

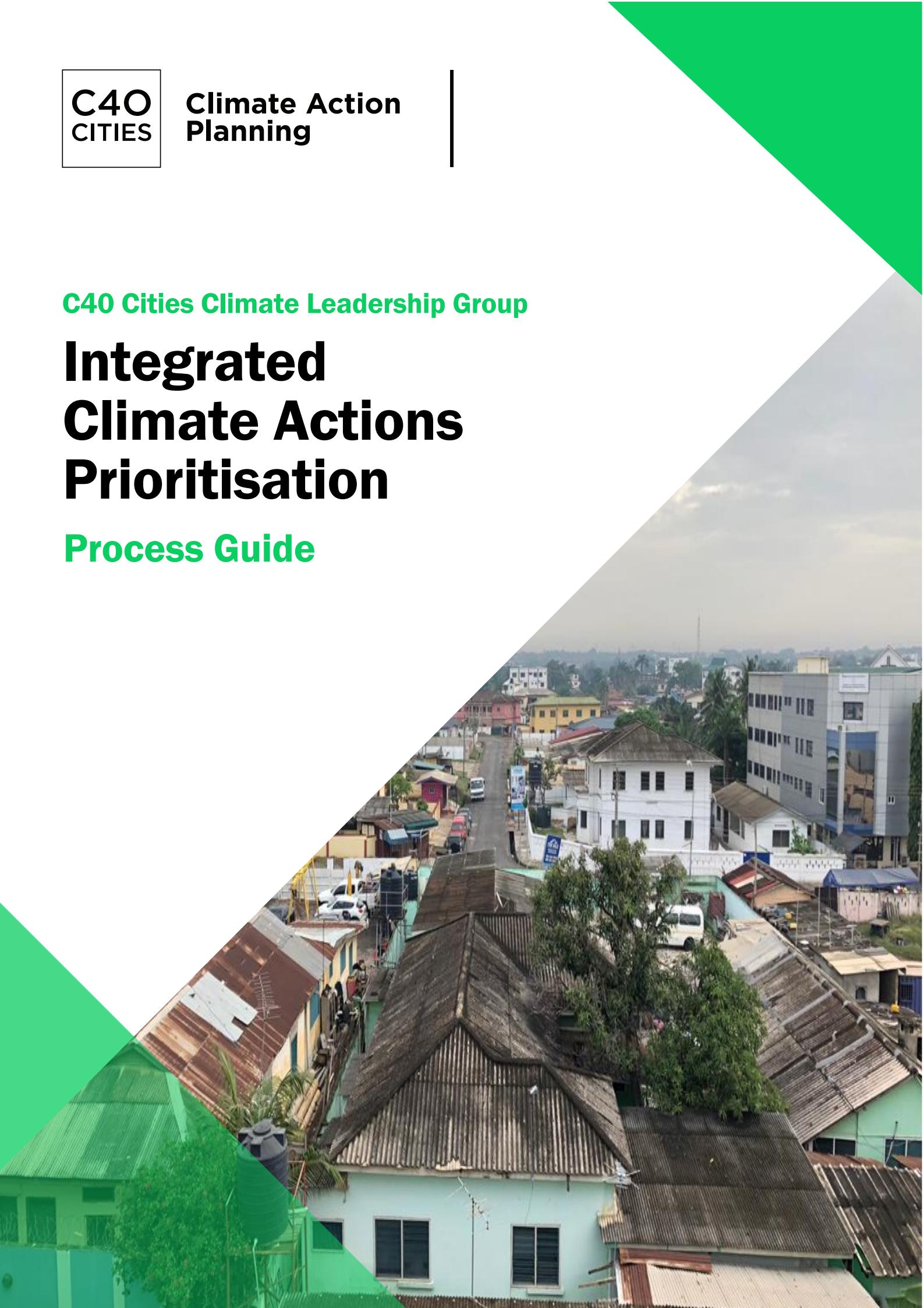
**C40
CITIES**

**Climate Action
Planning**

C40 Cities Climate Leadership Group

Integrated Climate Actions Prioritisation

Process Guide



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C40 CITIES

The C40 Cities Climate Leadership Group connects 90+ of the world's greatest cities which have committed to tackling climate change. We bring mayors from around the world together to learn from each other in reducing greenhouse gas emissions and creating resilient, sustainable and inclusive cities.

C40 cities represent more than 700 million urban citizens and their economies account for 25% of global GDP. Our 'Deadline 2020' report sets out the critical role that the world's major cities have to play in delivering the historic Paris agreement to prevent catastrophic climate change.

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SECTION 1

Introduction

Purpose of the Process Guide

The purpose of this document is to provide guidance to city staff and other users on how to lead a city through a climate mitigation and adaptation action prioritisation process that reflects both best practices in climate action planning and the unique context and priorities of their city. The goal of this process is to help prioritise implementable actions that will provide substantial emissions reductions, increase climate resilience, and promote environmental, and economic co-benefits. This Process was developed through extensive case study research, reviews of existing prioritisation processes/tools, and interviews with C40 City Advisors around the world, as well as subject matter experts within and outside the C40 organization.

The *C40 Climate Action Prioritisation Process Guide* (Guide) begins with an introductory section to orient the reader by describing the importance and benefits of action prioritisation and provides a summary of the action prioritisation process. Section 2: Process

Flexibility describes how the process has been designed to be customized by each city based on their unique context. Section 3: *Stakeholder and Community Engagement* explains the importance and benefits of stakeholder engagement, and how the engagement process can be adapted to the city's culture of decision-making. Section 4: *Action Prioritisation Process* is a step-by-step guide for users to understand specifics of the entire process.

This Guide is a companion to the *C40 Climate Action Prioritisation Tool* (Tool), an Excel-based software tool that documents action information and provides graphic outputs to support the decision-making process through a comparison of action benefits and challenges. It is important that users understand that the Tool is designed to support decision-making, not make decisions itself. For specific instructions on how to use the Prioritisation Tool, please see the *C40 Climate Action Prioritisation Tool User Manual*.

The importance and Benefits of Prioritisation

Action prioritisation is a crucial step in the C40 Climate Action Plan (CAP) process because it results in a more implementable and impactful plan. The action selection process builds on the emissions scenario planning work and adaptation goal setting. In an ideal world, cities would be able to begin pursuing all actions necessary to achieve carbon

neutrality and climate resilience simultaneously, but the reality is that cities have limited resources and many competing priorities. An action prioritisation process that reflects the priorities of the city is more likely to be successful and therefore help meet the city objectives around ambitions emission reductions and adaptation.

What is an Action?

In the context of this prioritisation process, an action is defined as a policy, program, or physical project that is specific enough to be qualitatively assessed based on emissions reduction, climate risk reduction, co-benefits, and feasibility. For example, a mitigation action could be “Implement a bus rapid transit line on International Boulevard from Downtown to the Eastside neighborhood” and an adaptation action could be “Construct bioswales on major corridors in the Parkview neighborhood”.

Framework for Rating Actions

In this prioritisation process, actions are evaluated based on three separate categories – Primary Benefits, Co-Benefits, and Feasibility. Actions receive a separate score for each, allowing comparison of how actions perform within each category and across the categories. This approach provides greater

nuance and actionable information than if these categories were summed into a single score. It also gives cities the flexibility to decide how these different factors influence prioritisation to reflect their unique context. A summary of each category is included below:

- ◆ **Primary Benefits** are the climate mitigation (emissions reduction) and climate adaptation (risk reduction) potential of actions. Actions that contribute to both emissions reduction and risk reduction receive an additional score in order to elevate actions that provide both benefits.
- ◆ **Co-Benefits** are benefits generated by climate actions beyond the primary benefits of emissions reduction and risk reduction. For example, actions designed to address climate change can also improve air quality, reduce the cost of living, or create jobs and new economic opportunity. Assessing co-benefits is important to capture the full range of benefits that the action provides and to justify actions to decision-makers.
- ◆ **Feasibility** is a rating of how easy or difficult it will be to implement the action. Feasibility is based on

a variety of factors such as cost, city authority to implement, technological/market readiness and political acceptability. While C40 does not recommend that actions with low feasibility should be automatically de-prioritised, assessing action feasibility provides important context for decision-makers.

For Co-Benefits and Feasibility, cities may choose from a list of suggested criteria or define their own. They may also decide to weight individual criteria based on their relative importance according to local context. Primary Benefits reflect the fundamental goals of the C40 CAP Programme—therefore weights are not customizable for these criteria.

See *Section 4: Action Prioritisation Process (Step 6: Action Rating)* for a detailed discussion of each category, definitions for criteria within them, and the mathematical formulas that determine how scores for each category are calculated.

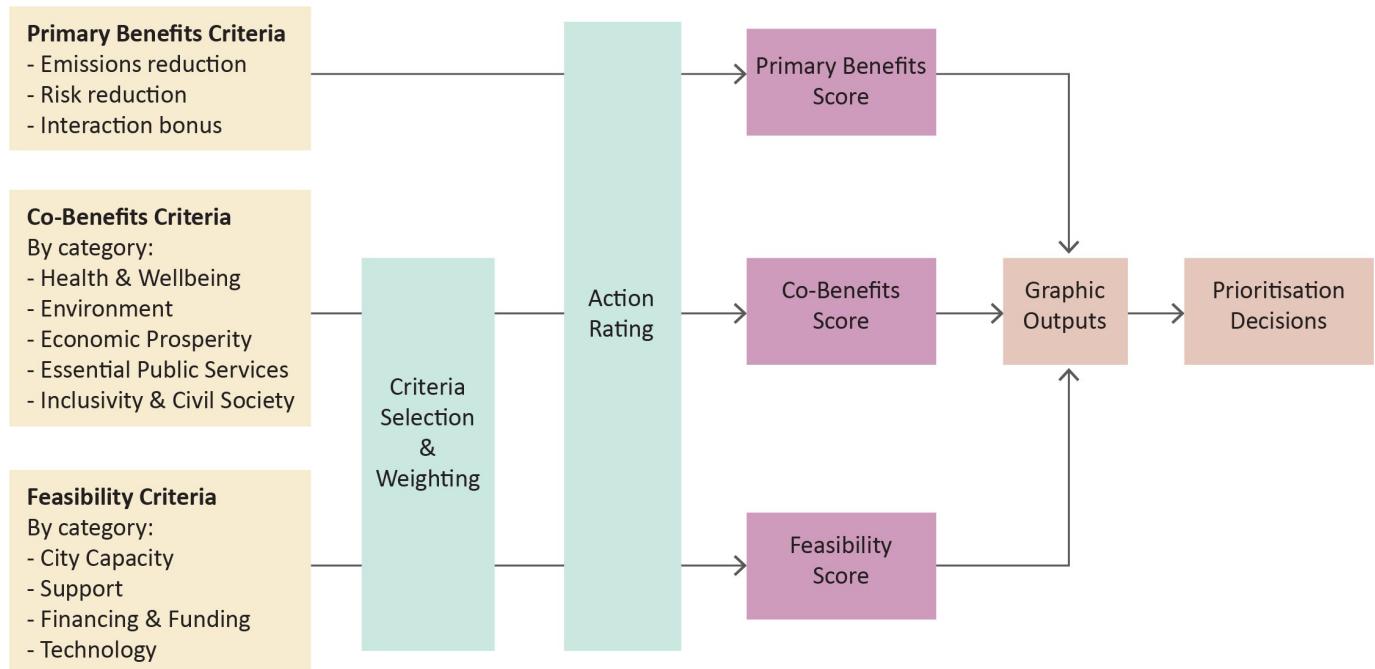


Figure 1: Action Rating Framework

Action Prioritisation Process Summary

The action prioritisation process is designed to enable users to develop a long list of potential climate mitigation and adaptation actions that a city could pursue. From this list, cities would select a short list of actions (approximately 20 to 30) for inclusion in the CAP based on how the actions perform in a three-pronged assessment based on primary mitigation and adaptation benefits, co-benefits, and feasibility. The steps in the process include:

1. **Emissions and Climate Hazard Context** – information from previous analyses is gathered,

including the relative contribution of emissions sources based on the city's GPC-compliant greenhouse gas emissions inventory, and estimates of the relative likelihood and impacts of climate hazards that the city faces.

2. **Action Development** – an initial long list of potential actions that could reduce greenhouse gas emissions, vulnerability to climate hazards, or both, is developed for further evaluation.

3. **Initial Screening** – screening questions flag actions that will not provide mitigation, adaptation or wider inclusivity benefits, and actions that could cause substantial negative impacts, like maladaptation, emissions lock-in. Cities have the option to remove actions that are flagged in this step, revise the actions so that they are no longer flagged during the screening, or choose to allow the actions to pass onto the next step as they are currently written.
4. **Action Refinement** – basic information is entered for each action that passes the initial screening, including what emissions source(s) and/or climate hazard(s) they address and additional context information.
5. **Criteria Selection and Weighting** – users select co-benefits and feasibility criteria that reflect the city's priorities and context. Cities can apply weights to the selected co-benefits and/or feasibility criteria based on their relative importance.
6. **Action Rating** – relevant stakeholders rate each action for primary benefits, and the selected co-benefits and feasibility criteria.
7. **Final Prioritisation** – based on the action rating and weighting steps, the Tool produces separate Primary Benefits, Co-Benefits, and Feasibility Scores for each action. The scores inform a series of dynamic graphic outputs to facilitate interpreting analysis results. Through a workshop or other participatory process, staff will rank the actions for implementation priority. Non-prioritised actions are saved in the Tool to provide process transparency and institutional memory for future CAP action discussions.
8. **Communicating Results** – the results of the final prioritisation should be first communicated to stakeholders who were involved in the previous steps. When developing the CAP document, users can use information gathered during the prioritisation process, as well as Tool-generated outputs to communicate benefits of the chosen actions and show how they achieve community priorities.

See Section 4: *Action Prioritisation Process* for a detailed description of each step listed above.

The Climate Action Prioritisation Tool

The prioritisation process is intended to be carried out using the *C40 Climate Action Prioritisation Tool*, which provides the following key functionalities:

- ◆ **Action Documentation** – the Tool documents information from all actions considered, including what emissions source(s) and/or climate hazard(s) they address. For actions that pass the initial screening, the Tool stores information on scale, anticipated effectiveness, and contribution to co-benefits, as well as factors that influence feasibility, such as city authority, political acceptability, or additional capital required to implement.
- ◆ **Process Guidance and Automated Calculations** – the Tool guides users through the process described in this document, with a module for each step detailed in *Section 4: Action Prioritisation Process*. In addition, it automatically creates tables based on what co-benefit and feasibility criteria are selected and performs all scoring calculations based on qualitative ratings entered by the user.
- ◆ **Transparent Record of Decision-Making** – in addition to documenting information on specific actions, the Tool provides a record of decisions and evaluation results. For actions that do not pass the initial screening, users can see which screening questions each action failed. The Tool also provides a record of which evaluation criteria were chosen, how each criterion was weighted, and how each action performed for individual criteria. In addition, the tool can support options analysis (e.g., assessing two potential actions targeting the same outcome and assessing which approach delivers more benefit).
- ◆ **Dynamic Outputs** – the Tool generates dynamic graphic and tabular outputs based on the actions, criteria, and ratings chosen or selected by the user. These outputs can inform final prioritisation, communicate the benefits and feasibility of actions to decision-makers, and be included in the CAP document itself.

User Note

It is important that users and city staff understand that the Tool is designed to support decision-making, not make decisions itself. While the Tool automates the scoring of actions and produces graphic and tabular outputs, it does not generate a single score or ranking of actions. Instead, the graphic and tabular outputs of the assessment are designed to help users understand the tradeoffs between primary benefits, co-benefits, and feasibility across a range of actions. The final prioritisation decisions will be informed by these outputs and should ideally be made by a group of relevant stakeholders including the user, city staff, and external stakeholders.

SECTION 2

Process Flexibility

The structure of this process allows for flexibility based on unique city context, including the criteria that are used to assess actions, data requirements, and the level of effort necessary to complete each step in the process. This section provides an overview

of opportunities for flexibility, and the factors likely to influence how a city customizes the process. Flexibility in the approach to stakeholder engagement is discussed in *Section 3: Stakeholder and Community Engagement*.

Customizable Criteria and Weighting

The criteria used to assess actions should reflect the priorities and unique context of the city to ensure the process prioritises actions that are likely to be accepted by decision-makers and the public and therefore be implemented. To this end, a series of co-benefit and feasibility criteria are included in the Tool. The criteria that are likely to be applicable to most cities are pre-selected in the Tool, but cities can also choose from additional optional criteria or define their own. It is recommended that input from internal and external stakeholders be incorporated into criteria selection and weighting in order to maximize buy-in and to ensure that the prioritisation process reflects city and community priorities.

Note that while the Co-benefits and Feasibility criteria are customizable, the Primary Benefits criteria are not. As the purpose of the C40 Climate Action Planning Framework is to guide cities in effective action planning that implement actions that reduce emissions and/or risk from climate hazards, an action that does not achieve either of these goals should not be prioritised in the CAP. For a detailed discussion of evaluation criteria, please see *Section 4: Action Prioritisation Process (Step 5: Criteria Selection and Weighting)*.

In *Section 4: Action Prioritisation Process*, most steps include a gradient of options ranging from “Essential” (low level of effort, low robustness) to “Go Further” (higher level of effort, higher robustness).

Level of Effort Options

The amount of staff time/resources that are available for this process will vary from city to city. In some, there may be a team or office that is dedicated to climate action, sustainability, or resilience and have additional staff to support them; in others, users may be working alone or have limited access to technical staff. While cities should ensure that their prioritisation process is as robust and participatory as possible, the Process and Tool have been designed to allow for flexibility in the level of effort necessary to complete each step (see call-out box Level of Effort Options below). This document presents best practices, and an “ideal” process, but will also guide cities on how to simplify and adapt the process based on what is feasible and applicable locally.

Essential – Practices that are the minimum level of effort necessary to complete the prioritisation process. These options can be carried out with very limited staff support, data, or input from stakeholders and therefore may result in a prioritisation process that is time and resource efficient, but not as technically accurate or lacks stakeholder buy-in. Cities should only choose these options if more robust options are not feasible and should limit the number of steps in the process that use an Essential approach to the extent possible.

Good Practice – Practices that require additional effort, data, and/or stakeholder engagement, and will result in a more accurate assessment with greater buy-in as a result. Cities should aspire to apply the Good Practice option for every step in the process as this will greatly increase the robustness of the prioritisation process.

Go Further – Practices that will produce the best results, but also require additional effort and may not be applicable to all cities. Due to resource limitations and other factors, C40 recommends that each city choose Go Further options strategically based on what points in the process will benefit most from additional effort given specific city contexts.

Emphasis on Qualitative Assessment

Across cities there is wide variability in data availability, access, and accuracy. Cities with high-quality data can more accurately calculate emissions, climate risk, and estimate the impacts of various actions. Other cities will need to rely more heavily on expertise from internal and external stakeholders.

The action prioritisation process has been designed to limit the amount of time and resources that cities need to spend on data gathering, modelling, and quantifying estimated benefits. Many cities will not have the technical capacity, financial resources, or access to data to support quantification for a long list of potential actions. Even for cities with high data access and analysis capacity, the goal of this process is to efficiently prioritise from a long list of actions. Therefore, this process leverages expertise from internal, external, and community stakeholders to rate qualitatively action performance against chosen criteria.

If users determine that quantification of expected benefits (or costs) will increase the likelihood that

decision-makers support prioritised actions, quantification can be performed on the final prioritised actions for a subset of key criteria. This will substantially reduce the effort and data requirements necessary for quantification, and will ensure those efforts are focused on high performing actions that already have buy-in.

The robustness of the qualitative assessment can be increased by ensuring that when stakeholders are consulted, they are relevant to the types of actions being rated (e.g., transportation planners evaluating transportation sector actions) and represent multiple perspectives. Users that do have quantitative data for some actions (i.e., the capital costs of some actions have already been estimated) can define order of magnitude thresholds for that criterion. This way, actions that have specific data and those that are estimated can be rated according to the same logic. For more detail on action rating, please see Section 4: Action Prioritisation.

Qualitative Assessments of Co-benefits – New York City and Los Angeles

New York City and Los Angeles are well-resourced cities with high technical capacity and administrations who are dedicated to the goals of the C40 Climate Action Programme. However, during their action prioritisation processes, both cities still opted for a qualitative assessment of co-benefits.

Los Angeles rated actions on a scale of -1 to 2 for each of seven co-benefits. New York City assigned scores on a 1 to 5 scale for 13 co-benefits organized into four categories. In both cases, the ratings were based on framing questions, expert opinion, and desktop research. Both cities determined that the time and effort required to produce quantitative estimates of co-benefits would not add significant value to the prioritisation process.

Flexible Interpretation of Results

Rather than producing a single score for each action that would lead to a simple ranking of all actions, the prioritisation process calculates three separate scores (Primary Benefits, Co-Benefits, and Feasibility) that are displayed in a series of dynamic and customizable outputs in which actions can be filtered or sorted by attributes (e.g., scores, action type, subsector addressed). A city's unique context should inform how these outputs contribute to final prioritisation. For example, some cities may prioritise

adaptation and mitigation actions jointly, while others may prioritise them separately. Some cities may want to choose the top performing actions overall, while others may want to choose the top performing actions from each subsector to ensure that responsibility for action implementation is distributed across city departments and emissions/vulnerability reduction is achieved across each sector. See Section 4: Action Prioritisation Process, Step 7: Final Prioritisation for a more detailed discussion of interpreting outputs.

SECTION 3

Stakeholder and Community Engagement

Stakeholder engagement should be an integral part of the prioritisation process. Consulting representatives of relevant city departments, sectors, and communities affected during action development helps ensure that actions are realistic and well-designed. Incorporating stakeholder input during the criteria selection and weighting increases the chances that prioritised actions are implemented since they already have stakeholder and/or public

support. Stakeholder expertise can also be harnessed to increase the robustness of the qualitative rating of actions, as described above.

This section provides an overview of stakeholder engagement as it relates to the overall process. Details on specific stakeholder engagement strategies recommended for each step of the process will be described in *Section 4: Action Prioritisation Process*.

Types of Stakeholders

Stakeholders can be categorized into the three groups below. While it will likely be easiest for users to solicit input from internal city stakeholders, it is recommended that all types of stakeholders be included in at least some part of the process.

- ◆ **Internal City Stakeholders** – elected officials, department leads/representatives
- ◆ **External Stakeholders** – utility companies, transit operators, other sector representatives, funders and development finance institutions (DFIs), relevant state/national departments
- ◆ **Community and Civil Society Stakeholders** – community-based organizations (especially representatives of vulnerable communities), academia, business representatives

Culture of Stakeholder Engagement

Some cities already have robust stakeholder engagement processes built into their decision-making structures, while others make decisions through internal technocratic or political processes in a culture that favors a more top-down approach. These factors will need to be considered when customizing the internal and external stakeholder engagement approach.

Generally, cities will fall into one of three categories, which will determine how they should approach engagement:

- ◆ **Strong Existing Culture of Stakeholder Engagement**

In these cities, stakeholder engagement is already institutionalized into planning processes, and City staff are accustomed to holding workshops and public meetings.

Users in cities within this category should focus on selecting the relevant stakeholders from existing

Capacity for Stakeholder Engagement

When cities have demonstrated their commitment to pursuing carbon neutrality through joining C40, this does not mean that every city department will treat this objective as a priority. In a city where emissions reduction is a primary goal of the current mayor, users may find it easy to get support and input from department leads and other key decision makers; in other cities, users may find that decision-makers are more focused on other issues and face challenges in receiving CAP input. This will influence the degree to which stakeholder expertise can be leveraged for action development and rating, or the number of workshops and level of attendance that is feasible.

relationships for each point in the process and ensuring stakeholders consulted are representative and include vulnerable communities.

- ◆ **Strong Interest in Stakeholder Engagement but Less Capacity or Experience**

Decision-makers and/or city staff understand the value of stakeholder engagement and are interested in increasing their capacity to harness stakeholder input, but they lack experience in facilitating workshops and including stakeholders in decision-making is not institutionalized or routine.

Users in cities within this category should focus on communicating best-practices in stakeholder engagement, identifying relevant stakeholders, and using the action prioritisation process as an opportunity to institutionalize engagement into city decision-making.

◆ Lack of Culture Supporting Stakeholder Engagement

The city is not interested in or is actively opposed to soliciting stakeholder feedback. This may be because the city's political structure or legal system is less representative, because the city's culture is more top-down or hierarchical, or because city staff are concerned that

incorporating outside input into the prioritisation process may result in actions being prioritised that decision-makers do not want to implement.

Users in cities within this category should focus on demonstrating the benefits of stakeholder engagement to decision-makers and identifying forms of stakeholder engagement that can be integrated within the city's existing decision-making structure.

Incorporating Stakeholder Input into the Prioritisation Process

This section provides a brief summary of the value of soliciting stakeholder input at various points in the prioritisation process. In Section 4: Action Prioritisation Process, more specific options for including stakeholder input inform many of the level of effort options at several steps in the process.

Action Development

Representatives of city departments, key sectors, business, academia, and communities impacted by climate change can all be valuable sources of ideas for action. Actions developed based on stakeholder expertise and input are likely to be more feasible and have greater buy-in than if actions are developed internally with no consultation.

As described in C40's [Inclusive Community Engagement: Executive Guide](#), "the Paris Agreement recognizes the need to put vulnerable groups at the heart of decision making not only as a means to address their vulnerability but also because they can be highly knowledgeable about the adaptation actions that are required – although often lacking the power to see them implemented."

Selecting and Weighting Evaluation Criteria

Stakeholders should be involved in the selection and weighting of evaluation criteria because this will ensure that actions are evaluated based on criteria

that reflect the priorities of decision-makers and the community. This step presents an opportunity to have community input formally integrated into the prioritisation process. Representatives from different community and/or stakeholder groups can vote on weighting decisions and the final weights can be calculated based on those votes.

Action Rating

It is recommended that users form several focus groups of expert internal and external stakeholders addressing each of the major sectors for action rating. For example, when rating the benefits and feasibility of transportation actions, users could consult representatives of the city's transportation department, major public and/or private transit operators, community mobility advocates, or other similar stakeholders.

Final Prioritisation

After the actions have been rated, the process should include a final workshop to select actions for prioritisation based on the outputs of the C40 Action Prioritisation Tool. Graphic outputs of the Tool can be used in presentation slides or presentation boards. The structure of this final workshop should be organized based on the level of involvement/engagement from stakeholder groups during previous stages of the process.

Importance of Stakeholder Input in Action Development

In one C40 city, the previous CAP included actions developed without consultation of stakeholders from key sectors impacted by the plan, including the private building sector. The result was development of ordinances in the CAP that received little compliance in the city. Now, the C40 City Advisor is encouraging the city to develop building sector actions with input from real estate developers and building owners to improve plan support from the private building sector and increase the likelihood of implementation.

Stakeholder Input in Criteria and Weighting Selection – Dhaka, Bangladesh

In Dhaka, a participatory adaptation project used community stakeholder input to select and weight action evaluation criteria, which were then rated by technical experts. Focus group discussions were conducted to identify the most important evaluation criteria to be considered in assessing adaptation measures. Participating community stakeholder groups were identified based on anticipated impacts in the community. Participants were grouped with similar stakeholders (farmers, shop owners, informal settlement residents, etc.), and each group received one vote when defining criteria weights.

SECTION 4

Action Prioritisation Process

This section is a step-by-step guide detailing the prioritisation process for city staff and other users. It begins with an overview of the entire process to orient users, and describes the purpose, process, and various level of effort options for each step. This section focuses on describing the entire process, including how the Tool should be used at each step in the process. For more specific instructions on how to navigate and operate the Tool, please see the *C40 Climate Action Prioritisation Tool User Manual*.

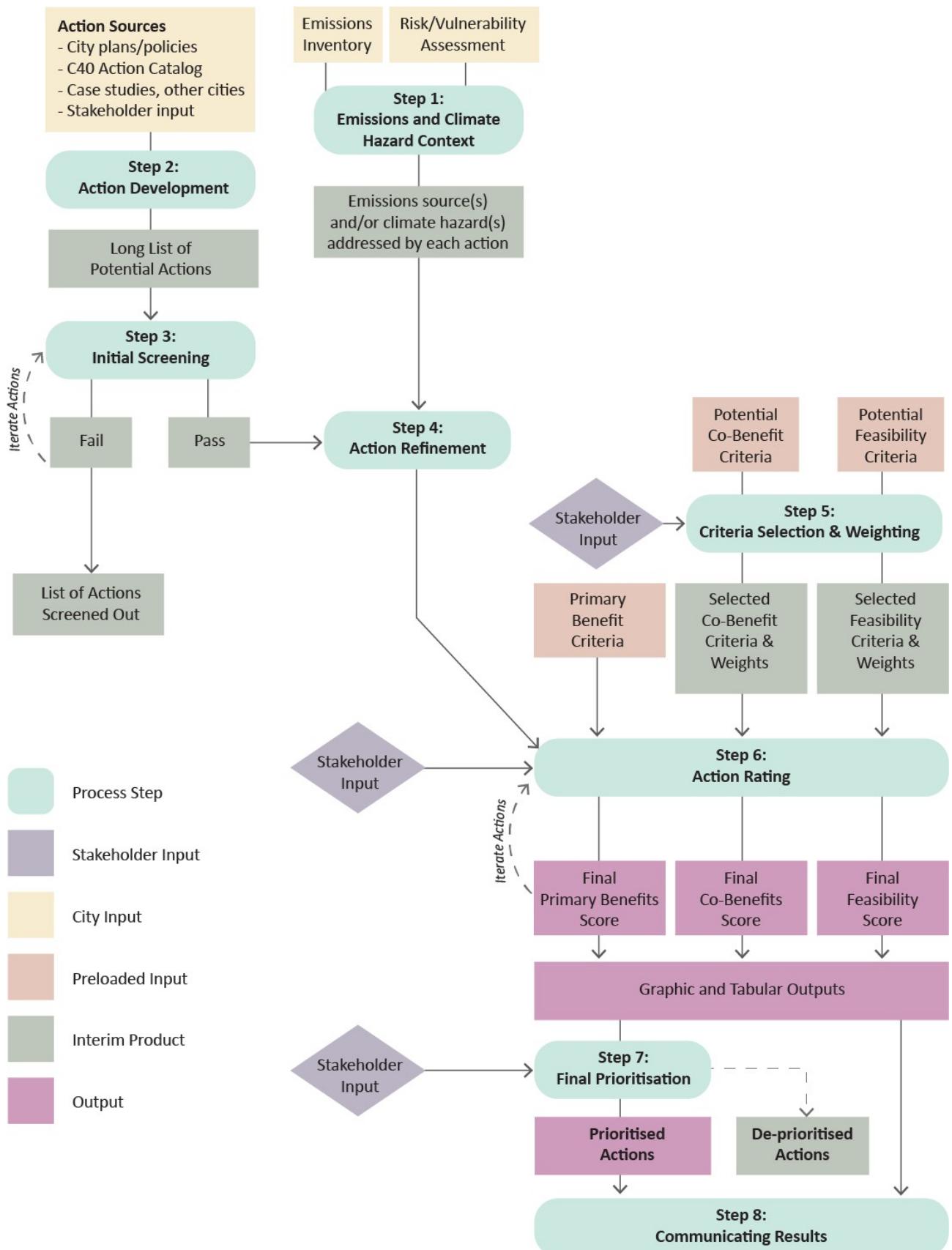


Figure 2: C40 Climate Action Prioritisation Process Summary Flowchart

STEP 1: EMISSIONS AND CLIMATE HAZARD CONTEXT

During this initial step, users gather information on the city's emissions sources and climate hazards. It is anticipated that this information will be available based on previous steps in the C40 CAP Process, such as the completion of a GPC-compliant greenhouse gas emissions inventory. This information is a prerequisite for the action prioritisation process—in a later stage, actions are linked to the emissions source(s) and/or climate hazard(s) they address, forming a component of the Primary Benefits Score for each action (see Step 6: Action Rating).

Emissions Sources

Based on the city's most recent GPC-compliant greenhouse gas emission inventory, users should enter data on BASIC or BASIC+ emissions (in MT CO₂e) by subsector into the Emissions Sources screen under Step 1: Emissions and Climate Hazard Context. Emissions subsectors omitted from the city's greenhouse gas inventory can be left blank in the Tool. Cities should enter the emissions inventory information (e.g., BASIC, BASIC+) that aligns with their emissions reduction target setting.

In addition to emissions by subsector, total Scope 2 emissions are necessary to evaluate actions that address emissions from electricity consumption. Subsector emissions and total Scope 2 emissions can be copied directly from the city's CIRIS inventory file or can be calculated by summing the electricity consumption emissions from each subsector.

Based on the data entered, the Tool will calculate the proportion of total emissions from each subsector and electricity use, expressed as percentages. Note that while the percentages of all subsectors will add up to 100%, the emissions associated with electricity consumption are already included in the subsector emissions and therefore overlap with the subsector total.

While total Scope 2 emissions are necessary to estimate potential emissions reductions of actions that aim to increase renewable energy sources in the electric grid, users do not need to enter Scope 3 emissions separately. It is not anticipated that cities will be evaluating actions that specifically address scope 3 emissions only. If a city has completed a BASIC+ inventory, several Scope 3 emissions sources will already be included in the total emissions entered for each subsector.

Climate Hazards

Users should qualitatively evaluate the risks posed by various climate hazards and enter this information into the Climate Hazards screen under Step 1: Emissions and Climate Hazard Context. Ideally, this information will be available as part of the city's Climate Risk Assessment or Climate Vulnerability

Assessment. For cities that have not completed a risk or vulnerability assessment, a qualitative assessment can be performed based on desktop research and/or leveraging stakeholder expertise (see Level of Effort Options below).

Defining Climate Hazards

Climate hazards are climate change-related weather induced events that have the potential to cause significant negative impacts in the city. It is anticipated that the most common climate hazards cities will consider are rainfall flooding, storm surge and sea-level rise, extreme heat, drought, and wildfires. These climate hazards are the focus in the [C40 Adaptation Monitoring Evaluation and Reporting Framework](#) and are included as defaults in the Climate Hazards screen in the Tool, but cities may choose to add additional criteria (e.g., landslide, vector-borne disease outbreak). For an extensive list of possible climate hazards, please see Table 1 in [C40's Climate Risk Change Assessment Guidance](#).

Cities may also wish to increase the specificity of the default climate hazards (e.g., rainfall flooding from a 100-year storm event, a heat event of five or more days with temperatures above 37° C) that they want their CAP actions to address.

Choosing a Timeframe and Emissions Scenario

The uncertainty surrounding climate change projections adds an additional level of complexity to assessing risk from climate hazards. To simplify this process, cities should evaluate risk based on conditions that are expected to occur by a chosen year under a chosen emissions scenario. It is recommended that cities use 2050 under a high climate change scenario (RCP 8.5), but some cities may wish to follow other local or national guidance regarding climate projections. The important consideration will be that the risk associated with all climate hazards are rated for the same timeframe and same climate change scenario. The chosen year and emissions scenario should be recorded in the Climate Hazards screen.

Evaluating Risk

The **risk** associated with a given climate hazard is a function of that climate hazard's **likelihood** and **impact**:

$$\text{Risk} = \text{Likelihood} \times \text{Impact}$$

Likelihood of a given climate hazard is the frequency at which the climate hazard is expected to occur by the chosen date under the chosen emissions scenario (recommend 2050, RCP 8.5). Likelihood is sometimes also referred to as *probability*.

Impact of a given climate hazard is the consequences anticipated to people, assets, or services when the climate hazard does occur, whichever would experience the greatest impacts (such as hospital admittances from heat stroke, homes flooded, transit service disrupted). Impact is sometimes also referred to as *consequence*.

The Tool will calculate risk for each climate hazard based on qualitative ratings of likelihood and impact. The recommended definitions for qualitative ratings of likelihood and impact are included below, and are defaults in the Tool, but cities may wish to modify or increase the specificity of the definitions based on local context (such as the frequency of the climate hazards and perception of what constitutes a low versus high impact). For example, a city may decide that a climate hazard that occurs more than once every 5 years should be rated as having a high likelihood or may refine the impact rating definitions to include specific numbers of injuries, deaths, or damages. Whatever a city decides, it is important that likelihood and impacts for all climate hazards are rated using the same definitions.

Table 1: Default Definitions for Qualitative Ratings of Climate Hazard Likelihood (assuming 2050, RCP 8.5)

Rating	Score	Definition	Examples
Very Low	1	Once every 20 years or less	A storm event comparable to the current 100-year storm (projecting that the current 100-year storm will become more frequent)
Low	2	Once every 5-20 years	A multi-year drought
Medium	3	Once every 1-4 years	A storm event comparable to the current 10-year storm (projecting that the current 10-year storm will become more frequent)
High	4	Annually	Flooding caused by a king tide (noting that a king tide can happen once or twice a year)
Very High	5	Several times each year or more	Constant or daily flooding from permanent sea level rise, extreme heat days throughout each summer (above current average)

Table 2: Default Definitions for Qualitative Ratings of Climate Hazard Impact

Rating	Score	People	Assets	Services
Very Low	1	Inconvenience/Discomfort	Very minor damage to some assets	Minor disruption of non-critical services
Low	2	Small number of injuries/illnesses	Minor but repairable damage to some assets	Major disruption of non-critical services
Medium	3	Large number of injuries/illnesses	Major damage to some assets	Prolonged disruption of non-critical services or short disruption of critical services
High	4	Small number of deaths	Widespread major damage to assets	Major disruption of critical services
Very High	5	Large number of deaths	Widespread destruction of assets	Prolonged disruption of critical services

Once users have entered qualitative ratings of likelihood and impact for each of the climate hazards being considered by the city, the Tool will calculate the proportion that each climate hazard contributes to total risk. In a later stage, this value will become a component of the primary benefits score for actions that address a given climate hazard. It can also be

used to sense-check the qualitative ratings. For example, if it is widely understood the greatest risk in the city comes from rainfall flooding, but this is only shown as being 15% of total risk considered, users should review the qualitative ratings to make sure that ratings for rainfall flooding are not too low or ratings for other climate hazards are not too high.

User Note

These values are based on qualitative ratings and are calculated for the purposes of performing action prioritisation only – they should never be interpreted or presented as quantitative values of the exact percentage that each climate hazard contributes to overall risk in the city.

Level of Effort Options

The level of effort options for this step are based on if the city has already completed a Vulnerability Assessment and/or Risk Assessment:

- ◆ **Essential** – if the city has not completed a climate vulnerability/risk assessment, users can carry out an abbreviated vulnerability/risk assessment and fill out the qualitative ratings of likelihood and impact for each climate hazard based on best professional judgment, desktop research, and consulting key city staff. For guidance in developing a city risk assessment in line with Global Covenant of Mayors and C40 Cities requirements, please see C40's *Climate Risk Change Assessment Guidance*.

- ◆ **Good Practice** – if the city has completed a climate vulnerability/risk assessment, users can fill out the qualitative ratings of likelihood and impact for each climate hazard, based on the results of this analysis and review the ratings with internal stakeholders who were involved in the original risk/vulnerability assessment.
- ◆ **Go Further** – if the city has completed a climate vulnerability/risk assessment, users can also review the assessment with local academic experts and/or representatives of vulnerable communities before filling out the qualitative ratings of likelihood and impact for each climate hazard.

STEP 2: ACTION DEVELOPMENT

In this step, the user, along with city staff, external stakeholders, and/or community stakeholders will develop an initial long list of climate mitigation and adaptation actions for consideration in the prioritisation process. At this stage, the objective is to cast a wide net and compile an extensive list of potential actions for consideration since achieving carbon neutrality and increased climate resilience by 2050 will require implementation of many innovative actions. Low performing or unrealistic actions can be iteratively improved or de-prioritised later in the process.

Developing Actions

Cities will draw upon multiple sources and analyses to define the initial long list of potential actions. For example, a city's emissions inventory and greenhouse gas reduction analysis in Pathways or other tools/methods should inform the types of mitigation actions to be considered. Similarly, a climate vulnerability/risk assessment will help to focus action development on climate hazards of local concern. Once these areas of primary focus have been identified, cities can refer to other resources for example actions that address each topical area.

Existing city plans/policies may provide a starting point for actions that have already achieved some level of community or city support. However, the level of ambition required to achieve the CAP Framework objectives will likely require development of new and more aggressive actions than have been pursued in the past. C40 provides a wealth of resources on best practices in climate action planning through case studies, reports, and its catalog of ambitious climate actions. It is important to note that the action

prioritization case studies do not necessarily follow the process set out in this guide.

The C40 Climate Action Template will also help users enter a consistent set of basic details for proposed actions in advance of the action prioritisation process, and then guide users through further stages of action definition following action prioritisation.

Action sources:

- ◆ Existing city plans/policies
- ◆ C40 ambitious climate action database/Pathways
- ◆ C40 case studies, including those collected in the City100 reports
- ◆ C40 Knowledge Hub
- ◆ Internal/external stakeholders
- ◆ Community members, particularly those most impacted by climate hazards

User Note – Action Development Details

To provide enough detail for action evaluation, users can consider developing actions that are S.M.A.R.T. – specific, measurable, achievable, realistic, and timely. For purposes of action prioritisation, providing the level of detail consistent with a S.M.A.R.T. action will help ensure comparable actions are evaluated against each other; this level of detail will also make the action rating process easier as users will have a clearer sense of what the action will do, what benefits it will provide, and what obstacles it might face during implementation.

Level of Effort Options

- ◆ **Essential** – users review existing city plans to identify climate-related actions and supplement this list with actions from the *C40 Climate Action Catalog*.
- ◆ **Good Practice** – in addition to the Essential option, users work with city staff from relevant departments to refine/make the C40 catalog actions more specific to local context. This may

take the form of focus group discussions or users may request that stakeholders submit lists of recommended actions that can then be merged into a single list in the Tool.

- ◆ **Go Further** – in addition to compiling actions from existing plans and the C40 catalog, actions are refined, and new actions are developed with internal/external stakeholders in a series of larger workshops by sector.

Incorporating Stakeholders into Action Development – Durban, South Africa

Durban's process emphasized ensuring that the initial list of potential actions had multi-departmental buy-in and reflected the expertise of stakeholders operating in each sector. The CAP team originally intended to develop a long list of actions by reviewing existing plans and presenting it to a multi- departmental workshop. However, it became clear that more engagement with individual sector departments was necessary to gather details on actions and modify them to ensure that actions would receive support from each department.

To this end, the CAP team carried out twenty engagements with individual departments. Draft lists of actions relevant to each department were circulated in advance. During each meeting a member of the CAP team reviewed the actions with the technical staff most familiar with each action. The action list was iteratively revised as comments from stakeholders were incorporated.

The CAP team also organized two additional multi-departmental workshops using the “Marketplace Method” where the actions were printed out on large sheets and stakeholders were free to write comments directly on each sheet and the “World Café Method” where stakeholders rotate through small discussion groups focused on key items. The purpose of these methods was to receive input from a range of different stakeholders and avoid the process from being dominated by an outspoken few.

Initial Action Entry

As actions are developed, they should be entered directly into the table in Step 2: Action Development. How the user chooses to do this will be based on the chosen Level of Effort option for Action Development (see above). If the user is working with minimal support or with small focus groups to develop actions, the actions can be entered directly into the Tool as they are generated. If actions are developed with input from a larger group, either in workshops or dispersed feedback, the user may instead opt to create a simple form for workshop participants to fill out (electronically or on paper) and then enter the actions into the Tool.

The information required to define actions at this stage is intended to be as minimal as possible, to reduce time spent defining actions that may be screened out during the next stage. Action development requires four criteria, summarized below:

- ◆ **Action Title** – a short phrase that succinctly describes the action. The title will identify the action in subsequent steps in the Tool, so it is

important that the Action Title differentiate it from other actions being considered.

- ◆ **Description** – a brief description (2-3 sentences) that should provide more detail/context than the action title. The description will ensure that in later stages all participants have the same understanding of what the action will do.
- ◆ **Primary Action or Sub-Action** – actions that support implementation of another action (such as a feasibility study or funding action to implement a specific project) must be designated as sub-actions (see Identification of Sub-Actions below). Actions that are supported by others are called ‘primary actions.’ A primary action can also stand alone, without any designated sub-actions.
- ◆ **Primary Action Supported** – if the action is designated as a sub-action, the primary action that it supports must be identified.

Primary Actions and Sub-Actions

Purpose

In this prioritisation process, actions that enable each other are bundled and evaluated as a single unit rather than being evaluated against each other. This also allows actions with varying levels of detail to be compared against each other. For example, a city's Transportation Department may have identified several specific actions related to implementing their bicycle masterplan such as a prioritisation study, a funding/financing assessment, a public outreach campaign, and a phased design and construction plan. These actions could all be packaged into a single action – "Implement dedicated bike lanes on major corridors"

Different actions in a city's long list may also include a range of specificity because actions will come from different sources (e.g., city departments, existing plans, sector stakeholders) that have different technical capacities to develop detailed actions. If detailed actions are evaluated against less specific actions, the less specific actions will tend to score more highly because the action they describe is broader and could be interpreted to provide greater co-benefits. For example, an action to "Implement a BRT system" would score more highly than an action to "Prepare a feasibility study to determine optimum BRT routes". In this situation, a package of detailed actions can be evaluated against a single less specific action so the unit of evaluation is at the same level of specificity.

Primary Actions and Sub-Actions

Primary action – this is the action level that is assessed in the Tool. All actions are assumed to be primary actions unless marked as sub-actions. In most instances, a primary action will provide GHG reductions or risk reduction as a direct benefit. An example primary action is:

- ◆ Implement dedicated bike lanes on major corridors

Sub-action – this action level is not assessed in the Tool. One or multiple sub-actions are combined under the umbrella of a primary action, and users must identify the primary action that is being supported. In most instances, a sub-action will provide GHG reductions or risk reduction as an indirect benefit. The following actions could be identified as supporting the primary action example above:

- ◆ Prioritisation study for bike lanes
- ◆ Funding/financing assessment for bike lanes
- ◆ Public outreach campaign to increase cycling
- ◆ Phased design and construction plan for new bike lanes

Note that sub-actions are those that directly enable, or are necessary to implement a primary action, not actions that are simply related to each other's outcomes in a broader sense. For example, funding measures or feasibility studies *enable* the implementation of an infrastructure project.

Increasing urban density through land use planning can be *related* to increased transit ridership, but development density should remain a separate action because it does not directly enable transit improvements.

Process

All actions (primary and sub-actions) should be listed in the Action Development screen. When an action is designated as a sub-action, the primary action that it supports must be selected. Once all sub-actions are identified, the Tool will consolidate actions.

The primary actions will become the units that are evaluated throughout the rest of the process. All actions that are not designated as sub-actions will automatically be considered primary actions. The sub-action relationships will carry through the analysis and will be listed in the Step 6: Action Rating Matrix and in the summary of primary actions in the Step 7: Final Prioritisation outputs.

STEP 3: INITIAL SCREENING

The purpose of the initial screening is to encourage cities to reconsider or improve actions that will not provide mitigation or adaptation benefits and actions that could cause substantial negative impacts, like maladaptation or emissions lock-in. The initial screening will likely not result in a deep cut of potential actions but will help to ensure actions focus on the CAP's primary goals. Actions that fail any of the screening questions will be flagged, and the user must decide if to screen these actions out or allow them to move forward in the analysis. Users can also revise flagged actions so that they do not fail the screening questions.

Actions that pass the initial screening but may have negative consequences beyond the scope of the initial screening can be rated lower for specific co-benefit criteria during the actions rating phase. Based on the user's familiarity with the goals of the CAP Framework, the initial screening process can be completed relatively quickly.

Screening Questions

The initial screening is based on the following questions. For each question, an explanation of its purpose, additional framing questions that will facilitate answering it, and examples of actions that would fail are included.

Question 1: Does this action reduce greenhouse gas emissions, reduce climate vulnerability, or support an action that does?

An answer of “no” will cause an action to be flagged. This question is designed to ensure that only actions that will result in emissions reduction or vulnerability reduction benefits are considered in this prioritisation process. Actions that address other social, environmental, or economic goals, but do not contribute to the primary objectives of the C40 Climate Action Planning Framework should not be included in a city’s CAP.

Framing questions:

- ◆ Would this action lead to reduced emissions, directly or indirectly?
- ◆ Would this action lead to reduced vulnerability, directly or indirectly?

Examples of actions that would fail:

- ◆ Plan to improve outdoor recreation amenities at municipal parks.
- ◆ Program to increase regulation of industrial sources of water pollution.

While both of these actions would provide social/environmental benefits, neither would reduce emissions or vulnerability.

Question 2: Would this action result in maladaptation or increased vulnerability?

An answer of “yes” will cause an action to be flagged. This question is designed to encourage cities to reconsider actions that inadvertently increase vulnerability to climate hazards or would prevent future adaptation efforts, even if the actions provide emissions reduction benefits.

Framing questions:

- ◆ Would this action result in increased vulnerability to climate hazards, either directly or indirectly?
- ◆ Would this action undermine capacities or opportunities for adaptation in the future?

Examples of actions that would fail:

- ◆ A transit-oriented development within an area that is known to be vulnerable to flooding in the future.

While this action would reduce emissions, it would lead to increased vulnerability in the long term.

- ◆ Providing diesel generators as emergency backup power for homes in a hurricane prone area. While this would provide continuity of power, it would increase emissions and worsen local air quality.

Question 3: Would this action result in substantial emissions lock-in?

An answer of “yes” will cause an action to be flagged. This question is designed to encourage cities to reconsider actions that might reduce emissions in the short term, or decrease vulnerability, but would also lock in emissions over the long term.

Framing questions:

- ◆ Would this action create a new source of emissions in the city, or replace one emissions type with another?
- ◆ Would this action undermine opportunities to reduce emissions in the city?

Examples of actions that would fail:

- ◆ Investing in natural gas power plants as a strategy to move away from coal. This action could reduce emissions and improve air quality in the short term, but if the useful life of the plant will be 50+ years it would make carbon neutrality by 2050 impossible.
- ◆ A waste incineration facility. While this action could potentially reduce solid waste management emissions compared to disposal in landfills, it would also ensure that future emissions occur for the useful life of the facility.
- ◆ Conversion of the municipal bus fleet from diesel to CNG, in a city without an existing CNG network or access to renewable natural gas/biogas sources. While this action might initially reduce emissions compared to diesel, investment in distribution infrastructure for a new emissions source would lock in emissions.
- ◆ A desalination plant that is powered by carbon-intensive energy sources. While this action might reduce vulnerability to drought, it could also result in substantial emissions lock-in over a long period of time.

Question 4: Could this action result in substantial negative impacts to people/communities?

An answer of “yes” will cause an action to be flagged. This question is designed to encourage cities to reconsider actions that could cause new substantial negative impacts on residents or specific communities.

Framing question:

- ◆ Could this action result in substantial negative impacts or unintended consequences to people or communities, such as new or increased costs, loss of property rights or use of land, or new environmental hazards?

Examples of actions that would fail:

- ◆ Construction of a flood control system that results in loss of privately-owned agricultural lands.
- ◆ A city ordinance that requires all property owners to install a rooftop solar photovoltaic system.

Performing the Screening

Once the initial list of actions is developed and sub-actions are packaged with the primary actions they support, the user will evaluate the long list of actions against the screening questions for each action.

The questions are designed to be general enough that a user can answer based on professional judgment. However, users may wish to include city staff in the process or to confirm certain answers. In some cases, users may need to gather some basic additional

information (for example, a map of sea level rise vulnerability throughout the city to determine if actions might encourage increased settlement in a vulnerability area, which would cause the action to fail Question 2).

Note that all four screening questions must be answered for all actions. An unanswered screening question will cause the action to automatically fail the initial screening.

Opportunity to Revise Actions

Actions that fail any of the screening questions will be flagged to encourage further consideration and/or discussion. Users must decide if a flagged action should be allowed to move forward in the prioritization process or not. Once the user has recorded their decision on each flagged action, the Tool will generate a list of the actions that did not pass the screening and show which questions were flagged.

The process provides an opportunity for users to revise and improve actions to avoid failing any screening questions. Using the examples of failed actions above, a desalination plant action could be modified to use renewable energy or plans for a

transit-oriented development could be relocated to an area that is not threatened by sea level rise. These modifications may impact how the actions perform in subsequent portions of the analysis. For example, a solar desalination plant may have a substantially higher initial cost than one that relies on other sources of energy.

If users want to improve any actions, they may do so by modifying the Action Title and/or Action Description in the Action Development screen, updating answers to the screening questions for that action, and then re-screening the actions.

User Note – Mitigation and Adaptation Action Interactions

As part of the initial screening process, users may find it helpful to refer to [C40's Adaptation and Mitigation Integration Assessment \(AMIA\) Tool](#) to understand the potential interactions between mitigation and adaptation actions. AMIA provides a framework for organizing interactions between adaptation and mitigation actions, including synergy potential, trade-off potential, mal-investment risk, and piggybacking opportunities. The Tool also provides links to case studies that provide further information on the synergies and interactions of adaptation and mitigation actions to provide real-world examples for users' reference. This resource could be useful in revising flagged actions to improve their outcome in the screening process.

STEP 4: ACTION REFINEMENT

Once the initial screening is complete, the screened list of actions will be available in the *Step 4: Action Refinement* screen. Here, users must specify the emissions source(s) and/or climate hazard(s) addressed by each action and define some basic contextual information. This step is performed after the initial screening (rather than during *Step 2: Action Development*) to minimize time spent defining actions that are designated as sub-actions or those that fail the initial screening.

Emissions Sources and Climate Hazards Addressed

It is anticipated that many actions considered by cities will address more than one emissions source or climate hazard. Therefore, the Tool allows users to specify up to three emissions sources and three climate hazards for each action. Actions that address multiple emissions sources or climate hazards will receive higher scores for Primary Benefits (see Step 6: *Action Rating*). For example, with actions related to land use planning users should generally select the On-road Transportation emissions source since these types of actions serve to reduce vehicle kilometers traveled. If an action also includes a transit-oriented development component, users may also select a relevant stationary energy emissions sub-sector (in addition to On-road Transportation) if the action would

result in building energy efficiency from multi-family development types or smaller residential units.

Note that if grid electricity is specified as the targeted emissions source for an action, no subsector emissions sources (e.g., Residential Energy) can be specified or vice versa. This is to avoid double counting the potential emissions reduction of actions based on the overlap between the subsectors and the Scope 2 emissions.

Users must specify at least one emissions source or climate hazard for each action, or the action will receive no Primary Benefits score. Users should be able to fill out this information for all actions based on professional judgment and expertise.

Additional Action Attributes

In this step, users can also provide additional contextual information about each action. Although this information will not directly inform the action scoring in Step 6, it is useful to consider at this stage, and will enable users to filter the results by these attributes in the final step. The options for additional action attributes are described below:

Scale – what is the scale of the action?

- ◆ Site
- ◆ Neighborhood
- ◆ City
- ◆ Regional/State/National

Timescale – when will action implementation begin?

- ◆ Short term (<5 years)
- ◆ Medium Term (5-10 years)
- ◆ Long Term (10+ years)

Action type – is this action a policy, project, or programme?

- ◆ Policy
- ◆ Project
- ◆ Programme

Note that the Tool allows users to customize the timescale option definitions (e.g., <5 years) to align with city budgeting or election cycles, or other relevant local considerations.

STEP 5: CRITERIA SELECTION AND WEIGHTING

In this step, the city will choose the criteria used to evaluate the actions' co-benefits and feasibility and may also weight the individual criteria, if desired.

This is a critical point in the process because 1) the criteria chosen will directly impact the scoring of actions, and therefore their prioritisation, and 2) this step is an opportunity reflect the city's unique context and priorities.

Note that while the co-benefits and feasibility criteria are customizable, the primary benefits criteria reflect the primary purpose of the C40 CAP Programme and are therefore not modifiable. In some cases, cities may be preparing a CAP that is only focused on mitigation actions if their adaptation plan is being developed through a separate process. Even for these cities, the risk reduction potential of actions should still be assessed.

User Note – Criteria Selection

The criteria selected for action evaluation should be tailored to the local context. It is recommended that users select approximately 7-10 criteria total from the co-benefits and feasibility areas that reflect the most important priorities of the community. All actions will be evaluated against each criterion selected, and the larger the number of criteria selected the greater amount of time required to evaluate all actions in Step 6: Action Rating.

Users can exclude criteria from action evaluation with no impact on the scoring results and should not feel that including more criteria will improve the evaluation results. Some actions may provide benefits beyond the criteria selected. However, the objective in this phase is to select the *most important* criteria to the city and criteria that is *broadly applicable* to the range of actions to be evaluated.

Criteria Selection

Co-Benefits Criteria

Co-Benefits are benefits generated by climate actions beyond the primary benefits of emissions reduction and risk reduction. Actions designed to address climate change can also improve air quality, reduce the cost of living, or create jobs and new economic opportunity. Assessing co-benefits is important to capture the full range of benefits that the action provides and to justify actions to decision-makers that have multiple priorities.

The co-benefits included in the Tool are defined below. Recommended criteria are pre-selected in the Tool for inclusion in the co-benefit assessment (Note: Users can de-select all recommended co-benefits criteria, with the exceptions of Air Quality and Stakeholder Engagement); users can select additional optional criteria if desired. Users can also add custom criteria to reflect local priorities. Criteria are selected and/or added in the Co-benefit Criteria Selection screen.

The co-benefits selected should reflect the variety of benefits that climate actions can provide, but not be so specific that they only apply to a few actions or so ambiguous that it is difficult to rate the performance of actions against them. Rating actions is based on a qualitative ranking scale – therefore it is not necessary for users to have quantitative or specific estimates of action performance for each criterion included. While cities should think as comprehensively about co-benefits as possible, the selection of many criteria will also increase the

complexity and effort required to rate the actions. Ultimately, the user will determine the optimal number of criteria based on city context. The process for rating actions is described in Step 6: Action Rating.

The recommended and optional criteria are based on the [C40 Inclusive Climate Action Indicators Database](#) and have been simplified for this prioritisation process. The criteria are organized into co- benefit categories based on the type of benefit they provide.

Table 3: Co-Benefit Criteria Organization and Definitions

Co-Benefit Category	Criteria **Essential *Recommended	Definition	Related Sustainable Development Goals
Health and Wellbeing			
	Air Quality**	Reduced exposure to particulate matter (PM2.5 and PM10), NO ₂ , O ₃ , SO ₂ or airborne toxins	11, 7
	Physical Health*	Increased life expectancy, or reduced incidents of diseases or deaths attributed to pollution, poor sanitation, or lack of access to nutrients	1, 2, 3, 7
	Safety	Reduced incidents of traffic accidents or violent crimes	3, 11, 16
	Well-Being	Reduced levels of stress/anxiety, time spent working/commuting, and increased gender equality in housework/childcare	3, 5
	Healthcare	Increased access to essential health services, health insurance, and emergency response	3
Environment			
	Water Quality*	Reduced levels of dissolved oxygen, phosphorous, nitrates, nitrites, fecal matter; sedimentation, chemicals, and/or heavy metals in freshwater and marine water bodies	6, 14
	Habitat*	Increased creation, preservation, or restoration of natural environments	14, 15
	Green Space	Increased percentage of urban area that is greenspace, urban tree canopy, and/or access to parks	11
Economic Prosperity			
	Employment*	Increased employment rate, access to quality jobs (full- time versus temporary; high-paying versus low-paying), and total number of jobs	5, 8
	Income and Poverty*	Increased income and social mobility - especially for vulnerable populations, reduced poverty rate	7, 8, 10
	Cost of Living	Reduced cost of living or utility cost savings	
	Skills and Training	Increased access to green skills training and programs that prepare residents for quality jobs (full-time versus temporary; high-paying versus low-paying)	4

Essential Public Services			
	Housing*	Increased availability of affordable housing, reduced proportion of residents living in informal settlements, reduced proportion of income spent on rent or mortgage	11
	Mobility*	Increased proportion of population within walking distance of transit (e.g., 500 m), share of trips by sustainable modes, reduced transportation costs	1, 11
	Energy*	Increased proportion of population with access to clean electricity, reduced frequency of electrical interruptions	1, 7, 11
	Waste Management*	Increased proportion of households with access to waste management services, recycling, composting; reduced waste generation and littering	1, 11
	Water & Sanitation*	Increased proportion of population connected to sewer system and with access to safe drinking water, increased proportion of city wastewater that is treated, reduced household water costs and supply interruptions	1, 6, 11, 14
	Technology and Communications	Increased proportion of population with access to internet, smartphone/computer ownership.	9

Inclusivity and Civil Society ¹			
	Stakeholder Engagement**	Increased engagement with public/private entities outside of city government	16
	Social Justice	Reduced socioeconomic or health disparities between groups based on race, ethnicity, religion, gender, or other identity	16
	Community Representation	Increased representation of specific community groups, including civil society, academia, business, and vulnerable populations	16

** Essential criteria are key areas that cities can develop high impact actions and C40 recommends focusing on these benefits; these criteria cannot be de-selected in the Tool

* Recommended criteria that are pre-selected in the Tool, but can be de-selected

¹ Depending on the type of action to be evaluated and the details known at the time of action prioritisation, users may find it difficult to score the Inclusivity and Civil Society criteria. If relevant action details are unknown but these criteria are included, users should rate these criteria as “neutral”. If action detail is available to support a positive or negative score, users should do so. See descriptions of co-benefit rating options in p.

Feasibility Criteria

Feasibility is a rating of how easy or difficult it will be to implement an action to help users understand what barriers may exist. Feasibility is based on a variety of factors such as access to funding, city authority to implement, technological/market readiness, and political acceptability. While it is not recommended that actions with low feasibility are automatically de-prioritised, assessing the feasibility of actions provides important context for decision-makers.

Like co-benefits, recommended feasibility criteria are pre-selected for inclusion in the assessment but can be de-selected; optional criteria can be selected if desired. Users can also add custom criteria. Criteria are selected and/or added in the Feasibility Criteria Selection screen. As with co-benefits, cities should think as comprehensively about feasibility as

possible, but the selection of many criteria will also increase the complexity and effort required to rate the actions. Ultimately, the user will determine the optimal number of criteria based on city context.

The chosen feasibility criteria should reflect the city's unique context, but not be so specific that they only apply to a few actions or be unrealistic for use in accurately evaluating a long list of potential actions. It is recommended that qualitative estimates of costs and specific funding plans be developed for a subset of actions during the more detailed action definition phase that comes after the prioritisation process.

Each feasibility criterion has specific options based on its topic. The feasibility criteria included in the Tool are defined below. Please see *Step 6: Action Rating* for definitions of the options within each criterion.

Table 4: Feasibility Criteria Organization and Definitions

Feasibility Category	Criteria * recommended	Definition
Authority		
	City Authority*	Does the city have the legal authority to implement this action or would it need to be implemented by another entity, such as the national government, a utility or agency outside of the city, or the private sector?
	Alignment with City Policy*	Is the action aligned with existing city policy? For example, does it further the stated goals of the city's Strategic Plan?
	Ownership / Access	Does the city or lead implementor of the action currently own, lease, or have access to the land or assets required to implement this action?
Support		
	Political Acceptability*	Is this action politically popular or would it be politically challenging to implement?
	Alignment with Cultural/Social Norms*	Is the behavior or technology change encouraged by this action favored or disfavored based on local cultural/social norms?
	Alignment with Other Commitments	Will the action also contribute to the city meeting an additional declaration or commitment?
	Alignment with Regional/State/National Policy	Does the action align with or promote regional, state, or national policies and priorities? Note that even alignment with policies that are not desirable from a climate action planning perspective will still have a positive impact on feasibility/ease of implementation.

Financing and Funding

	Funding Source Secured/Identified*	Has full or partial funding for this action been secured, or has a potential funding source been identified?
	Additional Capital Required to Implement*	Beyond any funding that is currently secured or identified, how much additional capital would be required to implement the action (capital expenditure)?
	Additional Capital Required to Operate	Beyond any funding that is currently secured or identified, how much additional capital would be required to sustain the action after implementation (operational expenditure)?
	Meets Relevant Environmental and Social Standards	Would the action comply with relevant environmental and social standards (e.g., World Bank ESS) necessary to be eligible for funding?
Technology		
	Technology/Market Readiness*	Is the technology required to implement the action ready for the market, will it require subsidies or other policy support to encourage adoption, or does it face significant technological or market hurdles before adoption can begin?
	Spatial Suitability	Is the action spatially or physically suitable for the location where it has been proposed?

* Recommended criteria that are pre-selected in the Tool, but can be de-selected

Level of Effort Options

The level of effort options for this step are based on the degree of and type of stakeholder engagement that is carried out to inform the criteria selection.

- ◆ **Essential** – the user opts to use the recommended/pre-selected co-benefit and feasibility criteria or may make a few modifications based on known city priorities/applicability, possibly with input from a few key stakeholders.
- ◆ **Good Practice** – the criteria are selected through a workshop with a focus group(s) of key internal/external/community stakeholders.
- ◆ **Go Further** – criteria are selected through a workshop process that includes internal city stakeholders as well as community stakeholders, especially representatives of socially vulnerable and impacted populations. Criteria are selected through discussion/consensus building or by voting.

Depending on the size of the group, the user can decide to use a ranked choice voting system or ask participants to rank the top 5 criteria they want to see included; the user then selects the criteria with the most votes.

Note that cities will likely apply different levels of effort for the selection of co-benefit versus feasibility criteria. It is recommended that stakeholder/community engagement efforts during this step be focused on the selection of co-benefits criteria to ensure they reflect citywide development priorities and the needs of vulnerable populations. The selection of feasibility criteria is less subjective and should be based on an understanding of the project implementation process within the city. Therefore, feasibility criteria can be selected by a smaller internal group.

Once criteria are identified, they will be selected in the Co-benefit Criteria Selection and Feasibility Criteria Selection screens in the Tool.

Criteria Weighting (Optional)

Weighting is applied at the criteria level to reflect the relative importance of each criterion in its potential proportion of contribution to action scores. Like evaluation criteria selection, criteria weighting decisions provide an opportunity to incorporate stakeholder and/or community input relatively easily.

Weights can be applied with any value between 1 and 3. The following definitions included in the Tool offer general guidance on the weighting scale:

1. Criterion is equally important to city as other selected criteria
2. Criterion is somewhat more important to city than other selected criteria
3. Criterion is significantly more important to city than other selected criteria, and has been identified in multiple city planning documents or by the community as a priority

Users do not need to apply weights and should only do so when there is some evidence or rationale for applying a weight in order to avoid applying personal preference to the evaluation process.

Note that weights will influence the relative importance of criteria within their score area (feasibility, co-benefits), but because scores are not combined into a single score, weighting is not intended to reflect relative importance of co-benefits criteria versus feasibility criteria.

As Primary Benefits reflect the primary goal of the C40 CAP Programme, their weights cannot be modified. While most weights are pre-set to be equal across all criteria in the Tool, it is recommended that two criteria – Air Quality and Stakeholder Engagement – are weighted higher than the other criteria, to reflect the importance of these priorities to the C40 CAP Programme. These weights are pre-set to a higher value in the Tool but can be modified by users.

Applying Weights to Scores

After weights have been determined for each criterion (see Level of Effort Options below), users will enter weights by criteria in the Co-benefit Criteria and Feasibility Criteria screens. Based on this information,

the Tool will automatically incorporate the weights into the scores for each action after Step 6: Action Rating is complete using the following formula:

$$\text{Weighted Criteria Score} = \text{Unweighted Criteria Score} \times \text{Weight}$$

If users do not wish to apply criteria weighting, all weights can be set to 1. The advantages to not using weighting are that users can avoid making judgments on the relative importance of co-benefits and the calculation of final ratings is easier to follow. A disadvantage to not using weighting is that criteria that are clearly of higher importance will end up having the same influence on final scores as less important criteria. It is recommended that weights are only applied if rationale exists to support their use (such as relating to community priorities).

Users can implement weighting for co-benefits and/or feasibility evaluation and can also merge the criteria and weighting selection process to minimize the number of stakeholder meetings required.

Level of Effort Options

- ◆ **Essential** – criteria weights are determined by the user based on their understanding of city priorities and from a review of vision/goal/objective statements in existing city policies and plans. The weights should be reviewed by key city staff before they are finalized.
- ◆ **Good Practice** – if the city selected evaluation criteria through a voting process, the user can expedite this step by using the results of that vote to calculate the criteria weights. Of the criteria that were selected, those that received more votes should be weighted higher. The weights should be reviewed by key city staff before they are finalized.
- ◆ **Go Further** – criteria weights are decided by consensus or by averaging votes from a group of stakeholders. For smaller groups, discussion/consensus will be easiest, while for larger groups averaging votes may be preferable.

STEP 6: ACTION RATING

Once the co-benefits and feasibility criteria have been determined, the Tool will automatically generate a matrix in the *Step 6: Action Rating* screen with a row for each primary action that passed the initial screening and a column for each Primary Benefit, Co-Benefit, and Feasibility Criteria. Most cells within the matrix will include drop down menus with different options depending on the criterion, while a few will be pre-populated based on information entered during *Step 4: Action Refinement*.

This section explains the process of rating Primary Benefits, Co-Benefits, and Feasibility, as well as how the ratings will influence each of the three scores. Actions can be rated with varying levels of effort depending on the level of stakeholder involvement that is possible for the city. Users may opt to rate all actions for one criterion at a time, or work through the action list and rate all criteria for a single action before moving to the next action.

Expert Stakeholders Rate Action Performance – Lagos, Nigeria

Lagos' CAP team organized a streamlined workshop format that leveraged stakeholder input to rate the performance of a long list of actions. The Lagos Climate Change Action Prioritisation Workshop was conducted over three days. Each day involved discussions with key representatives from one of three different sector groups: solid waste and wastewater (Day 1); transport and land-use planning (Day 2); and stationary energy & buildings (Day 3). Holding the workshop on separate days for each sector enabled the CAP team to target relevant stakeholders for each sector. Each day began with a series of presentations in the morning to ensure that all participants had a shared understanding of the goals of the workshop and the climate action challenges in that sector.

The sector workshops each had around twenty participants, including staff from relevant city departments, NGOs, academia, and the private sector. Participants were separated into breakout groups of about 7 participants each by topic. For example, breakout groups for waste included composting & recycling, landfill management and gas capture, and wastewater treatment. Each breakout group was asked to rate a subset of the sector actions relating to their topic, with the goal of choosing 2-4 priority actions from a list of 7-12. The breakout groups then presented the results of the exercise to the rest of the participants, who then collectively decided which actions to take forward.

This format maximized input with minimal effort and time investment required from stakeholders. The presentations at the beginning of each workshop laid the foundation for a productive session and provided an opportunity to introduce a diverse group of stakeholders to the importance of thinking about climate change in their sector.

Rating Primary Benefits

The Primary Benefits Score consists of a score for emissions reduction (mitigation), risk reduction (adaptation), and an interaction bonus score for actions that provide both benefits:

$$\text{Primary Benefits Score} = \text{Emissions Reduction Score} + \text{Risk Reduction Score} + \text{Interaction Bonus}$$

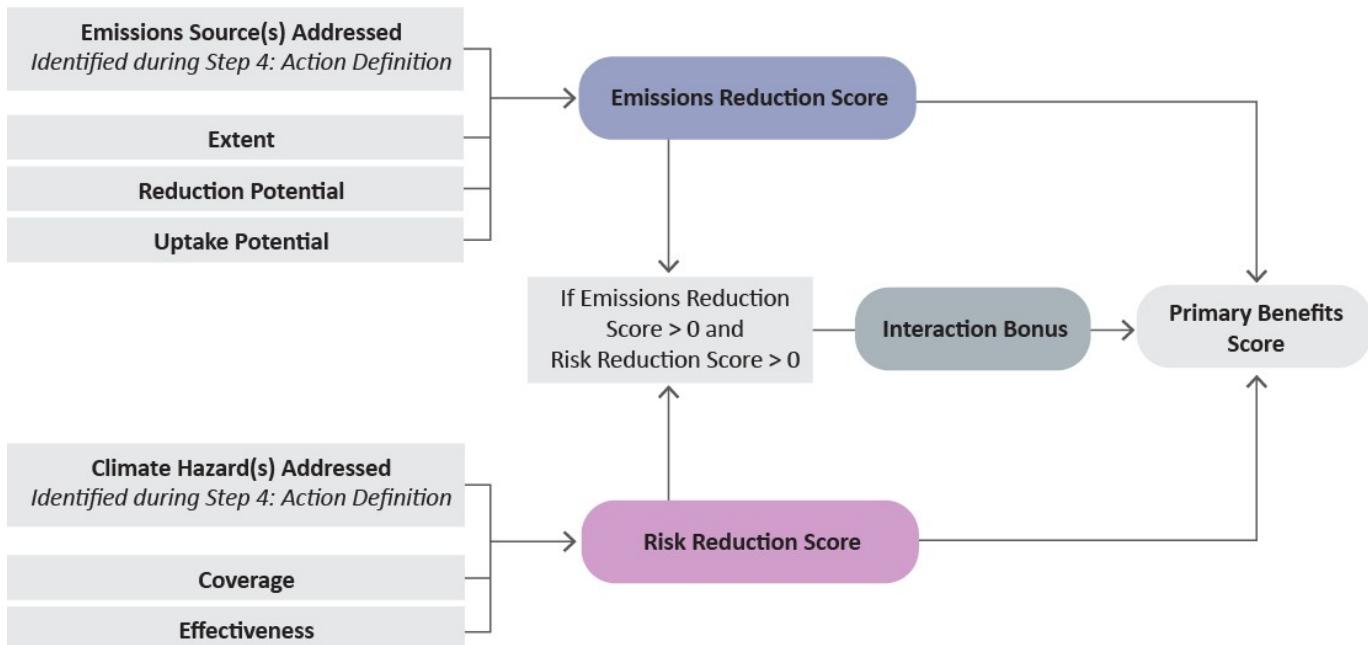


Figure 3: Primary Benefits Score Calculation Flowchart

Emissions Reduction

The emissions reduction component of the Primary Benefits Score consists of the percent of total emissions from the emissions source addressed, the extent of the action, the emissions reduction potential of the technology/policy/behavior change, and the estimated uptake/compliance. The process to rate each of these criteria is described below, followed by an explanation of how the criteria are combined into a single score.

Emission Source Addressed

This criterion auto-populates for each action based on what emissions source(s) the action was designated as addressing during Step 4: Action Refinement. The Tool will automatically calculate the percent of total city-wide emissions attributed to the emissions source(s) targeted by the action and use that value to inform the Emissions Reduction Score. Note that while this criterion refers to all emissions within a subsector, an action will likely only address a portion of these – this is determined based on the rest of the emissions criteria:

Extent

For the subsector addressed, users estimate the proportion of emitters (buildings, individuals, households, etc.) within the subsector that will be targeted by this action. This criterion is rated on an ordinal ranking scale of 0-19%, 20-39%, 40-59%, 60-79%, and 80-100%.

Examples:

- ◆ **Stationary Energy:** For an energy-efficient appliance retrofit subsidy that is available to all residential properties the extent would be 100%. If the subsidy only applies to multi-family units and they make up 60% of the city's housing stock, the extent would be 60%.
- ◆ **Transportation:** For an action to electrify the city's bus fleet, the extent would be the proportion of on-road fuel consumption attributed to city buses.
- ◆ **Waste:** For a program to collect compostable waste from all restaurants, the extent would be the proportion of the city's solid waste that comes from restaurants.

Reduction Potential

This criterion refers to the potential for the technology, behavior change, etc. encouraged by the action to reduce emissions. For the subsector addressed and within the emitters that are targeted by this action, users estimate the proportion of emissions that could potentially be eliminated by the action. This criterion is rated on an ordinal ranking scale of 0-19%, 20-39%, 40-59%, 60-79%, and 80-100%. Note that information to support estimates in this criterion can be found in the Pathways emissions context figures, remaining emissions analysis module or derived from Pathways action results.

Examples:

- ◆ **Stationary Energy:** For an action to subsidize commercial lighting retrofits to LEDs, if lighting makes up 20% of commercial building emissions and full replacement would reduce lighting energy by 75%, this action would have an emissions reduction potential of 15% (i.e., it could theoretically eliminate 15% of commercial building emissions if maximum implementation is achieved).
- ◆ **Transportation:** For an action that promotes a mode shift from personal vehicles to active transportation, the emissions reduction potential would be 100% because a single commuter bicycling or walking instead of driving will eliminate 100% of emissions from that vehicle (note that the uptake potential, defined next, would likely be very low).
- ◆ **Waste:** For an action to collect and compost organic waste from all restaurants, the reduction potential will be based on the relative difference in emissions from composting versus the city's traditional method of waste treatment.

Uptake Potential

For the subsector addressed and the emitters that are targeted by this action within that subsector, users will estimate the proportion that will likely implement the technological/behavioral change that the action promotes. This criterion is rated on an ordinal ranking scale of 0-19%, 20-39%, 40-59%, 60-79%, and 80-100%.

Examples:

Stationary Energy: For an action to subsidize commercial lighting retrofits to LEDs, if it is anticipated that 20% of commercial building owners will make use of the subsidy, then the uptake potential would be 20%.

Transportation: For an action that promotes a mode shift from personal vehicles to active transportation, such as expanding bike lanes, if it is estimated to result in 10% less vehicle trips, then the uptake potential would be 10%. For an action to electrify the city's bus fleet, the uptake potential would be 100% if it is assumed all city buses will be electrified.

Waste: For a program to collect recycling from residential households, if it is estimated that only 40% of households will participate/have access to the service, the uptake potential would be 40%.

Calculating the Emissions Reduction Score

Based on the user-entered ratings in the Action Rating screen, the Tool will convert the ratings to numeric values and combine them with the following formula:

$$\text{Emissions Reduction Score} = \text{Source Addressed} \times \text{Extent} \times \text{Reduction Potential} \times \text{Uptake Potential} \times 100$$

The result is an Emissions Reduction Score, which is a relative measure of the potential for the action to reduce emissions in the city.

Table 5: Summary of Rating Options and Scoring for Emissions Reduction Score Criteria

Source Addressed	Extent		Reduction Potential		Uptake Potential	
	Score	Rating	Score	Rating	Score	Rating
	0 – 19%	0.2	0 – 19%	0.2	0 – 19%	0.2
	20 – 39%	0.4	20 – 39%	0.4	20 – 39%	0.4
	40 – 59%	0.6	40 – 59%	0.6	40 – 59%	0.6
	60 – 79%	0.8	60 – 79%	0.8	60 – 79%	0.8
	80 – 100%	1	80 – 100%	1	80 – 100%	1

Note that except for Source Addressed, which is already calculated as part of the city's emissions inventory, the prioritisation process only requires a rough estimate of each criterion in order to inform an ordinal ranking score. This significantly reduces the data and effort required, but it does mean that the resulting Emissions Reduction Score is a rough estimate that should be used for the purposes of action prioritisation only. It should never be interpreted or presented as a quantitative calculation of the expected emissions reductions associated with the action.

Risk Reduction

The risk reduction component of the Primary Benefits Score consists of the proportion of total risk considered by the city attributed to the climate hazard(s) addressed by the action, the coverage of the action, and the anticipated effectiveness of the action. The process to rate each of these criteria is described below, followed by an explanation of how the criteria are combined into a single score:

$$\text{Risk Reduction Score} = \text{Risk Ratio} \times \text{Coverage} \times \text{Effectiveness} \times 100$$

Risk Ratio

Risk Addressed is a relative measure of the proportion of total risk considered by the city that is attributed to the climate hazard(s) addressed by the action. It is automatically calculated by the Tool for each climate hazard based on the ratings of likelihood and impact entered for each climate hazard during Step 1: Emissions and Climate Hazard Context. The Tool will also auto-populate the score for this criterion for each action based on what climate hazard(s) the action addresses as designated in Step 4: Action Refinement. The calculation is explained below, but users will not need to perform the calculation themselves.

The risk ratio for a given climate hazard is equal to the risk of that climate hazard divided by the total risk considered by the city. For an explanation of how risk is calculated from ratings of likelihood and impact for each climate hazard, please see Section 1: Emissions and Climate Hazard Context.

For a given climate hazard:

$$\text{Risk Ratio} = (\text{Risk of that climate hazard}) / (\text{Total risk considered by the city})$$

Table 6: Example Risk Ratio Calculations

Climate Hazard	Likelihood (L)	Impact (I)	Risk (L x I)	Risk Ratio (Risk/Total Risk)
Extreme Heat	3	3	9	21%
Drought	2	4	8	19%
Rain Flooding	2	3	6	14%
SLR/Coastal Flooding	5	4	20	47%
		Total Risk	43	

For actions that address multiple climate hazards, the risk ratio will be the sum of the risk ratios of all climate hazards addressed. Note that this value is based on qualitative ratings and is calculated for the purposes of performing action prioritisation only – it should never be interpreted or presented as a quantitative value of the exact percent that each climate hazard contributes to overall risk in the city.

Coverage

Coverage is the proportion of people, assets, or services impacted by the climate hazard that could be addressed by the action. Whether this is thought of in terms of people, assets, or services depends on what method was used to determine the climate hazard's impact score in Step 1: Emissions and Climate Hazard Context. This criterion is rated on an ordinal ranking scale of 0-19%, 20-39%, 40-59%, 60-79%, and 80-100%, with ratings explained below.

Table 7: Summary of Definitions and Scoring of Rating Options for Coverage

Coverage	Score	Rating	Examples
Very Small	0.2	0 - 19%	A low impact development ordinance that applies to new construction only (assuming new construction would make up less than 20% of the city's buildings)
Small	0.4	20 - 39%	A cool roofs ordinance that applies to all commercial buildings (assuming 20-40% of buildings in the city are commercial)
Medium	0.6	40 - 59%	A series of diffuse green infrastructure projects that would reduce urban flooding in a watershed that 52% of the city is within
Large	0.8	60 - 79%	An app-based early warning system (in a city where 60-80% of residents have smart phones)
Very Large	1	80 - 100%	A seawall that protects an entire area vulnerable to sea level rise

Effectiveness

Effectiveness refers to the people, assets, or services addressed by an action, and represents the degree to which the action will alleviate the impacts. This criterion is rated on an ordinal ranking scale of 0-19%, 20-39%, 40-59%, 60-79%, and 80-100%, with ratings explained below.

Table 8: Summary of Definitions and Scoring of Rating Options for Effectiveness

Effectiveness	Score	Rating	Examples
Very Low	0.2	0 - 19%	Opening public buildings as cooling centers during heat waves (number of people going to cooling centers, especially the most vulnerable, would likely be low)
Low	0.4	20 - 39%	An app-based early warning system when it is estimated that only a subset of smartphone users would install the app
Medium	0.6	40 - 59%	A cool roofs ordinance that could reduce the number of extreme heat days by ~25%
High	0.8	60 - 79%	A storm drain upgrade (natural based or grey infrastructure) that would accommodate all but the most extreme rain precipitation events
Very High	1	80 - 100%	A seawall that is built to withstand the highest SLR + storm surge scenario (no SLR flooding will occur)

The table below includes some example risk reduction score calculations for actions, based on the risk ratios calculated in Table 6.

Table 9: Example Risk Reduction Score Calculations

Action	Climate Hazard Addressed	Risk Ratio	Coverage	Effectiveness	Risk Reduction Score (Risk Ratio x Coverage x Effectiveness x 100)
Cooling centre network expansion	Extreme Heat	21%	0.8	0.2	3.4
Cool roofs retrofit incentive	Extreme Heat	21%	1.0	0.6	12.6
Upgrade storm drainage in some neighbourhoods	Rain Flooding	14%	0.6	1	8.4
Citywide small-scale green infrastructure projects	Rain Flooding	14%	0.8	0.6	6.7
Downtown seawall	SLR	47%	0.6	1.0	28.2
Berm protecting airport	SLR	47%	0.2	1.0	9.4

Interaction Bonus

The final component of the Primary Benefits Score is an interaction bonus, which is calculated automatically by the Tool for each action based on the action's Emissions Reduction Score and Risk Reduction Score. If both the Emissions Reduction Score and Risk Reduction Score are greater than 0, an additional 10% will be added to the action's Primary Benefits Score.

Rating Co-Benefits

The Co-benefits Score for each action is the sum of the scores the action receives for each co-benefit, organized by co-benefit category.

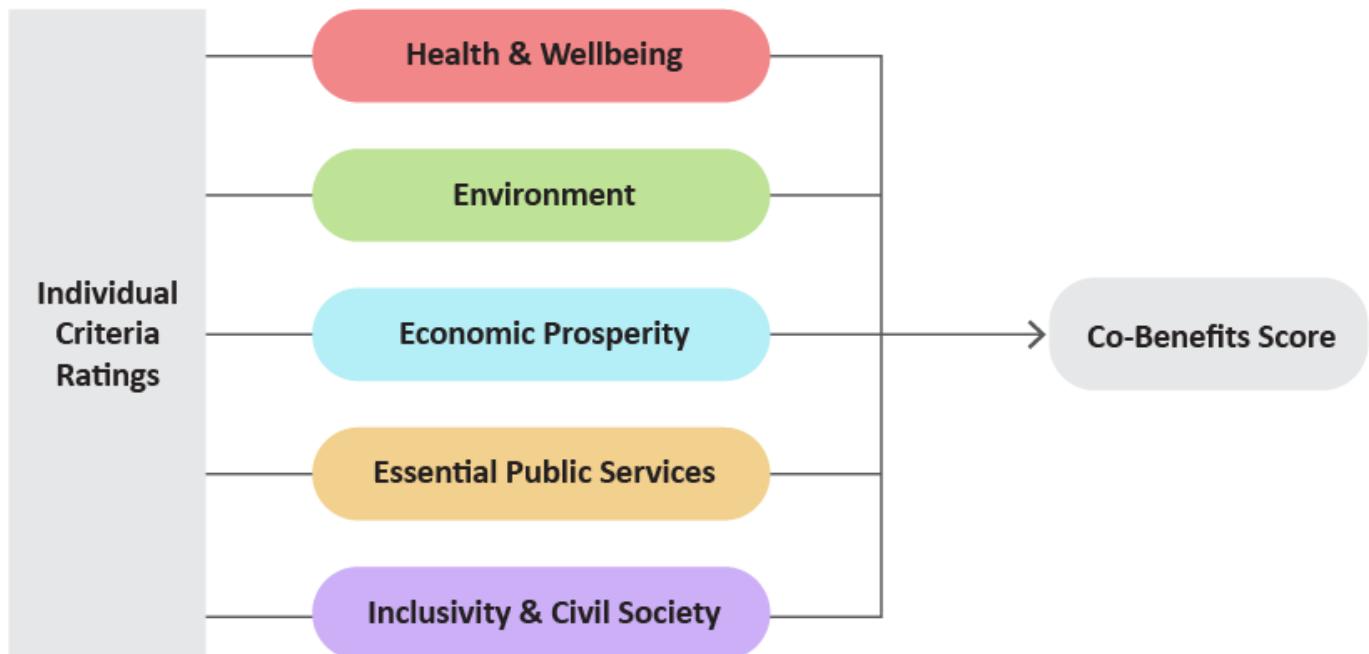


Figure 4: Co-Benefits Score Calculation Flowchart

Specific definitions for all criteria have been developed to ensure that the participants involved in co-benefit rating have a mutual understanding of what each criterion encompasses. These definitions are included in this document in Step 5: *Criteria Selection and Weighting*. In the Tool, they are visible in the Co-Benefits Criteria Selection screen.

For a given action, each co-benefit will be rated on a qualitative ranking scale based on the degree to which implementation of the action will positively or negatively impact the co-benefit (see Table 10).

Table 10: Summary of Definitions and Scoring of Rating Options for Co-Benefits

Rating	Score	Rating Definition	Example
Very Positive	2	The co-benefit will be significantly increased by this action.	Implementation of strong emissions regulations on factories in a city where majority of air pollution comes from industrial sources would receive a “Very Positive” rating for Air Quality
Somewhat Positive	1	The co-benefit will be increased by this action.	A new bus rapid transit line that would reduce congestion and improve access to transit, but only for a small portion of the city, would receive a “Somewhat Positive” rating for Mobility
Neutral	0	The co-benefit will not be impacted by this action, or the impacts are unknown.	An action to expand electric vehicle charging stations would likely not have any impact on reducing incidents of traffic accidents and would therefore receive a “Neutral” rating for Safety.
Somewhat Negative	-1	The co-benefit will be decreased by this action	An action that improves public transit might lead to jobs being lost in the informal transit sector, but if these jobs are determined to be a small proportion of total jobs in the city, the action would receive a “Somewhat Negative” rating for Employment.
Very Negative	-2	The co-benefit will be significantly decreased by this action	The implementation of stringent building energy codes for residential buildings in a city where housing supply is not meeting demand might lead to significant increases in housing costs and therefore receive a “Very Negative” rating for Housing.

Rating Feasibility

The Feasibility Score for each action is the sum of the scores the action receives for each feasibility criterion, organized by feasibility category.

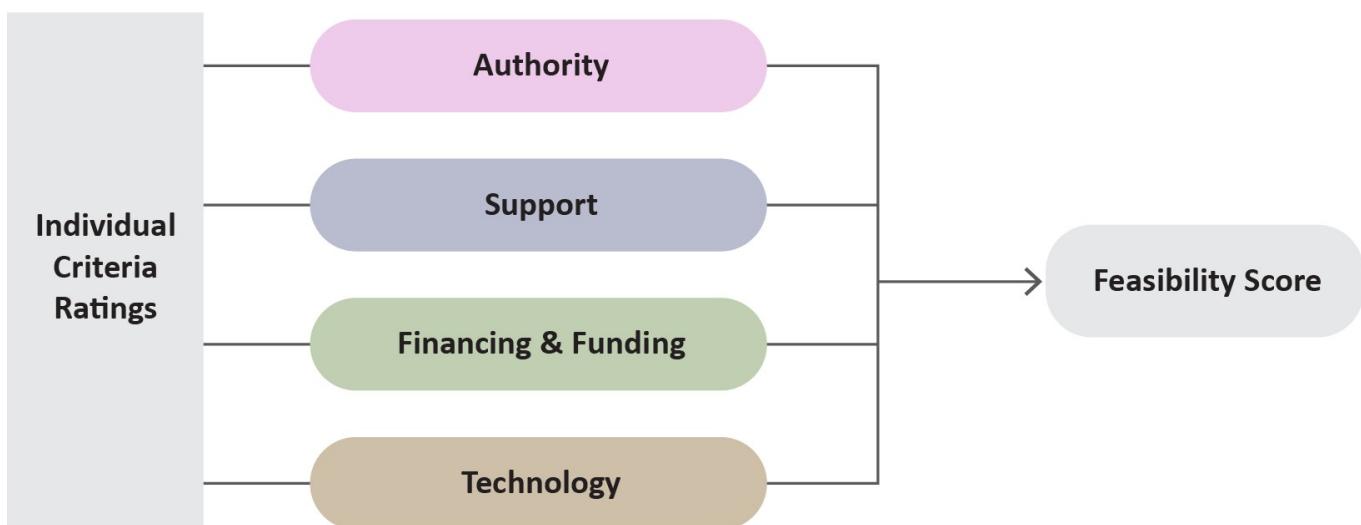


Figure 5: Feasibility Score Calculation Flowchart

Specific definitions for all criteria and the options for rating criteria have been developed to ensure that users and any other participants in feasibility rating have a mutual understanding of what each criterion encompasses. The definitions for each feasibility criterion are presented in this document in Step 5: Criteria Selection and Weighting and in the Tool in the Feasibility Criteria Selection screen. The definitions for the options within each criterion are included in the table below.

Table 11: Summary of Definitions and Scoring for Feasibility Criteria Options

Rating	Score	Rating Definition	Example
Authority			
City Authority* - Does the city have the legal authority to implement this action?			
Yes, under existing policy	2	The city currently has the legal authority to implement this action without modifying or passing new local policy	Constructing new bike lanes by the department of public works
Yes, but would require amending existing policy	1	The city has the legal authority to implement this action, but would need to modify an existing ordinance	Modifying the city's zoning ordinance to allow greater density near transit stations
Yes, but would require new policy	0	The city has the legal authority to implement this action, but would need to pass a new ordinance	A building ordinance that would need to be passed by the city council
Outside city authority - utility/Agency/Private	-1	The city does not have direct authority to implement this action because implementation would be determined by a utility, agency, or the private sector	A public transit project that would need to be approved/implemented by a transit operator
Outside city authority - federal/State/Provincial	-2	The city does not have direct authority to implement this action because implementation would be determined by a higher level of government	Setting higher renewable energy standards in a country where energy policy is controlled at the national level
Alignment with City Policy* - Is the action aligned with existing city policy goals?			
Aligned	2	Action is aligned with existing city policy goals	An action that would reduce air pollution if improving air quality is a stated goal of the city.
Not Aligned	0	Action does not promote any existing city policy goals	An action to restore natural habitat if habitat restoration is not currently a stated goal of the city.
Against	-2	Action is counter to existing city policy goals	An action that could raise housing prices when increasing housing affordability is a stated policy goal of the city

Ownership/Access - Does the city or lead implementor of the action currently own, lease, or have access to the land or assets required to implement this action?			
Yes, owned	2	The city or lead implementor owns the land or assets.	A methane capture project at a city-owned landfill.
Yes, has access but not owned	1	The city or lead implementor does not own but has other rights to the land or assets.	A flood protection levee that would need to be built on county or state-owned land.
Not applicable or unclear	0	Ownership/access is unclear, unlikely to have a major impact on feasibility, or not applicable to this action.	A policy action that does not require direct access to land or assets.
No, but access likely	-1	No, the land or asset is owned by another entity, but they are likely to be willing to sell or grant access.	A bicycle trail that would cross privately-owned land that could be accessed through an easement.
No, access unlikely	-2	The land or asset is owned by another entity that is unlikely to be willing to sell or grant access.	A metro line that would need to be routed through a residential area.
Support			
Political Acceptability* - Is this action politically popular or would it be politically challenging to implement? (note this is assumed to include community popularity too, as politicians are influenced by their electorate).			
Politically Popular	2	This action would be supported by a large majority of decision-makers across the political spectrum	Depends on individual city context
Politically Acceptable	1	This action would be supported by a majority of decision-makers	Depends on individual city context
Neutral or Unclear	0	Political support for this action is unclear or could easily change in the future	Depends on individual city context
Somewhat Politically Challenging	-1	This action would be politically challenging to implement	Depends on individual city context
Very Politically Challenging	-2	This action would be politically challenging to implement, with a large majority of decision-makers opposing it	Congestion pricing
Alignment with Cultural/Social Norms* - Is the behavior or technology change encouraged by this action supported or rejected based on local cultural/social norms?			
Supported	2	The behavior or technology change encouraged by this action is strongly supported by cultural/social norms	Building bike lanes in a city with a strong culture of bicycle ridership, where bicycling to work is recognized as convenient, healthy and good for the planet.
Neutral or Unclear	0	The cultural acceptability of this action is unknown, unclear, or neutral.	A recycling ordinance introduced for the first time where residents have not been required to sort any waste previously.

Rejected	-2	The behavior or technology change encouraged by this action is taboo or likely to be strongly rejected.	An action encouraging public transportation or disincentivizing car use through increased parking fees in a culture where owning a car is a sign of success An action encouraging residential composting in a culture where storage of waste in or near the home is considered unclean
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Alignment with Other Commitments - Will the action also contribute to the city meeting an additional declaration or commitment?

Aligned	2	Action contributes to a declaration or commitment	An action that would reduce landfill waste and therefore contribute to a Zero Waste goal
Neutral	0	Action does not contribute to a declaration or commitment	An action that has no impact on landfill waste and therefore doesn't contribute to a Zero Waste goal
Against	-2	Action would reduce a city's ability to meet a declaration or commitment	An action that would increase landfill waste and therefore work against a Zero Waste goal

Alignment with Regional/State/National Policy - Does the action align with or promote regional, state, or national policies and priorities?²

Entirely Aligned	2	Action is aligned with regional/state and national policy	A local clean energy action in a city where the state and national governments are both actively trying to increase renewable energy generation
Somewhat Aligned	1	Action aligned with regional/state or national policy if only one has a relevant policy	A local clean energy action aligns with regional/state policy or national policy (in instance where only one has a relevant policy)
Neutral	0	The regional/state or nation does not have relevant policies	A local clean energy action in a city where the state and national governments do not have a specific policy on renewables
Somewhat Against	-1	Action aligned with regional/state but not national policy or vice versa	A local clean energy action might align with regional/state policy but not be aligned with current national policy if the national government is expanding coal power plants or vice versa
Entirely Against	-2	Action does not align with regional/state/national policies	A local clean energy action might be against state and national policy if both are expanding coal power

² Evaluating actions based on their alignment with regional/state/national policy is related to implementation feasibility only; it is not a value judgement to evaluate if these policies are good or bad. The assumption is that alignment with these types of policies can make implementation more feasible for some types of actions.

Financing and Funding

Funding Source Secured/Identified* - Has full or partial funding for this action been secured, or has a potential funding source been identified?

Secured	2	Funding for the entire action has been secured	Funding for the action is earmarked in the city's capital plan
Partially Secured	1	Partial funding for the action has been secured	A grant to fund the project has been won, but it required matching funds from the city
Identified	0	A potential funding source has been identified	A potential grant program has been identified, but an application has not yet been submitted
Identified but unlikely	-1	A potential funding source has been identified but will be difficult to secure	A potential grant program has been identified, but the project is poorly aligned with funding requirements
No funding secured/identified	-2	No potential funding sources for the action have been identified	Potential funding for the action is unknown/unavailable

Additional Capital Required to Implement* - Beyond any funding that is currently secured or identified, how much additional capital would be required to implement the action (capital expenditure)?

None	2	<i>Order of magnitude buckets to be defined by the city based on local currency/fiscal context</i>	n/a
Very little	1		
Some	0		
A large amount	-1		
A very large amount	-2		

Additional Capital Required to Operate - Beyond any funding that is currently secured or identified, how much additional capital would be required to sustain the action after implementation (operational expenditure)?

None	2	<i>Order of magnitude buckets to be defined by the city based on local currency/fiscal context</i>	n/a
Very little	1		
Some	0		
A large amount	-1		
A very large amount	-2		

Meets Relevant Environmental and Social Standards - Would the action comply with relevant environmental and social standards (e.g., World Bank ESS) necessary to be eligible for funding?

Yes	2	The action would comply with all standards	An action that has no major negative environmental or social impacts, as defined by the World Bank
No	-2	The action would not comply with all standards	An action that would require involuntary resettlement of a community

Technology

Technology/Market Readiness - Is the technology required to implement the action ready for the market, will it require subsidies or other policy support to encourage adoption, or does it face significant technological or market hurdles before adoption can begin?

Market Ready	2	Currently being implemented due to market demand in other cities	Energy efficient appliances or light bulbs
Ready with Support	0	Technology exists but requires additional subsidies or other policy support to implement broadly	Electric vehicle charging stations
Not ready	-2	Market or technology is not ready for implementation	Autonomous electric vehicles

Spatial Suitability - Is the action spatially or physically suitable for the location where it has been proposed?

Highly suitable	2	The location is optimal for this action	A bicycle route on a corridor with gentle topography and space for a dedicated bike lane to be added
Suitable	1	The location is suitable for this action	The construction of a living shoreline to reduce wave action in an area that once had historic marshes
Not applicable or unclear	0	Spatial Suitability is unclear, unlikely to have a major impact on feasibility, or not applicable to this action	A policy action where feasibility is not determined by spatial suitability
Not suitable, potential to improve	-1	The location is not suitable for this action, but suitability could be improved through design or additional investment	Community solar projects in a city with few sunny days
Not suitable, unlikely to improve	-2	The location is not suitable for this action, and suitability is unlikely to be improved through design or additional investment.	A BRT line planned for a corridor that is too narrow to accommodate dedicated lanes

* Recommended criteria that are pre-selected in the Tool

Level of Effort Options

The level of effort options for this step are based on the city's capacity for stakeholder involvement in the prioritisation process, and the user's ability to get traction with stakeholders in other departments and outside city government. Note that while the higher level of effort options require additional city staff time and/or outreach/coordination with external stakeholders, users would likely find it very difficult to rate a long list of actions accurately on their own.

- ◆ **Essential** – the user assigns ratings based on research and professional judgement. Ratings are reviewed by a few city staff from key departments as well as technical advisors. This option should only be used if it is not possible for the user to get input from a wide range of city department stakeholders.
- ◆ **Good Practice** – the user convenes focus groups of 4-5 participants comprised of key stakeholders from relevant city departments for each emissions source or climate hazard. For example, for transportation actions the user might convene stakeholders from the city transportation department and public works. Led by the user, the focus groups each work through actions relevant to their expertise and rate all criteria.
- ◆ **Go Further** – the user convenes focus groups of 4-5 participants comprised of key stakeholders

from relevant city departments as well as external stakeholders for each emissions source or climate hazard. For example, for transportation actions the user might convene stakeholders from the city transportation department and public works as well as representatives from major public and private transit agencies. Led by the user, the focus groups each work through actions relevant to their expertise and rate all criteria.

The user may apply different levels of effort options for different criteria or for different types of actions. For example, users may find it easy to engage stakeholders in the transportation sector and therefore use the "Go Further" option for transportation actions, while use the "Essential" option for waste actions if there is no support to participate from the city's waste management department.

The user might also realize that the waste management services stakeholders are knowledgeable about the feasibility criteria for waste actions but less knowledgeable about the emissions reduction potential of waste actions. In this situation, users could choose to use the Good Practice or Go Further option to rate feasibility criteria and the Essential option to rate Primary Benefits.

STEP 7: FINAL PRIORITISATION

The graphic outputs in the Tool are designed to serve two purposes: 1) enable comparison between actions to support decision-making and prioritisation and 2) intuitively communicate the benefits of individual actions to stakeholders, politicians, and the public. This step will describe how the outputs can be used for the purposes of prioritisation. See Step 8: *Communicating Results* for information on using the Tool outputs for communication purposes.

Prioritisation Approach

As stated previously, this Process and the companion Tool are not designed to directly prescribe a ranking or short list of actions that the city should implement. Instead, the process produces a series of scores and graphic outputs that will help users and others evaluate the strengths, weaknesses, and tradeoffs for a variety of actions. Based on these results, participants will decide which actions to prioritise and include in the CAP.

The outputs are designed to be used in the order in which they are presented below to help narrow down the long list of initial actions to a final short list for inclusion in the CAP. However, users can view and modify the graphics in whatever order is most useful to their specific process. It is recommended that the final prioritised list include 20-30 high performing actions that cover multiple sectors and/or address multiple climate hazards.

How individual cities decide to interpret the outputs to inform final prioritisation should be based on their unique context. For example, some cities may decide to prioritise adaptation and mitigation actions in a single list, while others will prioritise them separately. Some cities may choose the top performing actions overall, while others may choose the top performing actions based on what departments would be responsible for implementation. The Tool supports options to filter actions in various ways, including if they have mitigation benefits or adaptation benefits; by the specific emissions sources or climate hazards they address; or based on action scale, timescale, or type. Users that prefer to prioritise mitigation and adaptation actions separately can follow the approach described below in separate phases to address each action type (i.e., mitigation or adaptation) individually.

Interpreting the Graphic Outputs

Tabular Results & Prioritised Action Selection

When users click on Step 7: Final Prioritisation in the Tool, they are taken to the Tabular Results & Prioritised Action Selection screen which presents a summary table of all primary actions that passed the initial action screening. Users can return to this screen as needed while reviewing the graphic outputs to select or revise their running list of final prioritised actions.

The tabular results provide specific information on the attributes and scores of each action. Colored bar charts are used in the table to visualize the relative values for each actions' Primary Benefits Score, Total

Co-benefit Score, and Total Feasibility Score. Blue bars indicate a positive score, while red bars indicate negative scores.

In the final column of this table, users can select if actions are prioritised or not. This table provides a record of the final prioritisation decision and allows the Summary Dashboard screen to be filtered to display prioritised actions, non-prioritised actions, or both.

While the user will be responsible for recording which actions are prioritised, the decisions should be made by a larger group, as described in the level of effort options below.

Level of Effort Options

- ◆ **Essential** – the user reviews the graphic outputs in the order described below and develops a draft list of prioritised actions. The prioritised list is reviewed and vetted by a few key city staff and technical advisors before it is finalized.
- ◆ **Good Practice** – the user convenes a focus group of internal city staff representing all city departments to review graphic outputs/ratings and decide on a final prioritised list of actions. If the user decides to convene a large group, it is recommended they export the graphic outputs from the Tool into a slide presentation.
- ◆ **Go Further** – the user organizes a meeting including key city staff and external/community

stakeholders. The user develops a presentation (using graphic outputs of the Tool) to communicate the trade-offs between different actions to meeting participants. This will likely result in more broad approval, buy-in, and transparency.

Score Comparison Matrices

The long list of actions should first be viewed on the score comparison matrices that display the relative Primary Benefits, Co-benefits, and Feasibility Scores at a high level. Filters can be used to display a subset of actions if users are interested in prioritising mitigation actions separately from adaptation actions or reviewing actions that address individual emissions sources/climate hazards.

Co-benefit vs Feasibility Criteria

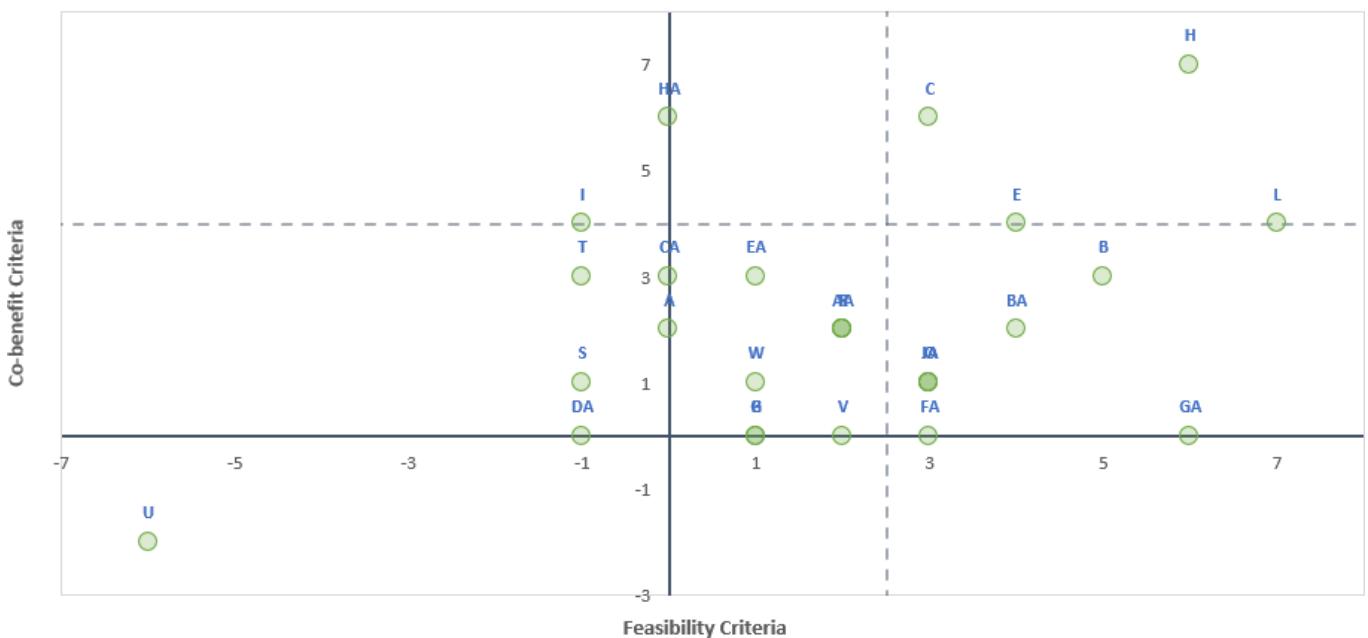


Figure 6: Example Score Comparison Matrix

The first two matrices allow users to view co-benefit scores versus primary benefit scores and feasibility scores versus primary benefit scores (see Figure 6). The third matrix plots actions on a grid that compares co-benefit scores and feasibility scores. These figures can help users evaluate actions from a high-level and organize the results into four action typologies:

- ◆ Quick Wins (high benefit, high feasibility)
- ◆ Ambitious Feats (high benefit, low feasibility)
- ◆ Helping Actions (low benefit, high feasibility)
- ◆ Less Viable (low benefit, low feasibility)

The category into which each action falls helps to inform the prioritisation process, depending on the implementation strategy the city wants to pursue. For example, a city may want to prioritise all “quick wins” first (i.e., high impact and high implementation feasibility/readiness), or may want to stagger “quick wins” and “feats” to maintain momentum throughout implementation. Regardless of how a city wishes to use the matrix results, it is recommended that users filter out approximately half to two-thirds of actions at this stage.

For all three score types, users can determine what qualifies as a high or low performing action. See Figure 6 for an example of this where the dashed lines represent user-selected thresholds for high and low performance. This selection creates quadrants on the matrices that help users understand what actions are high performing versus low performing for the two score types being compared in each matrix. Note that users may want to set different thresholds for mitigation versus adaptation actions when comparing Primary Benefits.

Top Scoring Actions

The top 30 actions can be viewed on a series of charts where individual actions are represented by a single stacked bar with different colored segments for each score component (see Figure 7). The graphic allows viewers to understand how actions compare to each other in terms of primary benefits, co-benefits, or feasibility, and to see which categories are contributing most to the scores for each action. This information can be used to further narrow actions for prioritisation based on cities’ unique priorities.

The charts on this screen include:

- ◆ **Primary Benefits - Emissions Reduction Score** – shows the actions with the top 30 highest emissions reduction scores in descending order. Blue bars illustrate the emissions reduction score, and gray bars indicate actions that received an interaction score (i.e., the action provides mitigation and adaptation benefits).
- ◆ **Primary Benefits - Risk Reduction Score** – shows the actions with the top 30 highest risk reduction scores in descending order. Pink bars illustrate the risk reduction score, and gray bars indicate actions that received an interaction score (i.e., the action provides mitigation and adaptation benefits).
- ◆ **Co-benefit Criteria Score** – shows the actions with the top 30 highest co-benefit scores in descending order. Colored bar segments correspond to the five co-benefit categories: Health and Wellbeing, Environment, Economic Prosperity, Essential Public Services, Inclusivity and Civil Society.
- ◆ **Feasibility Criteria Score** – shows the actions with the top 30 highest feasibility scores in descending order. Colored bar segments correspond to the four feasibility categories: Authority, Support, Financing and Funding, and Technology.

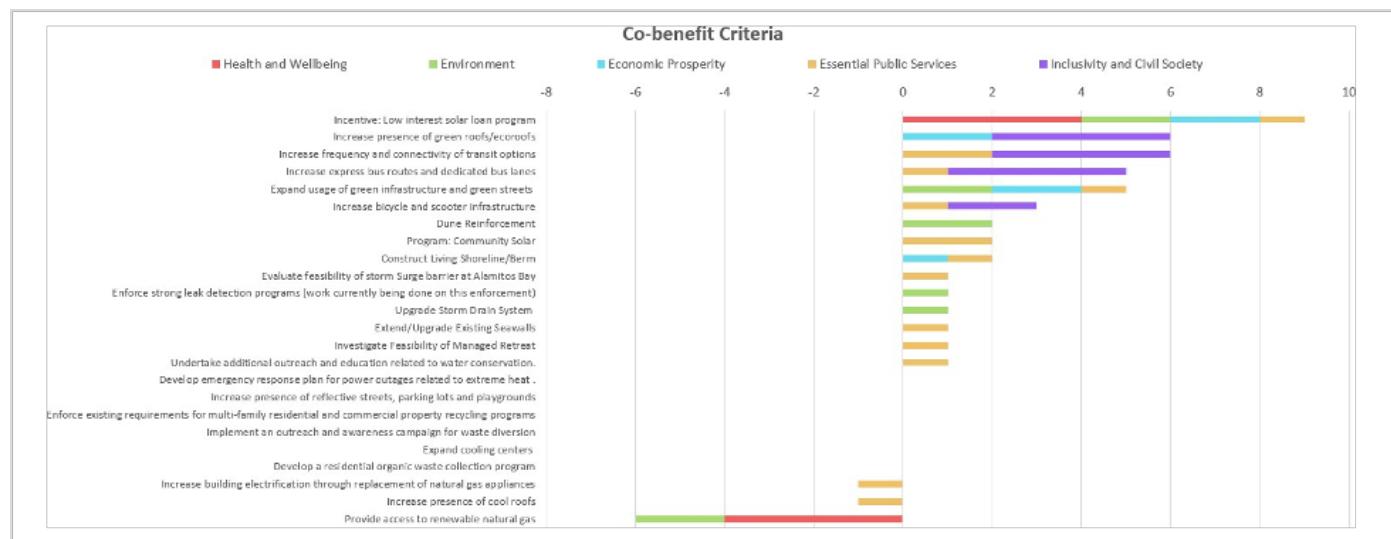


Figure 7: Example Top-Scoring Actions Stacked Bar Chart

Co-Benefits Performance

This screen allows users to review how a maximum of 8 actions perform across multiple criteria. This graphic output has the highest level of specificity and is intended to help refine prioritisation among a small group of actions that address the same emissions source or climate hazard. Figure 8 shows an example output with criteria evaluated for 3 different actions. Each wedge in the pie charts represents a co-benefit criterion selected for evaluation in Step 5: Criteria

Selection & Weighting, and the relative size of each wedge is based on the weighting applied in Step 5. The wedge colors illustrate how the action scores for each criterion, with positive scores shown in shades of green, negative scores shown in shades of red/orange, and neutral scores or non-rated criteria shown in gray. The charts give users a visual representation of an action's relative co-benefit strength: the greater the number of green wedges displayed, the higher an action's co-benefits score.

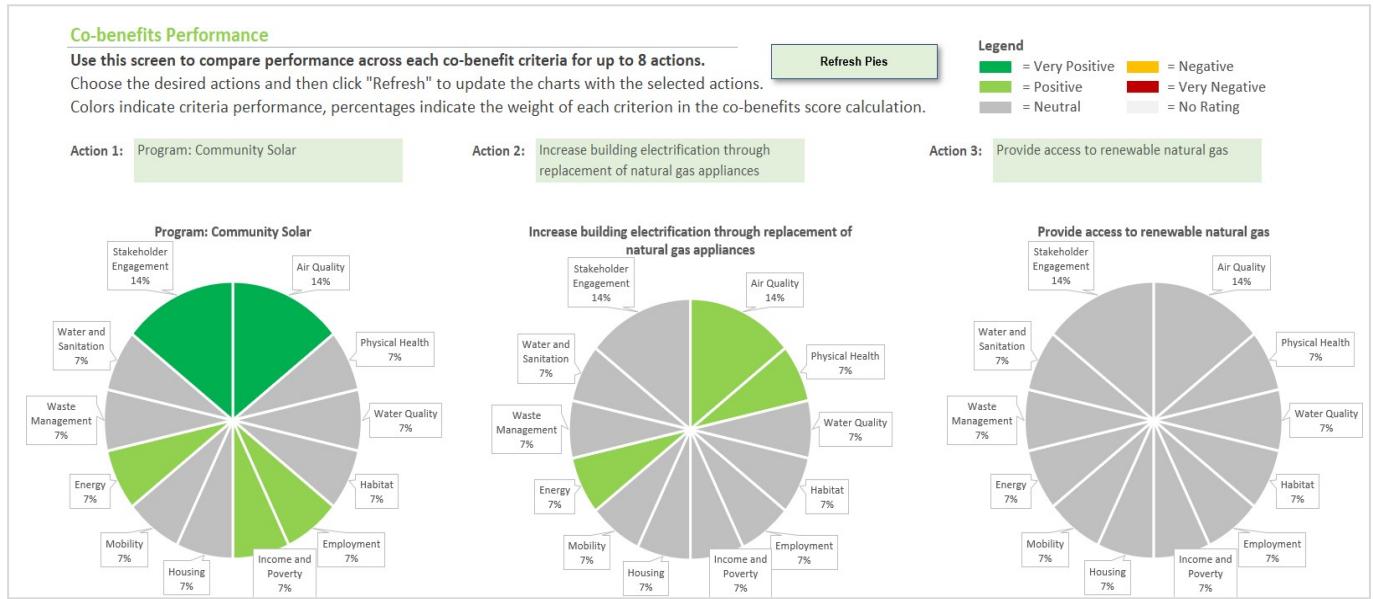


Figure 8: Co-Benefit Performance Charts

Individual Action Dashboard

This dashboard summarizes the available information for a single action chosen by the user. Users select a primary action from the dropdown list, and the dashboard automatically updates the results to show:

- **Primary Benefits Score** – total primary benefits score by source (emissions reduction, risk reduction, interaction bonus)
- **Co-benefits Score** – total co-benefits score by co-benefit category

- **Feasibility Score** – total feasibility score by feasibility category
- **Action Summary Information** – other action attributes defined in previous steps of the Tool, including emission source(s) addressed; climate hazard(s) addressed; action type, scale, and timescale; and, associated sub-actions, where applicable.



Figure 9: Individual Action Dashboard

Summary Dashboard

The Summary Dashboard gives users a snapshot of the potential actions, prioritised actions, or non-prioritised actions by sector/subsector and by climate hazard (see Figure 10). This output allows users to identify gaps in the prioritisation results. For example, the results might show that many transportation

actions were prioritised but very few stationary energy actions, or that many actions addressing flooding were prioritised but few addressing extreme heat. Based on the summary results from this dashboard, users can determine if any re-prioritisation is necessary to address gaps in the final list.

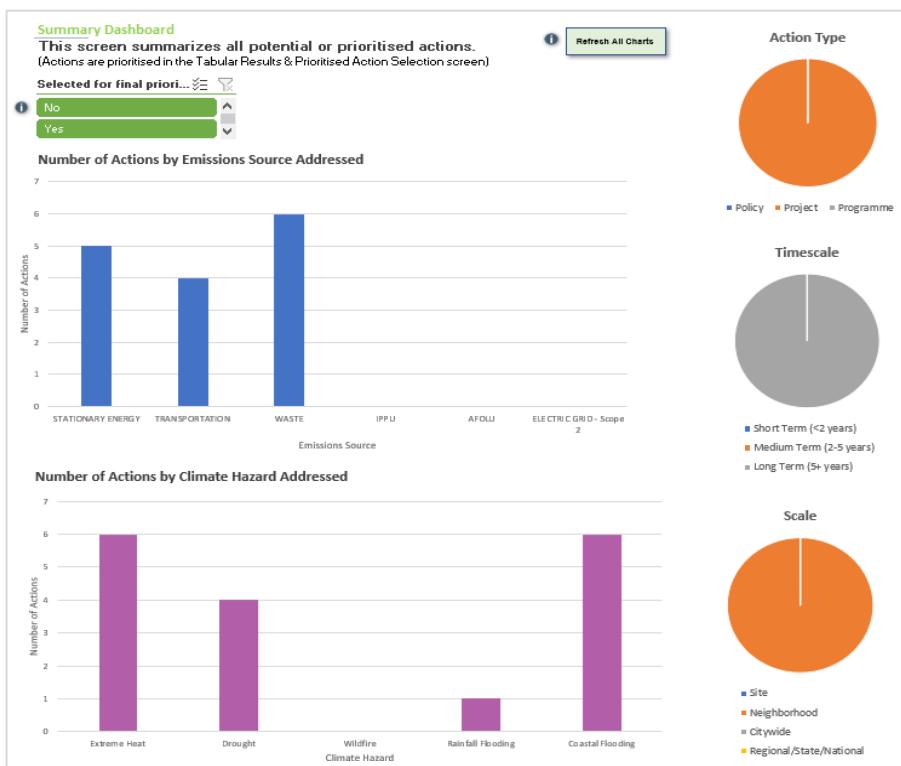


Figure 10: Summary Dashboard

STEP 8: COMMUNICATING RESULTS

The results of the final prioritisation should be first communicated to stakeholders who were involved in the previous steps, with emphasis on how their input was incorporated into prioritisation decisions.

When the city begins writing its final CAP, the plan should clearly, concisely, and transparently communicate how actions were evaluated and prioritised. The city should document key decisions made in the action prioritization process while using the tool. The emphasis should be on describing how stakeholder and/or community input was integrated at different stages and how the process reflects city/community priorities. For example, the plan could describe how workshops informed the selection and weighting of co-benefit criteria and tie those criteria directly to development objectives.

For actions chosen to be included in the CAP, the assessment of primary benefits, co-benefits, and feasibility from the prioritisation process can be used

to characterize each action. Graphic outputs from the Tool can also be used directly in the plan itself. For example, the CAP could have a one-page description of each prioritised action, which would include graphics from the Individual Action Dashboard. Alternatively, the ratings could be conveyed using custom graphics, such as icons indicating co-benefits or degrees of feasibility. However, if a city decides to use the outputs, the emphasis should be on clearly conveying the co-benefits of each action, especially those that are prioritised by stakeholders and decision-makers.