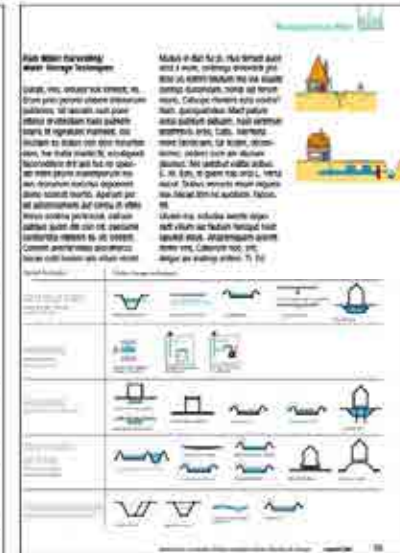


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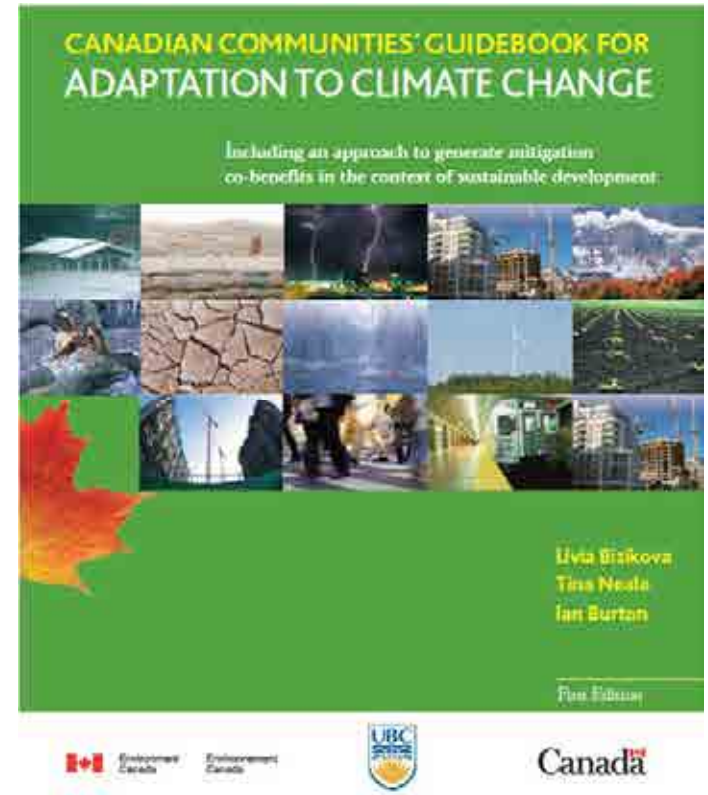
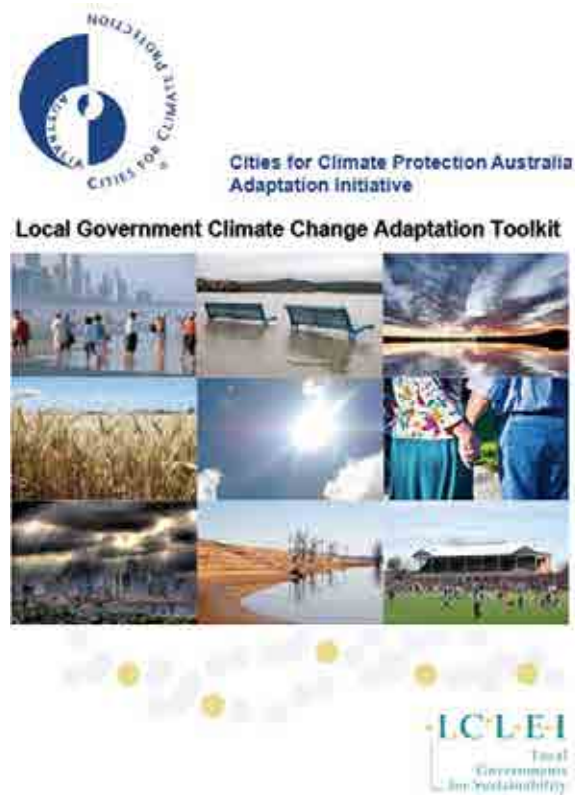
Ronald Eckert & Ralf Kersten, Dept. of Urban Planning and Spatial Design
University of Cottbus, Germany



2. DPA – Megacity Project Roundtable
“Building Climate Change Adaptive Capacity in Urban Planning”
15. March 2012 | Ho Chi Minh City

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- ↳ Climate Change Adaptation by Design
- ↳ Local Government Climate Change Adaptation Toolkit
- ↳ Guidebook for Adaptation to Climate Change

Best Practice Examples

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Guidebook on Climate Change Adapted Urban Design

contents

	Foreword	3
	Key messages	3
1	Introduction	4-9
2	International and national context	10-21
3	Defining adaptation action	12-16
4	How to implement adaptation through design and development	18-41
	Business case of adaptation options	
	Policy of adaptation and its alignment with the main climate risk that contributes to the CR and its sector	
	The following headings:	
	4.1 Managing high temperatures	
	At the national scale	
	At the neighbourhood scale	
	At the building scale	
	4.2 Managing flood risks	
	At the national scale	
	At the neighbourhood scale	
	At the building scale	
	4.3 Managing water resources and water quality	
	At the national scale	
	At the neighbourhood scale	
	At the building scale	
	4.4 Managing ground conditions	
	At the national scale	
	At the neighbourhood scale	
	At the building scale	
5	Technologies	42-45
	Review of key technologies in terms of the key climate risks outlined in this document	
	Check notes	
6	References and further information	45-47

key messages

- Adaptation is needed now because the climate is already changing. Many of the changes caused by the rise in greenhouse gas levels are irreversible. The result of our inaction will be a world of increased risks to the health, well-being, and livelihoods of present and future generations. Adaptation to the changes is essential to reduce the risks of the future, to enhance the resilience of systems, and to ensure that climate change is manageable.
- The built environment generally has a long life of 50, 100 years, and the urban built form has even greater impacts. The urban climate change context, over the next 20-30 years, will be a long-term one. It is important to plan for the long term, to take account of the cumulative impacts of urban climate change, and to develop strategies that are resilient to the long-term changes in the way that the built environment is used.
- Climate change is a cross-cutting issue in all sectors of society. Adaptation is a requirement of national planning and design policies.
- Climate change presents design opportunities and planners with significant responsibilities to ensure that urban climate change adaptation is integrated into the design process. Adaptation will enhance the quality of our quality of life, resilience and health.
- Climate change presents opportunities to design new urban forms and products that respond to changing urban patterns, the need to enhance opportunities for people to enjoy their communities and to reduce their carbon footprint.
- A number of urban planning and urban design opportunities to respond to the challenges of climate change are identified, including building design, and infrastructure design.
- Many adaptation strategies offer multiple benefits. At the same time, however, urban design and development decisions in terms of land use and infrastructure development need to be made in a way that is consistent with the need to adapt to the long-term changes in the way that the built environment is used.
- Human, financial, technical and other resources should also be deployed to support the adaptation process. In particular, the need to support the adaptation process is highlighted in terms of the need to support the adaptation process in terms of the need to support the adaptation process.
- Adaptation is a process that is ongoing and continuous.



menu of strategies for managing high temperatures

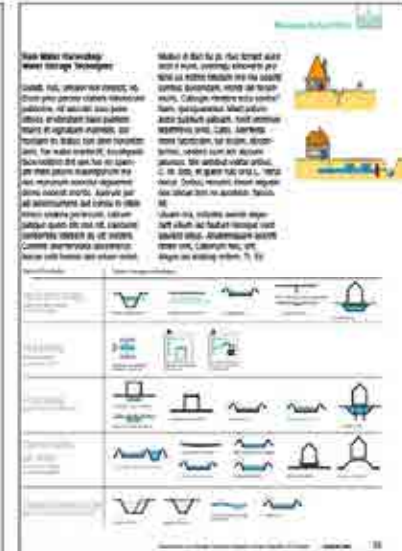
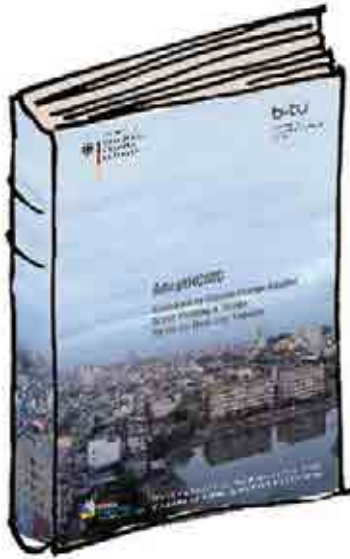


- ↳ Topics: Adaptation Handbook, Toolkit, Guidelines
- ↳ Objectives: Promote the development of adaptation responses
- ↳ Target Groups: Decision-makers at local governments
- ↳ Outline: introduction, guidebook, resources, glossary, reference
- ↳ Methods: e.g. case studies, pilot projects, CBA, focus groups

Best Practice Example: Content, Objectives and Target Groups

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- Objectives: Toolkit and Policy Guide to support planning decisions and the assessment process at the municipal level
- Target groups: municipal administration in the fields of planning and construction (DPA, DoC, DoT, Urban Management Divisions at City and District Level)

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Outline

Introduction

Purpose of Handbook
 Content & Structure of Handbook
 Target Group
 Link to Megacity Research Project



I Understanding Climate Change

Climate Variability & Change
 Climate Projections for Vietnam & HCMC
 Climate Change Impacts on the Urban System



II Climate Change Adaptation

Concept of Adaptation & Mitigation
 Adaptation in Urban Planning & Design
 Adaptation Initiatives & Policies in Vietnam & HCMC



III Urban Planning & Design Adaptation

III.1 Managing Flood Risks

Problem Background
 Overview on Adaptation Strategies
 Exemplary Urban Design Scheme
 Selected Adaptation Strategies
 Case Studies
 Adaptation Checklist
 References & Resources



III.2 Managing Surface Water

Problem Background
 Overview on Adaptation Strategies
 Exemplary Urban Design Scheme
 Selected Adaptation Strategies
 Case Studies
 Adaptation Checklist
 References & Resources



III.3 Managing High Temperatures

Problem Background
 Overview on Adaptation Strategies
 Exemplary Urban Design Scheme
 Selected Adaptation Strategies
 Case Studies
 Adaptation Checklist
 References & Resources



IV Tools & Instruments

(Intended Handbook Part 2)

Tools for Implementing Adaptation into Legal Procedures/ Project Approval Procedures (Guidelines)
 Tools for Implementing Adaptation into Planning
 Tools for Mainstreaming/ Capacity Building

Additional Resources

Literature, Links, etc.



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↘ **Outline:** Problem Background, Overview of Adaptation Strategies, Exemplary Urban Design Scheme, Selected Adaptation Strategies, Case Studies, Adaptation Checklist, References and Resources

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III.3 Managing Surface Water

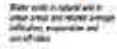
The urban hydrology regime is and will be affected by changing precipitation pattern, increasing heavy rain events and flooding from upstream areas. A well-designed and managed surface water system can decrease the water run-off volumes, can reduce the impacts of urban flooding, can save costs for investments into the calculation and can add to the visual attractiveness of a neighbourhood.

Problem Background

As most of HCMC's urban water are low-levelled and the entry of the Dong Nai, Cai Lân and Nhà Bè Rivers forms a wide spread network of rivers and canals with almost 8,000 km length, water plays a significant role in the city's life. While the urban form as well as the people's daily life were not too hard, the rapid population growth and urbanisation of HCMC. Under natural conditions water flows in a cycle of precipitation, infiltration, surface run-off, and evaporation. Urbanisation disturbs this cycling, reducing the infiltration capacity by a high degree of impervious soil coverage, reducing the evaporation capacity by less vegetation and increasing the surface run-off volume.

Solution

However, heavy rain events results in urban flooding. Urban flooding as major urban problem results in high economic damage and loss of urban attractiveness and public health. In addition, urban flooding causes environmental damage, such as water pollution, soil erosion, and loss of urban green space. Urban flooding also causes health problems, such as waterborne diseases and mosquito breeding. Urban flooding also causes economic damage, such as loss of property and business. Urban flooding also causes social damage, such as displacement and loss of community.



Water with its speed and in urban areas can cause damage, pollution, erosion and loss of life.

↘ **Problem Background, Overview of Adaptation Strategies, Exemplary Urban Design Scheme, Selected Adaptation Strategies, Case Studies, Adaptation Checklist, References and Resources**

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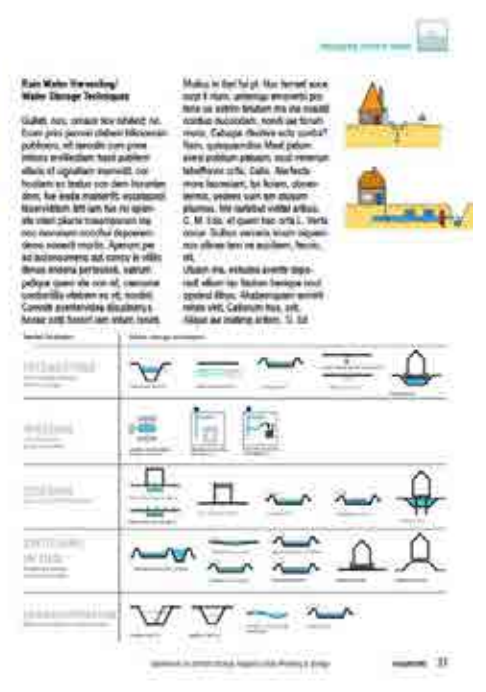
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- Problem Background, **Overview of Adaptation Strategies**, Exemplary Urban Design Scheme, Selected Adaptation Strategies, Case Studies, Adaptation Checklist, References and Resources

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↘ Problem Background, Overview of Adaptation Strategies, Exemplary Urban Design Scheme, **Selected Adaptation Strategies**, Case Studies, Adaptation Checklist, References and Resources

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Case Study: Sentosa Park, Singapore

The Sentosa Park project is aimed to meet today's and future challenges as regards the lack of fresh water as increasing population, water pollution as well as increased rainfall and sea level rise due to climate change. This project is part of Singapore's citywide water-scarce measures to manage storm and rainwater locally by an integrated and decentralized urban drainage system. A permeable network of local measures prevents high water levels and reduces the pressure on sewers during peak storm events. The remainder is collected by a comprehensive network of drains, canals, rivers and stormwater collection ponds before it is channelled to Singapore's fresh water intakes.

Location	Singapore
Area	2,200 km ²
Population	218.4 million
Area	14,000 ha (Mandai Park), 33 ha (Sentosa Park)
Design & Construction	7,000 ha (Mandai Park), 33 ha (Sentosa Park)
Client	Public Utilities Board and National Parks Board, Singapore
Design	Arup, Greenfield
Planning	2006-2008
Construction	2008-2010
Designers	Arup, Greenfield, National Parks Board, Water Programme, Cleaning & Urban Parks

For change: It contributes to the target of reducing 7400 mm³ of annual stormwater for fresh water supply. As a functional approach the public Sentosa Park combined technical solutions with a high quality park design, managing rainwater locally by means of infiltration, collection, evaporation and biotic retention as well as integrating the potential of changing water levels for design aspects. Supporting measures to reduce the retention and retention of rain off water can be further quantified by green roofs and facades, rain gardens, bioswale water inlets, permeable pavements and tree filters within adjacent neighbourhoods.

Construction Design for Sentosa Park

Case Study: Sentosa Park, Japan

As a new urban district for Tokyo, the Sentosa Park represents a future-oriented approach to combine a flexible public water with the requirements of a sustainable water management. The project's main objectives deal with the management of urban stormwater, the provision of alternative water sources for daily and recreational purposes as well as the beauty with fresh and clean water for an enjoyable surrounding. A integrated network of drainage basins, subsurface canals and multi-level areas allow to manage 50% of rainfall on site and to accommodate a 1 in 100 year flood event. Green roofs and permeable pavements contribute to the reduction of stormwater run-off. Stormwater guidelines have been developed and applied to property plots for a successful implementation of the overall water management.

Construction Design for Sentosa Park

↘ Problem Background, Overview of Adaptation Strategies, Exemplary Urban Design Scheme, Selected Adaptation Strategies, **Case Studies**, Adaptation Checklist, References and Resources

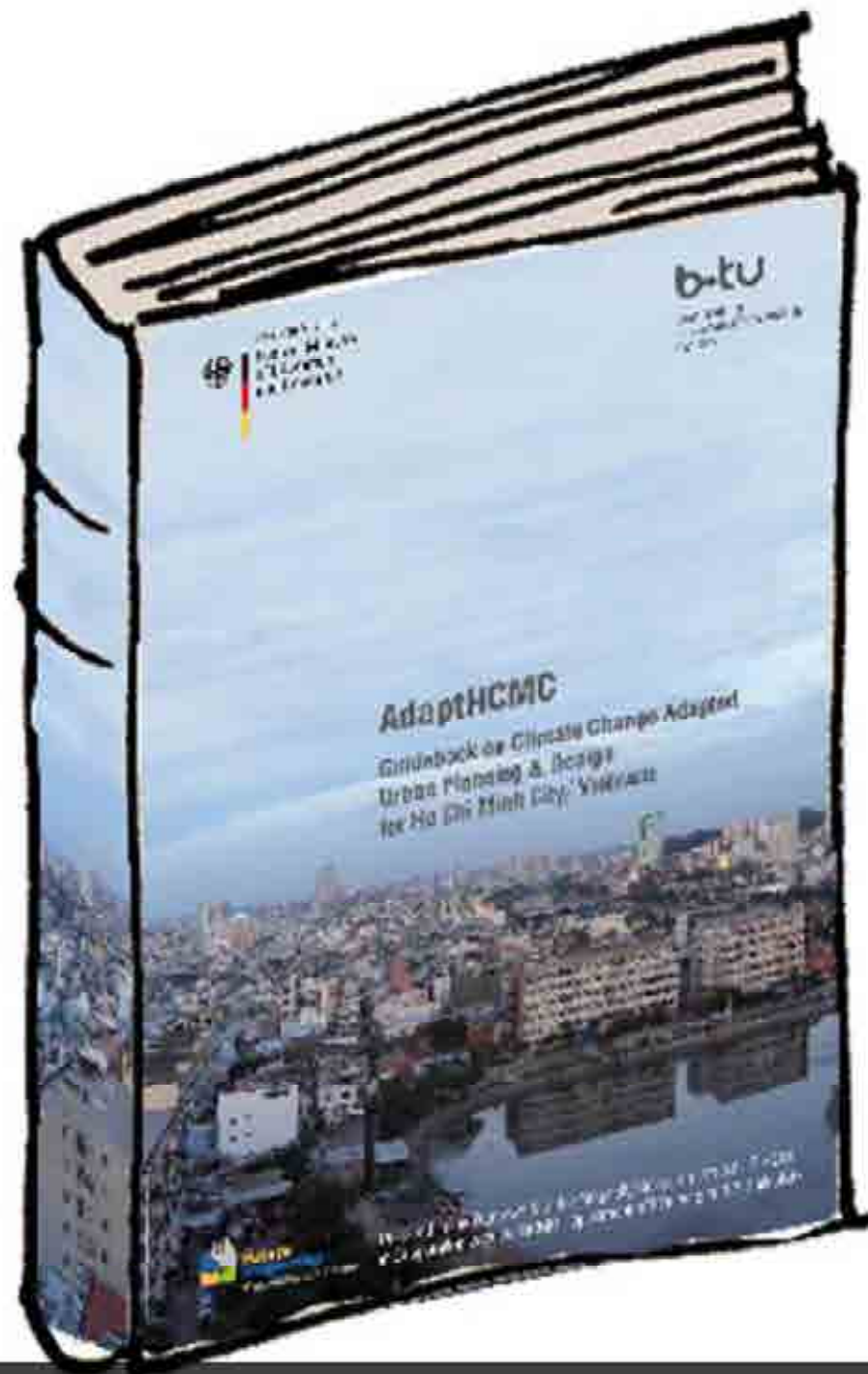
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The image shows the Table of Contents for the guidebook. It is organized into several sections, each with a chapter number and a list of sub-topics and page numbers. The sections include:

- 1. Adaptation Strategies (pages 01-08)
- 2. Urban Design (pages 09-16)
- 3. Case Studies (pages 17-24)
- 4. Adaptation Checklist (pages 25-32)
- 5. References and Resources (pages 33-40)

↘ Problem Background, Overview of Adaptation Strategies, Exemplary Urban Design Scheme, Selected Adaptation Strategies, Case Studies, **Adaptation Checklist**, References and Resources



Thank You for Your Attention!