x

Urban Climate Resilience Masterclass Somalia

GLOBAL CENTER ON ADAPTATION

TRAINER HANDBOOK

October 2025

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[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, Somalia and Somalia.

UCRMC is an interactive course to build capacity, knowledge and skills at the urban level. There are 7 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. including government stakeholders involved in city planning, infrastructure or housing, and/or a national training institute).
- **Phase 2: UCRMC delivery.** The trainers will subsequently deliver UCRMC training amongst municipalities and other colleagues.

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 seven core modules:

1. Module 1: Introduction to Climate Change and Urban Resilience
2. Module 2: Inclusive Climate Resilience in FCV Contexts
3. Module 3: Understanding Climate Risks in Your City
4. Module 4: Ensuring Climate Resilience of Urban Infrastructure
5. Module 5: Strengthening Climate Resilience through Nature-based Solutions
6. Module 6: Step-by-Step Guidelines for Delivering Climate Resilient Infrastructure
7. Module 7: Financing Climate Resilient Urban Infrastructure

Modules 1 – 6 will be taught to participants in-person by a group of trainers. Module 7 is self-taught. The UCRMC takes place as a 5-day masterclass. There is flexibility within the 5-day masterclass for local adaptations, such as 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. Be able to identify and work with a range of stakeholders in their city to deliver resilient infrastructure in a way that promotes equity and inclusion for vulnerable and marginalized groups and takes into consideration fragility, conflict and violence (FCV).
3. 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.
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 seven modules of the UCRMC follows a similar format that the trainer will deliver:

1. **Housekeeping Notes**: Agenda and any other administrative details learners need to know
2. **Why This Topic Matters:** Module introduction
3. **Learning Objectives:** Aims of the module
4. **Concepts & Definitions:** New ideas and terminology encountered in this module
5. **Technical Content**: Deep dive into the module topic
6. **Country-Specific Content:** A deeper look into the technical content, as it relates specifically to Somalia

   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 Somalia, and which presents specific case studies from Somalia.
7. **Interactive Exercise:** An activity that draws on the knowledge gained the module, and provides participants with the opportunity to contextualise and apply their learning
8. **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 Approach

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 ends 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, the trainer should feel comfortable pausing to invite participants to ask questions whenever they think it would be helpful.

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 computer and projector to show the training slides, and a microphone for the trainer. For some of the review activities, it is also helpful for the trainer to have a box or bowl, and a way of playing music (phone, computer application, etc.). It is also preferable for the training facility to have internet access if possible.

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 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 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, and an overview of the eight main categories of infrastructure and services that are used throughout the course. This module serves as a foundation upon which the rest of the UCRMC course is based.

Preparation: This module has two exercises that require additional printing/preparation. The Treasure Hunt Activity (Slide 49) is a matching game where learners pair "Infrastructure and Services" to their respective definitions. To achieve this, you will need small pieces of paper with each of the services and definitions written out. The Music Box Activity on Slide 66 will also require pre-written questions. See Appendix 1 for the material needed. You can print/photocopy this page, or write out the material by hand ahead of the session.

Note: Module 1 also has an optional test at the end of the module. It can be found in appendix 1. Trainers can still administer this test in-person if you think it would be helpful. 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 – 9	20
1. Why This Topic Matters	10 – 11	5
2. Learning Objectives	12– 13	5
3. Concepts & Definitions and Definition Bingo	14– 18	20
4. Climate Change, Risks & Hazards	19 – 31	35
5. Urban Climate Hazards in Somalia and Reflection Activity	32- 36	25
6. What is Urban Climate Resilience & Review Exercise	37 – 47	35
7. Climate Resilient Infrastructure & Services and Treasure Hunt Activity	48 – 58	35
8. Summary	59 - 61	10

Total estimated duration: **~185 minutes**

1.0 Introduction **[~9 slides, 20 minutes]**

Module 1 introduces the overall UCRMC course structure, showing participants that the course is split into 7 modules, 6 of 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 present slide 2, welcome participants and highlight that there will be opportunity for questions at the end of each section. Present the agenda for the day, and also prepare a separate flipchart page that shows the schedule for the entire course, including all relevant scheduled activities – for instance highlighting when there will be breaks for tea & coffee, for lunch, and when the day will finish. Finish with any relevant housekeeping notes.

Icebreaker Exercise:

As this is the first time that participants are getting together for the in-person UCRMC sessions, **slide 9** 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 **[~2 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, and resilience.

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

The next section outlines the Learning Objectives for Module 1. These are the expected outcomes of the module. By the end of Module 1, participants should be able to understand:

- The concepts of climate change, adaptation, and climate resilience
- The main types of climate hazards that cities are facing
- The different climate hazards affecting Somali cities
- Different entry points for promoting climate resilience in Somali cities.
- The different categories of infrastructure that can be impacted by climate hazards

1.3 Concepts & Definitions **[~5 slides, 20 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, and climate resilience.

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.

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.

If the participants are already familiar with the concepts on slide 15, you can also introduce 2 additional concepts: **cascading effects** and **co-benefits**:

Cascading effects refer to the chain of secondary and tertiary impacts that unfold when an initial hazard disrupts interconnected systems—particularly in fragile urban contexts. In Somalia, the 2019 climate sequence offers a stark illustration. The delayed onset of the Gu' rains led to severe drought, triggering widespread crop failure, livestock deaths, and acute food insecurity. This initial shock prompted rural-to-urban migration, placing additional pressure on already strained urban services. Later that year, the rains arrived with unusual intensity, causing flash and riverine flooding—especially along the Shabelle River—and displacing over 370,000 people. The flooding damaged infrastructure, contaminated water sources, and led to outbreaks of waterborne diseases. Displacement into informal settlements further strained housing, health, and sanitation systems, while school closures disrupted education. These cascading effects highlight how climate hazards can amplify vulnerabilities across sectors, underscoring the need for integrated urban planning, early warning systems, and community-driven resilience strategies.

Co-benefits, also known as secondary benefits, refer to the additional social, economic, or environmental gains that resilience and adaptation measures can generate beyond their primary objectives. In urban Somalia, where resources are limited and vulnerabilities are layered, designing interventions with co-benefits in mind can significantly enhance impact. For example, constructing flood-resilient drainage systems not only reduces exposure to water-related hazards but can also improve sanitation, reduce disease outbreaks, and create short-term employment opportunities. Similarly, greening urban spaces to mitigate heat stress can enhance biodiversity, provide shade for informal vendors, and foster community cohesion. These layered benefits make resilience investments more attractive to stakeholders, especially when they align with development priorities such as livelihoods, health, and education. Recognizing and planning for co-benefits encourages integrated thinking, maximizes resource efficiency, and builds broader support for climate adaptation efforts.

Concepts & Definitions Bingo Review Activity:

Ask participants to write down any 3 of the words on the screen.

- The facilitator reads out the definitions (below) in a random order.
- Tell participants that if a definition matches their word, they can tick it.
- The first person who ticks their 3 words is the winner.
- Option to carry on with another game of definition bingo if the game ends quickly with a participant wining with the first 3 or so definitions read out.

Read these definitions out in a random order for the **definition bingo activity**. Remember to read out only the definition – not the title.

Concept	Definition
Climate Hazards	Events caused by climate change—like extreme heat, floods, droughts, or rising sea levels—that can damage homes, land, and lives.
Climate Risk	The chance that climate problems—like floods or heatwaves—will harm people, nature, or communities. These risks are highest when vulnerable groups or places are exposed to climate hazards.

Vulnerability	How likely is someone or something to be harmed by problems like climate change. It depends on how sensitive they are and how well they can cope or adapt. Things like poverty, weak infrastructure, limited resources, and poor governance can make people more vulnerable.
Exposure	Being in a place where hazards—like floods or landslides—can cause harm. It includes people, homes, jobs, and services located in risky areas, such as floodplains or poorly drained neighborhoods.
Adaptation	Making changes to deal with climate change helps us avoid harm and take advantage of any benefits that come with new conditions.
Risk reduction	Taking steps to make disasters happen less often and cause less harm

1.4 Climate Change, Risks & Hazards **[~13 slides, 35 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.

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

1.5 Urban Climate Hazards in Somalia **[~5 slides, 25 minutes]**

Section 5 provides a summary of the main climate hazards in Somalia - including extreme precipitation and storms, increased rainfall, flooding, drought, heat stress and sea level rise. It also includes a mini-case study about the Gu rainy season to illustrate how climate hazards have impacted Hirshabelle, Jubaland and Southwest States in Somalia.

Review Exercise:

Ask participants to move into breakout pairs

- You read out the list of hazards on the slide
- Ask them to discuss and reflect on these hazards and how they relate to their own experience and cities with their breakout partner
- Ask 5 or 6 participants to share their reflections with the wider group.

The aim is to check their understanding of the definitions and explore the range of climate hazard related situations they have experienced.

1.6 What is Urban Climate Resilience? [~11 slides, 35 minutes]

Section 6 begins by explaining what we mean by urban climate resilience. **Urban resilience** is the ability of a city and its communities to withstand shocks and stresses, recover quickly, adapt to changing conditions, and make improvements that strengthen their capacity to cope with future challenges. Climate resilience incorporates disaster resilience as well as the ability to anticipate, cope with, respond to, and recover **from climate hazards specifically**.

Then, slides 39 and 40 emphasize the importance of Urban Climate Resilience. As climate change leads to more hazard events in the years to come, the infrastructure that supports peoples' lives in cities will need to be made more resilient so that the shocks do not lead to very negative outcomes for people. It is the course participants – planners working in different sectoral line ministries or departments at the city level in Somalia – who will be responsible for making urban infrastructure investments. So, we need them to understand how to make this infrastructure climate resilient.

The section 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.

Then, it introduces participants to the various ways that resilience can be promoted in cities (four different **entry points)**:

- 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 Somalia (and one international example) 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 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 46 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.

1.7 Climate Resilient Infrastructure & Services [~11 slides, 35 minutes]

Section 7 introduces participants to climate resilient infrastructure and services.

The UCRMC uses a typology of **eight different types of infrastructure and services**, summarized on slide 49, 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.

Review Climate Infrastructure and Services: Treasure hunt activity

1. Give half the participants a Climate infrastructure/Service and give the other half of the participants the matching definitions.
2. Ask the participants to move around the room and talk to people to find their Climate Infrastructure /Service partner.
3. Ask participants to write down theirs and their partners Climate Infrastructure/Service and definition.
4. End with a debrief in plenary, ask for participants to share the 8 Infrastructure /Services definitions in turn.

1.8 Summary

[~3 slides, 10 minutes]

Section 8 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.

Module 2: Inclusive Climate Resilience in FCV Contexts

Strategic Rationale:

The theme of Module 2 is **Inclusive Climate Resilience in FCV Contexts.** Building on Module 1's foundational knowledge related to climate change hazards and impacts; this module highlights the importance of local actors in planning and delivering urban resilience initiatives and infrastructure. Module 2 introduces participants to the different actors they can collaborate with beyond their own institutions to promote climate resilience in their cities. This module also introduces participants to the concept of equity and inclusion – and why fostering inclusion is important for delivering resilience outcomes. It also looks at fragility, conflict, and violence (FCV) as a key context for urban climate resilience in Somalia, exploring how participants can promote resilience in FCV-affected contexts.

The table of contents for **Module 2: Inclusive Climate Resilience in FCV Contexts** 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. Local Approaches to Urban Resilience	11-14	10
4. Key Stakeholders for Local Resilience	15-25	30
5. Equity & Inclusion	26-40	45
6. Fragility, Conflict & Violence (FCV)	41-55	50
7. Interactive Exercise: Context Mapping Canvas	56 – 62	40
8. Summary	63 – 64	5
Annex – introducing the LLA Principles	65-69	N/A

Total estimated duration: **~195 minutes**

2.0 Introduction

[~6 slides, 5 minutes]

Module 2 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.

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 four main points highlighted. Please read these to participants:

- This module highlights the importance of local actors in planning and delivering urban resilience initiatives and infrastructure.
- This module will introduce participants to the different actors they can collaborate with beyond their own institutions to promote climate resilience in their cities.
- This module also introduces participants to the concept of equity and inclusion – and why fostering inclusion is important for delivering resilience outcomes.
- It also looks at fragility, conflict, and violence (FCV) as a key context for urban climate resilience in Somalia, exploring how participants can promote resilience in FCV-affected contexts

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 four main Learning Objectives:

1. Understand and explain the roles that different local actors can play in supporting resilience in the urban context.
2. Explain the concepts of equity and inclusion
3. Recognize the critical importance of promoting equity and inclusion for climate resilience in cities.
4. Understand how fragility and conflict intersect with climate risks and resilience.

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

2.3 Local Approaches to Urban Resilience **[~4 slides, 10 minutes]**

This section introduces participants to the concept of local approaches to urban resilience and explains why local actors are vital to support urban resilience.

Outline why ‘local’ approaches to urban resilience important. The slide highlights 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’.

Local approaches are about local people and their communities having agency over defining, prioritising, designing, monitoring and evaluating adaptation actions. **Local approaches** empower local stakeholders to lead in adapting to climate change and gives communities on the frontline of climate impacts a voice in decisions that directly affect their lives and livelihoods.

Please read the slides to participants. At the end, there is a case study on how local actors can be included at the centre of local resilience planning efforts. It looks at the Financing Locally-Led Climate Action (FLLCA) programme in the Somali cities of Baidoa and Kismayo; which channels climate finance directly to local actors, enabling investments in water infrastructure, climate-smart agriculture, and green livelihoods.

Once you have finished, ask if they have any questions.

2.4 Key Stakeholders for Local Resilience **[~11 slides, 30 minutes]**

Section 4 introduces participants to the different stakeholders that they may interact with when delivering local climate resilient initiatives. 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 17 to 23 provide a list of the different types of LLA actors, one category per slide, reflecting relevant officials or groups and explains their role in delivering LLA in Somali cities. These are:

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

Experience Share Exercise

Ask participants to reflect and discuss, in plenary: Who are the key local actors involved in delivering resilience in your city?

2.5 Equity and Inclusion **[~15 slides, 45 minutes]**

This section 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. It also presents some of the structural inequalities that make people vulnerable to climate change. It specifically highlights the climate impacts on women, people with disabilities and IDPs in Somalia.

Slides 32-35 review key definitions of: equality, equity, inclusion, and inequality. Ask participants if they have any questions on these concepts.

The section ends looking at the Climate-Smart Agriculture for IDP Women project in Mogadishu, which illustrates how efforts to address structural inequalities are central to resilience-building interventions. It looks Please go over the case study as it's presented in these two slides.

The section ends with a QR to a Handbook for Gender-Inclusive Urban Planning Design, from the World Bank, that participants can review on their own time.

Experience Share

Ask participants to reflect on equity and inclusion considerations in their municipality, using the following questions:

- Which group or groups of people in your community typically face structural inequalities and exclusion
- What are the climate impacts on the most marginalized groups in your community?

Ask participants to raise their hands and share reflections with the rest of the people in the room.

2.6 Fragility, Conflict and Violence **[~15 slides, 50 minutes]**

This section starts by reviewing the definitions of key terms: fragility, conflict and violence on slide 42. Read the definitions and ask participants if they have any questions.

Slide 43 showcases the Conflict Iceberg – which explains how conflict is often driven by underlying issues below the surface. Please take participants through the diagram. And please highlight that there are a range of issues the lead to fragility, conflict and violence; and climate change is one of them.

The following slide introduces Fragility, Conflict & Violence (FCV) as a **major driver of vulnerability** to climate risk. While climate change acts as a *threat multiplier*, FCV shapes how severe impacts will be and how well societies can cope. The slide illustrates how both fragility (political weaknesses) and conflict & violence (structural destruction) deepen vulnerability and reinforce climate risks.

The presentation goes on to highlight how **urban infrastructure** is not neutral in FCV settings. It can either reinforce resilience or deepen conflict, depending on how it is designed, governed, and maintained.

Next, the presentation highlights how fragility, conflict and violence are a driver of increased numbers of internally displaced people in Somalia. Already 84% of Somalia's 3.5million IDPs live in cities across the country. There is therefore an important **nexus between FCV, urbanization and access to resources**. **FCV and environmental stress are deeply interconnected**. Fragility makes cities more vulnerable to climate shocks, while conflict and displacement accelerate degradation, creating a vicious cycle of risk.

The **climate and FCV nexus'** slides explain how climate change is both a driver of fragility, directly creating risks such as displacement from droughts and floods, and a threat multiplier, worsening existing challenges such as conflict, poverty, and weak governance. The following two slides showcase **diagrams** on Climate, Fragility & Migration, and on Drought, Migration & Vulnerability.

There are several ways that city officials and planners can work to address fragility, conflict, and violence in their cities, while also **promoting urban climate resilience.** The approaches highlighted in the section include:

- Building community trust through inclusive participation and conflict-sensitive design. 'Conflict sensitivity' (including design) is an approach to ensure that interventions do not unintentionally contribute to conflict, but rather strengthen opportunities for peace and inclusion. This means being aware of the context of conflict; understanding how a project interacts with the conflict context and acting upon that understanding to avoid doing harm, while seeking to maximize positive impacts.
- Linking urban development and climate adaptation efforts to reduce fragility risks
- Supporting flexible, adaptive, and locally rooted systems that can adjust to shocks, displacement, and insecurity
- Strengthening resilience delivery by working with local institutions and community mechanisms
- Promoting equitable access to urban infrastructure and services as peace dividends

The end of this section draws attention to the FCV Barriers to resilience in FCV contexts. These emphasize that local actors do not work in a vacuum, their ability to deliver resilience is often constrained by weak governance and institutional capacity, insecurity and displacement, social marginalization, finance risks, tenure insecurity, and the lack of reliable climate information. These barriers limit the scope and effectiveness of local adaptation efforts, and must be recognized and addressed locally led adaptation.

The final case study highlights This case study illustrates resilience building with an FCV lens. It looks at the **Forging a Greener Peace initiative** in **Jowar, Hirshabelle** to show how community dialogue platforms of women, youth, elders, religious leaders, and government worked together to develop Climate Security Action Plans.

The section ends showing two existing resources on **Resilience Building within an FCV context,** that participants can review on their own time.

Exercise: Music box activity on E&I and FCV

Tell the participants there are 4 Equity & Inclusion and 4 FCV questions in the box. Facilitator plays music and asks the participants to pass the box around the group.

As the music stops, a participant will read a question from the box when they are holding it. Ask another participant to answer the question.

Questions to include in the music box:

- What makes a place fragile or unsafe?
- Why is it harder to build strong cities in fragile areas?
- How does conflict affect people's access to services like water or housing?
- What helps build peace and trust in places facing conflict or displacement?
- Who is most affected by climate change in your city?
- What makes it hard for some groups to join climate resilience planning?
- How can climate-friendly jobs include people who are often left out of decision making?
- How can we make sure everyone in our city understands what's happening with the climate?

2.7 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.
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, FCV 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.

2.8 Summary **[~2 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.

Conclude with the overall structure of the UCRMC, showing the next topic to be covered in **Module 3: Understanding Climate Risks in Your City**.

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

Annex. Introducing the LLA Principles **[~5 slides]**

Please encourage participants to go through the annex on their own after the session.

This section introduces the 8 LLA Principles developed by the GCA and a network of over 120 partners from all over the globe, which aim 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.

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

Module 3: Understanding Climate Risk in Your City

Strategic Rationale:

Module 3 introduces participants to climate change risks in urban areas. Building on participants' initial understanding of climate change and climate hazards from Module 1, Module 3 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 3: 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	5
2. Learning Objectives	9 – 10	5
3. Concepts & Definitions	11 – 12	5
4. Understanding Climate Risks in Your City	13 – 20	25
5. Climate Risk Assessments	21 - 50	85
6. CRA Case Studies	52 - 60	25
7. How to Procure a CRA	61 - 68	20
8. Interactive Exercise: *Procuring a CRA*	69 – 73	60
9. Summary	74 – 76	5
Annex 1: Climate Risk Assessments in Somalia	77 – 85	15

Total estimated duration: **~240 minutes** (~255 minutes with Annex 1)

3.0 Introduction

[~6 slides, 5 minutes]

Module 3 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.

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 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 Somalia.

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 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.

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

Section 3 outlines the main new concepts and terminology that will be used in Module 3. 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 3:

- Climate Risk Assessment
- Impacts
- Likelihood
- Master Plan
- City Climate Action Plan
- Climate Scenario

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

3.4 Understanding Climate Risk in Your City **[~8 slides, 25 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.

3.5 Climate Risk Assessments **[~30 slides, 85 minutes]**

Now that participants have an understanding of climate risk and the types of climate risks that may occur in their cities, Section 5 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 3.6) 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.

3.6 CRA Case Studies

[~9 slides, 25 minutes]

Section 6 provides a deep dive into the CRA process using a case study from Somalia. 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 Johwar District and Beledweyne District, Somalia in developing a CRA. Please decide on one of the two case studies, depending on the audience for the course. Please go over each of the slides (of one of the 2 case studies) in detail with participants. There are supplementary Trainer Notes to help you explain the case study to participants.

3.7 How to Procure a CRA **[~8 slides, 20 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 7 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 7 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 7 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]

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

Section 8 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 how to procure a CRA, so they can apply the content of Module 3 in their daily jobs once they have completed the course.

[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.

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. *Please remind them about the Mission that was developed as part of Module 2 context mapping exercise, in case they would like to use that.*
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
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.

3.9 Summary **[~3 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.

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 3 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 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.

Annex 1: Climate Risk Assessments in Somalia

Annex 1 is a set of supplementary materials to be shared with UCRMC participants from Somalia to help them understand what type of climate-related data is available, where they can go to access climate related data from official regional and open 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 Somalia. 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.

Please encourage participants to go through the annex on their own after the session.

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 Modules 1 and 3, and about the importance of locally led adaptation in Module 2, 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 6.

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	14 – 19	20
5. Climate Impacts on Infrastructure in Somalia	20 – 30	35
6. What Makes Urban Infrastructure Resilient	31 – 36	20
7. Ways to Build Resilient Urban Infrastructure	37 – 47	30
8. Climate Resilient Infrastructure in Somalia	48 – 54	20
9. Interactive Exercise: *Decisions for the Decade*	55 – 64	60
10. Summary	65 – 66	5

Total estimated duration: **~215 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 8. 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.
7. 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 **four 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 infrastructure, soft infrastructure, and nature-based solutions.
3. Be familiar with a systems approach to understanding complex issues at the nexus of urban planning and climate change and associated solutions.
4. 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

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 **[~6 slides, 20 minutes]**

Section 4 builds on the content outlined in Module 1 and Module 3, 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 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 drought and water scarcity on infrastructure on Galgadud, Sool and Woqooyi Galbeed. Three take-aways that can be highlighted from the Somalia drought and water infrastructure case study are:

- Water infrastructure failures have cascading impacts – Borehole and system breakdowns didn't just affect water access, but also displaced communities, weakened health services, and undermined food security and markets.
- Women and children face disproportionate risks – The collapse of services like clinics and local markets deepened vulnerabilities for those most reliant on them, particularly women and children.
- Community-led, data-informed solutions strengthen resilience – Projects like solar water systems and pipelines improved water, health, and livelihoods together.

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 Somalia **[~11 slides, 35 minutes]**

Section 5 provides a more detailed look at how climate hazards impact urban infrastructure in Somalia. 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. The trainer can begin my mentioning the example of the Bardere bridge, which collapsed during the 2023 El Niño floods in Somalia.
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? **[~6 slides, 20 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 1, as they can erode the operation and performance of infrastructure systems over time.

Afterwards, slide 34 explains what climate resilient infrastructure looks like, focusing on a number of desirable outcomes and attributes that would indicate the infrastructure is resilient. Please read these off to participants so they understand the type of goals that they should be considering.

Finally, slide 35 presents the costs and benefits of investing in climate-resilient infrastructure.

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 **[~11 slides, 30 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 from Somalia.

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 Somalia **[~7 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 Somalia. 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 Somalia. 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.

Another slide presents specific types of NbS assets that Somali stakeholders could prioritize – focusing on urban green spaces, river restoration, and mangrove conservation & restoration. Please read these to participants.

The final slides orient participants to the policy/strategy landscape that can enable climate-resilient infrastructure, and where it's still evolving. While Somalia does not yet have one single, detailed technical manual, several national strategies, plans, and urban frameworks provide direction. Participants can refer to these in more detail to identify specific measures and standards that can be applied in their own cities.

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

4.9 Interactive Exercise **[~10 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

[~2 slides, 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: Strengthening Climate Resilience through Nature-based Solutions

Strategic Rationale:

The theme of Module 5 focuses on strengthening climate resilience through nature-based solutions. 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, how to develop urban infrastructure to deliver resilience in their city in Module 4, Module 5 explores nature-based solutions in more detail. Building on the nature-based solutions introduction in Module 4 and exploring opportunities in Somali cities in greater depth.

Module 5 will help participants to understand important questions in their learning journey. For example: What are examples of nature-based solutions for urban climate resilience in Somali cities? What makes a nature-based solution effective and sustainable in Somali cities? How can nature-based solutions be designed to meet both environmental and community needs? What are examples of nature-based solutions already used in Somali urban areas?

It stops short of providing a 'how to' guidelines for delivering climate resilient infrastructure. This will be the focus of Module 6.

This section provides an overview of **Module 5: Strengthening Climate Resilience through Nature-based Solutions.** 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 and Definitions	11 - 13	5
4. What are Nature-based Solutions?	14 - 24	35
5. NbS in Somalia	28 - 36	35
6. Interactive Exercise	37 - 40	60
7. Summary	41 - 42	5
8. Annex - Further Reading	43 - 52	N/A

Total estimated duration: **~150 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 five main points highlighted. Please read these to participants:

- **Somalia Urbanization Challenges** - Rapid urban growth strains infrastructure, increases poverty, and degrades ecosystems, intensifying climate-related urban vulnerabilities.
- **Climate change increases urban vulnerabilities -** Rising urbanization intensifies climate impacts, leading to ecosystem loss, flooding, and weakened infrastructure resilience.
- **Nature-based Solutions address urban resilience challenges -** NbS use ecosystems to support essential services, improve urban livability, and address environmental degradation.
- **Enhancing resilience in Somali cities is a national priority -** Somalia's secondary cities must be protected from climate risks by restoring ecosystems and integrating NbS.
- **Increased NbS knowledge is crucial for Somali urban projects -** Expanding NbS expertise ensures effective integration in SURP2 and other urban resilience and infrastructure initiatives.

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. Define Nature-based Solutions and understand the key elements.
2. Explain three ways to incorporate NbS into resilient urban infrastructure solutions.
3. Explain the NbS hierarchy of approaches in the context of urban climate resilience.
4. Analyse and propose NbS interventions tailored to their local context

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

5.3 Concepts and Definitions **[~3 slides, 5 minutes]**

Section 3 begins the technical content of Module 5 with the introduction of key concepts. This is meant to help participants understand the language around NbS when using them to support climate resilience in their cities.

Read through the definitions (Ecosystem Services, Green Infrastructure, Blue Infrastructure, Blue-Green Infrastructure, Urbanization, Ecosystem Degradation) and ask participants to ask if any clarification is needed.

5.4 What Are Nature-based Solutions **[~11 slides, 35 minutes]**

Section 4 starts with the IUCN **definition of NbS**. Read this definition: Nature-based Solutions are: "Actions to protect, manage and restore natural or modified ecosystems, which address societal challenges, effectively and adaptively, providing human well-being and biodiversity benefits"

Next, what qualifies as a NbS is introduced. Read the elements and criteria. Tell participants to ask if they have any questions. The next slide explains **what is not a NbS**, read the slide and make sure participants are clear on these points and examples.

Slide 18 introduces a **case study**, read this slide: Case Study | Community Mangrove Restoration for Coastal Resilience

In 2018, Durduri village in the Sanaag region faced recurrent and destructive coastal flooding due to rising sea levels and wave surges. Somalia is projected to experience a temperature rise of up to 3.4 °C and sea level rise of 36 cm by 2080(Binder et al '22), increasing vulnerability along its coastline.

City University of Mogadishu led a mangrove restoration initiative, training local communities in conservation, climate adaptation, and disaster preparedness. Marine biologists and students planted 230 resilient trees, including mangroves and dharma species, while developing nurseries and promoting participatory monitoring. The project applied a bio-wall concept and community micro-planning to ensure sustainability.

Mangroves reduced wave energy by 70–90% (Sunkur et al '23), helping buffer storms and erosion. They store 3 to 5 times more carbon than tropical forests and cool coastal microclimates (WB, 2023). Though Somalia's mangrove cover is limited (3,000–9,000 ha; Rhyma et al '20), this initiative demonstrated effective flood risk reduction and ecosystem recovery.

Highlight the Key Takeaways for Replication:

- Community-led restoration is feasible even in fragile contexts.
- Participatory planning and local capacity building are essential.
- Similar interventions could be scaled in Bossaso, Zeylac, and Abay-Dhahan,where there are mangrove ecosystems.

The following slide focuses on the **different climate adaptation and social benefits** of NbS, Take participants through the examples.

Slide 20 presents the overview of **3 approaches** within Nature-based Solutions, which we will go through in the following slides: protection, enhancement and creation. After explaining each of the 3 approaches, mention that in the following section we will be exploring Somali case studies for each of them.

Slide 24 presents a resource: the **World Bank's Catalogue of Nature-based Solutions** for Urban Resilience can help identify opportunities for NbS investment in your city. Explain to participants that we'll be using this catalogue in an exercise at the end of the module.

Slide 25 goes through incorporating NbS for Resilient Urban Infrastructure -**grey infrastructure, green infrastructure and hybrid infrastructure**. Emphasize that grey infrastructure in and of itself is not bad and is still required for development but we should seek to integrate it with green infrastructure to create hybrid infrastructure that is sustainable.

The final slide in this section presents the **strong economic case for NbS**. Emphasize that recent estimates suggest that the average cost of implementing NbS for infrastructure is half of their traditional

Review Exercise

Ask participants to:

- Write down a definition of NbS in one sentence as best as they can, without reviewing their notes.
- Ask participants if in their local context, NbS are cheaper than grey infrastructure over the project life cycle.

Open the floor for any comments / questions.

The aim of this exercise is to support participants in contextualising and understanding NbS in their city.

5.5 NbS Potential in Somalia **[~9 slides, 35 minutes]**

Section 5 has 11 slides, read through the slides that detail the types of NbS that are specifically available in Somalia. Explain that Somalia is exploring Nature-based Solutions as part of its climate adaptation strategy, particularly in coastal regions, and although they are not always referred to as 'NbS', Somali cities and peri-urban landscapes showcase a diverse range of NbS initiatives. Urban parks, forests, and urban agriculture are the most common examples highlighting some of the different types of nature-based solutions.

Present the slide with the stakeholders that are involved in developing NbS in your cities.

Proceed to review the case studies provided to illustrate the application of the 3 NbS approaches (Protection, Enhancement and Creation). Explain the context / problem statement for each, elaborate on the intervention, and highlight the key conditions for replicability. Go then into detail of the Implementation Process of each example, and the gap analysis.

Continue going through the challenges and considerations for NbS in Somalia. Ask participants if they can think of others not reflected on the slide.

5.6 Interactive exercise **[~9 slides, 60 minutes]**

Section 6 is an interactive exercise to develop understanding through designing NbS for Somalia's Borderlands.

Review Exercise

You will use Google Maps to explore climate challenges in Somalia's borderland regions and consider potential NbS approaches. As a group:

- Access Google Maps to identify a rural or peri-urban area. These locations represent areas with significant risks and challenges in Somalia's borderlands, including water scarcity, aquifer degradation, and flash flooding.
- Select and analyse an area against the World Bank Catalogue of NbS Families to identify its typology.
- Discuss possible options from the Catalogue and your own knowledge and experience. Specify if you will be using a Protection, Enhancement, or Creation approach.
- Propose a nature-based solution for this area and justify your choices based on visible land features and known climate vulnerabilities.
- Outline implementation steps, including identifying possible relevant stakeholders.
- List the key Somali institutions and policy documents that will support your interventions (e.g., National Adaptation Plan, Water Sector Strategic Plan) and highlight any missing frameworks or institutional gaps that could affect implementation.

At the end of the session, each group will present its findings and proposals. Be prepared to explain your analysis, the proposed NbS intervention, implementation steps, and policy documents.

Three Additional NbS Review Exercises (Optional)

1. **THINK ABOUT AN NbS YOU KNOW AND SHARE A PHOTO**

Objective: Familiarize with real-world NbS examples and encourage discussion about their features and benefits.

How to do it:

- Ask participants to reflect on an NbS they have seen or experienced, such as an urban park, wetland restoration, or mangrove forest.
- If available, have them share a photo from their phone or describe the example to their group.
- Facilitate a short discussion on what makes their chosen example an NbS and its key benefits (e.g., biodiversity, climate adaptation, or community impact).

2. **COLLABORATE ON AN NbS SKETCH IN A LANDSCAPE**

Objective: Promote collaborative thinking by designing an NbS within a specific landscape.

How to do it:

- Provide a blank template or landscape map (e.g., a flood-prone urban area or degraded coastal zone).
- Assign groups to brainstorm and sketch an NbS intervention incorporating elements like green corridors, urban forests, or waterfront parks.
- Have groups present their sketches, explaining the functionality and co-benefits of their design (e.g., flood mitigation, air purification, biodiversity).

3. **DRAW A SIMPLE SKETCH OF A BLUE-GREEN INFRASTRUCTURE AS AN NbS**

Objective: Encourage quick, creative thinking about how BGI can serve as an NbS.

How to do it:

- Ask participants to draw a quick sketch (2 minutes) of a blue-green infrastructure example (e.g., street planter or green roof).
- Facilitate a table discussion where participants share and evaluate their sketches.
- Have the group identify features that qualify their BGI as an NbS and discuss opportunities to improve it further
- Ask the group to reflect on the challenges and opportunities of implementing such an NbS in different contexts, particularly in their local area.

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

Section seven of Module 5 provides 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: 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.

5.8 Annex **[~5 slides]**

If time permits and the participants would like additional information, there are 5 slides to review that have links and suggested further reading and texts to support the development of NbS. Alternatively, the trainer can encourage participants to go through the annex on their own after the session.

Module 6: Step-by-Step Guidelines for Delivering Climate Resilient Infrastructure

Strategic Rationale:

Module 6 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 6, 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. These step-by-step guidelines follows the typical steps of a 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.

his section provides an overview of **Module 6: 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**
1. Introduction	1 – 6	5
2. Why This Topic Matters	7 – 8	5
3. Learning Objectives	9 – 10	5
4. Business as Usual vs Climate Resilient Infrastructure	11 – 13	10
5. Step-by-Step Guidelines for Delivering Climate Resilient Infrastructure in Somalia	14 – 45	90
6. Decision-Making in Contexts of Uncertainty	46 – 64	60
7. Interactive Exercise: *Infrastructure Plan Canvas*	65– 70	40
8. Summary	71 – 72	5

Total estimated duration: **~220 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. 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.

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 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 move 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.

6.3 Business as Usual vs. Climate Resilient Infrastructure **[~3 slides, 10 minutes]**

Section 3 is a very short learning block that contextualizes the content that will come in Section 4. 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.

6.4 Step-by Step Guidelines for Delivering Climate Resilient Infrastructure in Somalia **[~32 slides, 90 minutes]**

Section 4 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 4 uses the following format:

- Each subsection begins with an overview of the corresponding step in the project cycle. The slide is divided into two parts — a description of the *"business-as-usual (BAU)"* approach, and an explanation of how this step would differ under a *Climate Resilience Approach*.*
- This is followed by a **decision tree diagram** illustrating how the step-by-step process for delivering climate-resilient infrastructure works in practice. Encourage participants to refer to the same diagram in their workbooks as you walk them through it.
- Finally, a **short case study** demonstrates how a city or project has successfully integrated climate resilience at this specific 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.

**For the first step (Strategy), there are additional slides on how BAU usually works in Somalia, followed by how the Climate Resilience Approach for that step can be applied in Somalia, including reference to existing frameworks and guidance.*

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.

6.5 Decision-Making in Contexts of Uncertainty **[~19 slides, 60 minutes]**

Having learned how to deliver climate resilient infrastructure projects in the previous section, Section 5 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, or if they face uncertainty due to fragile, conflict and violence (FCV) risks.

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. In fragile and conflict-affected (FCV) contexts, participants should also recognize that social, political, and security risks create additional layers of uncertainty. These risks will continue to shape project feasibility and must be factored into decision-making.

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). Incorporating FCV dynamics means also reflecting on who controls access to resources, whether insecurity could affect feasibility, and how governance gaps or displacement might alter project outcomes. 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).

The section ends presenting Conflict-Sensitivity as an approach to mainstream through the Decision-Making in Contexts of Uncertainty framework. Conflict-Sensitive Investments need to rigorously analyze the conflict context in which they operate, critically assess how their activities may interact with that context, and take deliberate measures to mitigate security and conflict risks to projects. It presents the example of an organisation (Trócaire) and the Conflict Sensitivity Toolkit they use in Somalia. Following a number of measures, Trocaire has been able to maintain community trust, prevent escalation, and ensured programs could continue operating in volatile environments. The link to the Toolkit is provided so participants can review on their own time and reflect on how they could incorporate conflict sensitivity on the design and roll out of 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.

6.6 Interactive Exercise

[~6 slides, 40 minutes]

Section 6 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 developing a climate resilient infrastructure plan – while bringing in considerations around LLA, equity & inclusion, FCV, 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.

6.8 Summary

[~2 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.

Annex

[~8 slides]

This Annex presents a general **overview of Somalia's policy frameworks** for climate resilient infrastructure, and then goes onto presenting existing documents per geographical area.

At the **Federal Member State (FMS) level**, only **Puntland and Somaliland** have relatively elaborate policies, regulations, and guidelines. Other FMS such as **Jubaland, Hirshabelle, Galmudug, and South-West State**, as well as the **Banadir Regional Administration (BRA)**, still lack substantial legislative frameworks for environmental management, natural resource governance, and urban development.

At the **city level**, some progress is more visible. For instance, **Baidoa in South-West State** has advanced city-specific frameworks like its *Urban Profile (2017)* and *City Strategy (2023)*, which outline urban growth and resilience priorities even in the absence of strong state-level frameworks.

While some progress has been made, **major gaps remain nationwide**. There are still no comprehensive national guidelines for urban development, resilient infrastructure, or building codes. This section therefore introduces the challenges and the focus on what is available: federal-level frameworks, relatively advanced systems in Puntland and Somaliland, and emerging city-level initiatives in South-West State.

Trainers must review and familiarize themselves with all slides in advance, paying particular attention to those that correspond to the target audience for their specific training. Be prepared to reference and discuss these examples throughout the sessions — especially during Module 6, where they are most relevant.

These slides are intended primarily as a training resource for facilitators. They are not all meant to be shared with participants. **Before delivery, review the slide deck carefully and adapt it as needed** — hide or remove slides that are not relevant to your audience or local context, and retain those that best illustrate the key messages of the module.

Module 7: Financing Climate Resilient Urban Infrastructure

Strategic Rationale:

Module 7 is the final section of the UCRMC, and is a self-taught module, for participants to review at their own pace after the end of the face-to-face training. In this module, participants will learn about how to finance climate resilient investments in their city. The central focus of Module 7 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 7 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.

The facilitator shall distribute the digital version of the Module 7 slides and advise participants to study both the slide content and the Notes section, and to complete the individual reflection exercises independently. They have space on their workbooks to make notes.

Please conclude with the overall structure of the UCRMC and by asking participants if they have any final questions, comments or learnings they would like to share before concluding the training.

Appendix 1: Optional Pre-Training Survey

The facilitator is encouraged to build the below questionnaire in a google / MS Office form, SurveyMonkey or other simply survey tool, and send the link to participants in advance. Alternatively, it can be printed and distributed at the start of the training.

TRAINING PRE-SURVEY

Urban Climate Resilience Masterclass in Somalia

[DATE] | [LOCATION]

Dear participant,

We are delighted to welcome you to the Urban Climate Resilience Masterclass in Somalia. 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. Be able to identify and work with a range of stakeholders in their city to deliver resilient infrastructure in a way that promotes equity and inclusion for vulnerable and marginalized groups and takes into consideration fragility, conflict and violence (FCV).
3. 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.
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.

*To help deliver the training, we would like to request participants to respond to the following questions **by [DATE]**.*

How would you rate the following?

	Very Low	Low	Moderate	High	Very High
Your knowledge on climate change and its impacts on cities	☐	☐	☐	☐	☐
Your knowledge on the process for conducting a climate risk assessment (CRA)	☐	☐	☐	☐	☐
Your understanding of inclusive and locally led approaches to urban climate adaptation	☐	☐	☐	☐	☐
Your experience planning and delivering urban infrastructure that supports climate resilience	☐	☐	☐	☐	☐
Your knowledge of financing mechanisms and funding sources for urban climate resilience infrastructure and services.	☐	☐	☐	☐	☐

What specific topics are you most interested in learning more about during this training?

What are you hoping to gain or take away from this masterclass?

Appendix 2: Post-Training Survey

The facilitator is encouraged to build the below questionnaire in a google form, SurveyMonkey or other simply survey tool, and send the link to participants at the end of the training. Alternatively, it can be printed and distributed before delivering the training certificates.

TRAINING FEEDBACK

Urban Climate Resilience Masterclass in Somalia

[DATE] | [LOCATION]

[List of relevant organizations delivering the training] cordially congratulates you on completing the Urban Climate Resilience Masterclass which was delivered in support of the SURP-II Somalia.

We would like to seek your feedback on the training. Please select the most relevant response for the statements below.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The training improved my understanding of the key climate risks facing cities and the need for climate-resilient infrastructure and services.	☐	☐	☐	☐	☐
The training strengthened my understanding of inclusive and bottom-up approaches to building urban climate resilience.	☐	☐	☐	☐	☐
The training improved my understanding of the role and process of conducting Climate Risk Assessments (CRAs), and how to apply this knowledge in my city.	☐	☐	☐	☐	☐
The training provided practical guidance on planning and delivering climate-resilient urban infrastructure and services.	☐	☐	☐	☐	☐
The training enhanced my ability to effectively share knowledge and collaborate with peers and colleagues.	☐	☐	☐	☐	☐
The training strengthened my capacity to network across departments and organizations to advance systemic change and build support for projects.	☐	☐	☐	☐	☐
The quality of the trainers was satisfactory.	☐	☐	☐	☐	☐
The overall quality of the training was satisfactory.	☐	☐	☐	☐	☐

Please share any additional comments you have about the training.

Please share any additional support, resources, or materials you would need to feel confident in delivering this training to others.