b. length of the Program;
c. Program policy, objectives, targets and plans;
d. a description of responsibilities and authorities;
e. document and record keeping procedures for the Program and each policy/project to demonstrate conformity with the Protocol’s requirements;
f. documented procedure to avoid double counting; and
g. documented procedures for periodic evaluation of the impact of policies and projects implemented under the Program.

22. A Program Registry, which: tracks offsets that are either cancelled or sold; is periodically updated; and serves as the record of all transactions of ERs from interventions included in the Program.

POLICIES DEVELOPED UNDER THE PROGRAM

23. The Program includes the implementation of Policy interventions that contribute to the objectives and targets agreed to in line with the LCCDP of the Municipality.
24. A documented procedure to develop, approve, implement and periodically evaluate Policy interventions, including the definition of responsibilities and authorities.
25. The Program objectives and targets include conservative ER estimates from Program policies.
26. A baseline shall be established for each of the policy interventions implemented, in a transparent manner and taking into account relevant, national/local and/or sectoral policies and circumstances.
27. The ERs achieved through policy intervention implementation shall be additional to those in the baseline scenario, real and measurable and provide long-term benefits related to climate change mitigation.

EMISSION REDUCTION OFFSET PROJECTS DEVELOPED UNDER THE PROGRAM

28. The Program includes the implementation of project types that contribute to the objectives and targets developed in line with the Municipality’s LCCDP.
29. A documented procedure to develop, approve, implement and periodically evaluate those projects participating in the Program was developed.
30. Eligibility criteria for each project type allowed under the Program are defined, which shall address the demonstration of additionality, and the type and/or extent of information (e.g., criteria, indicators, variables, parameters or measurements) that shall be provided by each project to ensure its eligibility.
31. The Program establishes the ER methodologies, which can be applied to offset projects under the Program.
32. In the case of ER methodologies approved by other programs, the LCCDP documentation established an evaluation procedure of other programs/methodologies to ensure that those accepted under the LCCDP are cohesive with respect to:
   i. additionality;
   ii. conservativeness of the ER estimation/calculation; and
   iii. monitoring requirements.
33. The Program defines the level of accuracy/precision accepted for the ER calculated with the approved methodologies.
34. In the case of methodologies not approved by an accepted program, the LCCDP documentation establishes a process for approving a
methodology, which includes the minimum criteria that all methodologies shall comply with so that ERs claimed using those methodologies are additional, real, verifiable and conservatively calculated with a reasonable level of assurance.

35. The Program objectives and targets include ER estimates from projects under the Program that are conservatively calculated.

36. The ERs achieved through offset projects shall be additional, real and measurable, and have long-term benefits related to the mitigation of climate change.

37. The Program includes provisions to ensure that ER projects under the Program are in compliance with ISO 14064–2.

38. Additionality of a specific project is demonstrated using the procedure provided in the baseline and monitoring methodology applied.

39. A baseline shall be established on a project basis, in a transparent manner and taking into account relevant national/local and/or sectoral policies and circumstances.

40. The Program shall ensure that the evaluation of environmental impacts of the projects, including transboundary impacts, is undertaken, when applicable, and is in accordance with the applicable regulations.

MONITORING AND REPORTING ON PROGRAM PERFORMANCE

41. The Municipality shall establish, implement and maintain a procedure or procedures to monitor, on a regular basis, the key characteristics of its activities that can have a significant impact on low carbon city development, including:

i. city-wide GHG inventories; and

ii. policies and projects implemented under the Program

The procedure(s) shall include the documenting of information to monitor performance and conformity with the Program objectives and targets.

42. Consistent with its commitment to compliance, the Municipality shall establish, implement and maintain a procedure or procedures for periodically evaluating compliance, when applicable, with legal requirements for GHG ERs. The Municipality shall evaluate compliance with other voluntary requirements to which it subscribes.

43. The Municipality shall review Program performance at planned intervals, to ensure continued suitability, adequacy and effectiveness. Reviews shall include assessing opportunities for improvement and the need for changes to the LCCDP, including policy, objectives and targets.

VERIFICATION OF POLICIES AND PROJECTS UNDER THE PROGRAM

44. The Program includes provisions for the assessment and verification of ERs from policies and projects under the Program by a third independent party against ISO 14064 or other relevant standards.