

**ADDRESSING URBAN AND
HUMAN SETTLEMENT ISSUES
IN NATIONAL
ADAPTATION
PLANS**

a Supplement to the UNFCCC
Technical Guidelines on the
National Adaptation Plan Process

Version1.0

Addressing Urban and Human Settlement Issues in National Adaptation Plans

- A Supplement to the UNFCCC Technical Guidelines on the National Adaptation Plan Process

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Coordinators

Marcus Mayr & Yali Wang, UN-Habitat

Lead Authors

Liam Fee, Marcus Mayr & Yali Wang, UN-Habitat

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Contributors

Bert Smolders, Frank Wildschut - Arcadis; Dr Nopant Tapananont - Chulalongkorn University; Julie Greenwalt - Cities Alliance; Heinrich Gudenus, Siwaporn Tangwanichagapong, Wesley Wojtas - Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH; Asrat Yirgu Senato - Ethiopia, Senior Climate Change Adaptation advisor for Ethiopia under the NAP Global network in country support by IISD; Britta Horstmann - German Development Institute (DIE); Dr David Dodman - International Institute for Environment and Development (IIED); Angie Dazé - International Institute for Sustainable Development (IISD) and NAP Global Network Secretariat; Shuaib Lwasa - Makerere University; Nedal Katbeh-Bader - Ministry of Environment Affairs, Palestine; Mery Yaou - Ministry of Environment and Forestry resources, Togo; Pochanie Kajonpredanon, Wiya Songkittipakdee - Ministry of Interior, Thailand; Chompunut Songkhao - Ministry of Natural Resources and Environment, Thailand; Batu Krishna Uprety - Nepal, Former Joint-Secretary and Chief, Climate Change Management Division, Ministry of Environment; Choi Yeeting - Office of Te Beretitenti/President, Kiribati; Julie Teng, Laura M. Hammett, Rohini Kohli, Tomke Rinschede - United Nations Development Programme (UNDP); Dr Paul Desanker - United Nations Framework Convention on Climate Change (UNFCCC); Dr Himanshu Shekhar - United Nations University; Joanna Mary McMillan - Universität Stuttgart

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Design and Layout: Begoña Peiró & Freddie Maitaria

Diagrams: Yali Wang and Begoña Peiró

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Busan, the Republic of Korea's second largest city after Seoul. © UN Photo / Kibae Park

Foreword

Addressing Urban and Human Settlement Issues in National Adaptation Plans

We live in an urban world: more than 55 per cent of the world population lives in urban areas today; this likely grow to 68 per cent by 2050. Human settlements are the local, national and global drivers of economic prosperity and development, with up to 80 per cent of the global Gross Domestic Product generated in our towns, cities and metropolises. Cities are also the hubs for governance and state institutions, for ideas, commerce, culture, science and for social, human and individual development.

While they are drivers of prosperity, cities also drive climate change, and are particularly vulnerable to its effects. Worldwide, some of the communities most vulnerable to climate change are the urban poor. They are the people living in already stressed informal urban settlements, in at-risk areas unsuitable for permanent development: susceptible to flooding, landslides and sea level rise. These communities often have limited means to withstand extreme weather. They contain substandard dwellings, with limited basic services and infrastructure to support them pre- and post-crisis.

The Paris Agreement on Climate Change aims to set the course toward a healthier, safer, more prosperous future by limiting global warming and ensuring an adequate adaptation response. According to UN-Habitat's analysis of the national pledges under the Paris Agreement, approximately two-thirds of all countries have urban content in their Nationally Determined Contributions. Of these, 113 out of 164 countries have focused on adaptation in human settlements. Translating these commitments to national plans and strategies is crucial in the coming years.

National Adaptation Plans are essential in articulating the adaptation needs and priorities of countries. The process of formulating such plans helps countries to identify medium- and long-term adaptation needs and to develop, scale up and implement strategies and programmes to address them. Formulating and implementing National Adaptation Plans is also necessary to scaling up planning and attracting investment for adaptation actions.

Integrating urban issues and human settlement aspects in National Adaptation Plans enables countries to reduce vulnerabilities of people and improve adaptabilities to climate change. It is my hope that this guide will support countries to achieve this goal. This publication responds to a call by Least Developed Countries Expert Group of the United Nations



Framework Convention on Climate Change (UNFCCC), inviting international actors to "...come forward in drafting supplementary sectoral guidelines to the NAP Technical Guidelines...", the overarching guidance on formulating National Adaptation Plans.

This supplement to the National Adaptation Plans Guidelines was developed as an outcome of discussions with Member States. It was informed by the parties working under the UNFCCC Nairobi Work Programme, National Adaptation Plans experts and the urban development community over the course of the last year in a participatory and consultative process. UN-Habitat is grateful to its partners for their support in this endeavour, and hopes that it will be a useful contribution to government efforts to improve their climate resilience in settlements, towns, cities and metropolises.

I would like to encourage planners at the national level, experts, and decision-makers working on climate change to use this Supplementary Guide to better understand the need and opportunities for climate change adaptation in human settlements. At the same time, I hope that this publication will also be useful for local authorities to contribute to National Adaptation Plans, and strengthen synergies and partnerships between national and urban actors.

By building more resilient cities together, we can achieve our common global commitments, articulated in the Paris Agreement and the New Urban Agenda, and pledge to leave no one and no place behind.

Ms. Maimunah Mohd Sharif
Under-Secretary-General and
Executive Director, UN-Habitat

Abbreviations and Acronyms

AF	Adaptation Fund
AFINUA	Action Framework for the Implementation of the New Urban Agenda
AR5	Fifth Assessment Report
CBO	Community-Based Organization
CDM	Clean Development Mechanism
CIF	Climate Investment Fund
COP	Conference of the Parties
CPI	Climate Policy Initiative
DFI	Development Finance Institution
DIE / GDI	Deutsches Institut für Entwicklungspolitik / German Development Institute
EU	European Union
FAO	Food and Agriculture Organization
GCF	Green Climate Fund
GEF	Global Environment Facility
GDP	Gross domestic product
GHG	Greenhouse gas
GIS	Geographic information system
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German International Cooperation Agency)
HS	Human Settlement
IKI	International Climate Initiative
IPCC	Intergovernmental Panel on Climate Change
JCM	Joint Crediting Mechanism
JI	Joint Implementation
LEG	Least Developed Countries Expert Group
LDC	Least Developed Country
LDCF	Least Developed Countries Fund
LEG	Least Developed Countries Expert Group
M&E	Monitoring and Evaluation
NAMA	Nationally Appropriate Mitigation Action
NAP	National Adaptation Plan
NAP-GSP	National Adaptation Global Support Programme
NAP-HS	Addressing Urban and Human Settlement Issues in National Adaptation Plans
NDCs	Nationally Determined Contributions
NGO	Non-Governmental Organization
NIE	National Implementing Entity
NUA	New Urban Agenda
OECD	Organization for Economic Cooperation and Development
PPP	Private - public Partnerships
RCP	Representative Concentration Pathways
SCCF	Special Climate Change Fund
SDG	Sustainable Development Goal
SCF	Standing Committee on Finance
SIDS	Small Island Developing State
SWOT	Strengths, Weaknesses, Opportunities, and Threats
UN Environment	United Nations Environment Programme
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UN-Habitat	United Nations Human Settlements Programme
WHO	World Health Organization





Night view on Tbilisi in Georgia
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Executive Summary

The Addressing Urban and Human Settlement Issues in National Adaptation Plans Supplementary Guide (referred hereafter as the NAP-HS Guide) aims to comprehensively address urban and human settlement issues in National Adaptation Plans (NAPs) at the formulation and implementation stage. The guide is aligned with the Least Developed Countries Expert Group (LEG) NAP Technical Guidelines and has been developed in conjunction with numerous partners, including the UNFCCC, non-government organizations, the private sector and representatives of member states.

The guide primarily targets decision-makers at the national level working on NAPs, both within and outside UNFCCC focal point ministries, while it also targets a broader set of stakeholders at the national and sub-national levels who are interested in NAPs or who may be involved in their implementation.

The guide is divided into four Sections:

Part 1 – Introduces the guide and frames the topic of addressing urban and human settlement issues in NAPs.

Part 2 – Outlines the case for considering cities and towns in NAPs. It seeks to answer the question why undertake urban adaptation.

Part 3 – Introduces the practicalities of working at the sub-national level by asking how to effectively undertake adaptation in towns and cities. This guidance is provided to familiarize NAP stakeholders with city adaptation processes, which in turn will help to address urban adaptation in NAPs. This section points the reader to a substantial body of literature and guidance that guides decision making on urban adaptation.

Part 4 – Ties the previous sections together by considering scaling urban adaptation into national policy. It considers finance in particular, asking how globally significant change be affected in and by cities.

Part 1 introduces three rationales for the guide; i) that 55 per cent of the world's population now lives in urban areas, forecast to rise to 68 per cent by 2050.¹ ii) That cities are where the bulk of economic activity, cultural assets and social capital are located, and therefore face both the greatest threats from climate change but also have the greatest opportunity of



scalable actions, and finally iii) that there is greater momentum than before to take action in cities, as evidenced by 2/3rds of NDCs listing urban adaptation as a priority.

There are significant barriers, however. Building synergies between sectors, and a lack of technical capacities, policy support, financial instruments and resources are problematic for national-level actors at the formulation and implementation stages of the NAP. Despite advanced work on projecting future changes in climate, there is also uncertainty about future impacts, and there is evidence to suggest that there is a gap between academic and scientific research output and the operational needs of users.

Part 2 of the guide is split into two parts, which make the urban case and the climate change case for action through NAPs respectively. The urban case revolves around the fact that the vast majority of population growth will take place in cities; 90 per cent of which will take place in Asia and Africa. However, much of this growth will take place in smaller cities that often don't have access to resources, or capacity to plan for climate change.

Meanwhile, the climate case highlights how many cities are exposed to a multitude of climate change related hazards. This section points to extensive evidence published by the Intergovernmental Panel on Climate Change, including from the recent Global Warming of 1.5°C report. In particular, it highlights the heightened exposure resulting from extremes of temperature, sea-level rise and severe storms, and the subsequent effects of these on infrastructure systems, water, health and economic development.

¹ UN Population Division, *World Urbanization Prospects: 2018 Revision, key facts*. Available from <https://population.un.org/wup/Publications/Files/WUP2018-KeyFacts.pdf>.

Finally, Part 2 of the guide makes a link between urban adaptation and global agreements; the Paris Agreement, the Sustainable Development Goals, the New Urban Agenda, and the Sendai Framework for Disaster Risk Reduction. The guide highlights these through the NAP-HS system diagram to demonstrate the numerous and complex linkages between global goals, urban systems and priorities, and the processes required to programme adaptation actions in urban areas and human settlements.

Part 3 provides guidance to national level stakeholders in charge of formulating and implementing NAPs, as well as providing guidance to adaptation processes in cities. The purpose of this approach is to familiarize national-level NAP stakeholders with the nuances of urban adaptation while also offering guidance that can be utilized by stakeholders responsible for implementing NAP Priorities at the national level.

Part 3 provides guidance based on numerous existing publications by UN-Habitat and other agencies. In this regard, Part 3 takes the form of “meta-guidance” – directing the user to the numerous

other tools and materials that have been published. This allows users to choose the guidance that is most relevant and likely to be effective in their context, while also contributing to holistic guidance for the entire process of formulating and implementing urban components of the NAP.

Part 4 looks to scaling up the implementation of urban priorities in the NAP. Much of this discussion is taken up with questions of finance. The guide reviews the various finance options that are available, and particularly focuses on the financing that is available to city and sub-national level governments. This focus is based on UN-Habitat’s experience that a continued lack of finance (and lack of capacity to access finance) is a continuous problem that cities all over the world face. The guide acknowledges that there are other problems involving scaling adaptation actions, but proposes that overcoming barriers to accessing finance is one of the most critical.

Finally, the guide proposes some ways forward, highlighting UN-Habitat’s continued commitment to supporting member states to implement their urban adaptation priorities through NAPs.

The guidance in Part 3 is structured around a modified version of the elements and steps outlined in the NAP Technical Guidelines. These are:

Element	Additional considerations to ensure adequate coverage of urban/HS issues
A. Lay the Groundwork and Address Gaps	Include urban stakeholders and actors in the launch and NAP team
	Ensure adequate coverage of climate change impacts, vulnerability and adaptation information for urban areas, and enabling environment for urban issues
	Address the capacity gaps and weaknesses in coverage of urban issues within the national adaptation plan process
	Comprehensively assess development needs and climate vulnerabilities with an urban lens, involving appropriate policy makers
B. Preparatory Elements	Ensure coverage of urban areas and sufficient resolution for urban systems
	Identify urban adaptation objectives and long-list of actions for cities and human settlements
	Assess and appraise adaptation options
	Communicate urban adaptation components as part of the NAP
	Integrating climate change adaptation into urban planning
C. Implementation Strategies	Prioritizing climate change adaptation in city planning
	Develop an urban-focused component of the implementation strategy
	Build capacity of urban stakeholders who are engaged in implementing the adaptation options in urban areas
	Promote urban projects/actions with international organizations and identify synergies with international agreements
D. Reporting Monitoring and Review	Identify monitoring indicators and monitor the implementation of NAP progress in urban areas
	Iteratively update the urban component of the NAP
	Outreach with urban stakeholders in the progress and effectiveness

Objectives and Target Audience

Addressing Urban and Human Settlement Issues in National Adaptation Plans



In the decades to come, climate change may make hundreds of millions of urban residents – and in particular the poorest and most marginalized – increasingly vulnerable to floods, landslides, extreme weather events and other natural disasters. City dwellers may also face reduced access to fresh water as a result of drought or the encroachment of saltwater on drinking water supplies. These are the forecasts, based on the best available science. Yet none of these scenarios needs to occur, provided we act now with determination and solidarity.²

– Ban Ki Moon, former UN Secretary General

The Addressing Urban and Human Settlement Issues in National Adaptation Plans Supplementary Guide is designed to assist practitioners, policy makers and the wider development community to address urban and human settlement issues into the formulation and implementation of National Adaptation Plans. The NAP-HS guide attempts to bring together the national climate change focal points and urban planning and policy community which are often a disparate set of actors. It seeks to provide recommendations and practical actions that enhance NAPs through the comprehensive inclusion of urban and human settlement issues, in a way that, in the long term, benefits people living in cities and human settlements and ultimately improves the effectiveness of the NAPs.

This guide is aligned with the NAP Technical Guidelines³ prepared by the LEG⁴ under the UNFCCC⁵. The NAP-HS Guide is a specific, thematic supplement to the main NAP guidelines. It offers a specific focus on how to comprehensively address climate change adaptation measures in cities and towns in countries' NAP formulation and implementation process. The guide is predicated on the assumption that climate change in metropolitan regions, cities, towns and villages is an essential component of national efforts to build resilience.

The guide also assumes that urban areas are one among many crucial components of effective National Adaptation Plans. Climate change presents us with challenges on numerous fronts; in agriculture, water, infrastructure, the economy, and biodiversity, to name a few. This guide should be seen as part of a broader effort to make countries more resilient, rather than as a “zero-sum” attempt to assert the importance of urban areas and human settlements above other priority issues.

Now is a timely moment for the guide. The Paris Agreement on Climate Change was ratified on 5th November 2015 and will start formally in 2020. In preparation for this, governments around the world are now revising their Nationally Determined Contributions (NDCs). Addressing the question of how to enhance urban and human settlement considerations through the NAP and the NDC processes is the next logical step. Meanwhile, the Sustainable Development Goals (SDGs) were agreed in 2015 and the New Urban Agenda (NUA) was signed in 2016. With finance now flowing into NAP formulation at an unprecedented rate, there has never been a timelier moment to provide the guidance that this document lays out.

Objective of the guide and target audience:

The **main objective** of this publication is to reduce the vulnerability of people living in urban areas to climate change related impacts. It aims to achieve this through **two supporting objectives**: which are i) to support countries to effectively address human settlement issues in the formulation and implementation of NAPs by building their capacity and ii) To enhance, more broadly, the position of adaptation in human settlements in other development policies, programmes and plans.

The **primary target audience** of this supplementary guide are national-level decision makers and officials working on formulating and implementing NAPs. This includes UNFCCC focal point ministries but also any other actors that may be closely associated with NAPs.

The **secondary target audience** of this supplementary guide are national and sub-national decision makers and officials who are concerned about climate change issues, and particularly those who may be involved in the consultation process that accompanies the formulation of NAPs, or are involved in the implementation of NAP priorities in urban areas. Another important secondary target audience are academics, researchers or similar professionals involved in conducting analysis in support of governments that are formulating or implementing NAPs.

² UN-Habitat (2011), The Global Report on Human Settlements, p.vi (foreword). Available from <https://unhabitat.org/books/cities-and-climate-change-global-report-on-human-settlements-2011/>.

³ Least Developed Countries Expert Group (2012), National Adaptation Plans Technical guidelines for the national adaptation plan process. Available from <https://unfccc.int/topics/adaptation-and-resilience/workstreams/national-adaptation-plans-naps/guidelines-for-national-adaptation-plans-naps>.

⁴ <https://unfccc.int/process/bodies/constituted-bodies/least-developed-countries-expert-group-leg>

⁵ <https://unfccc.int/>

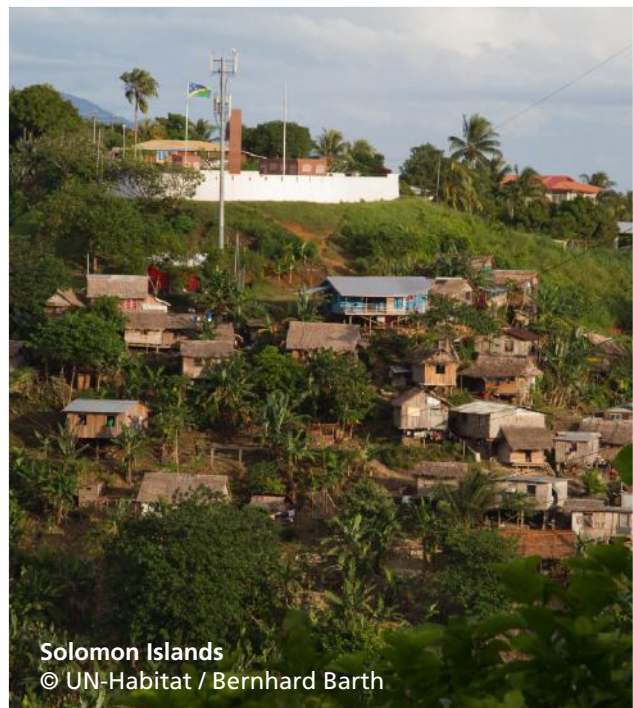


Ulaanbaatar, Mongolia
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Box 1

What is a human settlement?

This supplementary guide uses a simple definition of a human settlement as a city or town of any size where people live and work in close proximity. It recognises that great variation exists between countries in terms of how they define urban areas. In this guide, the terms “urban areas” and “cities and towns” are used interchangeably. “Human settlements” is a broader term referring to any cluster of dwelling where people live, which can also include villages. In response to the requests of member states, this guide focuses on both urban areas and human settlements, though it uses different terminology at different points, depending on what is being analysed and the guidance provided. It primarily offers guidance relating to urban areas, while acknowledging that the adaptation needs of mega-cities, smaller towns and cities and human settlements can differ greatly.



Solomon Islands
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01

OUTLINE OF THE REPORT
AND THE BIGGER
PICTURE; NAPS AND NDCS





OUTLINE OF THE REPORT AND THE BIGGER PICTURE; NAPs AND NDCs

The process to formulate and implement NAPs was created in 2010 under the Cancun Adaptation Framework.⁶ Initial guidelines for the formulation of NAPs were adopted by the COP in 2011⁷, and the technical guidelines for the process to formulation and implement NAPs were prepared by the LEG in December 2012, in response to a mandate from the UNFCCC COP. The adoption of the Paris Agreement in 2015 provided further greater focus on adaptation, along with enhanced financial support for the formulation of NAPs through the Green Climate Fund (GCF).⁸

This supplementary guide has been developed to address the support countries require to enhance the coverage of human settlement/urban issues within the broader national effort to formulate and implement NAPs. The supplement also offers advice on how adaptation efforts at the urban level can be scaled up and better integrated into national efforts.

Urban areas are complex. They are not “sectors” like agriculture or health, but places that are often densely populated and are where many social, physical and economic systems meet and interact. These systems include those that extend beyond the urban boundary such as supply chains and food supplies, which involve rural, regional and international linkages. Effectively addressing human settlements in National Adaptation Plans therefore requires a detailed approach to map appropriate interlinkages that are unique to different city and country contexts. For ease of use, this guide presents a simple structure broken down into four main sections, as outlined below:

Part 1 – Introduces the guide and frames the topic.

Part 2 – Outlines the case for considering cities and towns in NAPs. It seeks to answer the question why undertake urban adaptation?

Part 3 – Introduces the practicalities of adaptation in towns and cities – by asking how to undertake adaptation in cities. This guide is provided to familiarize NAP stakeholders with city adaptation processes, which in turn will help to address urban adaptation in NAPs. This section points the reader to a substantial body of literature and guidance that guides decision making on urban adaptation.

Part 4 – Ties the previous sections together by considering scaling urban adaptation into national policy. It considers finance in particular, asking how globally significant change be affected in and by cities.

The supplementary guide reviews good practice from towns, cities and countries that have taken actions to adapt to climate change and offers practical guidance on scaling this work to the national level through the NAP. Using this guide, climate change focal points or relevant institutions, who are formulating NAPs or overseeing their implementation, can more easily identify urban climate change priorities in their countries and incorporate them in the NAP process. However, the relationship between urban development and NAPs is a relatively new area, and as such this supplementary guide doesn't review completed NAPs for urban content.

The supplementary guide is developed in support of the guiding principles and key features of the overall NAP Process⁹:

- Guiding principles – the COP agreed that the enhanced action on adaptation should
 - Be undertaken in accordance with the Convention;
 - Follow a country-driven, gender-sensitive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems;
 - Be based on and guided by the best available science and, as appropriate, traditional and indigenous knowledge, and by gender-sensitive approaches, with a view to integrating adaptation into relevant social, economic and environmental policies and actions;
 - Not be prescriptive, nor result in the duplication of efforts undertaken in-country, but facilitate country-owned, country-driven action.
- The NAP process
 - Is not prescriptive. The guidelines for the process assist LDCs to undertake the steps and activities that can ensure effective adaptation. Based on their different levels of progress with adaptation thus far, countries are able to select which steps and activities to undertake in order to move forward;
 - Seeks to enhance the coherence of adaptation and development planning within countries, rather than duplicating efforts undertaken in a given country;
 - Facilitates country-owned, country-driven action. LDCs have full ownership of the NAP process within

⁶ UNFCCC (2011), COP Decision 1/CP.16. Available from <https://unfccc.int/sites/default/files/resource/docs/2010/cop16/eng/07a01.pdf>.

⁷ UNFCCC (2012), COP Decision 5/CP.17. Available from <https://unfccc.int/sites/default/files/resource/docs/2011/cop17/eng/09a01.pdf>.

⁸ UNFCCC (2016), COP Decision 1/CP.21. Available at <https://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf>.

⁹ UNFCCC (2012), The National Adaptation Plan Process, A brief overview. Available from https://unfccc.int/files/adaptation/application/pdf/nap_overview.pdf.



their countries. The NAP process seeks to harness and build upon national-level capacity, with support from various partners, as appropriate;

- Is designed so that countries can monitor and review it on a regular basis, and update their NAPs in an iterative manner. This is important, given that better quality climate data and projections, as well as other information useful for the planning process, will increasingly become available, and the impacts of climate change in the medium and long-term will be better understood.
- The planning and implementation of adaptation is:
 - Based on nationally-identified priorities, including those reflected in the relevant national documents, plans and strategies. Again, this refers to the country-driven nature of the NAP process. The process is designed so that the NAP process can be integrated into the national plans priorities as appropriate;
 - Coordinated with national sustainable development objectives, plans, policies and programmes. Coordination and coherence are important elements of the NAP process.

1.1. Rationale

Why develop this supplementary guide? There are three main reasons:

First, human settlements are important because they are where most people in the world live; in 2018, 55 per cent of people lived in urban areas, and by 2050 this is projected to rise to 68 per cent.¹⁰ Not taking adaptation in urban areas now will make adaptation to climate change more difficult in the future.

Second, human settlements are where most economic assets, infrastructure, culturally important sites and government institutions are located. They are the location where complex systems and millions of people meet and interact. To protect people from the impacts of climate change, there is a need to protect, through adaptation, the services people depend on for their livelihoods, prosperity, recreation and safety.

The Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) highlighted the next two decades present a window of opportunity for climate action in urban areas. As the recent Global Warming of 1.5°C Report notes, “Strengthening the capacities for climate action of national and sub-national authorities, civil society, the private sector, indigenous peoples and local communities can support the implementation of ambitious actions implied by limiting *global warming* to 1.5°C”.¹¹ Cities have the opportunity to apply more cost-effective measures to address both climate adaptation and mitigation, for example when replacing aging infrastructure, to integrate climate considerations into the new infrastructure decision-making processes. However, cities that do not take adaptation actions in key sectors like infrastructure and housing will be disproportionately vulnerable.¹²

¹⁰ UN Population Division, World Urbanization Prospects: 2018 Revision, key facts. Available from <https://population.un.org/wup/Publications/Files/WUP2018-KeyFacts.pdf>.

¹¹ IPCC, 2018: Summary for Policymakers. In: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [V. Masson-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P. R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland, 32 pp.

¹² Revi, A., D.E. Satterthwaite, F. Aragón-Durand, J. Corfee-Morlot, R.B.R. Kiunsi, M. Pelling, D.C. Roberts, and W. Solecki, 2014: Urban areas. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Blier, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 535-612.

As Part II of this guide makes clear, urban areas are growing rapidly throughout the world and are both key drivers of growth and places where rapid reductions in poverty take place. This presents opportunities and challenges. Population density means that cities offer the benefits of agglomeration, while the economic growth of, and driven by, cities means that adaptation actions can attract finance and be scaled more quickly and easily.

Third, the very active consideration of urban adaptation issues has largely been at the city level and in many countries only for selected cities. Most countries are making good progress in integrating urban and climate change issues, although much work is still needed. For example, UN-Habitat's analysis showed that 113 countries out of 164 that submitted NDCs included urban considerations (either directly or indirectly)¹³ This supplementary guide can help countries to include urban considerations in their adaptation planning at the national level, and provide the necessary technical inputs in the NAPs that would operationalize the progress that the NDC commitments represent.

113 of 164 NDCs show relevant urban key words in the context of national priorities and ambitions for reducing emissions and adapting to climate change

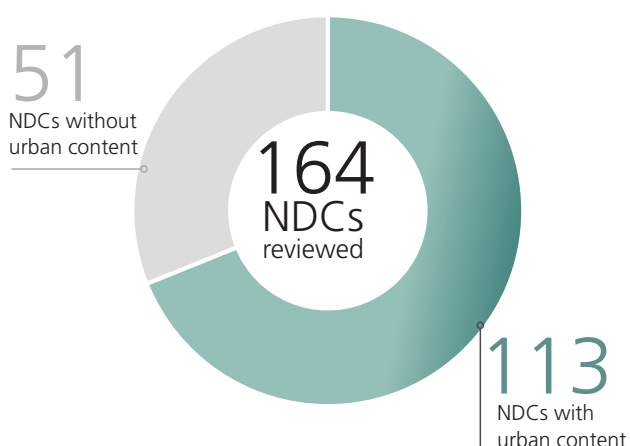


Figure 1: Analysis of NDCs with urban content.¹⁴

Specific challenges for climate change adaptation in human settlements

> *Building synergies between different sectors and stakeholders*

Addressing urban issues into NAPs requires that a broad range of sector interests be taken into consideration while formulating and implementing the NAP. Climate change has significant potential

to impact a range of critical physical and basic service sectors, including those of critical importance to urban areas, including water management, energy, transport, buildings and construction, urban planning, health and information and communication. These impacts interact with other social, economic and environmental stressors, exacerbating and compounding risks to individual and household well-being, and reducing the ability of urban areas to contribute to meeting development goals.

To successfully address urban issues in National Adaptation Plans, numerous stakeholders will need to be engaged throughout the formulation and implementation process. In particular, various ministries, representing the different sectors mentioned above, and different levels of government will need to be consulted as part of a thorough process of vertical and horizontal coordination. The integration of climate change adaptation in city planning has shown some positive influence in building resilience and synergies between sectors and actors.

> *Lack of technical capacities, policy support, financial instruments and resources*

In many cases, there is a lack of emphasis in the adaptation responses on the poorest population in human settlements who are often the most exposed or vulnerable to climate hazards.¹⁵ The capacity of local authorities to work effectively, either independently or vertically with different levels of government is constrained by limited funding and technical expertise, institutional mechanisms, and lack of information and leadership.¹⁶ Many national governments face similar constraints and have not recognized the potential importance of local governments in adaptation to the impacts of climate change.

Large cities in countries with decentralized governance systems and strong administrative capacity are best-placed to attract external funding, including transfers from national government. Smaller cities and those in countries with more centralized governance structures face greater challenges in raising finance, either from external sources or government transfers.¹⁷ These cities stand to gain the most from this supplementary guide.

¹⁵ UNFCCC (2015), Good practices and lessons learned in adaptation planning processes addressing ecosystems, human settlements, water resources and health, and in processes and structures for linking national and local adaptation planning: a synthesis of case studies. Available from <https://unfccc.int/resource/docs/2015/sbsta/eng/04.pdf>.

¹⁶ Gupta, J., R. Lasage, and T. Stam, 2007: National efforts to enhance local climate policy in the Netherlands. *Environmental Sciences*, 4(3), 171-182. Carmin, J., E. Chu, and D. Dodman, 2013: *Urban Climate Adaptation and Leadership: From Conceptual to Practical Understanding*. OECD Regional Development Working Paper No. 2013/26, OECD Publishing, Paris, France, 48 pp., doi:10.1787/5k3ttg88w8hh-en.

¹⁷ Revi, A., D.E. Satterthwaite, F. Aragón-Durand, J. Corfee-Morlot, R.B.R. Kiunsi, M. Pelling, D.C. Roberts, and W. Solecki, 2014: Urban areas. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Blier, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p.586.

¹³ UN-Habitat (2017), *Sustainable Urbanization and the Paris Agreement*, p.IX. Available from <https://unhabitat.org/books/sustainable-urbanization-in-the-paris-agreement/>.

¹⁴ Ibid.

> *Uncertainty of climate change impacts, gaps between research output and operational needs of users*

There is considerable uncertainty regarding climate change projections.¹⁸ Some human settlement adaptation studies report there is a gap between research output and operational needs of users.¹⁹ For example, a lack of research output or a lack of access to climate data or information can limit users such as urban planners in developing “climate-proof” plans and integrating climate considerations in adaptation planning processes.²⁰ Cities especially often lack access to information and/or lack the internal capacity to analyze existing information.

If national and local governments had more reliable, locally specific, downscaled projections of climate change they would enable themselves to screen for impacts and risks. Meanwhile, tools for the measurement and management of risk are also needed. At the same time, adaptation plans, where they exist, often don’t consider what changes in risk could take place during policy implementation. Identifying knowledge gaps is therefore an essential part of the institutional learning process.

1.2. NAPs in the Global Process

Context – NDCs and NAPs

Articles 7 and 8 of the Paris Agreement give equal weight to adaptation and mitigation.²¹ Adaptation is defined by the Agreement as “increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience [...]”²² In addition to the commitment on adaptation, the Paris Agreement sits adaptation and mitigation in the context of sustainable development and broader efforts to eradicate poverty. This allows for linkages between efforts to adapt to climate change and initiatives in support of other agreements such as the SDGs and the NUA.

Box 2

What are Nationally Determined Contributions?

Nationally Determined Contributions (NDCs) are the embodiment of efforts by parties to the UNFCCC to reduce their greenhouse gas emissions and adapt to the impacts of climate change. Article 4, Paragraph 2 of the Paris Agreement states that: “Each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.”²³ The NDCs should reflect each party’s “highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances”²⁴ Countries may adjust their NDC at any time, given changes in financial capabilities, technology or capacity. These submissions are publicly available on the NDC interim registry.²⁵



Parties acknowledge that adaptation action should follow a country-driven, gender-responsive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems, and should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems, with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions, where appropriate.”²⁶

¹⁸ Ibid., p.563.

¹⁹ UNFCCC (2015), Good practices and lessons learned in adaptation planning processes addressing ecosystems, human settlements, water resources and health, and in processes and structures for linking national and local adaptation planning: a synthesis of case studies. Available from <https://unfccc.int/resource/docs/2015/sbsta/eng/04.pdf>.

²⁰ Ibid.

²¹ United Nations (2015), Paris Agreement, Articles 7. Available from https://unfccc.int/sites/default/files/english_paris_agreement.pdf.

²² Ibid., Article 2.

²³ Ibid., Article 4.

²⁴ Ibid., Article 3.

²⁵ <https://unfccc.int/news/ndc-interim-registry>

²⁶ United Nations (2015), Paris Agreement, Articles 7. Available from https://unfccc.int/sites/default/files/english_paris_agreement.pdf.



Figure 2: Countries with human settlements contents in their NDCs.²⁷

National Adaptation Plans are a country's comprehensive plan for the implementation of adaptation actions in the medium to long-term and any associated monitoring and evaluation. NAPs, as an instrument to programme adaptation actions, were agreed under the Cancun Adaptation Framework at the 16th Conference of the Parties in 2010, meaning that NAPs predate the Paris Agreement and NDCs. NAPs are a continuous, progressive and iterative process that are designed to be country driven and transparent. At the time of writing however, only 11 countries have submitted their NAP to the UNFCCC via NAP Central.²⁸

The agreed objectives of the national adaptation plan process are:

- (a) To reduce vulnerability to the impacts of climate change, by building adaptive capacity and resilience;
- (b) To facilitate the integration of climate change adaptation,

in a coherent manner, into relevant new and existing policies, programmes and activities, in particular developing planning processes and strategies, within all relevant sectors and at different levels, as appropriate.

Despite initially slow progress, funding sources have now been made available for countries, primarily through the GCF readiness programme.²⁹ It is expected that a significant number of NAPs will be completed in the next few years. As of the end of 2018 for example, 40 of 47 Least Developed Countries have initiated the development of a NAP.³⁰ This shows a strong commitment from the Least Developed Countries to integrate climate change adaptation into medium and long-term national planning processes.

²⁷ UN-Habitat (2017), Sustainable Urbanization and the Paris Agreement. Available from <https://unhabitat.org/books/sustainable-urbanization-in-the-paris-agreement/>.

²⁸ http://www4.unfccc.int/nap/News/Pages/national_adaptation_plans.aspx

²⁹ <https://www.greenclimate.fund/gcf101/empowering-countries/readiness-support>

³⁰ UNFCCC (2018), Progress in the process to formulate and implement national adaptation plans. Available from <https://unfccc.int/documents/183788>.

02

THE CASE FOR ADAPTATION IN CITIES AND TOWNS





Neighborhood in Arrondissement No.8,
Ouagadougou, Burkina Faso
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THE CASE FOR ADAPTATION IN CITIES AND TOWNS

In Part 1 the guide introduces its rationale and gives a brief introduction to NAPs in the context of global agreements under the UNFCCC. However, it is necessary to understand the broader case for adaptation in human settlements.

This section is divided into two sub-sections; firstly, it makes the urban case for adaptation. In this sub-section, the guide explores two main issues; the climate change hazards that cities and towns are exposed to, and the non-climate related underlying vulnerabilities they often experience, because of, for example, inadequate infrastructure, poor quality or informal housing, or high numbers of people below the poverty line.

Table 1: World urbanization rates.³⁵

Region	Percentage of the population living in urban areas
North America	82
Latin America and the Caribbean	81
Europe	74
Oceania	68
Asia	50
Africa	43

The second half of the section links urban adaptation to other global goals and agreements, beyond NAPs and the Paris Agreement. Adaptation in urban areas is relevant to the Sustainable Development Goals, especially goal 11, Sustainable Cities and Communities, and Goal 13, Climate Action, but also several other goals and targets too. Urban adaptation is also in line with the New Urban Agenda, agreed in 2016, especially Articles 79 and 80 that relate to climate change adaptation action. Finally, climate change adaptation in cities is also directly relevant to the Sendai Framework for Disaster Risk reduction.

This chapter demonstrates the numerous co-benefits and positive knock-on effects of taking urban adaptation actions, especially in the context of other global agreements.

2.1. The Urban Case

Statistics on, and projection of, urban growth tell us that urban areas are changing very rapidly. 55 per cent of the world's population lives in urban areas, which. The global urban population is projected to increase to 68 per cent by 2050. This means that 2.5 billion more people will live in cities

in 2050. Today, the Americas and the Caribbean are the most urbanized regions, followed by Europe and Oceania. Around half of Asia-Pacific's population lives in urbanized areas, while Africa is presently the only region that is predominantly rural. Whilst they are the least urbanized areas at present, Asia and Africa will see the bulk of urban growth by 2050. Of the projected additional 2.5 billion people living in towns and cities by 2050, 90 per cent of this growth will occur in Asian and African cities; 35 per cent of this growth will be in India, China and Nigeria alone. However, high growth of cities is not necessarily a new phenomenon; of the 611 cities that in 2010 had a population greater than 750,000, 47 had seen a twenty-fold increase in population since 1960, and 120 had grown 10-fold.³⁶ While the number of mega-cities throughout the world is projected to more than double to 43, the fastest growing urban agglomerations are cities of fewer than 1 million inhabitants, while half of all urban residents currently live in cities of fewer than 500,000 people.³⁷

It is because of this last point; that both urban growth takes place, and that urban adaptation is required, in smaller cities that this guide does not set a "minimum size" of town or city that should be addressed in the formulation or implementation of NAPs. Countries have vastly differing definitions of urban areas; a small city in India or China, for example, would be very different in its size, governance structure or adaptation requirements from a small city in a small island developing state.

The substantial population growth that many human settlements are experiencing brings incredible potential for sustainable development for people living in them. Cities are drivers of growth and can be locations of better jobs, improved housing and educational opportunities. Cities that are well planned and governed have a much greater chance of providing these benefits to the people that live in them.

³⁵ UNDESA (2012), cited in evi, A., D.E. Satterthwaite, F. Aragón-Durand, J. Corfee-Morlot, R.B.R. Kiunsi, M. Pelling, D.C. Roberts, and W. Solecki, 2014: Urban areas. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 535-612.

³⁷ UN Population Division, World Urbanization Prospects: 2018 Revision, key facts.

³⁵ UN Population Division, World Urbanization Prospects: 2018 Revision, key facts. Available from <https://population.un.org/wup/Publications/Files/WUP2018-KeyFacts.pdf>.



Figure 3: Split in Half - A settlement divided into two because of sea-level rise in Kiribati.³⁸

Climate Hazards

Extreme climate change related hazards, such as severe storms, floods and exceptionally high temperatures, and slow-onset changes such as desertification, drought, glacial melt and sea-level rise are increasingly affecting all areas of the world, including cities. In addition, many urban areas are located in vulnerable areas, because these areas also provide economic opportunities.

By 2025, it is projected that 71 per cent of the world's urban population, as many as 2.8 billion people, will be living in low-elevation coastal zones, defined as those situated less than 10 metres above mean sea-level.³⁹ Meanwhile, sea levels are projected to rise by up to 98 millimetres by 2100.⁴⁰ This means that sea-level rise is a threat to cities throughout the world. Densely populated areas as diverse as the Mekong Delta in Vietnam, the US Eastern Seaboard, Guangdong Province in China, and the Nile Delta in Egypt are highly exposed to sea-level rise. Indeed, by 2080, sea-levels and related hazards will affect five times as many people as

they did in 1990.⁴¹ Sea-level rise is closely associated with temperature increase, as the two primary drivers of rising sea-levels are thermal expansion, where the surface area of water expands as it warms, and melting ice in the polar regions. There is evidence, for example, that a 2°C global temperature increase would expose 25 million people in North Africa to flooding, including in major cities such as Cairo.⁴² Meanwhile, small island developing states, which usually don't have large urban agglomerations, but are home to many smaller towns, are highly vulnerable to flooding and coastal erosion resulting from sea-level rise. In Kiribati, for example, the effects of sea-level rise are so severe that they pose an existential threat to people living there.

As this supplementary guide was being prepared, the IPCC released its Global Warming of 1.5°C report.⁴³ This report highlights the critical need to take urgent actions to keep global warming within 1.5°C of pre-industrial levels. A 1.5°C warming scenario would ensure that some impacts remain within the adaptive capacity of human societies, relative to a 2°C warming scenario. For example, risks from some vector-borne diseases, such as malaria and dengue fever, are projected to increase with warming from 1.5°C to 2°C, including

³⁸ Photo credit - <https://www.theguardian.com/world/2017/oct/23/waiting-for-the-tide-to-turn-kiribatis-fight-for-survival>.

³⁹ UN-Habitat (2011), Global Report on Human Settlements. Available from <https://unhabitat.org/books/cities-and-climate-change-global-report-on-human-settlements-2011/>.

⁴⁰ Revi, A., D.E. Satterthwaite, F. Aragón-Durand, J. Corfee-Morlot, R.B.R. Kiunsi, M. Pelling, D.C. Roberts, and W. Solecki, 2014: Urban areas. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L.

⁴¹ UN-Habitat (2011), Global Report on Human Settlements, Earthscan, London p.66.

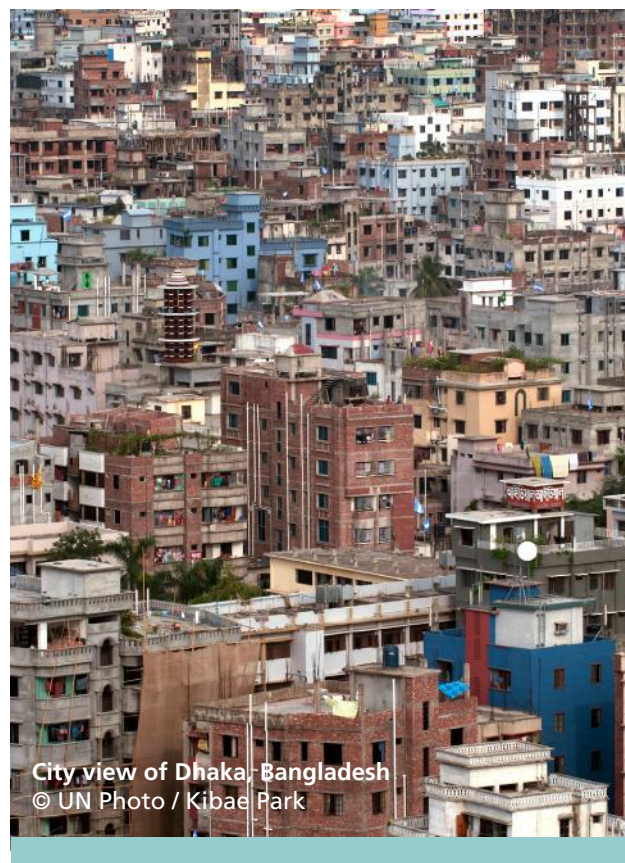
⁴² Ibid.

⁴³ <http://www.ipcc.ch/report/sr15/>

potential shifts in their geographic range.⁴⁴ Meanwhile, the urban heat island would be more pronounced under a 2°C warming scenario, relative to a 1.5°C warming scenario.

Severe storms are a related problem. As water in the oceans warms it causes more intense and more long-lasting storms: while a warmer atmosphere allows them to store more water that accumulates into storm systems that carry greater levels of rainfall. Many urban centres are located along cyclone tracks. As this guideline was being prepared, two storms were causing substantial damage on opposite sides of the planet. Super typhoon Mangkhut hit the Philippines, Hong Kong and southern China, killing 81 people in the Philippines alone⁴⁵, while at almost the same time Hurricane Florence made landfall on the US East Coast, killing 37 people and causing up to US\$22 billion of damage.⁴⁶ Evidence of these storms becoming more frequent and intense is building; in 2015, the US National Aeronautical and Space Administration observed four category 4 or above typhoons active in the Pacific Ocean for the first time⁴⁷, while storm tracks are now being observed in the Gulf of Aden, affecting Yemen, Somalia and Djibouti.⁴⁸

Heat stress is an important issue in urban areas. Larger cities often experience the urban heat island effect, where an urban area is substantially warmer than its surrounding rural area, due to human factors. This happens because buildings and paved surfaces heat up and retain heat more than vegetated areas, especially in densely built up areas with poor ventilation. Waste heat, from traffic or air conditioning units, also contributes to heating up the urban environment. The urban heat island effect means that heat waves, which will be more frequent and more extreme in many areas due to climate change, will be felt particularly acutely in cities. Extremely hot days, and especially nights, can cause heat stress in humans, which can lead to various health problems. In Europe and parts of North America, heat waves are thought to have been responsible for the deaths of thousands of people. The 2003 European heat wave killed over 700



people in Paris, for example.⁴⁹ While temperatures in other parts of the world were higher, in temperate climates, such as Europe, people are less prepared and unable to cope with extreme temperatures. Heat also causes forest and bush fires that can endanger urban areas, as seen in Greece in 2018, for example. The ability of cities to cope with heat waves is also being reduced due to increased water scarcity. For example, many Latin American cities, such as Quito, Bogota and Lima are experiencing decreased water availability as glacial mass has already decreased to such an extent that seasonal melts no longer provide enough water.⁵⁰

⁴⁴ IPCC, 2018: Summary for Policymakers. In: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [V. Masson-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P. R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland, 32 pp, p.12.

⁴⁵ The Economist, 22nd September, 2018 "Stormy Weather".

⁴⁶ Ibid.

⁴⁷ NASA. "Record Setting Three Category Four Storms in Pacific." 2 Sept. 2015 <https://www.nasa.gov/feature/goddard/record-setting-three-category-four-storms-in-pacific> - accessed 27/9/2018.

⁴⁸ Henson, Bob. "Rare Tropical Storm in Gulf of Aden May Affect Yemen, Somalia, Djibouti." Weather Underground, 17 May 2018, <https://www.wunderground.com/cat6/rare-tropical-storm-gulf-aden-may-affect-yemen-somalia-djibouti> - assessed 27/9/2018.

⁴⁹ The Guardian. "Global warming to blame for hundreds of heatwave deaths, scientists say." <https://www.theguardian.com/environment/2016/jul/08/global-warming-to-blame-for-hundreds-of-heatwave-deaths-scientists-say> - accessed 27/9/2018.

⁵⁰ UN-Habitat (2011), The Global Report on Human Settlements, p.69. Available from <https://unhabitat.org/books/cities-and-climate-change-global-report-on-human-settlements-2011/>.

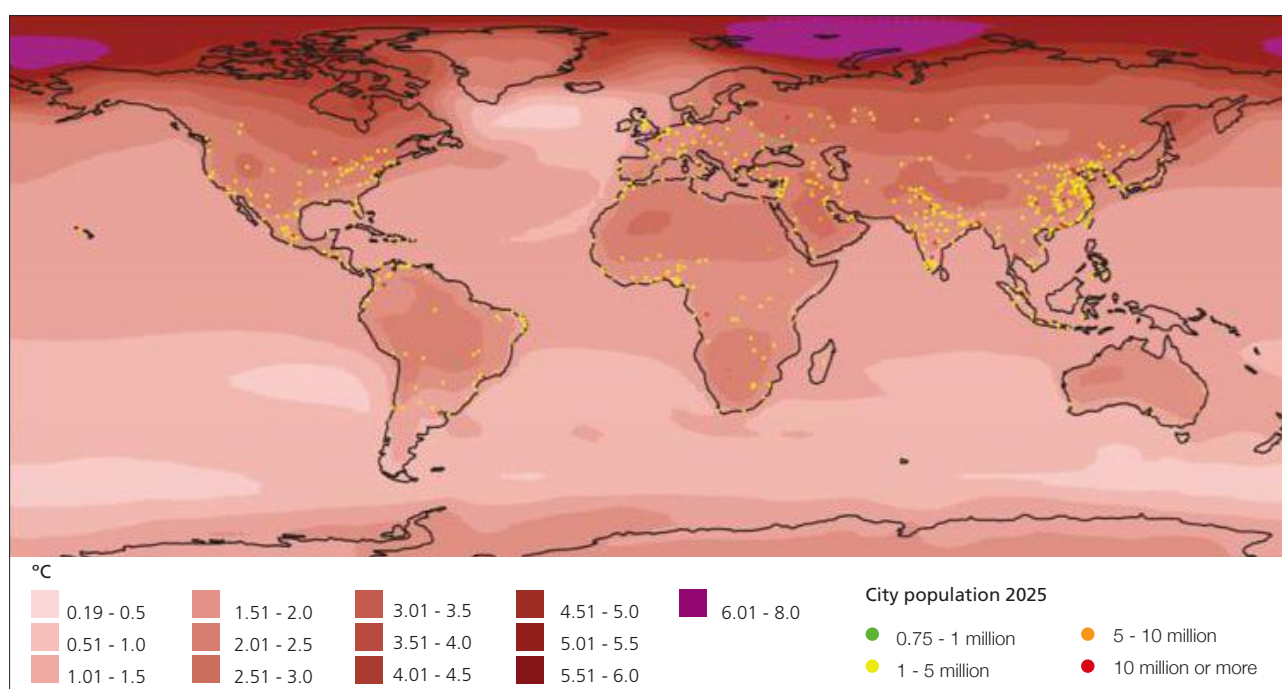


Figure 4: Large urban agglomerations 2025 with projected climate change for the mid-21st century using RCP8.5.⁵¹

Droughts and water shortages are also a very serious challenge. It is estimated that 150 million people currently live in cities with chronic water shortages, defined as less than 100 litres per person per day of sustainable surface and groundwater flow within their urban extent, which could rise to 1 billion by 2050.⁵² Cities in arid regions, such as the Arab States or the Iberian Peninsula are particularly exposed to water shortages, while other cities experience either seasonal shortages or inadequate infrastructure that leads to a lack of water, such as Cape Town in South Africa or Kathmandu in Nepal. An inadequate water supply is not the only factor leading to water scarcity; increased demand for water is a major factor.

Risk and Vulnerability

As these guidelines highlighted in their introduction, urban areas are locations where infrastructure, basic services, ecological systems, and people interact in close quarters. Because of the proximity that is inherent in urban areas, risks arising from climate change and underlying vulnerabilities that increase them tend to affect more people and can more easily have knock-on effects.

Housing

People living in informal settlements and/or temporary housing are the most likely to be negatively affected by climate change impacts in a given city. This is for three main reasons; i) because the physical location of slums and/or informal settlements is often on environmentally-fragile locations such as steep slopes, floodplains, coastal shores and river banks which have a high exposure to climatic hazards such as flooding and landslides, ii) The socio-economic characteristics of the residents, such as high levels of poverty and illiteracy, mean that these communities have low capacity to deal with shocks and stressors from climate-related disasters, and iii) The political and institutional marginalization of these neighbourhoods, stemming from nonrecognition of informal settlements as part of the larger city fabric, often results in the absence of meaningful risk-reducing infrastructure such as storm water drains, proper roads, bridges, and water and sanitation facilities – thereby further reducing the climate resilience of marginalized neighbourhoods and their residents. This marginalization also jeopardizes those communities affected or displaced by climate disasters and they often have limited guarantees that they can return to their homes and livelihoods after the recovery effort.⁵³

⁵¹ Revi, A., D.E. Satterthwaite, F. Aragón-Durand, J. Corfee-Morlot, R.B.R. Kiunsi, M. Pelling, D.C. Roberts, and W. Solecki, 2014: Urban areas. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 554.

⁵² McDonald, R.I., P. Green, D. Balk, B.M. Fekete, C. Revenga, M. Todd, and M. Montgomery, 2011: Urban growth, climate change, and freshwater availability. *Proceedings of the National Academy of Sciences of the United States of America*, 108(15), 6312-6317.

⁵³ UN-Habitat (2018), *Addressing The Most Vulnerable First: Pro-poor Climate Action in Informal Settlements*, p.3. Available from <https://unhabitat.org/un-habitat-thematic-guide-addressing-the-most-vulnerable-first-pro-poor-climate-action-in-informal-settlements/>.

Case Study 1: Upgrading of vulnerable coastal settlements in Saint Louis, Senegal.

Saint Louis is a city of approximately 250,000 inhabitants and a UNESCO world heritage site. It is part of a wetland constituted of a myriad of islands. The city is highly vulnerable to climate hazards since it borders the estuary of the Senegal River delta and is threatened by the erosive action of the Atlantic Ocean. There is high urban density in certain areas, in particular in the Guet Ndar neighbourhood located in the sandy stretch separating the sea and the river. The neighbourhood is also suffering from severe erosion as housing construction takes place too close to the ocean and within the dynamic areas of influence of the waves especially during high tides. The largest island, Sor, is characterized by poor sanitation, a high water table and an inefficient drainage system, as well as accumulation of solid waste in several locations, particularly in the Diaminar neighbourhood.

The Municipality, together with UN-Habitat and with the support of the Government of Japan carried out an in-depth analysis of the climate change related hazards and vulnerabilities of the city and its population. The study determined that two poor neighbourhoods – seafront Guet Ndar and low-lying Diaminar – were particularly vulnerable to flooding and the impacts of climate change. More specifically they identified some 68 households as highly vulnerable and recommended immediate relocation.

UN-Habitat carried out a preliminary mission to Senegal in January 2011 and identified an adequate resettlement site to build low-cost houses for the relocation of the most at risk in Diaminar and Guet Ndar. In April 2011 the Municipality carried out an affordability study in the two affected neighbourhoods, disaggregated by gender, including an assessment of the willingness and capacity to pay for the new houses to be received, and a socio-economic analysis on the impact of the resettlement, including livelihood aspects.

A resettlement site was eventually identified, not far from the original settlements, but far enough away to reduce the exposure of the residents, which is an important aspect to be observed in any relocation project due to the dependency of the targeted population on location-specific economic activities. The area was still in need of at least a 60-80 cm high land fill before construction could start. The Municipality was tasked with this activity. The Hands on Homes Foundation was hired for constructing low-cost houses at the resettlement site.

The Prime Minister of Senegal visited the site in 2012 and expressed his satisfaction with the project, signalling a strong political will by the national government to support the completion of the project. UN-Habitat signed a Memorandum of Understanding with the Mayor to transfer the responsibility for the management and administration of 68 completed houses to the Municipality of Saint Louis.

Social benefits that have and will accrue to beneficiaries include improved housing and secure tenure. Some 68 of the most vulnerable families were resettled. The project eventually will effect a transformational change by providing the beneficiaries with secure title to their property.

The environmental benefits include the establishment of an environmental buffer zone on the coastline and improved environmental conditions in the new relocation site. Plans for tree planting both in the new buffer zone as well as elsewhere in the city could yield ecosystem benefits.



Aerial view of Saint Louis a city surrounded by water



Vulnerable coastal community in Saint Louis © UN-Habitat



City view of Dhaka, Bangladesh © UN Photo / Kibae Park

In 1998, 30 per cent of Dhaka's housing stock was affected by floods, with those living in urban poor communities feeling the greatest effects and facing the greatest challenges in terms of recovery.⁵⁴ However, even secure land tenure and permanent housing structures are no guarantee of protection from extreme events. Hurricane Katrina in New Orleans in 2005 damaged 134,000 housing units; 70 per cent of the city's housing stock.⁵⁵

Protecting houses on the scale required is often prohibitively expensive and as a consequence governments are restricted in what they can achieve in trying to make housing more resilient to climate change. Saint Louis in Senegal is one example, a coastal city and UNESCO World Heritage site on the mouth of the Senegal river, which has frequent floods and large areas at risk from river and coastal flooding. The city tried to relocate people away from the flood-plain area through a participatory process that improved the quality of their homes, but the local government capacity to increase and sustain this investment was limited, thus requiring the government to seek external sources of finance. Sorsogon, a city on a narrow isthmus on Luzon, the Philippines' largest island also engaged in a similar, small-scale programme, with successful results. However, resettling people en masse is very difficult – people often feel very attached to their homes, even when they are in highly vulnerable areas, relocation is very costly, and ensuring the process is participatory and consensual takes time and high levels of capacity.

Infrastructure

Infrastructure systems are affected by climate change in various ways. In coastal cities, sea-level rise and erosion will result in the reduction of land available, and directly threaten infrastructure sited in coastal areas. In Mombasa 17 per cent of land would be lost because of a sea-level rise of just 30 centimetres⁵⁶, which could render any infrastructure in the area ineffective. Moreover, many coastal cities continue to build infrastructure in harm's way. Infrastructure often needs to be on the coast, but there is a need to effectively plan it so that it continues to function despite rising sea-levels. In Sihanoukville, Cambodia, for example, international donors invested over US\$300 million in port and railway developments in an area known to be affected by sea-level

rise and coastal storms.^{57 58 59} This highlights the need to ensure that critical coastal infrastructure is planned with future climate change in mind.

Severe and extreme weather also damages critical infrastructure. Floods in Thailand, for example, caused an estimated US\$45 billion of damage and made Don Mueang airport, the city's second major airport, unusable for several weeks.

Water

Climate related disasters are sometimes imagined as rapid-onset events such as hurricanes or typhoons, or catastrophic floods. However, disasters can be slow-onset – years in the making before they manifest themselves in disaster. Droughts occur through a combination of insufficient rain recharging water sources, inadequate infrastructure for storing and distributing water, and increases in population that are not matched by improvements in infrastructure. In many developing countries for example, many people, including in urban areas, depend on surface water or water from shallow water tables as their primary source of drinking water. Such sources are highly vulnerable to climate change, especially declining rainfall, typically seen in many parts of South and Southeast Asia and the Sahel, for example. In other locations, rainfall is becoming more concentrated in the rainy season, which can also contribute to droughts, where infrastructure systems are not adapted to keep pace with changing monsoon season patterns.

Variety of Settlements

While extensive work has been done on different risks and vulnerabilities in different regions, the typology of settlements and how they are affected by climate change is less clear. Table 2 below presents an overview typology of settlements. This does not substitute a detailed vulnerability assessment should be undertaken on a city by city basis before undertaking adaptation actions, but gives a general overview of the types of issues typically seen in different types of settlements.

Mitigation Linkages

While this publication and NAPs more generally focus on adaption, it is important that cities consider co-benefits with the reduction of greenhouse gas emissions. This guide does not offer detailed guidance on mitigation in cities. However, being aware of mitigation considerations when planning for adaptation is important, especially as urban areas emit more greenhouse gases than rural areas.

⁵⁴ Revi, A., D.E. Satterthwaite, F. Aragón-Durand, J. Corfee-Morlot, R.B.R. Kiunsi, M. Pelling, D.C. Roberts, and W. Solecki, 2014: Urban areas. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 560.

⁵⁵ Plyer, Allison. "Facts for Features: Katrina Impact." The Date Center, <https://www.datacenterresearch.org/data-resources/katrina/facts-for-impact/> - accessed 28/9/2018.

⁵⁶ UN-Habitat (2011), *The Global Report on Human Settlements*, p.71. Available from <https://unhabitat.org/books/cities-and-climate-change-global-report-on-human-settlements-2011/>.

⁵⁷ Yatsushashi, Tomoo. "Japan bankrolls Sihanoukville Port expansion." JOC.COM, https://www.joc.com/port-news/asian-ports/japan-bankrolls-sihanoukville-port-expansion_20170808.html - accessed 28/9/2018.

⁵⁸ ADB, Cambodia: Greater Mekong Subregion: Rehabilitation of the Railway in Cambodia Project. Available from <https://www.adb.org/projects/37269-023/main#project-pds>.

⁵⁹ UN-Habitat (2012), *Climate Change Vulnerability Assessment, Sihanoukville*. Available at <https://unhabitat.org/books/sihanoukville-cambodia-climate-change-vulnerability-assessment/>.

Table 2: Typology of settlements.

Typology of cities and towns	Change to climate variable	Impacts and risks	Vulnerable population
Low lying coastal settlements, settlements near rivers and lakes. Note this applies to cities and towns of all sizes	Increased intensity of cyclones and storms, increased mean sea level and more intense rain.	Increased flood, landslide and mudslide damage, increased flood runoff, increased soil erosion, increased pressure on disaster relief systems, increased stress on emergency services and hospitals and increased stress on urban infrastructure.	Informal settlement dwellers, dwellers living in low lands adjacent to unprotected riverbanks and ocean shorelines, women and children.
Cities and towns in drylands	Decrease in precipitation. Often higher temperatures (especially in the Arab States, Africa and Australasia).	Increased droughts, decreased ground-water availability. Increased urban heat island effects.	The elderly, pregnant women, and those who have other health problems. People without access to cooling, and those unable to afford bottled water or water from other external sources.
Cities and towns with tropical and temperate climates	Higher mean temperatures, more hot days and more heat waves.	Higher electricity demand for cooling, increased incidence of death and serious illness, increased stress on emergency services and hospitals.	Children, the old, outside workers, dwellers in city centers, informal settlements dwellers, urban poor and women.
Cities and towns in upland areas	Higher temperatures, receding snowlines, glacial melt.	Landslides, mudslides, flooding, including very rapid floods resulting from glaciers. Secondary economic impacts. Damage to biodiversity. Some highland cities also suffer from a lack of water, resulting from reduced snow and glacier levels.	People (often informal settlements) living on hill sides and beside rivers and seasonal streams.

Cities therefore have a substantial opportunity to engage in a low-carbon development while also investing in resilience. Assuming cities maintain the trend of decreasing density at the same time as increasing economic and population growth, the Intergovernmental Panel on Climate Change (IPCC) project urban land cover to increase by between 56 and 310 per cent by 2030, compared to a year 2000 baseline. Therefore, according to the IPCC “the next two decades present a window of opportunity for mitigation in urban areas, as a large portion of the world’s urban areas will be developed during this period”.⁶⁰

Furthermore, as the IPCC notes in its Global Warming of 1.5°C report⁶¹, limiting warming to 1.5°C with no or limited overshoot would require rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems. The report further notes:

⁶⁰ IPCC, 2014: Summary for Policymakers. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p.25.

⁶¹ <https://www.ipcc.ch/report/sr15/>

“

The urban and infrastructure system transition consistent with limiting global warming to 1.5°C with no or limited overshoot would imply, for example, changes in land and urban planning practices, as well as deeper emissions reductions in transport and buildings compared to pathways that limit global warming below 2°C. In pathways limiting global warming to 1.5°C with no or limited overshoot, the electricity share of energy demand in buildings would be about 55–75% in 2050 compared to 50–70% in 2050 for 2°C global warming. In the transport sector, the share of low-emission final energy would rise from less than 5% in 2020 to about 35–65% in 2050 compared to 25–45% for 2°C of global warming. Economic, institutional and socio-cultural barriers may inhibit these urban and infrastructure system transitions, depending on national, regional and local circumstances, capabilities and the availability of capital.⁶²

2.2. Global Goals and Agreements

Awareness of global agreements is important when planning adaptation actions because effectively planned actions can contribute to the achievement of multiple global agreements. As Part 1 of the Supplementary Guide notes, climate change adaptation in urban areas is a critical element not only of achieving the goals of the Paris Agreement, but also the Sustainable Development Goals, the New Urban Agenda and the Sendai Framework for Disaster Risk Reduction.

The Paris Agreement

Climate change adaptation received unprecedented attention at and since COP21, due to the recognition of the projected negative impacts of climate change. Unlike previous agreements, such as the Kyoto Protocol, adaptation is treated as an equally important priority to mitigation in the new Agreement, as evidenced by Article 7 and 8 of the Paris Agreement. Adaptation is defined by the Agreement as “increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience [...]” (Article 2 of the Agreement). In addition to the new commitment to adaptation, the Paris Agreement, aims to strengthen the global response to the threat of climate change in the context of sustainable development and efforts to eradicate poverty.

With almost universal adoption of the Paris Climate Change Agreement, countries have set an adaptation goal of “holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels.”⁶³

“

Parties acknowledge that adaptation action should follow a country-driven, gender-responsive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems, and should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems, with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions, where appropriate.

(Article 7:5 of the Paris Agreement)

To address the complex linkages between NAPs and the SDGs, the UNFCCC has developed the iframe, an example of this and how it relates to addressing urban issues into NAPs is shown above. The iframe attempts to make it easy to manage the synergy between development and adaptation goals, including documenting outcomes to support monitoring and evaluation of SDGs implementation and adaptation concurrently. The framework takes an integrated approach towards country-driven and country-specific descriptions of systems that should be managed to achieve adaptation and contribute towards achieving SDG targets. The combination of SDGs and climate risk factors help in selection of systems. For example, relating to SDG 11 Sustainable Cities and Communities, transport, water, housing, infrastructure, and land use and planning are all critical. These component systems can be assessed for sensitivity to climate change, taking into account interlinkages with other sectors and/or adaptation actions.

The Sustainable Development Goals

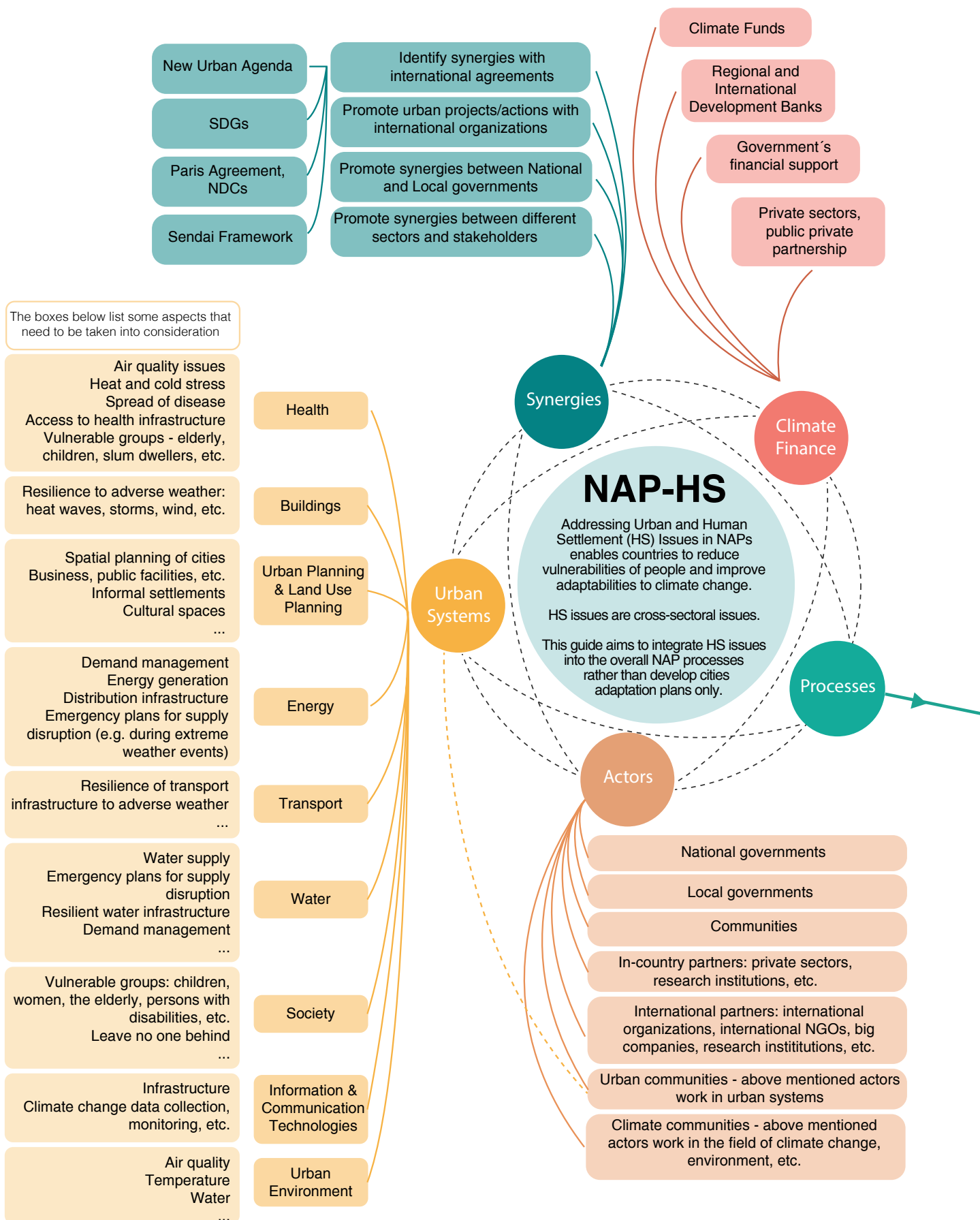
The Sustainable Development Goals (SDGs) set out an ambitious set of 17 goals and 169 targets to transform the world and achieve sustainable development. There are two SDGs with particular relevance to considering urban issues in the formulation of NAPs:

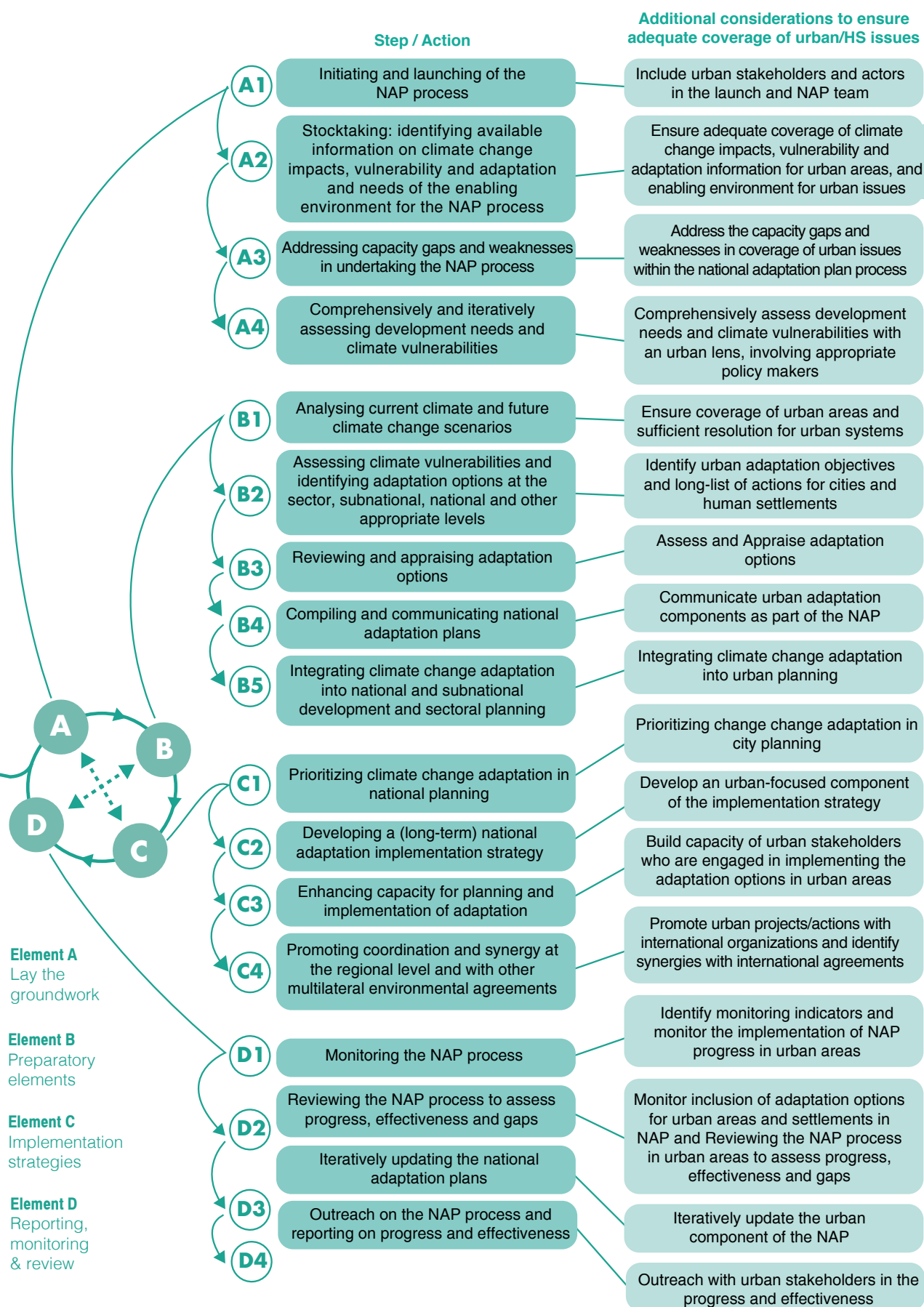
SDG 13 acknowledges that climate change is already impacting public health, food and water security, migration, peace and security. This goal advocates for development that addresses climate change by reducing greenhouse gas emissions, building climate resilience, and developing adaptive capacity to climate-related hazards and natural disasters. Furthermore, it emphasizes the importance of improving education, awareness raising and human and institutional capacity in the areas of: climate change mitigation, adaptation, impact reduction and early warning.⁶⁴

⁶² IPCC, 2014: Summary for Policymakers. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p.25.

⁶³ United Nations (2015), Paris Agreement, Article 2, paragraph 1a. Available from https://unfccc.int/sites/default/files/english_paris_agreement.pdf.

⁶⁴ UN-Habitat (2018), Climate Action Enhancer, p.16. Available at <http://urbanresiliencehub.org/wp-content/uploads/2018/04/Climate-change-enhancer-23.04-Online.pdf>.

Figure 5: The NAP-HS system.⁶⁵⁶⁵ Author's own diagram.



SDG 11 is “Make cities and human settlements inclusive, safe, resilient and sustainable”. Goal 11 focuses on several urban development issues, related to the elimination of slums, provision of accessible and affordable transport, managing urban sprawl, fostering urban governance participation, the enhancement and preservation of cultural heritage, the need to address urban resilience and climate change challenges, and the provision of safe and secure public spaces, consolidating urban policies, among others. All these are fundamental elements that respond to the social, economic and environmental dimensions of sustainable development. The integration and indivisibility of these targets are designed to provide a great opportunity to realize human rights, achieve gender equality and the empowerment of all women and girls.⁶⁶

While the SDGs are voluntary, and do not set binding targets on countries, their development involved engagement from all 193 UN members states and passed as United Nations General Assembly Resolution A/RES/70/1.



Article 59

The SDGs recognise that the sustainable development challenges we face in the immediate future are deeply interconnected, and the more countries meet the 169 targets laid out across the 17 goals, the more this has co-benefits for people in other countries. All developing countries are in some way monitoring progress towards achievement of SDG targets, as part of the localising SDG agenda. NAPs that incorporate urban issues are therefore making a greater contribution towards the achievements of member states in localising SDGs and meeting their targets.

SDG localisation sits with different ministries and agencies in different countries. However, the ministry or agency with responsibility for meeting SDG targets is therefore an important stakeholder in both the formulation of NAPs and in monitoring and evaluating their achievements.

Beyond goals 11 and 13, the SDGs with the greatest relevance to NAP formulation and implementation, several goals are also relevant and have substantial overlap with sectors that are likely to feature in NAP and are of critical importance to urban adaptation. These include; Goal 1 – No poverty, Goal 6 – Clean Water and Sanitation, Goal 7 – Affordable and Clean Energy, Goal 9 – Industry, Innovation and Infrastructure, Goal 15 – Life

The Sustainable Development Goals (SDGs)



SDG 13

Take urgent action to combat climate change and its impacts



SDG 11

Make cities and human settlements inclusive, safe, resilient and sustainable



on Land, Goal 16 – Institutions and Goal 17 – Partnerships for the Goals. The linkages are shown above in Figure 6, where the darker colours represent targets and indicators that are highly relevant to the formulation and implementation of urban components of NAPs and the lighter colours imply some relevance to addressing urban issues in the formulation and implementation of urban components of NAPs. This highlights the need for national actors responsible for formulating and overseeing the implementation of NAPs to engage in continued consultation and coordination with focal point ministries for the SDGs, especially the goals identified in Figure 6.

⁶⁶ UN (2018), SDG 11 Synthesis Report, High Level Political Forum 2018, pp. 3-4. Available from <https://unhabitat.org/sdg-11-synthesis-report/>.

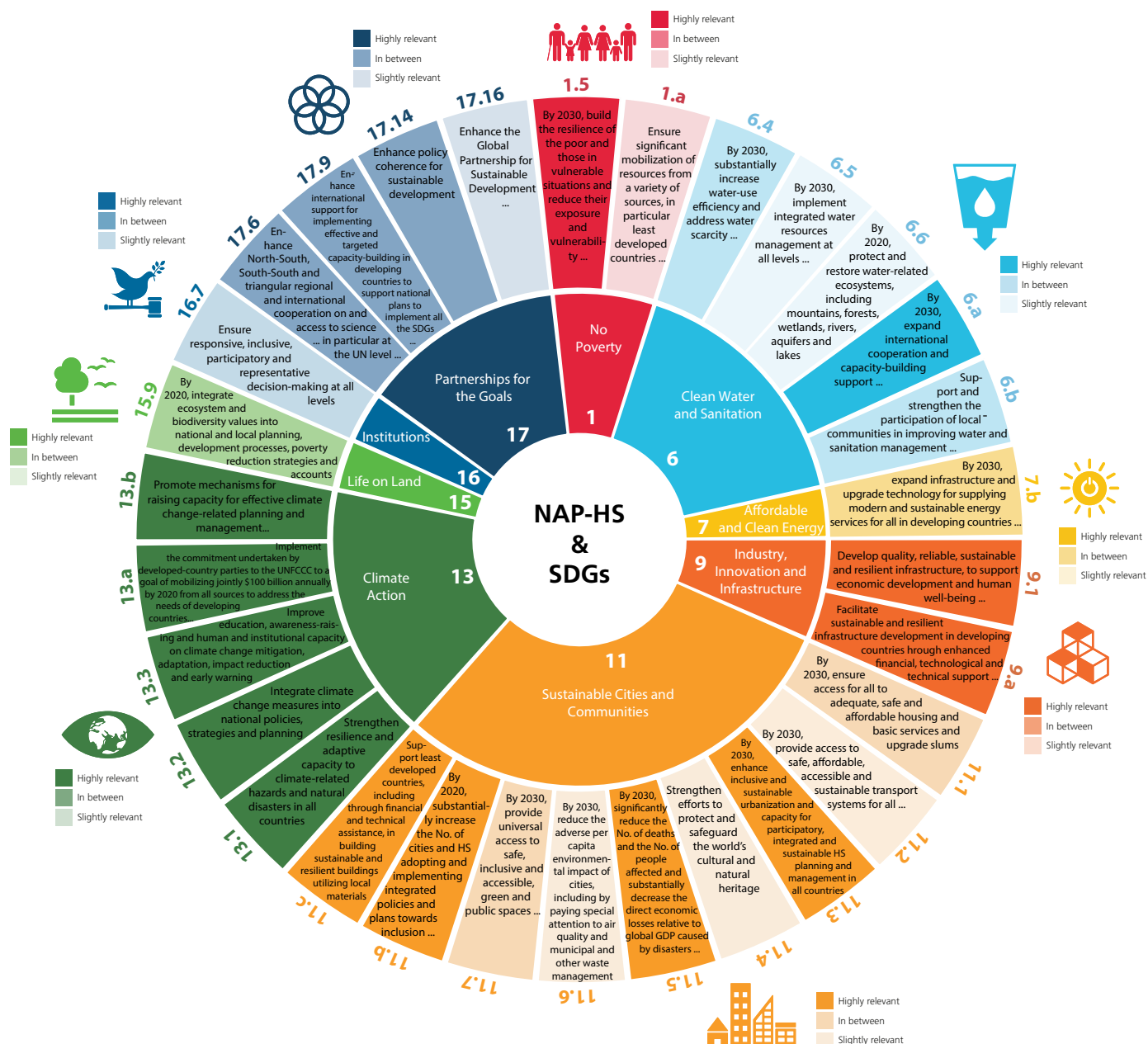


Figure 6: SDG goals and targets that are relevant to NAP in urban areas.⁶⁷

The New Urban Agenda

The New Urban Agenda, adopted at the United Nations Conference on Housing and Sustainable Urban Development (Habitat III), endorsed by the United Nations General Assembly in 2016, acknowledges the key role that cities play in climate action. For the first time in an international agreement, it identifies how the planning, financing, development and building of human settlement directly impacts sustainability and resilience far beyond city boundaries. The vision presented in the New Urban Agenda is one of sustainable, inclusive, and safe cities that are accessible for all. Resource-efficient consumption and production models should protect, conserve, restore and

promote ecosystems, water resources, natural habitats and biodiversity, thereby minimising environmental impact.

The framework also reinforces the need to adopt and implement risk reduction and management mechanisms to reduce vulnerabilities, build responsiveness to natural and human-made hazards and foster mitigation and adaptation to climate change. In particular, there are two paragraphs that are especially relevant to climate change stakeholders and those engaged with National Adaptation Plans formulation and implementation.

⁶⁷ Author's own diagram, for details please see annex 1.



Article 79

We commit ourselves to promoting international, national, subnational and local climate action, including climate change adaptation and mitigation, and to supporting the efforts of cities and human settlements, their inhabitants and all local stakeholders to be important implementers. We further commit ourselves to supporting building resilience and reducing emissions of greenhouse gases from all relevant sectors.⁶⁸



Article 80

We commit ourselves to supporting the medium- to long-term adaptation planning process, as well as city-level assessments of climate vulnerability and impact, to inform adaptation plans, policies, programmes and actions that build the resilience of urban inhabitants, including through the use of ecosystem-based adaptation.⁶⁹

The New Urban Agenda left open the critical question of how the agreement would be implemented. To address this, the Action Framework for the Implementation of the New Urban Agenda (AFINUA) was created. AFINUA outlines the basic pre-conditions and actions required for the implementation of the NUA, who should lead each, how they might be measured and how they link to the provisions of the NUA. While these, like the SDGs, are not binding, AFINUA outlines five broad areas where countries can take the initiative in implementing the New Urban Agenda; (1) national urban policies, with six key elements, (2) urban legislation, rules and regulations, with nine key elements, (3) urban planning and design, with eight key elements, (4) urban economy and municipal finance, with six key elements, and (5) local implementation, with six key elements.⁷⁰ Further information on the key elements can be found here.⁷¹

The NUA also presents opportunities for synergies with the National Adaptation Planning progress. NAP stakeholders can engage directly with urban stakeholders in countries to find synergies between the NAP process and the actions a country is taking to develop urban areas in line with the provisions or the New Urban Agenda. To that end, UN-Habitat has

recently developed a guidance document at the global level and a specific document for the Asia and the Pacific region for urban stakeholders to integrate climate change into their policies and programmes. This guidance is reviewed further in Section 3 of this report.

The Sendai Framework for Disaster Risk Reduction

The Sendai Framework, agreed in 2015, promotes analysis of and action on the interlinked challenges of disaster risk, sustainable development and climate change, and calls on national and local governments to undertake climate action. The Framework stresses that achieving stronger recognition of disaster risk reduction and climate change adaptation are complementary strategies that lead and facilitate appropriate climate risk management.⁷² The four Sendai Framework for Disaster Risk Reduction priority areas of understanding risk, investing in risk reduction, risk governance and building back better are critical for cities and infrastructure. Recent disasters as illustrated earlier have had severe impacts on cities and thus achieving SDGs and progress with the Paris Agreement will be influenced by integration of risk reduction in NAPs.

Cities and urban actors are encouraged to help inform the definition and development of NAPs, which aims to coordinate and harmonize efforts in local scale adaptation leading to vertical integration. The exchange of best practices, lessons learned, and knowledge is integral for urban adaptation measures and the development of innovative methods and tools to evaluate and advance the adaptive capacity of cities. The engagement of cities and urban stakeholders under the UNFCCC Process is supported by the New Urban Agenda and the 2030 Sustainable Development Goals, two further key international agreements that recognize the role of cities. In recent years, cities, sub-national government and the private sector have taken significant action to address climate change in urban environments. The role cities, often termed “non-party stakeholders” as they are additional to national delegations, have in addressing climate change is outlined within Section 5 of the COP-21 conference report, herein referred to as the Decision. Cities, alongside civil society, the private sector and financial institutions, are invited to scale up their efforts and support actions to reduce emissions, build resilience and decrease vulnerability to the adverse effects of climate change.⁷³

⁶⁸ UN (2016), New Urban Agenda. Available at <http://habitat3.org/wp-content/uploads/>.

⁶⁹ Ibid.

⁷⁰ UN-Habitat (2017), Action Framework for Implementation of the New Urban Agenda, p.2. Available at <http://nua.unhabitat.org/AFINUA19thApr.pdf>.

⁷¹ <http://nua.unhabitat.org/AFINUA19thApr.pdf>.

⁷² UN-Habitat (2018), Climate Action Enhancer, p.17. Available at <http://urbanresiliencehub.org/wp-content/uploads/2018/04/Climate-change-enhancer-23.04-Online.pdf>.

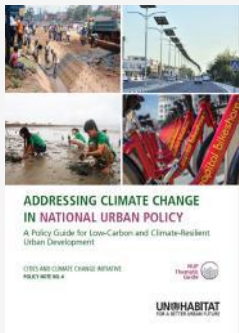
⁷³ UNFCCC (2016), Decision 1/CP.21, p.19.



For cities and the wider urban development community, definition and implementation of adaptation measures will be particularly challenging for a number of reasons. These include the limited predictability of extreme events and their duration, creating and maintaining behavioural change, and maintaining the resilience of key private and social infrastructure.

Building resilience and adapting to climate change will further support cities in their SDG implementation process, thus achieving sustainable urban development. This, however, will to a large extent depend on how urban issues and actors can be integrated into national adaptation planning processes and policies.

Table 3: Suggested readings.

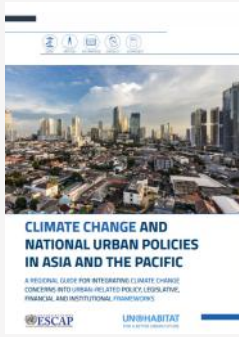
Publication	Synopsis	Cover
IPCC 5th Assessment Report, Climate Change 2014, Impacts, Adaptation and Vulnerability, Chapter 8, Urban Areas. ⁷⁴	Assesses urban processes, climate change risks and impacts, adaptation processes, with a focus on adaptive capacity in urban areas, and governance responses	
IPCC special report, Global Warming of 1.5 °C, 2018. ⁷⁵	<i>Global Warming of 1.5 °C</i> is an IPCC special report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.	
UN-Habitat, Sustainable Urbanization in the Paris Agreement. ⁷⁶	Provides an overview of the NDCs and their urban content. Finds that 113 NDCs have urban-related content included in them.	
UN-Habitat, Addressing Climate change in National Urban Policy. ⁷⁷	National Urban Policy is a tool for government and other stakeholders that can assist with achieving more sustainable urban development. It also facilitates an enabling environment that allows stakeholders to take advantage of urban opportunity. How to address climate change in cities and human settlements represents one of the most pressing challenges facing urban policy-makers today. This Guide recommends how to mainstream such considerations into National Urban Policy, thus helping to empower national governments, local governments, and other stakeholders to effectively address climate change.	

⁷⁴ https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap8_FINAL.pdf

⁷⁵ <https://www.ipcc.ch/report/sr15/>

⁷⁶ <https://unhabitat.org/books/sustainable-urbanization-in-the-paris-agreement/>

⁷⁷ <https://unhabitat.org/books/addressing-climate-change-in-national-urban-policy/>

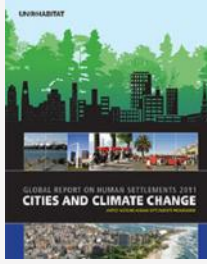
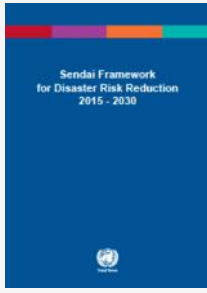
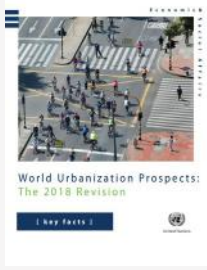
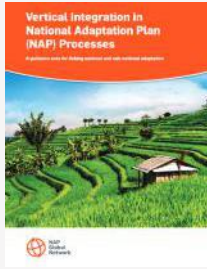
Publication	Synopsis	Cover
UN-Habitat, Addressing Urban Issues in National Climate Change Policies: Cities and Climate Change Initiative, Policy Note 3. ⁷⁸	This note is addressed primarily to decision-makers and stakeholders in the Global South engaged in developing national climate change policies. We define such policies in the present context as high-level documents that set forth in a consolidated manner a country's approach both to mitigating greenhouse gas emissions and adapting to climate change. More specifically, this Note seeks to help those teams to address a relatively narrow topic in the context of those policies: how their countries should deal with climate change in urban areas, and to empower local authorities as key actors in that effort.	
Integrating Climate Change into City Development Strategies. ⁷⁹	This guidebook attempts to provide a modest input into the effort of unifying two key thematic areas, Climate Change and City Development Strategies. This attempt of climate proofing city development strategies is an ongoing process and requires additional effort by governments, academia, and city development partners worldwide.	
UN-Habitat and ESCAP, Climate Change and National Urban Policies in Asia And the Pacific. ⁸⁰	This publication provides policy makers with a flexible and non-prescriptive approach that can help with the integration of climate change into urban policy at any point of the policy cycle.	
UN-Habitat, Trends in Urban Resilience, 2017. ⁸¹	A review of the theoretical debate, global agendas and agreements that are relevant to urban resilience, UN-Habitat's work in the field and other significant actors working on urban resilience throughout the world.	

⁷⁸ <https://unhabitat.org/addressing-urban-issues-in-national-climate-change-policies-cities-and-climate-change-initiative-policy-note-3/>

⁷⁹ <https://unhabitat.org/books/integrating-climate-change-into-city-development-strategies/>

⁸⁰ http://www.fukuoka.unhabitat.org/projects/asian_subregion/detail05_en.html

⁸¹ <https://unhabitat.org/books/trends-in-urban-resilience-2017/>

Publication	Synopsis	Cover
UN-Habitat, Climate Action Enhancer. ⁸²	The Climate Action Enhancer is designed to initiate discussion, provide a snapshot of the current agreements and practices and evaluate how stakeholders, particularly cities, are using tools to build resilience	
UN-Habitat, Global Report on Human Settlements, 2011. ⁸³	The 2011 edition of UN-Habitat's biennial flagship reports, covering adaptation and mitigation challenges, a review of the global frameworks for addressing climate change as they relate to cities, governance approaches and directions for policy makers	
Sendai Framework for Disaster Risk Reduction. ⁸⁴	The Sendai Framework for Disaster Risk Reduction 2015-2030 was adopted at the Third UN World Conference in Sendai, Japan, on March 18, 2015. It is the outcome of stakeholder consultations initiated in March 2012 and inter-governmental negotiations from July 2014 to March 2015, supported by the United Nations Office for Disaster Risk Reduction at the request of the UN General Assembly.	
UNDESA, World Urbanization Prospects, 2018 (Key Facts Overview) ⁸⁵	Key statistics on urbanization throughout the world. A quick, at-a-glance guide to the facts and figures	
NAP Global Network, Vertical Integration in National Adaptation Plan (NAP) Processes: A guidance note for linking national and sub-national adaptation. ⁸⁶	This guidance note is designed for country teams and other stakeholders interested in strengthening vertical integration in National Adaptation Plan (NAP) processes. In the context of the NAP process, vertical integration is the process of creating intentional and strategic linkages between national and sub-national adaptation planning, implementation and monitoring and evaluation (M&E). Recognizing the key role played by sub-national authorities and local organizations in advancing adaptation to climate change, the document outlines the key issues and questions to consider to facilitate vertical integration throughout the NAP process. Practical case examples are provided to illustrate the issues. The guidance note presents a flexible approach that can be adapted to the country's context, capacities and available resources.	

⁸² <http://urbanresiliencehub.org/wp-content/uploads/2018/04/Climate-change-enhancer-23.04-Online.pdf>

⁸³ <https://unhabitat.org/books/cities-and-climate-change-global-report-on-human-settlements-2011-abridged/>

⁸⁴ <https://www.unisdr.org/we/coordinate/sendai-framework>

⁸⁵ <https://population.un.org/wup/Publications/Files/WUP2018-KeyFacts.pdf>

⁸⁶ <http://napglobalnetwork.org/resource/vertical-integration-national-adaptation-plan-nap-processes/>



Floods in Sri Lanka
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03

HOW TO ADDRESS URBAN ISSUES
IN NAPS AND ADAPTATION IN
HUMAN SETTLEMENTS





Favelas of Rio de Janeiro, Brazil
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HOW TO ADDRESS URBAN ISSUES IN NAPs AND ADAPTATION IN HUMAN SETTLEMENTS

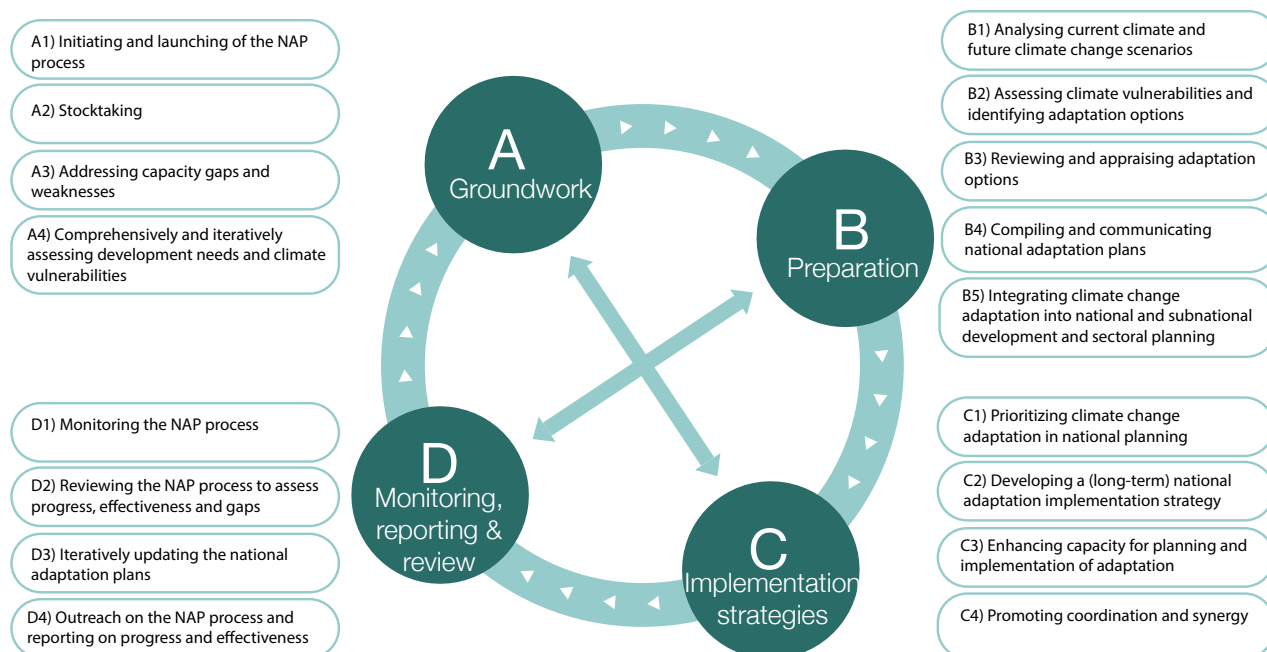


Figure 7: The four key elements of the NAP Technical Guidelines.⁸⁷

⁸⁷ UNFCCC (2012), NAP Technical Guidelines, p.23.

This section of the supplementary guide outlines guidance material that can support NAP focal points and other associated stakeholders from the national level. It points to and summarizes material that stakeholders may find useful in addressing urban issues in NAPs. As stated in the introductory section of the guide, it does not produce original guidance, and it doesn't prescribe which tools and other guidance material to use and when to use it, but rather presents an overview of guidance material that can be useful in understanding urban issues and addressing urban priorities in NAP.

As highlighted in Section 1 of this guide, towns and cities are places where many people live in close proximity, where businesses are located, and where critical, high value infrastructure is. Cities are also places where services are provided; schools, universities and hospitals are concentrated in cities. As the introduction to this supplementary guide showed, by 2050 we expect that 68 per cent of the world's population will live in urban areas; another 2.5 billion people will be added to cities over the next 30 years, with the vast majority of that growth taking place in developing countries. Meanwhile, cities are often located in or near vulnerable locations. Historically, cities typically grew up around

ivers and coasts, which facilitated trade and economic development. However, these locations are often exposed to climate-related hazards, while inland or high-altitude cities, such as Kathmandu or several capitals in the Andes face water challenges as their populations grow and ground-water availability decreases.

While NAPs are unlikely to guide adaptation processes on a city-by-city basis (which is instead the role of each individual town or city's adaptation plan), it is important for NAP focal points to be aware that NAP goals, targets and priorities will be reflected in city-level adaptation plans. For this reason, vertical coordination and integration is required, between NAP focal points and urban stakeholders. This will help to ensure that the various sector issues critical to urban adaptation are captured in the NAP, and that NAP both reflects urban adaptation priorities in the country while also providing sufficient macro-level guidance to city-level adaptation plans.

Part III of the guide will also relate these materials back to the NAP Technical Guidelines to find synergies, allowing NAP experts to contextualise the urban adaptation guidance material presented here in the broader context of the NAP Technical Guidelines.

Table 4: Overview of guidance materials.

Note: for information about these below guidance materials please see annex 3.

Element	Step / Action	Additional considerations to ensure adequate coverage of urban/HS issues	Guidance material to support action
Element A: Lay the Groundwork and Address Gaps	1) Initiating and launching of the NAP process	1) Include urban stakeholders and actors in the launch and NAP team	UN-Habitat, Planning for Climate Change: Guide – A strategic, values-based approach for urban planners and the Toolkit. ⁸⁸
	2) Stocktaking: identifying available information on climate change impacts, vulnerability and adaptation and needs of the enabling environment for the NAP process	2) Ensure adequate coverage of climate change impacts, vulnerability and adaptation information for urban areas, and enabling environment for urban issues	UN-Habitat, Planning for Climate Change: Guide – A strategic, values-based approach for urban planners and the Toolkit. ⁸⁹ IPCC Assessment Reports and publications. ⁹⁰
	3) Addressing capacity gaps and weaknesses in undertaking the NAP process	3) Address the capacity gaps and weaknesses in coverage of urban issues within the national adaptation plan process	UN-Habitat, Guiding Principles for City Climate Action Planning. ⁹¹ UNDP, Capacity Assessment Methodology; A User's Guide. ⁹²
	4) Comprehensively and iteratively assessing development needs and climate vulnerabilities	4) Comprehensively assess development needs and climate vulnerabilities with an urban lens, involving appropriate policy makers	An example: Vulnerability and Risk Assessment Framework and Indicators For National Adaptation Plan (NAP) Formulation Process in Nepal. ⁹³
Element B: Preparatory Elements	1) Analyzing current climate and future climate change scenarios	1) Ensure coverage of urban areas and sufficient resolution for urban systems	IPCC, 2013: Summary for Policymakers. In: Climate Change 2013: The Physical Science Basis. ⁹⁴
	2) Assessing climate vulnerabilities and identifying adaptation options at the sector, subnational, national and other appropriate levels	2) Identify urban adaptation objectives and long-list of actions for cities and human settlements	UN-Habitat, Planning for Climate Change: Guide – A strategic, values-based approach for urban planners and the Toolkit. ⁹⁵

⁸⁸ <https://unhabitat.org/books/planning-for-climate-change-a-strategic-values-based-approach-for-urban-planners-cities-and-climate-change-initiative/> and <https://unhabitat.org/books/planning-for-climate-change-toolkit/>.

⁸⁹ Ibid.

⁹⁰ https://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml#1

⁹¹ <https://unhabitat.org/books/guiding-principles-for-climate-city-planning-action/>

⁹² <http://www.undp.org/content/dam/aplaws/publication/en/publications/capacity-development/undp-capacity-assessment-methodology/UNDP%20Capacity%20Assessment%20Users%20Guide.pdf>

⁹³ <http://climatenepal.org.np/main/index.php?p=research%20and%20publications&sp=onlinelibrary&opt=detail&id=1027>

⁹⁴ <https://www.ipcc.ch/report/ar5/wg1/>

⁹⁵ <https://unhabitat.org/books/planning-for-climate-change-a-strategic-values-based-approach-for-urban-planners-cities-and-climate-change-initiative/> and <https://unhabitat.org/books/planning-for-climate-change-toolkit/>.

Element	Step / Action	Additional considerations to ensure adequate coverage of urban/HS issues	Guidance material to support action
	3) Reviewing and appraising adaptation options	3) Assess and Appraise adaptation options	UN-Habitat, Planning for Climate Change: Guide – A strategic, values-based approach for urban planners and the Toolkit. ⁹⁶ CLIMACT-prio tool. ⁹⁷ UNFCCC, Assessing the Cost and Benefits of Adaptation Options. ⁹⁸
	4) Compiling and communicating national adaptation plans	4) Communicate urban adaptation components as part of the NAP	
	5) Integrating climate change adaptation into national and subnational development and sectoral planning	5) Integrating climate change adaptation into urban planning	UN-Habitat, National Urban Policy: A Guiding Framework. ⁹⁹ UN-Habitat and ESCAP, Climate Change and National Urban Policies in Asia and the Pacific. ¹⁰⁰ UN-Habitat, Addressing Climate Change in National Urban Policy. ¹⁰¹
Element C: Implementation Strategies	1) Prioritizing climate change adaptation in national planning	1) Prioritizing climate change adaptation in city planning	UN-Habitat, Integrating Climate Change into City Development Strategies. ¹⁰² UN-Habitat, Addressing Urban Issues in National Climate Change Policies. ¹⁰³
	2) Developing a (long-term) national adaptation implementation strategy	2) Develop an urban-focused component of the implementation strategy	UN-Habitat, Planning for Climate Change: Guide – A strategic, values-based approach for urban planners and the Toolkit. ¹⁰⁴
	3) Enhancing capacity for planning and implementation of adaptation	3) Build capacity of urban stakeholders who are engaged in implementing the adaptation options in urban areas	UN-Habitat, A Practical Guide to Designing, Planning, and Executing Citywide Slum Upgrading Programmes. ¹⁰⁵
	4) Promoting coordination and synergy at the regional level and with other multilateral environmental agreements	4) Promote urban projects/actions with international organizations and identify synergies with international agreements	

⁹⁶ Ibid.⁹⁷ http://www.blueap.eu/site/wp-content/uploads/2014/06/CLIMACTPrio_ICLEI2014_Olivotto.pdf⁹⁸ https://unfccc.int/resource/docs/publications/pub_nwp_costs_benefits_adaptation.pdf⁹⁹ <https://unhabitat.org/books/national-urban-policy-a-guiding-framework/>¹⁰⁰ http://www.fukuoka.unhabitat.org/projects/asian_subregion/detail05_en.html¹⁰¹ <https://unhabitat.org/books/addressing-climate-change-in-national-urban-policy/>¹⁰² <https://unhabitat.org/books/integrating-climate-change-into-city-development-strategies/>¹⁰³ <https://unhabitat.org/addressing-urban-issues-in-national-climate-change-policies-cities-and-climate-change-initiative-policy-note-3/>¹⁰⁴ <https://unhabitat.org/books/planning-for-climate-change-a-strategic-values-based-approach-for-urban-planners-cities-and-climate-change-initiative/> and <https://unhabitat.org/books/planning-for-climate-change-toolkit/>¹⁰⁵ <https://unhabitat.org/books/a-practical-guide-to-designing-planning-and-executing-citywide-slum-upgrading-programmes/>

Element	Step / Action	Additional considerations to ensure adequate coverage of urban/HS issues	Guidance material to support action
Element D: Reporting Monitoring and Review	1) Monitoring the NAP process	1) Identify monitoring indicators and monitor the implementation of NAP progress in urban areas	UN-Habitat, Planning for Climate Change: Guide – A strategic, values-based approach for urban planners and the Toolkit. ¹⁰⁶
	2) Reviewing the NAP process to assess progress, effectiveness and gaps	2) Monitor inclusion of adaptation options for urban areas and settlements in NAP and Reviewing the NAP process in urban areas to assess progress, effectiveness and gaps	UN-Habitat, Planning for Climate Change: Guide – A strategic, values-based approach for urban planners and the Toolkit. ¹⁰⁷
	3) Iteratively updating the national adaptation plans	3) Iteratively update the urban component of the NAP	UN-Habitat, Planning for Climate Change; A Strategic, Values Based Approach and the Toolkit. ¹⁰⁸
	4) Outreach on the NAP process and reporting on progress and effectiveness	4) Outreach with urban stakeholders in the progress and effectiveness	

¹⁰⁶ <https://unhabitat.org/books/planning-for-climate-change-a-strategic-values-based-approach-for-urban-planners-cities-and-climate-change-initiative/> and <https://unhabitat.org/books/planning-for-climate-change-toolkit/>.

¹⁰⁷ Ibid.

¹⁰⁸ Ibid.

Element A - Lay the Groundwork and Address Gaps

Proposed action in an urban context A1) – Initiating and launching of the NAP process by engaging the appropriate urban stakeholders

A planning process requires leadership, consent and organization from the start – without these it is highly unlikely to be successful. Inevitably, most towns and cities will already have a planning process in place, and an increasing number have taken steps to address climate change challenges. This means that integrating urban adaptation into a NAP is unlikely to be starting from zero. It is vital, therefore, to undertake a thorough stakeholder consultation process to develop the most relevant actions, avoid duplication and to ensure that the broadest possible support is gained. While stakeholders responsible for formulating a NAP would not normally undertake a city-level planning process, it is necessary to understand the basics of such a process so that the NAP can appropriately set macro-level desired outcomes and targets.

UN-Habitat's Planning for Climate Change; A Strategic, Values Based Approach.¹⁰⁹ takes planners and users through two separate processes of "Getting Started" and "Stakeholder Engagement". These processes comprise the following steps:

Getting started

- (i) Frame the challenge – this involves finding a "triggering event" that will frame the need to develop an urban climate change plan, or integrate urban issues into national planning. This triggering event could be based around an opportunity; for example, how the NAP could lead to new adaptation and sustainable development opportunities for cities, or it could be around a recent disaster or evident climate change impact, such as storm damage or flooding.
- (ii) Get Organized – Where NAP planners or experts raise awareness among urban stakeholders and begin to understand which stakeholders are active, how to get their support, and how much political and community level support there is.

- (iii) Form a core team – Because cities are complex environments to plan and implement adaptation actions. In most countries, sub-committees will be formed to develop NAPs, and different ministries will be responsible for implementing them. The need to form a core team reminds NAP stakeholders to engage urban experts, who have worked with multiple cities, to participate in the formulation and implementation of NAP, including, where appropriate, the engagement of elected officials
- (iv) Determine Organizational Capacity – The guide returns to this below under action a3.
- (v) Plan the planning process – This requires the NAP team to be clear about the scope and limitations of the NAP and its focus on urban areas. In particular, can cities access finance or implement projects? Are external organizations likely to be needed to partner to implement? To what extent are cities and towns decentralized in your country? Are they likely to need ongoing national government support, and if so how much?

Stakeholders and participation

This action involves four main tasks:

- (i) Identify stakeholders – NAP planners may wish to consider a smaller advisory group on the urban elements of NAP, and a broader group of stakeholders for more general outreach. While the make up of stakeholders should be decided at country level, it would be good if there are representatives of urban local governments, private sector, and groups of citizens or civil society. It is also important to define the roles of the stakeholders, and their expectations from engaging in the process.
- (ii) Establish a stakeholder advisory group – A group of fewer than 20 individuals will be able to provide targeted advice to the NAP formulation process, and or support and advise the implementation of its urban components. Broadly speaking, an advisory group can: represent the interests of people in cities and towns, speak up for those who may be marginalised by development or adaptation activities, assist in gathering data or facilitating connections, and provide local knowledge.

¹⁰⁹ The guide also has an accompanying toolkit, which can be downloaded here: <https://unhabitat.org/books/planning-for-climate-change-toolkit/>.

- (iii) Establish the stakeholder advisory group procedures – This could be more effective if in the form of a terms of reference for stakeholders, so that each group has a realistic set of roles and responsibilities. This procedure may also be developed for broader groups of multi-stakeholders so as to ensure their involvement at different stages of the NAP formulation process and its implementation.
- (iv) Determine the appropriate level of broader community engagement –This asks the question; how should a NAP process engage with the public? How can the process (or its results) gain positive coverage in the media? How can the process communicate effectively with, for example, the urban poor, youth, marginalised communities or those

with low literacy rates. The draft NAP should be made public and the urban stakeholders should be encouraged to provide inputs, concerns, ideas and solutions for its refinement or improvement.

Planning for Climate Change will provide sufficient ideas and materials to NAP teams to complete this often-overlooked action. By getting stakeholder engagement right, NAPs can benefit from expertise and experiences, avoid pitfalls and pave the way for more successful implementation later on.

Further information about the steps outlined above can be found in Planning for Climate Change from pages 32-44. Associated tools that can be used in workshops can be found in the accompanying toolkit from pages 4-14.

Case Study 2: How to set up a coordinating mechanism to mainstream cities in the NAP.

Ministry of Cities is the focal point for the drafting of Brazil's cities strategy chapter under the NAP.¹¹⁰

The Government of Brazil places cities high on its national development agenda. In 2003, the Brazilian government created the Ministry of Cities with the mission of improving the drafting, implementation and management of public policies targeted at sustainable urban and territorial development.

The Brazil National Adaptation plan considers human settlements as one of 11 priority sectors, exemplified by the NAP containing a full dedicated chapter on cities, including analysis and strategies for building resilience. The Ministry of Environment, the UNFCCC Focal point ministry, integrated the Ministry of Cities closely into the NAP development process, and subsequently the Ministry of Cities focal point for the drafting of Brazil's cities strategy chapter under the NAP. The Ministry of Environment also works with other departments to support city related actions identified in "Strategy for Disaster Risk Management" and "Strategy for Infrastructure" chapters.

One of the outcomes of the above-mentioned mechanism is that Brazil's NAP has a comprehensive and strong focus on human settlement issues with a stand-alone "Strategies for Cities" chapter. It is expected that such a strong focus leads to strong action on the national and local level to improve the resilience of human settlements in the future.



The cover of Cities Chapter, Brazil's NAP.

¹¹⁰ Brazil National Adaptation Plan to Climate Change. Available from <https://www4.unfccc.int/sites/NAPC/Documents/Parties/Brazil%20NAP%20English.pdf>.

In Nepal the Ministry of Forests and Environment is the NAP focal point, urban settlements and infrastructure is one of the seven thematic working groups.¹¹¹

The UNFCCC focal point Ministry in Nepal (then Ministry of Population and Environment, and now the Ministry of Forests and Environment) launched the NAP process in September 2015 and decided to formulate it through a working group approach. Seven thematic working groups (TWGs) were formed on: (i) agriculture and food security (including nutrition); (ii) forests and biodiversity; (iii) water resources and energy; (iv) public health, including water and sanitation; (v) climate-induced disasters; (vi) urban settlements and infrastructure; and (vii) tourism, natural and cultural heritage, as well as two cross-cutting working groups (CWGs) on: (viii) gender and marginalized group (social inclusion); and (ix) livelihoods and governance. These were established under the leadership of a senior official (at the Joint-Secretary level) of each coordinating Ministry. The 23-member urban settlement and infrastructure TWG is coordinated and led by the Ministry of Urban Development (MoUD).

The Government considered the NAP formulation process as an opportunity to strengthen its capacity at systematic, institutional and individual levels. It followed the approaches of utilising an existing coordination mechanism, building capacity and enhancing understanding on climate change adaptation, building ownership and avoiding duplications, promoting multi-stakeholder participation, ensuring gender-sensitivity and inclusiveness, generating, utilising and sharing knowledge and good practices, supplementing development efforts with integration of adaptation actions, aligning with national policies and linking with recent international initiatives such as SDGs, and synergising ecosystem-based and community-based adaptation.

The TWG on urban settlements and infrastructure includes multiple stakeholders that were grouped into policy stakeholders, service providers, beneficiaries, enablers and advocates. For example, government institutions are service providers, and academic institution may serve as the enablers. The TWG members will be engaged in all activities of, at least, three elements (laying the groundwork and addressing gap, preparatory elements, and implementation strategies) of the NAP formulation process. From May 2016 to May 2017, members of the urban settlements and infrastructure TWG were involved in providing data and information for the preparation of the stocktaking report, capacity gap analysis, and development of training materials. Members also provided inputs and ideas on climate change trends, scenario analyses, and vulnerability and risk assessment (VRA) frameworks, including selection of indicators for VRA (separate indicators for hazard, exposure, sensitivity and adaptive capacity).

Nepal adopted an approach to optimise the use of existing coordination mechanisms. To ensure multi-stakeholder participation in climate change activities, Nepal established the Multi-Stakeholder Climate Change Initiative Coordination Committee (MCCICC) in 2010, to ensure overall coordination and guidance for the NAP process. A Technical Committee was also established under the chair of the UNFCCC focal point to provide technical guidance to the NAP process. If coordination is required at higher levels, the Climate Change Coordination Committee, established in 2011 and chaired by the Minister of Forests and Environment, and the Climate Change Council, which was established in 2009 and chaired by the Prime Minister to ensure coordination and guidance at political levels.

The National Urban Development Strategy (2017) has activities to generate information on climate change in urban areas of different ecological regions, and formulate NAP on urban settlements and infrastructure in order to implement its strategy (promote multi-hazard approach in dealing with disasters including climate change). Coordination mechanism related to the implementation of these strategic activities is expected to ensure coordination as necessary during NAP formulation and implementation processes.

During NAP implementation, Energy, Environment and Climate Change Coordination Committees were established in some districts, municipalities and villages in 2012 and 2013 are expected to promote and advance coordination and cooperation mechanisms at the local level.

In conclusion, Nepal has optimized existing coordination mechanisms on climate change and urban environment while formulating and implementing their NAP.

¹¹¹ Case study material is provided by Batu Krishna Uprety - Former Joint-Secretary and Chief, Climate Change Management Division, Ministry of Environment, Nepal.

Proposed action in an urban context A2) – Identify available information on climate change impacts, vulnerability and adaptation in urban areas, and assess the enabling environment for the NAP process.

The first part of this action involves conducting vulnerability assessments, or collating information gathered from vulnerability assessments conducted by other organizations. The second is around the ability of cities to become active implementing partners in developing and implementing NAPs. While some cities have developed vulnerability assessments, many have not. In an ideal world, NAP experts will develop specific, city-level vulnerability assessments to guide the development of the NAP and to form a baseline that guides the monitoring of the success of NAP actions in reducing vulnerability, where they don't already exist. However, resource and time constraints may prevent NAP teams from doing so. Alternatively, enough information may exist in urban sector reports and national communications to extrapolate information urban exposure and vulnerabilities. The ideal situation, however, is if specific urban vulnerability assessments can be conducted for key priority vulnerable cities. This sub-section points to guidance material on how to conduct vulnerability assessments.

There are countless guides available on conducting vulnerability assessments. This guideline refers again to Planning for Climate Change, as it provides urban-specific information. It should be noted that vulnerability assessments are substantial undertakings that are often very complicated and time-consuming. This section of the guide provides only



a brief overview. It links however to the location of detailed guidance. Some other guidance material apart from Planning for Climate Change is also collated at the end of the sub-section as well.

Before this guide summarises the material on vulnerability assessment, it is important to note that the conceptual framework of vulnerability changed from the Intergovernmental Panel on Climate Change 3rd and 4th Assessment Reports to its 5th Assessment Report. In the 4th Assessment Report, the framework was as shown below, where vulnerability is a function of exposure + sensitivity – adaptive capacity:



Figure 8: IPCC 3rd and 4th Assessment Report vulnerability framework.¹¹²

¹¹² UN-Habitat (2014), Planning for Climate Change, A Strategic, Values-based Approach, p.46. Available from <https://unhabitat.org/books/planning-for-climate-change-a-strategic-values-based-approach-for-urban-planners-cities-and-climate-change-initiative/>.

In the 5th Assessment Report the framework was changed however, primarily to incorporate risk. This framework is shown below:

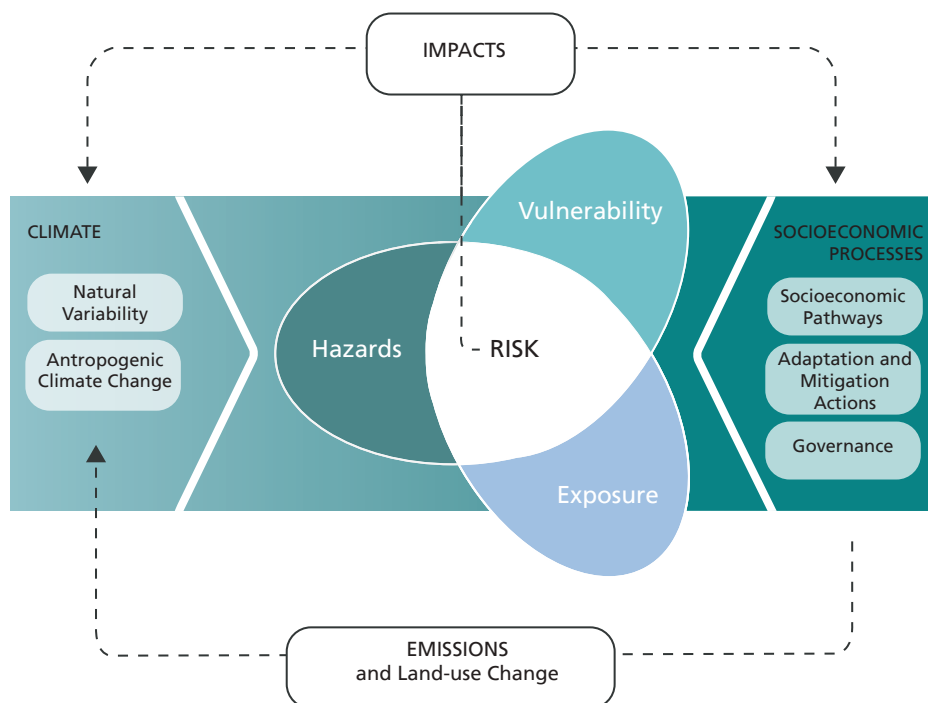


Figure 9: IPCC 5th Assessment Report risk and vulnerability framework.¹¹³

Planning for Climate Change was published in 2014, the same year as the IPCC 5th Assessment Report. It therefore uses the older 3rd and 4th Assessment Report framework. NAP stakeholders should use the framework that best suits the needs of their country, and/or the standard procedure of the government. There are five main steps to the vulnerability assessment, as follows:

1.1) Exposure analysis – This task identifies the climate hazards that cities and towns face, such as drought, flooding, sea level rise, increased storm frequency, and their biophysical manifestations like groundwater depletion, landslides, riverbank erosion and coastal erosion. This analysis should also identify the magnitude and frequency of these hazards, and identify the most exposed people, places and sectors.

1.2) Sensitivity analysis – Once the exposure analysis has been completed, giving information about who is affected, where they are, and which sectors are impacted, as well as the magnitude and frequency of hazards. The sensitivity analysis then identifies how these exposed people, places, institutions and sectors are impacted today and the degree to which they

could be impacted in the future. In particular, the sensitivity analysis seeks to answer the following questions; 1) What places, sectors and institutions are most sensitive to climate change hazards? 2) Who lives in sensitive locations, and how sensitive are they to their exposure? 3) Are there climate change “hotspots”, or specific areas with multiple exposures and sensitivities? 4) What degree of change will trigger a significant impact? And 5) What are the thresholds of concern?

1.3) Adaptive capacity analysis – This helps planners to determine the ability of people, places and institutions to adapt to the threats identified in the exposure and sensitivity analysis. Broadly, adaptive capacity analysis considers capacity on three levels; independent capacity at the individual or household level, collective capacity, which considers how well neighbourhoods or communities can adapt, and institutional capacity, which determines how well the government and public services would be able to function in the event of a disaster. The key questions that an adaptive capacity analysis would seek to answer are: 1) How well can people, places, institutions and sectors respond and adapt to climate change impacts? 2) What resources and capacity do they have to

¹¹³ IPCC, 2014: Summary for policymakers. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1-32.

adapt? 3) How resilient are people, places, institutions and sectors? And 4) What are the current adaptive capacities in climate “hotspots” by sector and with impacted people, places and institutions?

1.4) Summary and key findings of the vulnerability assessment – Once the exposure, sensitivity and adaptive capacity analysis have been completed, the assessment team will have clear information regarding the most vulnerable places, the most vulnerable people, the most vulnerable institutions and the most vulnerable sectors, and ideally this information will be specific, including quantitative data and maps. The summary of the findings then narrows down the results to begin to identify the key sectors, areas or people to target with priority adaptation actions. This could involve a simple ranking exercise or a more complex index that clearly identifies the most vulnerable.

1.5) Preliminary adaptation options identification – This activity is the preliminary step that feeds into **Activity B2 – Identify urban adaptation objectives and long-list of actions**. At this stage, a vulnerability assessment that is part of a broader planning process can develop a long, “wish-list” of possible projects and interventions. When a vulnerability assessment is being conducted, stakeholders will naturally state their preferred priority actions, according to their needs. By putting all the proposals in a “wish list”, planners are not committing to funding or implementing the actions, but merely documenting them for further analysis. As activities B2 and B3 will demonstrate, any planning process will inevitably be constrained by three resources that are always in short supply; time, human resources and money. This is why the long-list will be subject to further analysis in a subsequent step.

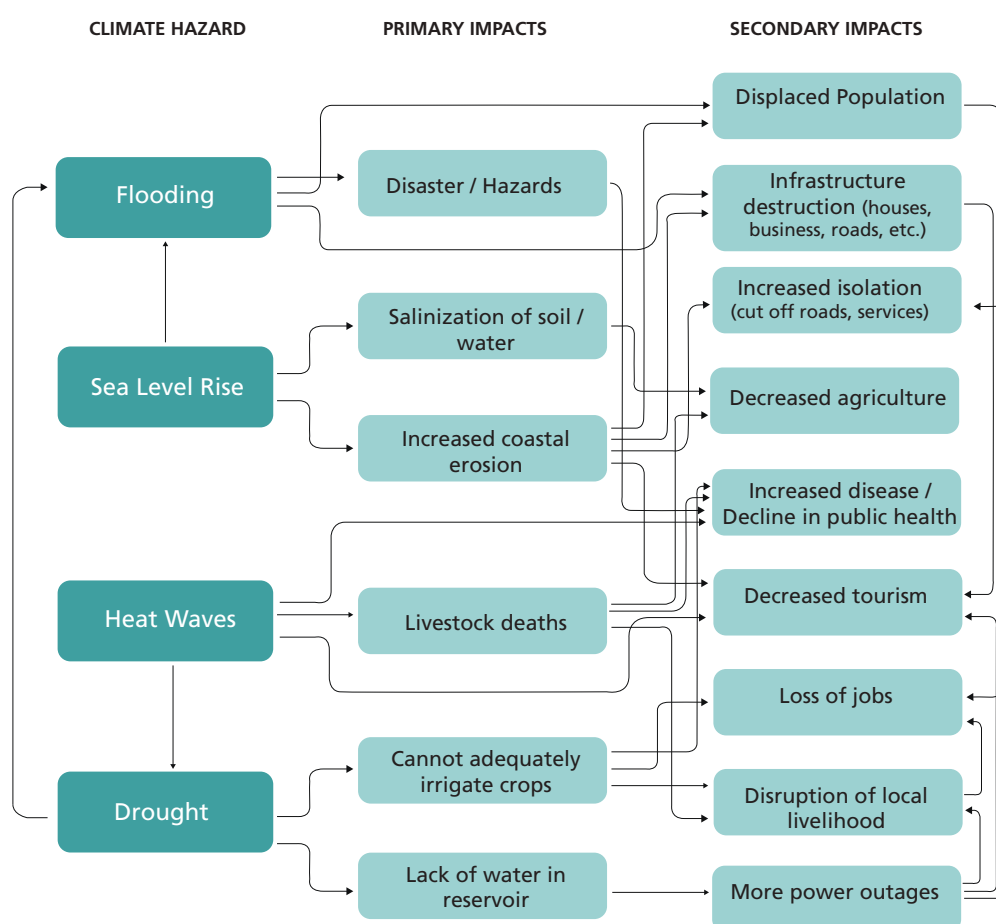
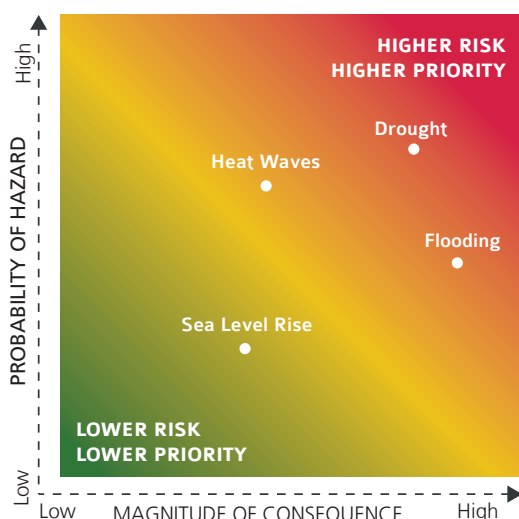


Figure 10: An influence diagram, that could be included in a climate change exposure analysis.¹¹⁴

¹¹⁴ UN-Habitat (2014), Planning for Climate Change, A Strategic, Values-based Approach, p.54. Available from <https://unhabitat.org/books/planning-for-climate-change-a-strategic-values-based-approach-for-urban-planners-cities-and-climate-change-initiative/>.



Further information about the steps outlined above can be found in Planning for Climate Change from pages 45-81. Associated tools that can be used in workshops can be found in the accompanying toolkit from pages 15-38.

Suggestion:

Human settlement issues are cross-sectoral issues. When analyzing Climate change impacts on human settlements, vulnerabilities and adaptation options in human settlements, it is suggested that the synergies among different sectors should be promoted by involving actors and stakeholders from different sectors, creating mechanism and enabling environment for multi-sectors, multi-levels cooperation.

Figure 11: Climate threat plotting in a sensitivity analysis.¹¹⁵

Case Study 3: The complexity of climate change impacts for human settlement sectors.

Human settlement issues cover several urban systems and sectors including buildings, transportation, water management, infrastructure, health, energy, etc. Climate change impacts on these human settlement related sectors are complex, and the inter-linkages are interwoven. The below diagram showcases an example.

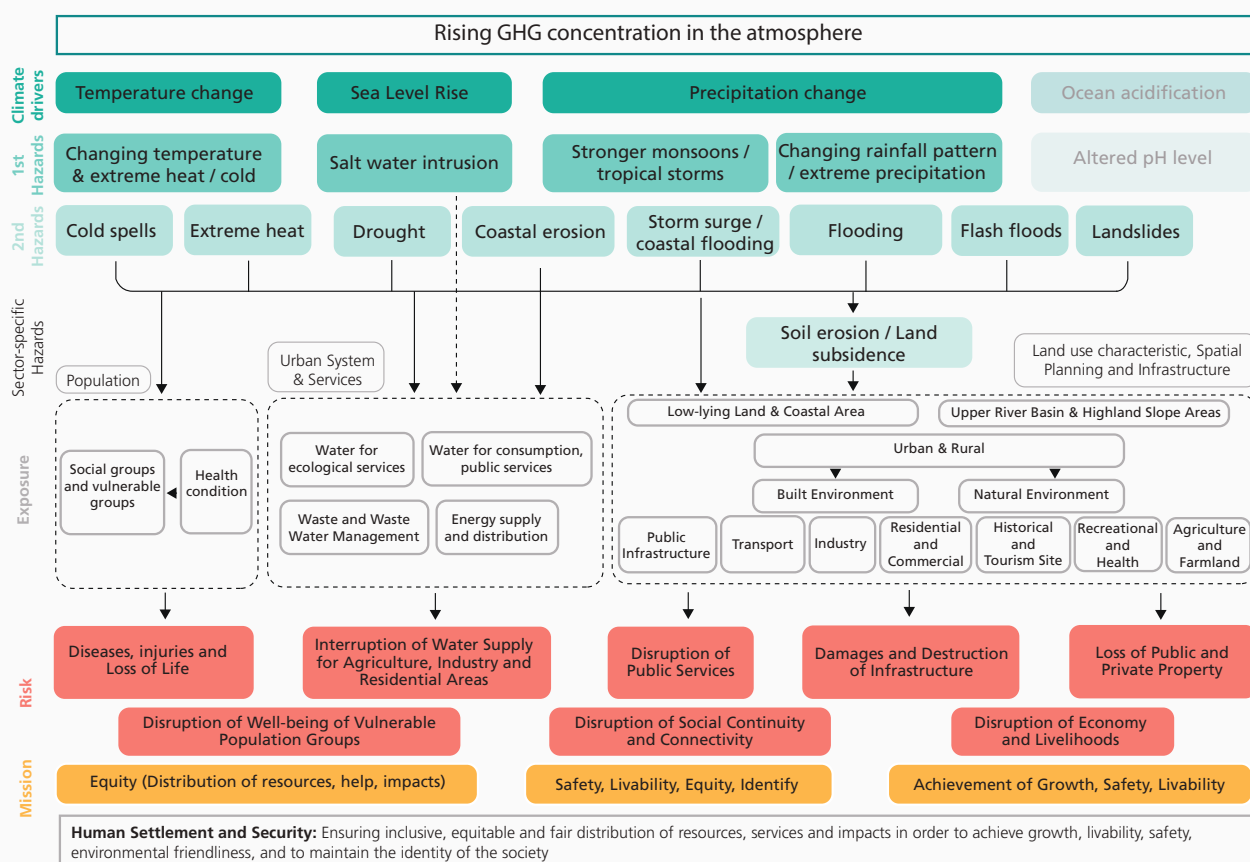


Figure 12: Climate change impact chain for human settlements in Thailand.

Source: Office of the Natural Resources and Environmental Policy and Planning (Thailand) and GIZ Thailand (2016)

¹¹⁵ Ibid., p.65.

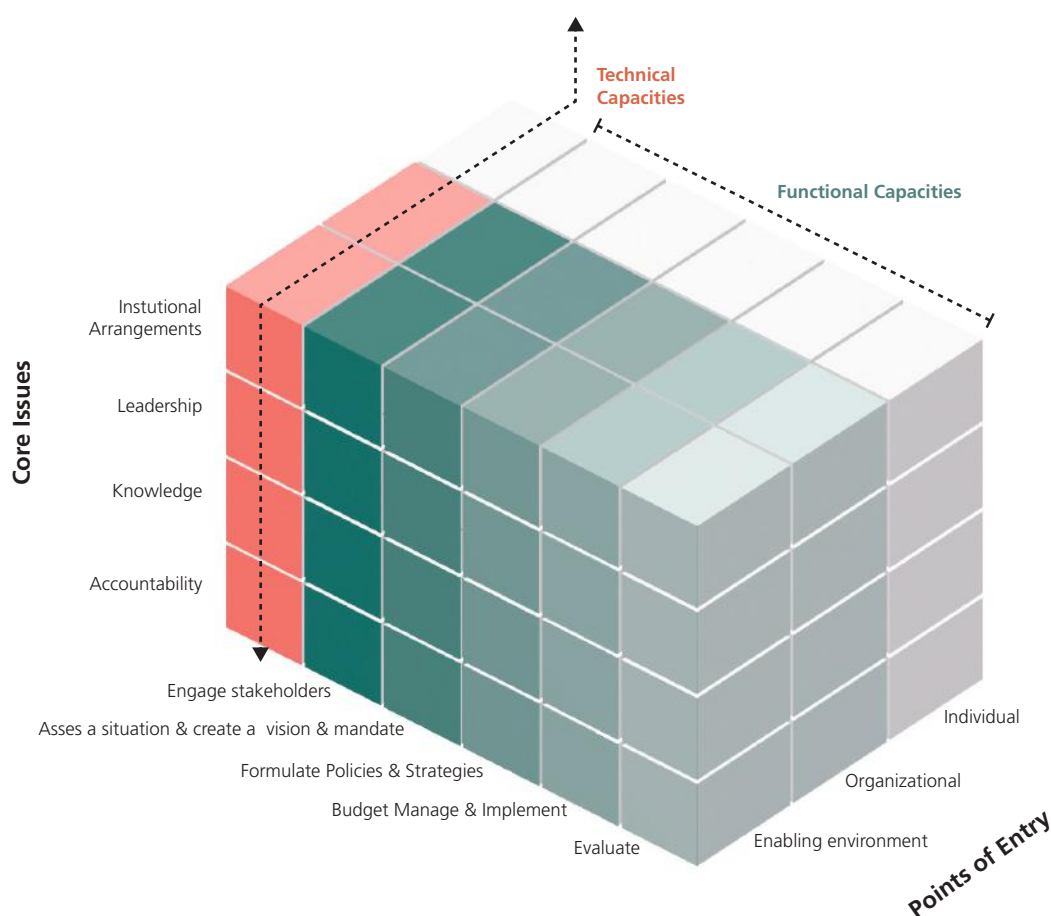


Figure 13: UNDP's capacity assessment framework.¹¹⁶

Proposed action in an urban context A3) Address the capacity gaps and weaknesses of urban stakeholders.¹¹⁷

Climate change is a relatively new challenge for many cities, and thus is one that involves on-going learning. This requires sensitizing and building the capacity of city elected and appointed officials who are championing, preparing, implementing, and monitoring the urban components of the National Adaptation Plan.¹¹⁸

Good practice on assessing capacity building has been established in numerous publications. This guide refers to UNDP's Capacity Assessment Methodology, published in 2008. However, other guiding documents are available and briefly summarised at the end of this section. This capacity assessment methodology is broken down into three straightforward steps, as follows:

- 1) Mobilise and design
- 2) Conduct the capacity assessment
- 3) Summarise and interpret the results.

Mobilise and design is broken down into 6 tasks, as follows:

- Engage stakeholders
- Clarify objectives and expectations with primary clients
- Adapt the UNDP Capacity Assessment Framework to local needs
- Determine the data & information collection and analysis approach
- Determine how to conduct the assessment (team, location)
- Plan and cost the capacity assessment

Engaging stakeholders is critical because, as this guide has already highlighted above, stakeholders bring benefits to the planning process, and engaging them early helps to mitigate the possibility of problems later on. In particular, effective stakeholder engagement in capacity building will; provide political and administrative oversight, assist in designing the capacity assessment, support research and participation in the assessment, help to analyze and disseminate the results and set priorities for follow-up action;

¹¹⁶ UNDP's Capacity Assessment Framework.

¹¹⁷ All material in this sub-section references UNDP (2008) Capacity Assessment Methodology; A User's Guide, pp7-18.

¹¹⁸ Established as a guiding principle in UN-Habitat (2015) Guiding Principles for City Climate Action Planning, p.6.

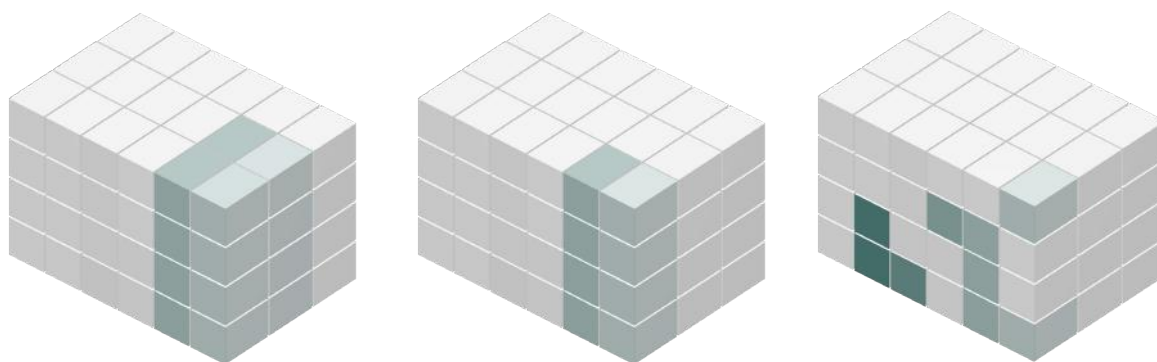


Figure 14: Scoping options for capacity assessment.¹¹⁹

Clarifying objectives and expectations essentially answers the question “capacity for why?”, in other words to what extent is capacity being built? This could be demand driven – because the city or urban stakeholders have identified the need to build capacity to face their climate change issues, or it could be supply-driven, because, for example, the national government wants urban stakeholders to take more responsibility for planning, programming and implementing their climate change response.

Adapt the Capacity Assessment Framework to local needs. This also answers the question of “capacity for whom?” This allows the NAP team working with cities to specify what capacities they need to focus on, and who should have those capacities. In Figure 14, above, the cube on the left, represents a capacity assessment scope that focuses on two levels of the hierarchy of an organization and three types of functional capacity. The cube in the centre focuses on all levels of the organizational hierarchy and two of the organization’s functions, and the cube on the right combines different levels and functions.

Determine the data & information collection and analysis approach – This is the decision what data to gather. It is important to make data comparable, where possible. However, in many cases quantitative data will not exist regarding capacity. In this case the capacity assessment team could compile a simple ranking system based on people’s perceptions, which could be augmented by more detailed quantitative information.

Determine how to conduct the assessment – This addresses the following questions: Who should be a part of the assessment team? Who should participate in the assessment? Where and how will the assessment be conducted? This, of course, depends on the context, content and exact process to be followed by the capacity assessment.

Plan and cost the capacity assessment – Based on the scale and scope of the capacity assessment and its duration, a work

plan should be drawn up detailing the outputs to be achieved, activities, due dates and roles and responsibilities. This work plan provides the basis for estimating the costs of the assessment. Designing and costing a capacity assessment may evolve into an iterative process that balances design and budget. The primary client, the assessment owner and other relevant stakeholders should participate in any re-scoping of the assessment, since it will influence the outcome of the assessment.

Conduct the capacity assessment – has two main tasks:

- Determine the desired level of capacity
- Assess the existing level of capacity

Combined, these two steps lead to the generation of results in the capacity assessment. Capacity is always relative; a capacity building exercise requires time, and an acceptance that the “perfect” level of capacity is likely to be unattainable. The assessment then sets out a simple schedule that consists of devising a workplan, an ethical reminder that results are for general institutional capacity building and not used as an individual performance audit or review, and a reminder to users to the capacity assessment to stay as neutral, “outside” actors.

Summarise and Interpret the Results

Once the assessment has been completed for the cross sections selected, the results generated need to be summarised and interpreted. This starts with comparing the level of desired capacity against the level of existing capacity. This helps determine whether the level of existing capacity is sufficient or needs improvement and in turn helps the team identify where to focus the capacity development response.

The results then need to be validated through a workshop to 1) ensure the results are well understood in the organization(s) assessed, 2) To listen to feedback from the people working in the organization whose capacity was assessed, and 3) To establish whether the results are relevant to the target audience and its capacity building aims.

¹¹⁹ UNDP (2008), Capacity Assessment Methodology; A User’s Guide, p.12.

Table 5: Sample results of a capacity assessment exercise.

Capacities	Budget	Manage	Implement	Avg
Core issues				
Leadership	3.4	3.0	3.2	3.2
Knowledge	1.3	1.7	1.5	1.5

Capacities	Budget	Manage	Implement	Avg
Core issues				
Leadership	4.0	1.0	1.3	2.1
Knowledge	4.2	1.3	1.4	2.3

Further information about the steps outlined above can be found in UNDP's Capacity Assessment Methodology, a User's Guide on pages 8-18.

Proposed action in an urban context A4) Comprehensively assess development needs and climate vulnerabilities and seek linkages with other urban priorities

This section of the guide relies on two good practice case studies from Brazil and Nepal to provide guidance on assessing development needs, climate vulnerabilities and co-benefits. While country contexts are likely to be considerably different, these two examples offer a good general framework for how to address the challenging interlinkages between climate change adaptation priorities, broader development issues and finding co-benefits between them.

Case Study 4: Climate change vulnerability and risk assessment framework for NAP Formulation Process in Nepal.

Nepal has developed a climate change vulnerability and risk assessment framework that combines previous trends and future scenarios, the main hazards, and the bio-physical, socio-economic and governance components of the system of concern. It uses the simplified IPCC 4th Assessment Report framework of vulnerability.

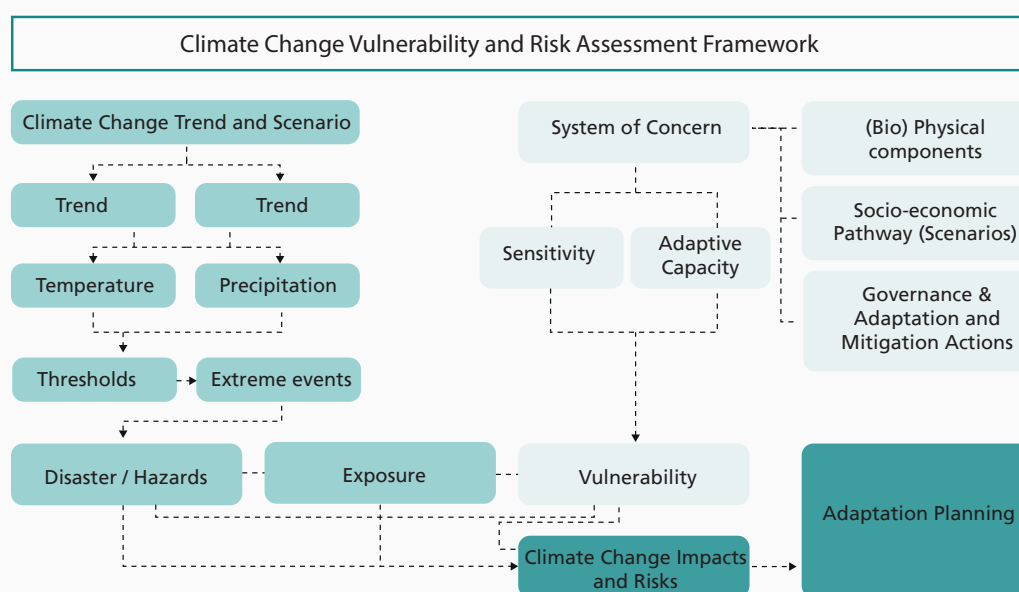


Figure 15: Nepal's climate change vulnerability and risk assessment framework.¹²⁰

The framework then provides an analysis and overview table, that analyses the different components of urban systems, their key sensitivities the indicator and the data source (which also equates to the responsible agency for the given sector). This approach also allows countries to categorize cities according to their size, location and other typology, and can also be the basis to outline linkages between NAP priorities and other urban policy or national development goals, policies or strategies. This approach also uses a science and evidence-based approach to systematically assess development needs and climate change adaptation priorities.

¹²⁰ Government of Nepal, Ministry of Population and Environment (2017), Vulnerability and Risk Assessment Framework and Indicators For National Adaptation Plan (NAP) Formulation Process in Nepal. Available at <http://climatenepal.org.np/main/index.php?p=research%20and%20publications&sp=onlinelibrary&opt=detail&id=1027>.

Table 6: Nepal - linking urban systems and adaptation priorities.¹²¹

System / Sub-system	Elements of Sensitivity	Unit	Data source
Population system:			
Urban population	Urban population density	ppha	CBS, Municipal profiles
	Dependent population (age under 5 and over 65 years)	%	CBS, Municipal profiles
	Population living in informal settlements	No. / No. of HHS	Municipalities, Squatters' organizations, Lumanti, LWF, study reports
	Population living in risk-prone areas	No. / No. of HHS	Maps, study reports
Urban infrastructure system (coverage of urban services):			
Water supply and sanitation	Discharge capacity of watershed	Cusec	DWSS, DSCWM
Urban settlements:			
Built up area	Rate of urbanization	% (average growth per annum)	CBS, Municipal office
	Built-up area in land-slide prone locations	Ratio of at-risk built-up area to total built-up area	Municipal office, DUDEC, maps, study reports
	Built-up area in flood-plains	Ratio of at-risk built-up area to total built-up area	Municipal office, DUD-BC, maps, study reports

¹²¹ Ibid.

Case Study 5: How to assess main vulnerabilities of Brazilian cities to climate change.

Brazil's NAP depicts a table that provides an overview typology of Brazilian cities based on size, exposure to climate change related hazards and vulnerability. Though not exhaustive, its objective is to illustrate and guide future implementation of adaptation actions and associated studies to complement this still incipient knowledge. This makes the NAP accessible for stakeholders beyond climate change specialists in the UNFCCC focal point ministry.

Brazil's NAP uses this approach to apply a climate lens to the framework of public policies for urban planning and development and to identify no-regrets actions that contribute directly to reducing vulnerability to climate change and to development of resilient cities.¹²² It has arrived at the following summary typology of cities, shown in the table below, and recommendations in sub-sectors affecting urban areas such as road infrastructure and solid waste collection.

Table 7: Characterization of Brazilian municipalities, demographic aspects (Census, 2010) and urban risks, in climate-change context.

Size	Population	Municipality		Population		Geographical location	Major vulnerabilities	Exposure
		Qty.	%	Million	%			
Small size	Size < 50,000	4957	89.07	64.01	33.6	North, Semiarid part of the Northeast and much of the Central-West region, northern and north-eastern of MG, south of BA, interior of PR and south of RS	Fewer resources for infrastructure and basic services. Development limitations and high socioeconomic vulnerability. Poverty. Sanitation problems	Mainly to droughts and floods. Some abrupt severe flooding. Waterborne diseases. High growth rates that can increase exposure to other dangers
Medium size	50,000 to 100,000	325	5.84	22.31	11.7	SP, RJ, central-south of MG, west of PR, SC and RS, north of RS, much of the coast from RS to CE, route between DF - Palmas (TO) - Belem (PA) – Manaus (AM). Scattered regions of MA, MT and RO, some capitals and metropolitan regions	Very variable. Generally, they have more resources than small municipalities. The larger the municipality, the greater the compliance with urban planning instruments. Some problems of drainage and sanitation.	Housings and economic activities in disaster risk areas (floods and landslides) featuring different degrees of exposure, such as land use limitations. Contagion from waterborne diseases and depending on the case, of respiratory diseases
Large size	100 to 500,000	245	4.40	48.57	48.57			
Large size	500,000 to 1 million	23	0.41	15.71	8.2	Some capitals and industrial and development hubs, especially in the Southeast, South and Northeast.	They have more resources and capacity to deal with structural and basic services problems. Strong social inequality and consequent housing problems normally linked to sanitation. Inadequate Drainage System due to intense sealing. Resulting in contamination of the water resources	High exposure to abrupt flooding, flash floods and inundation; landslides and water crises linked to urban supply. Respiratory diseases, thermal discomfort, worsening of health conditions and the spread of some waterborne diseases
Metropolis	> 1 million	15	0.27	40.16	21.1	Capitals of SP, RJ, BA, CE, MG, AM, PR, PE, RS, PA, GO, MA and DF and another two cities in São Paulo		

¹²² Ministry of Environment, Brazil (2016), National Adaptation Plan to Climate Change; Sectoral and Thematic Strategies, p. 68-69.

The urban sector strategy also arrives at the conclusion that guidelines for urban adaptation are required. The recommendations for these guidelines are shown below¹²¹.

1. Promote coordination among the three levels of government with a view to fostering cooperation for reducing vulnerability to climate change through integrated territorial planning and management by states and municipalities, especially in areas of public interest in metropolitan regions and conurbations;
2. Consider adaptation to climate change in processes of rehabilitation of consolidated and degraded urban areas, with a view to fostering urban diversity and limiting urban expansion and exposure of the population to risks arising from inadequate land-use and settlement patterns;
3. Consider adaptation to climate change during processes for promoting urbanization of precarious settlements, with the aim of improving housing and living conditions of the population through integrated approaches such as installation of urban infrastructure, housing improvements, land-tenure regularisation, environmental restoration and social-welfare;
4. Consider adaptation to climate change during large-scale projects for production of social housing, ensuring conveniently-located housing for low-income families living in situations of vulnerability, through decent and resilient infrastructure, with access to urban, social and cultural goods and services and leisure opportunities;
5. Strengthen urban planning integrated with policies and practices for prevention of disasters and risks, through specific urban-expansion projects, setting standards for urban land-use, settlement and land subdivision procedures, with a focus on adaptation to and mitigation of risks posed by climate change;
6. Promote engineering works for containment of hillsides and formulation of Municipal Disaster Risk-Reduction Plans, increase the number of municipalities benefited, particularly those listed on the National Register of Municipalities with Areas Susceptible to Landslides, Floods or related Geological or Hydrological Processes as foreseen in Law 12608, of 10th April 2012;
7. Incorporate measures for adaptation to climate change into actions for implementation of the National Basic Sanitation Plan;
8. Strengthen actions for Sustainable Urban Drainage targeted at reducing flooding, through works and services including containment basins, heavy-runoff control structures, seepage-drainage systems, riverside parks, recovery of floodplains, restoration of floodplains, and other related measures. Such sustainable drainage actions, whenever possible, should comply with ecosystem-based adaptation principles;
9. Support implementation and improvement of water-supply and wastewater services, taking into account socio-economic, public-health, ecological and infrastructural aspects of measures adopted, so to achieve health and environmental benefits directly associated with such systems seeking, in particular, decontamination of water bodies, multiple use of water, greater energy efficiency, and use of biogas from wastewater and urban solid-waste treatment, and other renewable energy sources;
10. Support actions for improvement of street cleaning and management of solid wastes, with the aim of expanding pre-sorting in municipalities, appropriate disposal of tailings and eradication of landfills, since more intense rainfall arising from climate change may exacerbate outflows of slurry from dumps that contaminate water bodies, exacerbating the effects of inadequate waste disposal on watercourses, in dumps and in densely populated urban areas, aggravating flooding risks;
11. Support the management and dissemination of information related to climate changes, as inputs for the drafting of diagnostic studies and development of strategies for adaptation, in synergy with urban planning;
12. Support studies on the impacts of climate change in different cities, as inputs for development of adaptation methodologies for urban infrastructure within urban development policies;
13. Support capacity building for human resources and dissemination of information management technologies, to assist in implementation of strategies and methodologies;
14. Incorporate adaptation to climate change into enhanced urban planning models, with a view to fostering management of land-use and settlement through approaches that respect environmental preservation and mitigate disaster risks;
15. Support coordination of initiatives for review of regulations and technical standards for buildings and urban-planning, with a view to promoting resilient buildings and urban infrastructure.

Element B - Preparatory Elements

Proposed action in an urban context B1) Analyze current climate and future climate scenarios

During action A2, assessment teams may have gathered historic, current and future climate scenarios. This subsection of the guide will go into more detail, especially on future climate change projections. To do this, it will reference the Intergovernmental Panel on Climate Change Fifth Assessment Report, as well as some case study examples. It briefly describes the global climate change scenarios outlined and then reviews the pathways approach to planning.

Most cities will not have their own downscaled climate change projections or defined scenarios. While downscaled projections, specific to a city, will give the most accurate information about future climate scenarios to planners and city leaders, developing such projections is technically complex, and beyond the capacity of all but the most well-resourced cities. However, in many countries, national-level projections have been developed and downscaled to regions of the country (depending, on the country's geography). From such projections, it is possible to extrapolate a reasonably accurate picture of projected future climate.

The IPCC 5th Assessment Report is a very extensive collection of scientific research findings, which is highly technical and may be difficult to comprehend to readers without a background in climate or environmental science. However, the guide assumes that those involved in the NAP formulation process will be familiar with it. Despite this, the links to the relevant sections are provided here.

An overview of global change and projections can be found in the Physical Science Basis report from 2013, which can be accessed here.¹²³

When analyzing future climate scenarios, it is important to have a basic understanding of emissions scenarios. In the most recent IPCC reports, these scenarios are known as representative concentration pathways (RCPs). Four RCPs are defined; RCP2.6, RCP4.5, RCP6 and RCP8.5. In simple terms, RCP2.6 represents a reduction in the concentration of greenhouse gases in the atmosphere and is therefore a "low-emission scenario". RCP4.5 and 6 are mid emissions scenarios; they envisage a stabilization in radiative forcing (in the case of 4.5, before the year 2100). RCP 8.5 is a "no climate policy scenario" with very high emissions.¹²⁴



Post-Yolanda, Philippines
© UN-Habitat / Bernhard Barth

With this in mind, urban areas will typically want to understand changes in temperatures, rainfall (both overall volume and seasonal patterns), storm frequency and severity. Based on this, cities may want to undertake more specific modelling of river flows, ground water or urban heat islands, based on their specific vulnerability. However, such further assessments are highly location specific and beyond the scope of these guidelines.

As shown in Figure 16, below, most areas of the world face some level of temperature increase, even under RCP4.5, by 2035. While these changes are most pronounced at the poles (which has a substantial bearing on future sea-level rise) many cities across the Middle East, Africa and Latin America will see temperature increases of up to 1°C in some months. In these already dry regions, where water access is a pressing challenge, this has a substantial bearing on how cities plan for population growth and the provision of basic services.

Most areas of the world also face changes in their rainfall patterns, with some experiencing increases in precipitation overall, while others will experience a decrease. Some areas will see their dry and rainy season patterns shifting, with earlier or later onset or withdrawal of monsoons. In much of Southeast Asia, for example, monsoon rains are projected to begin later, resulting in a shorter rainy season.

¹²³ <https://www.ipcc.ch/report/ar5/wg1/>

¹²⁴ IPCC, 2013: Summary for Policymakers. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. P.29.

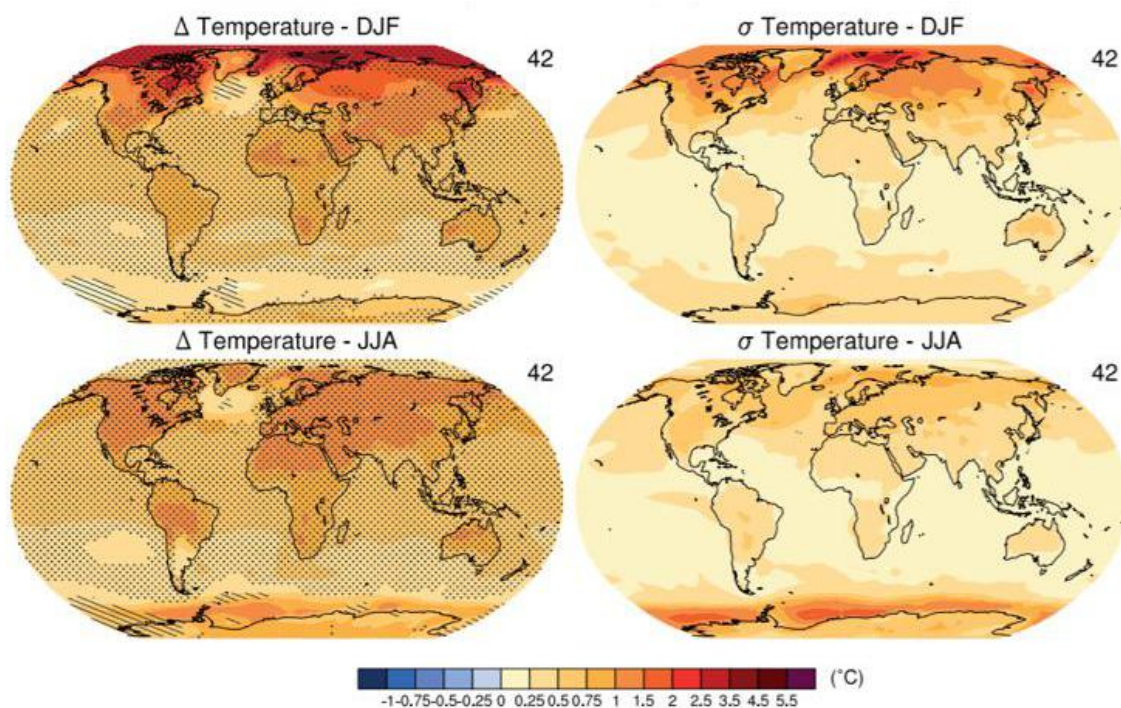


Figure 16: Global seasonal mean temperature change from 2016-2035.¹²⁵

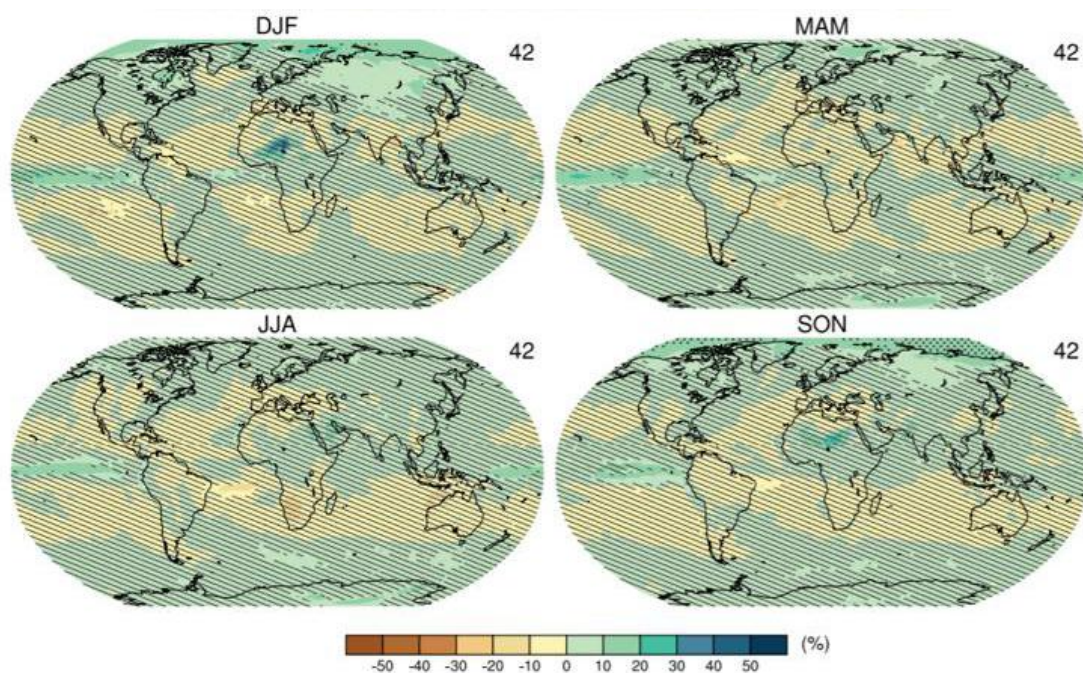


Figure 17: Seasonal mean temperature change from 2016-2035.¹²⁶

¹²⁵ Kirtman, B., et al (2013): Near-term Climate Change: Projections and Predictability. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. p.982.

¹²⁶ Ibid., p.985.

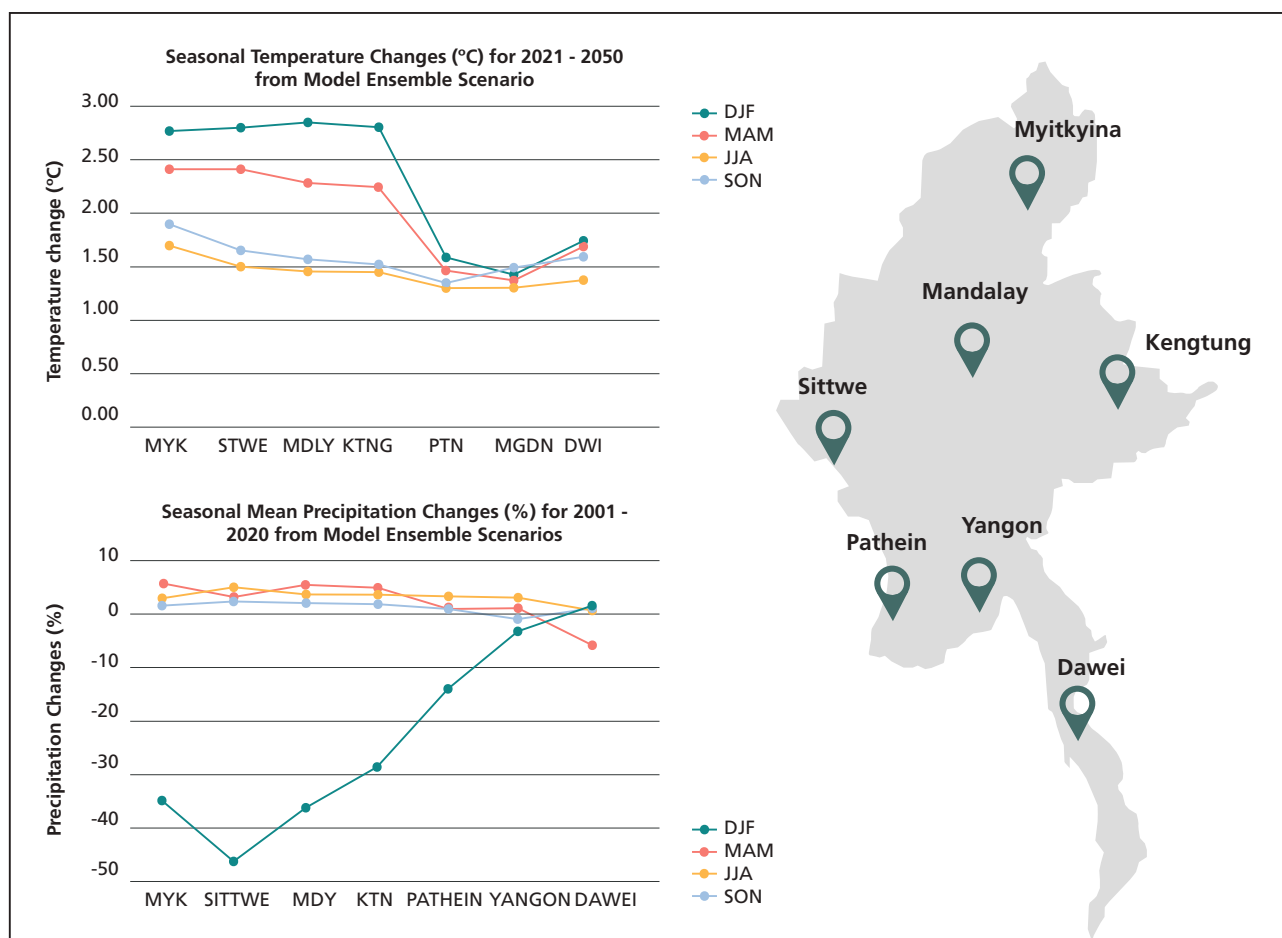


Figure 18: *Top left* – Projected change in temperature across the 7 weather stations in Myanmar. *Bottom left* – Projected mean precipitation change across the 7 stations. *Right* – Location of selected stations for climate change scenarios in Myanmar.¹²⁷

While most cities will not have their own, downscaled projections, most countries have projections downscaled to different regions of the country. In many cases, such projections can be found in the official communications to the UNFCCC, while in others, projections have been conducted by scientific or research organizations such as the Commonwealth Scientific and Industrial Research Organization, which has conducted such work in Australia and much of the Asia and Pacific region, or development partner organizations such as UNDP or GIZ.

For example, Myanmar submitted its Initial National Communication in 2012. In it, climate change historical trend analysis and future projections were developed based on data from seven stations throughout the country. Myanmar offers an interesting example of this approach. Its southwestern coast, which borders the Bay of Bengal, is one of the wettest regions in the world, with up to 5,000 millimetres of annual rainfall. Moreover, it is frequently affected by tropical cyclones – most

seriously Cyclone Nargis in 2008, which caused upwards of 140,000 fatalities.¹²⁸ However, the country's central dry zone, in the area around Mandalay, is one of the most arid regions on earth, receiving as little as 300 millimetres of rain per year.

In conducting a city-level assessment, planners in this example could use data from the nearest station in the Initial National Communication; in the wet southwestern region of the country, they could extrapolate data from the Sittwe projections, while in the north of the country, projections could be based on data for Myitkyina.

The IPCC 2013 Physical Science Basis reports cited in this section, which provides the definitive, comprehensive overview of climate change scenarios and projections globally, can be accessed here. The National Communications to the UNFCCC, similar to the example from Myanmar cited in this section can be accessed here for the so-called non-Annex I countries, and here for the Annex I countries.

¹²⁷ MoECAP (2012), Myanmar's Initial National Communication Under the United Nations Framework Convention on Climate Change, pp56-62.

¹²⁸ Ibid., p.985.

Proposed action in an urban context B2) Identify urban adaptation objectives and long-list of actions

This sub-section and the following one will once again reference UN-Habitat's Planning for Climate Change, which guides planners through the process of narrowing down a long-list of adaptation options to a realistic set of highly targeted, priority actions. Both this action and action B3 which follows, assume that some level of vulnerability assessment has been conducted, as outlined in action A2.

Before returning to the long-list of actions however, it is important to consider objective setting. This asks what do we want to achieve by considering urban adaptation issues in the NAP? Planning for Climate Change offers 5 steps to undertake a thorough objective setting exercise:

1.1) Identify and organize issues

While being heavily informed by the vulnerability assessment, this step also considers existing plans and strategies already in place in cities. Throughout the world, cities are at very different stages of designing and implementing climate change strategies and plans and implementing their actions. Some well-resourced cities have well-designed, thorough plans, while some others have not yet taken action. So too in developing countries, some cities have acted autonomously, while others have received support from international organizations. Many, however, have not yet planned for adaptation. Understanding the current status of adaptation in towns and cities in the country is important in this step.

During the vulnerability assessment, and also when conducting consultations, stakeholders will naturally present issues that are critical to them. This first step is to make a list of these issues. These can be directly climate related, like flooding, potentially impacted by climate hazards, such as inadequate housing, or more general challenges, such as health problems.

1.2) Restate the issues as objectives

Once the issues are organized into general categories or sectors, they can be converted into objectives that can be used to guide the rest of the planning process. This is done by converting one of the issues into a succinct statement that indicates how to manage, minimize or mitigate the particular issue. The objective describes the desired outcome. Put simply, creating an objective involves putting a verb around the problem, for example "reduce flooding".

1.3) Assess relevance to climate change

Once objectives have been identified and organized, the next step is to assess their relevance to climate change. This is done

by using a simple table like the one below to go through the main objectives and sub-objectives and ask how this is affected by climate change. If the objective is not affected by climate change, it is not relevant to the NAP formulation.

1.4) Identify gaps in the objectives

Once the objectives are organized and assessed for their relevance to climate change, it is necessary to look for objectives that may have been overlooked but are typically considered in climate change planning, such as: sustainable urban resource management, or mitigation co-benefits.

The purpose of this step is to assess whether climate change related planning objectives have been overlooked. Although local values are the core of the objective identification process, it is important to analyze these objectives in a broader context to make sure that they are as comprehensive as possible. It is also critical at this juncture to make sure that vulnerable groups have been considered, and their viewpoints and needs are not missing from the list of objectives, so it is important to review the Vulnerability Assessment. The needs and objectives of women, youth and marginalized groups such as the urban poor must be included in the climate change planning process.

1.5) Develop indicators for the objectives

To ensure that these objectives are carried forward into the next planning steps, indicators need to be developed for them. These indicators, or measures as they are sometimes called, will be used to:

- Help to identify additional climate change options
- Help to assess the climate change options by measuring how well each action would support every one of the objectives.
- Help to prioritize the climate options highlighting the actions that best support the most important objective, or best support multiple objectives.
- Help to form the basis of a monitoring and evaluation programme to make sure that the options are actually helping to meet the objective(s) they were intended to (i.e., how well is the action improving housing conditions in informal settlements?)

Indicators should be clearly linked to their objective(s) and are often quantitative. Sometimes it may be challenging to determine a clear, measurable indicator for a given objective. This may be because no data is available, capacity is limited in establishing an indicator, or because an objective cannot be adequately measured using quantitative data and must use more qualitative measures. There are three types of measures: natural measures, constructed scales and proxy measures.

Table 8: Linking proposed planning objectives to climate change.¹²⁹

Objectives		Link to climate change (risks, threats and impacts) from the vulnerability assessment	Affected by climate change?	
Main objective	Sub-objective		Yes	No
Protect the environment	Conserve the mangrove forests	Development (upstream and on coastal plain) causing destruction of mangrove forests which buffer and protect some coastal areas from sea level rise and storm surges	✓	
	Minimize contamination from waste water	Stormwater from extreme storm events overloads sewers and sewage lagoons; increased raw sewage flows untreated into harbour	✓	
Support a prosperous economy	Improve road infrastructure	Roads susceptible to erosion and impassable during floods caused by extreme storm events	✓	
	Expand regional rail links	Not affected		✗
Promote community well-being	Improve informal settlements	Severe storms and flooding put informal settlements at river mouth at increased risk	✓	
		Increased landslide or slope failure risk on saturated steep slopes where informal settlements are also located		
	Protect drinking water supply	Increased flood incidents caused by extreme storm events contaminate water supply Seasonal droughts reduce water supply	✓	

Identifying adaptation options

Climate change options are defined as the project, programme and policy actions that can be undertaken to reduce a city's vulnerability, develop its adaptive capacity and to build its overall resilience to climate change. Identifying the "long list" of potential options is the first step in developing the ultimate "short-list" of prioritized options that will make up a large part of the urban component or elements of the National Adaptation Plan.

Broadly, actions can be grouped into three categories:

- Information and awareness
- Plans and regulations
- Public investments and infrastructure

Developing the list could be a desk exercise, or it could involve further consultations with city stakeholders. It is also possible that a long-list of actions has already been generated through the vulnerability assessment, conducted under action A2.

Broadly, there are three steps to generate the long-list of adaptation actions:

- Generate possible options (may already be complete through the vulnerability assessment)
- Organize the options
- Conduct preliminary screening and ranking of the options

When planners generate possible options it is best to start with a wide range of options that can be narrowed down later. While adaptation options should be contextualized to benefit people as much as possible, there are some general principles that can guide planning teams when formulating adaptation options for urban areas. These principles are as follows:

- defenses are a good place to start. Most vulnerable cities have some level of defenses; either physical infrastructure, such as river banks or sea-walls, or ecological defenses such as green space, mangroves or forests in surround rural

¹²⁹ UN-Habitat (2014), Planning for Climate Change; A Strategic, Values-based Approach, p.89. Available from <https://unhabitat.org/books/planning-for-climate-change-a-strategic-values-based-approach-for-urban-planners-cities-and-climate-change-initiative/>.

- areas. In most cases, strengthening such defenses, especially where they are ecosystem-based, is a no-regret action.
- Climate proofing critical infrastructure, such as electricity and water supply, is usually a critical action, where it has not yet been undertaken.
 - However, new, large-scale infrastructure works are sometimes undesirable or controversial, unless they are part of a broader spatial planning and land use planning programme:
 - Eco-system based approaches are often lower-cost and equally, if not more, effective, and have potential for co-benefits
 - Small-scale adaptation efforts can also accumulate as many adaptation benefits as large-scale investments.

Table 9: Example of a long-list of climate change adaptation actions in a coastal city.¹³⁰

Climate change impact	Options - policies, programmes, projects and other actions
Groundwater depletion	• Research underlying causes (e.g., increased runoff due to deforestation or other land use changes) • Groundwater recharging • “Low regrets” infrastructure upgrades and repair (e.g., ground water recharge/impoundment areas) • Disaster Risk Reduction Plan
Water shortages	• Water management plan • Water conservation and awareness programme • Rainwater harvesting, groundwater recharge and improved infiltration • Engage with UN-Habitat’s Global Water Operator Partnership building the resilience of water utilities • Minimize system leaks and other water loss (e.g., surface reservoir evaporation) • Expanded or new reservoir capacity • “Low regrets” infrastructure upgrades and repair (e.g., reservoirs, water supply network)
Salt water intrusion into groundwater supplies in coastal areas	• Rehabilitation of coastal zone ecosystem and habitats (e.g., mangroves, dunes) • Water management plan • Water conservation and awareness programme
Increased riparian flooding and erosion	• Flood risk prediction and mapping • Rehabilitate urban wetlands and floodplains • Upstream rehabilitation of ecosystems • “Low regrets” infrastructure upgrades and repair (e.g., dikes, diversion channels, reservoirs) • Climate proofing vulnerable infrastructure in flood hazard areas (e.g., water, power, medical facilities)
Increased coastal flooding and erosion	• Coastal flooding risk prediction and mapping • Rehabilitation/protection of coastal ecosystems (dunes, mangroves) • “Low regrets” infrastructure upgrades and repair (e.g., dikes, diversion channels, reservoirs) • Climate proofing vulnerable infrastructure in hazard areas (e.g., water, power, medical facilities) • Improved, “climate safe” building codes for new development

¹³⁰ UN-Habitat (2014), Planning for Climate Change, A Strategic, Values-based Approach, p.98.



As emphasised earlier, the long-list should “build out” from the vulnerability assessment (where available) and the objectives set in the previous action. This makes it easier to categorise the long-list of actions and allows for some simple screening of actions that may be valid, but are not part of a climate change plan.

Once actions have been listed as above, the next step is to organize the options. This means screening out unworkable, unfeasible actions and grouping them so they form the beginnings of a coherent strategy. There is no “right” way to begin to organize the options – this could be by sector, location, cost or timing (i.e., short, medium or long-term). However, in most countries organizing by sector will fit best with in-country planning systems and NAP organization.

Table 10: Organizing the long-list.¹³¹

Time Frame	Sector	
	Water & sanitation	Economy & livelihoods
Short-term Options (1-2 years)	A) Clean-up and improve maintenance of existing drainage culverts B) Storm water management system for informal communities C) Install better drainage culverts D) Develop community warning & evacuation systems E) New building codes	A) Local economic development strategy - “green” jobs B) Climate-smart employment programme (e.g., mangrove planting) C) Clean-up / maintenance programme for drainage culverts (employment programme) D) New building codes - climate proof construction E) Disaster Risk Reduction Plan F) Improved hazard mapping
Medium-term Options (3-5 years)	F) Repair and improvement of “low regret” infrastructure (dikes, diversion channels)	G) Climate proof exposed roads (i.e., raise road bed above flood level) H) Develop new informal market I) Build dikes along the river J) Repair and improvement of “low regret” infrastructure (e.g., storm water system)

¹³¹ Ibid., p.104.

From there, the preliminary short-listing can begin. While the detailed assessment of adaptation options takes place in the next action, it makes the process simpler if a simple, “pre-screening” is done to reduce the number of adaptation options that are subject to the detailed appraisal. In some cases, the proposed adaptation options may be impractical. In other cases, some options may be more easily implemented, they would benefit multiple sectors and could be highlighted for immediate priority. Some possible criteria for the basic screening are:

- Stakeholder acceptability
- Technical feasibility
- Urgency
- Ease of implementation
- Relative effectiveness
- Cost
- Mainstreaming potential
- Multi-sector benefit (or co-benefit)

The adaptation options could then be subject to a simple ranking based on a 1-5 scale under each criteria. This will give a simple score and relative rank (i.e., adaptation options can be ranked from 1st to last). Clearly undesirable actions can be filtered out at this point.

For further information and detailed guidance on this step, see Planning for Climate Change from pages 86 to 108, and its associated toolkit from pages 39 to 50.

Proposed action in an urban context B3) Assess and appraise adaptation options

This action follows directly from action B2 and is linked to the vulnerability assessments (where available) and assesses the ability of actions to achieve the objectives identified. It involves three basic steps:

- Assess the consequences of options through a technical assessment
- Weight and rank options (value assessment)
- Final review and decision-making

Firstly, in assessing the consequences of options, there are three ways to rank the short-listed options:

- **A direct rank**, like that outlined above, that lists the adaptation options from “best” to “worst”
- **A technical rank**, that assesses how well the actions meet the objectives
- **A weighted rank**, which considers which of the actions matters most, weighting them based on their importance

Assessing options with the three scoring systems will not only help to decide which options have the most technical merit, but also which ones best support the objectives that matter most to the local community. It will also allow the NAP team and other associated stakeholders to assess any trade-offs associated with them to help narrow the long-list of options down to a short-list of options to be considered for the final Climate Change Action Plan.

Important and complex decisions, like assessing and prioritizing potential climate change adaptation options, can benefit from structured decision-making. This includes separating facts (technical information including uncertainty and risk) from values (preferences). This planning task contains three activities that, taken together, lay out a simple way to apply more structured decision-making to a multiple objective process.

Once the adaptation options are ranked, as outlined in the previous step, the next step is to carry out a more detailed assessment and technical scoring of the options. This can be done using a consequence table – a simple matrix that illustrates the potential performance of each option on each objective.

A well-constructed consequence table should convey all the information needed to understand and compare options. It will also help to guide discussions on choosing between options and to identify potential trade-offs and uncertainties between options under consideration. A consequence table will also help to make discussions between stakeholders and decision-makers more transparent and objective, and help ensure that the final selection of options is based on a common understanding of their expected outcomes (i.e., how well each option meets each objective). It will also allow you to develop a short-list of options for final consideration by identifying and removing from consideration the relatively poorly performing options.

Table 11: An example consequence table.¹³²

Objectives	Indicators	Option A	Option B	Option C	Option D
Protect the environment		Trade-offs within options			
Support a prosperous economy					
Promote community wellbeing					
Reduce poverty			Trade-offs between options		

Weight and rank potential adaptation options

Weighting and ranking the potential adaptation options is more value driven than the direct ranking. The activity involves participants ranking and weighting the objectives based on general descriptions of the possible “worst case” impacts and the possible best case impacts for each objective. These are the value weights.

In this activity, planners and stakeholders rank the impacts to the objectives by identifying the objective they would like to move from worst to best, thereby indicating the change in the objective that is most important to them, rather than the

objective itself. This is continued until all objectives have been ranked. Once complete, proposed actions can be ranked in the same way, meaning that planners will have a weighted rank of both objectives and options, which is easily comparable through the total score. This can then be cross-checked against the direct ranking exercise undertaken in the previous action. Where an activity scores highly in both exercises planners can be confident that the activity has both technical merit and meets the values of the community. Where an activity ranks highly in one exercise, but low in another, there is likely a clash between the technical efficacy of the activity, and the likelihood that it aligns with the values of the community.

Table 12: Weighting and ranking of objectives and actions.¹³³

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

¹³² UN-Habitat (2014), Planning for Climate Change; A Strategic, Values-based Approach, p.111.

¹³³ UN-Habitat (2014), Planning for Climate Change, p. 114.

	Objective weight	Option A	Option B	Option C	Option E	Option G	Option K	Option N
Protect the environment	1	3	3	4	3	2	3	4
Support a prosperous economy	2	10	8	4	6	2	8	4
Promote community wellbeing	2	8	8	6	8	4	8	4
Reduce poverty	4	6	12	4	4	8	12	4
TOTAL WEIGHTED SCORE		37	31	18	21	18	31	18
Total Weighted Rank		1st	2nd	4th	3rd	4th	2nd	4th
Technical Rank		1st	2nd	4th	3rd	5th	2nd	4th
Direct Rank		3rd	1st	2nd	6th	7th	4th	5th

= Objective Weight (1) x Technical Score

= Weighted scores for each objective added together
(i.e., 3+10+8+16=32)

In an ideal world, the preferred actions would rank highly in all of the above exercises. However, as the world is not ideal this is unlikely, so it is therefore critical at this stage that the proposed actions be subject to broader consultation or public discussion. Planners can use such a forum to ask the appropriate stakeholders why options are ranked lowly, and if they can be adjusted to become more acceptable.

Once discussions are completed and options have been appropriately revised and ranked, planners will arrive at a final short list of adaptation objectives and adaptation options that will most effectively meet them, that can be carried forward to the NAP. In addition, by undertaking this process, the adaptation options can also be included in both urban policies and plans both at the national level and in towns and cities themselves, ensuring alignment between NAP and other policy and planning initiatives.

Final review and decision making

The goal for the end of this step is to decide on and begin to document the best climate change strategy (i.e., the combination of options to be pursued). However, it is important to consider some practical issues that may not have been addressed through the ranking exercises. This is because NAPs are designed to be more than just a “plan”, but most also consider the practicalities and mechanisms for implementing the prioritized actions.

Some key questions to consider are presented below:

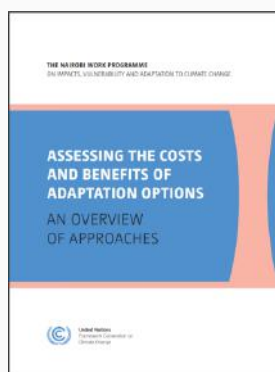
- Are there any options with high mainstreaming potential that could be prioritized for a quick start to implementation?
- Are there any clear opportunities to link options to existing plans, policies and programmes?
- Will additional coordination be required to implement these “quick start” options?
- Do any of the options require new or complex coordination requirements (such as cooperation between local governments, or between the city, region and national levels)?
- Has the option identification and assessment process uncovered capacity issues – such as a lack of knowledge, skills, etc. – that will need to be addressed in order to successfully implement the options?
- Which and how many of the options could be funded with the currently available budget?
- If options can’t be funded, how can you mobilise international public or private finance?

For further information and detailed guidance on this step, see Planning for Climate Change from pages 109 to 117, and its associated toolkit from pages 51 to 57.

An alternative (or complementary) approach to the Planning for Climate Change approach to appraise adaptation options is to use the CLIMACT-prio tool.¹³⁴

¹³⁴ <http://city-development.org/tool-19-climact-prio/>

Case Study 6: How to assess and appraise adaptation options.



The UNFCCC prepared Assessing the Cost and Benefits of Adaptation Options based on a 2009 technical paper and a 2010 workshop on costs and benefits of adaptation options. It introduced four approaches to assess costs and benefits of adaptation options and ten case studies.

The cover of Assessing the Cost and Benefits of Adaptation Options

Table 13: Assessment approaches and their main strengths and weaknesses.

Approach	Description/outputs	Case studies
Cost-benefit analysis (CBA)	CBA assesses benefits and costs of adaptation options in monetary terms. Outputs include net present values, internal rates of return or benefit-cost ratios.	Bolivia, The Gambia, Nepal and UK
Cost-effectiveness analysis (CEA)	CEA identifies the least-cost option of reaching on identified target/risk reduction level or the most effective option within available resources.	Brazil and Pacific islands
Multi-criteria analysis (MCA)	MCA assesses adaptation options against a number of criteria, which can be weighted, to arrive at an overall score.	Bhutan, the Netherlands and Yemen
Risk assessment	Risk assessment analyzes current and future risks and identifies options to address the greatest threats.	Canada

One of the case studies showcased how to assess urban water management and adaptation options using multi-criteria analysis:

Sana is Yemen's capital city. The region, Sana's basin, is suffering from extreme water stress and modern pumping technology has created competition to exploit limited groundwater reserves.

Forecasts show that aquifers within the basin could be exhausted within two to three decades and climate models predict that this scenario is going to further deteriorate under the impacts of climate change. This creates important implications for water resource demand and management.

Three urban water adaptation options are:

- Protecting the quality and usability of existing water resources;
- Constructing a solar power desalinisation plant and transport infrastructure to pump desalinated seawater to the Sana'a basin;
- Improving water pricing, for example, by reforming public water tariffs and metering methods, billing and revenue collection.

This case study uses methodology developed under UN Environment's MCA4 climate initiative to evaluate which adaptation policy option could build on current measures to best manage scarce water resources, whilst at the same time taking into account Yemen's other development priorities.

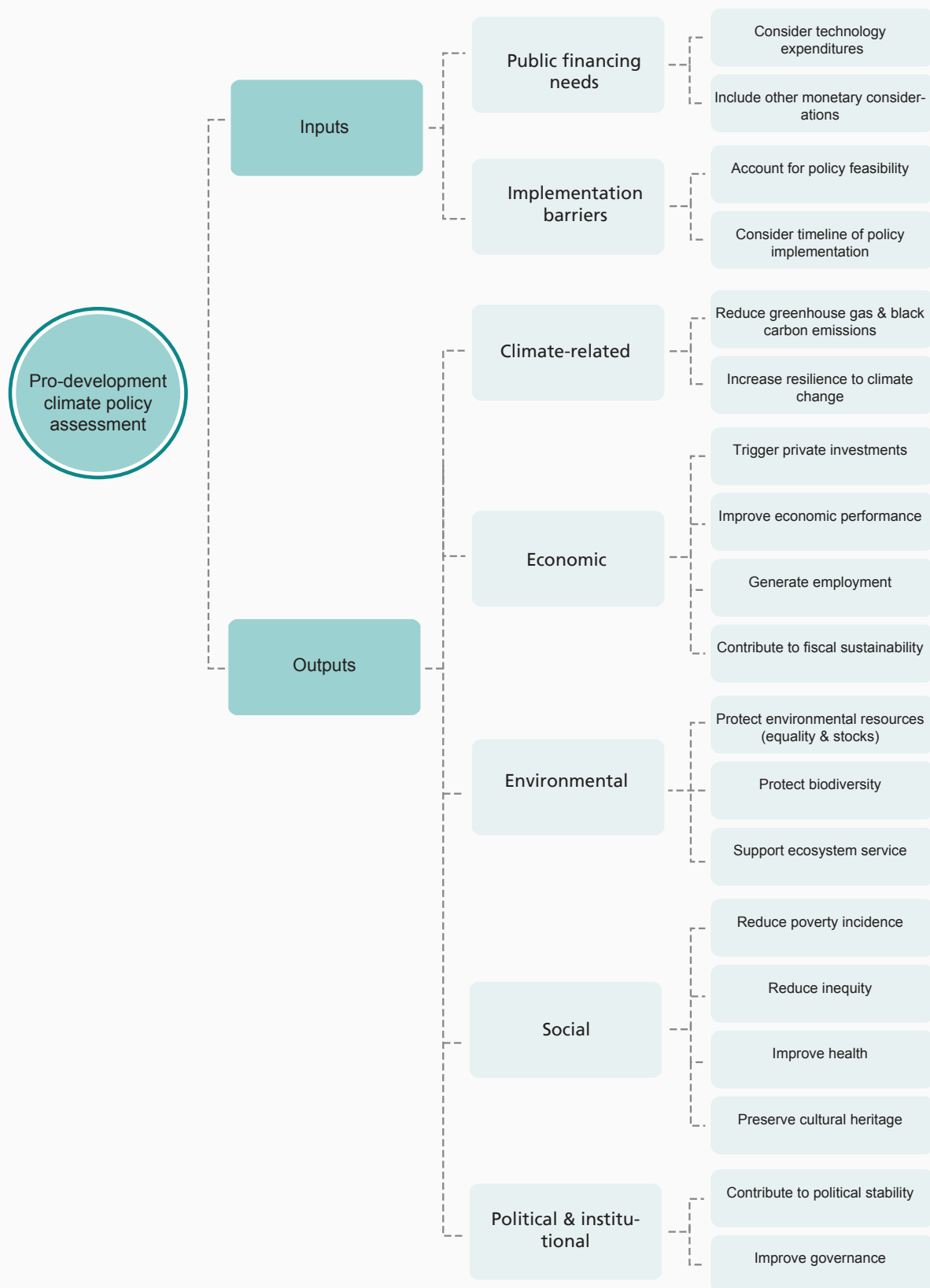


Figure 19: Generic criteria tree used to assess adaptation policy options.

Using the above generic criteria tree, each policy option was scored according to how well it performs against each criterion. Because of time constraints, the scoring was based on guess-estimates by the expert group assembled. To assign weights to the different criteria, the swing weight method was used. This approach first identifies the criterion which gives the greatest “value added” in moving from the least preferred policy option to the most preferred. The relative value added associated with each of the other criteria is then considered and values assigned to reflect this. With scoring and weighting completed, it was possible to see how each of the water adaptation policy options put forward for the Sana’a basin performed against the MCA4 climate criteria.

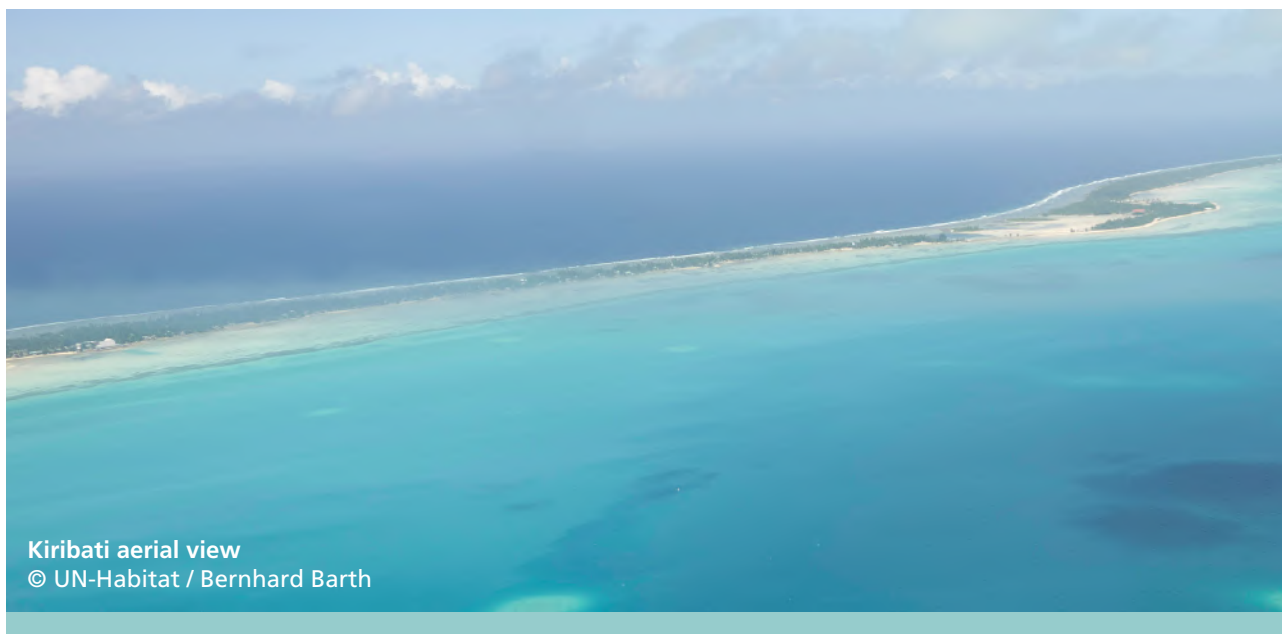
Lessons learnt: one of the lessons learned was that certain adaptation policy options perform better if they are implemented with other options. For example, if governmental reforms are taken as given, then the performance of some of the other policy options against the criteria was found to shift significantly. To address this, further analysis was conducted which evaluated portfolios of policy options rather than individual options.

Source:

Assessing the Cost and Benefits of Adaptation Options, https://unfccc.int/resource/docs/publications/pub_nwp_costs_benefits_adaptation.pdf
Miller K and Belton V. 2011. *Water Resources Management and Climate Change Adaptation in the Sana’a Basin, Yemen. Contribution to the MCA4 climate initiative.*

Suggestion:

It is suggested that countries assess and appraise adaptation options systematically using the most appropriate or doable approaches in a coherent manner. For city adaptation options, their co-benefits and influence to other urban systems should also be taken into consideration.



Kiribati aerial view
© UN-Habitat / Bernhard Barth

Proposed action in an urban context B4)
Communicate urban component of the NAP with relevant stakeholders

As in Proposed Action A4, the guide now turns to a case study to offer guidance. Kiribati is an atoll nation in the Pacific with a population of 110,000 (2015 population census),

which is a Small Island Developing State (SIDS) and currently a Least Developed Country (LDC). Kiribati has always seen climate change impacts to be the barrier towards achieving sustainable development and therefore climate change must be addressed first hand to ensure that the trend of development is constant.

Case Study 7: Communicate human settlement vulnerabilities and issues with relevant stakeholders.

The majority of Kiribati people across the country's various atolls and reside on the coast, making them vulnerable to climate change impacts such as sea level rise, which leads to overtopping, saltwater intrusion affecting ground water resources, loss of agricultural productivity and increased health risk to children (especially through outbreaks of diarrhoea). The Government of Kiribati has prioritized four areas based on the key issues that Kiribati currently faces: coastal protection, water, renewable energy and sustainable sea transport. All four prioritized areas are related to human settlements.

The Kiribati 20 Year Vision 2016 – 2036 (KV20), Kiribati Climate Change Policy 2018, the Kiribati Development Plan 2016 – 2019 (KDP), the Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2014-2023 and The Whole of Island Approach (an implementation strategy for Climate Change Adaptation and Disaster Risk Management) apply an integrated approach which benefits from multi-stakeholder engagement (involving government, communities, NGOs, CSOs and faith-based organizations).

Decision making in the national planning process is informed through integrated vulnerability assessments which provide technical information on the impacts observed by the general population on each island in Kiribati. This ensures evidence-based decisions are made at the national and sub-national level with the aim of building resilience and strengthening adaptive capacity to counter the impacts of climate risks and disasters. There are constraints on knowledge sharing, coordination and collaboration among ministries as well as with non-governmental organizations, the private sector, faith-based organizations and development partners. The integrated vulnerability assessment process also provided opportunities for the community, especially women and youth, to participate in broader governance. It provided the technical basis for decision making process, and it is applied across all levels: Kiribati's policies - the Kiribati 20 Year Vision, Kiribati Climate Change Policy 2018; plans - KDP 2016-2019, KJIP, 2014-2023; and strategies. This integrated vulnerability assessments process also helped to ensure efficiency of resources used, including financial resources.

Integrated vulnerability assessment approach provides an adequate enabling environment for all stakeholders to contribute to the planning process. Applying the integrated approach and efficient use of national budget allocation, bilateral support, and multilateral support helped to ensure positive outcomes towards collective efforts at the national level to strengthen resilience and enhance the adaptive capacity of its people and land.^{135 136 137 138}

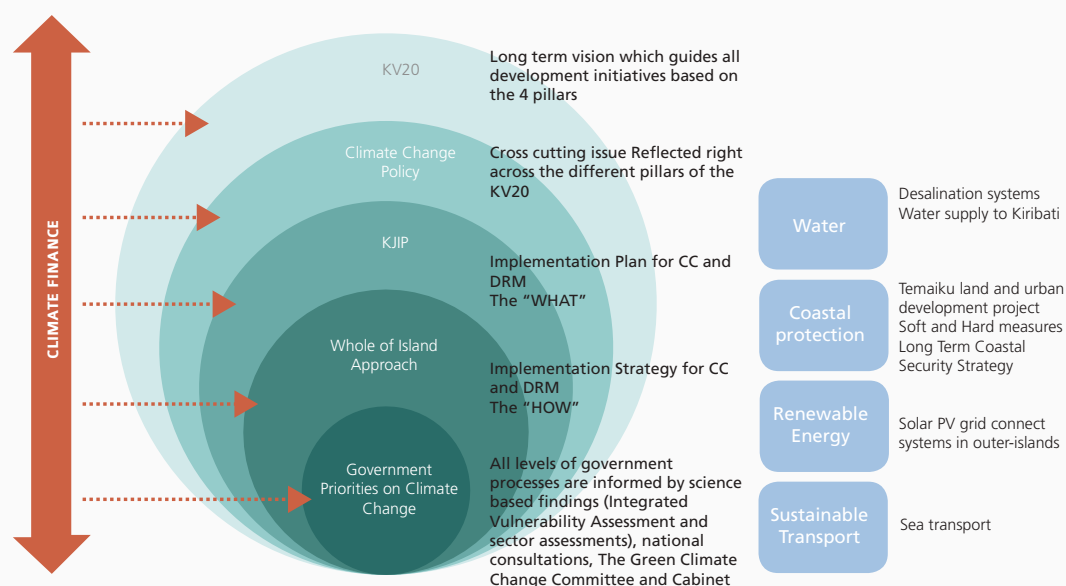


Figure 20: Integrated vulnerability assessment approach is applied in the context of national planning process through Kiribati's policies, plans and strategies.

¹³⁵ Case study material is provided by Mr. Choi Yeeting, National Climate Change Coordinator, Office of Te Beretitenti (Office of the President), Kiribati.

¹³⁶ Whole of Island Approach Abaiang Atoll, Kiribati, Integrated Vulnerability and Adaptation Assessment Synthesis report. Available from <https://www.sprep.org/attachments/Publications/CC/iva-assessment-synthesis-abaiang.pdf>.

¹³⁷ Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management (KJIP) 2014-2023. Available from http://www.mfed.gov.ki/sites/default/files/KJIP%20BOOK%20WEB%20SINGLE_0.pdf.

¹³⁸ Kiribati Development Plan 2016-19. Available from <http://www.mfed.gov.ki/sites/default/files/Kiribati%20Development%20Plan%202016%20-%202019.pdf>.

Proposed action in an urban context B5) Integrating climate change adaptation into national and subnational urban development policy and sectoral planning

Guidance for this proposed action draws upon two main guidance materials, Addressing Climate Change in National Urban Policy; A Policy Guide for Low-Carbon and Climate-Resilient Urban Development, and Climate Change and National Urban Policies in Asia and the Pacific a Regional Guide for Integrating Climate Change Concerns into Urban-Related Policy, Legislative, Financial and Institutional Frameworks. While the second of these two materials focuses specifically on the Asia-Pacific region, it offers the most specific guidance published to date on how to align and integrate climate change concerns, including NAP priorities and actions, into national urban policies.

From the outset, it is important to agree a definition of national urban policy. UN-Habitat defines it as “A coherent set of decisions derived through a deliberate government-led process of coordinating and rallying various actors for a common vision and goal that will promote more transformative, productive, inclusive and resilient urban development for the long term”.¹³⁹ However, this is immediately problematic – many countries don’t have a conveniently packaged national urban policy. Rather, their urban areas are governed by a patchwork of laws, policies and plans. In Bangladesh for example, a recent analysis showed that “urban policy” involves 32 different ministries and government agencies and 42 policies, plans, government orders and laws.¹⁴⁰

This guide, therefore, does not offer detailed guidance – integrating NAP priorities into urban (and urban related) policy will necessarily be as complex as the urban policy environment itself. Instead, this guide overviews briefly some of the steps involved, and highlights more detailed guidance.

UN-Habitat’s Addressing Climate Change in National Urban Policy makes seven recommendations regarding adaptation and four on addressing urban climate governance, as follows:

Adaptation:¹⁴¹

- Promote applied research into the risks associated with the impacts of climate change, as well as other hazards, in urban areas. Provide for the use of findings to inform decision-making.
- Encourage and support the development of local-level climate change vulnerability assessments that include an

analysis of climate resilience and adaptive capacity, to inform policy-making at all levels. Promote multi-hazard assessments.

- Promote the mapping of hazards, including of climate-related hazards that may evolve over time.
- Plan human settlements, regulate land use and provide critical infrastructure and services in a way that takes into account risks and builds resilience, including climate resilience. To this end, encourage and support local-level plans and strategies to build climate resilience.
- Prioritize actions that build the resilience of vulnerable and marginalized communities. When possible, upgrade slum and informal settlements in situ so as to build resilience to shocks and stresses, including those brought about by climate-change impacts.
- As part of adaptation efforts, promote the protection and restoration of ecosystems and natural buffers.
- Provide for regional planning as one means to protect ecosystems and guard against “mal-adaptation”.

The four governance recommendations are:¹⁴²

- While encouraging local autonomy, coordinate national and local action in addressing climate change in urban areas. Undertake collaborative action when appropriate.
- Provide resources for, and build the institutional capacity of, urban managers to address climate change.
- Promote public awareness of climate change, including of co-benefits and economic opportunities.
- Ensure that national urban policies, laws, regulations, investment plans and so on are fully consistent with national policies for addressing climate change.

These actions set out a general set of principles for action, and the Addressing Climate Change in National Urban Policy publication also lays out some proposed actions for planners in its concluding chapter. However, for more detailed guidance, the guide turns to the aforementioned Guide for Integrating Climate Change Concerns into Urban-Related Policy, which has a focus on the Asia-Pacific region, but offers useful, more detailed guidance on how to approach this complex problem, and its lessons can be applied throughout the world, with contextualisation.

The integrating guide is built around four elements, similar to the UNFCCC NAP Technical Guidelines, and four phases. The four elements then recur through four phases: 1) Feasibility and Diagnosis, 2) Formulation, 3) Implementation and 4) Evaluation. These elements are outlined in the Figure, below:

¹³⁹ UN-Habitat (2015), National Urban Policy: A Guiding Framework, p.7. Available from <https://unhabitat.org/books/national-urban-policy-a-guiding-framework/>.

¹⁴⁰ UN-Habitat and ESCAP (2018), Climate Change and National Urban Policies in Asia and the Pacific, p.9. Available at http://www.fukuoka.unhabitat.org/projects/asian_subregion/detail05_en.html.

¹⁴¹ UN-Habitat (2016), Addressing Climate Change in National Urban Policy, pp 14-21. Available from <https://unhabitat.org/books/addressing-climate-change-in-national-urban-policy/>.

¹⁴² Ibid., pp 22-23.

Explanation of the Framework's Four Elements

1) Substantial process - Working through this Element, you focus on identifying and analyzing the "WHY" (driver) and the "WHAT" (issues, objectives, actions): and zoom in on the "HOW" of the mainstreaming processes (mapping it out, monitoring and evaluation, drafting the text and pushing for implementation).

2) Resource and capacity assessment and development

This Element assists you with mapping out and analyzing available and needed resources and capacities and planning all practical and logistical aspects of the mainstreaming process. It involves conducting capacity gap assessments and planning and undertaking capacity development activities (on a needs basis) throughout Phases A, B and C. Under this Element you receive guidance on creating detailed work plans and supporting resource mobilization for implementation of mainstreaming through the entire body of relevant policies, as well as for subsequent climate actions.

3) Urban and climate related policy alignment

All key international, national (including sectoral) and sub-national

urban- and climate-related policies, strategies and frameworks, as well as relevant legislative instruments should be identified and analysed, so that the mainstreamed national urban policy makes correct and complete references (conscious of hierarchies, relationships and mandates) and embeds necessary mechanisms of coordination and implementation including financing. Documents here are defined as including any policies, strategies, frameworks, legislation, regulations, key programs, initiatives and plans of a normative / guiding or of a legally binding nature.

4) Institutions and Stakeholders

All key government institutions with urban- and climate-related mandates should be identified and analysed (as "inside actors"), so that the mainstreamed national urban policy makes the right and complete references, considers linkages and mechanisms of coordination and implementation and takes into account their needs, mandates and resources. Also, key actors outside government should be identified, such as civil society, community organizations, academia, business, professional associations, etc. and their needs, roles and resources should be taken into account.

Figure 21: The four elements of integrating climate change considerations into urban areas.¹⁴³

The guide also links to additional tools and materials that can be used to guide planners through the integration process.

Case Study 8: The National Adaptation Plan for Cities and Local Governments (NAP-Cities) project, Uruguay.

Uruguay is a South American country with a population of 3,380,177, 70% of which live in coastal areas and 93% of which live in urban areas. Uruguay experiences climate hazards such as droughts and flood, heat waves, hail, storms and tornados. Cities and urban areas have been selected as a climate change adaptation priority given that the spatial development of Uruguay has historically tended to concentrate population, institutions, services and activities in urban areas.

The Government of Uruguay initiates a project titled "National Adaptation Planning process in cities and local governments" (NAP-Cities) (ongoing project 2018 to 2021), to enable mainstreaming adaptation in cities and urban areas throughout the country.

This GCF funded NAP-Cities project is to reduce vulnerability to the impacts of climate change, by building adaptive capacity and resilience in cities, infrastructures and urban environments. It aims to facilitate the integration of climate change adaptation, in a coherent manner, into relevant new and existing policies, programmes and activities, in particular development planning processes and strategies that apply to cities and local planning.

Launched in May 2018, this NAP-Cities have five expected outcomes.

Output 1 - National mandate, strategy and steering mechanisms are in place and gaps are assessed

Output 2 - Preparatory elements for the NAP in place to develop a knowledge-base and formulate a NAP

Output 3 - NAP implementation facilitated

Output 4 - Mechanisms for Reporting, Monitoring and Review of NAP-Cities and adaptation progress in place

Output 5 - Funding strategy for the NAP-Cities and climate change adaptation is available

For more information of Uruguay's NAP-Cities, please refer to its project proposal

https://www.greenclimate.fund/documents/20182/466992/Readiness_proposals_-_Uruguay___UNDP___Adaptation_Planning.pdf/b9ddffdf-376e-4d36-9f95-b2e813bf8e3d.

More sources:

NAP- GSP, *National Adaptation Plan process in focus: Lessons from Uruguay*

https://globalsupportprogramme.org/sites/default/files/resources/uruguay_nap_country_briefing_final_for_print_071117_0.pdf

Project website: <https://www.adaptation-undp.org/projects/NAP-Uruguay>

¹⁴³ UN-Habitat and ESCAP (2018) Climate Change and National Urban Policies in Asia and the Pacific, p.22.

Box 3

UN-Habitat tool - Integrating Climate Change into City Development Strategies.¹⁴⁴

Cover of the *Integrating Climate Change into City Development Strategies*

The World Bank, UN-Habitat and UN Environment collaborated in a joint work programme to help cities address challenges related to climate change, aiming to facilitate a coordinated, focused effort targeting cities and climate change. The partners captured knowledge and supported local and national decision-makers incorporate climate change adaptation and mitigation into their urban planning policies and practices. The result is a knowledge product that supports local government in Integrating Climate Change into City Development Strategies through a 3-Step process.

Phase A: Assessing City Development Opportunities and Capacities

- A.1 Get organized: frame the issue, map key stakeholders, form technical team and plan the process
- A.2 Institutional capacity assessment
- A.3 Plan the city development strategy process with climate change considerations
- A.4 Rapid participatory city vulnerability appraisal
- A.5 Strengthening data and information management
- A.6 Mobilization of expertise

Phase B: Strategy Planning

- B.1 Building a participatory strategy development process and visioning and building consensus
- B.2 Strategic choices and prioritization
- B.3 Establishing process for continuous strategy development
- B.4 Strategy planning and institutions
- B.5 Promoting the strategy

Phase C: Strategy Implementation

- C.1 Implementation of strategic plan
- C.2 Mobilizing financial resources
- C.3 Mobilizing expertise and support for implementation
- C.4 Evaluation of monitoring programme

¹⁴⁴ <https://unhabitat.org/books/integrating-climate-change-into-city-development-strategies/>

Table 14: Overview table (Mainstreaming Framework).¹⁴⁵

PHASE A: feasibility and Diagnosis	ELEMENT 1: Substantive process	ELEMENT 2: Resource and capacity assessment and development
	- Identify drivers (WHY) you want to mainstream climate action into urban policy - make your case for mainstreaming - Identify urban-related climate change issues, mainstreaming objectives and climate actions (WHAT) - Customize your mainstreaming process using this Framework (HOW) – creating process Timeline - Analyze good practices for Monitoring and Evaluation (M&E) and draft an M&E Plan, including indicators for mainstreaming objectives and interim milestones - Compile a Diagnosis Paper based on outputs of all tasks from Phase A of your tailored mainstreaming process	- Identify Core Team for feasibility and diagnosis, formulation, implementation and M&E phases of mainstreaming process (WHO) - Assess availability and gaps in needed human, financial, informational, institutional and other resources for undertaking the mainstreaming process; and develop a Financing and Capacity Development Strategy
	The goals, substance and main steps of the mainstreaming process (including M&E) have been clearly articulated in the Diagnosis Paper	The necessary (human, financial) resources and institutional commitments for the mainstreaming process have been secured
Output Phase A: Preparation: DIAGNOSIS PAPER, the content of which has been agreed by key institutions and stakeholders, containing: - Goal and objectives of the mainstreaming process - Summary of urban-related climate issues and diagnosis of urban and climate related policies (SWOT, gaps, priorities) - Annotated outline of content to be mainstreamed into a certain policy or set of policies - A preliminary strategy for mainstreaming process is outlined in broad terms, including general roles, resources and M&E		

Table 14 provides guidance on integrating climate change into national urban policy. Much like the framework used in this guide, Table 14 allows a flexible, non-prescriptive approach. It assumes that a country has a singular, overarching national urban policy. However, it can also be used if a country is seeking to develop a new national urban policy, or to achieve coherence across several policies. In this case, it is recommended that the table is used in conjunction with the UN-Habitat publication “National Urban Policy: A Guiding Framework”.

The climate change mainstreaming Framework takes the form of a matrix with four mainstreaming Phases of A: Feasibility and Diagnostics, B: Formulation, C: Implementation, and D: Evaluation, and four mainstreaming Elements of 1) Substantive process, 2) Resource and capacity assessment and development, 3) Urban and climate related policy alignment, and 4) Institutions and stakeholders. The Framework allows users to pick tasks in relevant building blocks across Phases and Elements and helps them design their country and time specific mainstreaming process.”

¹⁴⁵ UN-Habitat and ESCAP (2018) Climate Change and National Urban Policies in Asia and the Pacific, pp.26-27.

ELEMENT 3:
Urban and climate related policy alignment.¹⁴⁶

- Identify relevant national, sectoral and sub-national urban-related documents, including stage of National Urban Policy development and sources of financing, and check if climate change has been mainstreamed
- Identify relevant national, sectoral and sub-national climate policies, strategies and frameworks that have relevance in urban context, and check if urban-related concerns are sufficiently covered
- Identify relevant sections in international frameworks linked to urban development and/or climate change with relevance for urban context
- Find existing mainstreaming efforts of climate change concerns into national, sectoral or sub-national urban policies from other countries, and diagnose if helpful for your context
- Identify other cross-cutting issues (e.g., gender) that could be mainstreamed into your policy formulation or revision alongside climate change, as well as existing mainstreaming processes of your country and other countries to learn from
- In the Diagnosis Paper, undertake a comparative analysis of the above-mentioned set of country documents and international frameworks, and identify urban policy document(s) to mainstream climate actions into (WHERE), / or propose using mainstreaming process to drive development of new NUP
- Identify what adaptation options to include into policies, plans and strategies and how to include these options

The urban policy document(s) into which to mainstream has/ have been identified and an annotated outline drafted (or a new climate responsive NUP outline drafted) as part of the Diagnosis Paper

ELEMENT 4:
Institutions and stakeholders

- Map and analyze relevant parts of your country's institutional landscape (government), and identify potential mainstreaming champions (institutions and/or individuals)
- Map and analyze relevant key stakeholders (outside government) and identify potential mainstreaming champions
- Determine potential means and level of engagement of relevant institutions and key stakeholders based on capacities and interest (HOW, WHAT), and agree on Participation Strategy for mainstreaming process, including forming a Reference Group (WHO)

Consensus has been reached with institutional partners and other stakeholders on content, and process for mainstreaming policy formulation and implementation has been proposed in the Diagnosis Paper

¹⁴⁶ Policy here is defined as including any policies, strategies, frameworks, legislation, regulations, key programs, initiatives and plans of a normative/ guiding or of a legally binding nature.

	ELEMENT 1: Substantive process	ELEMENT 2: Resource and capacity assessment and development
PHASE B: Formulation	• Prepare a detailed Formulation Work Plan for your Policy Proposal • Conduct periodic M&E as per plan developed in Phase A • Undertake Implementation Analysis to understand the policy, legislative and institutional landscape in your country	• Undertake capacity development activities of Core Team or Reference Group if needed
	The drafting process has been well planned and executed, and an Implementation Analysis has been included in the Policy Proposal	The Core Team and the Reference Group have clear assignments and capacity to complete them in time and with high quality, including periodic M&E
	Outputs Phase B: Formulation: POLICY PROPOSAL (i.e., mainstreamed national urban policy/ies document), whose content has been agreed by key institutions and stakeholders; - and if appropriate, draft recommendations for operationalization in follow-on legislation and planning.	
PHASE C : Implementation	• Facilitate the process of having the Policy Proposal sanctioned/ adopted or agreed by the respective oversight / decision-making bodies in line with country-specific requirement • Continuously monitor process and outcomes of implementation, and create feedback mechanisms to inform future policy cycles (responsibilities defined, clear progress indicators, analysis of downstream policy documents, regular meetings with reference group and key stakeholders)	• Create detailed implementation work plan on support/ coordination/ oversight by Core Team and Reference Group • Support resource mobilization for implementation of mainstreamed climate actions, considering domestic and international, private and public financing sources and mechanisms, and support measures to channel financial resources to sectoral and sub-national implementing bodies • Develop capacities of sectoral and sub-national implementing bodies if mandated and needed (including on access to climate finance), and support institutionalization of capacity building processes where possible
	The process of adopting and operationalizing the policy has been completed	All necessary resources and capacity development for successful implementation have been provided to all key implementers
	Output Phase C: Implementation: POLICY ADOPTION and OPERATIONALISATION – Implementation plan with clear timelines, tasks and roles, confirmed resources and covering capacity development needs; – Mainstreamed National Urban Policy/ies Document has been ratified (if legally binding according to country's legislative process), its directives and recommendations have been transcribed into respective laws and regulations, and operationalized in sectoral and sub-national policy documents, and plans and budgets have been aligned accordingly	

ELEMENT 3:
Urban and climate related policy alignment

- Formulate Policy Proposal, including clear indication of what other documents need to be aligned, and estimation for budget needs and other resources to implement the mainstreaming objectives
- Align national policy targets with international framework targets and indicators, as well as review and reporting requirements as far as possible

Text of policy proposal has been either newly formulated or adapted to include: a) climate responsive language, b) evidence on climate change status quo and trends and impact of planned climate actions, and c) concrete mainstreaming objectives and climate actions– by sector and at national and sub-national levels

ELEMENT 4:
Institutions and stakeholders

- Formulate Policy Proposal, including clear indication of what other documents need to be aligned, and estimation for budget needs and other resources to implement the mainstreaming objectives
- Align national policy targets with international framework targets and indicators, as well as review and reporting requirements as far as possible

Participating institutions and stakeholders support formulation of changes, and are ready to support implementation

- Oversee, encourage or assist sectoral ministries or government agencies to align existing policies and plans, or develop new ones in line with implementation objectives of the newly mainstreamed national-level urban policy/ies
- Mandate, encourage or assist local governments to align existing policies and plans, or develop new ones in line with implementation objectives of the newly mainstreamed national-level urban policy/ies

All linked (“downstream”) documents have been aligned with new climate responsive national urban policy, enabling actors to start implementation of urban-related climate actions

- Facilitate delegation of roles and responsibilities to sectoral and sub-national implementation bodies
- Define roles and responsibilities for stakeholders, and facilitate institutionalization of coordination processes (e.g., development of standards and procedures for stakeholders) if possible

All relevant government bodies and other stakeholders actively and inclusively contributed to policy adoption and operationalization; their roles were clarified and if appropriate institutionalized

PHASE D: Evaluation

ELEMENT 1:**Substantive process**

- Evaluate if the mainstreaming process has been effective and inclusive
- Evaluate if the policy proposal has been sanctioned/ adopted or agreed upon by the respective oversight / decision-making bodies
- Evaluate if climate-responsive national urban policy has been operationalized with follow-on policies, legislation, plans etc.
- Plan or encourage evaluation of whether the mainstreamed/ new national urban policy has enabled implementation of urban-related climate actions

ELEMENT 2:**Resource and capacity assessment and development**

- Evaluate if capacity building had the desired impact and reached the right people
- Evaluate if climate-responsive national-level urban policy has been aligned with local, national and global financing opportunities

Output Phase D: Evaluation: EVALUATION REPORT, whose content has been agreed by key institutions and stakeholders

- Institutionalisation of periodic evaluation and review of policy impacts with feed-in of learnings into subsequent policy processes

ELEMENT 3:
Urban and climate related policy alignment

- Evaluate if the mainstreaming process of national urban policy/ies fully considered existing sectoral and sub-national policies and legislation
- Evaluate if the mainstreamed urban policy/ies have been aligned with targets, indicators, monitoring and review of international frameworks

ELEMENT 4:
Institutions and stakeholders

- Evaluate if institutional roles, responsibilities and coordination are clear and processes are functioning
- Evaluate if all key stakeholders were meaningfully involved throughout, their resources were effectively incorporated, and their needs met

Element C – Implementation Strategies

Proposed action in an urban context C1) Integrate urban priorities in national planning

This action will draw heavily on the guidance of Addressing Urban Issues in National Climate Change Policies. This is a brief guidance document that offers numerous key recommendations, in the same style as the Addressing Climate Change Issues in National Urban Policies policy note, referenced above.

The guide makes eight recommendations regarding climate change adaptation and resilience, and four recommendations relating to cross-cutting issues. The adaptation recommendations are as follows:¹⁴⁷

- Prohibit new development in areas subject to high risk of natural disasters. Find appropriate uses for such lands. (b) Respect human rights principles when seeking to assist communities already living in such areas.
- In areas of medium risk of natural disasters, consider curtailing or applying higher building standards to new development.
- Consider reflecting risks that will increase with climate change in urban land use plans.
- Improve standard building codes and regulations by incorporating broadly applicable resilience considerations (including climate resilience). Consider the affordability and local context of such requirements.
- (a) Prioritize investments in systems that reduce the risks of natural disasters faced by human settlements. Maintain such systems. (b) Build the resilience of systems that provide basic urban services, including by protecting critical facilities. (c) In such infrastructure-based approaches to reducing risks and building resilience, take into account changing conditions.
- As part of a system-wide approach, fully consider and adopt when feasible ecosystem-based approaches to building the resilience of human settlements and protecting them from natural disasters.
- Pay specific attention to the needs of the most vulnerable groups in developing responses to climate change.
- Harmonize policies that address climate change adaptation with other relevant policies, with particular attention to those that guide disaster risk reduction.

The four cross-cutting recommendations are:¹⁴⁸

- Explicitly recognize that local authorities can help national governments to implement policies and achieve targets for addressing climate change. (b) While respecting local autonomy, vertically integrate local (and other sub-national) authorities' initiatives into nationally-led efforts.
- (a) Try to minimize the administrative burden imposed on local authorities by new climate change related mandates. (b) When appropriate, differentiate responsibility by different categories of local authority.
- Provide adequate resources to local authorities to support new mandates.
- Provide an adequate enabling environment for local authorities to take action

Proposed action in an urban context C2) Develop an urban-focused component of the implementation strategy

This action of the guide relies again on Planning for Climate Change; A Strategic, Values-based Approach.

Developing an implementation strategy starts with the acceptance and realisation that this is the "high-risk" stage of planning; it is upon implementation that well-intentioned actions can be implemented in a way that negatively affects people, brings negative externalities, or that the plan merely sits on a shelf and doesn't get implemented at all. Some more specific reasons for the failure of implementation can include:

- A plan that is poorly written or difficult to use
- A plan that is too vague or lacks clear roles and responsibilities
- A lack of political will to act or implement the plan
- Changes to the organizational structure or political leadership after its development, but prior to implementation
- A lack of resources, particularly finance.

To develop an effective implementation strategy, there are five basic steps:

- 1) Re-assess the institutional and governance context
- 2) Identify and confirm the "anchor" department or agency who will drive the implementation
- 3) Link the actions to established policies
- 4) Finalise the plan
- 5) Establish a means for continued learning, knowledge and skills development

¹⁴⁷ UN-Habitat (2013), Addressing Urban Issues in National Climate Change Policies, p.vii. Available from <https://unhabitat.org/addressing-urban-issues-in-national-climate-change-policies-cities-and-climate-change-initiative-policy-note-3/>.

¹⁴⁸ Ibid., p.viii.

Reassessing the institutional context first involves establishing who has decision-making authority.

Levels of influence over decision-making will vary depending on the local political context, with some planners having substantial authority over decision-making and others having more limited roles and influence. In order to address these issues and, where necessary, work around them, it is important to identify these potential challenges. Even in cities where planners report to their political superiors – council, mayor, etc. – with reports and recommendations, the planner's influence will vary depending on a number of factors. These could include personal politics, and also how well understood and supported the planning process has been to date – a plan developed through a participatory process with good community, political and staff engagement is more likely to have the understanding and support of these important stakeholders.

To ensure this continued support, there are a few basic steps that need to be followed:

- Confirm continued political support for the urban component of the plan and determine the best way to make it official
- Has the city leadership changed during the NAP formulation process?
- If so, are the new leaders aware of the process and of climate change action more generally?
- Have there been any staff changes or additions that need to be addressed (i.e., new technical staff)?
- Have any new climate change-related policies, programmes, plans, laws or large-scale projects emerged that need to be taken into account?

It is important to *identify and confirm the “anchor” department or agency who will drive the implementation* because successful implementation depends on having a strong institutional foundation in place. The anchor agency's role will include the following critical components:

- Manage and support other departments or agencies involved in the strategy implementation
- Maintain communications and networks with the NAP planning team and critical stakeholders where they are involved in the implementation
- Build and maintain political support for the implementation of the NAP actions
- Monitor the implementation and make adjustments where necessary
- Maintain good working relationships with a coalition of actors who can affect the successful implementation of the plan, including financiers

Formally linking actions to policies, programmes, plans, laws or large-scale projects is essential to ensure that the final urban components of NAP are robust, integrated and sustainable. Stand-alone plans with no mainstreaming component are more vulnerable to funding cuts, shifts in political will, or being forgotten altogether. The key part of this step is to establish and confirm how and where actions will be linked, or mainstreamed into existing government policies, programmes and plans. Typical areas where climate change actions, particularly policies, can be included or formalized include:

- Physical land use plans or community plans
- Development approval processes, including building codes
- Local economic development strategies and programmes, including livelihood projects
- Community health plans, including social development programmes
- Environmental management plans, policies and programmes
- Infrastructure plans (sewer, water, road, transit, etc.)
- Disaster response and management plans
- The budgeting process
- City laws or bylaws, where applicable

To *finalise* the plan, especially its urban content, will involve preparing a long document that sets out the results of the formulation process. The final NAP should be very clear in terms of what is required from different urban stakeholders and related agencies involved in implementation. The final plan will not only communicate the rationale for the selection of actions, but it will also be used to help document progress (i.e., monitoring and evaluation) and to ensure that those working on the plan implementation actually carry out what they agreed to do. Because it is the primary mechanism to ensure that everyone plays their part in implementing the plan, the final NAP document must be well-organized and user-friendly to ensure that all users can navigate it effectively.

It may be advisable to create specific activity-level plans to guide implementation. The activity specific plans will contain the following guidance and basic information:

- Which departments or agencies are involved in the implementation of the activity
- Who is the project leader (this should be the position of the project leader, rather than a specific person, to ensure that the activity continues despite any personnel changes that may occur).
- What resources are required, in terms of capacity, time, and especially finance?
- Is the budget available?
- When will the activity be complete and is there a workplan for the activity (or groups of activities)

With this information complete, it can be incorporated into the final draft of the NAP.

The final step in this action is to *establish a means for continued learning, knowledge and skills development*. It is important to create this continuous learning environment among all stakeholders, from elected officials, planners, and among national level agencies, as well as other stakeholders who may have been identified during the plan formulation process.

It is important to maintain a communication channel to urban stakeholders throughout the implementation of NAP. Among other things, this will help to quickly address problems that will inevitably arise during the implementation of NAP urban priority actions. It is also important to try to maintain any planning and technical capacity developed through the NAP formulation. This will help to plan continuously throughout the lifespan of the NAP, meaning that its actions are not static, but are constantly being refined. Any new skills and capacity developed by the local government and stakeholders in developing the NAP will be extremely useful in monitoring the implementation of the NAP's urban components. Further guidance on monitoring is provided in Action D1.

For further information and detailed guidance on this step, see Planning for Climate Change from pages 118 to 126, and its associated toolkit from pages 59 to 62.

Proposed action in an urban context C3) Build capacity of urban stakeholders

Building capacity is a highly context-specific set of actions; each country will need to develop its own capacity building approach based on its particular needs. Because of this, proposed Action C3 is closely linked with the output of Proposed Action A3; Address the capacity gaps and weaknesses of urban stakeholders.

However, despite the practical challenges and long-term nature of building capacity of urban stakeholders, the framework for capacity building is quite simple. For an overview of this, this guide turns to UN-Habitat's *A Practical Guide to Designing, Planning, and Executing Citywide Slum Upgrading Programmes*.¹⁴⁹ This guide particularly focuses on capacity building in the housing sector, but its lessons can be extrapolated to urban stakeholders more broadly.

Implementing capacity development of urban stakeholders at the national and city levels is likely to consist of some or all of the following:

- Increasing skills (e.g., through training and on the job technical assistance focused on specific aspects of programme design, planning, management and execution).
- Improving organizational processes (e.g., through the application of new techniques, reorganization, management and technical assistance).
- Increasing resources (financial, physical, human, organizational and the ability to manage funds, multiple projects and financial reports)
- Adapting policy (to allow the new skills, processes and resources to be utilised effectively).

In some cases, new capacity will be required among all stakeholders; skills, along with time and financial resources, are always in short supply everywhere. However, building from the capacity assessment in Action A3, it is unlikely that all stakeholders will need the same capacity. The table below provides an example of what skills, training, systems and knowledge stakeholders will need. This is purely an example, which will need to be developed based on the capacity assessment, which will have established the capacity building needs of urban stakeholders.

Proposed action in an urban context C4) Promote urban projects/actions with international organizations and identify synergies with international agreements

There are no external tools or guidance materials as such to support this proposed action suggested by the guide. Instead it offers brief general guidance on how urban initiatives and priorities in the NAP can be promoted among international organizations.

First, it is important to have a broad coalition at that national level through effective coordination that supports the addressing urban adaptation actions in the formulation and implementation of NAP. This coalition should also include key target cities who will likely be responsible for implementing priority actions. Ministries whose portfolios include infrastructure, housing, water supply, energy, planning, commerce, industry and economic development should be included. At the city or local level, the coalition of stakeholders is much the same as outlined in Proposed Action D4, below, and includes; local governments, NGOs/CBOs and private firms involved in, inter alia, finance, engineering and architecture, and other key urban actors in the country context. In this regard, these actions can be combined for greater efficiency.

¹⁴⁹ UN-Habitat (2014), *A Practical Guide to Designing, Planning, and Executing Citywide Slum Upgrading Programmes*. Available from <https://unhabitat.org/books/a-practical-guide-to-designing-planning-and-executing-citywide-slum-upgrading-programmes/>.

Then, using the linkages that have been outlined in Part II of this supplementary guide, NAP actors can seek to engage with other organizations to align priority urban actions in the NAP with other global processes and agreements, including the SDGs, the New Urban Agenda and the Sendai Framework for Disaster Risk Reduction.

This supplementary guide offers detailed information on finance in Part IV, on the understanding that increased and sustained financial support is a critical reason to promote NAP priorities internationally. Figure 22, below, shows the process that Thailand has undertaken in aligning and communicating its NAP formulation process.

Table 15: Example stakeholder capacity needs and approach to developing them.

Stakeholder	Required capacities (example)	How to develop capacity (example)
Urban-related ministries	Ability to deliver climate-resilient basic service improvements	Improved and aligned policy Staff capacity improved through training and peer-to-peer learning
Local / City level governments	How to promote adaptation that includes the poorest and potentially marginalized communities	Training staff in new participatory approaches New planning procedures
Architects, engineers and planners	Appropriate and affordable housing design, building materials and planning standards. Street-led settlement design	Improved training New guidance / procedures
NGOs	Leadership and ability to facilitate	Conferences, workshops and seminars. Increasing human, physical and organizational resources
CBOs	Management of service organizations (e.g., for solid waste, drinking water). Participatory data collection/enumeration.	Exchange visits with CBOs already experienced in citywide slum upgrading. Increasing human, physical, financial and organizational resources. Training Slum dwellers' federations and networks Negotiating with programme planners on a citywide scale during design stage. Study tours

Case Study 9: Promote urban actions with international organizations and identify synergies with international agreements – country example.

“Human settlement and human security” is one of the six key areas identified by Thailand’s NAP. Thailand’s NAP process is supported by various international organizations, Government agencies and research institutes, including UNDP, EU, GIZ, Japan International Cooperation Agency (JICA), Thailand Research Fund (TRF) and National Research Council Thailand (NRCT). In regarding to align with SDGs, Thailand has developed a roadmap for the implementation and tracking of SDG goal 13 which is being considered during the development of the NAP monitoring and evaluation framework.¹⁵⁰

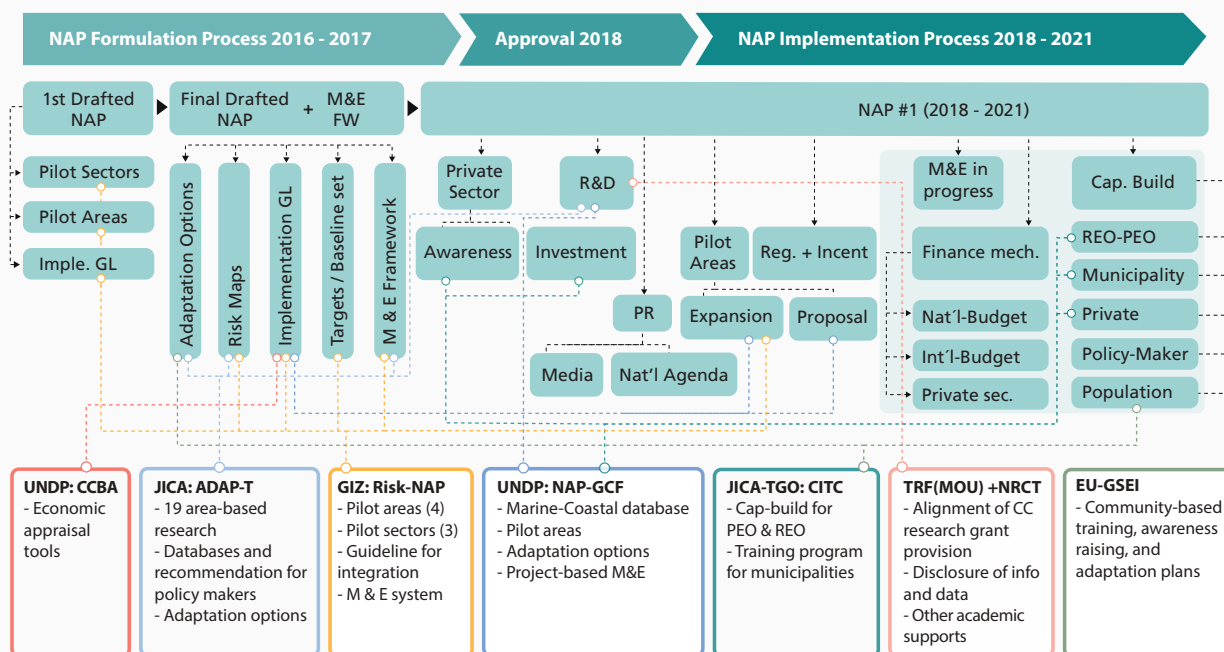


Figure 22: Thailand's NAP process is supported by international and national partners.¹⁵¹

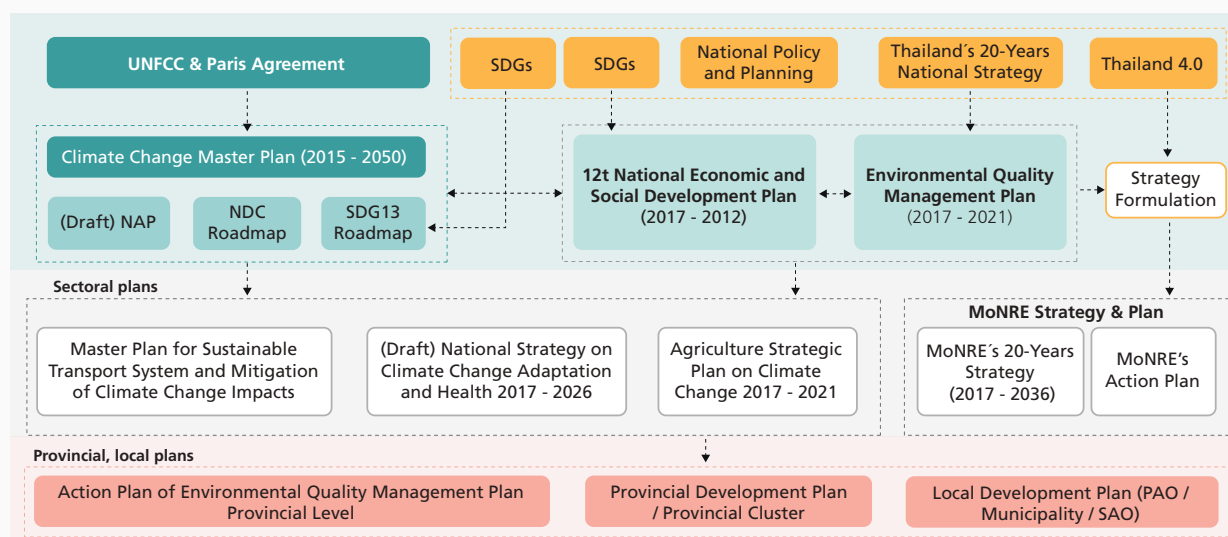


Figure 23: Thailand's climate change policies align with Paris Agreement and SDG Goal 13- Linkages of international agreements and Thailand's policies and plans.¹⁵²

¹⁵⁰ http://www.adaptationcommunity.net/wp-content/uploads/2017/11/giz2017-en-cc-policy-brief-synergies-PA_SDG_SF.pdf

¹⁵¹ Dr Kollawat Sakhakara (2017). Thailand's National Adaptation Planning Process (NAP) [PowerPoint slides]. Retrieved from https://lcs-rnet.org/pdf/loCARNet_6th_presentations/B1-1_1_Kollawat_LoCARNet_011117.pdf.

¹⁵² Ms. Chompunot Songkhao (2018). Integrating Climate Change Adaptation into human settlement through the NAP process: Experiences and Learning from Thailand [PowerPoint slides]. NAP-HS expert group meeting.

Element D – Reporting, Monitoring and Review

Proposed action in an urban context D1) Monitor the implementation progress of NAP in urban areas

This section of the guide again relies on Planning for Climate Change to provide overview guidance.

Monitoring and evaluation is one of the most critical steps in the entire NAP process, and like the other urban components of NAP, can be especially complicated in towns and cities. Monitoring the implementation progress of NAP seeks to answer two fundamental questions:

- Are the relevant actors and agencies doing what the need to do, as outlined in the implementation strategy (see Action C2)
- Is the implementation of the urban component of NAP having the desired outcome?
- There are two basic steps in this action:
- Prepare the monitoring framework and programme
- Evaluate the results of the monitoring programme

Preparing a monitoring framework and programme, will help to determine what gets monitored, how, when and by whom. They will also identify how this information is shared with stakeholders, including partner agencies and organizations assisting with implementing the NAP urban priority actions.

The objective indicators, which should have been developed under Action B2 of this guide, are the starting basis for monitoring the implementation of NAP's urban components. It is possible that these indicators may need to be revised and updated at this stage to adequately measure the actions agreed upon in the final version of the NAP. It may be necessary to develop some new indicators to monitor both the processes (i.e., are all stakeholders contributing to the implementation of the actions, as agreed), and the output or outcomes (i.e., is the implementation having the desired results?). Table 16 below shows some examples of different types of indicators.

Finally, while formal guidance on reporting at the global level is not provided here, reporting outlets are available in the form of UNFCCC's NAP Central¹⁵⁴ and through the global adaptation stocktake. Countries may also have their own reporting systems through national parliaments, for example. If countries can report success stories and best practice at the global level, it can serve as an inspiration to other countries, and allows for UN agencies to gather good practice in future guidance materials such as this one.

Table 16: Example of different types of indicator.¹⁵³

Action	Potential process indicators	Potential outcome indicators	Related objectives and sub-objectives
Water quality alert programme	- Alert programme implemented - Number of districts that have adopted the programme	- Number of hospital visits due to water quality issues	Protect the Environment Minimize contamination from waste water
Zoning land uses	- Has zoning been created/updated - Has it been mainstreamed into existing city processes (development permitting, etc.)	- Percentage of mangrove forest that is protected - Total hectares of mangrove forest (protected and unprotected)	Protect the Environment Conserve the mangrove forests
Low regrets infrastructure improvements to markets (drainage, flood protection)	- Percentage of market area with storm drainage coverage	- Number of days per year market is closed due to floods	Reduce poverty Improve informal market infrastructure
Urban Agriculture Programme	- Land designation - Guidelines for smaller plots - Formal amendment of Land Use Plan to include designated agricultural lands - Formal update of Local Economic Development Strategy to include supportive policies	- Number of days per year market is closed due to floods	Reduce poverty Improve informal market infrastructure

¹⁵³ UN-Habitat (2014), Planning for Climate Change; A Strategic, Values-based Approach, p.130.

¹⁵⁴ https://www4.unfccc.int/sites/NAPC/News/Pages/national_adaptation_plans.aspx

As well as agreeing indicators, it is important to establish (or re-confirm) baselines. Baselines provide information against which future monitoring can be compared. This is critical in understanding how well the activities are supporting the achievement of the objectives of the urban component of the NAP. The baselines are also a basis to set targets, which is often useful.

A simple example of a monitoring framework is shown below:

Table 17: Example monitoring framework.¹⁵⁵

Action: Urban Agriculture Programme								
Who is responsible for monitoring: City Planning Department (with support from Urban Farmers' Association)								
Objective	Indicator(s)	Baseline Measure (Current 2013)	Target (2015)	Target (2018)	Data source	Data collection frequency	Data collection methods	Parties involved
Support a prosperous economy	Area zoned for urban agriculture (hectares)	10 ha	30 ha	60 ha	City Planning Department (GIS, Land Use Plan)	Every 18 months	City - GIS data base	City
Promote community wellbeing	Number of urban farms (#)	15 ha	45 ha	100 ha	City Planning Department (GIS, Land Use Plan)	Every 18 months	City - GIS data base	City
Reduce urban poverty	Urban agricultural employment (number direct, number indirect)	90 (140)	300 (500)	700 (1500)	Urban Farmers' Association (direct interviews and surveys)	Every 18 months	Urban Farmers' Association - direct interviews and surveys	Urban Farmers' Association

Once the monitoring framework has been agreed and procedures are in place, the next step is to evaluate the results of the monitoring programme. Evaluation analyses the information generated by the monitoring programme at selected times to determine two things:

- If the urban component of the NAP is actually meeting the needs of people living in urban areas efficiently and effectively.
- If there are opportunities to improve the urban components of NAP by refining actions, introducing new ones, or involving new stakeholders or partners.

Proposed action in an urban context D2) Reviewing the NAP process in urban areas to assess progress, effectiveness and gaps

This section follows on closely from Action D1. The location of guidance materials for Actions D1 and D2 are provided at the end of this sub-section.

Unlike monitoring, evaluation is not a continuous, ongoing process. Instead, it occurs at strategic points throughout the implementation process. Typically, evaluation is aligned with project phases, so that a formal evaluation is conducted at the end of a short-term action project cycle and or at the mid-term of a project. Given the dynamic nature of climate change and urban development, evaluations should take place relatively frequently (possibly every two to five years). Evaluation is, however, like monitoring in that it should promote learning and is a long-term process. Like monitoring, the results of the evaluation should also be communicated both to the stakeholders and made public, where possible.

Before undertaking an evaluation of the urban components of the NAP, it is important that the main stakeholders feel confident to answer the following questions:

- Why is the evaluation being undertaken?
- What is the evaluation expected to achieve?
- How does it contribute broader evaluation of the NAP's achievements?
- How will the evaluation be conducted, and who will conduct it?
- How will the evaluation process and results be documented and communicated?
- How will the results be used?

¹⁵⁵ UN-Habitat (2014), Planning for Climate Change, A Strategic, Values-based Approach – Toolkit, p.67.

Where possible, the evaluation should engage as many of the stakeholders consulted in the formulation and implementation as possible. This will help to give a more accurate picture of the impact of the urban components of the NAP. It will also ensure that the evaluation is participatory. It may also be necessary to involve neutral, external help with the evaluation, which will make it more neutral and reduce the possibility of bias.

Overall, the focus of the evaluation should be the adequacy, effectiveness and efficiency of actions in the context of the local climate change vulnerability.

Below is a simple evaluation table, and subsequently an example set of evaluation questions is provided.

Table 18: Example evaluation matrix.¹⁵⁶

Action	Related objectives & sub-objectives	Indicator	Baseline 2013	Target 2016	Actual 2016	Comments
Low regrets infrastructure improvements to markets (drainage, flood protection)	Reduce poverty Improve informal market infrastructure	Percentage of market area with storm drainage coverage	17%	25%	32%	Action exceeded expectations. This was due to _____
Zoning land uses	Protect the environment	Hectares of mangroves	650 ha	800 ha	750 ha	Action fell short of expectations. This was due in part to _____
	Conserve the mangrove forests	Percentage of mangroves that are protected	15%	30%	20%	Action fell short of expectations. This was due in part to _____

¹⁵⁶ UN-Habitat (2014), Planning for Climate Change, p.133.

Table 19: Example evaluation questions.

Questions for each activity	Answer
Adequacy and effectiveness	
Have the urban components of the NAP been satisfactorily implemented?	
Has the action adequately achieved its stated objective(s)?	
Have sufficient resources been organized to carry out the action?	
Have the leadership and capacities of the individuals and organizations involved been sufficient?	
Will the partnerships and networks formed in the process of implementing the action be sustained and strengthened?	
Have the adverse outcomes, both anticipated and unexpected, been adequately addressed?	
Can the results be sustained?	
Efficiency	
Could resources have been used differently to produce more results within the estimated costs?	
Could the same results have been achieved for less money or effort?	
Would a different action have produced the same or better results at a lower cost?	
Were the resources managed in the most efficient way possible to achieve the objectives?	
Local Context and Conditions	
Have local climate conditions and circumstances changed (exposure, vulnerability, etc.)?	
Do the new climate conditions necessitate new or revised actions (phasing, scope, etc.)?	
Has new climate change information emerged that needs to be addressed (e.g., funding, resources, capacity, etc.)?	
Have local priorities changed (either political priorities in the city or priorities among the beneficiary communities)?	
Would a different action have produced the same or better results at a lower cost?	
Were the resources managed in the most efficient way possible to achieve the objectives?	
Adjustment and recommendations	
How must the urban priority actions in the NAP be changed to better meet objectives?	
Have climate and/or community conditions changed so much that a complete review of objectives and actions is necessary?	

For further information and detailed guidance on this step, see Planning for Climate Change from pages 129 to 135, and its associated toolkit from pages 64 to 71.

Proposed action in an urban context D3) Iteratively update the urban component of the NAP.¹⁵⁷

Climate change is a dynamic issue. Local exposure can change relatively quickly, particularly as global “negative feedback” loops are approached that will likely have major implications. For example, increased temperatures can cause an increase in water vapour in the atmosphere (as water is evaporated), which causes further warming. Climate impacts will change

(and potentially speed up) over time and new and different impacts may emerge, while existing exposure may increase.

In addition to growing and changing impacts, it is very likely that urban areas and urban stakeholders knowledge and understanding of climate change will continue to grow along with their capacity to adapt to it. Because of this, it is important to view the urban component of the NAP as “living” and requiring regular updates and adjustment to reflect the shifting dynamics of two highly complex issues; climate change and urban development.

¹⁵⁷ This section is based on UN-Habitat (2014) Planning for Climate Change, p.136.

Just as other plans are updated regularly, the urban components or issues of the NAP should be revisited and revised on a regular basis. With a good monitoring and evaluation programme in place, planners involved with NAP will be able to identify where and when adjustments to the urban components of NAP need to be made. In some cases, fundamental changes may be required or community objectives may need to be revisited. In short, adjustments and modifications are expected and should occur whenever new information or new priorities demand it.

In addition to responding to the outcome of monitoring and evaluation activities, some other possible reasons to adjust the urban components of the NAP are as follows:

- A change in the governance structure of some or all cities or towns (i.e., a change in the level of decentralized authority), or a change in personnel or leadership in key cities or linking with electoral system in the cities.
- The overall NAP is adjusted, or there is a change in the policy direction at the national level, because of a change in government or in response to updated international commitments
- New climate data or projections emerge in some or all parts of the country
- Funding constraints emerge, or proposed funding falls through.

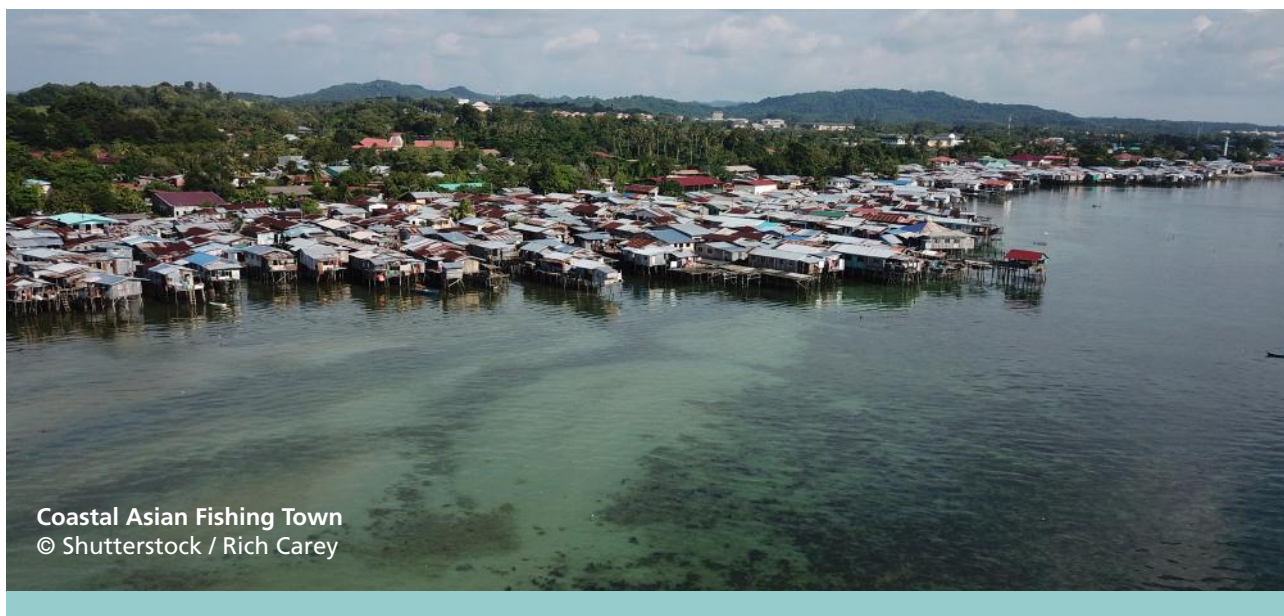
As identified in Action D1, a formal monitoring and evaluation programme should be established with a view to guiding updates of the urban components or issues in the NAP. Given the dynamic nature of climate change and urban development, revisions and updates could be expected at least once every five years, and perhaps more frequently.

Proposed action in an urban context D4) Outreach with urban stakeholders in the progress and effectiveness

Unlike other proposed actions in the guide, there is no tool or guidance material particularly recommended to accompany this action. However, the actions required to outreach with urban stakeholders are straightforward and outlined below.

First, as results of the implementation of urban components or priorities under NAP become available, disseminate them to urban stakeholders, including line ministries, local governments, NGOs/CBOs and private firms involved in, inter alia, finance, engineering and architecture, and other key urban actors in the country context. At the global level, there are numerous opportunities for countries to present their urban adaptation planning, priorities, successes and lessons learned, including CoPs, various international climate change related conferences and LEG meetings. Peer-to-peer learning and experience sharing is also very important.

Second, successful communication should lead to scaling up adaptation actions in cities and towns. This can happen by promoting buy-in among the target communities, raised awareness and opportunities to access finance and support for cities themselves. Media channels, including social media, can be a very useful aid in this action. The national monitoring exercises that generate information for adaptation communications under the Paris Agreement could also help to inform reporting for other development agendas, such as the SDGs and the Sendai Framework for Disaster Risk Reduction. There can also be linkages between adaptation monitoring and other work streams under the UNFCCC (e.g., the Nairobi Work Programme on Impacts, Vulnerability and Adaptation) and general information and knowledge dissemination.



Coastal Asian Fishing Town
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04

**SCALING URBAN ADAPTATION
INTO NAP AND INTERNATIONAL
AGREEMENTS**





Slum at the waterside,
Bangkok, Thailand
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SCALING URBAN ADAPTATION INTO NAP AND INTERNATIONAL AGREEMENTS

4.1. Finance

Mobilising finance is critical to the successful implementation of the urban priorities in the NAP. In stakeholder consultations conducted ahead of the formulation of this guide, lack of finance was consistently highlighted as the most pressing challenge facing governments in implementing (or planning to implement) their NAPs. This section of the guide provides more general guidance on climate finance for national or city-level stakeholders seeking to implement the urban components of NAPs. It is important to consider mobilising finance early in the NAP process, as there is often a long “lead time” (i.e., the time between applying for finance and actually receiving funds in the bank). However, when and how urban or national stakeholders apply for finance depends on the local context. As such, this information is not included in the Actions above.

The UNFCCC defines climate finance as “local, national or transnational financing, which may be drawn from public, private and alternative sources of financing - that seeks to support mitigation and adaptation actions that will address climate change”. It is critical to address climate change because large-scale investments are required to significantly reduce emissions, notably in sectors that emit large quantities of greenhouse gases.

Climate finance is equally important for adaptation, for which significant financial resources will be similarly required to allow countries to adapt to the adverse effects and reduce the impacts of climate change.¹⁵⁸ The above definition of climate finance is not without complexity, and there is no formal internationally agreed definition of what actually counts as climate finance.

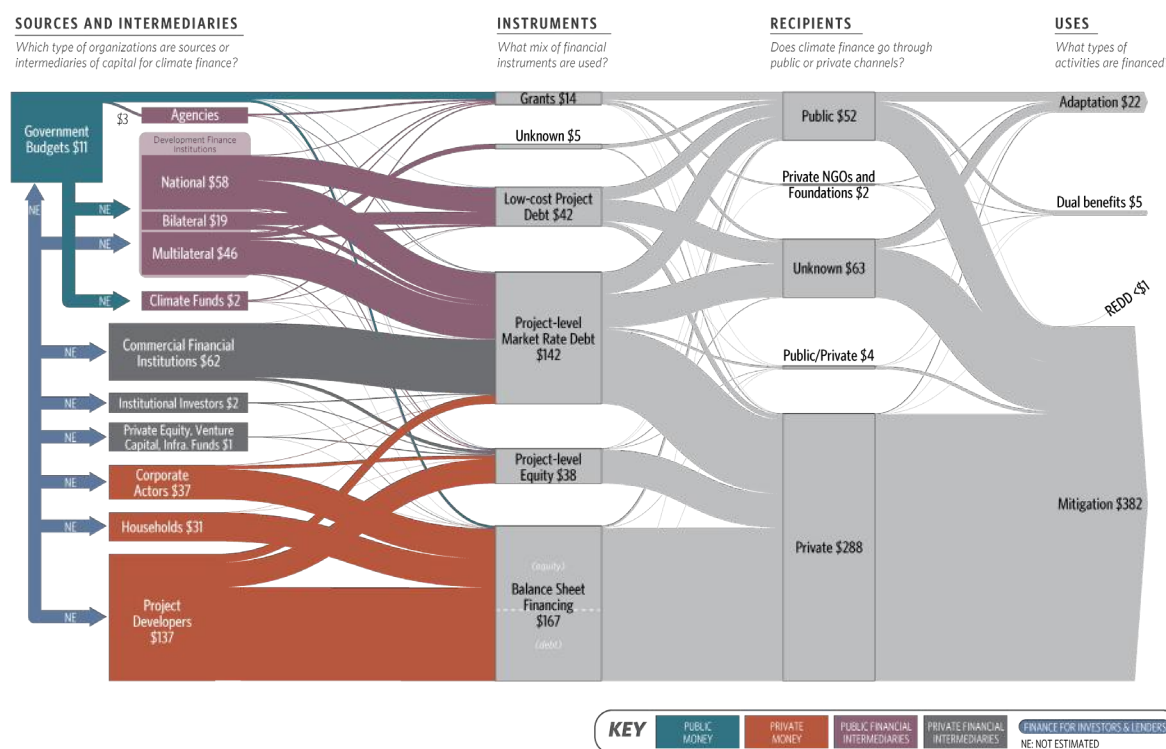


Figure 24: Landscape of Climate Finance in 2015/2016.¹⁵⁹

Global climate finance flows along their life cycle in 2015 and 2016. Values are average of two years' data, in USD billions.

¹⁵⁸ <https://unfccc.int/topics/climate-finance/the-big-picture/introduction-to-climate-finance>

¹⁵⁹ Climate Policy Initiative (2017) – Global Landscape of Climate Finance, p.3.

In 2017, The Climate Policy Initiative estimated that the total global climate finance flow was US\$410 billion, with around 93 per cent of this amount being invested in mitigation actions.¹⁶⁰ Of this, US\$288 billion was private, compared to as little as US\$52 billion of public finance.¹⁶¹ The remainder was made of mixed finance approaches such as public-private partnerships. However, it is thought that some domestic public finance, such as investment in infrastructure, which is difficult to directly attribute as climate finance, is not included in this total. This finance could be as much as US\$60 billion per year.¹⁶²

This section provides an overview of the main types of climate finance, and highlights some of the challenges in accessing it at local, city and national levels. It then provides recommendations on taking practical steps to accessing finance for NAP actions.

4.2. Sources of Climate Finance

Sources of urban climate finance can be broadly separated into three categories: domestic public climate finance, international climate finance and private sources, as displayed in Figure 25, below. An overview of each, including some of the challenges surrounding access to their respective financial mechanisms are provided in following the sections.

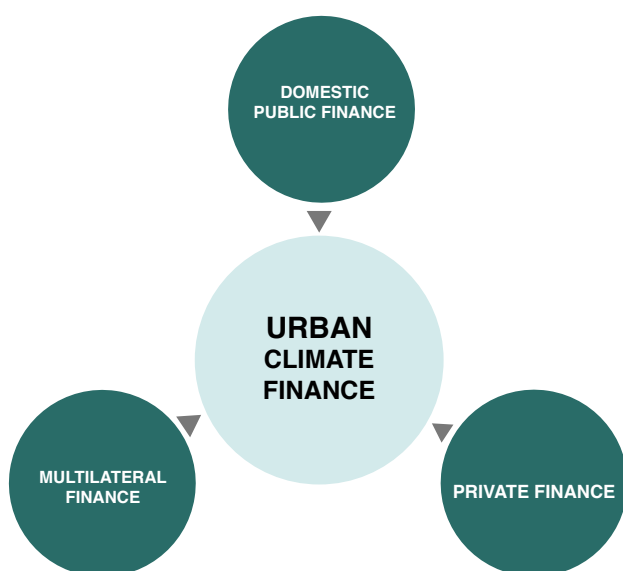


Figure 25: Sources of urban climate finance.¹⁶³

Domestic climate finance is an important source of climate finance. Globally, available climate funds remain at a relatively modest scale compared with the climate change needs of developing countries. Domestic public finance has a catalytic role because it can leverage both climate and development finance through piloting innovative approaches that combine resources to maximize synergies. As shown in Figure 24, about US\$52 billion globally was created for national climate finance from public budgets.

To try to establish what countries spend from their national budgets on climate change, UNDP has led a series of studies known as Climate Public Expenditure and Institutional Reviews^{164 165}. These have shown some interesting results. In Bangladesh, for example, the government spends around US\$1 billion on what UNDP terms “climate sensitive activity”.¹⁶⁶ Accounting for national climate finance remains challenging however, because of ongoing problems with the definition of what constitutes climate finance. While adaptation and mitigation actions are well defined among climate practitioners¹⁶⁷, they are much less well defined in public accounting systems, making the classification of climate budget and expenditure a subjective task.¹⁶⁸ To try to address this, the UNDP Climate Public Expenditure and Institutional Reviews reports make a distinction between “direct” climate change spending and “indirect” climate sensitive spending.

For Local governments, domestic public finance presents a significant opportunity, as it can be easier to access than international finance. It does not require complex and lengthy accreditation procedures (which multilateral climate finance does), and requires only compliance with national laws and standards in issues such as environmental and social safeguards, rather than requiring “dual compliance” – with both national standards and the (often very different) standards of an international financier. Fiscal transfers to local governments can be tailored to address local climate action. Local revenue generation through taxes can also be a potentially powerful tool, especially property tax. It has a direct relationship with land use and the built environment, which is responsible for a large part of cities’ GHG emissions.

¹⁶⁴ <https://en.wikipedia.org/wiki/CPEIR>

¹⁶⁵ http://www.asia-pacific.undp.org/content/rbap/en/home/library/democratic_governance/cpeir-methodological-guidebook.html

¹⁶⁶ UNDP/UNEP (2012) Bangladesh Climate Public Expenditure and Institutional Review, p.20.

¹⁶⁷ See for example OECD (2011) Handbook on the OECD-DEC climate markers. Preliminary version.

¹⁶⁸ UNDP (2012) Bangladesh Climate Public Expenditure and Institutional Review, p.89.

¹⁶⁰ CPI (2015) Global Landscape of Climate Finance, p.2.

¹⁶¹ Ibid., p.1.

¹⁶² Curran, P. (2016) What is Climate Finance? LSE/Grantham Research Institute on Climate Change and the Environment.

¹⁶³ Author's own diagram.

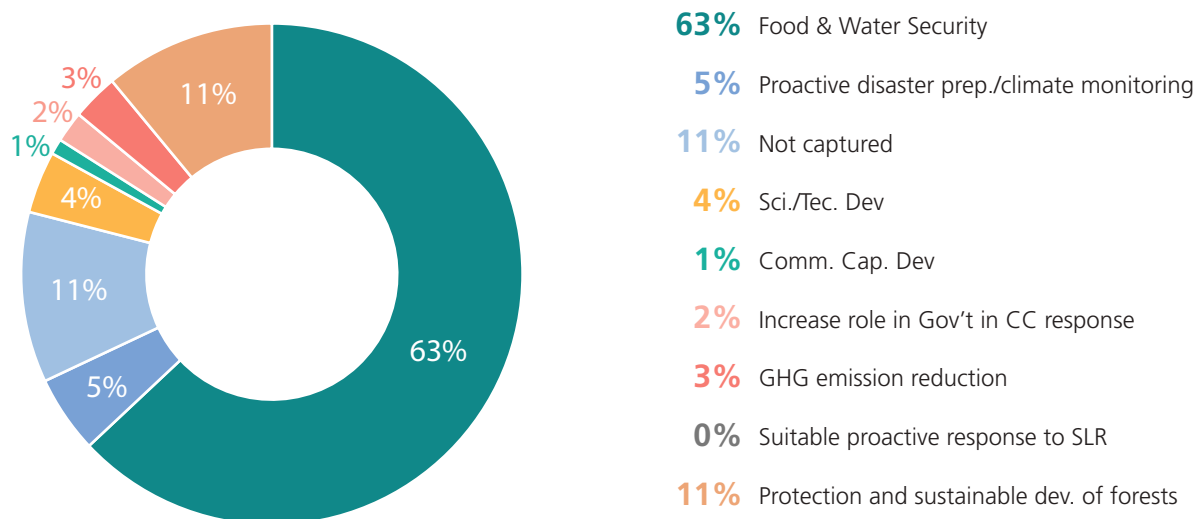


Figure 26: Domestic climate finance allocation in Vietnam.¹⁶⁹

Local governments can also raise domestic climate finance through climate change related fees and charges which could be effective instruments in a variety of areas to signal the higher cost of internalizing environmental externalities or adaptation action, including in the transport, land development, waste, and water sectors.

As shown in Figure 26, the example from Vietnam highlights that domestic climate finance is often allocated at national level and through sector ministries - mainly to agriculture, water security and forestry, while urban-related climate change issues are not often prioritised. This points to a need for improved lobbying from cities and urban actors for climate finance from domestic budgets and for strengthening of vertical channels of distributing finance. In cases such as this, a NAP that addresses urban priorities can significantly strengthen the case for increased climate finance to be directed to adaptation actions in urban areas.

It is also essential that effective mechanisms be in place to channel national-level climate finance to the local level – whether its source is domestic or international. There is a range of evidence to suggest that national governments need to focus more on developing robust systems and capacities to plan for, prioritize, and design viable projects and manage the finance required to drive local climate action. An example

that bucks the trend is the People's Survival Fund, an annual fund programmed by the government of the Philippines and intended for local government units and accredited local/community organizations to implement climate change adaptation projects that will equip vulnerable communities to deal with the impacts of climate change. This innovative mechanism has not been without challenges, however, the People's Survival Fund process has had significant start-up challenges; since the first call of the People's Survival Fund in November 2015 to the latest call in July 2017, the People's Survival Fund Board has approved only four proposals.

One challenge for local governments in this example is the shift away from "business-as-usual" planning and budgeting. Planning for adaptation activities requires a clear understanding of local climate vulnerabilities. This understanding has to be translated into baselines, which then serve as the starting point of the People's Survival Fund proposal. Bottlenecks exist too at the national level because no single agency, can certify the strength and merits of the plans developed by local government units. This problem is exacerbated by the lack of capacity in many cases, especially in project appraisal and monitoring and evaluation.¹⁷⁰ Nevertheless, despite these teething problems, the People's Survival Fund represents an interesting model for cities to access national finance in a way that aligns with local needs and national priorities.

¹⁶⁹ World Bank and UNDP (2015) Financing Vietnam's Response to Climate Change, p.68.

¹⁷⁰ Adapted from Institute for Climate and Sustainable Cities: Accessing the People's Survival Fund. Available from <http://www.icsc.ngo/accessing-people's-survival-fund>.

International Climate Finance.¹⁷¹

International climate finance consists of multilateral and bilateral financing mechanisms. The international climate finance architecture is displayed in Figure 27, below, providing an overview of both multilateral and bilateral financing institutions and mechanisms, along with their major contributor countries and implementing agencies.

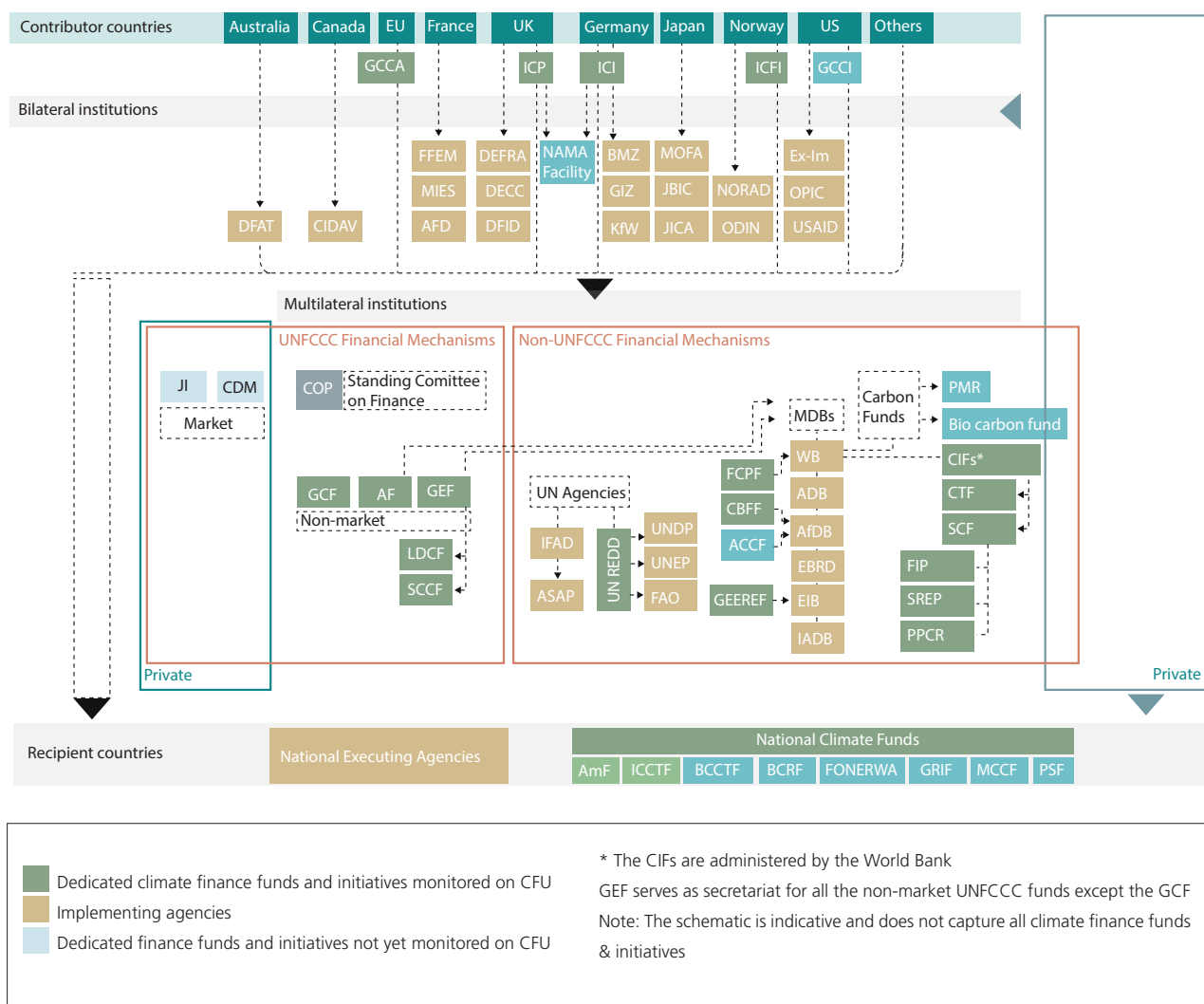


Figure 27: International climate finance architecture.¹⁷²

(See Annex 2 for abbreviations)

¹⁷¹ For a comprehensive overview of International Sources of Climate Finance, see Act Alliance (2018) A Resource Guide to Climate Finance.

¹⁷² Figure retrieved from GGGI presentation: Climate Finance for Local Climate Action from the workshop "Enhanced National Urban Policies and Vertical Integration: Governance Capacities – Finance for Local Climate Action" Kuala Lumpur, 4-6 February 2018. See also <http://www.climatefundsupdate.org>.

Multilateral Financial Mechanisms consist of United Nations Framework Convention on Climate Change (UNFCCC) Funds and non-UNFCCC funds. A summary of major mechanisms is provided in the Table below. Selected multilateral financial mechanisms, as well as the means for accessing them are elaborated in the following sections as examples.

Table 20: Multilateral Financial Mechanisms.

UNFCCC Funds	• Global Environment Facility (GEF), which includes the Special Climate Change Fund (SCCF) and the Least Developed Countries Fund (LDCF) • Green Climate Fund (GCF) • Adaptation Fund (AF) • Clean Development Mechanism (CDM) • Joint Implementation (JI) Mechanism
Non-UNFCCC Funds ¹⁷³ (Selection of major funds)	• Climate Investment Fund (CIF) – World Bank (including Clean Technology Fund, Forest Investment Programme, Pilot Programme for Resilience; Scaling up RE Programme) • Global Fund for Disaster Risk Reduction • Global Climate Change Alliance (EU) • The International Climate Initiative (Germany) • Nordic Climate Facility (Norway)

One notable challenge observed in relation to cities is that UNFCCC funds, in particular, are often accessed by the Ministry of Environment usually the climate change focal point – and channelled to agriculture, forestry, and other environmental initiatives. This means that, as in the case with domestic climate finance, cities have thus far lacked the capacity to lobby themselves for international funding to be channelled towards local climate change action.

The Green Climate Fund (GCF) aims to help developing countries reduce GHGs emissions and adapt to the impacts of climate change. Created by the United Nations Framework Convention on Climate Change (UNFCCC), the Fund became operational in May 2014. The GCF aims to allocate 50 per cent of its resources to mitigation projects and 50 per cent to adaptation. Across adaptation and mitigation, it will allocate 50 per cent of its resources to least developed countries, small islands developing states and African countries.

The GCF has become the first multilateral fund to make cities and urban areas a priority. There are eight strategic priorities for the GCF; four in mitigation, four in adaptation, as shown

in Figure 28. Of these cities and urban areas are a priority in five of them – three in mitigation; transport; energy generation and access; buildings, cities, industries and appliances; and two in adaptation; enhanced livelihoods of vulnerable people and communities; and food, water security, and health. The GCF also has a separate readiness window that provides up to US\$3 million to formulate NAPs and up to US\$1m per year to strengthen country capacity, engage stakeholders in the consultative process, support direct access, provide access to finance and mobilize the private sector.¹⁷⁴



Figure 28: Strategic funding priorities.¹⁷⁵

¹⁷⁴ <https://www.greenclimate.fund/gcf101/empowering-countries/readiness-support>

¹⁷⁵ GCF (2015) Elements 02 – Investment Opportunities for the Green Climate Fund, pp.10-11.

¹⁷³ A thorough overview of international climate finance opportunities can be found here - <https://actalliance.org/wp-content/uploads/2018/06/ENGLISH-quick-guide-climate-finance.pdf>.

There are three types of accreditation; national direct access, which allows an organization registered in a given country to implement projects in that country (this is called the national implementing entity (NIE); regional direct access, which follows a similar logic in a given region; and international access, which is typically for international organizations and the private sector. Accessing GCF remains a challenge for many countries, as grants under the main GCF funding window requires accreditation based on fiduciary standards which account for capacities surrounding finance and administration, transparency and accountability, and project management and monitoring and evaluation¹⁷⁶; as well the adoption of an Environmental and Social Safeguard system¹⁷⁷ that aims to avoid, reduce or compensate for negative effects of planned activities and ensure that they are successful. A total of 145 countries have now officially nominated National Designated Authorities.¹⁷⁸

As of September 2018, there are only 21 nationally accredited entities globally.¹⁷⁹ There are ten regional direct access entities.¹⁸⁰ There are 27 accredited international access entities¹⁸¹, which includes some private sector finance institutions, such as HSBC Bank and Bank of Tokyo Mitsubishi.

Adaptation Fund

The Adaptation Fund (AF) was established in 2001 under the Kyoto Protocol of the UN Framework Convention on Climate Change (UNFCCC), to finance projects and programmes that help vulnerable communities in developing countries adapt to climate change based on country needs, views and priorities. It has committed US\$ 462 million in 73 countries since 2010 to climate adaptation and resilience activities.

The AF allows national direct access through NIE. NIEs can directly access financing and manage all aspects of climate adaptation and resilience projects, from design through implementation to monitoring and evaluation.¹⁸²

Similar to the GCF, there are fiduciary standards for the accreditation of NIEs, which are displayed in Box 4 below.

Box 4

AF fiduciary standards for implementing agencies.¹⁸³

Accreditation of Implementing - Entities Fiduciary Standards

32. Among the principles established for the Adaptation Fund (Decision 5/CMP .2) is "sound financial management, including the use of international fiduciary standards." At its 7th meeting the Board adopted fiduciary standards governing the use, disbursement and reporting on funds issued by the Adaptation Fund covering the following broad areas (refer to Annex 3 for details):

- p) Financial Integrity and Management:
 - (i) Accurately and regularly transactions and balances in a manner that adheres to broadly accepted good practices, and are audited periodically by an independent firm or organization;
 - (i) Managing and disbursing funds efficiently and with safeguards to recipients on a timely basis;
 - (i) Produce forward-looking financial plans and budgets;
 - (i) Legal status to contract with the Adaptation Fund and third parties
- q) Institutional Capacity:
 - (i) Procurement procedures which provide for transparent practices, including in competition;
 - (i) Capacity to undertake monitoring and evaluation;
 - (i) Ability to identify, develop and appraise project;
 - (i) Competency to manage or oversee the execution of the project / programme including ability to manage sub-recipients and to support project / programme delivery and implementation.

Transparency and Self-investigative Powers: Competence to deal with financial mismanagement and other forms of malpractice.

As this demonstrates, adequate financial, human and institutional capacity, including sound financial budgeting and management, capacity to develop, implement and monitor and evaluate projects, and transparency are general requirements for national direct access to AF funds.

¹⁷⁶ See full GCF Fiduciary Standards here: http://www.greenclimate.fund/documents/20182/818273/1.6_-_Fiduciary_Standards.pdf/083cfe10-46f4-4a73-b603-8d7bfd2a35bd.

¹⁷⁷ Find GCF Environmental and Social Safeguard system here: <http://www.gcfreadinessprogramme.org/sites/default/files/Environmental%20and%20Social%20Safeguards%20at%20the%20Green%20Climate%20Fund.pdf>.

¹⁷⁸ A list can be found here - <http://www.greenclimate.fund/how-we-work/tools/country-directory/>.

¹⁷⁹ The list can be found here - <http://www.greenclimate.fund/how-we-work/tools/entity-directory/>.

¹⁸⁰ The Micronesia Conservation Trust and the Secretariat of the Pacific Regional Environment Programme - <http://www.greenclimate.fund/how-we-work/tools/entity-directory/>.

¹⁸¹ The list can be found here - <http://www.greenclimate.fund/how-we-work/tools/entity-directory/>. Of the 27 international access entities, five are not operational in Asia, and will not be in the future (African Development).

¹⁸² <https://www.adaptation-fund.org/apply-funding/implementing-entities/national-implementing-entity/>

¹⁸³ http://unfccc.int/files/adaptation/implementing_adaptation/adaptation_funding_interface/application/pdf/afguide.pdf

Bilateral Financial Mechanisms

Examples of bilateral cooperation mechanisms include the International Climate Initiative (IKI) initiated by Germany, or the Joint Crediting Mechanism initiated by Japan, as described below.

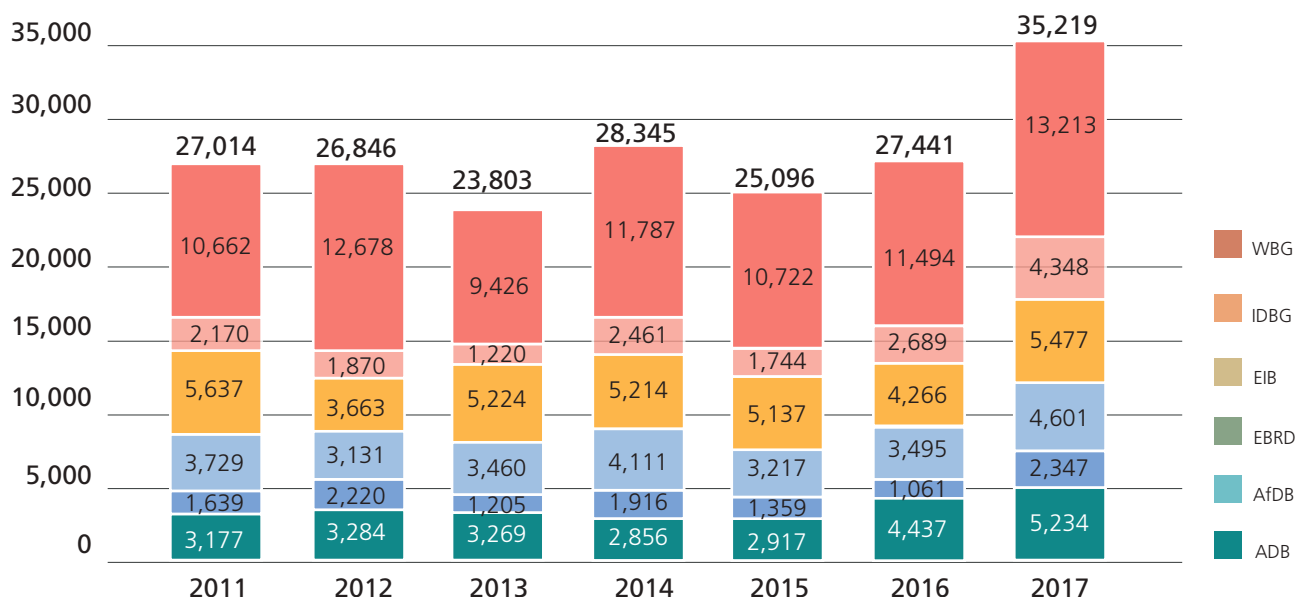


Figure 29: Total reported MDB climate finance commitments, 2011-17 (in US\$ million).¹⁸⁴

However, the overwhelming majority of this finance takes the form of lending, however. This makes it very difficult (and in many countries impossible) for cities to access multilateral development bank funds, and instead ties national government into larger lending portfolios. The funds provided by multilateral banks are, however, evenly spread throughout the world, with Latin America and the Caribbean being marginally the largest recipient region of MDB funds (see Figure 31).

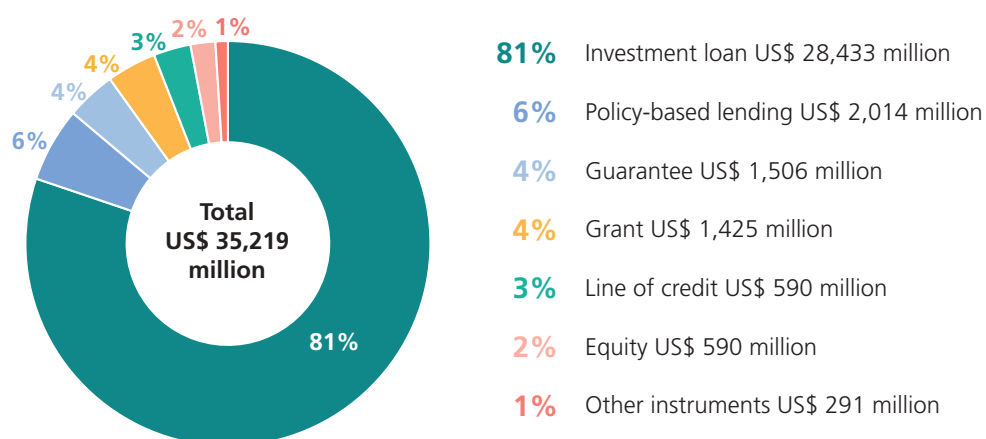


Figure 30: Total MDB climate finance split by type of instrument, 2017 (in US\$ million).¹⁸⁵

¹⁸⁴ Joint Report on Multilateral Development Banks' Climate Finance, 2017 (2018), p.4.

¹⁸⁵ Ibid., p.11.

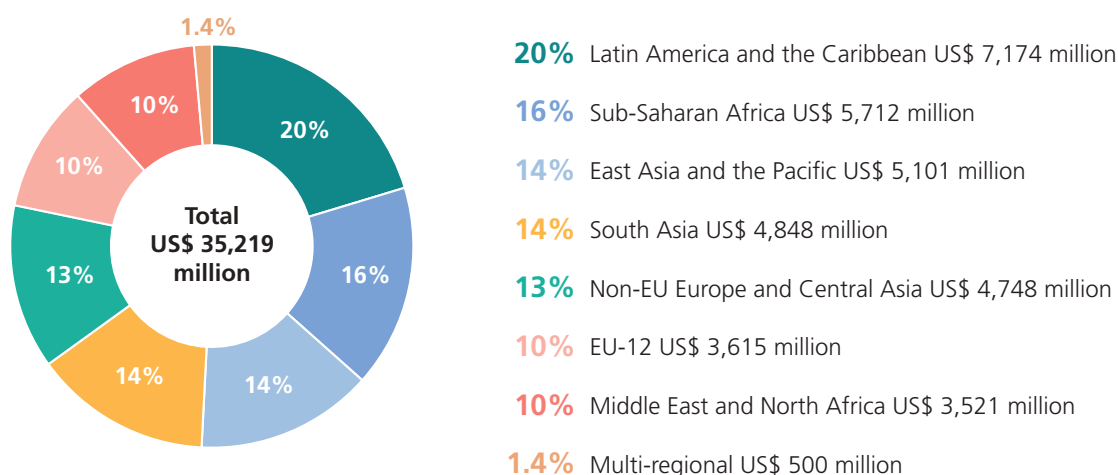


Figure 31: MDB climate finance by region, 2017 (in US\$ million).¹⁸⁶

Bilateral Funds

International Climate Initiative

The International Climate Initiative (IKI) was founded in 2008 by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), and has been financing climate and biodiversity projects in developing and least-developed countries. It supports projects carried out in partner countries by federal implementing agencies, NGOs, business enterprises, universities and research institutes, and by international and multinational organizations and institutions, such as development banks and United Nations bodies and programmes.

Since 2017, IKI project implementing organizations are expected to apply the Green Climate Fund Environmental and Social Safeguard System for the avoidance of potential negative impacts of projects on people or the environment, and to enhance the overall quality of project planning and implementation. Project applicants are expected to suggest a risk category based on a screening of all Performance Standards in conjunction with planned measures to avoid and mitigate the risks. In case of potential risky activities relevant instruments for risk minimization, monitoring and management have to be included in the project concept (e.g., indicators, desk study, safeguards workshop with stakeholders).¹⁸⁷

IKI is unique in that it provides substantial support to beneficiaries, including support to the risk assessment process for implementing organizations that lack an institutional safeguard system or in-house expertise. IKI also supports its

partner countries in developing mechanisms for mobilising additional funding, in particular private investments, as well as sustainable business models for climate change mitigation and biodiversity conservation measures. In addition, it supports its partner countries in strengthening transparency and governance, to be able to make measurable, reportable and verifiable (MRV) contributions to climate change mitigation.

Joint Crediting Mechanism

The Joint Crediting Mechanism (JCM) is a bilateral carbon market mechanism, funded by the Ministry of Environment of Japan, to promote use of low carbon technology in developing countries. JCM was established and announced by the Minister of the Environment of Japan and the President of the Asian Development Bank in June 2014. The JCM provides financial incentives for adoption of advanced low-carbon technologies to government and public-sector entities in the form of grants, and also provides direct financial assistance to private sector projects to leverage a large amount of finances from commercial sources.

At present 28 projects carried out by Japanese businesses for JCM, including following areas: Waste management and treatment (3); Land use and forestry (3); Industry, energy saving and efficiency (18); Transport.

Eligibility requirements include adoption of JCM methodology; preparation of the Project Design Documents; validation by a third-party entity; monitoring and verification of GHG emissions reduction; and issuance of the JCM credits and delivery to both governments. Therefore, the technical and institutional capacity of project participants can present a challenge.

¹⁸⁶ Ibid., p. 12.

¹⁸⁷ For additional information, see <https://www.international-climate-initiative.com/en/project-funding/information-for-applicants/#c6362>.

Private Financing Mechanisms

Private financing institutions include national and local commercial banks, private equity funds and institutional investors such as pension funds. There are also capital market mechanisms, such as green bonds.

However, local governments often lack the capacity and legislative authority to mobilise finance from these alternative sources of financing. In addition, regulatory uncertainty often affects low carbon infrastructure investments. As a result, less than 20 per cent of cities in developing countries have access to local capital markets, through for example issuing bonds to investors, and only 4 per cent are deemed creditworthy enough to access international capital markets.¹⁸⁸ Therefore, local governments continue to rely heavily on national climate funds.

There are many direct and market based private financing mechanisms available to finance local climate action. These include direct investments by private sector actors, structured projects and programmes done through private-public partnerships (PPP), guarantee schemes, insurance schemes for climate risk management measures to market based instruments such as green bonds and carbon finance. As explained below, accessing green bonds can offer a potential solution for cities in developing countries looking to secure investment in low-carbon, climate-resilient infrastructure to meet the water, energy, housing and transportation needs of their expanding urban populations.

Green Bonds

A green bond is a tax-exempt bond issued by appropriate national-level bodies or by municipalities to fund projects that have positive environmental and/or climate change benefits. Since 2007, US\$131 billion in green bonds have been sold to institutional and retail investors attracted by their link to green projects, goods and services. The last three years has seen an exponential 13-fold increase in the value of annual bonds issued, from USD 3.2 billion in 2012 to USD 44 billion in 2015. This was projected to reach USD 75 billion by the end of 2016.¹⁸⁹

According to an analysis of the Climate Policy Initiative (CPI), the projects underlying green bonds currently in the market shows USD 2.3 billion in value is linked with city-based projects in developing countries, including urban mass transit systems, district heating and water distribution networks. To put this in context, this represents:¹⁹⁰

- 1.7 per cent of total green bond market flows since 2007
- 6 per cent of all flows to developing countries: A total of USD 38 billion of the proceeds from green bonds issued by development finance institutions (DFIs), commercial banks, and corporations has been directed toward projects in developing countries
- 11 per cent of flows to all city-based projects worldwide: USD 17 billion has been raised by cities in developed countries such as the US, France, and Sweden.

This demonstrates that there is considerable room for cities to directly access increased finance from the green bonds market.

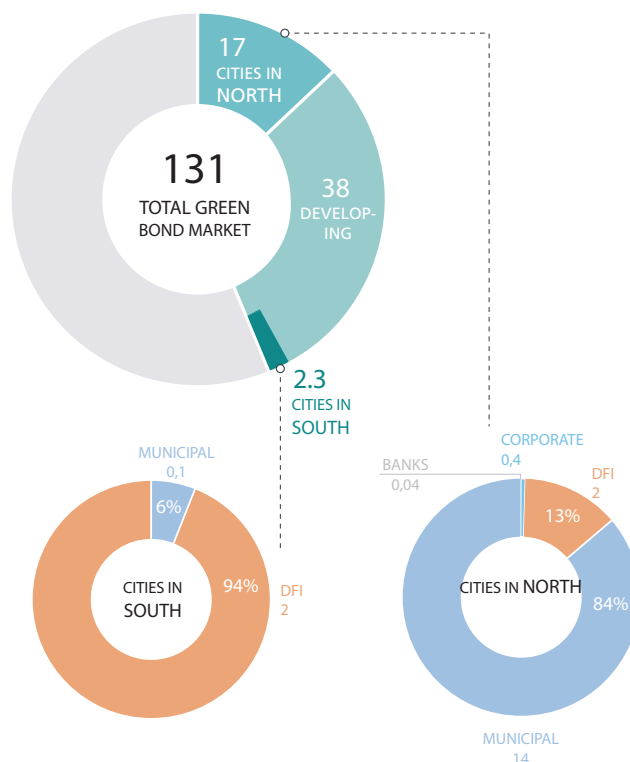


Figure 32: Breakdown of green bond market flows from total issuance 2007- mid-2016.¹⁹¹

In summary, access to international sources of climate finance generally requires that implementing entities at the national-level have adequate capacity for the financial and administrative management of projects, as well as project-management capacities including the development, implementation and monitoring and evaluation of planned activities. In addition, mitigation-related projects typically require that greenhouse gas (GHG) mitigation actions and commitments are “measurable, reportable and verifiable.” Therefore, strengthening governmental stakeholder capacities and ensuring transparent processes are prerequisites for

¹⁸⁸ World Bank, 2013.

¹⁸⁹ Bloomberg, 2016.

¹⁹⁰ Excerpt from Climate Policy Initiative (2016) Green Bonds for Cities: A Strategic Guide for City-level Policymakers in Developing Countries <https://climatepolicyinitiative.org/wp-content/uploads/2016/12/Green-Bonds-for-Cities-A-Strategic-Guide-for-City-level-Policymakers-in-Developing-Countries.pdf>.

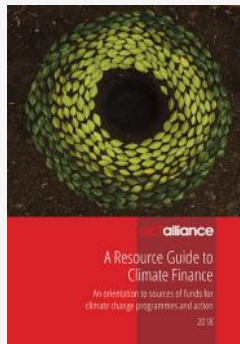
¹⁹¹ Climate Policy Initiative (2016).

improved access to international climate finance by national governments is of critical importance to financing the urban priorities of NAPs.

International sources of climate finance often do not have mechanisms for sub-national levels of government to access them directly, and local governments often also lack the capacity to lobby for international funding accessed by national government agencies, or to mobilize resources through the development of project proposals. They also often lack the capacity, authority and credit worthiness to access alternative sources of financing such as private sector and capital market mechanisms. As a result, they tend to face significant challenges in financing local climate action. This makes it considerably more difficult for cities themselves to access finance, especially international finance.

However, where NAPs with strong urban components exist, backed up by a coordinated policy environment, included NDCs that also show strong urban content and coherent national urban policy, makes countries attractive to international climate financing institutions, as gaps between national policy targets and the indicators and targets of major global commitments and frameworks (such as the 2030 Sustainable Development Agenda, the Paris Agreement, Sendai Framework for Disaster Risk Reduction and the New Urban Agenda) are identified through the assessment and comparative analysis of policies, and alignment takes place through the process of policy formulation or revision.

Table 21: Overview of key climate finance materials.

Publication	Synopsis	Picture
Climate Policy Initiative, Global Landscape of Climate Finance 2017	A visual overview of climate finance flows by source, mitigation and adaptation, and sectors	
GARI, Bridging the Adaptation Gap: Approaches to Measurement of Physical Climate Risk and. Examples of Investment in Climate Adaptation and Resilience	This discussion paper focuses on two issues at the heart of addressing the physical risk of climate change that were the focus of GARI conversations in 2016: I) Approaches to Measurement of Physical Climate Risk; and II) Examples of Investments in Climate Adaptation and Resilience.	
ACT Alliance, A Resource Guide to Climate Finance, an orientation to sources of funds for climate change programmes and action 2018	An initial orientation to the available funds that may be relevant for financing climate-related programs and projects of ACT Forums, members and partners, as well as other Faith-Based Organizations, Non-Governmental Organizations, and public institutions in developing countries.	

Publication	Synopsis	Picture
Group of MDBs, Joint Report on Multilateral Development Bank's Climate Finance 2017	The Joint Report on Multilateral Development Banks' Climate Finance is an annual collaborative effort to make public MDB climate finance figures for developing and emerging economies, together with a clear explanation of the methodologies for tracking this finance.	
UNFCCC - Report of the Standing Committee on Finance to the Conference of the Parties	This report contains information on the outcomes of the work of the Standing Committee on Finance (SCF), including its meetings, in 2018. It also contains the draft guidance to the operating entities of the Financial Mechanism, the summary and recommendations by the SCF of the 2018 Biennial Assessment and Overview of Climate Finance Flows, the summary report on the 2018 SCF Forum, information on the theme of the 2019 SCF Forum, the workplan of the SCF for 2019 and a list of the members of the SCF.	



Coastal village, Peru
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Annexes

Annex 1: SDG goals and targets that are relevant to NAP in urban areas.

 Goal 1: End poverty in all its forms everywhere	
Goals and targets	Indicators
1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters	1.5.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
	1.5.2 Direct economic loss attributed to disasters in relation to global gross domestic product (GDP)
	1.5.3 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030
	1.5.4 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies
1.a Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions	1.a.1 Proportion of domestically generated resources allocated by the government directly to poverty reduction programmes
	1.a.2 Proportion of total government spending on essential services (education, health and social protection)
	1.a.3 Sum of total grants and non-debt-creating inflows directly allocated to poverty reduction programmes as a proportion of GDP

Highly relevant
 In between
 Slightly relevant

 Goal 6. Ensure availability and sustainable management of water and sanitation for all	
Goals and targets	Indicators
6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	6.4.1 Change in water-use efficiency over time
	6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources
6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate	6.5.1 Degree of integrated water resources management implementation (0–100)
	6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes	6.6.1 Change in the extent of water-related ecosystems over time



Goal 6. Ensure availability and sustainable management of water and sanitation for all

Goals and targets	Indicators
6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies	6.a.1 Amount of water- and sanitation-related official development assistance that is part of a government-coordinated spending plan
6.b Support and strengthen the participation of local communities in improving water and sanitation management	6.b.1 Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management

Highly relevant
In between
Slightly relevant



Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all

Goals and targets	Indicators
7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support	7.b.1 Investments in energy efficiency as a proportion of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to sustainable development services

Highly relevant
In between
Slightly relevant



Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Goals and targets	Goals and targets
9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	9.1.1 Proportion of the rural population who live within 2 km of an all-season road
	9.1.2 Passenger and freight volumes, by mode of transport proportion of the rural population who live within 2 km of an all-season road
9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States	9.a.1 Total official international support (official development assistance plus other official flows) to infrastructure

Highly relevant
In between
Slightly relevant



Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable

Goals and targets	Indicators
11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums	11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing
11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons	11.2.1 Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities
11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	11.3.1 Ratio of land consumption rate to population growth rate
	11.3.2 Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically
11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage	11.4.1 Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/ investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)
11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations	11.5.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
	11.5.1 Direct economic loss in relation to global GDP, damage to critical infrastructure and number of disruptions to basic services, attributed to disasters
11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	11.6.1 Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities
	11.6.2 Annual mean levels of fine particulate matter (e.g., PM2.5 and PM10) in cities (population weighted)
11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities	11.7.1 Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities
	11.7.2 Proportion of persons victim of physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 months
11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels	11.b.1 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030
	11.b.2 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies
11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials	11.c.1 Proportion of financial support to the least developed countries that is allocated to the construction and retrofitting of sustainable, resilient and resource-efficient buildings utilizing local materials

Highly relevant

In between

Slightly relevant



Goal 13. Take urgent action to combat climate change and its impacts

Goals and targets	Indicators
13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	13.1.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
	13.1.2 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030
	13.1.3 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies
13.2 Integrate climate change measures into national policies, strategies and planning	13.2.1 Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)
13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula
	13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions
13.a Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible	13.a.1 Mobilized amount of United States dollars per year between 2020 and 2025 accountable towards the \$100 billion commitment
13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities	13.b.1 Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities

Highly relevant

In between

Slightly relevant



Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Goals and targets	Indicators
15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts	15.9.1 Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011–2020

Highly relevant

In between

Slightly relevant



Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Goals and targets	Indicators
16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels	16.7.1 Proportions of positions (by sex, age, persons with disabilities and population groups) in public institutions (national and local legislatures, public service, and judiciary) compared to national distributions
	16.7.2 Proportion of population who believe decision-making is inclusive and responsive, by sex, age, disability and population group

Highly relevant
In between
Slightly relevant



Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

Goals and targets	Indicators
17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge-sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism	17.6.1 Number of science and/or technology cooperation agreements and programmes between countries, by type of cooperation
	17.6.2 Fixed Internet broadband subscriptions per 100 inhabitants, by speed
17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the Sustainable Development Goals, including through North-South, South-South and triangular cooperation and through a global technology facilitation mechanism	1.a.1 Proportion of domestically generated resources allocated by the government directly to poverty reduction programmes
	1.a.2 Proportion of total government spending on essential services (education, health and social protection) 1.a.3 Sum of total grants and non-debt-creating inflows directly allocated to poverty reduction programmes as a proportion of GDP
17.16 Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries	17.14.1 Number of countries with mechanisms in place to enhance policy coherence of sustainable development
17.16 Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries	17.16.1 Number of countries reporting progress in multi-stakeholder development effectiveness monitoring frameworks that support the achievement of the sustainable development goals

Highly relevant
In between
Slightly relevant

Annex 2: Abbreviations for Figure 27 (*International climate finance architecture*).

Implementing Agencies and Institutions

AfDB	African Development Bank
AFD	French Development Agency
ADB	Asian Development Bank
BMZ	Federal Ministry of Economic Cooperation and Development
CIDA	Canadian International Development Agency
DECC	Department of Energy and Climate Change
DEFRA	Department for Environment, Food and Rural Affairs
DFAT	Department of Foreign Affairs and Trade (Australia)
DFID	Department for International Development
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
Ex-Im	Export-Import Bank of the United States
FAO	Food and Agriculture Organisation
FFEM	French Global Environment Facility
GIZ	German Technical Cooperation
IADB	Inter American Development Bank
IFAD	International Fund for Agricultural Development
JBIC	Japan Bank of International Cooperation
JICA	Japan International Cooperation Agency
KfW	German Development Bank
MIES	Inter-ministerial Taskforce on Climate Change
MOFA	Ministry of Foreign Affairs
NORAD	Norwegian Agency for Development Cooperation
ODIN	Ministry of Foreign Affairs
OPIC	Overseas Private Investment Corporation
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USAID	US Agency for International Development
WB	World Bank

Multilateral Funds and Initiatives

AF	Adaptation Fund (GEF acts as secretariat and WB as trustee)
ACCF	Africa Climate Change Fund
ASAP	Adaptation for Smallholder Agriculture Programme

CBFF	Congo Basin Forest Fund (hosted by AfDB)
CDM	Clean Development Mechanism (implemented under the Kyoto Protocol)
CIF	Climate Investment Funds (implemented through WB, ADB, AfDB, EBRD, and IADB)
CTF	Clean Technology Fund (implemented through WB, ADB, AfDB, EBRD, and IADB)
FCPF	Forest Carbon Partnership Facility FIP Forest Investment Program (implemented through WB, ADB, AfDB, EBRD, and IADB)
GCCA	Global Climate Change Alliance
GCF	Green Climate Fund
GEF	Global Environment Facility
GEEREF	Global Energy Efficiency and Renewable Energy Fund (hosted by EIB)
JI	Joint Implementation (implemented under the Kyoto Protocol)
LDCF	Least Developed Countries Fund (hosted by the GEF)
PMR	Partnership for Market Readiness
PPCR	Pilot Program on Climate Resilience (implemented through World Bank, ADB, AfDB, EBRD, and IADB)
SCCF	Special Climate Change Fund (hosted by the GEF) SCF Strategic Climate Fund (implemented through WB, ADB, AfDB, EBRD, and IADB)
SREP	Scaling Up Renewable Energy Program (implemented through WB, ADB, AfDB, EBRD, and IADB)
UNREDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation

Bilateral Funds and Initiatives

GCCI	Global Climate Change Initiative (US)
GCPF	Global Climate Partnership Fund (Germany, UK and Denmark)
ICF	International Climate Fund (UK) ICFI
	International Climate Forest Initiative (Norway)
ICI	International Climate Initiative (Germany)
NAMA	facility Nationally Appropriate Mitigation Action facility (UK and Germany)
REM	REDD Early Movers (Germany and UK)

Annex 3: Guidance materials.

Publication	Synopsis
UN-Habitat, Planning for Climate Change; A Strategic, Values Based Approach ¹⁹² and the Toolkit. ¹⁹³	This guide and toolkit were developed for city planners to better understand, assess and take action on climate change at the local level. Specifically targeted to the needs of planners and allied professionals in low and middle-income countries where the challenges of planning for climate change are particularly high. The guide and toolkit promote a participatory planning process that integrates local participation and good decision-making; provide practical tools for addressing climate change through different urban planning processes; support the “mainstreaming” of climate change actions into other local government policy instruments.
IPCC Assessment Reports and publications. ¹⁹⁴	The IPCC prepares comprehensive Assessment Reports about knowledge on climate change, its causes, potential impacts and response options.
UN-Habitat, Guiding Principles for City Climate Action Planning. ¹⁹⁵	The Guiding Principles for City Climate Action Planning reviews typical steps in the city-level climate action planning process in light of a proposed set of globally applicable principles. These principles, developed through a robust and open multi-stakeholder process, support local officials, planners and stakeholders in climate action planning. Such plans aim to help cities to reduce greenhouse gas emissions and adopt low emission development trajectories, as well as adapt to the impacts of climate change and build local climate resilience. These Guiding Principles are intended to be applied flexibly, together with more detailed “how to” manuals, to help cities more effectively play their role in reducing greenhouse gas emissions and building climate resilience.
UNDP, Capacity Assessment Methodology; A User’s Guide. ¹⁹⁶	The UNDP Capacity Assessment Methodology User’s Guide (hereafter the User’s Guide) gives UNDP and other development practitioners a detailed step-by-step guide to conducting a capacity assessment using the UNDP Capacity Assessment Methodology, which consists of the UNDP Capacity Assessment Framework, a three-step process and supporting tools.

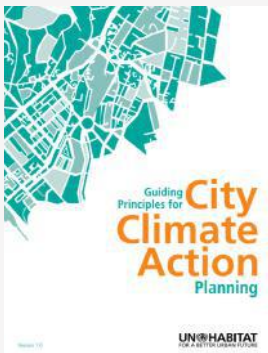
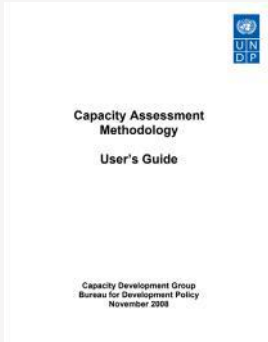
¹⁹² <https://unhabitat.org/books/planning-for-climate-change-a-strategic-values-based-approach-for-urban-planners-cities-and-climate-change-initiative/>

¹⁹³ <https://unhabitat.org/books/planning-for-climate-change-toolkit/>

¹⁹⁴ <https://www.ipcc.ch/reports/>

¹⁹⁵ <https://unhabitat.org/books/guiding-principles-for-climate-city-planning-action/>

¹⁹⁶ <http://www.undp.org/content/dam/aplaws/publication/en/publications/capacity-development/undp-capacity-assessment-methodology/UNDP%20Capacity%20Assessment%20Users%20Guide.pdf>

Cover	Step / Additional considerations to ensure adequate coverage of urban/HS issues
	Element A: Lay the Groundwork and Address Gaps Steps 1 / Include urban stakeholders and actors in the launch and NAP team Step 2 / Ensure adequate coverage of climate change impacts, vulnerability and adaptation information for urban areas, and enabling environment for urban issues Element B: Preparatory Elements Step 2 / Identify urban adaptation objectives and long-list of actions for cities and human settlements Step 3 / Assess and Appraise adaptation options Element C: Implementation Strategies Step 2 / Develop an urban-focused component of the implementation strategy Element D: Reporting Monitoring and Review Step 1 / Identify monitoring indicators and monitor the implementation of NAP progress in urban areas Step 2 / Monitor inclusion of adaptation options for urban areas and settlements in NAP and Reviewing the NAP process in urban areas to assess progress, effectiveness and gaps Step 3 / Iteratively update the urban component of the NAP
	Element A: Lay the Groundwork and Address Gaps Step 2 / Ensure adequate coverage of climate change impacts, vulnerability and adaptation information for urban areas, and enabling environment for urban issues Element A: Lay the Groundwork and Address Gaps Step 3 / Address the capacity gaps and weaknesses in coverage of urban issues within the national adaptation plan process
	Element A: Lay the Groundwork and Address Gaps Step 3 / Address the capacity gaps and weaknesses in coverage of urban issues within the national adaptation plan process

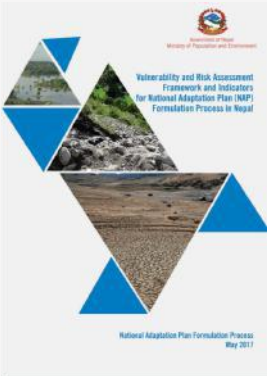
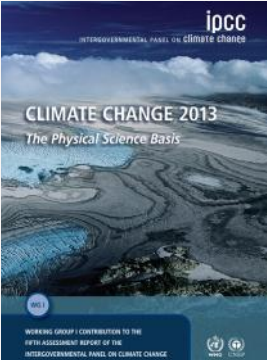
Publication	Synopsis
An example: Vulnerability and Risk Assessment Framework and Indicators for National Adaptation Plan (NAP) Formulation Process in Nepal.¹⁹⁷	A good vulnerability and risk assessment example.
IPCC, 2013: Summary for Policymakers. In: Climate Change 2013: The Physical Science Basis.¹⁹⁸	The report provides a comprehensive assessment of the physical science basis of climate change since 2007 when the Fourth Assessment Report (AR4) was released.
CLIMACT Prio tool.¹⁹⁹	The aim of the CLIMACT Prio tool is to provide support to decision makers to identify and prioritize local adaptation and mitigation actions at a city level (in a given case). The analysis is undertaken not only to identify adaptation and mitigation actions but also to prioritize which actions should be implemented first. CLIMACT Prio tool applies a Multi Criteria Analysis (MCA) evaluation.
UNFCCC, Assessing the Cost and Benefits of Adaptation Options.²⁰⁰	This publication introduces a range of different assessment approaches and methodologies and shares best practices and lessons learned.

¹⁹⁷ <http://climatenepal.org.np/main/index.php?p=research&sp=onlinelibrary&opt=detail&id=1027>

¹⁹⁸ <https://www.ipcc.ch/report/ar5/wg1/>

¹⁹⁹ <http://city-development.org/tool-19-climact-prio/#1472660365357-fe4ea7fa-1d8b7466-96d4>

²⁰⁰ https://unfccc.int/resource/docs/publications/pub_nwp_costs_benefits_adaptation.pdf

Cover	Step / Additional considerations to ensure adequate coverage of urban/HS issues
	Element A: Lay the Groundwork and Address Gaps Step 4 / Comprehensively assess development needs and climate vulnerabilities with an urban lens, involving
	Element B: Preparatory Elements Step 1 / Ensure coverage of urban areas and sufficient resolution for urban systems
	Element B: Preparatory Elements Step 3 / Assess and Appraise adaptation options
	Element B: Preparatory Elements Step 3 / Assess and Appraise adaptation options

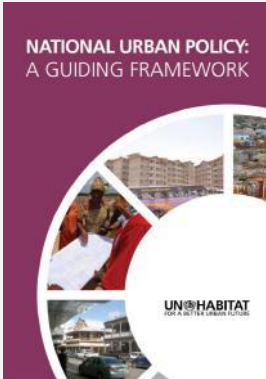
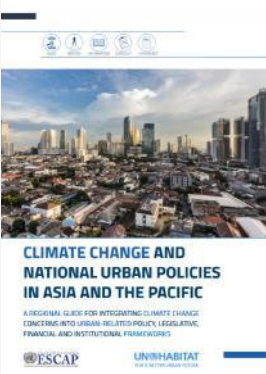
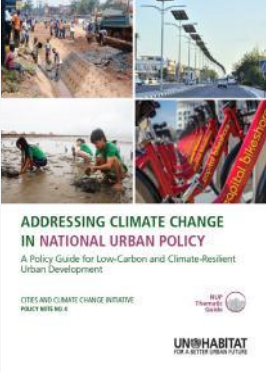
Publication	Synopsis
UN-Habitat, National Urban Policy: A Guiding Framework. ²⁰¹	This Guiding Framework is designed to outline key elements and instruments of the policy process through all the five National Urban Policy phases: feasibility, diagnosis, formulation, implementation and monitoring, and evaluation. Each phase is the subject of one part of the Framework. For each phase, the Framework will recommend perspectives and approaches that can be productive in the development of National Urban Policy.
UN-Habitat and ESCAP, Climate Change and National Urban Policies in Asia and the Pacific. ²⁰²	This publication provides policy makers with a flexible and non-prescriptive approach that can help with the integration of climate change into urban policy at any point of the policy cycle. This Guide suggests methods and steps for mainstreaming Climate Change into National Urban Policies. Government stakeholders can select the methods and tools needed based on their respective circumstances, under a framework of “Phases” and “Elements” that serve as the building blocks of the mainstreaming process. Within each of the Elements, which are aligned and consistent with phases of UN-Habitat’s National Urban Policy process, concrete actions covering various policy aspects are proposed to ensure effective mainstreaming; ranging from the substantive planning process, capacity development, vertical and horizontal policy alignment to multi-stakeholder participation.
UN-Habitat, Addressing Climate Change in National Urban Policy. ²⁰³	National Urban Policy is a tool for government and other stakeholders that can assist with achieving more sustainable urban development. It also facilitates an enabling environment that allows stakeholders to take advantage of urban opportunity. How to address climate change in cities and human settlements represents one of the most pressing challenges facing urban policy-makers today. This Guide recommends how to mainstream such considerations into National Urban Policy, thus helping to empower national governments, local governments, and other stakeholders to effectively address climate change.
UN-Habitat, Integrating Climate Change into City Development Strategies. ²⁰⁴	This guidebook attempts to provide a modest input into the effort of unifying two key thematic areas, Climate Change and City Development Strategies. This attempt of climate proofing city development strategies is an ongoing process and requires additional effort by governments, academia, and city development partners worldwide.

²⁰¹ <https://unhabitat.org/books/national-urban-policy-a-guiding-framework/>

²⁰² http://www.fukuoka.unhabitat.org/projects/asian_subregion/detail05_en.html

²⁰³ <https://unhabitat.org/books/addressing-climate-change-in-national-urban-policy/>

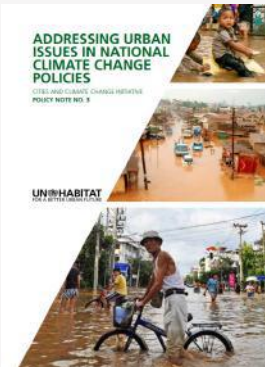
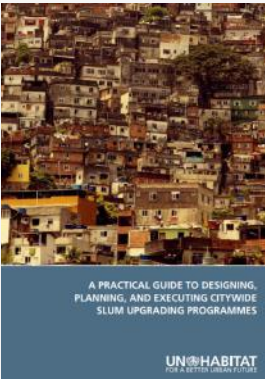
²⁰⁴ <https://unhabitat.org/books/integrating-climate-change-into-city-development-strategies/>

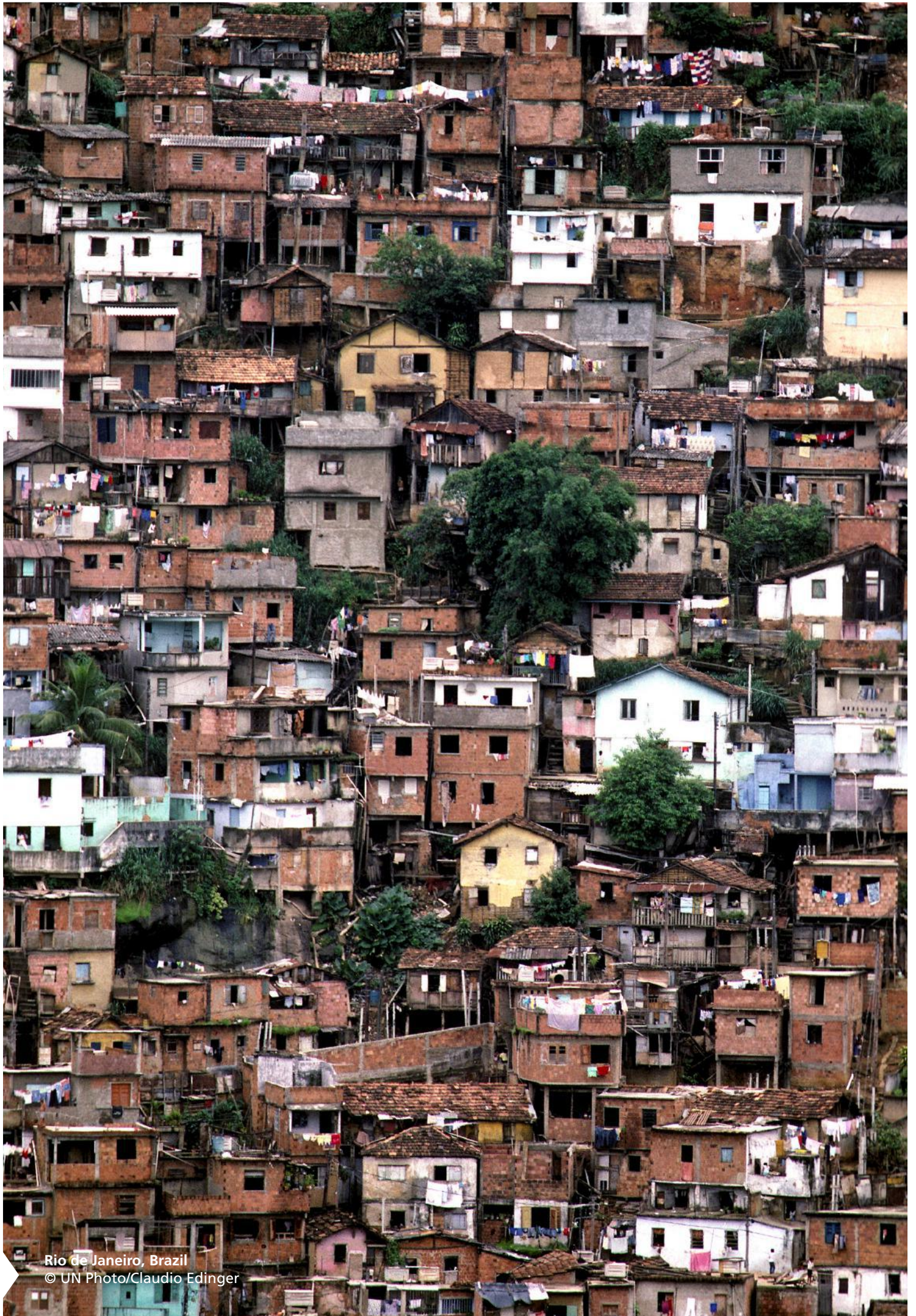
Cover	Step / Additional considerations to ensure adequate coverage of urban/HS issues
	Element B: Preparatory Elements Step 5 / Integrating climate change adaptation into urban planning
	Element B: Preparatory Elements Step 5 / Integrating climate change adaptation into urban planning
	Element B: Preparatory Elements Step 5 / Integrating climate change adaptation into urban planning
	Element C: Implementation Strategies Step 1 / Prioritizing climate change adaptation in city planning

Publication	Synopsis
UN-Habitat, Addressing Urban Issues in National Climate Change Policies. ²⁰⁵	This note is addressed primarily to decision-makers and stakeholders in the Global South engaged in developing national climate change policies. We define such policies in the present context as high-level documents that set forth in a consolidated manner a country's approach both to mitigating greenhouse gas emissions and adapting to climate change. More specifically, this Note seeks to help those teams to address a relatively narrow topic in the context of those policies: how their countries should deal with climate change in urban areas, and to empower local authorities as key actors in that effort.
UN-Habitat, A Practical Guide to Designing, Planning, and Executing Citywide Slum Upgrading Programmes. ²⁰⁶	This guide gives an example of how to build capacity of urban stakeholders.

²⁰⁵ <https://unhabitat.org/addressing-urban-issues-in-national-climate-change-policies-cities-and-climate-change-initiative-policy-note-3/>

²⁰⁶ <https://unhabitat.org/books/a-practical-guide-to-designing-planning-and-executing-citywide-slum-upgrading-programmes/>

Cover	Step / Additional considerations to ensure adequate coverage of urban/HS issues
	Element C: Implementation Strategies Step 1 / Prioritizing climate change adaptation in city planning
	Element C: Implementation Strategies Step 3 / Build capacity of urban stakeholders who are engaged in implementing the adaptation options in urban areas



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UNITED NATIONS HUMAN SETTLEMENTS PROGRAMME

P.O.Box 30030, Nairobi 00100, Kenya;

Tel: +254-20-7623120, Fax: +254-20-7624266/7

Email: unhabitat-climate@un.org

www.unhabitat.org/publications

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