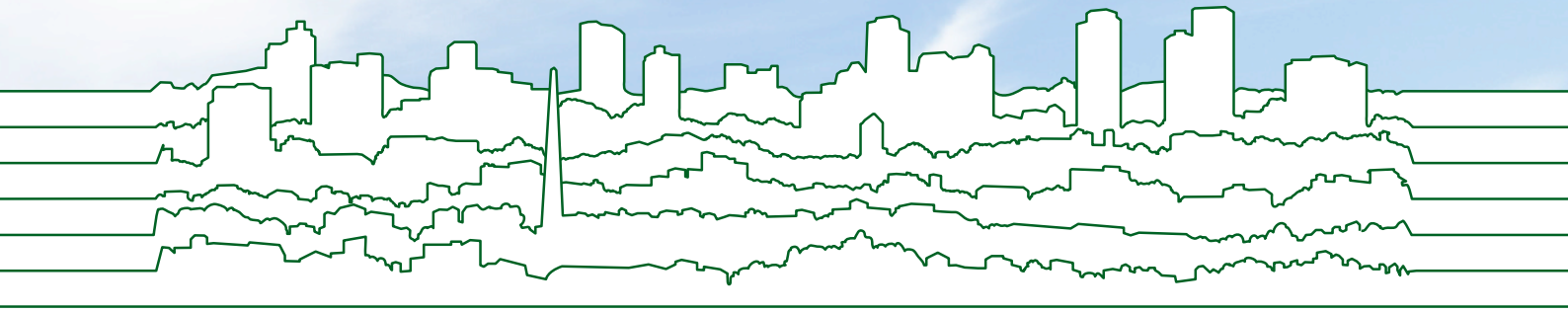
CITIES AND CLIMATE CHANGE INITIATIVE
TOOL SERIES

PLANNING FOR CLIMATE CHANGE

A STRATEGIC, VALUES-BASED APPROACH FOR URBAN PLANNERS

Toolkit



UN HABITAT
FOR A BETTER URBAN FUTURE

epi ecoplan international, inc.

PLANNING FOR CLIMATE CHANGE: A STRATEGIC, VALUES-BASED APPROACH FOR URBAN PLANNERS - TOOLKIT

HS Number: HS/002/14E
ISBN Number(Series): 978-92-1-132400-6
ISBN Number:(Volume) 978-92-1-132597-3

DISCLAIMER

United Nations Human Settlements Programme (UN-Habitat)
P.O. Box 30030, GPO Nairobi 00100, Kenya
Tel: 254-020-7623120 (Central Office)
Website: www.unhabitat.org
Cover Photo: iStockphoto

ACKNOWLEDGEMENTS

EcoPlan International, Inc. (www.ecoplan.ca) and Compass Resource Management (www.compassrm.com) from Vancouver, Canada developed the original version of this guide in 2011. *Planning for Climate Change – Version 1: for field testing and piloting in training* was released and extensively reviewed and tested in numerous Cities and Climate Change Initiative (CCCI) countries around the globe by UN-Habitat. Detailed testing of the tools (including versions of most of the tools that are now in this version) was undertaken in the Philippines. Global, regional and national training events were held, as well as an Expert Group Meeting in the Republic of Korea in November 2012, on which many of the revisions are based. A ten-day intensive training based on an earlier draft of the current document was held in May 2013, which brought together advanced users of climate change vulnerability assessment and planning tools. Feedback from these sessions and their participants was invaluable.

Bernhard Barth shepherded the tool through multiple rounds of review during both the field-testing and final version. A review committee assembled for production of *Planning for Climate Change – Version 1* provided invaluable feedback, resources and suggestions. UN-Habitat reviewers during this phase included Debashish Bhattacharjee, Bruno Dercon, Robert Kehew, Cecilia Njenga, Laura Petrella, Frederic Saliez and Raf Tuts. Other reviewers include Marni Cappe (President, Canadian Institute of Planners), JoAnn Carmin (Environmental Policy and Planning Department of Urban Studies and Planning, Massachusetts Institute of Technology), Charles Davies (United Nations Environment Programme), Johannes Flacke (Faculty of Geo-Information Science and Earth Observation, University of Twente), Stelios Grafakos (Institute for Housing and Urban Development Studies), Masahiko Haraguchi (World Bank), Timothy McDaniels (School of Community and Regional Planning, University of British Columbia), Rutger Perdon (ARCADIS), Scott Phillips (ARCADIS), Christine Platt (President, Commonwealth Association of Planners), Malcolm Pirnie (ARCADIS), Dory Reeves (School of Architecture and Planning, University of Auckland), Bert Smolders (ARCADIS), Rob Steijn (ARCADIS), John Taylor (Rockefeller Foundation/ Mercy Corps) and Stephen Tyler (International Institute for Sustainable Development).

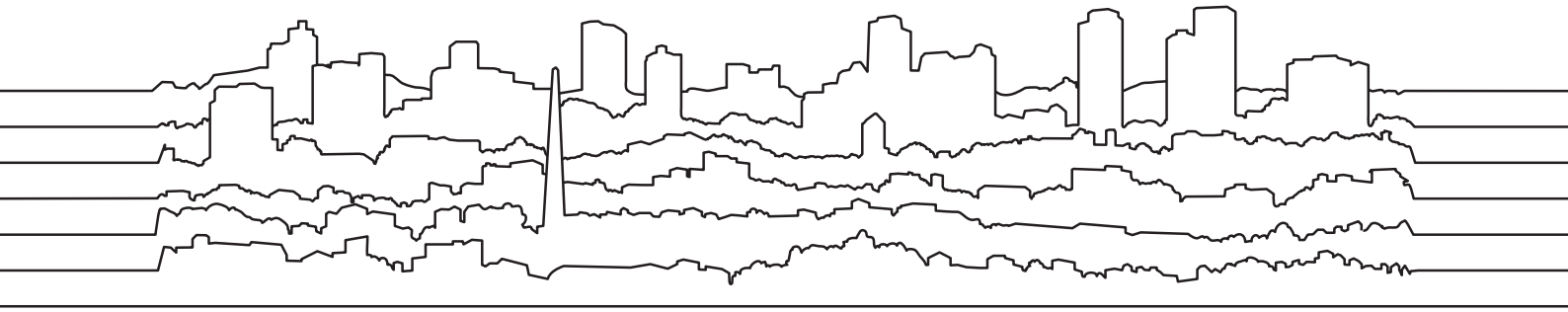
Peer reviewers for the final version of *Planning for Climate Change* included Stelios Grafakos (Institute for Housing and Urban Development Studies), Robert Kehew (UN Habitat), Samuel Kernaghan (Arup) and J. Jorge Ochoa (Bond University).

Principal authors:	John Ingram and Colleen Hamilton
Contributors:	Bernhard Barth, Maria Adelaida Cea, Liam Fee, Julian Gonzalez, Dan Ohlson, Paul Siggers, William Trousdale and Taylor Zeeg.
Coordinator:	Bernhard Barth.
Editors:	Bernhard Barth, Maria Adelaida Cea, Liam Fee, Kim Koch, Lorien Nesbitt, Vicky Quinlan.
Design and layout:	Trevor Coghill, EcoPlan International, Inc.
Printer:	UNON, Publishing Services Section, Nairobi. ISO 14001:2004-certified.

PLANNING FOR CLIMATE CHANGE

A STRATEGIC, VALUES-BASED APPROACH FOR URBAN PLANNERS

Toolkit



UN HABITAT
FOR A BETTER URBAN FUTURE

Contents

A section of Port-Au-Prince, Haiti.
© UN-Habitat/Julius Mwelu

Foreword

Cities and towns in developing countries face numerous challenges, including large proportions of people living in slums; expansion and dominance of the informal sector; inadequate basic services, especially water, sanitation and energy; unplanned peri-urban expansion; social and political conflict over land resources; high levels of vulnerability to natural disasters; and poor mobility systems. Two of the most severe challenges of our time, rapid urbanization and climate change, collectively aggravate these pre-existing challenges in a number of ways.

First, no city can be on a long-term path to more sustainable development without first addressing climate change. Without taking the impacts of climate change into consideration, today's development gains may be wiped out tomorrow.

Second, the ways our cities are planned and operate - as well as the lifestyles of people living in them – are major contributors to the greenhouse gas emissions that cause climate change. The dependency on fossil fuel for transport and electricity for heating, cooling, lighting, and other day-to-day activities increases in tandem with the growth of sprawling cities.

Third, urban growth will increasingly be driven by climate change induced rural-urban migration.

Fourth, rapid urbanization manifests itself in growing slum populations, increasing informality of tenure, and demand for housing and basic services, and creates pressure on land and ecosystems. Often, urban expansion takes place on sites that are most vulnerable to climate change related hazards.

Planning for Climate Change: A Strategic Values-based Approach for Urban Planners was developed for city planners and other professionals to better understand, assess and take action on climate change at the local level. Targeting the needs of cities in low and middle-income countries where the challenges of planning for climate change are particularly high, the guide offers a strategic, values-based planning framework.

I would like to thank EcoPlan International and Compass Resource Management from Vancouver, Canada, for developing the original version of this guide in 2010, with input from an extensive peer review group. My gratitude as well to the Cities and Climate Change Initiative (CCCI) which tested the guide in numerous cities participating in around the world.

Based on its robust methodology and its flexible approach, I sincerely hope that this guide will contribute to better urban planning and ultimately to more economically vibrant, inclusive and resilient cities around the world.

Dr. Joan Clos

Under-Secretary-General and Executive Director,
United Nations Human Settlements Programme
(UN-Habitat)

Overlooking Mumbai.
© UN-Habitat/Bernhard Barth

Introduction

This Toolkit is a companion document for ***Planning for Climate Change: A strategic values-based approach for urban planners****, a resource and planning guide developed for city planners and other professionals to better* ***understand, assess and take action on climate change at the local level.***

Planning for Climate Change: A strategic values-based approach for urban planners incorporates a participatory, community-based methodology that includes the supporting tools featured in this Toolkit. *Planning for Climate Change* can be used with this Toolkit to **support city climate change planning processes** and as a stand-alone **capacity building resource** and **training tool**.

As illustrated, *Planning for Climate Change* and this accompanying Toolkit are organized around a four-module strategic planning approach that correspond to four key strategic planning questions:

WHAT IS HAPPENING?
WHAT MATTERS MOST?
WHAT CAN WE DO ABOUT IT?
ARE WE DOING IT?

Answering these questions requires users to go through a corresponding set of individual **steps**. Each of the nine planning steps is further broken down into more detailed **tasks**, many of which are supported by corresponding **tools**. *Planning for Climate Change: A strategic values-based approach for urban planners* describes the overall planning framework and how and where specific tools could be used, while this companion document provides specific instructions for each tool along with blank tool templates.

It is important to remember that the planning process is **flexible and non-linear** and is designed for a range of situations and realities. It is anticipated that cities will:

- Be at **different stages** of climate change planning (e.g. some may have already completed a *Vulnerability Assessment* as outlined in Module A).
- Be using the guide for **different purposes** (e.g. one city may use it to support development of a city-level *Climate Change Action Plan*, while another city may use it to support only one planning step, like a *Vulnerability Assessment*).

FIGURE 1: Planning for climate change

- Have **different planning structures**, processes (e.g. some cities may have a sophisticated planning approach and supporting plans, while others may not) and **authorities** (e.g. some cities may have limited planning responsibilities, as the authority rests with state or provincial governments).
- Have **different resources and capacities** (e.g. some cities may have the human, financial and technical resources to undertake a process themselves, while others may have to secure external funding or technical support).

Recognizing these factors, the use of the tools in this guide will vary depending upon cities' local context, demands and capacity.

TOOLS

The following tools are designed to help planners, or other project facilitators, to work through the planning framework in *Planning for Climate Change: A strategic values-based approach for urban planners.*

While the tools are best used in conjunction with the planning framework, every process will be different and may not require that every tool be used. The tools can also be used to support discrete steps or smaller planning projects (e.g. Vulnerability Assessment, Stakeholder Assessment, Monitoring and Evaluation).

PLANNING FOR CLIMATE CHANGE TOOL LIST

Module A: What's happening?

Tool 1-A Framing the challenge questionnaire
Tool 1-B Getting organized worksheet
Tool 1-C External assistance assessment
Tool 2-A Stakeholder identification worksheet
Tool 2-B Stakeholder analysis matrix
Tool 3-C Stakeholder "Terms of Reference" worksheet
Tool 3-A Weather and climate change summary
Tool 3-B Climate change observation template
Tool 3-C Climate change influence diagram
Tool 3-D Overview – exposed people, places, institutions and sectors
Tool 3-E Hazard mapping (exposure mapping)
Tool 3-F Socio-demographic sensitivity assessment
Tool 3-G Sensitive places mapping
Tool 3-H Community-based sensitivity mapping
Tool 3-I Sensitivity thresholds
Tool 3-J Sensitivity assessment summary
Tool 3-K Climate threat plotting
Tool 3-L General adaptive capacity assessment
Tool 3-M Hazard-specific adaptive capacity assessment
Tool 3-N Rapid institutional assessment questionnaire
Tool 3-O Summary vulnerability rating matrix
Tool 3-P Summary vulnerable population by sector
Tool 3-Q Vulnerability Assessment Report outline

Module B: What matters most?

Tool 4-A Issues identification and organization
Tool 4-B Issues to objectives
Tool 4-C Objectives analysis – relevance to climate change
Tool 4-D Objective indicators (descriptive)

Module C: What can we do about it?

Tool 5-A Option identification worksheet
Tool 5-B Objectives to options worksheet
Tool 5-C Organizing options worksheet
Tool 5-D Screening and ranking options
Tool 6-A Direct ranking options
Tool 6-B Technical ranking matrix
Tool 6-C Objective ranking and weighting matrix
Tool 6-D Weighted ranking matrix
Tool 7-A Institutional - governance checklist
Tool 7-B Action plan worksheet
Tool 7-C Climate Change Action Plan table of contents

Module D: Are we doing it?

Tool 8-A Indicator development worksheet
Tool 8-B Monitoring framework worksheet
Tool 8-C Evaluating actions against objectives worksheet
Tool 8-D Evaluation questions

Module A

WHAT IS HAPPENING?

This module includes **three steps** and will help planners answer these questions:

STEP 1 *Are we ready to undertake a climate change planning process?*
STEP 2 *Who needs to be involved at the city and in the community and how can they be engaged?*
STEP 3 *How is climate change affecting the city and who is most vulnerable to these changes?*

The **first two steps in this module are the foundation for any successful planning process**. Many projects that stall will return to these foundational planning steps after failing to get off the ground.

After completing Module A, planners and stakeholders will:

- ✔ Have a shared, clear awareness of the need to address climate change in their city.
- ✔ Know which city, community and local stakeholders to involve and how to do it by completing their *Stakeholder and Engagement Plan.*
- ✔ Understand what is happening with climate change in the city through the creation of a *Vulnerability Assessment (*including where to source the information required for it)

The graphic illustrates this module's three planning steps and major planning tasks.

Step 1: Getting started

TOOL 1-A: FRAMING THE CHALLENGE QUESTIONNAIRE

Time Required	1 to 2 hours
Rationale and Comments	Designed to help provide context around resource limitations for the process, the core planning team and/or stakeholder advisory group can use this tool to: • Understand the "triggering event" • Explore the larger planning context • Frame the climate change planning challenge Sharing the answers with other project stakeholders can help build project awareness with groups or individuals who may not understand the challenge of climate change.
Procedure	Answer the questions with your core planning team and/or stakeholder advisory group. Record answers in responses column and use additional sheets if required.

QUESTIONS	RESPONSES
Describe the "triggering event" or motivation for the planning process. (e.g. a crisis or event clearly linked to climate change? Policy mandate for climate change planning? Available funding or support?)	*Example: Rising sea levels and storm surges are inundating coastal areas and flooding low-lying informal settlements. Planning funding from central government is available.*
Who is affected by the triggering event?	*Example: Informal settlements, flooding of coastal road network.*
Who or what will be affected if nothing is done?	*Example: Increased life safety risks. Health issues from waterborne disease.*
Is there any work underway or past planning initiatives that addressed climate change? What were they and how did they work?	*Example: Vulnerability Assessment, which was never adopted by city council.*

Step 1: Getting started

TOOL 1-B: GETTING ORGANIZED WORKSHEET

Time Required	1 to 2 hours
Rationale and Comments	To be used as a guide for the process leader or your core planning team at the outset of the planning process to help organize initial activities and "plan-to-plan".
Procedure	Answer the questions with your core planning team and/or stakeholder advisory group. Record answers in responses column. Use additional sheets if required.

QUESTIONS	RESPONSES
Who will lead the effort? - Which department, individual or agency (Physical Planning, Public Works, Health, etc.)? - If local government capacity is limited what about a non-governmental organization (NGO)? - For NGOs or other groups, what authority will they have? - Does the lead agency have partnerships to support in facilitating the planning? If not, who does? What is their agreed role and coverage of support?	*Example: City Planning Department (specifically, the Manager of Community Planning) with advisory assistance from local NGO.*
What are the links to existing or ongoing plans and visions? - Is there is an existing Land Use Plan (or equivalent) and does its vision or goals support a climate change planning initiative? - What are the connections to other existing plans, i.e. are there any mainstreaming opportunities like a Water and Sewer Plan, Disaster Risk Reduction Plan?	*Examples: Out-dated City Land Use Plan (1984). Potential mainstreaming opportunity with new Disaster Risk Reduction Plan.*

Step 1: Getting started

TOOL 1-B: GETTING ORGANIZED WORKSHEET - continued

QUESTIONS	RESPONSES
Are there anticipated constraints? - Are there time constraints, like elections or funding windows? - What resources are anticipated – staff time, money, and skills? - Is there funding?	*Examples: Limited staff resources (time, capacity). No funding.*
Who should be invited to get the process going? - How should staff from different departments be involved? - Are there other key stakeholders that can help initiate the process?	*Examples: Staff from engineering/public works and transportation need to be involved.*
What is the process that will be followed? - Does the planning process need to be adjusted to fit with local cultural and area needs? - How will decisions be made and implemented?	*Examples:* - *We will follow the step-by-step process described in this guide* - *Decisions will be made by the core planning team by majority vote, and implemented by designated staff members in the Planning Department*

Step 1: Getting started

TOOL 1-C: EXTERNAL ASSISTANCE ASSESSMENT

Time Required	1 hour
Rationale and Comments	Expert support or leadership may make the process more effective and efficient, especially if internal staff members lack the time or capacity. This worksheet can help the planning team determine if outside help is needed to lead or support the planning project.
Procedure	Have each core planning team member answer the questionnaire. Then, discuss answers as a group and create a final questionnaire with reasons for the answer noted (yes or no). If the core planning team, leadership or evaluators can answer "yes" to all of the above questions, then there is no need to hire outside expertise. If the group answers "no" to any of these questions, outside expertise should be considered or discussed further.

QUESTIONS	YES	NO	NOTES AND COMMENTS
Was the core group able to adequately answer all the questions in Tool 1-A "Getting Organized"?			
Is there someone in the group with strong climate change knowledge (i.e. someone with an understanding of key concepts – climate impacts, risks, vulnerability, adaptive capacity)			
Is the core group and leadership in agreement that there is no need to have someone from outside the local area facilitate (e.g. someone who does not have a stake in the outcome)?			
Is there a staff member or trained facilitator in the core group that can create an environment for constructive and cooperative interaction and maximize productivity of group work and participation?			
Do they have a good understanding of planning techniques and structured group processes?			
Can they help the group to establish rules and procedures for the process?			
Can they ensure that communication between stakeholders is effective and fair, without being swayed by powerful or outspoken members?			
Can they balance the need to push the process forward (due to budget or time constraints) and the need for participants to reflect and understand?			

Step 2: Stakeholders and participation

TOOL 2-A: STAKEHOLDER IDENTIFICATION WORKSHEET

Time Required	1 to 3 hours
Rationale and Comments	Good working partnerships with stakeholders are critical for a successful planning process. In this step the planning team creates a list of all potential stakeholders, without judging whether or not they should be involved in the process at this time. Having a complete listing of stakeholders is the first step in identifying important, major stakeholders, forming a stakeholder advisory group, and identifying where and how different stakeholders could participate.
Procedure	Have the core planning team fill out the worksheet below. Have participants read their answers and record group responses on a flip chart. Record compiled answers on a single worksheet. Use additional sheets if required.

QUESTIONS	LIST OF STAKEHOLDERS
Who are most impacted by, at risk from, or vulnerable to known climate change impacts? (This list will evolve as the city's understanding of climate change impacts improves).	*Examples: Residents of the informal settlement on the banks of the river, fisherman, children and elderly (due to health impacts associated with increased waterborne illness).*
Who should be included because of their relevant government or official position (e.g. municipal, provincial, national, traditional government)?	*Examples: Elected officials (Mayor, Councillors), Chief Engineer, City Planning Director, etc.*
Who should be included because of their relevant community position (e.g. local leaders and organizations)?	*Examples: Local environmental NGO, community leaders, local religious leaders, etc.*

Step 2: Stakeholders and participation

TOOL 2-A: STAKEHOLDER IDENTIFICATION - continued

QUESTIONS	LIST OF STAKEHOLDERS
Who should be included because they have control over relevant resources (e.g. money, expertise)?	*Examples: Chamber of Commerce, Non-governmental Organization (NGO) or international organization representatives (e.g. UN-Habitat, World Bank), local university, etc.*
Who has power to hinder or block the implementation of the actions in the climate change action plan (e.g. lobby groups, implementing agencies)?	*Examples: National/state/provincial governments, industry associations*
Are there other relevant stakeholders who should be included?	*Examples: Media, labour organizations, political organizations*

Step 2: Stakeholders and participation

TOOL 2-B: STAKEHOLDER ANALYSIS MATRIX

Time Required	1 to 2 hours
Rationale and Comments	This tool will help in assessing potential stakeholders and in developing a stakeholder group. It will help narrow down the large list of stakeholders generated in Tool 2-A and assesses whether they should be involved in the stakeholder advisory group or as part of a broader community engagement plan.
Procedure	Use the list generated in Tool 2-A to fill out the matrix below. Stakeholders will be organized into three main groups:

- Government
- Non-government
- Business

Step 1: Organize the stakeholders under one of the headings above.

Step 2: For each stakeholder, note why they would be interested in participating in the description of interest column (i.e. what would they get out of the process)

Step 3: For each stakeholder, note what they could contribute to the process (e.g. data, staff, resources, funding) in the description of potential contributions column

Step 4: For each stakeholder, evaluate their current and potential relevance to the project in the partnership assessment column and note whether their involvement is:

- Essential: process will fail without their involvement
- Important: process may suffer without it
- Minor: nice to have

Consider the following issues when assessing stakeholders:

- Their stake in the issues (e.g. vulnerable groups, environmental NGOs)
- Their formal position (e.g. government authority);
- Their control over relevant resources (e.g. money, expertise); and
- Their power to promote, hinder or block adaptation implementation (e.g. lobby groups, implementing agencies).

The activity can be done individually with participants reporting back to the main group, or by the whole group working together. For larger groups, or to compare individual answers, it can be helpful to use a flipchart.

See table on the following page.

Step 2: Stakeholders and participation

TOOL 2-B: STAKEHOLDER ANALYSIS MATRIX

STAKEHOLDER	DESCRIPTION OF INTEREST	DESCRIPTION OF POTENTIAL CONTRIBUTIONS	PARTNERSHIP ASSESSMENT	
			Current	Potential
Government: Municipal, Provincial, National, Traditional				
NGO (Non-governmental organization) and CBO (Community-based organization)				
Business and Labour				
Other				

Step 2: Stakeholders and participation

TOOL 2-C: STAKEHOLDER "TERMS OF REFERENCE" WORKSHEET[1]

Time Required	3 hours
Rationale and Comments	A ToR clearly lays out roles and responsibilities of the stakeholder advisory group, and should help avoid any potential conflicts that may arise later in the process.
Procedure	The core planning team can use the following template to develop a ToR for the stakeholder advisory group. The first page is a template with guiding questions, and the second one is blank and can be used for your own group. Once a formal ToR has been produced, every member of the stakeholder advisory group will receive a copy of it and review it together as a group during their first meeting.

CONTENTS	PURPOSE AND NOTES
Name	What is the name of the group? *Example: Doha Climate Advisory Team*
Chairperson/Leadership	Who chairs the group? *Example: The Director of Planning will chair the Advisory Team meetings*
Purpose	What is the purpose of the committee in three or four bullet points? *Example:* - *To provide input from a variety of community perspectives* - *To represent broader groups of stakeholders* - *To report back to broader groups of stakeholders on the process*
Empowerment	What is the group empowered to do? Does the group have the power to make decisions regarding the planning process, or do they provide advice to the core planning team? *Example: This group is an advisory group only and cannot make decisions regarding the planning process*
Time Frame and Time Commitment	What is the time commitment expected from participants? How long will the committee to be active? What is the end date? Is it subject to funding? *Example: Stakeholder advisory meetings will happen once per month, for two hours, during the project life span (approximately 16 months). Several hours of additional work per month may be requested (e.g. reporting back to their community on progress, doing research).*
Roles and Responsibilities	What are participants expected to do? *Examples:* - *To show up on time for meetings or send a replacement* - *To review planning documents and provide feedback* - *To participate in group discussions* - *To represent their community's perspectives above personal perspectives* - *To report findings back to their community and potentially assist in community engagement processes*

1 *Adapted from ICLEI (1996). The Local Agenda 21 Planning Guide. Toronto.*

Step 2: Stakeholders and participation

TOOL 2-C: STAKEHOLDER "TERMS OF REFERENCE" WORKSHEET - continued

CONTENTS	PURPOSE AND NOTES
Reporting	How are meeting minutes/discussions reported? *Examples:* - *Each person to report back to their respective community or organization* - *Minutes prepared within ten (10) working days and emailed to members*
Method of decision-making	How are decisions made? Example: Although this is not a decision making body, some decisions may need to be made as part of their advisory role (for example, to decide which course of action to recommend to the planning team). In this case, decisions will be made by a majority vote.
Resources	Are there any resources the committee can draw on? *Examples:* - *City staff; upon availability and subject to approval* - *Other expertise as deemed necessary by committee* - *The group does not have discretionary budget*
Process for joining or leaving the group	What is the protocol for letting members into, and out of, the process – when and how? *Example:* - *If original members are unable to continue participating, they should recommend an alternate participant* - *New members can join the process at any point, if recommended by the core planning team*
Communications	What is the communication protocol? With other members? With members' constituents? With the media? With public officials? *Examples:* - *Members can communicate back to their constituent communities or organizations on behalf of the planning process* - *Members should not communicate with the media, but should refer media back to the core planning team*
Approval and contact information	This is where members should sign that they agree to these ToR and provide contact information. I, _____, agree to these Terms of Reference and agree to be a part of the stakeholder group. I will adhere to the rules in this document and fulfil the responsibilities outlined above. Date: _____ Phone: _____ Email: _____

Step 2: Stakeholders and participation

TOOL 2-C: STAKEHOLDER "TERMS OF REFERENCE" WORKSHEET

	DETAILS
Name	
Chairperson/Leadership	
Purpose	
Empowerment	
Time frame and time commitment	
Roles and responsibilities	
Reporting	
Method of decision-making	
Resources	
Process for joining or leaving the group	
Communications	
Approval and contact information	I, _____, agree to these Terms of Reference and agree to be a part of the stakeholder group. I will adhere to the rules in this document and fulfil the responsibilities outlined above. Date: _____ Phone: _____ Email: _____

Step 3: Vulnerability assessment

TOOL 3-A: WEATHER AND CLIMATE CHANGE SUMMARY

Time Required

2 to 6 months or more, with multiple stakeholder workshops. Completing this table requires several sub-tasks and considerable research. Historical data gathering and future climate change modelling, in particular, can require substantial time commitments.

Rationale and Comments

The first step is to collect and review available weather and climate information. This tool provides a template for organizing this information and data that will be collected. When completed, the summary matrix will provide a summary of:

- Historical weather **trends**, including stakeholder and community observations
- Longer-term climate change **scenarios**, including the level of uncertainty and confidence around these projections occurring
- Principal local, city-level **hazards** (e.g. drought, sea level rise, increased precipitation and flooding) associated with current and projected climate changes
- Major local, city-level **impacts** (e.g. reduced crop yields, local flooding) associated with current and projected climate change hazards

Given the technical work is required in completing this tool, now is a good time to determine whether you need to bring in someone with technical climate change skills and knowledge. A climate expert from a local university or government agency can help gather data, interpret historical trends and project future trends.

Procedure

Completing the table is done in conjunction with Tools 3-B and 3-C and involves the following steps.

Step 1: Collect historical and projected weather and climate data. The collection of this information can begin with your core planning team and stakeholder advisory committee. Once it has been collected and reviewed, summarize the information in columns 3 and 4.

Step 2: Present this information to both the core planning team and the stakeholder advisory group and gather their own observations about changes to the local weather and climate. This will help to reinforce the findings and ensure that the research done so far is consistent with stakeholder's "on-the-ground" observations (see Tool 3-B). Summarize stakeholder observations and add to column 3.

Step 3: Work with the core planning team and/or stakeholder group to organize the information into a limited number of major impact categories so you can begin to assess how important the weather changes and related climate change exposures are to your community.

Step 4: Use Tool 3-C to record the climate-related hazards and help identify which climate change hazards and weather changes are most relevant to your city. Record these in column 1. This will likely require some changes and modification to the summary matrix, but help narrow its scope to the most relevant climate change hazards and weather changes.

Step 5: Now the remaining three columns are ready to be filled in. See main body of guide for detailed guidance.

- **Column 2:** Indicate the type of hazard in this column.
- **Column 5:** Summary climate change projection provides a summary assessment of which way the trend is going. How likely is it that the projections will actually occur?
- **Column 6:** How confident are you about the accuracy of the summary projection?
- **Column 7:** The final column will be explored further in the next tasks. It is useful at this point, however, to start thinking about what known vulnerable populations might be exposed to these projected climate changes, and how they might be exposed.

See table on the following page.

Step 3: Vulnerability assessment

TOOL 3-A: WEATHER AND CLIMATE CHANGE SUMMARY

COLUMN 1	COLUMN 2	COLUMN 3		COLUMN 4	COLUMN 5	COLUMN 6	COLUMN 7
Climate Change Hazard	Extreme Event or Change to Average?	Historical Trends		Climate Model	Summary Climate Change Projection		Exposure – Preliminary Notes on Who and How
		Stakeholder Observations	Local / Regional Weather Data	Scenario Projections *	Projected Future Change Direction Uncertainty	Confidence	
EXAMPLE *Drought*	*Extreme event*	*Summer droughts lasting 4-5 weeks longer most years*	*Average length of summer dry periods increased by 15 days in last 30 years*	*Spring / Summer in year 2050:* *+ 1.5°C temperature* *- 20mm precipitation* *- 18% soil moisture*	*Generally increasing trend in length of dry season.* *Rate of change is uncertain, but expected to rise over time.*	*High*	*Farmers – reduced crop yields* *City water supply – reduced reservoir levels*

NOTES

Extra rows to be added as required for all identified climate change hazards

**Climate projections can be from climate models or extrapolated from historical data. See Appendix 2: Resources for relevant climate model references*

Step 3: Vulnerability assessment

TOOL 3-B: CLIMATE CHANGE OBSERVATION TEMPLATE

Time Required	Half-day workshop, or as required.
Rationale and Comments	Working with the stakeholder advisory group and core planning team, discuss the weather related changes that they have seen in the region in their lifetime. Use the tool to record participants' climate observation information. Obtaining local observations engages stakeholders directly in the information gathering aspects of planning. Information will be integrated and cross-referenced with Tool 3-A.
Procedure	Set the context for the discussions as required, by describing the importance of tapping into local knowledge as part of developing the overall situation assessment. Describe how local observations will be integrated and cross-referenced with technical data collection efforts. Pose two simple questions to the core planning team and/or stakeholder advisory group: • What climate-related weather changes have you observed? • How are those changes affecting your daily life? Document specific observations and trends using the table below.

OBSERVATION	RECENT TRENDS

Step 3: Vulnerability assessment

TOOL 3-C: CLIMATE CHANGE INFLUENCE DIAGRAM

Time Required	Half-day to full-day workshop.
Rationale and Comments	Influence diagrams organize and present information in a concise way. They can be used to graphically illustrate major climate change hazards (e.g. drought, flooding, heat waves, sea level rise) and their biophysical impact and human system impacts. They are a helpful tool for visualizing and organizing the primary, secondary and tertiary impacts and linkages of climate change. Influence diagrams can be developed with your core planning team and stakeholder working group, or as a part of broader community engagement activities. Use this tool to record the climate-related hazards and to help identify which climate change hazards and weather changes are most relevant to your city. The results will be included in column one of Tool 3-A Weather and Climate Change Summary Matrix.
Procedure	Assemble a list of observations and other identified potential impacts. Use flip charts, whiteboards or equivalent to draw out cause and effect relationships using box and arrow diagrams (see Figure 8 in *Planning for Climate Change* for an example). Note that several potential impact areas can likely be traced back to a single weather-related change. Note also that primary, secondary and tertiary impacts are also often related to one another. These linkages should be noted as well. The aim is to develop and organize Influence Diagrams into major climate change driver categories – drought, flooding, heat waves, storms, sea level rise, etc. – and to start thinking about the connections between and amongst the hazards and hazard impacts.

Step 3: Vulnerability assessment

TOOL 3-D: OVERVIEW – EXPOSED PEOPLE, PLACES, INSTITUTIONS AND SECTORS

Time Required

Half-day to full-day workshop.

Rationale and Comments

Now that a list of potential hazards has been completed, it is important to identify the places where climate change hazards are most likely to occur (i.e. the most exposed locations). For example, river flooding risks are most likely in existing flood plains, while sea level rise will affect low-lying coastal areas most significantly.

When identifying hazard areas, the people living or working in the area should be identified. Exposed places (bridges, roads, schools, clinics, markets, etc.) and institutions (governments, stakeholder organizations) should also be noted. In addition, and as illustrated in the sample table, the corresponding sector(s) that are impacted should also be noted.

Procedure

Step 1: List the climate change hazards from column 1, Tool 3-A in the first column.

Step 2: Note where, approximately, the hazard occurs in column 2

Step 3: Note exposed features in area (people, places, institutions) in column 3

Step 4: Note exposed sectors associated with hazard in column 4

CLIMATE CHANGE HAZARD	HAZARD AREA / LOCATION	HAZARD AREA - EXPOSED FEATURES (PEOPLE, PLACES, INSTITUTIONS)	EXPOSED SECTORS
EXAMPLE *Heat Waves*	*City-wide/region-wide*	*Elderly and young* *Power Plant (air conditioning load leads to brown outs)*	*Health*

NOTES
Extra rows to be added as required

Step 3: Vulnerability assessment

TOOL 3-E: HAZARD MAPPING (exposure mapping)

Time Required

As required. Time requirements will vary depending upon:

- Resources and mapping capacity available (i.e. whether computer aided mapping capacities, like GIS, exist).
- Data resources (i.e. the quality and quantity of existing data and mapped features).
- Scale and number of hazard maps to be created.

Rationale and Comments

Once you have created an overview of exposed places, people and sectors, it is extremely helpful to map these features where practical and possible. Maps are powerful communication and project documentation tools.

As a documentation tool, hazard mapping can illustrate climate change exposed locations in a city and their features (people, places, institutions, sectors).

As a communication tool, hazard mapping can raise awareness and facilitate discussion among stakeholders, external agencies and government officials.

Hazard mapping analysis will be used to assess sensitivities and help identify risk areas when additional information about sensitivity is collected. It will also be used to help illustrate the type and degree of vulnerability for the different risk categories (i.e. people, places, institutions, sectors) and scales of risk to be defined in the next step.

Procedure

If your city has good geographic information systems (GIS) data and capacity, this task should be relatively straightforward. It will involve the creation of a series of maps that illustrate exposed locations, such as flood plains, low-lying areas along the coast subject to storm surges and coastal erosion.

Once base-level natural hazard potentials have been identified and mapped, they can be overlain with additional map layers illustrating important exposure variables, like population information (e.g. population density), major infrastructure (major roads, water supply, sanitation, sewerage, bridges), land uses (e.g. residential [housing], industrial, commercial), critical infrastructure (hospitals, major government offices), and key environmentally sensitive areas (coastline, wetlands, water bodies, conservation areas).

Step 1: Assess and determine computer-aided mapping capacity and resources

Step 2: Assess and determine quality and quantity of data available (i.e. is new data collection and fieldwork required?)

Step 3: Determine scale and scope of map atlas (i.e. what is going to be mapped and how big will the scale be?)

Step 4: Develop base maps and overlay with additional map layers

Step 5: Review maps with core planning team and/or stakeholder advisory committee and revise where required

Where capacity and mapping resources are sufficient, additional hazard mapping analysis could also include a more thorough evaluation of the potential economic impact of natural hazards, taking into account direct and indirect damages.

Step 3: Vulnerability assessment

TOOL 3-F: SOCIO-DEMOGRAPHIC SENSITIVITY ASSESSMENT

Time Required	As required. Likely to involve several months of research.
Rationale and Comments	A social sensitivity assessment determines human populations that may be adversely (or positively) affected by climate change. In particular, this focuses on climate-related sensitivities in regard to public health, livelihoods, housing, and mobility. The main purpose of the socio-demographic sensitivity assessment is to pull together and organize the data that will be used for other task activities, including mapping. The assessment will summarize the socio-demographic considerations and variables that play an important role in understanding the degree of exposure to hazards that will characterize certain parts of a city.
Procedure	The final document does not have to be extensive, but will likely include tables, graphs and, where practical and possible, maps that illustrate the variables shown on Table 13 in *Planning for Climate Change* and provide a succinct socio-demographic profile of your city. In those cases where such profiles already exist, the work will mainly involve making sure that the information is up to date. While not all information can always presented spatially on maps, where practical and possible all spatial data should be captured in a GIS geo-database to assist with future mapping activities. A geo-database is a digital map atlas and database of separate map layers, each featuring different information that can be easily organized and analysed using GIS. For the socio-demographic sensitivity assessment, some information that may lend itself to mapping includes: • Population densities (current and projected) • Informal settlements • Vulnerable populations densities (e.g. poor households)

Step 3: Vulnerability assessment

TOOL 3-G: SENSITIVE PLACES MAPPING

Time Required

As required. Time requirements will vary depending on:

- Resources and mapping capacity available (i.e. whether computer aided mapping capacities, like GIS, exist).
- Data resources (i.e. the quality and quantity of existing data and mapped features).
- Scale and number of sensitivity maps to be created.

Rationale and Comments

The next series of sensitivity assessments involves data that can (mostly) be presented spatially. These simple sensitivity maps will build-off of and add on to the hazard mapping work in Tool 3-E and incorporate the findings organized by Tool 3-F.

Procedure

If mapping capacities and resources exist, a single map with separate map layers for each topic could be developed to illustrate:

- Sensitive places: major infrastructure and facilities (hospitals, schools, government buildings, ports, airports, etc.), neighbourhoods located in exposed areas
- Sensitive ecosystems: coastal areas, estuaries, mangrove forest, coastal dune habitat, rivers

Mapping for sensitive places could also likely use existing city mapping to locate known development hazard areas, like steep slopes (typically < 20 per cent) and flood plains.

All of the mapping generated should be overlain with the exposure mapping. Locations where exposed areas overlap with sensitive populations and places could indicate areas where vulnerability may be particularly high. This will be analysed further and confirmed with some additional risk assessment activities, including community-based sensitivity mapping, Tool 3-H.

Step 1: Assess and determine quality and quantity of data available (i.e. is new data collection and fieldwork required?)

Step 2: Determine scale and scope of map atlas (i.e. what is going to be mapped and how big will the scale be?)

Step 3: Develop maps

Step 4: Review maps with core planning team and/or stakeholder advisory committee and revise where required

Step 3: Vulnerability assessment

TOOL 3-H: COMMUNITY-BASED SENSITIVITY MAPPING

Time Required

As required. Time requirements will vary depending upon the number of community-based sensitivity maps to be created.

Rationale and Comments

Community-based sensitivity mapping can be used to compliment and augment the desk-based sensitivity mapping. To be carried out after completing the initial sensitivity mapping (Tool 3-G), it provides an opportunity to engage the broader community in the sensitivity assessment and to confirm findings at the local level. It also provides an opportunity to involve the vulnerable populations identified in the socio-demographic sensitivity assessment.

Finished maps can be used to support the identification of climate actions and to raise awareness / facilitate dialogue among stakeholders and decision makers.

You can also use the opportunity to confirm exposure trends at the local level, gauge local level adaptive capacity and to begin identifying preliminary climate adaptation options or actions (something community mapping activity participants will likely be keen to provide).

Procedure

Step 1: Determine scale and scope of mapping as required for community groups (i.e. will it be based on informal communities, the larger city, other specific neighbourhoods?)

Step 2: Develop base map of the planning area to be explored. Identify important places and facilities (transport routes, major infrastructure, community facilities like schools). Make several copies to mark up with each particular community group. Maps can be digital, printed or hand drawn, depending on available resources.

Step 3: Discuss and review the hazard and completed sensitivity mapping. Review and confirm with stakeholders. Mark up the base maps community feedback and comments. Expect that participants may jump right into developing climate change actions. These can be captured for Task 3.5 and revisited during Step 6: Option Assessment.

Step 3: Vulnerability assessment

TOOL 3-I: SENSITIVITY THRESHOLDS

Time Required	As needed.
Rationale and Comments	With or without community and computer-aided mapping, some sensitivities may be less obvious and may require more detailed analysis. In particular, they may wish to understand the point at which changes to a climate variable begins to matter (i.e. the impact threshold), as well as the point at which a change to a climate variable will have a catastrophic effect (i.e. the critical threshold).
Procedure	Use this tool to summarize all available information on thresholds for each identified hazard. Filling out this table may require assistance from the climate specialist or agency contacted as part of Task 3.1. It will also require working with your stakeholder advisory committee to help develop and confirm thresholds. Some information may be available from research carried out during Task 3.1 and the data sources identified in Table 7 and Table 13 in *Planning for Climate Change*.

CLIMATE CHANGE HAZARD	SENSITIVITY THRESHOLDS	PRIMARY / SECONDARY IMPACTS	DATA SOURCES
EXAMPLE *Flooding*	*Dikes overflow with a river flow of greater than 100,000 m3/second, which causes an increase in river height of 1.5 metres at Low Bridge, threatening the vehicle deck.*	*Residential / Industrial area flooding*	*Engineering Department (or equivalent)* *Transportation Department (or equivalent)*

Step 3: Vulnerability assessment

TOOL 3-J: SENSITIVITY ASSESSMENT SUMMARY

Time Required	Half-day to full-day workshop.
Rationale and Comments	Having identified a list of climate change hazards and thresholds to the extent your capacity allows, the next piece of analysis is to summarize the sensitivity information collected so far and examine the potential threats presented by those hazards to exposed people, places, institutions and sectors. Understanding the potential consequences and the likelihood, or threat, of them occurring over time will help to prioritize areas for action. The priority threat assessment will help to identify which climate hazards your city is most sensitive to, and which people, places, institutions and sectors are most sensitive.
Procedure	To complete the summary chart:

Columns 1-3: The first three columns pull information from Tool 3-I.

Columns 4 & 5: Take the initial list of sensitive people, places, institutions and sectors from Tool 3-D and update it with any new information from the Socio-Economic Sensitivity Assessment (Tool 3-F).

Column 6: The sixth column deals with exposure. With the core planning team and/or stakeholder advisory group, refer back to the work done in Tool 3-A. For each climate hazard (e.g. drought, floods) create an estimate of the most likely climate scenario for a 20-year planning horizon. In some cases, a longer or shorter planning horizon may be appropriate – adjust as necessary.

Column 7: What are the potential socio-economic consequences in the future, if the city does not do any additional climate change planning? Think about how the city is currently being impacted by climate change (Tool 3-A) and how the climate exposure from Column 6 will affect the city in the future, taking into account trends like population growth or economic growth that could impact the consequences. Also, be sure to look to any existing city planning documents that could influence the consequences. For example, perhaps flooding could impact a particular road, but the city's Transport Plan already calls for moving the road to higher ground. Note this down in Column 7. Finally, consider how climate change will impact your city's development objectives – will these impacts prevent key development goals from being met?

Column 8: The last column evaluates how impacted, or how sensitive, the groups identified in columns 4 and 5 would be to the potential climate scenario from column 6. This is referred to in this tool as the threat level. Work with the core planning team to create definitions for high medium and low that are appropriate locally. See the Threat Level table (which is shown after the tool) for examples.

See tables on the following pages.

Step 3: Vulnerability assessment

TOOL 3-J: SENSITIVITY ASSESSMENT SUMMARY

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5	COLUMN 6	COLUMN 7	COLUMN 8
Climate Change Hazard (Tool 3-I)	**Primary / Secondary Impacts (Tool 3-I)**	**Thresholds (Tool 3-I)**	**Sensitive Features (people, places, institutions) (Tool 3-D)**	**Sensitive Sectors (Tool 3-D)**	**Exposure (Likely scenario for 20 year planning horizon) (Tool 3-A)**	**Potential Future Consequences (if there is no additional climate change planning)**	**Threat level: Sensitivity of people, places, institutions and sectors to each hazard (See Threat Level table on next page)**
EXAMPLE *Drought*	- *Reduced water supply* - *Reduced power generation* - *Reduced agricultural production*	- *At river flows less than100 m^3/s, reservoirs cannot be filled*	- *City reservoir, residents and businesses* - *Farmers (some subsistence)*	- *Water/ Sanitation* - *Economy (formal & informal)* - *Agriculture*	- *1°C temperature increase* - *15mm precipitation decrease* - *18% soil moisture decrease*	- *Subsistence farmers will have reduced incomes – decreased income per person, difficult to reach development goals* - *Increased rural to urban migration of farmers – potential stresses on city services and infrastructure*	***High***

Step 3: Vulnerability assessment

TOOL 3-J: SENSITIVITY ASSESSMENT SUMMARY

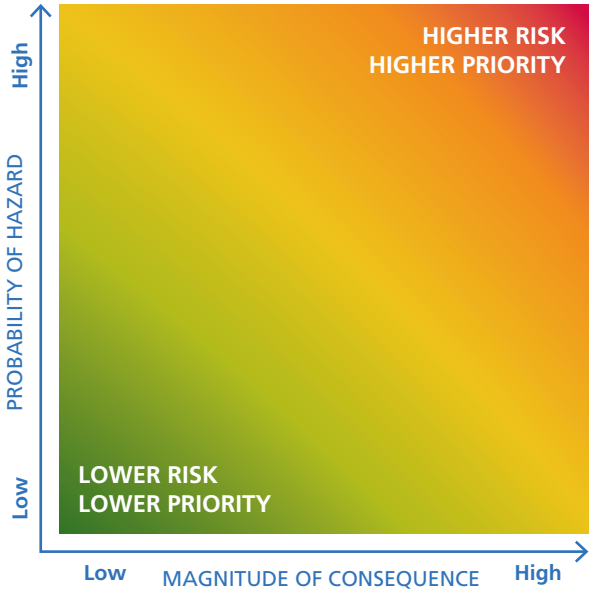
Threat Level: Example sensitivity scale (to be used to fill out the final column of Tool 3-J)

THREAT LEVEL	DESCRIPTIVE EXAMPLES
High	- Large numbers of serious injuries or loss of lives. - Regional decline leading to widespread business failure, loss of employment and hardship. - Major widespread damages and loss to environment and infrastructure, with progressive irrecoverable damage. - Local government services would cease to be effective.
Medium-High	- Isolated instances of serious injuries or loss of lives. - Regional local economic development impacts and stagnation. Serious impacts on livelihoods. - Severe and widespread decline in the quality of life within the community. - Severe damages and a danger of continuing damage to infrastructure and environment. - Local government services struggle to remain effective and would be seen to be in danger of failing completely.
Medium	- Small numbers of injuries involving the public. - Significant general reduction in livelihoods. - Isolated but significant instances of environmental and infrastructure damage that might be reversed with intensive efforts. - Local government services under severe pressure on several fronts.
Medium-Low	- Minor injuries to public. - Individually significant but isolated livelihood impacts. - Minor instances of environmental and infrastructure damage that could be reversed. - Isolated instances of government services being under severe pressure.
Low	- Appearance of a threat but no actual harm to public safety. - Minor impact on livelihoods. - No or insignificant infrastructure and environmental damage. - Minor instances of disruption to local government services.

Step 3: Vulnerability assessment

TOOL 3-K: CLIMATE THREAT PLOTTING

Time Required	Half-day workshop, or as needed.
Rationale and Comments	With climate exposures, sensitivities and threats identified and mapped, another helpful tool is to chart or plot the climate hazards on a simple table to graphically summarize threats (Tool 3-K). The activity can be a good method to engage a broader stakeholder audience, as it is relatively easy to understand, and can help stakeholders get a better sense of which hazards are higher priority. It is the high threat – high priority hazards that adaptation options should consider first.
Procedure	Plotting threats can be done on a flip chart with sticky notes. Probability of threat (from low to high) is noted on the Y-axis, while the magnitude of potential consequences (using information from the risk assessment and community mapping) is noted on the X-axis. The hazards and threats identified using the previous tools should be written on note cards. These note cards can then be taped on the flip chart with the X- and Y-axis and moved around until there is agreement on their arrangement with the group you are doing the activity with (core planning team, stakeholder advisory group). While there are some similarities to the previous tool, the activity can easily be repeated in community outreach activities to confirm threat findings.



Step 3: Vulnerability assessment

TOOL 3-L: GENERAL ADAPTIVE CAPACITY ASSESSMENT

Time Required	1 – 2 hours as a desk exercise. Half-day workshops with core planning team and/or stakeholder advisory team to review, modify and confirm.
Rationale and Comments	With background information collected and reviewed, use Tool 3-L to develop an overview perspective of your adaptive capacity, or to focus your assessment of adaptive capacity on a target sector as appropriate. The tool is intended to get you started, and will be followed by a tool that rates adaptive capacity relative to specific climate hazards. A city's capacity to respond to a given climate change impact is based on its level of awareness, knowledge, resources and skills (see Table 17 in *Planning for Climate Change*). Determining capacity is not an exact science, so some subjective judgement will be required. However, as you move into future planning steps this table can be revisited and refined.
Procedure	**Step 1:** Conduct first as a desk exercise. **Step 2:** Fill out assessment. In the "Why" column, be sure to note where findings have been confirmed during community mapping (Tool 3-F) or other planning tasks and steps. More checkmarks in the yes column of Tool 3-L suggests a higher ability to respond to an impact. **Step 3:** Convene a workshop with your core planning team and/or stakeholder advisory committee to discuss how individuals and households (i.e. independent capacity), communities (i.e. collective capacity) and governments (i.e. institutional capacity) have traditionally responded to extreme climate events and disasters like flooding, droughts and major storms. Ask your planning team: - How have locations withstood or been impacted by these events? - How well have people coped or managed? - In more extreme events and disasters, was government response timely and effective? **Step 4:** In consultation with your core planning team and stakeholders, work through the table.

See table on the following page.

Step 3: Vulnerability assessment

TOOL 3-L: GENERAL ADAPTIVE CAPACITY ASSESSMENT

ADAPTIVE CAPACITY ASSESSMENT CRITERIA (EXAMPLE)	YES	NO	WHY?
Economic wealth:			
Do you have access to adequate financial resources and funding?			
Do the people in the affected area have resources to respond to a climate-related hazard (e.g. access to basic transport, adequate rations, ability to relocate temporarily, basic shelter)?			
Do you have adequate staff and allocated time to plan and implement adaptation actions?			
Technology:			
Is there an ability to communicate directly with the people/sector affected (e.g. basic communication infrastructure, a designated key point of contact, regular interaction, radio service, etc.)?			
Infrastructure:			
Is there adequate transport, water infrastructure, sanitation, energy supply and management?			
Are major infrastructure and/or facilities located in hazard prone areas?			
Do people in the affected area have access to safe, clean drinking water in the event of a hazard occurrence?			
Are there adequate medical services in close proximity?			
Information and Skills:			
Are decision-makers aware of a) climate change and b) potential impacts/risks in your jurisdiction?			
Are stakeholders in the area/sector aware there are current and/or potential impacts?			
Has this area/sector undertaken previous efforts to study or address the climate change driver and potential impact?			
Are there trained emergency response teams for this sector/area?			
Institutions and Social Capital:			
Is there political willingness to allocate resources to build adaptive capacity?			
Are there notable community/neighbourhood "leaders" that can quickly organize people in the event of a hazard occurrence?			
Are there existing processes that you can integrate with?			
Are there any existing area/sectoral plans, including emergency response plans that can be referred to?			
Are there specific agencies, community groups, and/or NGOs that have the mandate and skills to focus on the specific sector/area?			

Step 3: Vulnerability assessment

TOOL 3-M: HAZARD-SPECIFIC ADAPTIVE CAPACITY ASSESSMENT

Time Required	2 to 3 hour workshop with core planning team and/or stakeholder advisory committee.
Rationale and Comments	After evaluating the general adaptive capacity of the city in the previous tool, this tool takes a closer look at the adaptive capacity relative to specific climate hazards (such as drought, floods, etc.). This is an important step, as it will help to understand where capacity gaps exist, particularly with regard to hazards that were rated as being a large threat to the city in Tool 3-J.
Procedure	**Step 1:** Conduct first as a desk exercise. **Step 2:** Convene a workshop with your core planning team and/or stakeholder advisory committee to review, revise and confirm questionnaire.

See table on the following page.

TOOL 3-M: HAZARD-SPECIFIC ADAPTIVE CAPACITY ASSESSMENT

HAZARD	THREAT LEVEL (from Tool 3-J)	ADAPTIVE CAPACITY FACTORS												AVERAGE ADAPTIVE CAPACITY SCORE (total score divided by number of Adaptive Capacity Factors)
		WEALTH: What wealth and financial resources are available to address this hazard?		TECHNOLOGY: What technology and related resources are available to address this hazard?		INSTITUTIONS: What institutions or teams are addressing this hazard? What policies already exist?		INFRASTRUCTURE: What infrastructure is available to address this hazard? Can it withstand climate projections?		INFORMATION: What is the level of knowledge on this hazard? Is it distributed to the people who need it?		SOCIAL CAPITAL: What social capital is available that could address the impacts from this hazard?		
		Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	
EXAMPLE *Drought*		*Farmers have low incomes* *Low government funds for assistance*	*L (1)*	*New drought resistant crop types being tested locally*	*MH (4)*	*Agriculture ministry has been responsive to droughts in the past* *Multiple local agricultural NGOs with high capacity*	*MH (4)*	*Good irrigation systems on most farms*	*M (3)*	*Information on drought resistant crops is not disseminated well to farmers*	*M (3)*	*Farmers' cooperative and networking groups share information*	*M (3)*	*18/6 = 3*

Step 3: Vulnerability assessment

TOOL 3-N: RAPID INSTITUTIONAL ASSESSMENT QUESTIONNAIRE

Time Required	2 to 3 hour workshop with core planning team and/or stakeholder advisory committee.
Rationale and Comments	Given the important role of governments in both preparing for and responding to climate change, a major component of the larger adaptive capacity assessment is an institutional assessment of the local government's adaptive capacity. Such an assessment will help to identify how climate change affects local government service delivery and, ultimately, will support mainstreaming climate change adaptation options across city departments.
Procedure	**Step 1:** Conduct first as a desk exercise. **Step 2:** Convene a workshop with your core planning team and/or stakeholder advisory committee to review, revise and confirm questionnaire. **Step 3:** If, after answering the questions, it is obvious that climate change and disaster risk management are not sufficiently developed or linked with each other, you may wish to develop climate change actions that address this gap. Record this potential action in Step 3.5 for subsequent evaluation.

1) GOVERNANCE STRUCTURE AND CLIMATE CHANGE MANAGEMENT IN THE CITY			
Local government office structure: Does it have…	**Yes**	**No**	**Comments**
a) Disaster risk management manager?			
b) Environment, sustainability or climate change manager?			
c) Are (a) and (b) in the same department or do they have sufficient coordination and interaction?			
d) If you answered no to question (a) and (b), are these functions carried out by another individual on staff? If so, which position(s)?			
Other government office structure: Does it have…	**Yes**	**No**	**Comments**
a) Disaster risk management department?			
b) Environment, sustainability or climate change department?			
c) Do (a) and (b) have a sufficient level of coordination and interaction?			
d) If you answered no to (a) and (b), are these functions carried out by another department(s)? If so, which one(s)?			

2) RESPONSIBILITIES FOR CLIMATE CHANGE AND DISASTER RISK MANAGEMENT			
	Yes	**No**	**Comments**
Responsibilities for disaster risk management clearly specified?			
Responsibility for climate change management established?			
What are the roles and functions of each department involved in disaster risk reduction and climate change?			
What are the policies, programmes and services offered by departments involved in disaster risk reduction and climate change?			
Authority to contract for services if necessary?			

3) EXISTENCE, CAPACITY AND EFFECTIVENESS OF A CITY'S EMERGENCY AND DISASTER RESPONSE PLAN			
	Yes	**No**	**Comments**
Does a disaster response system exist in the city?			
Is the response system comprehensive for all natural hazards specified?			
Is the disaster response system regularly practised?			
Is the disaster response system regularly updated?			

Step 3: Vulnerability assessment

TOOL 3-O: SUMMARY VULNERABILITY RATING MATRIX

Time Required

As needed for preparation time. Full-day workshop to develop with Stakeholder Working Group.

Rationale and Comments

Use this tool to bring together data from earlier tasks and to start identifying vulnerable people, places, institutions and sectors, as illustrated in Table 21 in *Planning for Climate Change*. The activity will be followed by another tool to re-evaluate the results and ensure that traditionally marginalized populations like women, and other vulnerable groups (e.g. urban poor) are adequately addressed in the final vulnerability assessment (Tool 3-P).

The summary vulnerability rating matrix (Tool 3-O) and vulnerable populations by sector (Tool 3-P) can be viewed as **a synthesis of your Vulnerability Assessment**. This synthesis should identify the highest priorities (people, places, institutions, sectors) for adaptation planning and will be a major reference for future *Climate Change Action Plan* tasks.

Procedure

To complete Tool 3-O:

Column 1: Climate Change Hazards: Use the climate change hazards that have been used in previous tools.

Column 2: Threat Level: Threat level is a rating of exposure and sensitivity that was completed in Tool 3-J. When filling out column 2 (threat level), use the values from the final column of Tool 3-J and assign scores using the following scale:

- High = 5
- Medium High = 4
- Medium = 3
- Medium-Low = 2
- Low = 1

Column 3: Adaptive Capacity: Use the values from Tool 3-M to fill in this column.

Column 4: Relative Vulnerability: Finally, calculate the relative vulnerability by dividing the threat level by the adaptive capacity. Keep in mind that this is measuring vulnerability – so a high score indicates high vulnerability (a bad thing) and a low score indicates low vulnerability (a good thing). As illustrated, the relative vulnerability is highest when there is a combination of high threat level and low adaptive capacity.

This method gives a relative vulnerability estimate for each of the climate hazards. Where resources are available, other more sophisticated tools can be used to carry out more comprehensive, analytical assessments. More sophisticated (and time consuming and costly) tools are summarized in Table 23 in *Planning for Climate Change*. Tool 3-O is a simplified tool to help prioritize which climate impacts to address.

EXPOSURE		ADAPTIVE CAPACITY	VULNERABILITY
Climate Change Hazard (Tool 3-J)	Threat Level (Tool 3-J)	Hazard-specific Adaptive Capacity Status (from Tool 3-M)	Relative Vulnerability (Threat Level minus Adaptive Capacity)
EXAMPLE Drought	*High 5*	*3*	***5÷3=1.7***

Step 3: Vulnerability assessment

TOOL 3-P: SUMMARY VULNERABLE POPULATION BY SECTOR

Time Required	As needed for preparation time. Full-day workshop to develop with Stakeholder Working Group.
Rationale and Comments	The last step in this task is to review the sectors that have been identified as highly vulnerable and re-examine them to determine whether traditionally unrepresented and vulnerable groups (women, youth, urban poor) are at elevated risk in any of them. Filling out the matrix in Tool 3-P will require discussion with your core planning team and/or stakeholder advisory group. At this level of analysis, it will be subjective in places.
Procedure	To complete Tool 3-P, first review Tool 3-O and identify the climate hazards that had the highest level of vulnerability associated with them (in the example above, these are heat waves, drought and sea level rise). Review Tool 3-J and compile a list of **sectors** that would be most affected by the priority hazards identified in Tool 3-O. Record these in Tool 3-P, column 1. In the next column, note their associated geographic locations. Here, it is important to note that some sectors occur in many areas and cannot be geographically isolated, like housing. Such subjectivity is fine. If you completed community mapping or hotspot mapping, it should be brought back to support this work. Go through each sector and note in columns three, four and five whether: • Any **informal communities** or settlements are located in the geographic area(s) noted in column two • Any **livelihoods** (formal or informal) closely associated with vulnerable people are operating in, or associated with the geographic area(s) noted in column two • Any **vulnerable population health impacts** associated with climate change impacts on the particular sector As with the previous tools, use a scoring system for each column using a High to Low scale where High=5 and Low=1. Add the scores for a relative vulnerable population impact score.

See table on the following page.

Step 3: Vulnerability assessment

TOOL 3-P: SUMMARY VULNERABLE POPULATION BY SECTOR

SECTOR	GEOGRAPHIC LOCATION(S)	VULNERABLE POPULATION – Settlements	VULNERABLE POPULATION – Livelihoods	VULNERABLE POPULATION – Health	VULNERABLE POPULATION IMPACT (Relative score)
EXAMPLE *Water and Sanitation*	*City reservoir* *Central Business District* *Neighbourhoods A, B, C*	*No*	*Limited. Some street vendors / informal economic activity*	*Significant. Water borne diseases reduced through improved water supply and sanitation*	***8***
		Low (1)	*Medium-Low (2)*	*High (5)*	

Step 3: Vulnerability assessment

TOOL 3-Q: VULNERABILITY ASSESSMENT REPORT TABLE OF CONTENTS

Time Required	5 to 10-days or more, depending on size and scope of *Vulnerability Assessment Report*.
Rationale and Comments	The *Vulnerability Assessment Report* summarizes the information identified during Step 3.The level of detail does not need to be exhaustive, but it should be comprehensive. A detailed, well-written, user-friendly plan will help to ensure that it is used in future planning steps. Aspects that are unclear, vague or left to interpretation may turn into problems later on. While the preferred approach is to consider the *Vulnerability Assessment Report* that results from this step as one step in the larger planning process, it can be used as a stand-alone product where circumstances dictate (i.e. limited project funding, limited capacity). In these cases, it can be used as: • Input into other planning processes (e.g. Environmental Plan, Transport Plan • A public communications and awareness-building tool • A fund-raising tool to help raise funds (provincial/state, national, international) to carry out the entire planning cycle and complete a full *Climate Change Action Plan* It is likely that the *Vulnerability Assessment Report* will also be used in a full planning cycle to help secure additional funding for future planning steps and *Climate Change Action Plan* implementation.
Procedure	Completing the *Vulnerability Assessment Report* involves pulling together and summarizing work completed during Step 3, with some summary of steps 1 and 2, which should have preceded it. The final report should be a summary document, accessible to a wide range of readers and users. Detailed technical information can be appended in an appendix or separate technical background document. While the size and scale of the plan will vary from city to city, it is recommended to keep the final document to no more than 40 – 70 pages. A separate executive summary should be developed for distribution to potential funders and donors, elected representatives, the media, and others who should be aware of the plan, but do not require the full document. Wherever practical and possible, it is worth getting the document laid out professionally. A "light", illustrated document is easier to read and use and, often, worth the additional expense of graphic design. This is particularly true for the Vulnerability Report that will likely contain a large number of charts, graphs and process diagrams. Use the annotated outline to guide production of the document. The suggested page numbers are for reference only.

See table on the following page.

Step 3: Vulnerability assessment

TOOL 3-Q: VULNERABILITY ASSESSMENT REPORT OUTLINE

SECTION	NOTES	Suggested # of pages
Executive Summary	- Brief overview and summary of entire document	4
Background	- Context and background to city and planning process	See below
• Rationale	- What is the rationale for the *Vulnerability Assessment Report*? - What is the plan? How was it developed? Who developed it? Purpose and limitations. - Cities and Climate Change – key issues and UN-Habitat's Cities and Climate Change Initiative (CCCI)	4

• City Profile & Context	- Brief overview
	  - Physical: geographic location, physical features, key economic/ development sectors and livelihoods, land use and tenure
	  - Socio-economic: demographic trends, urbanization trends
	  - Governance: city structure, current urban planning and land management regime (challenges and ongoing work)
		6

• Planning Context	- City development priorities - City vision and mission (if available) - City planning context, including existing climate change relevant plans and policies	2
• Planning Approach	- Planning framework, principles (participatory, strategic, value-based) and rationale - Process – *Planning For Climate Change* framework steps 1, 2 and 3 - Stakeholders and engagement – who was involved and how?	2
Vulnerability Assessment	- High-level summary and findings of the *Vulnerability Assessment*	See below
• Vulnerability Assessment Framework	- Process and findings highlights	4
• Exposure	- Summary overview (e.g. past trends based on observations, future scenarios)	4
• Sensitivity	- Summary overview (i.e. degree to which people, places, sectors, are affected) - Key risks	4-8
• Adaptive Capacity	- Summary overview (autonomous / collective / institutional)	4
Vulnerability Summary	- Specific vulnerability summary (highlights) focusing on communities (people), locations (sectors) and sectors. Final organization will depend on local communities.	4
Preliminary Adaption Options	- Summary of potential adaptation options (Note: in full planning cycle project, these options would be further assessed during Module C	2
Annexes	- Glossary of Terms - List of Acronyms - Contact list (project lead, core planning team, stakeholder advisory group, implementing agencies)	6

Module B

WHAT MATTERS MOST?

This module includes only **one planning step** and will help planners to answer the following question:

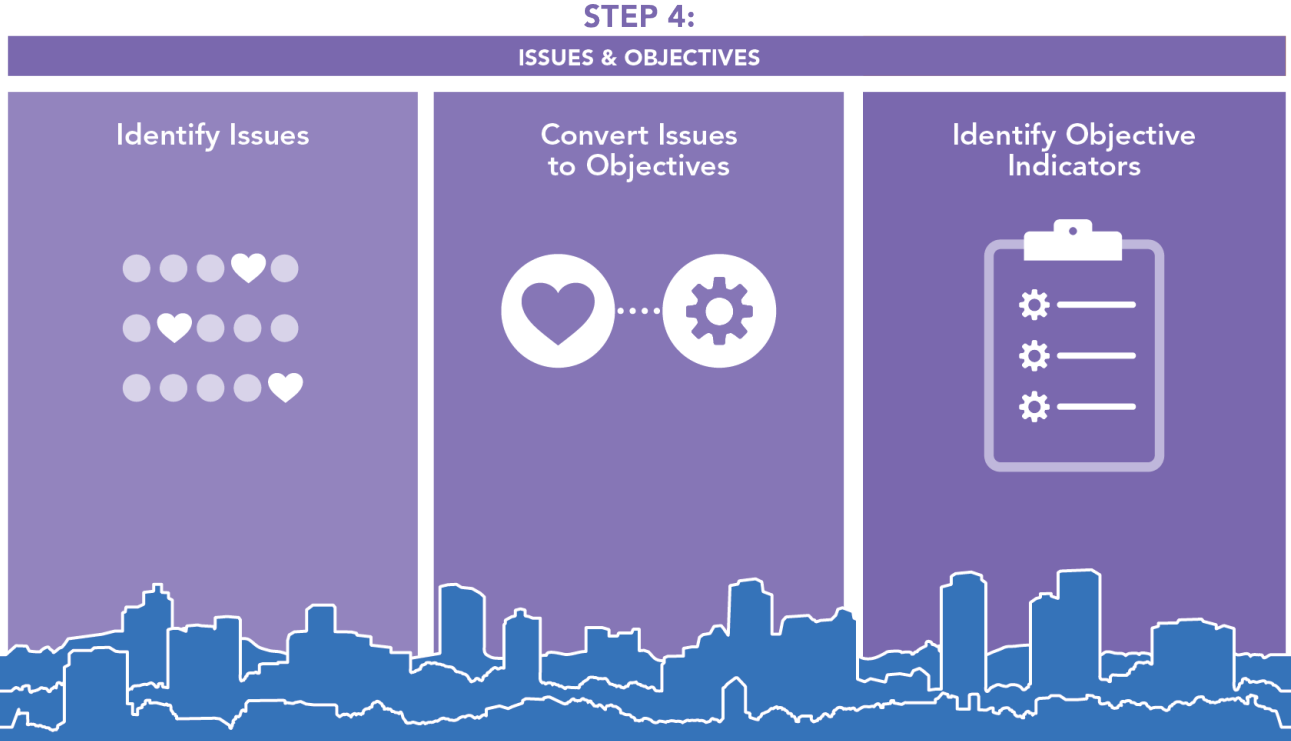
STEP 4 *What community and local stakeholder issues must be considered in addition to any existing city objectives when selecting and prioritizing climate change options, and how can they be identified?*

After completing Module B, planners and stakeholders will have:

- ✔ A clear list of *existing* city development objectives (from other plans and strategies) that must also be considered and used as part of the climate change planning initiative.
- ✔ A clear understanding of the local community issues and objectives (which may or may not be addressed by city planning objectives) and which ones matter most to the community.
- ✔ An understanding of which objectives (city-level and additional local community-level objectives) are most affected by, and relevant to, climate change adaptation planning.
- ✔ Indicators with which to compare and measure the objectives so they can be used to evaluate and prioritize climate change adaptation options.

Along with the **technical facts** about climate change uncovered in *Step 3: Vulnerability Assessment*, the objectives identified and/or refined in this module will be used in later planning steps to help identify climate change options and to help assess and prioritize them based on how well they meet the objectives.

The graphic illustrates the module's single planning step and major planning tasks.



Step 4: Issues and objectives

TOOL 4-A: ISSUES IDENTIFICATION AND ORGANIZATION

Time Required	1 hour, or as needed.
Rationale and Comments	Local values matter. They are what people care about and are the foundation of participatory, values-based planning. This tool will help to identify community issues (i.e. values) through an individual activity and then organize them into general themes and issue categories. It is the first step in identifying community objectives for use in the climate change planning process.
Procedure	This activity can be done with your core planning and/or stakeholder advisory group. **Step 1:** Distribute each core planning team member and/or stakeholder advisory group member a stack of ten note cards. Ask them to note one community concern, problem, challenge, opportunity or issue per card (e.g. solid waste, lack of housing, flooding). Participants can ask for additional cards if necessary. Give participants about five or ten minutes to fill out the cards. **Step 2:** Go around the group and get them to read out their note cards to the larger group. Note any similarities or common themes that may have emerged. **Step 3:** Collect the note cards and, using tape or pins, stick them to a wall or flip chart so that everyone can see. Look for themes while posting up note cards and rearrange them with larger group so that similar issues are grouped together. You can write the name of the grouped issue on another note card and stick it above the others to help you organize them. **Step 4:** Review groupings and remove options or actions (e.g. build new sea wall, repair road). Note that these are not issues, but actions that will be revisited in Step 6. Put them aside for Step 6: Option Identification. A common challenge in organizing issues is separating the issues from actual climate change adaptation and mitigation actions. For example, someone might note on their issue card "build sea wall", while another person may suggest "plant more trees on city streets". Both of these are examples of climate actions. When you identify a potential climate change option idea, ask the person who provided it why they would pursue it. In these two examples, the underlying issues might be increased incidents of coastal flooding during storm surges, and increasingly hot summers and dangerous urban heat island effects. Facilitators should note which of the suggestions from participants are actually actions and use them as a way to identify and understand the underlying issues, which should be noted and organized in the appropriate grouping of issues. **Step 5:** Review reorganized issues with group and discuss. Are the groupings correct? Are there any obvious issues that are missing? Which are the most significant issues, in terms of number of note cards? Are there any common action ideas or options? Write down the final issue groupings on a piece of paper of flip chart and put aside for the next activity.

Step 4: Issues and objectives

TOOL 4-B: ISSUES TO OBJECTIVES

Time Required	2 – 3 hours, or as needed.
Rationale and Comments	Once the issues are organized into general categories this tool will help to convert them into objectives that can be used to guide the rest of the planning process. Objectives are used to help generate climate action options and to assess and prioritize them. They act as a checklist to make sure that climate change adaptation options actually address local community development issues.
Procedure	This activity can be done with your core planning and/or stakeholder advisory group. Convert an issue into a succinct statement that indicates how you would like to manage, minimize or mitigate the issue creates an objective. This is done by combining an action verb that describes a direction of preference (e.g. "increase", "reduce", "maximize"), with a description of the subject (e.g. "reduce risk of coastal storm surges", "improve citizen's health" or "minimize urban poverty"). **Step 1:** Working with your larger group, go through the main list of issues identified in the previous activity and convert them to objectives. Write each on its own note card as you did in the previous activity. **Step 2:** Collect the note cards and, using masking tape or pins, stick them to a wall or flip chart that everyone can see. As you did in the previous activity, look for themes while posting up the cards and rearrange them with larger group so that similar objectives are grouped together. You can write the name of the objective area on another note card and stick it above the others to help you organize them. Objectives may correspond to sectors or other themes. **Step 3:** Review groupings with the larger group and begin to organize them into higher and lower levels as you did with the issues. In this case, the lower level objectives will become sub-objectives (i.e. supporting objectives). The desired outcome of this step is a simplified hierarchy of objectives. Some sub-objectives might contribute to multiple objectives. Place them under the objective that it is most related to. **Step 4:** Review reorganized issues with group and discuss. Are the groupings correct? Are there any obvious issues that are missing? Which are the most significant issues, in terms of number of note cards? Are there any common action ideas or options? Write down the final issue groupings on a piece of paper of flip chart and put aside for the next activity.

Step 4: Issues and objectives

TOOL 4-C: OBJECTIVES ANALYSIS – RELEVANCE TO CLIMATE CHANGE

Time Required	Half-day workshop, or as needed.
Rationale and Comments	Once objectives have been identified and organized, the next step is to assess their relevance to climate change. If the objective is not affected by climate change, it no longer needs to be considered in your further climate change planning.
Procedure	Use the tool to go through both the main objectives and supporting objectives.

Step 1: Working with your larger group, go through each of the main objectives and any associated supporting objective(s). For each one, ask yourself or your group:

- How is climate change impacting, affecting, worsening, or exacerbating the objective?

Discuss the impact it is having on the objectives. You may want to consider the results of Step 3: Vulnerability Assessment and discuss what the future potential impacts of climate change could be on the particular objective.

In any instance where you marked "yes" for an objective or sub-objective, note down the link to climate change.

Step 2: Now go through and indicate which objectives are being impacted by climate change, and which are not by placing check marks in the columns called "Affected by Climate Change?" Objectives that are not impacted by climate change can be removed from the rest of the climate change planning process.

OBJECTIVES		LINK TO CLIMATE CHANGE (risks, threats and impacts) FROM THE VULNERABILITY ASSESSMENT	AFFECTED BY CLIMATE CHANGE?	
Main Objective	**Sub-objective**		**Yes**	**No**
EXAMPLE *Protect the environment*	*Conserve the mangrove forests*	*Development (upstream and on coastal plain) causing destruction of mangrove forests which buffers and protects some coastal areas from sea level rise and storm surges.*	✔	
	Minimize contamination from waste water	*Stormwater from extreme storm events overloads sewers and sewage lagoons; increased raw sewage flows untreated into harbour*	✔	

Step 4: Issues and objectives

TOOL 4-D: OBJECTIVE INDICATORS (descriptive)

Time Required	Half-day workshop, or as needed.
Rationale and Comments	Every objective needs an indicator so that the objectives can be measured, compared and used to help assess climate change adaptation options. Objective indicators also help to form the basis of a monitoring and evaluation programme to make sure that the options are helping support the objective they were intended to *(e.g. How well is Option X improving community issue Y?).* In cases where more descriptive indicators are used, "low" typically would be described as "no or little change from the current situation", while "medium" would describe a potential change to the "low" situation where some progress has been made. "High" would describe a situation where a great deal of progress has been made and the objective has almost been met. The description of the current situation for "low" should come from the *Vulnerability Assessment*. Example: • Low: No change from current situation. Government does not provide support when faced with floods or other emergencies. • Medium: Some change from current situation. Government response has improved and they are providing some support for people affected by emergencies. • High: Government provides excellent emergency response and support for people affected by emergencies.
Procedure	Fill in table first as a desk exercise. Review, revise and confirm with your core planning team and/or stakeholder advisory committee. If choosing to fill out the table with the core planning team and/or stakeholder committee, follow these steps. **Step 1:** Note that "low" for all cases = no or little change from the current situation. Discuss and confirm what the current situation is for particular objective based on findings from the *Vulnerability Assessment*, or other city plans and documents where required. **Step 2:** Fill out the "high" column where "high" = the "best" outcome. What would that look like? For a descriptive indicator activity like this, a general description of the desired "best case" future outcome is all that is required. **Step 3:** Fill out the "medium" column with a description that is about "half-way" to the "high" (i.e. only some of the situation imagined in the "high" description has come to pass).

See table on the following page.

Step 4: Issues and objectives

TOOL 4-D: OBJECTIVE INDICATORS (descriptive)

OBJECTIVE	LOW	MEDIUM	HIGH
EXAMPLE *Improve and safeguard settlements*	*No or little change from the current situation*	*Planning for improved land management started, some housing upgraded as demonstration project.*	*Improved land management regime and housing upgrades.*
	No or little change from the current situation		
	No or little change from the current situation		
	No or little change from the current situation		
	No or little change from the current situation		

Module C

WHAT CAN WE DO ABOUT IT?

This module includes **three steps** and will help planners answer these questions:

STEP 5 *What options are there to respond to climate change in our city?*

STEP 6 *How to assess, screen and choose the best options to ensure resources, time and capacity are used most effectively and efficiently?*

STEP 7 *How can we best implement the prioritized climate change options and assemble a Climate Change Action Plan?*

After completing Module C, planners and stakeholders will have:

- ✔ Identified, screened, assessed and prioritized climate change adaptation actions (i.e. projects, policies, programmes, actions) according to local objectives and vulnerabilities;
- ✔ Developed a stand-alone *Climate Change Action Plan* with a clear implementation framework; and / or
- ✔ Mainstreamed / integrated climate actions into existing policy instruments, plans and programmes (where practical and feasible).

While the entire planning process is cyclical and iterative, this is especially the case during *Step 5: Option identification* and *Step 6: Option assessment*. There are significant gains to be had in **assessing and re-assessing climate change actions against community objectives**, **technical realities** and the **local planning context**. The end result will be an **achievable, comprehensive and integrated** *Climate Change Action Plan* that recognizes and supports a city's most vulnerable populations.

The graphic illustrates the module's three planning steps.

Step 5: Identify options
TOOL 5-A: OPTION IDENTIFICATION WORKSHEET

Time Required

2 to 4 days as an independent desk research task. 2 to 3 hours as a large group activity.

Rationale and Comments

This task is involves identifying a "long list" of candidate climate change adaptation options for further assessment and review. Candidate options can be climate adaptation projects (e.g. sea wall rehabilitation), programmes (e.g. community awareness) and policies (climate smart building and design guidelines).

Procedure

Fill in the matrix first as a desk exercise / independent research project. Share results and review with core planning team and/or stakeholder advisory group when completed, and revise where necessary.

Following these steps to help work through the activity and to group all possible climate options together.

Step 1: Review Step 3 and your final *Vulnerability Assessment Report*. What preliminary climate change adaptation options did it identify?

Step 2: Review Step 4: Issues to Objectives. Were any issues identified in Tool 4-A that were put in the "parking lot" for options?

Step 3: Conduct additional general research on other generic climate change options that have been undertaken by (and reported on) from international organizations, similar urban areas in your region, and climate change adaptation reports. Are there any additional options that could address either:

- Identified vulnerabilities from Step 3: Vulnerability Assessment
- Support realizing objectives identified in Step 4: Issues and Objectives

Step 4: List all potential options in column one and document sources in column two for future reference.

If you choose to do the activity as large group activity, options could be written down on note cards (one option per card) and posted on a wall with tape or push pins for the large group to review.

CLIMATE CHANGE IMPACT	OPTIONS - policies, programmes, projects and other actions	SOURCE
	Research causes (e.g. increased runoff due to deforestation or other land use changes)	*City Environment Plan*
EXAMPLE *Groundwater depletion*	*Groundwater recharging*	*Vulnerability Assessment Report – preliminary adaptation options*
	"Low regrets" infrastructure upgrades and repair (impoundment areas)	*Other climate change adaptation research reports – World Bank, UN-Habitat*
	Disaster Risk Reduction Plan	*From Step 4: Issues and Objectives – identified during issue identification*

Step 5: Identify options

TOOL 5-B: OBJECTIVES TO OPTIONS WORKSHEET

Time Required	1 to 2 days as an independent desk research task. 2 to 3 hours as a large group activity.
Rationale and Comments	Another method of generating candidate actions is to review the objectives that were generated from Step 4 and ask: What options could be undertaken to address the objectives?
Procedure	Fill in the matrix first as a desk exercise. Share results and review with core planning team and/or stakeholder advisory group when completed and revise where necessary. Step 1: List objectives, sub-objectives (if any) and the description of their link to climate change from Tool 4-C in columns 1, 2 and 3. Step 2: Using Tool 5-A, note the actions that could be used to address the objectives in column 4. Step 3: In cases where there are no relevant actions identified for the objective from your earlier work, carry out additional review and research to identify options to address the gap.

OBJECTIVE		DESCRIPTION OF LINK TO CLIMATE CHANGE	POTENTIAL OPTIONS
Objective	Sub-objective (if any)		
EXAMPLE *Support a prosperous economy*	*Improve road infrastructure*	*Roads susceptible to erosion and impassable during floods*	- *Install better drainage culverts (could be an employment programme for urban poor)* - *Build dikes along the river* - *"Low regrets" infrastructure upgrades (e.g. dikes, diversion channels, drainage systems)* - *Improved hazard mapping* - *Climate-proof exposed roads (e.g. raised road bed above flood level)*

Step 5: Identify options

TOOL 5-C: ORGANIZING OPTIONS WORKSHEET

Time Required

Half-day workshop with core planning team and/or advisory planning group.

Rationale and Comments

To help prepare for the assessment of optoins, we recommend organizing the identified options by sector, unless there is another structure that is better suited to your local context. One simple template to follow is to first sort options by sector and then to order the options by timeframe (short-, medium-, long-term).

Procedure

Fill in the matrix below as a desk exercise / independent research, or conduct it as a group activity with your core planning team and/or stakeholder advisory committee using note cards to let you move around options as they are being organized.

Step 1: First identify core sectors to organize options under. Sectors can be fairly standard across localities. We recommend working with the core planning team to first come up with sector list. Fill out the matrix list with the sector names, or if doing activity as group exercise, fill out header note cards under which option note cards can be organized.

Step 2: Write options under appropriate sectors. Organize options underneath sector headings if using note cards if doing activity in plenary. Many actions will fit in multiple sectors (make copies where you need to).

Step 3: Where appropriate, look to group similar options.

Step 4: Begin reorganizing options in each sector by potential time frame.

- Short-term = relatively small-scale, lower cost or easier to implement activities that could be likely be implemented in 1 to 2 years.
- Medium-term = Moderately larger projects that would be more expensive than the short-term projects and because of cost, technical or other factors, likely would take between 3 and 5 years to be implemented.
- Long-term = large-scale, relatively complex projects with potentially challenging or complicated implementation requirement, funding requirements, phasing needs, etc.

Add additional sector columns where required. If done using note cards, be sure to capture final matrix (photograph or transcription).

	SECTOR			
TIME FRAME	***EXAMPLE*** ***Water & Sanitation***	**Sector:**	**Sector:**	**Sector:** .....
Short-term Options (1 – 2 years)	A. Clean drainage culverts B. Develop community warning systems			
Medium-term Options (3 – 5 years)				
Long-term Options (6+ years)				

Step 5: Identify options
TOOL 5-D: SCREENING AND RANKING OF OPTIONS TABLE

Time Required

2 – 3 hour workshop with core planning team and/or stakeholder advisory group.

Rationale and Comments

Screen and rank options to:

- Create a shorter list to bring forward to a more detailed assessment. Sometimes too many options to effectively evaluate in more detail (as we will do in next step).
- Identify options that can be easily implemented in the very short-term (and may not require more detailed analysis) – i.e. "quick starts".
- Screen out options that may not be feasible, are too expensive, etc.
- Screen out those options "just don't make sense" after conducting a preliminary screening.

Procedure

Fill in the matrix as a group activity with your core planning team and/or stakeholder advisory committee. You can do the activity as one large group, or break into smaller teams and compare and discuss results at the end. The criteria, or considerations, to guide this first level of screening criteria and a potential scoring scale for each criterion include:

Stakeholder acceptability: Would local residents accept it?
- High = majority of residents in area; Medium = limited majority; Low = limited support

Technical feasibility: Will necessary design, implementation and maintenance support be available for the option?
- High = design available; Medium = resources to develop design, implement and maintain; Low = no available resources to develop design, implement and maintain

Ease of implementation: Can it be implemented at the local government level, or does it depend upon state/provincial or national support?
- High = city can implement this without external support; Medium = city can implement this with some support; Low = city cannot implement this without external support

Urgency of implementation: Is this action urgently needed to address current risks and vulnerabilities?
- High = extremely urgent; Medium = somewhat urgent; Low = not urgent

Relative effectiveness: How well would it work relative to other options?
- High = needed in order to deliver objectives and other options; Medium = would contribute to other options; Low = would contribute to other options somewhat

Cost: Is it a financially realistic option? Does the city have funding or potential access to funding to cover the costs?
- High = financially realistic with available funding; Medium = more limited funding opportunities; Low = expensive and limited funding opportunities

Mainstreaming potential: Could it be integrated with existing local government planning and policy development?
- High = yes, easily and fully through many plans and strategies; Medium = yes, partly but with more time and through more limited plans and strategies; Low = relatively limited potential, would require additional activities

Multi-sectoral and multi-objective: Would it address objectives in other sectors?
- High = yes, significant cross over with other sectors and objectives; Medium = some cross over with other sectors and objectives; Low = little cross over with other sectors and limited impact on other objectives

Refer back to this list when filling out the matrix.

Step 1: Enter options into worksheet. Use a new worksheet for each sector.

Step 2: Working with your remaining list of options, go through each of the options and score them against the criteria. Go criterion by criterion, i.e. score all your options against the first criterion and then score all your options against the second criterion, and so on through the whole list.

The scoring uses a 5-point scale where:	Evaluators can also use where there is discussion:
High = 5	Medium-High = 2.5
Medium = 2	Medium-Low = 1.5
Low = 1	

Step 3: Total scores, rank options (from 1st to bottom rank), note any ties, review and discuss.

Step 5: Identify options

TOOL 5-D: SCREENING AND RANKING OF OPTIONS TABLE

OPTIONS	Acceptability	Feasibility	Implementation Ease	Urgency	Effectiveness	Cost	Mainstream Potential	Multi-sectoral	SCORE	RANK
EXAMPLE *Option A*	*2*	*1*	*3*	*5*	*3*	*1*	*4*	*4*	*23*	*3rd*
Option B										
Option C										
Option D										
Option E										
Option F										
Option G										
Option H										

Step 6: Assess options
TOOL 6-A: DIRECT RANKING OF OPTIONS

Time Required	1 hour
Rationale and Comments	Direct ranking options is the first step in the more detailed assessment process. It allows particpants (core planning team, stakeholder advisory group) a chance to vote for their "favourite" options, or the ones they think would be best to implement from the list of high ranked options from Activity 5-D. The intent of this activity is to create a direct-ranked list of options to be used for more detailed assessment using tools 6-B and 6-C.
Procedure	The activity can be done with your core planning team and stakeholder advisory group working together in plenary, or using "dot voting" where each participant gets four sticky dots that they can place in any combination next to the potential options. They can also use pens to mark their votes.

Step 1: Going by sector, make a list of highly ranked options from Activity 5-D using either a flip chart or by putting them in chart using your computer. Be sure to leave room for voting on the options.

Step 2: Give each participant four sticky dots per sector. They can also use pen to mark their votes. Ask participants to "vote" for their favourite options using their four dots or four check marks (if they are using pens). Votes can be used in any combination (i.e. all one option, or spread in any combination between two and four options).

Step 3: Tally votes per sector and write down how each option ranked (i.e. 1st, 2nd, 3rd, etc.)

Step 4: Discuss with participants. Why did they vote for the options they did? Are there any surprises with the ranking (i.e. some low ranking or high ranking options that were not expected)?

The table illustrates a sample vote.

Sample direct ranking

OPTIONS	VOTES	RANK
Option A	● ● ●	5 (tie)
Option B	● ● ● ● ●	4
Option C	● ●	6
Option D	● ● ● ● ● ●	3
Option G	● ● ● ● ● ● ● ● ●	1
Option H	● ● ● ● ● ● ●	2
Option K	● ● ●	5 (tie)

Step 6: Assess options
TOOL 6-B: TECHNICAL RANKING MATRIX

Time Required

1-day workshop with core planning team and/or stakeholder advisory group.

Rationale and Comments

The technical scoring and comparison of options is carried out using a consequence table. A consequence table is a succinct technical ranking matrix that illustrates the potential performance of each option on each objective.

A well-constructed consequence table should convey all of the information needed to understand and compare alternative options, and expose the key trade-offs and uncertainties that are relevant to choosing among and between options under consideration in each sector.

A consequence table can be a critical tool for ensuring that dialogue among stakeholders and decision makers, including your core planning team and stakeholder advisory group, is based on a common understanding of the expected outcomes of different options. It will also allow you to develop a short-list of options for final consideration by identifying relatively poorly performing options.

The consequence table allows options and their potential trade-offs to be identified, reviewed and discussed. It can serve as the basis for discussing which consequences are more or less important, and which set of trade-offs is more or less acceptable. Often, the discussion of trade-offs will be a catalyst towards developing a more refined or detailed option that better supports all of the objectives (i.e. making trade-offs within the option). The discussion may also lead to combining options, or elements of options into a new and improved option (or options) that better balance results across competing objectives (i.e. making trade-offs between options).

Procedure

Fill in the matrix as a desk exercise / independent research, or conduct it as a group activity with your core planning team and/or stakeholder advisory committee. Even if you do it ahead of time, run it by your core planning team and/or stakeholder advisory committee to make sure they agree with the technical scoring.

Step 1: Find objective indicators from Step 4. You will use them to fill out the consequence table.

Step 2: Fill in blank consequence table with objectives and options. You can use a flip chart or set up a copy using your computer.

Step 3: Score options. Fill out your consequence table by objective (i.e. by row), to see how each option compares to each other by objective. This is easier than going through and scoring each option by itself.

Step 4: Count up scores for each option to get a technical score. See example below.

Step 5: Assign a technical rank for each option based on the scores (i.e. the option with the highest amount of points is 1st, and so on)

Sample consequence table

Sector: AGRICULTURE & FISHERIES	OPTION A	OPTION B	OPTION C	OPTION E	OPTION G	OPTION K	OPTION N
Protect the environment	ML (2)	ML (2)	M (3)	ML (2)	M (3)	MH (4)	M (3)
Support a prosperous economy	L (1)	L (1)	ML (2)	ML (2)	MH (4)	MH (4)	ML (2)
Promote community wellbeing	ML (2)	ML (2)	M (3)	ML (2)	MH (4)	MH (4)	M (3)
Reduce poverty	L (1)	ML (2)	ML (2)	ML (2)	MH (4)	MH (4)	ML (2)
Score	2+1+2+1= 6	7	10	8	15	16	10
Technical Rank	6th	5th	3rd	4th	2nd	1st	3rd
Direct Rank (Tool 6-A)	5th	4th	6th	3rd	1st	2nd	5th

Step 6: Assess options
TOOL 6-B: TECHNICAL RANKING MATRIX

Sector:	Option A	Option B	Option C	Option D	Option E	Option F	Option G .....
Objective							
Objective							
Objective							
Objective							
Score							
Technical Rank							
Direct Rank (Tool 6-A)							

Step 6: Assess options

TOOL 6-C: OBJECTIVE RANKING AND WEIGHTING MATRIX

Time Required	1-hour, or as needed
Rationale and Comments	To provide another analysis for prioritizing options, one that is more specifically driven by values, the core planning team and stakeholder advisory group can also rank and weight each of the objectives, in terms of their potential impacts from climate change. This analysis will also help further narrow the list of options to be pursued in your final *Climate Change Action Plan*.
Procedure	This activity should be completed with members of your core planning team and/or stakeholder advisory group. It may be helpful to go through the activity first with your core planning team and then with the stakeholder advisory group. Results can be compared and any differences and similarities discussed. Remind the participants that rankings are not final and there are no right or wrong answers. Remind all the participants that they are ranking objectives to identify why they are undertaking a *Climate Change Action Plan* process.

Step 1: Develop objective weights. Prior to the meeting(s), develop a worksheet that identifies the "worst" and "best" impacts to the objectives from a climate change perspective. Use the basic worksheet template on the following page as a guide.

Step 2: Ask each participant to read over each of the general descriptions of the possible "worst case" impacts and the possible "best case" impacts for each objective.

Step 3: Ask the participants to rank the impacts to the objectives by first placing a 1 in the "Rank" box associated with the objective they would like to move from "worst-to-best" first, thereby indicating the change in the objective that is most important to them, not the objective itself. Then place a 2 next to the objective they would move from worst to best second. And so on until they have ranked all objectives.

Step 4: Ask each participant to place a 1 in the "Weight" box next to the objective they ranked as least important (in the example below this would be "protect the environment").

Step 5: Ask each participant to think about the relative importance of the next lowest ranked objective (in the example below this would be "support a prosperous economy" and "promote community wellbeing" which are tied) as compared to rank 1, and place a number that reflects this importance (e.g. if it is twice as important it would receive a 2, if it was nearly as important it might receive the same weight or a 1). Then consider each of the other changes to the objectives as compared to each other (e.g. in the example below "support a prosperous economy" and "promote community wellbeing" are considered to be twice as important as "protect the environment " and receive a 2). Continue this until all objectives are ranked.

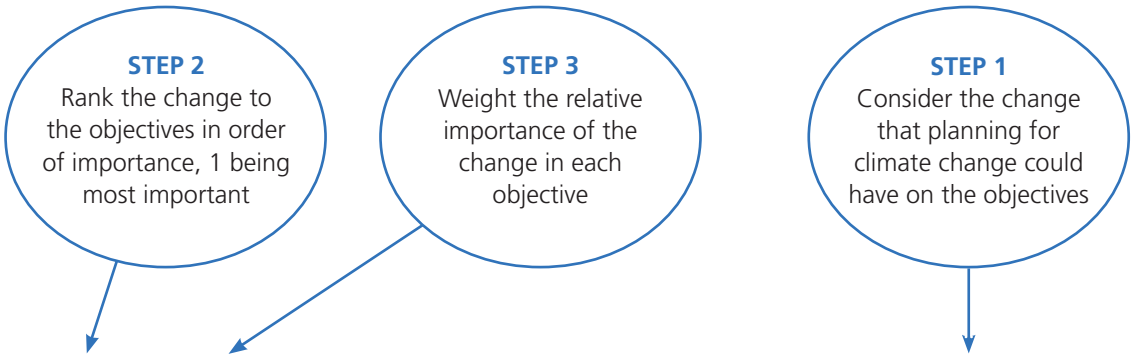
Step 6: Compare the individual worksheets as a large group and discuss similarities and differences. Working together, complete a new worksheet with consensus ranks and weights, or with permission from the group average the scores and weights or get a mean for each objective (depending on sample size) and apply. These are the "value" weights – distinct from the technical data in the indicators – and will be used in the next activity.

See tables on the following pages.

Step 6: Assess options

TOOL 6-C: OBJECTIVE RANKING AND WEIGHTING MATRIX

Sample objective ranking and weighting matrix



RANK	WEIGHT	OBJECTIVES	WORST CASE	BEST CASE
4th	1	Protect the environment	Current conditions (from *Vulnerability Assessment*) - Mangroves increasingly threatened - Increasing episodes of water pollution	- No net loss of mangroves - Storm water managed - Outfall contamination minimized during larger storm events - Storm sewer system able to manage larger storm event
2nd	2	Support a prosperous economy	Current conditions (from *Vulnerability Assessment*) - Some coastal roads at risk from climate change protected	- Most coastal roads at risk from climate change protected - Work travel times reduced on improved roads
3rd	2	Promote community wellbeing	Current conditions (from *Vulnerability Assessment*) - Poor land management - Limited access to safe drinking water	- Reduced incidents of drinking water contamination - Stable and affordable water price - Number of houses in hazardous locations dropping
1st	4	Reduce poverty	Current conditions (from *Vulnerability Assessment*) - Poorly designed and functioning informal market - Days lost to market closures from flooding	- Market access and services better protected from climate change-related flooding - Minimal days lost to market closures

Step 6: Assess options

TOOL 6-C: OBJECTIVE RANKING AND WEIGHTING MATRIX

RANK	WEIGHT	OBJECTIVES	WORST CASE	BEST CASE

Step 6: Assess options
TOOL 6-D: WEIGHTED RANKING MATRIX

Time Required

1-day workshop with core planning team and/or stakeholder advisory group.

Rationale and Comments

After completing the objective ranking and weighting, the next task is to complete a weighted ranking of the options. This weighted ranking will consider the so-called value-weights developed in Activity 6-C.

Procedure

Fill in the matrix as a desk exercise / independent research, or conduct it as a group activity with your core planning team and/or stakeholder advisory committee. Even if you do it ahead of time, run it by your core planning team and/or stakeholder advisory committee to make sure they see the scoring and can discuss any changes between the technical scores and ranking and the value-weighted scores and ranking.

Step 1: Fill in the blank matrix with technical scores for each option from Tool 6-B.

Step 2: Fill in the value weights for the objectives from Tool 6-C in the second column.

Step 3: Multiply the technical score by the value weight for each option (by objective). See example below.

Step 4: Count up scores for each option to get a weighted score.

Step 5: Assign a weighted rank for each option based on the scores (i.e. the option with the highest amount of points is 1st, and so on).

Step 6: Review outcomes with group and discuss any changes in scoring and ranking between the technical and value scores.

In the example, Option A has a weighted score of 2 with for the objective *"protect the environment"*. The score was calculated by taking the Option A's technical score for this objective from Tool 6-B (which in this case was 2), and multiplying it by the number in the objective weight column (1).

After completing this process for all of the options, add the weighted scores for each option together to get a total weighted score. Based on the scores for each option, you can then create a total weighted rank (i.e. the option with the highest weighted score is the 1st ranked, the second highest score is the 2nd ranked, etc.).

Sample weighted ranking matrix

OBJECTIVE	OBJECTIVE WEIGHT (Tool 6-C)	OPTION A	OPTION B	OPTION C	OPTION D	OPTION E	OPTION F	OPTION G
Protect the environment	1	2	2	3	3	3	4	3
Support a prosperous economy	2	2	2	4	8	8	8	4
Promote community wellbeing	2	4	4	6	8	8	8	6
Reduce poverty	4	4	8	8	16	16	16	8
TOTAL WEIGHTED SCORE		12	16	21	20	35	36	21
Total Weighted Rank		6th	5th	3rd	4th	2nd	1st	3rd
Technical Rank		6th	5th	3rd	4th	2nd	1st	3rd
Direct Rank (Tool 6-A)		5th	4th	6th	3rd	1st	2nd	5th

= Objective Weight (1) X Technical Score from Tool 6-B (2)

= Weighted scores for each objective added together (i.e., 2+2+4+4=12)

Step 6: Assess options

TOOL 6-D: WEIGHTED RANKING MATRIX

OBJECTIVE	OBJECTIVE WEIGHT (Activity6-C)	OPTION A	OPTION B	OPTION C	OPTION D	OPTION E	OPTION F	OPTION G
TOTAL WEIGHTED SCORE								
Total Weighted Rank								
Technical Rank								
Direct Rank (Tool 6-A)								

Step 7: Implementation
TOOL 7-A: INSTITUTIONAL GOVERNANCE CHECKLIST

Time Required

1 – 2 hours, plus review time with core planning team and/or stakeholder advisory group.

Rationale and Comments

While developing the final *Climate Change Action Plan*, it is very likely that the lead project planner or facilitator will not have final decision-making authority to implement, authorize or adopt the final plan (or its mainstreaming recommendations). Levels of influence over decision-making will vary depending on the local political context, with some planners having substantial authority over decision-making and others having more limited roles and influence. In order to address these issues and, where necessary, work around them, it is important to identify these potential challenges.

To ensure that this support and awareness exists with your city's decision-makers, now is a good time to:

Confirm project understanding and support with senior managers, decision-makers and city leadership

Determine the most effective and appropriate method of making the final *Climate Change Action Plan* "official" (i.e., should council adopt it in a formal vote as an official city plan? Should city departments be required to "sign on" to it?)

As it is likely that some time may have passed since the project was first launched, it may also be a good time to review the current governance and institutional situation.

Procedure

Answer these questions as a desk exercise, recording on the checklist. Note resulting considerations and discuss, review and confirm with your core planning team and stakeholder advisory group, particularly those considerations that require action.

QUESTION	YES /NO	EXPLAIN DEVELOPMENT	Does it impact *Climate Change Action Plan* and/or require addressing?	YES /NO	How can it, or should it be addressed, if it is required?
Has city leadership changed during the planning process?					
Are new elected leaders aware of and do they support the Climate Change Action Plan process?					
Have there been any staff changes or additions that need to be addressed (e.g. new senior managers, additional technical staff or resource people)?					
Have any new climate change-relevant policies, programmes, plans or laws emerged that need to be taken into account or addressed?					

Step 7: Implementation
TOOL 7-B: ACTION PLAN WORKSHEET

Time Required	2-days, with half-day to full-day workshop with core planning group and/or stakeholder working group to review.
Rationale and Comments	The first step in creating the larger *Climate Change Action Plan* is to create detailed sub-plans for the each action that made it into the final plan. The action plans will describe the actual tasks required to implement each action and be included as appendix material in the final *Climate Change Action Plan*.
Procedure	Each worksheet will detail the following information and answer the related questions:

- **Institutions involved:** Who will be involved in the particular activity, implementing the activity, supporting it, funding it, and monitoring it?
- **Project leader:** Who is the person responsible for implementing the action? Make sure to use only the person's title so that the plan can withstand staffing turnover. Sometimes more than one individual may be listed. In the example in Table 37 in *Planning for Climate Change*, one person is responsible for implementing the programme, while another individual plays a leading role in the ongoing operations of the activity.
- **Resources required:** What resources (supplies, human resources, infrastructure and services, technologies, etc.) are required for the specific task?
- **Budget:** What is the approximate budget (estimate) for the task? What is the funding source(s)? If the activity has a revenue component to it, it should be noted.
- **Timeframe:** When will the activity be completed? General start dates (month or season and year) and estimated completion dates (month or season and year) are sufficient.

When the project implementation has begun, use the final two sections in the action plan to note progress and when the action is completed.

Follow these steps to fill in your Action Plan Worksheet. The worksheet can be filled out with your core planning team and/or stakeholder advisory group. A clean copy should be developed after comparing worksheets created by different project groups.

Step 1: Describe the activity in column one. Then work across the table moving from left to right.

Step 2: Add additional rows to the worksheet as required.

Step 3: The last two columns can be left blank, but will be filled in once implementation activities have started.

DESCRIPTION OF ACTION/PHASE	INSTITUTIONS INVOLVED	PROJECT LEADER	RESOURCES REQUIRED

BUDGET (EST.)	TIMEFRAME (EST.)	PROGRESS	COMPLETE

Step 7: Implementation
TOOL 7-C: CLIMATE CHANGE ACTION PLAN – TABLE OF CONTENTS

Time Required	5 to 10-days or more, depending on size and scope of *Climate Change Action Plan*.
Rationale and Comments	A *Climate Change Action Plan* is a detailed document that outlines exactly what will occur during the implementation of short-term actions (i.e. the options to be carried out in one to two years) and medium-term actions (i.e. the options to be carried out in three to five years). Long-term actions (i.e. the options to be carried out in six plus years) will also be included, but not with the same amount of detail as will be provided for the short- and medium-term actions. The plan should also summarize any mainstreaming actions and quick-start projects that were implemented during the planning process, before the final *Climate Change Action Plan* was finalized. The final *Climate Change Action Plan* must be very clear in terms of what is required from different stakeholders, or external agencies for plan implementation. The final plan will not only communicate the rationale for the selection of actions, but it will also be used to help document progress (i.e. monitoring and evaluation) and ensure that those working on the plan implementation actually carry out what they agreed to do. Because it is the primary mechanism to make sure that everyone plays their part in implementing the plan, the final *Climate Change Action Plan* must be well organized and user-friendly to ensure that all users can navigate and use it effectively.
Procedure	The final plan should be a summary document, accessible to a wide range of readers and users. Detailed technical information can be appended in an appendix or separate technical background document. While the size and scale of the plan will vary from city to city, it is recommended to keep the final document to no more than 75 – 100 pages. A separate executive summary should be developed for distribution to potential funders and donors, elected representatives, the media, and others who should be aware of the plan, but do not require the full document. Use the annotated outline to guide production of the document. The suggested page numbers are for reference only.

Annotated table of contents

SECTION	NOTES	SUGGESTED # OF PAGES
Executive Summary	- Brief overview and summary of entire document - Includes list of actions organized by timeframe	4
Background	- Context and background to city and planning process	See below
• Rationale	- What is the rationale for the *Climate Change Action Plan*? - How was it developed? Who developed it? Purpose and limitations	4
• City Profile	- Brief overview of city socio-economic and demographic trends - Current urban planning and land management regime (challenges and ongoing work)	6
• Planning Context	- City development priorities - City vision and mission (if available) - City planning context, including existing climate change relevant plans and policies	4
• Planning Approach	- Planning framework, principles (participatory, strategic, value-based) and rationale - Stakeholders and engagement – who was involved and how?	4

Step 7: Implementation

TOOL 7-C: CLIMATE CHANGE ACTION PLAN – TABLE OF CONTENTS CONTINUED

SECTION	NOTES	SUGGESTED # OF PAGES
Vulnerability Assessment	- High-level summary and findings of the *Vulnerability Assessment* - High-level summary and findings of Greenhouse Gas Assessment (if completed)	15
Plan Objectives	- From the planning process (steps 4, 6)	4
Adaptation Actions	- The final shortlisted priorities organized by sector and time frame (short-term 1 – 2 years, medium term 3 – 5 years, long-term 6 years plus) - Action plans for each provide an overview of adaptation option (what it is, why it was selected, when it will be implemented, where, anticipated impacts), cost, and how it will be mainstreamed into existing plans, policies or programmes - Long-term actions will provide summary/high-level overview only	24
Mitigation Actions (if completed)	- Sectors will change as appropriate for local context and process - Potential sector areas: Energy Efficiency, Green Energy, Transport, Waste & Industrial Pollution, Environmental Management - The final shortlisted priorities organized by sector and time frame (short-term 1 – 2 years, medium term 3 – 5 years, long-term 6 years plus) - Action plans for each provide an overview of the mitigation option (what it is, why it was selected, when it will be implemented, where, anticipated impacts), cost, and how it will be mainstreamed into existing plans, policies or programmes - Long-term actions will provide summary/high-level overview only	12
Communication & Awareness Activities	- How the plan and actions will be communicated to the broader public and stakeholders - How results will be communicated	2
Summary of Resource Requirements	- Summary of short-term and medium-term requirements, including funding sources	4
Monitoring and Evaluation	- Based on Step 8 from planning framework	10
Annexes	- Glossary of Terms - List of Acronyms - Contact list (project lead, core planning team, stakeholder advisory group, implementing agencies)	10

Module D

ARE WE DOING IT?

This module includes **two planning steps** and will help planners answer these questions:

STEP 8: *How can the progress of the Climate Change Action Plan be tracked to ensure it is having the anticipated impact, and that stakeholders are doing what they agreed to do?*

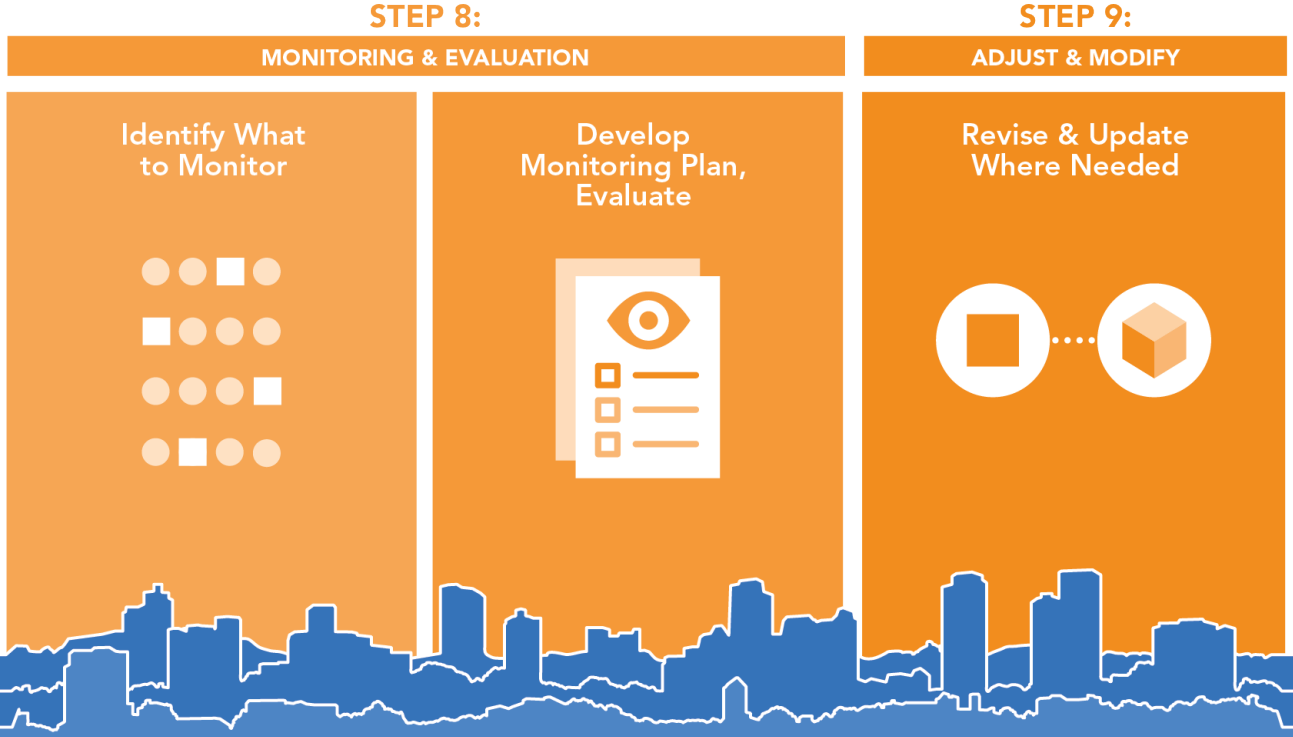
STEP 9: *How should new information be incorporated in to the Climate Change Action Plan or other needed changes be made?*

After completing Module D, planners and stakeholders will have:

- ✔ A clear understanding of what monitoring and evaluation are and why they are critical to the successful implementation of a *Climate Change Action Plan*
- ✔ Developed a monitoring and evaluation programme for the *Climate Change Action Plan* to monitor implementation progress, evaluate actions against plan objectives (i.e. is it making a difference?), and share results with stakeholders
- ✔ Developed a clear timeline for formal *Climate Change Action Plan* reviews

Asking "*are we doing it*?" is a fundamental step in gauging the success of a climate change planning process and the *Climate Change Action Plan* that was developed through it. The information gathered during these planning steps might indicate a need to adjust or fine-tune the *Climate Change Action Plan* to better meet community objectives and address climate change impacts.

The graphic illustrates the module's two planning steps.



Step 8: Monitoring and evaluation
TOOL 8-A: INDICATOR DEVELOPMENT WORKSHEET

Time Required	2-days, plus half-day review workshop with core planning team and/or stakeholder advisory group.
Rationale and Comments	The objective indicators developed by the core planning team and stakeholder advisory committee in *Step 4: Issues and Objectives* serve as the starting framework for monitoring the *Climate Change Action Plan*. They will likely need to be revised and updated at this stage in order to adequately measure the final plan actions, particularly if only descriptive indicators were developed (as was the case for the guide's example). You may also need to develop some new indicators, in order to monitor both plan processes (i.e. are people and agencies doing what they agreed to do?) and plan outputs (are the activities/actions having the desired results?).
Procedure	Begin by listing all the final actions from the *Climate Change Action Plan* in the first column. As a starting point for filling in the indicator columns, a good first step is to go back to Step 4 (Task 4.6) and review the indicators developed for the objectives and sub-objectives. Keep in mind that these were developed to do a high-level comparison of actions, and may not be detailed enough for actually evaluating how the action is performing once it has been implemented. These indicators may need to be refined, or supplemented with additional, new indicators. Some questions to ask when assessing indicators are: *Is there a clear link to an objective or sub-objective?* The final *Climate Change Action Plan* actions were assessed and chosen on their ability to help achieve community objectives. Actions and indicators must be linked back to the main and/or supporting objectives so they can be used to help monitor whether or not plan actions are having the desired results/impacts on the objectives. *Is the indicator specific and measurable?* Can the indicator be easily tracked? Here, it is best to seek information and data already being collected by another party (e.g. national census). Standardized indicators also allow for maximum use of published data, minimizing the need for additional data gathering, information management and cost. *Are they consistent?* Whatever the final indicators, it is important to be systematic and consistent in the information you collect for monitoring and evaluation purposes. Information not collected in the same manner (i.e. at different times, using different information sources, etc.) may not be comparable over time.

See table on the following page.

Step 8: Monitoring and evaluation
TOOL 8-A: INDICATOR DEVELOPMENT WORKSHEET

ACTION	POTENTIAL PROCESS INDICATORS	POTENTIAL OUTCOMES INDICATORS	RELATED OBJECTIVES AND SUB-OBJECTIVES
EXAMPLE *Urban Agriculture Programme*	*Land designation* *Guidelines for smaller plots* *Formal amendment of Land Use Plan to include designated agricultural lands* *Formal update of Local Economic Development Strategy to include supportive policies*	*Urban agricultural employment (number direct, number indirect)*	*Reduce poverty*

Step 8: Monitoring and evaluation

TOOL 8-B: MONITORING FRAMEWORK WORKSHEET

Time Required	2-days, plus 1-day review workshop with core planning team and/or stakeholder advisory group.
Rationale and Comments	The monitoring framework and programme will help determine what gets monitored, how, when and by whom. It will also identify how this information is shared with stakeholders, including partner agencies and organizations assisting with implementing certain *Climate Change Action Plan* actions, and the broader community. Monitoring is not conducted to find fault or be critical. It is a method of ensuring accountability and an adaptive management tool for improving plan outcomes. When conducted regularly, monitoring provides timely and reliable information for adjusting and modifying specific *Climate Change Action Plan* actions, programmes or policies. When carried out properly, effective monitoring determines when: • Internal and external circumstances, including climate change vulnerability, exposure or sensitivity have changed (something that should be expected when dealing with a phenomenon as dynamic as climate change). • Stakeholders, managers, or agencies tasked with specific *Climate Change Action Plan* implementation activities are not carrying them out as planned, or on time. • *Climate Change Action Plan* actions are not working, need adjusting or are no longer effective. • Potential climate change adaptation options are being missed.
Procedure	The template should be completed for each *Climate Change Action Plan* action. In it, all indicators should be listed along with information about where and how relevant information pertaining to the indicator can be accessed or gathered. This is essential for the demonstration of transparency in data collection and analysis, and will help to ensure that the data collected is also relatively easy and cost-effective to gather. Additional columns can be added to indicate: • Reporting: *How will data be reported (annual report, quarterly brief)?* • Logistics and Data Management: *Where will data be stored, who gets access and how?*

See table on the following page.

TOOL 8-B: MONITORING FRAMEWORK WORKSHEET

ACTION:

.....

Who is responsible for monitoring action:

.....

RELATED OBJECTIVE	INDICATOR	BASELINE MEASURE (Current year)	TARGET (2-years from current)	TARGET (5-years from current)	DATA SOURCE	DATA COLLECTION FREQUENCY	DATA COLLECTION METHODS	PARTIES INVOLVED
EXAMPLE *Support a prosperous economy*	*Area zoned for urban agriculture (hectares)*	*10 ha*	*30 ha*	*60 ha*	*City Planning Department (GIS, Land Use Plan)*	*Every 18 months*	*City - GIS data base*	*City*

Step 8: Monitoring and evaluation

TOOL 8-C: EVALUATING ACTIONS AGAINST OBJECTIVES WORKSHEET

Time Required	2-days, plus half-day review workshop with core planning team and/or stakeholder advisory group.
Rationale and Comments	Evaluation analyses the information generated by the monitoring programme at selected times to determine: • If *Climate Change Action Plan* actions are meeting community objectives efficiently, effectively or at all • If there are opportunities for improving the *Climate Change Action Plan* by refining actions, introducing new ones, or involving new stakeholders and partners Unlike monitoring, evaluation is not a continuous and ongoing process. Instead, it occurs at strategic points during the implementation process. Typically, it should be coordinated with project phases, so that a formal evaluation is conducted at the end of the short-term project cycle (i.e. 2-years) and the medium-term action project cycle (i.e. 5-years). Given the dynamic nature of both climate change and urban areas, a full, comprehensive evaluation should be conducted at least every five to six years. Before an evaluation process is initiated, it is wise to first review and answer the questions below. They are similar to the questions asked at the outset of developing the monitoring programme. • Why is the evaluation being undertaken? • What is the evaluation expected to achieve? • What type of evaluation is most suitable – who will be involved (e.g. participatory, external expert-based, combined)? • When is project evaluation to take place? • How will the evaluation process be documented and communicated? • How will the results be used and by whom?
Procedure	Evaluations should include the core planning team and stakeholder advisory committee where appropriate and feasible. As a participatory planning exercise, these groups should be involved in the design of the evaluation programme and should be presented with the results of the evaluation for comment and feedback. In some cases, it might be important to have an external reviewer to assist or lead the evaluation, or evaluate certain actions, if the local situation makes it difficult for an objective analysis to be conducted internally.

See table on the following page.

Step 8: Monitoring and evaluation

TOOL 8-C: EVALUATING ACTIONS AGAINST OBJECTIVES WORKSHEET

ACTION	RELATED OBJECTIVES AND SUB-OBJECTIVES	INDICATOR	BASELINE 2013	TARGET 2016	ACTUAL 2016	COMMENTS
EXAMPLE *Low regrets infrastructure improvements to markets (drainage, flood protection)*	*Reduce poverty* *Improve informal market infrastructure*	*Percentage of market area with storm drainage coverage*	*17%*	*25%*	*32%*	*Action exceeded expectations. This was due to* .....

Step 8: Monitoring and evaluation
TOOL 8-D: EVALUATION QUESTIONS

Time Required	1 to 2 hours, plus review with core planning team and/or stakeholder advisory group.
Rationale and Comments	Tool 8-D provides a series of questions that can be asked to help evaluate the *Climate Change Action Plan*. The first set of questions pertains to individual actions from your Plan and should be answered for each action. The second set of questions relates to the plan as a whole and should be answered once as they relate to the entire *Climate Change Action Plan*. The second set of questions also considers the larger climate change context (i.e. vulnerablity) and how changes in local climate conditions (exposure, sensitivity, adaptive capacity) may warrant a more comprehensive review and evaluation of the *Climate Change Action Plan*.
Procedure	Go through the evaluation questions as a desk exercise or with your core planning team and/or stakeholder advisory group.

QUESTIONS TO ANSWER – for each action	RESPONSES
Adequacy and Effectiveness	
Has the *Climate Change Action Plan* action been satisfactorily implemented?	
Has the action adequately achieved its stated objective(s)?	
Have sufficient resources been organized to carry out the action?	
Have the leadership and capacities of the individuals and organizations involved been sufficient?	
Will the partnerships and networks formed in the process of implementing the action be sustained and strengthened?	
Have the adverse outcomes, both anticipated and unexpected, been adequately addressed?	
Have the process indicators from Tool 8-A been met, or are they on track to being met?	
Can the results be sustained?	
Efficiency	
Could resources have been used differently or been substituted to produce more results within the estimated costs?	
Could the same results been achieved for less money or effort?	
Would a different action have produced the same or better results at a lower cost?	
Were the resources managed in the most efficient way possible to achieve the objectives?	

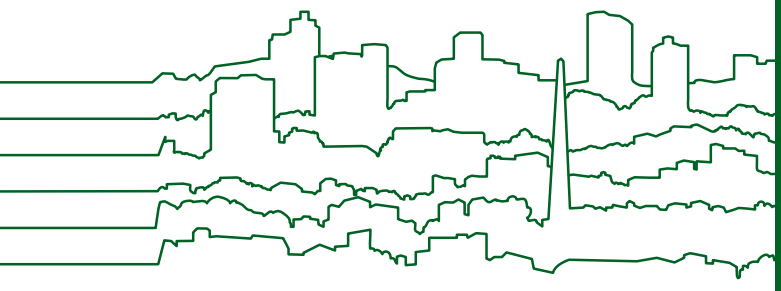
Step 8: Monitoring and evaluation

TOOL 8-D: EVALUATION QUESTIONS - continued

QUESTIONS TO ANSWER – for the *Climate Change Action Plan* as a whole	RESPONSES
Local Context and Conditions	
Have local climate conditions and circumstances changed (exposure, vulnerability, etc.)?	
Do the new climate conditions necessitate new or revised actions (phasing, scope, etc.)?	
Has new climate change information emerged that needs to be addressed (e.g. funding, resources, capacity, etc.)?	
Have local priorities changed (i.e. are community objectives being weighted differently)?	
Adjustment and Recommendations	
How must the *Climate Change Action Plan* (overall and individual actions) be changed to better meet objectives?	
Have climate and/or community conditions changed so much that a complete review of objectives and actions is necessary?	

Planning for Climate Change: A Strategic Values-based Approach for Urban Planners was developed for city planners to better **understand, assess** and **take action on climate change at the local level**. Specifically targeted to the needs of planners and allied professionals in low and middle-income countries where the challenges of planning for climate change are particularly high, the guide's strategic, values-based planning framework:

- ✔ Promotes a **participatory planning process that integrates local participation and good decision-making**.
- ✔ Provides **practical tools for addressing climate change** through different urban planning processes.
- ✔ Supports the **"mainstreaming" of climate change actions** into other local government policy instruments.



UN HABITAT

United Nations Human Settlements Programme
Cities and Climate Change Initiative
P.O. Box 30030, Nairobi 00100, KENYA
Telephone: +254-20-7625404, Fax: +254-20-7623715
Email: updb@unhabitat.org

www.unhabitat.org