UN CC:Learn

The One UN Climate Change Learning Partnership

Resource Guide for Advanced Learning on

CLIMATE CHANGE AND CITIES

Acknowledgements

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Specific inputs were provided by Kristina Eisele, UN-Habitat; and Cristina Rekakavas, Amrei Horstbrink and Junko Taira, UNITAR.

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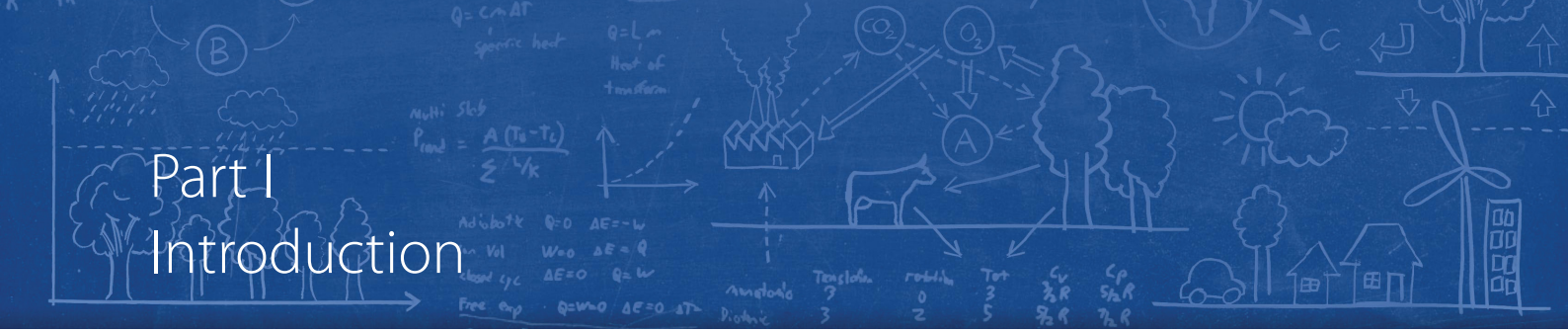
We Are Boq, Lda.



Part I
Introduction

1.1 About the Series of Resource Guides for Advanced Learning

This Guide is part of a series developed through UN CC:Learn[1] to facilitate access to existing state-of-the-art materials relevant for climate change learning on particular topics. The Guides are written from the perspective of a learner who perhaps understands the basics of a topic but is seeking to obtain a more advanced understanding by gaining quick access to the most relevant learning materials. The Guides cover selected climate change topics that have been identified as a priority from a country perspective.

The learning resources presented in this Guide are drawn primarily from within the UN and partners to UN CC:Learn. Learning resources published by other recognized international and other organizations are provided in the Annex. UN CC:Learn is not responsible for the content of these third-party resources and their mention does not imply that these have been endorsed or recommended by UN CC:Learn.

1.2 How to Use this Resource Guide for Advanced Learning

This Resource Guide for Advanced Learning is organized into two parts. Part I provides basic orientation for readers, including a brief introduction to the subject area and an outline of the specific learning topics to be covered. Part II lists available written learning resources as well as a number of training courses currently being offered, organized by learning topic. To facilitate easy access to the resources, a hyperlink is provided along with a brief summary of each learning resource and its value to different stakeholder groups. An Annex containing a list of non-UN learning resources, also organized by learning topic, concludes the Guide.

Readers are advised to:

(A) start by reading Part I;

(B) select a preferred learning topic;

(C) identify the relevant learning resources for that topic under Part II as well as the Annex; and

(D) click on the relevant hyperlinks to access the resources.

1 UN CC:Learn is a partnership of more than 30 multilateral organizations supporting countries to design and implement systematic, recurrent and results-oriented climate change learning. UN CC:Learn Partners to date include: CEB, EMG, FAO, GEF, IDB, IFAD, ILO, IMO, ITU, OCHA, UNAIDS, UNDP, UNECA, UNEP, UNESCAP, UNESCO, UNESCWA, UNFCCC, UNFPA, UNHABITAT, UNHCR, UNICEF, UNIDO, UNISDR, UNITAR, UNSSC, UNU, UN WOMEN, UNWTO, UPU, WFP, WHO, WMO, WTO, World Bank.

1.3 Target Group for this Resource Guide for Advanced Learning

This Resource Guide for Advanced Learning has been designed to inform the following target groups interested in learning more about climate change in urban areas:

- Decision makers and technical staff in national and subnational governments responsible for developing and implementing urban development policies, programmes or projects;
- Decision makers and technical staff in national and subnational governments working on climate change mainstreaming;
- Private sector representatives working on urban development;
- Non-governmental organisations and community-based organisations active in the area of climate change and/or urban development;
- Academic and training institutions working on urban development;
- Interested citizens/youth/students.

1.4 Introduction to Climate Change and Cities

Urban areas are both greatly affected by the impacts of climate change and major contributors to the emission of greenhouse gases. Urban adaptation and mitigation therefore provide significant opportunities, with cities having a key role to play in addressing climate change.

Urban areas are responsible for up to 70% of global anthropogenic greenhouse gas emissions, of which the largest source is related to fossil fuel consumption.[2] An important step in analysing the greenhouse gas emissions of cities is the development and use of standardised methodologies. Such methodologies enable comparability between cities and give information on the contribution of cities to national emissions levels and targets. Cities are increasingly taking action by setting city-level targets for emissions reduction or for other contributing measures such as increasing the use of renewable energy technologies.

More than half of the world's population currently live in urban areas, and urbanisation is one of the key trends of this century. Urbanisation is expected to continue with around 60% of world population living in cities in 2030.[3] At the same time, many of the key and emerging climate risks, such as sea level rise or extreme weather events, are affecting cities, in particular informal settlements in developing country cities.[4] Urban climate change-related risks are likely to increase and will impact on infrastructure, ecosystems, housing, service delivery, as well as the livelihoods and health of urban communities.[5] Urban adaptation will therefore continue increasing in importance.

Climate change should be integrated into local planning processes, plans, policies, and programmes. There is a need for city-level climate action planning to address the threats and opportunities presented by climate change. A number of tools and principles have been developed to support cities in this process.

2 UN-Habitat (2011), Cities and Climate Change: Global Report on Human Settlements 2011.

3 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.

4 Ibid.

5 Ibid.

1.5 Learning Topics Featured in this Resource Guide for Advanced Learning

Many organizations have developed learning materials on the theme of climate change in urban areas. However, given the wealth of existing resources, interested learners can face difficulties in identifying specific materials that match their needs. This Resource Guide for Advanced Learning aims at facilitating access to learning by providing a "guided tour" to materials that are already available, focusing mainly on those available from within the UN system. These have been selected according to specific learning topics identified in consultation with the UN CC:Learn partners, further refined through the application of the following criteria:

- Universality
  The resources featured in this Guide are relevant for interested learners regardless of their specific background and experiences;
- United Nations
  The resources have been produced primarily by UN agencies, especially by agencies with specific expertise in the field of urban development [6];
- Quality
  The resources are comprehensive and of high quality;
- State-of-the-art
  Given the developments in the field, resources are recent and up-to-date;
- Learning component
  The resources selected are designed to promote learning activities.

6 Selected publications from other relevant international and other organizations have been referenced in Annex 1.

Learning Topic 1

Cities' Contribution to Greenhouse Gas Emissions

In order to adopt effective climate change mitigation strategies, it is important to understand how cities contribute to greenhouse gas emissions and what the key emitting sectors are in cities. Calculating a baseline of emissions, a greenhouse gas inventory is an important step for setting emissions reduction goals. Using an internationally recognized methodology, such as the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories, ensures comparability between cities in the same country or other countries.

Go to Resources

Learning Topic 2

Climate Change Vulnerability Assessments in Urban Areas

A vulnerability assessment helps policy makers to understand and prepare for climate change vulnerability in their cities. There are a number of international and local approaches and tools available for undertaking a vulnerability assessment, for example the vulnerability assessment approach of UN-Habitat and the Francisco Bay Conservation and Development Commission's Adapting to Rising Tides vulnerability and adaptation model. Often vulnerability is considered as a function of exposure, sensitivity and adaptive capacity. Such an assessment gives urban stake-holders information on the vulnerability of people and places to the effects of climate change.

Go to Resources

Learning Topic 3

Vulnerable Groups in Urban Areas

While climate change will affect everyone, there are particularly vulnerable groups. These vary depending on the area but in general it can be said that the urban poor, elderly, children and women are particularly vulnerable groups. These groups may be more affected by climate change because of the condition and location of their housing, their greater susceptibility to the health impacts, and by the particular role they may have in their communities. Vulnerable groups, such as the urban poor, are also important actors in taking action on climate change in their communities.

Go to Resources

Learning Topic 4

Concrete Actions on Urban Mitigation and Adaptation

Cities are taking concrete actions to mitigate greenhouse gas emissions and to adapt to the effects of climate change. Cities cover around 2% of the Earth's surface but produce up to 70% of greenhouse gas emissions. Measures taken in different sectors, for example in buildings, transport and choice of energy sources, affect the level of emissions. Hundreds of millions of people in urban areas across the world are already being affected by the effects of climate change, such as rising sea levels and more frequent droughts. Urban adaptation measures, for instance more resilient urban infrastructure, are therefore critical in many urban areas.

Go to Resources

Learning Topic 5

Integrating Climate Change into Local Planning

Climate change planning at the sub-national level is important because the effects of climate change are felt locally, planning and investment decisions are often taken at the sub-national level, and climate change impacts the services local institutions provide. Urbanisation is also increasing, which underlies the importance of local action. Climate change mitigation and adaptation can be mainstreamed into local planning by identifying vulnerabilities and solutions in the different types of local plans and processes. Cities can also develop and adopt stand-alone plans that focus solely on climate change action.

Go to Resources

Learning Topic 6

Mobilising Financial Resources

Given that the world is urbanising, cities will need to be central actors for addressing climate change. More financial resources are required for urban mitigation and adaptation, in particular in developing countries where the adaptive capacity of cities is often low. Possible resources include domestic and international financing, such as multilateral climate funds, redirecting funds from business-as-usual urban infrastructure development, and municipal bonds amongst others.

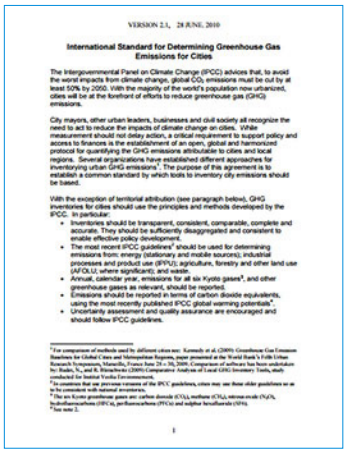
Go to Resources

Part II
Guide to Learning Resources and Training Courses

1

Learning Topic 1
Cities' Contribution to Greenhouse Gas Emissions

International Standard for Determining Greenhouse Gas Emissions for Cities



VERSION 2.1, 28 JUNE, 2010

International Standard for Determining Greenhouse Gas Emissions for Cities

The Intergovernmental Panel on Climate Change (IPCC) advices that, to avoid the worst impacts from climate change, global CO_2 emissions must be cut by at least 50% by 2050. With the majority of the world's population now urbanized, cities will be at the forefront of efforts to reduce greenhouse gas (GHG) emissions.

City mayors, other urban leaders, businesses and civil society all recognize the need to act to reduce the impacts of climate change on cities. While measurement should not delay action, a critical requirement to support policy and access to finances is the establishment of an open, global and harmonized protocol for quantifying the GHG emissions attributable to cities and local regions. Several organizations have established different approaches for inventorying urban GHG emissions[1]. The purpose of this agreement is to establish a common standard by which tools to inventory city emissions should be based.

With the exception of territorial attribution (see paragraph below), GHG inventories for cities should use the principles and methods developed by the IPCC. In particular:

- Inventories should be transparent, consistent, comparable, complete and accurate. They should be sufficiently disaggregated and consistent to enable effective policy development.
- The most recent IPCC guidelines[2] should be used for determining emissions from: energy (stationary and mobile sources), industrial processes and product use (IPPU); agriculture, forestry and other land use (AFOLU; where significant); and waste.
- Annual, calendar year, emissions for all six Kyoto gases[3], and other greenhouse gases as relevant, should be reported.
- Emissions should be reported in terms of carbon dioxide equivalents, using the most recently published IPCC global warming potentials[4].
- Uncertainty assessment and quality assurance are encouraged and should follow IPCC guidelines.

[1] For comparison of methods used by different cities see: Kennedy et al. (2009) Greenhouse Gas Emission Baselines for Global Cities and Metropolitan Regions, paper presented at the World Bank's Fifth Urban Research Symposium, Marseille, France June 28 – 30, 2009; Comparison of software has been undertaken by: Rader, N., and R. Bluestein (2009) Comparative Analysis of Local GHG Inventory Tools, study conducted for Institut Veolia Environnement.

[2] In countries that use previous versions of the IPCC guidelines, cities may use those older guidelines so as to be consistent with national inventories.

[3] The six Kyoto greenhouse gases are: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).

[4] See note 2.

Organization(s)
UNEP, UN-Habitat, World Bank

Language(s)
English

General Audience(s)
Technical Staff/Practitioners

Year of Publication
2010

Type of Material
Guidance Document/Handbook

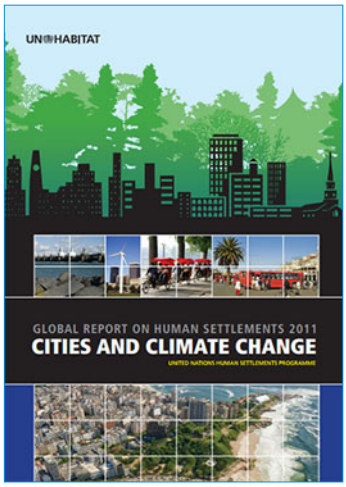
Go to Document

Value of Learning Resource

In order to take action on climate change at city-level, it is important to know the baseline emissions of greenhouse gases. A common methodology enables comparability between cities and increases transparency.

This document presents the International Standard for Determining Greenhouse Gas Emissions for Cities proposed by UNEP, the World Bank and UN-Habitat as a reference standard for city emissions inventories. It provides a common format for reporting greenhouse gas emissions from cities. It was launched at the World Urban Forum in Rio de Janeiro in 2010 and was the first common system for calculating greenhouse gas emissions from urban areas and by specific sector or time. The Standard calculates emissions on a per capita basis and enables cities to compare their emissions.

Cities and Climate Change: Global Report on Human Settlements 2011



Organization(s)
UN-Habitat

Language(s)
Arabic, Chinese, English, French, Russian, Spanish

General Audience(s)
Decision Makers; General Public

Year of Publication
2011

Type of Material
Analytical/Technical Document

Go to Document

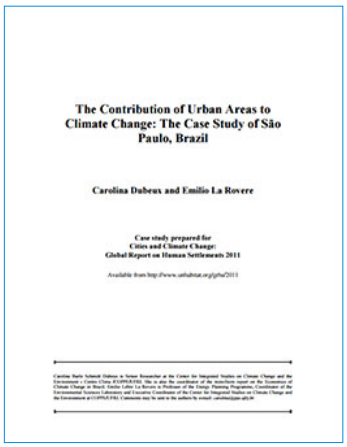
Value of Learning Resource

Urban areas are major contributors to greenhouse gas emissions globally. A comprehensive study of the emitting sectors in cities and the factors influencing the levels of emissions is needed in order to decide on mitigating actions.

The Report analyses the linkage between urbanisation and climate change, such as the contribution of cities to climate change, the impacts of climate change on cities, and how cities are promoting mitigation and adaptation action. By clearly illustrating the findings, it intends to raise global awareness on the role of cities in climate change.

Chapter 3 of the Report focuses on the contribution of urban areas to climate change. It provides information on measuring greenhouse gas emissions from urban areas, in particular different approaches and methodological issues as well as specific protocols that can be used. In addition, the chapter analyses the levels and sources of emissions in cities, providing data and analysis by region, city and sector. Moreover, it discusses the difficulty of estimating global urban emissions and the factors influencing emissions. Four factors are presented: geographic situation, demographic variation, urban form, and the types of economic activities. The chapter concludes with concrete policy recommendations.

Cities and Climate Change: Global Report on Human Settlements 2011 The Contribution of Urban Areas to Climate Change: The Case Study of São Paulo, Brazil


The Contribution of Urban Areas to Climate Change: The Case Study of São Paulo, Brazil

Carolina Dubeux and Emilio La Rovere

Case study prepared for Cities and Climate Change: Global Report on Human Settlements 2011

Available from http://www.unhabitat.org/grhs/2011

Organization(s)
UN-Habitat

Language(s)
English

General Audience(s)
Technical Staff/Practitioners; General Public

Year of Publication
2011

Type of Material
Analytical/Technical Document

Go to Document

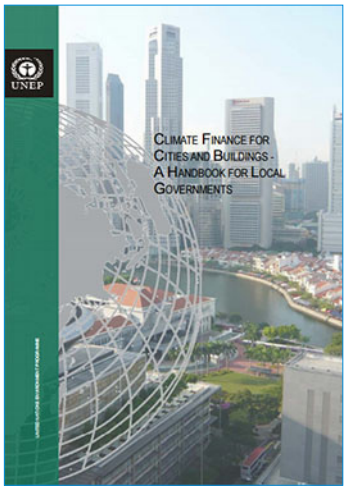
Value of Learning Resource

This case study examines the contribution of a highly urbanised area, Sao Paulo in Brazil, to greenhouse gas emissions. It is of particular interest as it provides a concrete example of estimating the emissions of an urban area, complementing other more theoretical resources.

The metropolitan region of Sao Paulo has a population of 18 million and consists of 39 municipalities. There is a high demand for transport due to movement of people between Sao Paulo and neighbouring cities, as well as cargo transport passing through the city. The dominant mode of transport is private cars.

The focus of the case study is the analysis of the emissions inventory of Sao Paulo. The document presents a detailed breakdown of the emissions and compares them to the Brazilian national emissions and to emissions of other cities. In addition, the case study discusses methodological issues regarding emissions inventories, especially in relation to cities. It shows that the main sources of emissions of Sao Paulo are energy use and solid waste disposal, with road transport being the largest contributor to the energy use emissions.

Climate Finance for Cities and Buildings: A Handbook for Local Governments



Organization(s)
UNEP

Language(s)
English

General Audience(s)
Technical Staff/Practitioners

Year of Publication
2014

Type of Material
Guidance Document/Handbook

Go to Document

Value of Learning Resource

Cities are central to action on climate change as the majority of the world population lives in cities and cities contribute around 75% of energy-related global greenhouse gas emissions. The buildings sector accounts for around 30% of energy-related greenhouse gas emissions. Climate finance is an important means to enable mitigation and adaptation projects, but existing mechanisms are not targeted to local stakeholders. Few climate finance projects that focus on cities exist despite the potential in the sector.

The Handbook addresses the need for guidance in this area for local governments and other interested parties. It aims to raise awareness on climate finance and its potential in the buildings sector. In addition, it aims to support local governments to utilize climate finance mechanisms for increasing the energy performance of their district while at the same time generating additional revenue, improving resource efficiency and contributing to their wider climate change strategies.

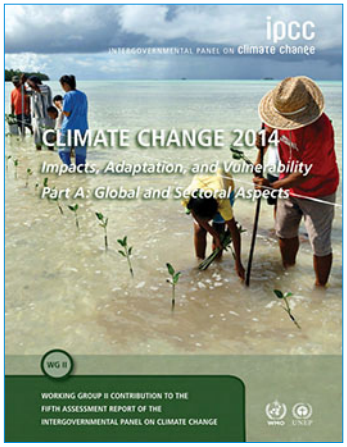
Chapter 3 of the Handbook focuses on MRV (measuring, reporting and verification), which refers to the processes needed for calculating a greenhouse gas emissions baseline and measuring changes to the baseline over time. It is closely related to the learning topic of measuring cities' contribution to greenhouse gas emissions. MRV is also relevant for climate finance mechanisms, which require measuring, reporting and verification of greenhouse gas emissions.

2

Learning Topic 2

Climate Change Vulnerability Assessments in Urban Areas

Climate Change 2014: Impacts, Adaptation, and Vulnerability, Chapter 8



Organization(s)
IPCC

Language(s)
English

General Audience(s)
Technical Staff/Practitioners

Year of Publication
2014

Type of Material
Analytical/Technical Document

Go to Document

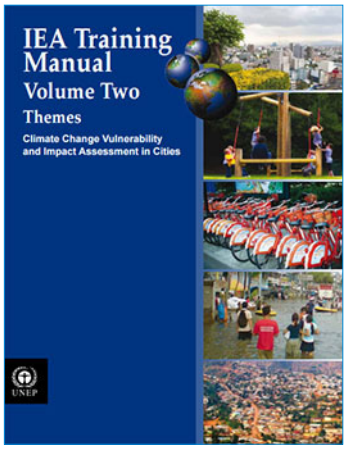
Value of Learning Resource

Urban areas are home to the majority of world population, as well as most of built assets and economic activities. A high proportion of these are most at risk from the impacts of climate change, with urban climate change vulnerability increasing. Urban vulnerability assessments give information on local impacts and guide adaptation actions.

The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change. The IPCC's Fifth Assessment Report, which was published in 2014, contains a chapter specifically dedicated to urban areas (chapter 8).

Sections 8.1.4, 8.4.1.4 and 8.4.1.5 focus on vulnerability, resilience, and risk and give a brief overview of these concepts. In addition, the tools for assessing risk and vulnerability at local level are discussed. The document identifies tools such as impact assessments, environmental audits, vulnerability mapping, and disaster risk assessment and management, which can be used by local governments, NGOs and other actors. They vary in their focus, aims, and complexity.

IEA Training Manual: Volume Two – Climate Change Vulnerability and Impact Assessment in Cities



Organization(s)
UNEP

Language(s)
English

General Audience(s)
Decision Makers; Technical Staff/Practitioners

Year of Publication
2011

Type of Material
Training Manual/Material

Go to Document

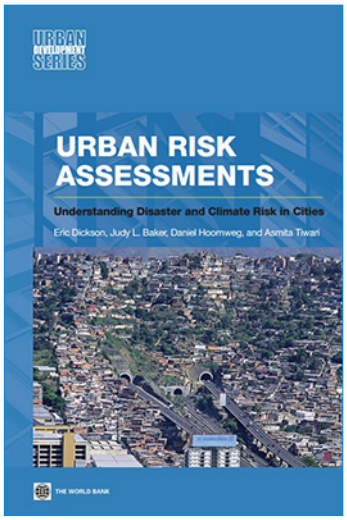
Value of Learning Resource

Policymakers need to address climate change in their cities and to adapt to its effects. Thus, systematic assessments are important for gathering information for evidence-based policy-making on climate change.

The Global Environmental Outlook (GEO) Cities Methodology helps stakeholders to analyse the linkages between the environment and urban development. It is used to prepare environmental assessments and the related GEO Cities reports. The training module on Climate Change Vulnerability and Impact Assessment in Cities presented in this manual has been developed to complement the GEO Cities Methodology and increase the capacity of cities to analyse and prepare for future climate impacts.

The objective of the training module is to assist governments and other institutions working on vulnerability and climate change adaptation. In particular, it aims to foster discussion and presents methodologies and tools evaluating the impact of climate change. In addition, the module gives concrete options for climate change adaptation in cities. After completing the training module, policymakers are able to analyse climate change vulnerability as part of integrated environmental assessments at city level. The module includes practical exercises to guide the analysis, as well as bibliography for further reading.

Urban Risk Assessments: Understanding Disaster and Climate Risk in Cities



Organization(s)
World Bank

Language(s)
English

General Audience(s)
Decision makers; Technical Staff/Practitioners

Year of Publication
2012

Type of Material
Guidance Document/Handbook

Go to Document

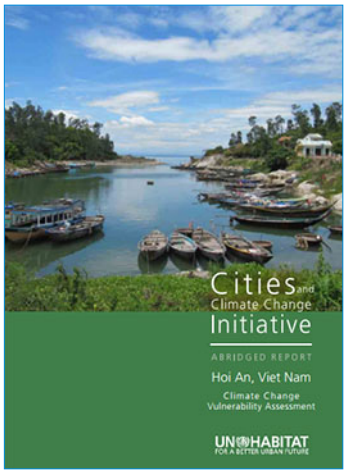
Value of Learning Resource

Cities in developing countries are facing an increasing risk of disasters, with new residents and the urban poor being particularly vulnerable as they often reside in high risk areas and live in more vulnerable conditions. The potential losses from disasters are exacerbated by the rate of unplanned urbanisation and are influenced by the quality of urban management. There is a need for cities to streamline risks from disasters and climate change into their planning, management and delivery of services.

This document proposes a framework for undertaking urban risk assessments (URA). The URA is a flexible approach that gives the city leaders and officials the key information in order to consider measures to respond to the risks posed by disasters and increased climate variability. It builds on three pillars: institutional, hazard impact, and socioeconomic. Cities can choose the level of complexity for their assessment depending on their need, resources, capacity and overall goals. After using the URAs, cities should integrate the findings into action plans.

The URA methodology was piloted in four cities (Dar es Salaam, Jakarta, Mexico City, Sao Paulo). The case studies on these cities are contained in the annex together with a number of case studies on other cities.

Climate Change Vulnerability Assessment: Hoi An, Viet Nam



Organization(s)
UN-Habitat

Language(s)
English

General Audience(s)
Technical Staff/Practitioners

Year of Publication
2014

Type of Material
Analytical/Technical Document

Go to Document

Go to the Series

Value of Learning Resource

The urban centers of Vietnamese cities are often located in areas vulnerable to climate change, such as coastal areas and along rivers. This document reports the climate change vulnerability assessment results for Hoi An in Vietnam and gives learners a practical example of how such an assessment is conducted.

Using a mix of quantitative and qualitative methods to gather the data, the study shows that Hoi An is exposed to five main climate hazards (flooding, salinity, coastal erosion, river bank erosion, and sea-level rise). The assessment led to a quantification of exposure and sensitivity of each hazard, adaptive capacity and finally the vulnerability to each hazard. In addition, it identified the most vulnerable areas in Hoi An. The assessment then defined adaptation priority actions. A number of recommendations are made to improve the adaptive capacity of the city.

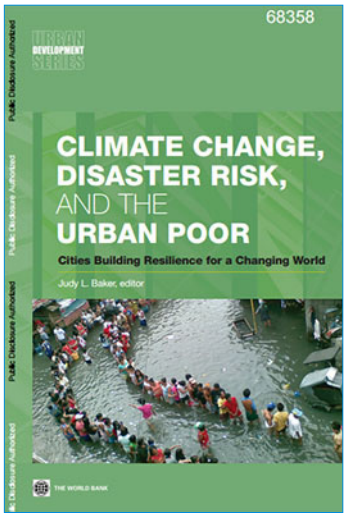
This Climate Change Vulnerability Assessment is one of a series of assessments covering other cities. These assessments form part of UN-Habitat's Cities and Climate Change Initiative.

3

Learning Topic 3

Vulnerable Groups in Urban Areas

Climate Change, Disaster Risk, and the Urban Poor: Cities Building Resilience for a Changing World



Organization(s)
World Bank

Language(s)
English

General Audience(s)
Decision makers; Technical Staff/Practitioners

Year of Publication
2012

Type of Material
Analytical/Technical Document

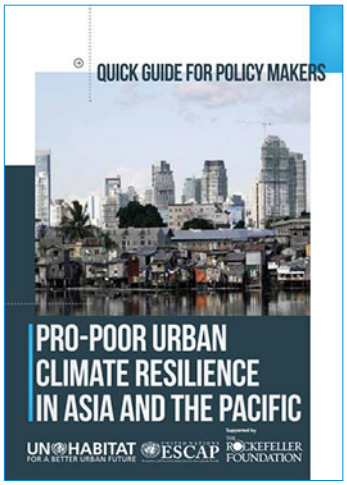
Go to Document

Value of Learning Resource

The urban poor are particularly vulnerable to climate change as they live in higher risk areas and often lack adequate infrastructure and housing. Actions need to be taken to build resilience of vulnerable groups in cities. This study calls on cities to be proactive and take a lead role in addressing the risks of climate change and natural hazards at the local level, with a specific focus on populations at highest risk.

This study provides mayors and other city managers, national governments, donors, as well as urban and climate change practitioners, with an analysis of the key challenges the urban poor face with regards to climate change and disasters. It also discusses strategies to address these risks and build the resilience of the urban poor, grouping them in 5 main areas, from risk assessment for informed decision-making to strengthening institutional capacities. In addition, financing needs of cities and financing opportunities are considered. The report includes case studies on four cities (Dar es Salaam, Jakarta, Mexico City and Sao Paulo), as well as good practices from other cities.

Quick Guide for Policy Makers on Pro-poor Urban Climate Resilience in Asia and the Pacific



Organization(s)
UN-Habitat, UNESCAP, Rockefeller Foundation

Language(s)
English

General Audience(s)
Decision Makers

Year of Publication
2014

Type of Material
Guidance Document/Handbook

Go to Document

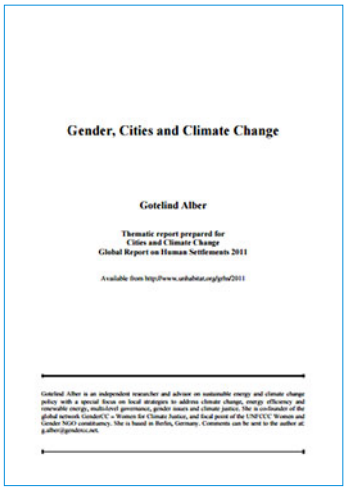
Value of Learning Resource

The urban poor are particularly affected by climate change due to factors such as more vulnerable location of their housing and limited capacity to prepare for and respond to the effects of climate change. This document provides an introduction to the issue, including key concepts and ideas, and offers guidance on how to combine poverty reduction efforts with climate change related interventions.

The Quick Guide discusses the principles of pro-poor urban climate resilience in Asia and the Pacific and proposes a number of issue-based entry points within specific sectors. Additionally, the document advocates for comprehensive citywide approaches and finance to enhance resilience. Throughout the document case studies are used to further illustrate the ideas, such as Cambodia's urban poor development fund and private partnerships on flood management in Malaysia.

The Quick Guide is aimed in particular at local government officials and policymakers in Asia and the Pacific who need to understand how to build resilience against climate change effects.

Gender, Cities and Climate Change: Thematic Report Prepared for Cities and Climate Change Global Report on Human Settlements 2011


Gender, Cities and Climate Change

Gotelind Alber

Thematic report prepared for
Cities and Climate Change
Global Report on Human Settlements 2011

Available from http://www.unhabitat.org/ghs/2011

Gotelind Alber is an independent researcher and advisor on sustainable energy and climate change policy with a special focus on local strategies to address climate change, energy efficiency and renewable energy, multi-level governance, gender issues and climate justice. She is co-founder of the global network GenderCC – Women for Climate Justice, and focal point of the UNFCCC Women and Gender NGO constituency. She is based in Berlin, Germany. Comments can be sent to the author at: g.alber@gendercc.net.

Organization(s)
UN-Habitat

Language(s)
English

General Audience(s)
Technical Staff/Practitioners

Year of Publication
2011

Type of Material
Analytical/Technical Document

Go to Document

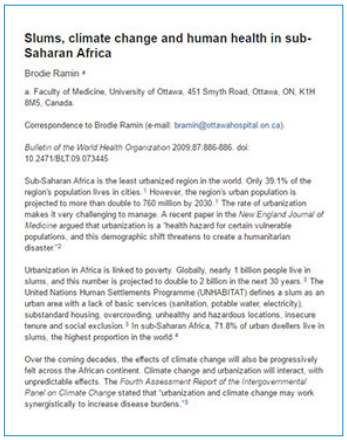
Value of Learning Resource

Gender should be addressed in climate policy to work towards gender equality and to target both mitigation and adaptation actions and policies towards all citizens. In relation to vulnerability to climate change, women may be a particularly vulnerable group due to factors such as expectation for women to take care of sick relatives and community members after disasters and loss of income from informal work at home.

This thematic report analyses gender and climate change, in particular the contribution of urban areas to climate change from a gender perspective and the impacts of climate change on women and men in urban areas, considering both direct and indirect impacts and tertiary and longer term impacts. Housing and shelter, water and food security, power relations, economic resources, responses to disaster are analysed as key issues for vulnerability and adaptation. The document also discusses mitigation and adaptation responses in urban areas from a gender perspective.

The report provides guidance and tools for equal participation and gender mainstreaming at the local level. Concrete examples of existing practice on gender sensitive urban adaptation and mitigation are discussed. The report concludes with recommended steps for gender mainstreaming into climate policy and recommendations for city networks and national governments.

Slums, Climate Change and Human Health in Sub-Saharan Africa



Slums, climate change and human health in sub-Saharan Africa

Brodie Ramin [a]

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Bulletin of the World Health Organization 2009;87:886-886. doi: 10.2471/BLT.09.073445

Sub-Saharan Africa is the least urbanized region in the world. Only 39.1% of the region's population lives in cities.[1] However, the region's urban population is projected to more than double to 760 million by 2030.[1] The rate of urbanization makes it very challenging to manage. A recent paper in the *New England Journal of Medicine* argued that urbanization is a "health hazard for certain vulnerable populations, and this demographic shift threatens to create a humanitarian disaster."[2]

Urbanization in Africa is linked to poverty. Globally, nearly 1 billion people live in slums, and this number is projected to double to 2 billion in the next 30 years.[3] The United Nations Human Settlements Programme (UNHABITAT) defines a slum as an urban area with a lack of basic services (sanitation, potable water, electricity), substandard housing, overcrowding, unhealthy and hazardous locations, insecure tenure and social exclusion.[3] In sub-Saharan Africa, 71.8% of urban dwellers live in slums, the highest proportion in the world.[4]

Over the coming decades, the effects of climate change will also be progressively felt across the African continent. Climate change and urbanization will interact, with unpredictable effects. The *Fourth Assessment Report of the Intergovernmental Panel on Climate Change* stated that "urbanization and climate change may work synergistically to increase disease burdens."[5]

Organization(s)
WHO

Language(s)
English

General Audience(s)
Technical Staff/Practitioners

Year of Publication
2009

Type of Material
Analytical/Technical Document

Go to Document

Value of Learning Resource

Slums are particularly vulnerable to the effects of climate change due to their lack of access to sanitation and sewage and poor building materials among other reasons. Over 70% of urban dwellers in Sub-Saharan Africa live in slums.

This bulletin analyses the impacts of climate change on the slum dwellers of Sub-Saharan Africa in terms of health issues. For instance, climate change is expected to bring more extreme precipitation events and lead to rising sea levels in some areas. More severe and frequent flooding will affect slums in particular due to their location and the materials used for construction. The bulletin gives the example of the Luis Cabral neighbourhood in Maputo in Mozambique. It also provides statistics on sanitation and clean drinking water, as well as impacts on children.

Given the rate of urbanisation and the prevalence of slums in sub-Saharan Africa, understanding the vulnerability of slums to climate change is particularly important.

4

Learning Topic 4

Concrete Actions on Urban Mitigation and Adaptation

Advancing Climate Ambition: Cities as Partners in Global Climate Action

Organization(s)
UN Secretary-General's Special Envoy for Cities and Climate Change

Language(s)
English

General Audience(s)
Decision Makers, General Public

Year of Publication
2014

Type of Material
Other

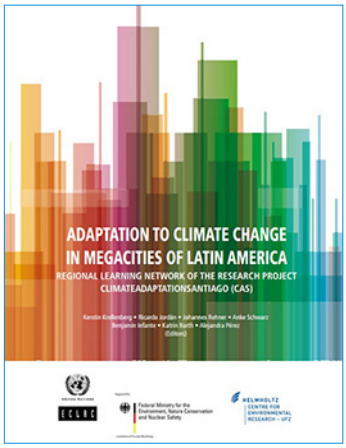
Go to Document

Value of Learning Resource

As cities are major contributors to greenhouse gas emissions globally, action at the local level can help to bridge the emissions gap and to contribute to limiting the global temperature rise to 2 degrees Celsius above pre-industrial levels.

This report analyses the contributions cities can make to decrease greenhouse gas emissions and suggests that aggressive city actions have the potential to reduce global greenhouse gas emissions by 3.7 GtCO2e in 2030. A brief analysis of the building energy, transport, and waste management sectors is included. According to the report, the greatest opportunity for urban emissions reduction is in urban building energy use. Estimates are calculated for the abatement potential of the different sectors in 2030 and 2050.

Adaptation to Climate Change in Megacities of Latin America: Regional Learning Network of the Research Project ClimateAdaptationSantiago (CAS)



Organization(s)
UNECLAC

Language(s)
English

General Audience(s)
Technical Staff/Practitioners

Year of Publication
2014

Type of Material
Analytical/Technical Report

Go to Document

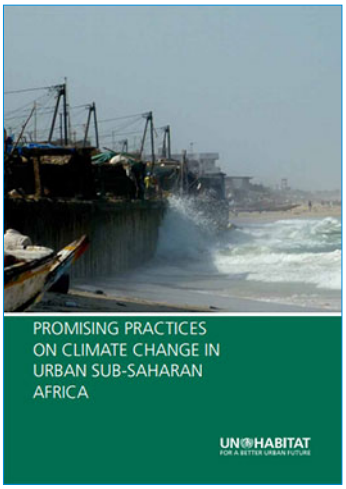
Value of Learning Resource

Latin America and the Caribbean is one of the world's most urbanised regions, and cities there are exposed to the effects of climate change. The region contains different climate zones and cities of varying levels of development with regards to their responses to climate change.

This report documents the impacts of climate change and climate action in six large Latin American cities (Bogotá, Buenos Aires, Lima, Mexico City, São Paulo and Santiago). It is based on three workshops of the Regional Learning Network, which was set up by the ClimateAdaptationSantiago (CAS) project. The aim of this Regional Learning Network is to promote knowledge exchange and possible transfer of successful practices in urban adaptation to climate change.

The report includes a detailed analysis of current policies and institutional responsibilities in each city, as well as obstacles encountered and progress achieved. Furthermore, the report provides an analysis of expected trends and the key adaptation measures. It includes concrete good practices of climate change adaptation in the six cities.

Promising Practices on Climate Change in Urban Sub-Saharan Africa



Organization(s)
UN-Habitat

Language(s)
English

General Audience(s)
Technical Staff/Practitioners; General Public

Year of Publication
2012

Type of Material
Analytical/Technical Report

Go to Document

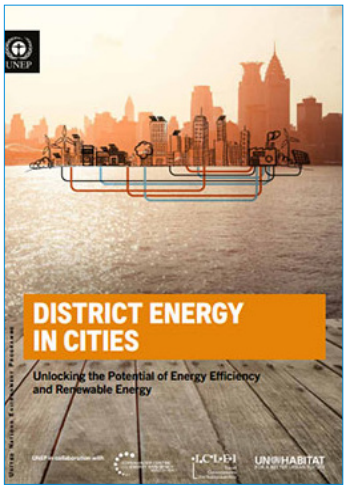
Value of Learning Resource

Knowledge sharing on lessons learnt and best practices is important for taking action on climate change in the most effective way. Urban areas are already undertaking successful mitigation and adaptation measures, which need to be shared to benefit a larger audience.

This compendium contains promising practices from urban Sub-Saharan Africa covering four topics: 1) major roles for gender, youth and business; 2) adaptation: infrastructure, slums and deserts; 3) how coastal cities face up to climate change; and 4) enhancing/spreading awareness of climate change. It shows, in an easy-to-read format, concrete examples of actions being taken in 14 African cities, highlighting the problems, the local issues, and the promising practices addressing climate change.

The compendium can be used by anyone interested in learning as well as getting an inspiration from the experience of other cities facing similar challenges.

District Energy in Cities: Unlocking the Potential of Energy Efficiency and Renewable Energy



Organization(s)
UNEP, Copenhagen Centre on Energy Efficiency, ICLEI, UN-Habitat

Language(s)
English

General Audience(s)
Technical Staff/Practitioners

Year of Publication
2015

Type of Material
Guidance Document/Handbook

Go to Document

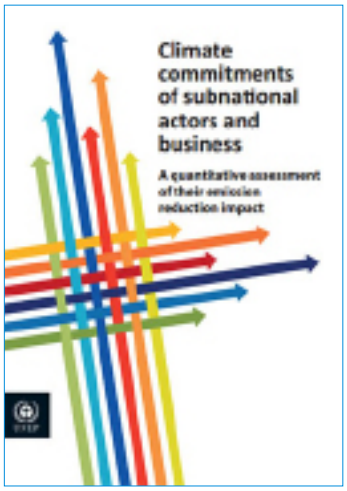
Value of Learning Resource

District energy represents an opportunity for cities to move to a low carbon pathway, with modern and affordable district energy systems in cities being one of the most efficient ways for reducing greenhouse gas emissions and primary energy demand. District energy is the provision of thermal energy at the district level through district heating and/or district cooling. In addition to limiting GHG emissions, modern district energy systems have several other benefits, such as air pollution reduction, energy efficiency improvements, integrating renewable energy sources into heating and cooling sectors, resilience and energy access, and contributing to transitioning to green economy.

This publication offers concrete policy, finance and technology best practice guidance, providing an overview of different district energy options and their costs. It aims to help local governments and actors to identify the most appropriate options in their regions. The document consolidates data on the multiple benefits that cities, countries and regions have achieved through the use of modern district energy, in an effort to identify policy recommendations and to promote awareness raising on the relevance of the heating and cooling sectors.

It is based on interviews in 65 cities worldwide, as well as a comprehensive survey of 45 of these cities, and consultations during two workshops and different documents. The 45 cities use modern district energy, and 11 of these have set targets for either carbon neutrality or a 100% renewable energy supply.

Climate Commitments of Subnational Actors and Business: A Quantitative Assessment of Their Emission Reduction Impact



Organization(s)
UNEP

Language(s)
English

General Audience(s)
Decision Makers; Technical Staff/Practitioners

Year of Publication
2015

Type of Material
Analytical/Technical Document

Go to Document

Value of Learning Resource

There is an increasing number of initiatives to address climate change that are undertaken by actors other than central governments, such as non-governmental organisations and cities. It is important for policy makers to understand the potential impact of such initiatives.

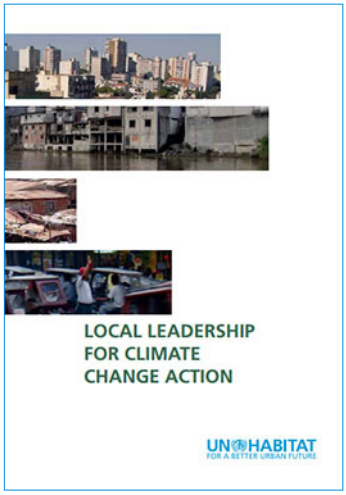
The study examines the contribution of non-state initiatives to closing the emissions gap, focusing on international cooperation initiatives where groups of actors are working together. It estimates that committed action from the existing initiatives considered in the study could result in emissions reduction of 2.9 GtCO2e in 2020, with a range of 2.5–3.3 GtCO2e. A total of fifteen major initiatives worldwide in the areas of cities and regions; companies; and sectors, such as energy efficiency, methane, agriculture and finance were considered, therefore constituting only a part of the potential that non-state initiatives can contribute to emissions reduction.

5

Learning Topic 5

Integrating Climate Change into Local Planning

Local Leadership for Climate Change Action



Organization(s)
UN-Habitat

Language(s)
English

General Audience(s)
Decision Makers; Technical Staff/Practitioners; General Public

Year of Publication
2011

Type of Material
Other

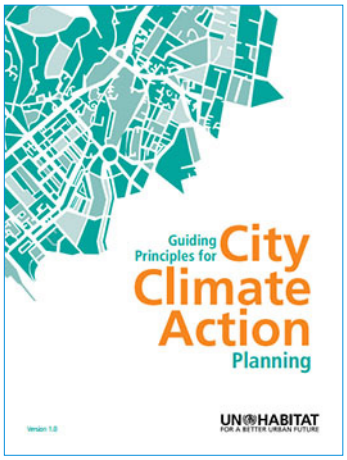
Go to Document

Value of Learning Resource

While posing multiple challenges, climate change can also provide cities with various opportunities, including taking a long-term perspective to urban development, defining integrated strategies, accessing technologies and good practices, and promoting urban renewal, which could lead to more sustainable, liveable and vibrant urban environments.

To support mayors and city leaders in taking advantage of these opportunities, the publication introduces them to the need for climate action and indicates ways to get started. It presents concise information, illustrated by a series of practical case studies, of what cities can do to respond to climate change in in 12 key messages - including, among others, recognition that climate change is an existing and actual issue, identification of the specific challenges a city faces, consideration of possible adaptation and mitigation actions, and coordination with multiple entities and stakeholders..

Guiding Principles for City Climate Action Planning



Organization(s)
UN-Habitat

Language(s)
English

General Audience(s)
Decision Makers; Technical Staff/Practitioners

Year of Publication
2015

Type of Material
Guidance Document/Handbook

Go to Document

Value of Learning Resource

Local governments are central to cities' efforts in dealing with climate change, particularly by framing strategies and programmes, promoting integration of climate actions into ongoing urban development, and forging the partnerships necessary for effective climate responses.

In support of these processes, the document sets out eight guiding principles, which are globally applicable and can serve as a benchmark for cities as they undertake climate action planning. These principles are intended to be applied flexibly, taking into account the local context, and together with more detailed 'how to' manuals, to help cities to play more effectively their role in reducing greenhouse gas emissions and building climate resilience.

The publication also examines important components of climate action planning in light of the guiding principles, describing the important steps of organization and participation, planning process, and strategies and actions. A typical climate action planning process is also presented. In addition, five case studies (South Africa, Ecuador, Norway, China and Vietnam) and a series of figures provide complementary information.

Developing Local Climate Change Plans: A Guide for Cities in Developing Countries

Organization(s)
UN-Habitat, IIED

Language(s)
English

General Audience(s)
Decision Makers; Technical Staff/Practitioners

Year of Publication
2012

Type of Material
Guidance Document/Handbook

Go to Document

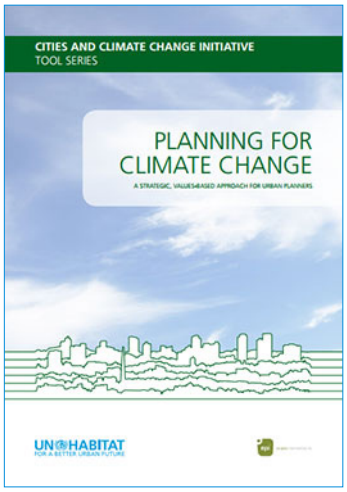
Value of Learning Resource

Climate change presents towns and cities in developing countries with a number of challenges, which add to other existing issues such as persistent poverty, increasing inequalities, underemployment, and pollution. Well planned and managed cities can address climate change as well as the broader urban development challenges.

This guide intends to demonstrate that getting started on climate change is both necessary and possible for any city, regardless of resource availability. In doing so, it presents a toolkit providing local policy-makers and major stakeholders with a simple planning process building on an analysis of long-term climate change impacts, urban development challenges and the needs of citizens. The proposed methodology focuses on four major stages of a climate change response: 1) gathering and analysing information; 2) strategic planning; 3) developing adaptation and mitigation projects; and 4) monitoring and evaluation.

In setting the context, the guide also analyses the local impacts of climate change with a focus on the main risks as well as on vulnerable groups, classified by poverty level, age and gender. In-depth case studies in Ecuador, Uganda, Mozambique, and the Philippines conclude the publication by providing guidance on how to approach climate change in practice.

Planning for Climate Change: A Strategic, Values-based Approach for Urban Planners



Organization(s)
UN-Habitat

Language(s)
English

General Audience(s)
Decision Makers; Technical Staff/Practitioners

Year of Publication
2014

Type of Material
Training Manual/Material

Go to Document

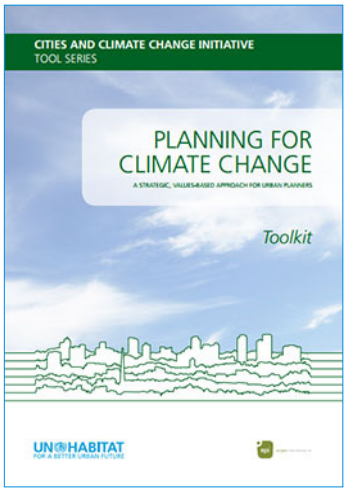
Value of Learning Resource

As cities and towns worldwide will be more and more exposed to significant climate change driven impact, it is crucial for city planners and other professionals to better understand, assess and take action on climate change at the local level.

Targeting the needs of cities in low and middle-income countries, where the challenges are particularly high, this guide provides practical tools for addressing climate change through different urban processes, helps city planners to better plan for current and future climate change impacts, and supports the mainstreaming of climate change actions into local plans. To do so, it promotes an inclusive and participatory planning process organized around four modules. Each module asks a specific planning question – What is happening? What matters most? What can we do about it? Are we doing it?

The publication can be used both as a step-by-step planning guide both and a stand-alone capacity building resource and training tool for urban professionals. An easy-to-use navigation system helps the learners to track where they are in the process at all times. The tools presented in this guide are provided in a companion document, "Planning for Climate Change: A Strategic, Values-based Approach for Urban Planners – Toolkit" (see next publication).

Planning for Climate Change: A Strategic, Values-based Approach for Urban Planners – Toolkit



Organization(s)
UN-Habitat

Language(s)
English

General Audience(s)
Decision Makers; Technical Staff/Practitioners

Year of Publication
2014

Type of Material
Training Manual/Material

Go to Document

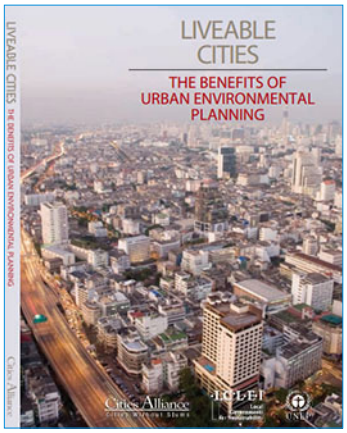
Value of Learning Resource

This toolkit is designed to help city planners or other project facilitators to work through the planning framework presented in the guide "Planning for Climate Change: A Strategic Values-based Approach for Urban Planners" (see previous publication).

While the guide describes the overall planning framework and how and where specific tools could be used, this companion toolkit provides specific instructions for each of the 42 planning tools presented, along with blank tool templates and worksheet with inquiry questions, organized around the same four-module strategic planning approach.

Although the tools are best used in conjunction with the planning framework, they can be used independently, depending upon local situations, demands and capacities. The tools can also be used to support discrete steps or smaller planning projects, such as vulnerability assessment, stakeholder assessment, monitoring and evaluation.

Liveable Cities: The Benefits of Urban Environmental Planning



Organization(s)
UNEP, ICLEI, Cities Alliance

Language(s)
English

General Audience(s)
Decision Makers; Technical Staff/Practitioners

Year of Publication
2007

Type of Material
Analytical/Technical Document

Go to Document

Value of Learning Resource

Cities affect and at the same time are affected by the environment they are surrounded by, including the climate. Managing environmental resources as a group of strategic assets is key to successful urban management.

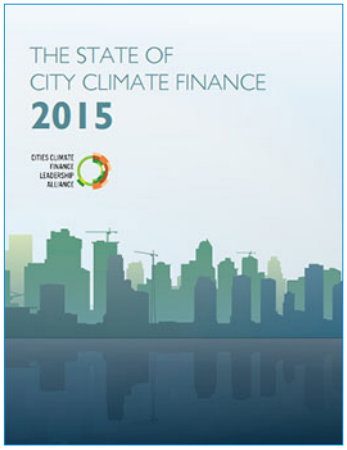
This report provides local government leaders and practitioners with a variety of strategies to integrate environmental considerations into the urban planning process. In particular, it highlights different entry levels for environmental activities and presents a set of policy, process, planning and management instruments. It subsequently provides practical examples of environmental integration in five well established approaches to integrated urban planning, which are all defined and illustrated. The document also outlines the information that urban managers need for the development of their urban development strategies.

Twelve case studies of cities that have worked to integrate the environment into their planning processes complete the report. Following a clear structure – including information on value for the reader, the management approach used, the environmental entry point, results and lessons learned, and replicability – the case studies provide rich information that urban managers can draw from for action in their own cities.

6

Learning Topic 6
Mobilising Financial Resources

State of City Climate Finance 2015



Organization(s)
Cities Climate Finance Leadership Alliance

Language(s)
English

General Audience(s)
Decision Makers; Technical Staff/Practitioners; General Public

Year of Publication
2015

Type of Material
Analytical/Technical Document

Go to Document

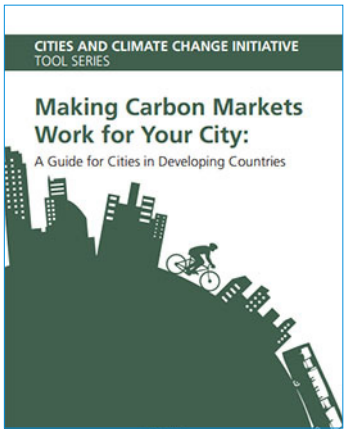
Value of Learning Resource

Recognizing the need to systematically measure finance flows to urban areas for climate change related investment, this report provides a systematic analysis of the state of city climate finance, as well as recommendations for improving financing for low-emission and climate-resilient urban infrastructure.

This study has been elaborated by The Cities Climate Finance Leadership Alliance (CCFLA), which is a specific initiative launched at the UN-Secretary-General's Climate Summit in 2014. The CCFLA is a platform for collaboration between public and private sector institutions on mobilising financing for low-emission, climate-resilient urban infrastructure. Its membership includes national governments, leading global public and private finance institutions, city and subnational networks and associations, UN agencies, and advocacy organizations.

This inaugural report is a systematic global assessment of the urban climate finance sector, providing an overview of the demand and supply for urban climate finance, and the urban climate finance gap. The report also analyses the challenges in financing low-emission, climate-resilient urban infrastructure and provides recommendations illustrated by concrete examples of existing projects and initiatives.

Making Carbon Markets Work for Your City: A Guide for Cities in Developing Countries



Organization(s)
UN-Habitat

Language(s)
English

General Audience(s)
Decision Makers; Technical Staff/Practitioners

Year of Publication
2012

Type of Material
Guidance Document/Handbook

Go to Document

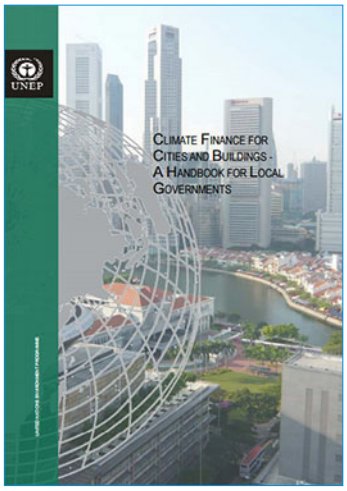
Value of Learning Resource

There have been calls for local governments to take more part in the carbon market, which has a complex set of procedures and methodologies. While there are barriers to accessing the carbon market, this has the potential to provide much needed financing for climate change.

This handbook is targeted to local government officials and supports them in initiating, developing, and managing Clean Development and Verified Emission Reduction projects in their cities and regions. Part A gives an overview of the carbon market, Part B focuses on the key strategic decisions guiding project development, and Part C describes the critical steps for project development and trading. In addition, a specific section explains the rationale for local government involvement.

The handbook contains ten case studies (India, Thailand, Côte d'Ivoire, three cities in South Africa, two cities in Tanzania and Philippines), as well as a number of figures and text boxes.

Climate Finance for Cities and Buildings: A Handbook for Local Governments



Organization(s)
UNEP

Language(s)
English

General Audience(s)
Technical Staff/Practitioners

Year of Publication
2014

Type of Material
Guidance Document/Handbook

Go to Document

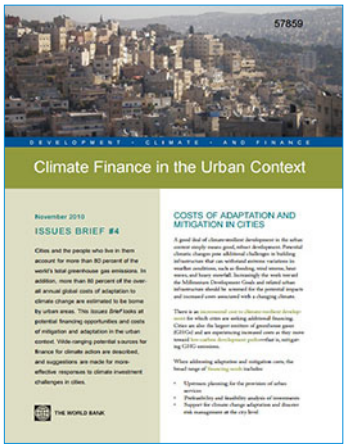
Value of Learning Resource

Cities are central to action on climate change, as the majority of the world population lives in them. Cities' contribution accounts for around 75% of energy-related global greenhouse gas emissions. The buildings sector shares around 30% of energy-related greenhouse gas emissions. Climate finance is an important means to enable greenhouse gas mitigation and adaption project, but existing mechanisms are not targeted to local stakeholders. Few climate finance projects focus on cities despite the potential in this sector.

The Handbook addresses the need for guidance in this area for local governments and other interested parties. It aims at raising awareness of climate finance and its potential in the buildings sector. In addition, it intents to support local governments in utilizing climate finance mechanisms for increasing the energy performance of their district while at the same time generating additional revenue, improving resource efficiency and contributing to their wider climate change strategies.

The document covers the international climate change context, challenges and opportunities for buildings, the principles of measuring, reporting and verification, and climate finance mechanisms. Throughout the Handbook, there are 15 case studies showing specific examples, such as in transport, waste, water and energy sectors.

Climate Finance in the Urban Context: Issues Brief 4



Organization(s)
World Bank

Language(s)
English

General Audience(s)
General public

Year of Publication
2010

Type of Material
Analytical/Technical Document

Go to Document

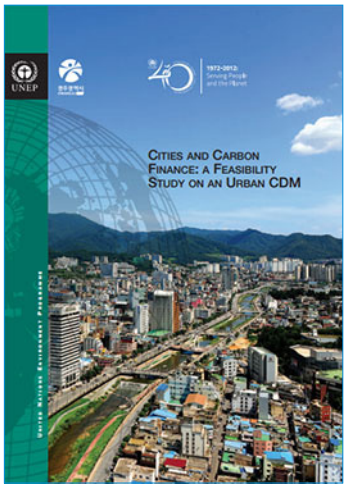
Value of Learning Resource

A significant proportion of the costs of mitigation and adaptation will be borne by urban areas. Mitigation efforts include, for example, the development of mass transit and programmes for energy efficiency. Adaptation measures include efforts such as developing coastal protection and safeguarding water supply.

This Issues Brief analyses the potential costs of adaptation and mitigation in cities, describes the current sources of climate finance – both national and international as well risk management systems, market instruments and public-private arrangements – and their relevance in the urban context, and makes concrete recommendations. Throughout the Issues Brief, specific examples of financing for climate change in different cities are included.

The annex provides an annotated list of the main instruments used for financing climate action in the urban context, covering both mitigation and adaptation.

Cities and Carbon Finance: A Feasibility Study on an Urban CDM



Organization(s)
UNEP

Language(s)
English

General Audience(s)
Decision Makers; Technical Staff/Practitioners;

Year of Publication
2012

Type of Material
Analytical/Technical Document

Go to Document

Value of Learning Resource

The Clean Development Mechanism (CDM) is one of the market-based mechanisms of the Kyoto Protocol, for investment in projects that reduce emissions in developing countries. Despite the majority of emissions emanating from cities, urban areas are underrepresented in the CDM with less than 1% of projects registered to CDM being credited to cities. The CDM offers a potential funding source for city authorities to address climate change.

This feasibility study on the urban CDM discusses CDM institutional options, the applicability of CDM methodologies as well as the barriers to CDM in cities, and existing CDM projects in urban areas. A number of concrete projects are presented, including in cities in South Korea and Thailand. The study makes recommendations for cities to benefit more from carbon financing opportunities to mitigate emissions.

ANNEX 1
Selected Non UN Written Resources and Training Courses

1

Learning Topic 1
Cities' Contribution to Greenhouse Gas Emissions

Global Protocol for Community-Scale Greenhouse Gas Emission Inventories: An Accounting and Reporting Standard for Cities

(World Resources Institute, C40 Cities, ICLEI, 2014)

Recognizing that cities need good quality data on their greenhouse gas emissions in order to understand the role of different sectors and monitor progress, the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) offers a robust framework for measuring and disclosing a city-wide greenhouse gas emissions inventory, based on multiple methodologies. The GPC also provides information on accounting for the aggregation of city inventories at sub-national and national levels.

Go to Document

carbonn® Climate Registry: 5 Year Overview Report (2010 - 2015)

(carbonn® Center, 2015)

The carbonn® Climate Registry is a reporting platform that enables local governments to publicly report their greenhouse gas reduction commitments, emissions inventories, and climate mitigation and adaptation actions. This document presents reporting trends by local and sub-national governments. It highlights the scale of greenhouse gas emissions from cities, as well as methodological issues concerning reporting of inventories.

Go to Document

3

Learning Topic 3
Vulnerable Groups in Urban Areas

Climate Change and Urban Children: Impacts and Implications for Adaptation in Low- and Middle-income Countries

(Bartlett, Sheridan, Human Settlements Discussion Paper Series, International Institute for Environment and Development - IIED, 2008)

The paper analyses and explains the possible impacts on children arising from the likely effects of climate change in urban centers. It highlights the particularly vulnerable position of children, such as high vulnerability to heat stress, and higher risk of death and injury from extreme weather events than adults. In addition, the paper discusses the implications and guidelines for adaptation actors.

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5

Learning Topic 5
Integrating Climate Change into Local Planning

Institutionalizing the Urban Governance of Climate Change Adaptation: Results of an International Survey

(Aylett, Alexander, Urban Climate, Volume 14, Part 1, December 2015, Pages 4–16)

This article presents the findings of a global survey on the state of mitigation and adaptation planning in cities, as well as what challenges cities are facing. Overall, 350 cities responded to the survey. The results show that the majority of cities are working on both mitigation and adaptation. Cities are also increasingly integrating climate change adaptation into local government plans rather than addressing climate change in isolated stand-alone plans.

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6

Learning Topic 6
Mobilising Financial Resources

Climate Finance for Cities: How Can International Climate Funds Best Support Low-Carbon and Climate Resilient Urban Development?

(Barnard, Sam, Overseas Development Institute, Working Paper 419, 2015)

This paper provides information for urban managers and practitioners on the approaches taken by multilateral funds to support low emission and climate resilient development in developing country cities and highlights that only a fraction of approved climate finance has been dedicated to explicitly urban projects. The paper makes a number of recommendations for future climate fund engagement in cities.

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Cities and Climate Change: National Governments Enabling Local Action

(OECD and Bloomberg Philanthropies, Policy Perspectives, 2014)

This document focuses on the need for national policies to support local action on climate change: national policy frameworks should be well aligned and support local level action. More specifically, the document highlights the challenges related to financing low carbon and climate resilient investment at city level as well as the need for national level policy action and support, in particular to encourage private sector investment.

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About UN CC:Learn

UN CC:Learn is a partnership of more than 30 multilateral organizations supporting countries to design and implement systematic, recurrent and results-oriented climate change learning. At the global level, the partnership supports knowledge-sharing, promotes the development of common climate change learning materials, and coordinates learning interventions through a collaboration of UN agencies and other partners. At the national level, UN CC:Learn supports countries in developing and implementing national climate change learning strategies. Through its engagement at the national and global levels, UN CC:Learn contributes to the implementation of Article 6 of the UNFCCC on training, education and public awareness-raising, and the 2012-2020 Doha Work Programme. Funding for UN CC:Learn is provided by the Swiss Government and UN partners. The Secretariat for UN CC:Learn is hosted by the UN Institute for Training and Research (UNITAR). For further information please contact: uncclearn@unitar.org.

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