Urban Climate Resilience Masterclass

Trainer Handbook

Prepared by:

GLOBAL CENTER ON ADAPTATION

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NUVONI RESEARCH

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These contributions were instrumental in ensuring the relevance and quality of the UCRMC Modules and the Trainer Handbook.

[1] The views expressed in the document do not necessarily reflect the views of our funding partner.

Contents

Section 1: Urban Climate Resilience Masterclass - Overview

Welcome to the UCRMC

Welcome to the Urban Climate Resilience Masterclass (UCRMC). The UCRMC is an initiative led by the Global Centre on Adaptation (GCA) to support investment in climate resilient infrastructure in Bangladesh and Kenya.

UCRMC is an interactive course to build capacity, knowledge and skills at the urban level. There are 6 modules that support participants in understanding, planning and delivering urban climate resilience.

Purpose of this Trainer Handbook

The trainer handbook is designed for trainers delivering the UCRMC. It is a support guide that leads the trainer through the material, module by module, and offers helpful guidance.

To achieve the long-term aim of knowledge and training capacity, the course will be rolled out in two phases:

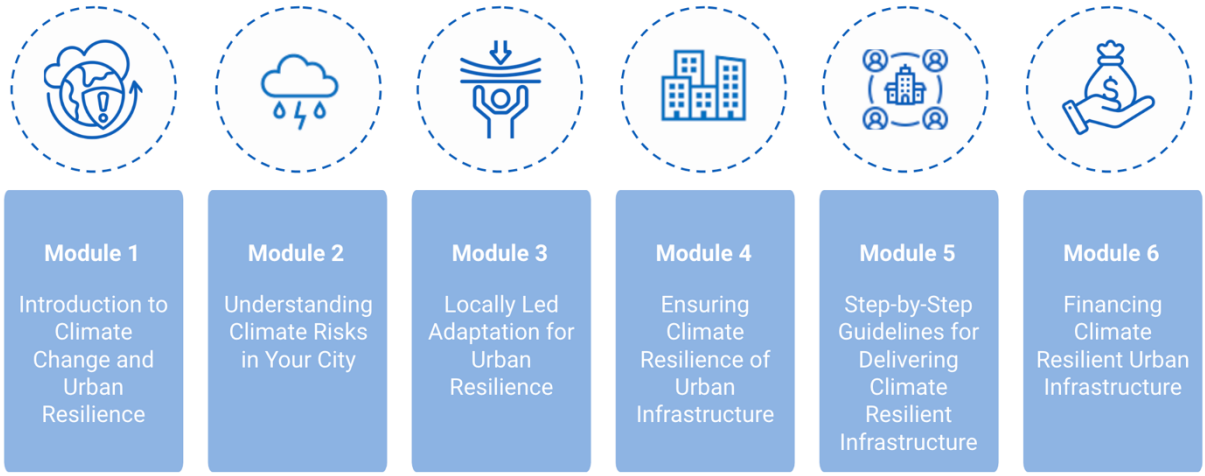
- **Phase 1: Training of the trainers.** Delivered to national-level entities (e.g. a ministry involved in city planning, infrastructure or housing and/or a national training institute).
- **Phase 2: UCRMC delivery.** The national level entity trainers deliver UCRMC training amongst municipalities (i.e. 47 counties in Kenya).

The trainer handbook is a resource to support the trainer's development in phase 1, and is an ongoing guide and resource for the trainers to deliver UCRMC in phase 2.

Course Structure

The UCRMC has six core modules.

1. Introduction to Climate Change and Urban Resilience
2. Understanding Climate Risk in Your City
3. Locally Led Adaptation for Urban Resilience
4. Ensuring Climate Resilience of Urban Infrastructure
5. Step-by-Step Guidelines for Delivering Climate Resilient Infrastructure
6. Financing Climate Resilience



Modules 1 – 6 will be taught to participants in-person by a group of trainers. The in-person component of the UCRMC will take place as a 5-day masterclass. There is flexibility within the 5-day masterclass for local adaptations, such as the addition of site visits, or the participation of high-level speakers or dignitaries, etc.

Course Learning Objectives

The UCRMC has five high-level learning objectives. By the end of their participation in the UCRMC participants will:

1. Understand the key climate risks facing cities and the importance of delivering climate resilient infrastructure and services to overcome urban climate vulnerability.
2. Understand the importance of climate risk assessments (CRAs) as a foundation for climate resilient planning, be familiar with the key steps and outputs of a CRA and apply this knowledge by being able to commission a CRA in their city.
3. Be able to identify and work with a range of stakeholders in their city to promote locally led adaptation (LLA) in support of resilience initiatives that promote equity and inclusion for vulnerable and marginalized groups.
4. Apply their knowledge on climate resilience into the planning and delivery of urban infrastructure and services, so that their investments build climate resilience and move beyond business-as-usual.
5. Identify different financing options they can access to finance priority investments in urban climate resilient infrastructure and services.

General Structure of Modules

Each of the six modules of the UCRMC follows a similar format that the trainer will deliver:

1. **Why This Topic Matters:** Module introduction.
2. **Learning Objectives:** Aims of the module.
3. **Concepts & Definitions:** New ideas and terminology encountered in this module.
4. **Technical Content**: Deep dive into the module topic.
5. **Country-Specific Content:** A deeper look into the technical content, as it relates specifically to Kenya.

   In some cases, the country-specific content is woven into the narrative along with the technical content from the previous section(s) and this section is therefore merged with the previous section. In other cases, there is a dedicated section of country-specific content here that outlines the application of the technical content to Kenya, and which presents specific case studies from Kenya.
6. **Interactive Exercise:** Each of the modules has an interactive exercise that draws on the knowledge gained the module, and provides participants with the opportunity to contextualise and apply their learning.
7. **Summary:** A summary slide that outlines the next steps in the UCRMC learning journey.

   This final section also should be used by Trainers to open the floor to any final questions that the participants have about the content that has been covered in this module.

Specific content for each module is provided in Section 2 of this Trainer Handbook.

Guidance on Training Style

UCRMC is an interactive masterclass in which participants are encouraged to take an active role. They should be able to ask questions, discuss ideas, and share their own experience throughout the masterclass.

The content of the UCRMC is presented as:

- Taught content: delivered by the training using the slides and the trainer notes attached to each slide. Participants should be encouraged to ask questions if they need to.
- Case studies: delivered by the trainer using the slides and the trainer notes attached to each slide. Participants should be encouraged to discuss or comment on case studies.
- Exercises: There are three types of exercise throughout the masterclass:
    1. Quick, fun exercises: The first exercise of each module is designed to be fast paced and fun for participants. These should be delivered quickly, without too much emphasis on content. They are important to relax participants into the module and recap important definitions.
    2. Short check in exercises: Throughout each module there are exercises that encourage participants to apply the material, ask questions, or share their experience. These exercises serve as pauses in the material to allow participants time to reflect, and apply their learning.
    3. Canvas exercises: Each module completes with a longer exercise where participants complete a canvas. These are structured templates to help participants apply their learning to their own context and share their ideas with one another.

Throughout the masterclass training can pause at any time to invite participants to ask questions.

Training Room Set-up

The room used for the training should be set up café style with small tables, allowing participants to sit in groups of 4 or 5. The use of tables allows participants to freely discuss ideas during the short check in exercises, and to work together during the canvas exercises.

The room should have a projector to show the training slides, and a microphone for the trainer.

Good lighting and ventilation are necessary to keep participants alert.

Flip chart paper and pens should be available for the participants to share ideas visually.

The participant workbook can be printed for each participant, and provided to them on the day. It contains all of the canvases for the canvas exercises.

Participants will also need a notepad and pen to make their own notes.

How to Use the Trainer Handbook

Section 2 of this Trainer Handbook provides detailed training guidelines on each of the UCRMC's six modules. Trainers should familiarize themselves closely with Section 2 so that they are prepared to deliver the UCRMC course to participants.

Section 2 has a chapter for each of the six UCRMC modules. Each chapter is structured around the outline for that module.

The Trainer Handbook should be read in conjunction with the training slides to fully understand the material. Section 2 provides, per module:

- The module structure
- Brief notes on the content of each section within the module
- Suggestions on how to deliver the content
- Outlines of any interactive elements
- Guidance on how to deliver the interactive elements

Section 2: In-Depth Training Guidelines for UCRMC Modules

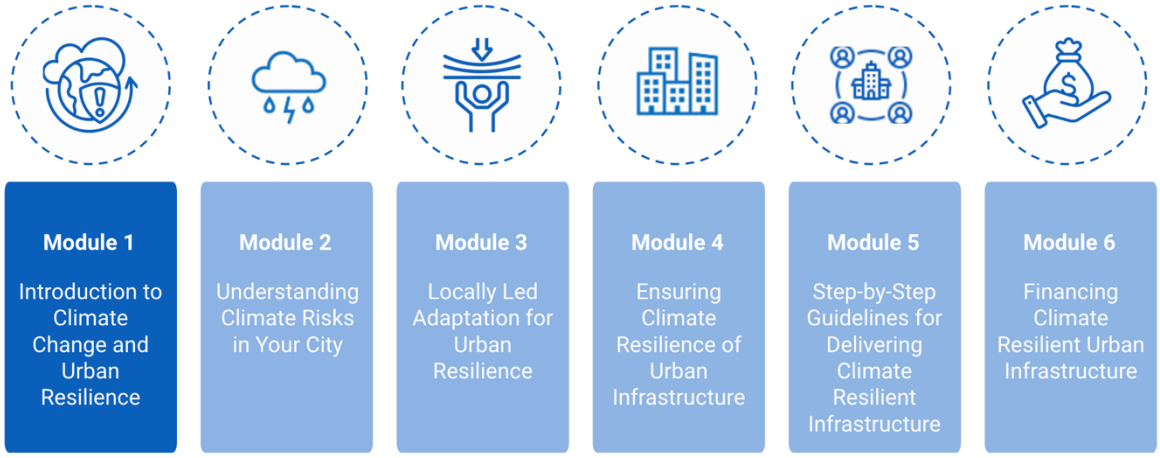
Module 1: Introduction to Climate Change and Urban Resilience

Strategic Rationale:

Module 1 provides UCRMC participants with an overview on climate change and urban resilience that serves as a basis for the rest of the course. This content includes an introduction to core terminology used in the UCRMC, an introduction to the concepts of climate change and urban resilience, an overview of the eight main categories of infrastructure and services that are used throughout the course, and an introduction to equity and inclusion; which is a cross-cutting theme in the UCRMC. This module serves as a foundation upon which the rest of the UCRMC course is based.

Note1. Originally designed as a self-paced module, Module 1 has a more static delivery style that may feel less engaging compared to the rest of the course. To better align with the interactive nature of the overall training, trainers are strongly encouraged to adapt and gamify the content to create a more dynamic and participatory experience from the outset.

Note 2. The self-taught version of Module 1 also required participants to complete a final test at the end of the module. It can be found in appendix 1. Trainers can still administer this test in-person. The results of the test will highlight any areas for the trainer to raise with the group.



The table of contents for **Module 1: Introduction to Climate Change and Urban Resilience** is outlined below.

Module structure:	**Indicative Slide Numbers**	**Estimated Duration**
0. Introduction	1 – 8	15
1. Why This Topic Matters	9 – 10	5
2. Learning Objectives	11 – 12	5
3. Concepts & Definitions	13 – 18	15
4. Climate Change, Risks & Hazards	19 – 35	20
5. Climate Resilient Infrastructure & Services	36 – 46	15
6. Equity & Inclusion	47 – 61	20
7. Summary	62 – 65	15
8. Test	(not in the slides, see appendix 1)	10

Total estimated duration: **~110 minutes** (120 minutes with the test)

1.0 Introduction **[~5 slides, 15 minutes]**

Module 1 introduces the overall UCRMC course structure, showing participants that the course is split into 6 modules, which will be taught in person by a qualified Trainer.

The title slide introduces participants to the main topic of the module. There is an overview of the entire UCRMC course structure, so participants can situate the module within the broader context of their learning journey throughout the course. The funders and partners who have been involved in creating the course are introduced, then a module agenda, and some basic housekeeping 'rules' – which encourage participants to listen attentively, ask questions when they don't understand something, share their own experiences, and discuss actively with others during exercises, breaks and reflection points throughout the Module.

Please read the first slides to participants and ask them if they have any questions. Please also highlight that there will be opportunity for questions at the end of each section. You may wish to also explain how the module fits into the schedule of the day – for instance highlighting when there will be breaks for tea & coffee, for lunch, and when the day will finish.

Icebreaker Exercise:

As this is the first time that participants are getting together for the in-person UCRMC sessions, **slide 8** has an introductory exercise so that participants can introduce themselves to each other.

- Split the group in half.
- Form two circles, one inside the other (Everybody in the outer circle should be facing a person in the inner circle).
- Introduce yourselves.
- Every minute the outer circle moves clockwise.
- Keep moving round every minute.

1.1 Why This Topic Matters **[~3 slides, 5 minutes]**

This section sets the scene for what participants will learn in Module 1. It provides a justification of why the topic is important – in particular that it serves as a foundation for the rest of the UCRMC by introducing core concepts related to climate change, adaptation, resilience, equity, and inclusion.

1.2 Learning Objectives **[~2 slides, 5 minute]**

The next section outlines the Learning Objectives for Module 1. These are the expected outcomes of the module – i.e. what the audience will have learned by the end of Module 1. There are four main Learning Objectives:

1. Understand the main types of climate risks that cities are facing.
2. Understand the concepts of adaptation, climate risk, and climate resilience.
3. Understand the concepts of equity and inclusion.
4. Recognize the critical importance in promoting equity and inclusion in climate resilience in cities.

1.3 Concepts & Definitions **[~8 slides, 15 minutes]**

This section provides key definitions for core concepts that will be used across the entire UCRMC. These provide participants with a vital grounding in the subject matter, so that they come to the taught portion of the UCRMC with an adequate grounding in the topic of climate change, climate hazards, climate resilience and equity and inclusion.

Trainers will note that the terms presented in Module 1 are communicated in simplified language without a lot of technical terminology compared to following modules. This is because we do not want to overload participants with technical jargon that is too unfamiliar for them from the very first module, rather gradually increase the technical level with each consecutive module.

Here is a **summary of the key terms** introduced in Module 1:

- The greenhouse effect
- Climate change
- Climate hazards
- Climate risk
- Vulnerability
- Exposure
- Risk reduction
- Adaptation
- Mitigation and low-carbon development
- Maladaptation
- Climate resilience
- Urban resilience
- Equity
- Social inclusion

A series of notes accompany each slide to provide more information to participants on the key terms listed above, along with links to other sources if they want to explore any of these concepts in more detail. A 'Further Reading' list is also provided at the end of the slide deck so to direct participants to resources that they may wish to consult to learn more.

1.4 Climate Change, Risks & Hazards **[~19 slides, 20 minutes]**

Section 4 introduces participants to climate change, climate risks and climate hazards.

It begins by explaining what climate change is and how it is caused by the greenhouse effect. It then explains the two common ways to address climate change – mitigation and adaptation – with the focus in this course being on adaptation and not mitigation.

Next it introduces climate risk, highlighting that risk is a result of three interlinked elements – climate hazards, exposure to hazards, and vulnerability to hazards. This concept is neatly illustrated by a diagram, with risk at the centre of these three overlapping circles. Trainers can refer back to this slide and diagram if participants have trouble understanding the issue of climate risk during Modules 2 – 6 when they are in-person with trainers.

A brief summary of the types of climate risks that cities will face is provided. These will be expanded upon and treated in more detail by Trainers in Module 2.

The main climate hazards that cities face are outlined. There is an overall typology of 9 hazards. trainers should familiarize themselves with the main climate hazards outlined here, since these are used throughout the course. Each of these hazards is then outlined in more detail on a dedicated slide,

explaining the hazard itself, and then outlining some of the impacts that hazard can have on cities – in other words, the types of risks the hazard can lead to.

The **nine climate hazards** outlined here are:

- Changing precipitation patterns
- Flooding
- Rising temperature
- Heatwaves
- Drought
- Wildfires
- Storms & cyclones
- Sea level rise
- Landslides

Section 4 concludes with a mini-case study of flooding in Kenya, to illustrate how climate hazards have impacted Dhaka and Nairobi.

1.5 Climate Resilient Infrastructure & Services **[~13 slides, 15 minutes]**

Section 5 introduces participants to climate resilient infrastructure and services.

The section begins by explaining what we mean by urban climate resilience. It then explains that cities will need to make investments to ensure that both existing and future infrastructure is resilient to climate hazards to protect citizens from negative climate risks.

The UCRMC uses a typology of **eight different types of infrastructure and services**, summarized on slide 41, to help city officials understand the core areas where they can make investments to promote climate resilience. These are:

- Transportation
- Energy
- Telecoms
- Buildings
- Water
- Waste
- Health & sanitation
- Public spaces

A summary is provided of each of these types of assets & services. Each slide explains (i) how the infrastructure or service is vulnerable to climate hazards, (ii) the types of climate risks that can be caused in cities, (iii) and what climate resilient outcomes could be prioritized by city officials for the asset or service.

Trainers should familiarize themselves with the infrastructure and services typology, the ways which climate hazards impact them, and the types of resilience solutions that could be prioritized for those assets and services.

1.6 Equity & Inclusion **[~18 slides, 20 minutes]**

Section 6 introduces participants to the concept of equity and inclusion – and the importance of ensuring that vulnerable and marginalized groups are prioritized in urban resilience measures.

Equity and inclusion is a core cross-cutting theme of the UCRMC. Trainers should therefore familiarize themselves with the definitions listed here, and the different types of structural inequalities that make certain people and groups vulnerable to climate hazards.

There is a generalized introduction to equity and inclusion. The concepts of equality, equity, inclusion, and inequality are then detailed.

A range of **structural inequalities** that create the conditions for vulnerability are presented. These include inequality stemming from:

- Poverty
- Gender
- Disability
- Race
- Ethnicity
- Caste
- Class
- Religion
- Age
- Sexuality *(Note: The term has been removed from the slides in recognition of cultural sensitivities in the country context. Trainers may use their discretion to determine whether and how to address the topic during the session.)*
- Displacement

There are several ways that city officials can work to address issues of inequality and exclusion in their cities, alongside their efforts to promote climate resilience. There are seven options that are explored in detail in this section. Each of these has its own slide that explains the solution and discusses a brief example from cities in developing countries where this equity and inclusion-focused resilient approach has been trialled. The **seven approaches** are:

- Community-based vulnerability assessments
- Supporting people who live in informal settlements and work in the informal economy
- Promoting inclusive job creation in green sectors
- Using decentralized decision-making approaches to climate solutions which encourage participation of vulnerable groups
- Promoting equitable access to infrastructure and services
- Ensuring communication of climate resilience solutions is accessible to vulnerable groups
- Promoting localized finance

These approaches to integrating a focus on equity and inclusion into resilience-building measures will be discussed in more detail throughout the rest of the UCRMC.

1.7 Summary **[~4 slides, 10 minutes]**

Section 7 provides a summary and review of what participants have covered in Module 1. It instructs participants to reflect on what they have learned in Module 1. It then provides participants a link to a

short learning exercise to make sure they have understood the material in Module 1 and are ready to move to the in-person component of the UCRMC.

Review Exercise: Definition Bingo

Following the introduction to these definitions, concepts and terminology – you will lead a short review exercise to help embed the core terminology in the minds of participants.

1. Ask participants to note down two words from the screen (any two words they chose themselves)
2. The trainer reads the definitions (but NOT the key term) out loud, from the slide trainer notes.
3. Participants listen for the definitions of their chosen words, and the first person to have heard both of their definition's shouts bingo.

1.8 Participant test

The test can be found in appendix 1. It should be set up by the trainer using google forms or a similar survey platform. The test is sent to all participants one week before the in-person masterclass takes place.

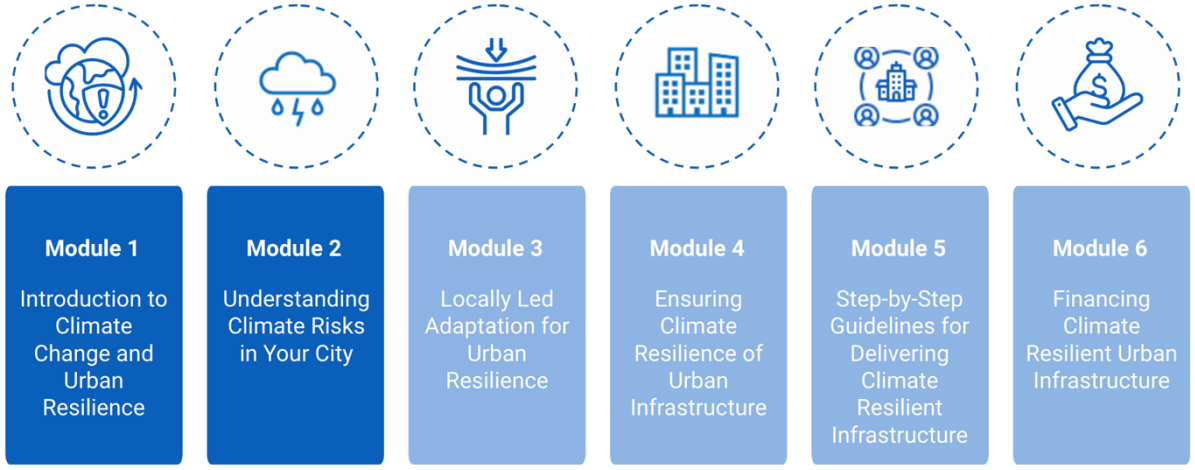
The role of the test is to:

- Ensure all participants have completed module 1, and come to the masterclass with the same level of base knowledge.
- Provide the participant with a check point for their own learning
- Provide the Trainer with a base knowledge of the participants level by checking the test results prior to the masterclass

Module 2: Understanding Climate Risk in Your City

Strategic Rationale:

Module 2 introduces participants to climate change risks in urban areas. Building on participants' initial understanding of climate change and climate hazards from Module 1, Module 2 dives into more detailed explanation of climate risk in the urban context and introduces participants to climate risk assessments (CRA), which they can use to help them understand climate risks in their own cities. CRAs are an important tool, which can be used by participants to help prioritize the types of climate resilient infrastructure they should build in their cities.



The table of contents for **Module 2: Understanding Climate Risk in Your City** is outlined below. This is followed by a section-by-section breakdown of the content, which will help you familiarize yourself with the content, and provide you with specific advice on how to communicate this content to the audience.

Module structure:	**Indicative Slide Numbers**	**Estimated Duration**
0. Introduction	1 – 6	5
1. Why This Topic Matters	7 – 8	10
2. Learning Objectives	9 – 10	5
3. Concepts & Definitions	11 – 12	5
4. Understanding Climate Risks in Your City	13 – 19	15
5. Urban Climate Risks in Kenya	20 – 25	20
6. Climate Risk Assessments	26 – 54	60
7. CRA Case Studies	55 – 59	25
8. How to Procure a CRA	60 – 67	15
9. Interactive Exercise: *Procuring a CRA*	68 – 72	60
10. Summary	73 – 75	5
Annex 1: Climate Risk Assessments in Kenya	76 – 85	15

Total estimated duration: **~225 minutes** (~250 minutes with Annex 1)

2.0 Introduction

[~8 slides, 5 minutes]

Module 2 begins with an introductory set of slides to start the session.

The title slide introduces participants to the main topic of the module. There is an overview of the entire UCRMC course structure, so participants can situate the module within the broader context of their

learning journey throughout the course. The funders and partners who have been involved in creating the course are introduced, then a module agenda, and some basic housekeeping 'rules' – which encourage participants to listen attentively, ask questions when they don't understand something, share their own experiences, and discuss actively with others during exercises, breaks and reflection points throughout the Module.

Please read the first slides to participants and ask them if they have any questions. Please also highlight that there will be opportunity for questions at the end of each section. You may wish to also explain how the module fits into the schedule of the day – for instance highlighting when there will be breaks for tea & coffee, for lunch, and when the day will finish.

2.1 Why This Topic Matters **[~2 slides, 5 minutes]**

This short section provides a quick rationale for why this module topic is important. It is meant to explain to participants why they should be interested in the content and how it is relevant to the broader UCRMC focus on helping them to deliver climate resilient infrastructure in their cities.

There are five main points:

1. Climate risk assessments (CRA) are the foundation of climate-informed planning and decision-making, enabling actors to identify and prioritise climate risks and opportunities, and implement corresponding resilience-building actions.
2. Understanding the process and components of a CRA enables city officials to effectively commission and supervise CRAs in their cities, and meaningfully engage with the results.
3. Understanding the climate risks in your city is an important first step in identifying the types of investments in infrastructure and services you can make to build resilience in your city.
4. This module also introduces the concept of climate resilient master planning – outlining ways in which cities can systematically integrate urban resilience into medium and long-term development planning.
5. It will also outline ways in which urban resilience initiatives and investments can support national and sub-national climate objectives in Kenya.

2.2 Learning Objectives **[~2 slides, 5 minutes]**

The next section outlines the Learning Objectives for Module 2. These are the expected outcomes of the module – i.e. what the audience will have learned and be able to apply that learning to their daily jobs. There are five main Learning Objectives:

1. Understand the importance of climate risk assessments as the foundation of climate-resilient planning.
2. Identify the key climate risks facing their cities and explain how these risks affect vulnerable and marginalized groups.
3. Outline the key steps involved in conducting a CRA.
4. Understand the different types and sources of data that can be used in a CRA (along with the limitations of the data).
5. Understand how to procure and supervise a CRA and interpret its results.

Please read the Learning Objectives out loud to participants, and check that they match their expectations.

2.3 Concepts & Definitions **[~4 slides, 10 minutes]**

Section 3 outlines the main new concepts and terminology that will be used in Module 2. Many of these definitions will be new to participants and involve technical concepts that might be difficult to understand. So, it is important that they are communicated clearly, using simple language to help explain the technical concepts. Please familiarize yourself with each of the definitions so that you are prepared to answer questions about them or give examples if requested by participants. A list of further reading, links and supplementary information is included in the Trainer Notes to help you prepare.

Here is a **summary of the key terms** introduced in Module 2:

- Risk Assessment
- Climate impacts
- Master Plan
- Climate Scenario

Please read each of the definitions to participants. Once you have finished, ask if they have any questions.

2.4 Understanding Climate Risk in Your City **[~7 slides, 15 minutes]**

This is the first learning block of technical content to teach to participants. The purpose of Section 4 is to help participants build a more detailed understanding of climate risk. They will be familiar with the different types of climate hazards that occur from Module 1. In this section, we want to build on this understanding by explaining how a climate hazard (e.g. flooding) creates climate risks (e.g. physical damage to infrastructure) that have an impact.

The section begins with a recap of 'what is climate risk'. This slide should be familiar to participants form Module 1, but please take a few minutes to go over the explanation of climate risk as the intersection between hazards, exposure and vulnerability. Ask them if they have any questions about these terms.

There is an outline of a series of different climate risks that cities face, with accompanying descriptions. Please go over each of these **types of climate risk** in more detail:

- Disruptions to essential services
- Physical damages to infrastructure
- Food insecurity
- Social and community stress
- Degraded water, sanitation and water-borne diseases
- Displacement and need for shelter
- Increased water stress and water scarcity

Discussion

Ask participants to discuss the questions on the slide with the person next to them for 2 minutes
Open the floor if anyone would like to share or ask a question.

2.5 Urban Climate Risks in Kenya **[~6 slides, 20 minutes]**

Section 5 builds on the previous section by providing a bit more context on the specific climate risks that participants might face in their own countries. This section provides a snapshot of the different climate risks that occur in Kenya.

Each section illustrates the different climate hazards and associated risks that occur in cities in Kenya. This is followed by a group of slides on how climate change creates risks for vulnerable groups – including people living in informal settlements, informal workers, women and girls, children, people living with disabilities. Please communicate these slides to participants. There is additional information in the trainer notes for you to provide supplementary information if you choose.

2.6 Climate Risk Assessments **[~29 slides, 60 minutes]**

Now that participants have an understanding of climate risk and the types of climate risks that may occur in their cities, Section 6 turns to focus on climate risk assessments. CRAs

There is a short overview of CRAs – helping participants understand ‘what are CRAs’ and ‘why conduct a CRA’

Slide 38 provides a summary of the **six steps of a CRA**:

1. Establish the decision-making context
2. Assess hazards
3. Assess impacts
4. Identify and assess risks
5. Identify resilience building options
6. Appraise resilience building options

Next, walk participants through each of these 6 steps, detailing the methodology for developing a CRA and what needs to be done at each step. Note: GCA does not expect that UCRMC participants will be developing a CRA themselves. So please emphasize to participants that they do not need to memorize this content and apply it in their jobs. Rather, we are showcasing each step of the process so that they understand the key sections that should be included in a CRA (if, for example, they commission a CRA – see Section 2.6) and most importantly: how they can interpret the results of a CRA.

Please explain each step to participants and demonstrate how each step builds on the previous step to understand the climate hazards, the impacts of these hazards, climate risks and how to score them in terms of likelihood and severity, and ultimately leading to the identification and prioritisation of resilience building options. Extra information is provided in the Training Notes to guide Trainers explain this content.

It concludes with a quick reminder that equity and inclusion should be embedded within a CRA. It outlines ways in which a CRA can incorporate design, analysis and outputs that support vulnerable and marginalized groups in cities. Please read these out to participants.

There are several **types of CRA outputs**. These include:

- Risk matrices
- Hazard, risk, and vulnerability maps
- Infographics
- Prioritized adaptation options
- Interactive online platforms

Please go over these slides with participants. You can move through them relatively quickly, without a need to explain the detailed background behind each CRA. A brief 1-2 sentence outline of the CRA context is provided for you in the Trainer Notes to help you communicate the context to participants if

necessary. However, the main point of this exercise is to show participants the possibilities for visualizing CRA data. They don't need to go over each in detail to see what the visualization is trying to tell them. It is sufficient here to explain that there are a wide range of options that they could use in communicating CRA data when it comes time for them to undertake a CRA in their own city.

Questions & Experience Share

Open the floor if anyone would like to share an experience they have had with CRA outputs or decision making.
If there are no raised hands, ask participants to spend 5 minutes discussing with the person next to them about the material that has just been covered.
Open the floor for any questions.

2.7 CRA Case Studies **[~14 slides, 25 minutes]**

Section 7 provides a deep dive into the CRA process using 1 case study from Kenya. The intention of this content is for UCRMC participants to understand the journey a city takes in developing a CRA – including understanding the background context, the level of analysis in the CRA, the steps that the city undertook to deliver the CRA, the data that was used for the CRA, the type of outputs it produced, and how the CRA was used to identify priority climate resilient infrastructure options.

The slides detail the experience of Isiolo Municipality, Kenya in developing a CRA. Please go over each of the slides in detail with participants. There are supplementary Trainer Notes to help you explain the case study to participants.

2.8 How to Procure a CRA **[~8 slides, 15 minutes]**

Many cities have not yet undertaken a CRA to identify climate risks and integrate this information into planning, infrastructure investment and service delivery.

Section 8 explains to participants the steps they can take to procure a CRA in their city. The reason this section has been included, is that some UCRMC participants may have the mandate and authority to commission a CRA – to help them understand climate risk in their city. GCA assumes that it is more likely that a city will commission a consultant or a specialized agency (e.g. an NGO, consulting firm, or university) to undertake a CRA, than for city officials to conduct the CRA themselves. Section 8 therefore helps UCRMC participants to understand what steps they will need to take to commission a CRA.

There are **five main steps** for commissioning a CRA:

- Prepare
- Draft Terms of Reference (ToRs)
- Select CRA team
- Supervise CRA
- M&E

Section 8 provides a slide for each of these steps, which details the tasks that officials should undertake as they prepare to commission a CRA. Please communicate these steps to participants and ask them if they have any questions. If participants have commissioned a CRA before, you could ask them to share their experience with the rest of the UCRMC participants.

Please note, in many cities, a CRA study might be initiated and led by more senior officials than those that are participating in the UCRMC. This could include political leadership (e.g. centred in the mayor's office, the governor of a county, etc.), or the head of a major department (e.g. department of public works, department of local government). Conducting a CRA may also be more likely to occur as part of a strategic planning phase in a city, rather than for a specific infrastructure investment. For example, during the development of urban Master Plans, spatial plans, land use plans, climate change strategies, etc. So it is not guaranteed that participants will have the mandate to commission a CRA. Nevertheless, we have included this section in the UCRMC in case commissioning a CRA does fall within the purview of UCRMC participants.[2]

2.9 Interactive Exercise **[~5 slides, 60 minutes]**

Section 9 is an interactive exercise that aims to help participants synthesize the technical content they have learned in Module 2. The exercise runs through the steps for how to procure a CRA, so they can apply the content of Module 2 in their daily jobs once they have completed the course.

Exercise: Procuring a Climate Risk Assessment

Use the slide template and guide participants to fill it out. You can print this slide as a canvas, or simply project it.

Work on the first canvas
STEP 1: Participants should think about their own city, and what they aim to achieve there 9or an idea that could be carried out). They then complete the mission and actions to make this change:

1. Mission: Ask participants to think about the overall goal for resilience building in their city. This is the mission and should be one statement e.g. build up sea defences, create alternative transport options, or decarbonise the energy supply
2. Actions: Considering your mission, what steps would you need to take to reach this mission?

Next ask participants to share their canvas with the person next to them:

- Discuss the canvas in pairs
- Think about which step would require a CRA - circle this step

Sometimes the CRA is required for the project as a whole (the mission), and other times it is necessary for a step towards the mission.

Work on the second canvas
STEP 2: Guide participants to complete the CRA procurement canvas. Prompts for participants:

- Using your chosen step towards your mission, consider how you would procure a CRA.
- Complete box 'objectives' using your mission and the step towards it as a way to identify the objective of the CRA
- Complete box 'equity and inclusion; considering what needs to be included in the CRA to ensure E&I
- Complete 'resources available' considering what resources (data, access, reports etc.) you have available to share with the CRA assessor who you will procure
- Complete 'outputs required' considering what you would want to receive from a CRA - what data and how should it be visualised for maximum use to you in achieving your mission.

Present

[2] Note: different government departments or heads of government will have different terminology in different countries. We have included these here for illustrative purposes, but please tailor the use of terminology to the country you are providing training in. Likewise, certain terms like Master Plans or spatial plans are not used in all contexts. Please use the appropriate planning process terminology in the country where you are working. If you have any doubts of the correct terminology, ask participants what this process is called in their city.

STEP 3: Share the canvases on each table, encourage participants to present and discuss their work to their table colleagues.
If there is time, you can invite someone to present their work to the full room and take any questions on their canvas.
You can ask clarifying questions, or open the floor to the participants to ask questions.

The most important points to gather from this exercise are:

- Do the participants understand what a CRA is, what it is for, and how they can use it?
- Do the participants understand the information they need to gather in order to commission a successful CRA?

Go round the tables while participants are working on the canvas and check that they have understood these two overarching elements from the day.

2.10 Summary **[~3 slides, 5 minutes]**

The final section of Module 2 provides a quick summary of the module and offers an opportunity for participants to reflect on any lingering questions or concepts that they would like to review before completing the module.

There is a short summary on ‘why are CRAs important’ and ‘what can you do with a CRA’. These help reinforce the content from across Module 2 and give participants an idea of how they can use CRAs to help plan climate resilient infrastructure; develop long-term plans, policies and strategies; and access finance for investing in climate resilient infrastructure in their cities.

The section concludes with the overall structure of the UCRMC, showing the next topic to be covered in Module 3: Locally Led Adaptation for Urban Resilience.

Please conclude by asking participants if they have any final questions, comments or learnings they would like to share before concluding the module.

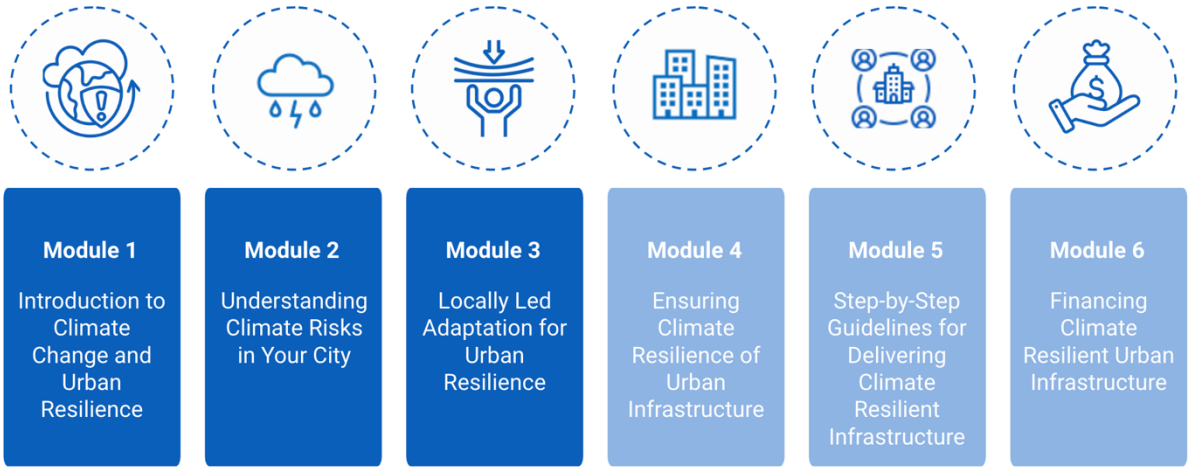
Annex 1: Climate Risk Assessments in Kenya **[~10 slides, 15 minutes]**

Annex 2 is a set of supplementary materials that can be shared with UCRMC participants from Kenya to help them understand what type of climate-related data is available, where they can go to access climate related data from official sources. These materials also will help them identify different organisations with CRA expertise who they can collaborate with and understand some of the challenges in undertaking a CRA in Kenya. These supplementary materials can be used to guide participants in procuring a CRA for their city, or in accessing data that can help them understand climate risks in their city.

Module 3: Locally Led Adaptation for Urban Resilience

Strategic Rationale:

The theme of Module 3 is **locally led adaptation (LLA).** Having built an understanding of how to assess urban climate risks in Module 2, Module 3 outlines the importance of local actors in responding to climate change and building resilience in cities. Module 3 introduces participants to the LLA Principles, which provide guidance for participants on ways they can promote adaptation in their cities. Module also introduces the different actors they UCRMC participants can collaborate with to promote urban resilience in their cities.



The table of contents for **Module 3: Locally Led Adaptation for Urban Resilience** is outlined below. This is followed by a section-by-section breakdown of the content, which will help you familiarize yourself with the content, and provide you with specific advice on how to communicate this content to the audience.

Module structure:	**Indicative Slide Numbers**	**Estimated Duration**
0. Introduction	1 – 6	5
1. Why This Topic Matters	7 – 8	5
2. Learning Objectives	9 – 10	5
3. Concepts & Definitions	11 – 12	10
4. Locally Led Adaptation for Urban Resilience	13 – 19	40
5. Introduction to the LLA Principles	20 – 42	10
6. LLA Actors	43 – 54	10
7. Interactive Exercise: Context Mapping Canvas	55 – 61	40
8. Summary	62 – 65	5

Total estimated duration: **~130 minutes**

3.0 Introduction

[~6 slides, 5 minutes]

Module 3 begins with the same introductory set of slides to start the session used in previous modules.

The title slide introduces participants to the main topic of the module. There is an overview of the entire UCRMC course structure, so participants can situate the module within the broader context of their learning journey throughout the course. The funders and partners who have been involved in creating the course are introduced, then a module agenda, and some basic housekeeping 'rules' – which encourage participants to listen attentively, ask questions when they don't understand something, share

their own experiences, and discuss actively with others during exercises, breaks and reflection points throughout the Module.

Please read the first slides to participants and ask them if they have any questions. Please also highlight that there will be opportunity for questions at the end of each section. You may wish to also explain how the module fits into the schedule of the day – for instance highlighting when there will be breaks for tea & coffee, for lunch, and when the day will finish.

3.1 Why This Topic Matters **[~2 slides, 5 minutes]**

This short section provides a quick rationale for why this module topic is important. It is meant to explain to participants why they should be interested in the content and how it is relevant to the broader UCRMC focus on helping them to deliver climate resilient infrastructure in their cities.

There are four main points highlighted. Please read these to participants:

1. Building on the foundational knowledge in Module 1 and Module 2 related to climate change impacts, climate risk and vulnerability, this module highlights the importance of local actors in planning and delivering urban resilience initiatives and infrastructure.
2. This module introduces participants to the concept of 'locally led adaptation' and outlines how participants working in city government departments can help deliver LLA.
3. It will introduce participants to what LLA looks like in practice – with a focus on how they can support urban resilience through their own daily jobs.
4. It will also introduce participants to the different actors they can collaborate with beyond their own institutions, and it will highlight some key challenges in delivering LLA in cities.

3.2 Learning Objectives **[~2 slides, 5 minutes]**

The next section outlines the Learning Objectives for Module 3. These are the expected outcomes of the module – i.e. what the audience will have learned and be able to apply that learning to their daily jobs. There are five main Learning Objectives:

1. Understand locally led approaches for urban resilience and its importance.
2. Understand and explain the roles that different local actors can play in supporting resilience in the urban context.
3. Identify examples of locally led approaches from your own country.
4. Identify challenges associated with implementing locally led approaches and begin to think of ways that these challenges can be addressed.
5. Apply the concept of LLA to their own work and understand what role they have in supporting or implementing LLA.

Please read the Learning Objectives out loud to participants, and ensure they meet their expectations of the day.

3.3 Concepts & Definitions **[~2 slides, 5 minutes]**

Section 3 outlines the main new concepts and terminology that will be used in Module 3. Please familiarize yourself with each of the definitions so that you are prepared to answer questions about them or give examples if requested by participants. There are only two new concepts introduced in this section:

- Locally led adaptation
- Local institutions

Please read each of the definitions to participants. Once you have finished, ask if they have any questions.

3.4 Locally Led Adaptation for Urban Resilience **[~7 slides, 10 minutes]**

Overall, Module 3 aims to showcase the importance of local actors in delivering adaptation solutions – in particular, focusing on the role of urban infrastructure planners who are our target audience. Section 4 begins this journey by outlining (i) why building urban resilience is important, (ii) why focusing on equity and inclusion is important, and (iii) why local approaches to delivering adaptation are important.

A rationale is provided of why urban resilience is important. It outlines the fact that cities are now where the majority of people in the world live and where most economic activity is concentrated. At the same time, climate change hazards are increasing in frequency and intensity, leading to ever increasing impacts on cities – impacting the people who live there, economic activity and industry, and the infrastructure and services that people in cities rely on. Building resilience is therefore becoming increasingly important, so that cities and their populations can withstand these negative impacts in the future. Recap the types of infrastructure and services that city officials can focus on in their efforts to build resilience.

Return to the issues of equity and inclusion from Module 1. Explains how different groups of vulnerable and marginalized people are vulnerable to climate hazards as a result of inequality which excludes them from economic, social and political power. These slides aim to emphasize to participants that their efforts to build resilience need to promote equity and inclusion for such groups. There is a recap from Module 1 of some of the structural inequalities that make people vulnerable to climate change.

Since some of this content is a recap, please pause and ask participants if they have any questions about either (i) the 8 types of infrastructure and services that we have outlined, or (ii) the concepts of equity and inclusion. Some participants may not have fully grasped these concepts when they were reviewing this material on their own, so now that they are in-class with Trainers and peers, it is important to check-in with them and allow them to ask any questions they might have.

Outline why ‘local’ approaches to urban resilience important. These two slides highlight how climate change is a localized phenomenon; in other words, the impacts of climate change are felt in specific places – for example a city where a flood occurs, a community that experiences a landslide, a building that is burnt by wildfires. At the same time, city planners who build, maintain and upgrade infrastructure and services have the ability to deliver solutions that build resilience in their cities and communities. They are the ones that know the local context the best, they have a mandate to improve urban liveability for citizens in their city, and, as a result, they are often the best placed to undertake what is called ‘**locally led** adaptation’.

These slides are intended to serve as a call to action to participants – it is local actors, people like the participants in this training session – who have the role, the capacity, and the ability to make a difference in their city to promote climate resilience, and to do so in a way that promotes equity and inclusion for vulnerable groups.

3.5 Introducing the LLA Principles **[~22 slides, 40 minutes]**

As mentioned above, Module 3 aims to showcase the importance of local actors in delivering adaptation solutions. Section 4 focused more on the ‘why’ – i.e. why is locally adaptation important? Section 5 builds on this journey by focusing on the ‘what’ – i.e. what does locally-led adaptation really look like in practice?

The anchor for this discussion on ‘what is locally led adaptation’ are the 8 LLA Principles that are introduced in Section 5. The GCA and a network of over 120 partners from all over the globe have developed a series of 8 LLA Principles to promote local solutions for adaptation and resilience and build

the capacity of local actors and institutions. These 8 Principles present a broad categorization of 'what good locally-led adaptation looks like in practice'. To begin understanding the LLA Principles, there is a quick introduction of the LLA Principles in a short 3-minute video. Please click on the QR code and show the video to participants.

Following the video, the **8 LLA Principles** are:

1. Devolve decision making to the lowest appropriate level
2. Address structural inequalities faced by women, youth, children, disabled, displaced, Indigenous Peoples and marginalised ethnic groups
3. Provide patient and predictable funding that can be accessed more easily
4. Invest in local capabilities to leave an institutional legacy
5. Build a robust understanding of climate risk and uncertainty
6. Promote flexible programming and learning
7. Ensure transparency and accountability
8. Promote collaborative action and investment

These might seem abstract to participants – and their initial reaction might be one of confusion. That's perfectly okay. Please explain to them that you will guide them through each of the 8 LLA Principles one-by-one, with examples of LLA that have already been undertaken in cities across their country, so that they understand each in more detail.

Provide a detailed explanation of each LLA Principle. The general format here is that there is one slide that outlines the LLA Principle, followed by a one slide case study to showcase an example of that Principle in real life. The first slide that outlines the LLA Principle will have the name of the Principle (e.g. 'Principle 1: Devolve decision making to the lowest appropriate level.). Since this may be too abstract, a series of bullet points then provides a more simplified description of what that LLA Principle means to city officials. The intention of these bullet points is for participants to understand how they can apply the LLA Principle to their day-to-day job, especially in relation to their role in planning and delivering infrastructure projects in their city. The goal here is for participants to begin to understand the types of actions they can take to promote adaptation and resilience in their cities.

Trainers should emphasize that this content is not a step-by-step guideline on how to deliver climate resilient infrastructure. The step-by-step guidelines will be outlined in Module 5. For now, Trainers can emphasize to participants that these LLA Principles are intended to give them more ideas about how they could deliver climate resilient infrastructure in their cities, and how this infrastructure could ensure equitable outcomes for vulnerable and marginalized groups. They should also explain to participants that as they continue through the UCRMC (particularly in Modules 4 and 5 which get more into technical detail on how to deliver climate resilient infrastructure in cities), participants can look back on the LLA Principles and case studies to remind themselves of important considerations to improve local resilience outcomes.

Trainers should familiarize themselves with both the LLA Principles and the LLA case studies, so that they can explain the linkage between each LLA Principle and the case study. Many of the case studies have supplementary text and links for the Trainer, in case they want to read up more to understand the case study and help explain it better to participants.

Provide a summary of all 8 LLA Principles with a simplified 'takeaway message' for city officials for each Principle. Participants should go over each of these messages before proceeding to the review exercise.

Review Exercise

It is important for participants to consider their own local actors, knowledge of 'who' they are talking about helps them to contextualise the LLA principals. However, they will do this in more depth in the

next exercise, so for this one get them to simply list a few actors (2 or 3), but you do not need to get them to make an extensive list.

There are four short steps in this exercise:

1. Ask participants to write down a high-level list of their local actors (this can be organisations, community groups, vulnerable groups, NGOs, councils, companies etc.). You can give these prompts to help them for a list.
2. Ask them to consider, using the actors in their own list, if any are engaged in LLA activities.
3. Ask them to discuss this with the person next to them.
4. Open the floor for any questions or sharing.

3.6 LLA Actors

[~11 slides, 10 minutes]

After the detailed overview of the LLA Principles, Section 6 introduces the different actors that can work together to deliver LLA in cities. These can be representatives from the public sector, the private sector and civil society. It can also include people, groups and communities that live in cities.

Slides 52 and 53 provide a categorisation of the **different types of LLA actors**. These are:

- State or regional governments
- Municipal / city governments
- NGOs and civil society organisations
- Community leaders
- Cooperatives and federations
- Private sector
- Households and individuals

This is followed by a more detailed breakdown of each of these actors in Kenya – with one actor group per slide. These slides list relevant officials or groups and explains their role in delivering LLA in Kenyan cities. The slides explain the different policies and regulations that provide the mandate for local officials to deliver LLA in Kenya.

Review Exercise

Now participants have considered the full range of actors they can build up their short list from the previous exercise into along list.

1. Using the list from exercise 1, build on it and add in more actors, this time be specific.
2. Ensure local institutions and community groups are added
3. Ask participants to share the list with the people next to them

3.7 Interactive Exercise

[~7 slides, 40 minutes]

Section 7 is an interactive exercise that aims to help participants synthesize the technical content they have learned in Module 3. The exercise runs through the steps for creating a city vision on climate resilient infrastructure and mapping the various actors that will be involved in the process. It serves as an opportunity for city officials to think about how to integrate an LLA perspective and a focus on equity and inclusion from the beginning of the process as they plan climate resilient infrastructure in their city.

Exercise: Context Mapping Canvas

The context mapping canvas is a tool to help participants link their community with the mission and needs of both the city and the people. It also highlights that these have external influences. The aim of the context map is to understand the importance of an inclusive view when considering urban resilience.
You can either print or display the context mapping canvas. Participants will add in information from the previous modules exercise (the mission) and from the earlier exercise (actors) and then complete the canvas.

Introduce the canvas
The context mapping canvas is a tool to describe your mission, and the environment in which that mission will be undertaken:

1. Mission: What you want to do in your city? Be aspirational. (*Remind participants that they identified a mission at the end of module 2, for the CRA exercise. They may want to refer back to this)*
2. Actors: Who will be involved? Think broadly of organisations directly involved, and the communities and individuals directly and passively involved. *(The actor list from the previous exercise can be used to fill in this segment of the canvas)*
3. Needs: What will be required to enable this mission? It might be labour, training, finance, land, or other resources.
4. Influences: What will affect the mission? Think about the environment, climate hazards and risks, social structures, policies, and other influencing factors.

The slides contain a printing version of the canvas, and one with the questions displayed that can be used on the projector.

Present
Once participants have completed their canvas, ask them to present them to one another at their tables. During the presentations, move around the room and check that participants have understood:

- How actors, mission and needs link to one another
- Climate risks and hazards, and other external influences that can affect the actors and their needs.

Bonus
If participants complete this activity quickly, you can ask them to carry out a second canvas to consider the actions required to engage local actors, achieve the mission, and meet the needs of the mission / actors.
Further instructions on the slide.

3.8 Summary **[~4 slides, 5 minutes]**

The final section of Module 3 provides a quick summary of the module and offers an opportunity for participants to reflect on any lingering questions or concepts that they would like to review before completing the module.

The slides provide a short summary of how participants can embed LLA in different steps of their journey to make their cities more climate resilient. These include embedded LLA in climate risk assessments, infrastructure planning, infrastructure construction and financing decisions. Each of these topics correspond to UCRMC Modules 2, 4, 5 and 6 respectively.

There is a QR code link to the GCA LLA Hub for participants to learn more about LLA in their own time.

Conclude with the overall structure of the UCRMC, showing the next topic to be covered in **Module 4: Ensuring Climate Resilience of Urban Infrastructure**.

Please conclude by asking participants if they have any final questions, comments or learnings they would like to share before concluding the module.

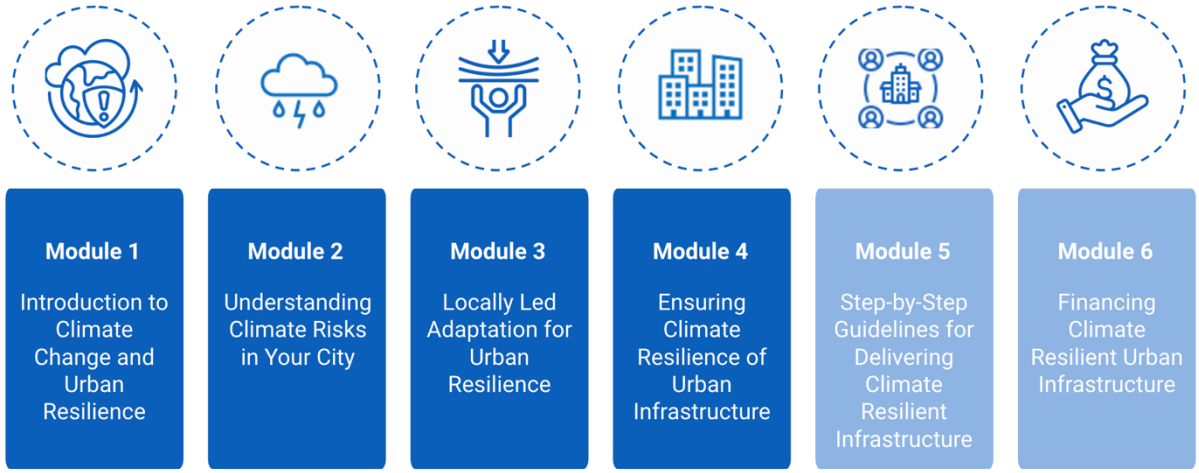
Module 4: Ensuring Climate Resilience of Urban Infrastructure

Strategic Rationale:

The theme of Module 4 focuses on climate-resilient infrastructure. Having built an understanding of how to assess urban climate risks in Module 2, and about the importance of locally led adaptation in Module 3, Module 4 moves towards the topic of climate resilient infrastructure, helping participants to understand how they can act to deliver resilience in their city.

Module 4 will help participants to understand important questions in their learning journey. For example: What is climate resilient infrastructure? What makes infrastructure resilient? How can infrastructure be designed to ensure that is resilient? What are examples of climate resilient infrastructure in cities in their own country?

It stops short of providing a 'how to' guidelines for delivering climate resilient infrastructure. This will be the focus of Module 5.



The table of contents for **Module 4: Ensuring Climate Resilience of Urban Infrastructure** is outlined below. This is followed by a section-by-section breakdown of the content, which will help you familiarize yourself with the content, and provide you with specific advice on how to communicate this content to the audience.

Module structure:	**Indicative Slide Numbers**	**Estimated Duration**
0. Introduction	1 – 6	5
1. Why This Topic Matters	7 – 8	5
2. Learning Objectives	9 – 10	5
3. Concepts & Definitions	11 – 14	10
4. How Climate Change Impacts Urban Infrastructure	15 – 28	25
5. Climate Impacts on Infrastructure in Kenya	29 – 38	25
6. What Makes Urban Infrastructure Resilient	39 – 53	25
7. Ways to Build Resilient Urban Infrastructure	54 – 69	20
8. Climate Resilient Infrastructure in Kenya	70 – 75	20
9. Interactive Exercise: *Decisions for the Decade*	76 – 84	60
10. Summary	85 – 86	5
11. Annex 1: Climate Risk Assessments in Kenya		

Total estimated duration: **~205 minutes**

4.0 Introduction [~6 slides, 5 minutes]

Module 4 begins with the same introductory set of slides to start the session used in previous modules.

The title slide introduces participants to the main topic of the module. There is an overview of the entire UCRMC course structure, so participants can situate the module within the broader context of their learning journey throughout the course. The funders and partners who have been involved in creating the course are introduced, then a module agenda, and some basic housekeeping 'rules' – which encourage participants to listen attentively, ask questions when they don't understand something, share their own experiences, and discuss actively with others during exercises, breaks and reflection points throughout the Module.

Please read the first slides to participants and ask them if they have any questions. Please also highlight that there will be opportunity for questions at the end of each section. You may wish to also explain how the module fits into the schedule of the day – for instance highlighting when there will be breaks for tea & coffee, for lunch, and when the day will finish.

4.1 Why This Topic Matters [~2 slides, 5 minutes]

This short section provides a quick rationale for why this module topic is important. It is meant to explain to participants why they should be interested in the content and how it is relevant to the broader UCRMC focus on helping them to deliver climate resilient infrastructure in their cities.

There are five main points highlighted on slide 7. Please read these to participants:

1. Infrastructure is the backbone of urban systems. Infrastructure & services are vital for ensuring the necessities of life and promoting economic activity.
2. Climate change poses risks to urban infrastructure including loss, damage and service disruption, leading to cascading impacts across sectors.
3. City planners need to understand how to make sure that urban infrastructure and services are resilient to climate change so that they are not damaged and disrupted by climate hazards.
4. Investing in climate resilient infrastructure makes economic sense, reduces post-disaster expenditure, and ensures continuity of urban services during disasters, helping minimize losses.
5. This module introduces a range of approaches to building climate resilience of urban infrastructure, including structural measures, non-structural measures and Nature-based Solutions (NbS).

4.2 Learning Objectives [~2 slides, 5 minutes]

The next section outlines the Learning Objectives for Module 4. These are the expected outcomes of the module – i.e. what the audience will have learned and be able to apply that learning to their daily jobs. There are **five main Learning Objectives**:

1. Understand the cascading impacts of climate change on urban infrastructure.
2. Understand the various ways of building climate resilience in urban infrastructure, including through hard and soft infrastructure.
3. Be familiar with a systems approach to understanding complex issues at the nexus of urban planning and climate change and associated solutions.
4. Be familiar with Nature-based solutions as an approach to deliver climate resilience in urban infrastructure.

5. Understand how to mainstream climate risk and resilience into infrastructure planning processes and instruments.

Please read the Learning Objectives out loud to participants, and ensure they meet their expectations of the day.

4.3 Concepts & Definitions **[~4 slides, 10 minutes]**

Section 3 outlines the main new concepts and terminology that will be used in Module 4. Many of these definitions will be new to participants and involve technical concepts that might be difficult to understand. So it is important that they are communicated clearly, using simple language to help explain the technical concepts. Please familiarize yourself with each of the definitions so that you are prepared to answer questions about them or give examples if requested by participants. A list of further reading, links and supplementary information is included in the Trainer Notes to help you prepare.

Here is a **summary of the key terms** introduced in Module 4:

- Resilient Infrastructure
- Structure Measures / Grey Infrastructure
- Non-Structural Measures / Soft Infrastructure
- Ecosystem Services
- Ecosystem-based Adaptation
- Nature-based Solutions
- Green Infrastructure
- Blue Infrastructure
- Blue-Green Infrastructure

Please read each of the definitions to participants. Once you have finished, ask if they have any questions.

Review Exercise:

Following the introduction to these definitions, concepts and terminology – you will lead a short review exercise to help embed the core terminology in the minds of participants.
This is a quick and fun exercise

1. Ask participants to look at the list of infrastructure types on the slide
2. They must sketch / draw one type of infrastructure
3. Show their picture to their table and see if others can guess the infrastructure they have drawn.

Take a short pause for any questions before starting the next section.

4.4 How Climate Change Impacts Urban Infrastructure **[~14 slides, 25 minutes]**

Section 4 builds on the content outlined in Module 1 and Module 2, providing a more in depth look at how climate change impacts infrastructure in cities.

The slides provide a recap on the importance of urban infrastructure, highlight the interconnected nature of urban infrastructure, and remind participants about the eight types of infrastructure that we focus on in the UCRMC.

There are **three ways that climate hazards create negative impacts on infrastructure**.:

- Asset damage
- Service disruptions
- Changes demands for infrastructure and services

Please read these to participants and talk through each of the examples provided on the ride side of the this slide.

Then provide a detailed analysis of how specific climate hazards – heatwaves, storms & cyclones, flooding, and sea level rise impact each of the eight types of infrastructure that we focus on in the UCRMC. Please go over each of these with participants. Trainers may prompt participants to consider how location (exposure), sector-specific characteristics (sensitivity), and the adaptive capacity of infrastructure systems influence their level of risk to climate impacts. This awareness can foster a nuanced understanding of the complexities involved in climate adaptation planning and decision-making.

Explain how climate change can have cascading impacts on infrastructure. This means that not a single climate impact on one infrastructure asset or service can create a ripple effect that then creates negative impacts on other assets or services in the city. The slides illustrate this with a case study on the impact of flooding on roads and access to health services in Ghana.

Conclude section 4 with an explanation of how climate change can lead to negative impacts on vulnerable groups. There is a slide each that explains some of the impacts facing people living in informal settlements, people living in informal settlements alongside rivers, and women & girls. Please read these to participants.

You can ask them if they have any other experiences that they would like to share on climate impacts on vulnerable groups in their cities.

4.5 Climate Impacts on Infrastructure in Kenya **[~10 slides, 25 minutes]**

Section 5 provides a more detailed look at how climate hazards impact urban infrastructure in Kenya. These slides go one-by-one through the eight types of infrastructure that we are focusing on in the UCRMC; each slide focuses on a type of infrastructure (e.g. transportation) and outlines the various climate hazards that can negatively impact that type of infrastructure.

Please summarize the content on each slide for participants as you go through Section 5 – emphasizing the ways that each type of infrastructure can be affected by climate hazards.

Experience Share

Open the floor to allow any participants to raise their hands and tell a story / share an experience from their location relating to climate impacts.
It is important to allow participants to relate the content to their own lives and work, and also there is a powerful learning in hearing one another stories and experiences.

4.6 What Makes Urban Infrastructure Resilient? **[~15 slides, 25 minutes]**

Section 6 begins the UCRMC's technical deep dive into climate resilient urban infrastructure. It begins by discussing 'why it is important to make urban infrastructure resilient'. Slide 48 explains that resilience can ensure **three important outcomes**, despite escalating climate risks:

- Increased reliability of service provision

- Increased asset life
- Improved efficiency of service provision

Please read these points to participants from the text on the slides. Please also emphasize the additional information shown in the Trainer Notes on the importance of avoiding 'lock-in' of vulnerability over long time horizons. Highlight to participants the need to extend the length of asset life in ways that deliver resilience and avoid locking-in vulnerability. The information is broken down in more detail for each of the three outcomes, explaining how they can provide (a) social, and (b) economic benefits to cities and their citizens. Please go over the content in the table with participants.

There is a video for participants on 'what makes urban infrastructure climate resilient'. Please show the video to participants. You can stop the video at 2:23. Note: The video has a focus on disaster risk reduction and extreme events/climate shocks such as flooding, storms, heat waves etc. It is important to point out to participants that it is equally important to consider slow onset climate events/stresses like rising temperatures and sea level rise, as seen in Module 2, as they can erode the operation and performance of infrastructure systems over time.

Two very important slides come next:

Core messages of the UCRMC: explain to participants what makes infrastructure climate resilient. Please go over each bullet point on the slide with participants, then outline that there are **two different approaches to building climate resilient infrastructure**:

- **Climate-proofing infrastructure:** which ensures that new infrastructure or upgrades to infrastructure can withstand climate hazards.
- **Infrastructure that addresses underlying vulnerabilities:** which provides people with access to assets or services that help make them more resilient – for example access to energy to help them manage the impacts of heatwaves.

Please explain the difference between these two approaches and explain that both are valid ways of building resilience to climate change in cities. Please also note that these two strategies can be delivered in tandem to build deeper and more lasting resilience outcomes. These two approaches can be directly applied to participants' jobs as they design infrastructure in their cities. So please encourage them to incorporate this thinking when they design infrastructure projects in their cities in the future.

Highlight **climate-resilient design principles** that participants should consider when preparing infrastructure projects in their city:

- **Systems approach:** which ensures that participants look at the interlinkages between their project and other infrastructure systems within their city to identify resilience options.
- **Adaptive management:** which integrates flexibility across the lifespan of an infrastructure asset or project to make changes as new or more severe climate impacts emerge.
- **Equity and inclusion:** which aims to provide access to assets, services and decision-making to vulnerable groups so that climate action minimizes vulnerability and promotes more equal outcomes.

Each of these design principles are explained on one slide, followed by a case study from around the world to illustrate this principle in action. Please go over each design principle in detail and the corresponding case study to make sure that participants understand the material. Like the previous content, these design principles can be applied directly to participants' jobs, so please encourage them to incorporate this thinking when they design infrastructure projects in their cities in the future.

Experience Share

Open the floor to experiences and / or any questions from participants.
It is important to allow participants to relate the content to their own lives and work, and also there is a powerful learning in hearing one another's stories and experiences.

4.7 Ways to Build Urban Resilient Infrastructure **[~16 slides, 20 minutes]**

Section 7 focuses on three different **ways to build climate resilient infrastructure**:

- Structural measures
- Non-structural measures
- Nature-based solutions (NbS)

Each of these three types of measures are introduced on a dedicated slide that explains what each of the main terms means. This is followed by 1-2 case study slides to illustrate the type of measures, taken from examples around the world including in India, Pakistan, Indonesia, Kenya and Bangladesh.

Please ensure that participants understand the core terminology that differentiates between structural, non-structural and NbS measures. Also please note to participants that these types of initiatives **can be combined**. For example, a climate resilient building project could include both structural measures (e.g. concrete building for flood risk management) and NbS measures (e.g. green rooftop for cooling).

Provide a bit of extra information on NbS – explaining the different types of NbS options available to urban planners depending on the type of infrastructure they are looking to build. They also show how NbS can complement, substitute or safeguard existing grey infrastructure (structural measures). Please read this information to participants and ensure they understand the importance of exploring NbS as an option in their cities; they do not need to only rely on grey infrastructure to build resilience!

4.8 Climate Resilient Infrastructure in Kenya **[~6 slides, 20 minutes]**

Section 8 builds on the content from the previous sections, focusing specifically on climate resilient infrastructure needs, guidelines, and case studies in Kenya. The intention of this section is to ground the learning from Module 4 in the urban context of participants' own countries. This will help them apply the learning to their own cities and help them develop ideas about how they can action this knowledge in their daily jobs.

Outline the needs for climate resilient infrastructure in Kenya. These slides highlight the specific climate hazard that most threatens the specific type of asset – and offers suggestions on the types of climate resilient assets that participants should focus on in their cities.

Provide a snapshot of the different policy documents at national and regional levels in Kenya which provide guidelines on climate resilient infrastructure in the country. Participants can refer to these in more detail to look for specific guidance that they can aplly in their cities. The slides present similar information, this time focusing specifically on nature-based solutions. This is followed by specific types of NbS assets that Kenyan stakeholders could prioritize – focusing on urban green spaces, river restoration, and mangrove conservation & restoration. Please read these to participants. To conclude this section, you may want to ask participants if they have any experience implementing NbS in their cities; or if there are specific challenges in delivering NbS in their cities that they have faced.

Open the floor for any questions before moving to the final exercise

4.9 Interactive Exercise **[~9 slides, 60 minutes]**

Section 9 is an interactive exercise that aims to help participants synthesize the technical content they have learned in Module 4. The exercise is a game entitled *Decisions for the Decade* which helps participants understand how to make infrastructure investment decisions in contexts of uncertainty.

Note: the game takes some time to plan, prepare and play. You must ensure you are ready to play the game. The game can be swapped for a site visit or other activity if desired.

Exercise: Decisions for the Decade

"Decisions for the Decade" is an intensely interactive game designed to support learning and dialogue about key aspects of long-term investments under uncertainty, designed by the Red Cross. All materials to play the game can be found online. It is important to prepare for the game by reading all the relevant material and preparing the resources required.
Each slide has helpful instructions to remind you how to play the game as you move through it with participants.

- **Full facilitation notes:** https://www.climatecentre.org/wp-content/uploads/Decisions-for-the-Decade.pdf
- **Full facilitation explanation video:** https://vimeo.com/215056621

Space requirements

- Large room with tables and chairs

Equipment requirements
6 sided dice: https://g.co/kgs/pqD31Vh
8 sided dice: https://g.co/kgs/9WRTAQe
Cone of uncertainty: **Print the cone and make it before the game.**
https://www.climatecentre.org/wp-content/uploads/ConeFinal-for-Print-.pdf
Beans: 10 beans per decade, per team.

Acknowledgements
This game was developed with support from the American Red Cross (International Services Team), and is a substantially simplified version of a game on deep uncertainty and robust decision making, designed for the World Bank Chief Economist for Sustainable Development.

4.10 Summary

[~32slides, 5 minutes]

The final section of Module 4 provides a quick summary of the module and offers an opportunity for participants to reflect on any lingering questions or concepts that they would like to review before completing the module.

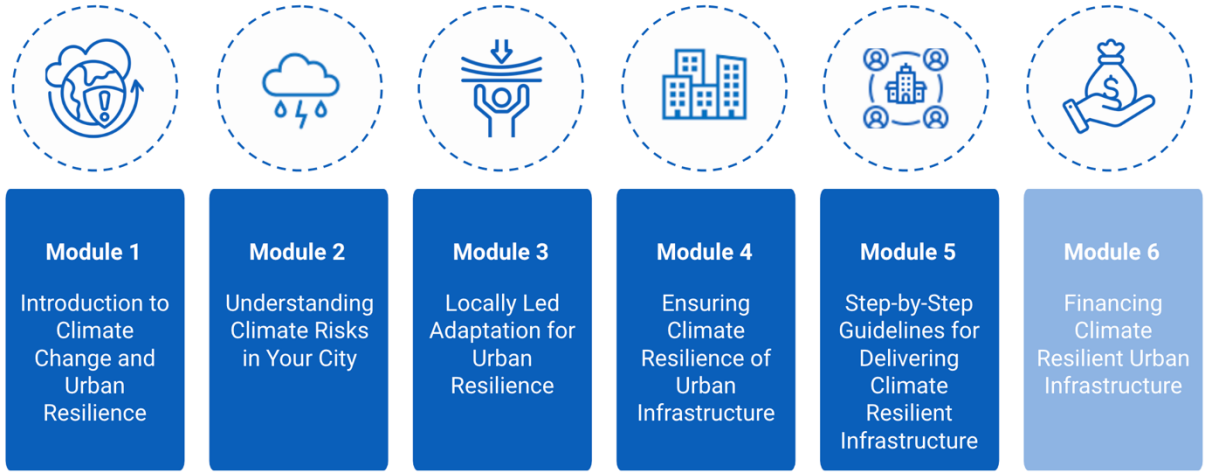
Conclude with the overall structure of the UCRMC, showing the next topic to be covered in **Module 5: Step-by-Step Guidelines for Delivering Climate Resilient Infrastructure.**

Please conclude by asking participants if they have any final questions, comments or learnings they would like to share before concluding the module.

Module 5: Step-by-Step Guidelines for Delivering Climate Resilient Infrastructure

Strategic Rationale:

Module 5 is an action-oriented module that teaches participants how to deliver climate resilient infrastructure in their cities. In Module 4 participants learned about the different types of climate resilient infrastructure. Building on this knowledge, in Module 5, they will go one step further and learn how to make different types of infrastructure assets climate resilient so that they can approach in their daily jobs. This step-by-step guidelines follows the typical steps of an project cycle for planning and delivering infrastructure, and maps on the additional actions that participants can take at each step to make sure that infrastructure asset is climate resilient.



This section provides an overview of **Module 5: Step-by-Step Guidelines for Delivering Climate Resilient Infrastructure.** The table of contents for this module is outlined below. This is followed by a section-by-section breakdown of the content, which will help you familiarize yourself with the content, and provide you with specific advice on how to communicate this content to the audience.

Module structure:	**Indicative Slide Numbers**	**Estimated Duration**
0. Introduction	1 – 6	5
1. Why This Topic Matters	7 – 8	5
2. Learning Objectives	9 – 10	5
3. Entry Points for Promoting Climate Resilience in Cities	11 – 18	15
4. Business as Usual vs Climate Resilient Infrastructure	19 – 21	5
5. Step-by-Step Guidelines for Delivering Climate Resilient Infrastructure in Kenya	22 – 37	20
6. Decision-Making in Contexts of Uncertainty	38 – 53	30
7. Interactive Exercise: *Infrastructure Plan Canvas*	54 – 59	40
8. Summary	60 – 61	5

Total estimated duration: **~130 minutes**

5.0 Introduction

[~6 slides, 5 minutes]

Module 5 begins with the same introductory set of slides to start the session used in previous modules.

The title slide introduces participants to the main topic of the module. There is an overview of the entire UCRMC course structure, so participants can situate the module within the broader context of their learning journey throughout the course. The funders and partners who have been involved in creating

the course are introduced, then a module agenda, and some basic housekeeping 'rules' – which encourage participants to listen attentively, ask questions when they don't understand something, share their own experiences, and discuss actively with others during exercises, breaks and reflection points throughout the Module.

Please read the first slides to participants and ask them if they have any questions. Please also highlight that there will be opportunity for questions at the end of each section. You may wish to also explain how the module fits into the schedule of the day – for instance highlighting when there will be breaks for tea & coffee, for lunch, and when the day will finish.

5.1 Why This Topic Matters **[~2 slides, 5 minutes]**

This short section provides a quick rationale for why this module topic is important. It is meant to explain to participants why they should be interested in the content and how it is relevant to the broader UCRMC focus on helping them to deliver climate resilient infrastructure in their cities.

There are four main points highlighted. Please read these to participants:

1. Building on the introduction to climate resilient infrastructure in Module 4, this module provides you with actionable guidelines and processes to deliver climate resilient infrastructure in your city.
2. It outlines different entry points for integrating resilience into decision-making in your city – including policies, planning, and asset creation. It then dives deep into how to plan and deliver climate resilient infrastructure.
3. This module presents a series of step-by-step guidelines for you to use when making infrastructure investments to ensure they are climate resilient.
4. It also gives you a framework that you can use to decide what type of climate resilient infrastructure you can deliver even in situations where you do not have access to a CRA or climate risk data to guide your decision.

5.2 Learning Objectives **[~2 slides, 5 minutes]**

The next section outlines the Learning Objectives for Module 5. These are the expected outcomes of the module – i.e. what the audience will have learned and be able to apply that learning to their daily jobs. There are four main Learning Objectives:

1. Understand the different entry points for integrating climate resilience into city plans, policies and investments.
2. Be able to plan, design and deliver climate resilient infrastructure in your city by following step-by-step guidelines.
3. Explain how your infrastructure investments moves beyond business as usual to build climate resilience.
4. Make decisions on what type of resilient infrastructure to build in situations where you do not have reliable climate risk data.

Please read the Learning Objectives out loud to participants, and ensure they meet their expectations.

5.3 Entry Points for Promoting Climate Resilience in Cities **[~8 slides, 15 minutes]**

Section 3 begins the technical content of Module 5 with a block of content that is meant to help participants situate their role – as technical staff delivering climate resilient infrastructure in their cities – within a broader context of the different types of actions that can support climate resilience in cities.

It lists four different **entry points for promoting climate resilience** in cities:

- Policies & strategies
- Urban planning
- Building standards, codes, and guidelines
- Infrastructure investments

Outline each of these four entry points. Each slide contains explanatory text of the entry point, followed by a case study from around the world to highlight how different cities have used these approaches to promote climate resilience. Please read these to participants. You can ask them if they have experience in supporting policies & strategies, urban planning, or building codes as part of their work.

Please explain to participants that the intention of this content in Section 3 is not to say that they are expected to fulfil all of these roles in their city. Rather, it is to show how their work complements a broader set of resilience approaches in their city. GCA's expectation is that participants in the UCRMC will predominantly be involved in planning and delivery (entry point #4 in this section); developing policies & strategies, urban planning, and building codes is likely to involve different technical officials and political leadership in their city. Please use slide 16 to re-emphasize the point that the UCRMC focuses on infrastructure investments as the main entry point for our audience to build resilience in their cities.

Review Exercise

Ask participants to:
- Write down a list of things your city is doing to promote climate resilience.
- Share the list with the person next to them

Open the floor for any comments / questions
The aim of this exercise is to support participants in contextualising climate resilience in their city.

5.4 Business as Usual vs Climate Resilient Infrastructure **[~3 slides, 5 minutes]**

Section 4 is a very short learning block that contextualizes the content that will come in Section 5. Despite its short size it is very important, since it introduces participants to a template that they can use to help plan climate resilient infrastructure in their cities.

Outline the 'business as usual' (BAU) steps to plan and deliver infrastructure. These are the typical steps of a project cycle, which participants are likely to be familiar with from their experience planning and delivering projects in their daily jobs. Note, these are a list of generic steps – they may be slightly different in different contexts. So explain to participants that we are using these 6 steps for the UCRMC, but they can tailor the learning from the course to the exact project steps that they use in their jobs. The **6 steps of the project cycle** used in the UCRMC are:

- Strategy
- Planning
- Design
- Build
- Operate & Maintain
- Decommission or Upgrade

Each of these steps is listed with a short explanation in the right-hand box. Please read these to participants and ensure they are comfortable and familiar with the definition of each step.

Build on the previous slide by adding a focus on climate resilience to the project cycle. For each step of the project cycle, an additional set of actions are listed in the right-hand box, which show what need to be done during that phase of the project cycle to promote a climate resilient approach. This is a very important slide because it outlines the **additional actions that participants can take to ensure their projects are climate resilience**. Please emphasize to participants that these are additional actions that need to be integrated into each step of the project cycle. They are not separate, standalone actions; but actions that they will perform at each step of the project cycle when implementing projects in the future to ensure that infrastructure is climate resilient.

Please read each of these steps in the right-hand box to participants. Ask them if they have any questions. We will go over each step in detail in the following section.

5.5 Step-by-Step Guidelines for Delivering Climate Resilient Infrastructure **[~15 slides, 20 minutes]**

Section 5 builds on the content from the previous section by providing a deep dive to each step of the project cycle – highlighting both the BAU action and the new climate-resilient action that participants should undertake at each step of the project cycle to ensure that their infrastructure projects are climate resilient. These guidelines can be applied to any type of infrastructure – whether it is in transport, energy, buildings, public space, etc.

The content of Section 5 uses the following format:

- One slide provides an overview of each step of the project cycle; this slide is split with a list of actions that are undertaken as part of BAU infrastructure project delivery in the left box, and a list of new actions in the right box that participants should add into each step of the project cycle to integrate a climate resilient approach. When going over this content, please emphasize the ‘new and additional’ tasks in the right-hand box so that participants understand what they will need to do in the future when they implement climate resilient infrastructure projects in their city.
- Following the description of each step, a short case study is provided to showcase how a city or a project has integrated climate resilience into this stage of the project cycle. Please read these slides and ensure that participants understand the link between the case study and the step in the project cycle.

As you go through all 6 steps of the project cycle, please check-in regularly with participants to ensure they understand what the ‘additional’ climate resilient actions are, which they will need to integrate into their normal approach to delivering infrastructure projects. Encourage them to ask questions at each step of the project cycle to ensure they have grasped the content.

Present the step-by-step guidelines of the climate resilient project cycle, along with case studies from different projects in cities across Kenya.

5.6 Decision-Making in Contexts of Uncertainty **[~15 slides, 30 minutes]**

Having learned how to deliver climate resilient infrastructure projects in the previous section, Section 6 moves to a discussion of how participants can decide on what type of climate resilient project to build if they don’t have data from a CRA to help guide

In these situations participants can safely assume that climate hazards are likely to become more frequent and intense over time, and that climate hazards will continue to affect vulnerable groups of people in their cities. City officials can develop a basic understanding of (a) the types of climate risks in their city – even if it is from news reports or conversations they have with community members, and (b) how climate hazards impact different vulnerable groups (e.g. through a multistakeholder consultation in line with the LLA Principles). All of this information gathering can occur without the need to conduct a full CRA.

They can then use the '**decision-making in contexts of uncertainty' framework** to take one of the following five actions that deliver different types of climate resilient infrastructure:

- No regrets investments
- Low regrets investments
- Win-win investments
- Flexible and adaptive investments
- Investments that avoid maladaptation

Detail each of these five options. The general format is that one slide provides a definition and explanation of the action (e.g. no regrets investment). This is followed by a case study slide to illustrate a type of climate-resilient infrastructure asset that has been delivered, illustrating the action in more detail. Please read and explain these slides to participants and ask them if they understand each concept. When going over each case study, please ensure that you make the link between the case study and how it illustrates the action from the 'decision-making in contexts of uncertainty framework' (e.g. flexible and adaptive investments).

Review Exercise

Reflection and consideration – ask participants to either:

- Reflect on the 'Decisions for the decade' game (if you played it) or
- Think of any examples or stories from their own city involving decision making in contexts of uncertainty.

Open the floor to share people's stories. The exercise allows people to reflect on how decision making has happened in their location having heard the material and examples from the previous slides.

5.7 Interactive Exercise **[~6 slides, 40 minutes]**

Section 7 is an interactive exercise that aims to help participants synthesize the technical content they have learned in Module 5. The exercise runs through the steps for developing a climate resilient infrastructure plan – while bringing in considerations around LLA, equity & inclusion and climate risk management.

Exercise: Infrastructure Plan Canvas

Print or display the infrastructure plan canvas.

There is a slide with the canvas containing question prompts that can be displayed to support participants while they fill it out.

Introduce the canvas to participants:

- Strategy: Use your mission from the context map combined with ideas you may get from a CRA to write a short strategy for your mission. You may also think about linking it to any local or national policies.
- Options: What are the options for infrastructure (reflecting on Module 4) that you could use to achieve your strategy?
- Construction: Who would construct it, where, and with what resources? Consider equity & inclusion for the chosen option.
- Timeline: When would construction start, and what is the lifetime of this infrastructure?

Link the canvas back to the exercises from module 2 and 3: The context mapping canvas, and the CRA procurement canvas. The mission should be the same (or updated with eh past modules learning), and the influences, actors and needs taken into consideration.

Complete the canvas

1. STEP 1: Introduce the canvas
2. STEP 2: Participants complete the canvas on their own, or in small groups

Share and present

3. STEP 3: Participants discuss at their own table (there is a slide of questions prompts to help the discussion)
4. STEP 4: Ask a participant to come to the front and present their canvas using the question prompts

Note: not all participants present at the front due to time constraints, choose a participant while they are completing the canvases who you think will give an interesting presentation for the class

The aim of the exercise is to complete a useful outline that helps participants think about how they would plan, and provide them with a tool they can take back to their daily work.

5.8 Summary **[~2 slides, 5 minutes]**

The final section of Module 5 provides a quick summary of the module and offers an opportunity for participants to reflect on any lingering questions or concepts that they would like to review before completing the module.

Conclude with the overall structure of the UCRMC, showing the next topic to be covered in **Module 6: Financing Climate Resilient Urban Infrastructure**.

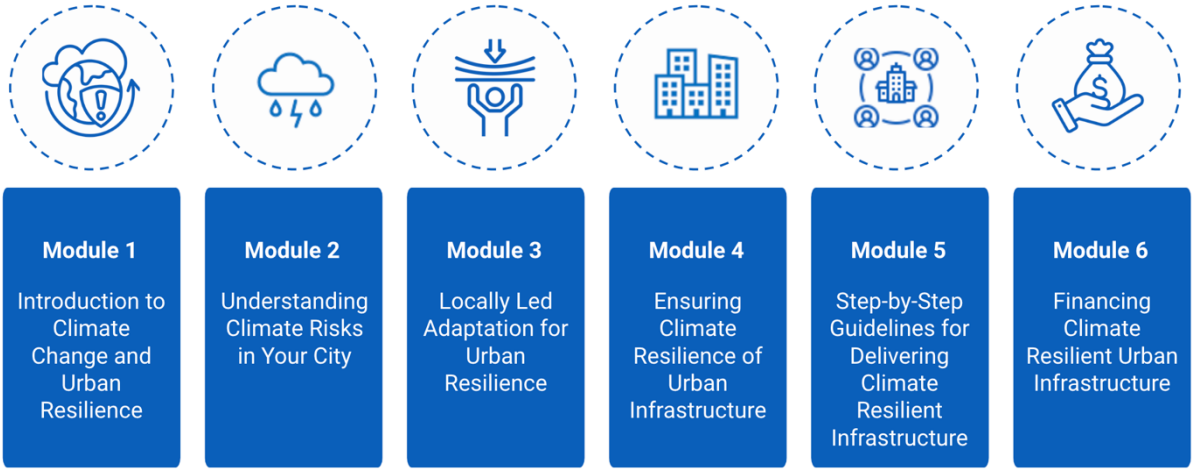
Please conclude by asking participants if they have any final questions, comments or learnings they would like to share before concluding the module.

Module 6: Financing Climate Resilient Urban Infrastructure

Strategic Rationale:

Module 6 is the final module of the UCRMC. In this module, participants will learn about how to finance climate resilient investments in their city. The central focus of Module 6 is around how cities access finance and where officials can look to within their own city budgets to access finance for their projects.

The topic of finance has the potential to be an entire course of its own, since there is so much information to cover. Module 6 aims to strike the right balance of introducing the basics on where to access finance from and who participants can partner with to deliver climate resilient infrastructure projects. However, participants will not learn about how to do detailed costing of climate resilient infrastructure projects or about the specifics of every phase of the financial sign-off process when delivering a project. The module also does not provide guidance on how participants can work with international or national partners to increase the amount of climate finance being delivered to city budgets, as this function is likely to take place at higher levels (e.g. department heads, elected officials) than the UCRMC audience.



This section provides an overview of **Module 6: Financing Climate Resilient Urban Infrastructure,** the final module of UCRMC**.** The purpose of this module is to introduce participants to the topic of financing climate resilient infrastructure and help them to understand where they can access money to implement priority projects.

The table of contents for this module is outlined below. This is followed by a section-by-section breakdown of the content, which will help you familiarize yourself with the content, and provide you with specific advice on how to communicate this content to the audience.

Module structure:	**Indicative Slide Numbers**	**Estimated Duration**
0. Introduction	1 – 6	5
1. Why This Topic Matters	7– 8	5
2. Learning Objectives	9 – 10	5
3. Concepts & Definitions	11 – 13	10
4. Financing Urban Resilience	14 – 23	30
5. Financial Instruments for Urban Resilience Investments	24 – 41	25
6. Financing Urban Resilience in Kenya	42 – 63	25
7. Interactive Exercise: *Finance Plan Canvas*	64 – 70	40
8. Summary	71 – 73	5

Total estimated duration: **~150 minutes**

6.0 Introduction [~6 slides, 5 minutes]

Module 6 begins with the same introductory set of slides to start the session used in previous modules.

The title slide introduces participants to the main topic of the module. There is an overview of the entire UCRMC course structure, so participants can situate the module within the broader context of their learning journey throughout the course. The funders and partners who have been involved in creating the course are introduced, then a module agenda, and some basic housekeeping 'rules' – which encourage participants to listen attentively, ask questions when they don't understand something, share their own experiences, and discuss actively with others during exercises, breaks and reflection points throughout the Module.

Please read the first slides to participants and ask them if they have any questions. Please also highlight that there will be opportunity for questions at the end of each section. You may wish to also explain how the module fits into the schedule of the day – for instance highlighting when there will be breaks for tea & coffee, for lunch, and when the day will finish.

6.1 Why This Topic Matters [~2 slides, 5 minutes]

This short section provides a quick rationale for why this module topic is important. It is meant to explain to participants why they should be interested in the content and how it is relevant to the broader UCRMC focus on helping them to deliver climate resilient infrastructure in their cities.

There are four main points highlighted on slide 7. Please read these to participants:

1. This module introduces participants to climate finance and helps them focus on how they can identify and access finance for their urban resilience projects and infrastructure.
2. It provides participants with a simple Climate Finance Framework they can use to think about where climate finance comes from, who provides the money and how it is delivered to them.
3. It will enable participants to identify potential sources of finance and who they might partner with to access funds in the future.
4. It will enable participants to explain to funders their adaptation investment needs and why they are important when designing finance proposals.

6.2 Learning Objectives [~2 slides, 5 minutes]

The next section outlines the Learning Objectives for Module 6. These are the expected outcomes of the module – i.e. what the audience will have learned and be able to apply that learning to their daily jobs. There are four main Learning Objectives:

1. Understand the difference between sources of climate finance, actors who deliver finance, the financial instruments used to transfer finance, and investments in green urban infrastructure.
2. Identify sources of urban climate finance that they can access in their country.
3. Identify different types of investments they could make to build climate resilient infrastructure in their cities (e.g. NbS, green transport, housing, drainage infrastructure, waste, etc.).
4. Describe the adaptation rationale of their own projects / investments to explain to finance providers their need for climate finance investment.

Please read the Learning Objectives out loud to participants, and ensure they meet their expectations of the day.

6.3 Concepts & Definitions **[~4 slides, 10 minutes]**

Section 3 outlines the main new concepts and terminology that will be used in Module 6. Many of these definitions will be new to participants and involve technical concepts that might be difficult to understand. So it is important that they are communicated clearly, using simple language to help explain the technical concepts. Please familiarize yourself with each of the definitions so that you are prepared to answer questions about them or give examples if requested by participants. A list of further reading, links and supplementary information is included in the Trainer Notes to help you prepare.

Here is a summary of the key terms introduced in Module 6:

- Climate Finance
- Financial Instruments
- Infrastructure Financing
- Public Sector
- Private Sector

Please read each of the definitions to participants. Once you have finished, ask if they have any questions.

Review Exercise

Following the introduction to these definitions, concepts and terminology – you will lead a short review exercise to help embed the core terminology in the minds of participants.
It is a quick and fun exercise:

- Ask participants to write down some (2 or 3) key words they remember from across the full masterclasss
- They can pass the words to the person next to them who has to try and remember the definitions for the words!

6.4 Financing Urban Resilience **[~7 slides, 30 minutes]**

Section 4 introduces participants to climate finance and provides them with a useful framework to help them think through how and where to access money for their climate resilient projects.

The section begins with two slides that introduce the topic of climate finance. It provides an overview of the rationale on why finance is an important topic, and it explains how cities face challenges to access finance and therefore need to identify suitable sources of finance for their climate resilient projects.

Slide 16 introduces the Climate Finance Framework to participants. This is probably the most important slide of Module 6, so please take time to go over this carefully with participants. The Climate Finance Framework illustrates that there are four key considerations that participants should consider about when they are deciding where and how to access climate finance. These are:

- Sources of finance
- Actors involved in delivering finance
- Financial instruments used in the financial transaction
- Type of investment that the finance will be used for (i.e. the project that the money will be used to implement)

The Climate Finance Framework is presented in more detail, showing that there are four main sources of finance (international, national, municipal own source revenue, and private sector). Each of these sources of finance generally involve a unique set of actors and financial instruments to make investments in projects. This slide presents all the detailed information about climate finance in one

place, so is a very useful slide that you should encourage participants to return to again and again as they seek finance for their projects in their daily jobs.

Next , the slides break down the Climate Finance Framework in more detail, with a slide for each of the sources, actors, instruments, and types of investments. Please focus first on delivering the definition in bold at the top of the table on each slide. This explains the definition of sources, actors, instruments, and investments. Then please go over the information in the middle and righthand columns. E.g. on please explain who are the main actors for each source of climate finance (middle column) with further information to explain the role of the international, public, municipal and private sector in the righthand column.

Review Exercise: Experience Share

Following the introduction to the Climate Finance Framework, please conduct a short Experience Share exercise to encourage engagement with this content from audience members.
Open the floor to experiences and / or any questions from participants.
It is important to allow participants to relate the content to their own lives and work, and also there is a powerful learning in hearing one another's stories and experiences.

6.5 Financial Instruments for Urban Resilience Investments **[~18 slides, 25 minutes]**

Section 5 provides a deeper dive into financial instruments that are used to make investments in climate resilient infrastructure. The purpose of this section is for participants to get a deeper understanding on where they can get finance for their climate resilient projects, and how that finance will be delivered to them – in terms of which sources and instruments they are likely to use to finance their projects.

To begin with, please focus on the following important point: the instruments that are highlighted in this deep dive are instruments from **national** and **municipal sources of finance**. That means that we are not focusing very much on international or private sector finance. The reasons for this focus are highlighted in detail. Please emphasize this point with participants to show why we are focusing on finance from national and municipal budgets.

Provide a quick refresher on the five main finance instruments that are used to transfer finance from either national or municipal sources. These are:

- Intergovernmental transfers
- Grants & concessional loans*
- Taxes
- User fees
- Development levies

Each of these instruments are introduced in more detail. The format in this section is that an instrument is explained in general terms on one slide, and on the following slide a case study from a different city around the world illustrates how that instrument was used to finance a climate resilient infrastructure project. Please read the definitions of each instrument to participants and explain the case study to them.

When going over the case study, please emphasize as the key learning how that city used the financial instrument to implement the case study project. Participants might have many questions about the case study which you do not have the information to answer – e.g. related to context, outcomes, lessons, etc. Do not worry if you can't answer all the questions. The main point is for you to emphasize how the instrument was used in the project. If they still want to learn more about the case study in more detail, they can refer to the links in the trainer notes to read more background information about the case study.

** Note: grants and concessional loans are two different instruments that we have grouped together because typically they are used by development banks – e.g. AFD or World Bank at international levels, Development Bank of Kenya at national level – to deliver finance. In some cases, a single project may receive some funds via both grants and concessional loans for different components of the same project.*

Review Exercise: Questions

Please ask audience members if they have any questions about the content. If they are confused about any concepts or instruments, please go back over that content again to help explain it and answer the participant's question.

6.6 Financing Urban Resilience in Kenya **[~22 slides, 25 minutes]**

Section 6 brings together the learnings from the previous two sections and applies the concepts directly to the country context of Kenya so that the information is targeted directly to our audience. The purpose of this section is to help the Kenyan audience understand which sources of finance are relevant for them to access in their country.

The slides begin with an overview of climate finance trends in Kenya. They then provide a deep dive into the different sources of climate finance that are available to city officials in Kenya. A recap of the Climate Finance Framework is provided to remind participants of how to organise their thinking on climate finance. This is followed by a slide that depicts the Climate Finance Framework with the actors and instruments that are commonly used in the country.

The section then continues with slides split by sources – focusing on international sources, national sources and municipal sources. Each source has an illustrative case study where a city in Kenya has accessed finance from that source to deliver climate resilient infrastructure. The section concludes with a summary of key advice on how city officials can access finance from different sources to implement climate resilient projects in their city.

6.7 Interactive Exercise **[~7 slides, 40 minutes]**

Section 7 is an interactive exercise that aims to help participants synthesize the technical content they have learned in Module 6. The exercise runs through the steps for how to think about the different finance sources, actors and instruments that might be appropriate for the climate resilient infrastructure project they have been developing throughout the interactive exercises in Modules 2 - 6.

Exercise: Finance Plan Canvas

Introduce the finance plan canvas
You can print the canvas or display it.

The canvas sections are:

- Project description: Use your mission and strategy from the content map and infrastructure plan to formulate a short project description.
- Project objectives: Consider the options, construction, timeline, and upkeep from your infrastructure plan to create key project objectives.
- Suitable financial instruments: Consider which of the financial instruments we have been discussing could be suitable. for each one and provide:
    - A reason why this instrument is suitable.
    - The actors who would be involved in providing or supporting this financial instrument.

Compete the canvas

1. STEP 1: Participants fill out the main canvas. Move around the room and support them as needed
2. STEP 2: Participants fill out the final box in the canvas: How would you describe this climate resilient project to ensure that it goes forward?

Prepare a pitch

3. STEP 3: Participants prepare a pitch of their project: Use the 'pitching to an official' slide

Present

4. STEP 4: Select one participant from each table to pitch to the room

It is nice to host a pitching session where you have a number of short pitches. Ask participant to keep to 5 minutes or less, and time them. You can ask the rest of the room to be an investor audience and they can ask questions after each pitch and then vote for their favourite pitch!

The aim of this exercise is to consolidate the learning from across the 6 modules. It focuses on the finance instruments from module 6, however, a convincing pitch should also explain the rationale for resilience and draw on arguments from the previous modules such as climate risks mitigated, LLA principals, appropriate solution choses etc.

6.8 Summary

[~3 slides, 5 minutes]

The final section of **Module 6** provides a quick summary of the module and offers an opportunity for participants to reflect on any lingering questions or concepts that they would like to review before completing the module.

Provide a high-level summary of the key takeaways that participants should take from the course. It is titled 'What is your role in delivering climate resilient infrastructure'. This slide summarizes the different tangible actions that participants can take in their jobs to deliver climate resilient infrastructure. Each of these correspond to one of the main module topics of the UCRMC. It highlights the following takeaway actions:

- Understand how climate change will increase climate risks for diverse groups of people in your city by undertaking or commissioning a CRA (Modules 1, 2 & 3).
- Identify infrastructure, services, neighbourhoods, and vulnerable groups, who are impacted by climate hazards and/or will be impacted more in the future as climate change brings new challenges (Modules 1, 2 & 3).
- Identify and deliver infrastructure investments that could help make your city and its citizens more resilient to climate risks. These could be new infrastructure investments or upgrades to existing infrastructure (Modules 4 & 5).
- Access finance to make investments in climate resilient infrastructure in your city (Module 6).
- Explain to senior officials and/or finance providers why the infrastructure investment you are proposing will help lead to climate resilience – i.e. how is it different than business as usual (Modules 1 – 6).

Please read these out to participants.

If time permits, you can ask participants to share any key takeaways they will take when they return to their jobs.

Conclude with the overall structure of the UCRMC, showing that participants have finished the course. Please ask participants if they have any final questions, comments or learnings they would like to share before concluding the course. Then please offer them a big congratulations for completing UCRMC!

Appendix 1: Module 1 participant test

If Module 1 is taught in-person, the participant test could be shared digitally (e.g., google form, mentimeter, slido) or printed in paper.

The aim of the test is to evaluate whether he participants have understood the basics concepts introduced in Module 1, which would guide the pacing of following modules.

If Module 1 is self-taught, then the participant test should be placed into a google form or other simple survey tool, and sent to participants at least 1 week before they start the masterclass in person. The trainer should review the results before the start of the Masterclass.

The aim of the test is to:

- Ensure participants have completed odule 1
- See the results – as a trainer you can see if participants have understood the material in module 1
- Prepare for your first day: As a Trainer you can see if there are any issues participants had in Module 1 and prepare to cover this content if needed.

The correct answers are in bold.

Module 1 test

Introduction text:

Congratulations on your successful completion of Module 1 of the Urban Climate Resilience Masterclass (UCRMC). Check your learning from Module 1 by now completing this short test.

The test will take approximately 10 minutes and contains 8 multiple choice question.

Questions:

1. What are the three interlinked elements of climate risk?
   a) Risk factors, cost, and loss
   b) Hazard, exposure, and vulnerability
   c) Events, results, and impact

2. Which of the following is NOT a climate risk to cities (because it is a climate hazard):
   a) Displacement and shelter needs
   b) Food insecurity and livelihood disruptions
   c) Floods

3. What is the definition of a climate hazard?

a) Physical events or trends linked to climate change, such as heat, extreme weather events (e.g., floods and droughts) and sea level rise, that may cause damage and loss.

b) Long-term changes in the weather because of human activities. This refers to changes over several decades or longer, and is different from the day-to-day changes we see in the weather.

c) The chance of negative consequences for people and nature because of climate issues. Risks happen when climate hazards affect exposed and vulnerable people, communities or systems.

4. What is the definition of climate resilience?

a) The presence of people, livelihoods, assets, infrastructure, services, etc. in locations that could be adversely affected by hazards. This could include, for example, living on a flood plain, a steep slope, or in a neighbourhood with poor drainage.

b) The ability of people and nature to manage difficult situations caused by climate change. It's about ensuring that physical infrastructure, economic systems and livelihoods, human health, ecosystems, and social systems can function well, even when faced with challenges from the changing climate.

c) Materials and substances that are resistant to climate change

5. What is urban climate resilience?

a) The ability of urban centres (and their populations, enterprises, and governments) and the systems on which they depend to anticipate, reduce, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner

b) Buildings that are resilient to climate changes

c) Citizens who are aware of and can respond to climate change hazards without loss of livelihood

6. What does E&I stand for?

a) Equity and indebt

b) Energy and incineration

c) Equity and social inclusion

7. What is the difference between equality and equity?

a) Equality means that each individual or group of people is given the same resources or opportunities, regardless of their background, identity or circumstances; Equity is the money acquired on an investment

b) Equality means that each individual or group of people is given the same resources or opportunities, regardless of their background, identity or circumstances; Equity is about giving everyone what they need to have an equal chance of success.

c) Equality means that everyone one is equal; Equity means that everyone is wealthy

8. Which of these is NOT a way that city officials can work to promote equity and inclusion for marginalized groups who are vulnerable to climate risks?

   a) Invest in infrastructure and services in wealthy areas only where citizens can afford to pay high rates to generate a rapid return on investment.

   b) Support people who live in informal settlements and work in the informal economy to ensure they are not excluded from formal development processes.

   c) Provide localized finance that supports excluded groups.