



# **cities fit for climate change**

**Integrated urban development for climate-proof cities**

**International Dialogue Forum on Climate-Proof Urban Development  
27 – 30 August 2018 | Chennai, India**

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# 1. Cities Fit for Climate Change Project

The global project “Cities Fit for Climate Change” implemented by GIZ on behalf of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) cooperates with various partners internationally, in Germany and in particular with its three partner countries Chile, India and South Africa. The project aims to strengthen cities as actors of sustainable development.

## Coping with Climate Change Begins in Cities

Our cities are both contributing to and affected by climate change: they consume 70 per cent of the world’s energy and heat up the earth’s atmosphere by producing over 75 per cent of global CO<sub>2</sub> emissions. At the same time many urban agglomerations already suffer from the negative impacts of climate change: in low-lying coastal areas they are threatened by rising sea levels and storm surges; in drier climate zones they must contend with droughts and water shortages; and cities everywhere have to deal with heat islands in the densely built-up urban landscape. Accelerated urbanisation exacerbates these problems.

By 2050, 6.5 billion people, or two thirds of the world’s population, are expected to live in sprawling metropolises. Therefore, new forward-thinking strategies for mitigation and adaptation to the impacts of climate change need to be integrated into conventional concepts of urban development in order to safeguard urban ways of life.

## Trajectories for a Climate-Proof Future

How can cities as drivers and victims of climate change cope with the risks and become custodians of a livable climate? This global project is focused on finding answers to this question.

Because there are no universally applicable solutions, existing concepts for resilient low carbon urban development are to be analysed and compiled in a source-

book, and selected cities are to be supported in developing case-specific climate-proof strategies.

This work is guided by the “Leipzig Charter on Sustainable European Cities” and the BMU Memorandum “Urban Energies – Urban Challenges”. The important issue of securing financing for required infrastructure investments is also addressed.

The experiences of our partner cities are shared at international conferences. The knowledge thus gained helps to support the UNFCCC process (United Nations Framework Convention on Climate Change) and contributes to the implementation of the “New Urban Agenda”, the international agreement of the Habitat III process.

## Climate-Proofing Provides Orientation

The existing urban development guidelines and concepts of our partner cities are to be adapted according to climate-proofing principles. Climate-proofing means that city development strategies, urban designs, land use and master plans, and all related investments are resilient and adaptable to the current and future impacts of climate change. Furthermore, corresponding climate protection measures need to be taken, and they must be aimed at decarbonisation. These steps provide the basis for designing an individualised climate-proof urban development model for each city. An example of how carbon emissions can be reduced while at the same time adapting to climate change impacts is through urban green space, which helps prevent heat island effects and flooding, absorbs carbon from the atmosphere and improves air quality and citizens’ quality of life – a win-win situation for the inhabitants, city budgets, and the climate.

## Our Partners in Chile, India and South Africa

The partner cities, Santiago in Chile, Chennai in India and eThekweni/Durban in South Africa, were selected



Image 1: Partner Cities Map



Source: GIZ

in agreement with the relevant national ministries and authorities: the decisive factors were the commitment of the mayors and city councils, and the cities' level of climate change vulnerability. The cities determine their project priorities, which might be, for example, the climate-proofing of instruments, strategies and regulations, or the implementation of participatory city development strategies, or the development of financing options for realising available climate protection and adaptation concepts.

The partner cities are to exchange knowledge with each other and with German and further cities within the framework of the exchange workshops. To facilitate this, each of the partner cities is hosting an annual Dialogue Forum where representatives from German cities and the other partner cities are coming together to share their insights into climate-proof urban development.

### International Learning Exchange Workshops

The exchange sessions are intended to enable and facilitate peer-to-peer knowledge sharing, support and collaboration, the joint generation of new knowledge, and the promotion of innovation with regards to the planning of low-carbon and resilient urban development.

Three “inter-connected” Dialogue Forums are planned in each of the participating partner cities, where a bottom-up approach to conceptualising new elements of climate-proof urban planning can be incrementally developed into a new urban development approach that draws on real city-level case studies, as opposed theoretical discussions. Such an approach revises analysis tools, city development strategies, planning approaches, implementation frameworks etc. to reflect climate change considerations with the resultant outcome: to make cities low-carbon and resilient to the impacts of climate change. The overall objectives of the Dialogue Forums are:

- To strengthen the exchange of experiences among the Cities Fit for Climate Change project (CFCC) partner cities as well as with German cities at different levels and areas of intervention;
- To identify good practice examples from the cities that can be used for an international exchange with other cities around the world;
- To provide peer-to-peer advisory services for planning instruments in application and processes in a conducive and creative Dialogue Forum environment;
- To conceptualise and prepare joint planning interventions that will be developed further in the course of the Dialogue Forum series;



- To initiate a practice oriented learning process over the duration of the project that includes different exchange and learning formats and seeks to strengthen capacities of urban practitioners;
- To interrogate innovations in spatial planning and policy which can lay the groundwork for conceptualising a new climate-proof urban development approach.

### Box 1: Partner Cities



#### Durban – eThekweni, South Africa

Located in the province of KwaZulu-Natal, is the largest city in this province and the third largest city in the country. It is a cosmopolitan city of over 3.4 million people (2011 Census). It has a well-managed and busy port, and is also a major centre of tourism because of its warm subtropical climate and extensive beaches.



#### Chennai, India

Chennai is the capital city of the state of Tamil Nadu, as well as an important district, located in the south east of the Indian Peninsula. It is a cosmopolitan city, with a population of over 7 million inhabitants, and used to be the chief centre of the British empire, with the development of its institutions and administration.



#### Santiago de Chile

Santiago is the capital city of Chile, located in its central area, in the Metropolitan Region of Santiago. The city gathers more than 40% of Chile’s population, with over 6.5 million inhabitants. The Santiago province is compound by 32 municipalities with its 32 Mayors.

## Earlier Dialogue Forums in Durban and Santiago de Chile

Throughout the last years, local stakeholders in the three partner countries of the CFCC project have made considerable progress introducing climate change issues into local urban planning agendas. However, ongoing challenges as tackling the localization of the Nationally Determined Contributions (NDC), climate-proofing of urban planning and investments, financing sustainable development in the context of rapid urbanization, just to mention a few, still determine, to different extents, the debates in South Africa, Chile and India.

The Dialogue Forum in Chennai is the third in the series of comprehensive workshops that took place in each CFCC partner city. The first one, held in Durban under the title “From Challenges to Solutions - How to Improve Integration of Climate Change Aspects into Urban Development Instruments, Strategies and Initiatives?” had confirmed that each of the partner

cities has embraced planning for climate change in varying degrees. During the second workshop in Santiago under the title “The Governance of Local Climate Action and how to Foster Multi-sectoral Collaboration” the participating cities produced feasible solutions in order to introduce and steer climate-proof urban development in a multilevel stakeholder environment.

The lessons learned during these workshops have highlighted the need for climate change responses to be:

- Motivated
- Mainstreamed
- Multi-Stakeholder Adopted
- Multi-Functional
- Modelled



The third Dialogue Forum in Chennai now was to build on the outcomes of the previous Dialogue Forums. While in Durban participants had shared a common understanding for the mainstreaming of climate change into urban development projects, the discussion was taken to the next level in Santiago. Here, practitioners shared experiences and knowledge on how to change institutional patterns in order to achieve

enhanced integrated urban development. The third Dialogue Forum now focused on the process that spans from Policy to Action, taking strongly the Climate-Proof Urban Development Approach (ClimPUDA) into account. ClimPUDA serves as a conceptual backbone of the project. It lays out a guiding framework for urban practitioners to structure their work on climate-proof urban development.

Image 2-3: Dialogue Forum I – Durban, South Africa



Image 4: Dialogue Forum II – Santiago de Chile





**Box 2: Representatives for Chennai Dialogue Forum 2018**

**Chief Guests**

**Mr. Doss Karthikeyan**  
IAS, Commissioner Greater Chennai Corporation

**Mr. S. Krishnan**  
IAS, Principal Secretary Planning, Housing and Urban Development, Government of Tamil Nadu

**Mr. Mantri Govinda Rao**  
IAS, Deputy Commissioner (Works) Greater Chennai Corporation

**Mr. Raj Cherubal**  
Chief Executive Officer Chennai Smart Cities Limited.

**Mr. Ashwin Mahesh**  
Urbanist and Social Technologist

**Mr. Michael Wegener**  
Deputy Consul General, German Consulate General Chennai

**Dr. Mike Falke**  
Head of Section, GIZ Germany

**Ms. Tanja Feldmann**  
Cluster Coordinator, GIZ India

**India**

**Ms. Jayshree Vencatesan**  
Managing Trustee, Care Earth Trust

**Ms. Vidya Mohankumar**  
Founder Principal, Urban Design Collective

**Ms. Abinaya Rajavelu**  
Urban Design Collective

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**Ms. María José Castillo**  
Head of the Urban Planning Department, Municipality of Providencia

**Mr. Carlos Maillet**  
Director of Cultural Patrimony, Municipality of Santiago

**Germany, Sweden**

**Mr. Thomas Haberland**  
Policy Officer, Urban Development Policy, German Ministry of the Interior, Building and Community

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Manager Head of Specialist Departmental Issues – Supraordinated Planning, Land Use Planning, Frankfurt/Main

**Ms. Mary Uhlig**  
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**Ms. Linnea Upsall, Sweden**  
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Head of Cities Fit for Climate Change Project, GIZ Germany

**Mr. Georg Jahnsen**  
Project Manager, Sustainable Urban Development in Smart Cities and Land Use Planning & Management, GIZ India



## 2. Chennai Dialogue Forum 2018: From Planning to Implementation

### Objectives

A strong emphasis was placed on enabling networking and continuing to foster collaboration of the CFCC partner cities and their allies from Europe. This was achieved through a range of informal and formal networking opportunities. Furthermore, the Dialogue was built on learning from case studies, especially in the light of the Climate-Proof Urban Development Approach (ClimPUDA). The selected German and Swedish cities contributed with their case studies. The analysis of an existing exemplary project in Chennai on the Buckingham Canal – an important open waterway with open spaces at the banks, running through Chennai and further parts of the Tamil Nadu State – encouraged practice oriented learning.

The overall main objectives was to:

- Learn about municipal practices on climate-proof urban development experiences from the participating cities
  - Analyse existing projects of the partner cities from India, Chile, South Africa as well as Germany and Sweden to identify institutional patterns which facilitate more climate-proof urban development
  - Elaborating ideas for the rejuvenation of a stretch of the Buckingham Canal.
  - Actively participate and contribute to further developing a climate-proof urban development narrative that is promoted in the framework of CFCC project.
- Create networking opportunities between the CFCC partner cities as well as German and Swedish cities

### Participants

This Dialogue Forum involved participants from the three CFCC partner cities Durban/South Africa, Santiago de Chile and Chennai/India as well as representatives of three German cities (Leipzig, Munich and Frankfurt am Main) and the Swedish city Malmö. The

European allied cities were again invited to participate in order to continue the professional exchange and peer-to-peer learning around climate-proof urban development. (Refer Box 2, Page 6)

### Design and Agenda

The conceptual guiding framework of the CFCC project, the Climate-Proof Urban Development Approach (ClimPUDA), served as a compass for the design of the workshop sessions. ClimPUDA provides new entry points for urban planning and it had already benefited from inputs and discussions during the former

Dialogue Forums. The sessions in Chennai offered yet another possibility to elaborate and test the approach. Focusing on two relevant parts of ClimPUDA (policies and how to put them into action), the workshop agenda was designed in the following way (Box 3):

## Summarised Sequence of the Dialogue Forum Chennai

### Box 3: Unfolding of the Dialogue Forum Chennai 2018

#### DAY 1, 28th August 2018: Collect and Connect

The first day served to establish a common understanding and present cases from the project partners Durban, Santiago and Chennai as well as Leipzig and Munich. In addition, the topic of ClimPUDA together with the current version of the CFCC Sourcebook were introduced. An afternoon site visit to the Buckingham Canal as one of the major project sites in Chennai displayed some of the challenges of climate-proof urban development that Indian public authorities face together with the civil society. The site visit took place in the context of the ongoing ideas competition "Eyes of the Canal" for a 3km stretch of the Buckingham Canal, an activity implemented by the CFCC project. Background information regarding the objectives of this competition were provided before and throughout the joint walk.



#### DAY 2, 29th August 2018: Connect, Conceive, and Create

The day started with further field visits to [Kotturpuram Tree Park and Adyar Eco Park](#) to showcase good examples in Chennai that could help creating ideas regarding the Buckingham Canal project. Additional inputs from the cities of Nuremberg, Frankfurt am Main and Malmö were given after lunch. The afternoon session "From Planning to Implementation: Reimagining the Buckingham Canal" provided an opportunity to apply the Climate-Proof Urban Development Approach practically to the local context and in the light of the ongoing ideas competition, enabling participants to take home some valuable ideas and messages.



#### DAY 3, 30th August 2018: Create and Commit

The last Forum day focused on the continuation of the work in the three partner cities and on sustaining the momentum. The specific learnings gained during the Dialogue Forum were shared among the group with an emphasis of how the participants want to take action until the end of the CFCC project. Furthermore, the Buckingham Canal activity and outcome of the group work of Day 2 were presented to the Commissioner and Deputy Commissioner of the Greater Chennai Corporation to foster support and commitment in the joint initiative of "Reimagining the Buckingham Canal".





## Forum Opening on 27th August 2018

The Dialogue Forum was opened with all participants on the evening of 27th August 2018. A formal ceremony of lighting an oil lamp was followed by addresses by Mr. S. Krishnan (Principal Secretary, Department of Housing and Urban Development, Government of Tamil Nadu), Mr. Thomas Haberland (Policy Officer, Urban Development Policy, German Ministry of the Interior, Building and Community), Mr. Michael Wegener (Deputy Consul General, German Consulate General Chennai) and Dr. Daphne Frank (Head of Cities Fit for Climate Change Project). After a key note speech by Mr. Ashwin Mahesh (Urbanist and Social Technologist), all participants and chief guests joined for a networking dinner that also included speeches by Mr. Mike Falke (Group Leader Governance and Human Rights, GIZ) and Ms. Tanja Feldmann (Cluster Coordinator Sustainable Urban and Industrial Development, GIZ).

Following the welcoming speeches from Mr. Haberland and Mr. Wegener, the project Cities Fit for Climate

Change was introduced by Dr. Frank. She highlighted that one of the core ideas of the project is the peer-to-peer exchange of experts from different backgrounds on the topic of climate-proof urban development. Over the course of the past years, not only has the professional exchange been intensified but also friendships and personal relations have been built. Mr. Mike Falke raised that climate governance is key in the century of cities and local governments needs to be empowered. Global agreements such as the Agenda 2030 and the Paris Agreement could only be successful, if they are implemented in and with cities. Ms. Feldmann concluded the opening remarks by stressing the need to respond to the vulnerability of Indian cities, which are heavily exposed to the effects of Climate Change. Important key aspects are the participation of local actors as well as the promotion of an integrated approach to urban development.

Image 5-8: Opening of Dialogue Forum Chennai





Image 9-11: Opening of Dialogue Forum Chennai



## Setting the Local Context

### Box 4: Chennai Brief



#### Chennai as the host City

Chennai formerly known as Madras is the capital of the Southern Indian state of Tamil Nadu. Tamil Nadu is one among the most urbanized States in the Country and Chennai city is the fourth most populous metropolitan city in India. The average population of Chennai city is about 6.7 million based on 2011 census but as per recent estimates the population has increased to 8.7 million. With Chennai being hub of economic activities, the city and its metropolitan region have experienced tremendous growth in the last few decades, exerting significant stress on the natural resources including water. The city is struggling to strike a balance between growth and environmental sustainability. Chennai is in the direct path of weather events including droughts,

floods, and storms, accelerated by climate change. Being a coastal city with a flat topography, altered natural ecosystems due to unplanned development, recent incidences of extreme weather events making the city highly vulnerable to impacts of climate change. The recent devastating floods is a testimony to the region's vulnerability to the adverse effects of climate change.



Image 12: Welcome Address by Mr. S.Krishnan



Mr. Krishnan pointed out that Chennai is a climate vulnerable city and that living in Chennai is living the climate change reality with the vagaries of floods and droughts. He pointed out that the climate change risks hit the most vulnerable population and that the challenge Chennai is facing is to appropriately resettle this population along the canals, ensuring that their livelihoods are secure.

Furthermore, Mr. Krishnan stressed that mixed and dense neighbourhoods are preferable and the recently developed Combined Building and Development Rules for Tamil Nadu are aligned with this principle. He also highlighted the need to understand the existing urban fabric and to prioritise investments to strengthen the existing infrastructure over creating new infrastructure. An example Mr. Krishnan gave is the Tamil Nadu State Government's effort in strengthening the public transportation systems, which affect the common person. The secretary also indicated the importance of multi-stakeholder engagement built on consensus that works well for all levels of society and makes the city liveable for all.

Pointing out the good timing of the Dialogue Forum concurring with ongoing policy debates and a perfect setting for a multi-stakeholder engagement, Mr. Krishnan said that Chennai would be interested to learn from the experiences of Durban (South Africa) and Santiago de Chile (Chile) as well as the European cities. He thanked the German Ministry and GIZ for choosing Chennai as the venue for this year's Dialogue Forum.

## The Keynote Address

The keynote speech was addressed by Mr. Ashwin Mahesh. He highlighted the need for high-level governance to be the basis for developing resilience in cities. He also stressed the importance of proactive planning and drafting polices for different climate risks and to be prepared before these risks to become a reality. Besides, Mr. Mahesh underlined that permanent public education about risks linked to climate change needs to be provided. He illustrated the role that different stakeholders – especially the corporate entities and citizens – can have as co-managers of city-level projects and underlined his perspective with examples from different Indian cities.

Both speakers, while highlighting different elements to build climate resilience for the City of Chennai, expressed their optimism about the Dialogue Forum and emphasised that they are keen to see the results of this format.

Image 13: Keynote Speech by Mr. Ashwin Mahesh



### 3. Key Aspects of Chennai Dialogue Forum

#### Status quo in the CFCC partner cities Durban, Santiago de Chile and Chennai

##### Durban – From Policy to Action: The Climate Resilience Implementation Plan for Spatial Development Planning

In South Africa, all cities are legally required to develop a 20-year spatial master plan that is reviewed and updated annually. Since spatial planning has a long-term impact on the growth of the city, integrating climate change responses into the spatial planning framework contributes to increasing the city’s climate resilience and supporting climate-proof urban development plans. The representatives from Durban presented the case study on good practice and lesson learned in integrating climate change with the city’s spatial planning framework, focusing on the development and implementation of the Climate Resilience Implementation Plan (CRIP).

In addition, a climate change governance framework was set up to support the integration and implementation

of the Durban Climate Change Strategy in the city, covering both technical and political work streams. Central to this framework is the Technical Task Team that is mandated by the city mayor and provides a platform for oversight, co-ordination and implementation of the Durban Climate Change Strategy in the city. The Technical Task Team also responds to the executive political committee responsible for decisions and strategic direction.

Before the CFCC Dialogue Forum in Durban 2017, there was not much consideration of climate resilience in terms of the city’s spatial plan. The Forum provided ideas to include climate change into the spatial plan and importantly highlighted the cross-cutting nature of climate change response in terms of governance and implementation in a city. The main outcome of the Forum carried forward by CFCC and the city was the development of the Climate Resilient Implementation

Image 14: Introduction to CFCC Activities in Durban, South Africa





Image 15: Introduction to CFCC Activities in Santiago de Chile



Plan (CRIP), which responded to the sectors identified in the Durban Climate Change Strategy as well as those that are included in the spatial master plan (e.g. transport). One of the main topics to improve spatial climate resilience, for instance, was transport and mobility. Actions within CRIP were developed through consultation with the sector departments and co-ordination was carried out through the Technical Task Team. As a major step in securing commitment by the relevant sector departments, the CRIP was then annexed to the next review of the spatial master plan and approved by the council as part of the master plan. To secure a long-term outlook from the city officials there has been a recent commitment through the Technical Task Team that the CRIP will form part of the implementation framework of the DCCS. This way the city can continue to work on implementing the actions of the CRIP to improve spatial resilience after the CFCC project is completed. The next step is to enhance the capacity for the municipal staff and politicians of the city so that they can support the implementation of the CRIP actions and the Durban Climate Change Strategy.

### Santiago de Chile – Pilot Regions Providencia and Matadero

The team from Santiago de Chile introduced the participants to the initiatives that are being carried out for urban regeneration at municipal level in two areas, Providencia and Matadero. The challenges in urban planning are numerous, from providing swift solutions for housing to shifting a culture towards building compact cities. The urban regeneration challenge is

especially difficult in town centres which need to be redeveloped with minimal disruption. At the municipal and city level, the cross-sectoral challenges are technical, political and social.

Sharing about the ongoing processes, the team introduced the pilot projects of Matadero and Providencia developed under the framework of CFCC.

Providencia has a big floating population of 2 million every day. The primary focus is therefore to improve the standards of public spaces – with focus on universal accessibility, pedestrianisation and location of appropriate local economy. A mixed use of land and the compact city model need to be promoted. The zoning plan for Providencia is one of the first to consider environmental impacts as important factors by including planning to regulate green areas and acknowledging the need for disaster management. The challenge is that there is no robust national level policy on environmental degradation to guide zoning plans for mixed land use areas and mobility. Providencia has an integrated approach to mobility with good links and coordination between the different transportation agencies. For the municipality of Providencia, the commercial zone is the main focus and the planning process includes citizen participation. Lessons learned are being replicated in other municipal initiatives in order to increasingly improve the urban standards of the whole district of Providencia.

A second pilot region called Matadero is an urban area connected with the City of Santiago. Matadero has been facing conflicts of interest between residents and businesses for the past decade, forcing people to move

to other areas. The Ministry of Housing and Urban Development, the Ministry of Economy and the Ministry of Culture have come together to redesign the area while keeping the citizens' needs in mind. The Urban Regeneration of Historic Neighbourhoods Programme is run as a multi-actor and multi-level program which aims at regenerating central urban areas with focus on the cultural values as well as heritage of this city area. As one measure, squares, principal streets and historical buildings are being restored. Besides, retail stores have been invited to settle to boost the economy of the area. Despite increased risks due to climate change the erstwhile flood park next to Matadero is empty, but can't be accessed since it is blocked by an industrial area in front of it. Lessons learned in this pilot project will be replicated in six different areas in the country under the National Program for Urban Regeneration of Historic Neighbourhoods.

Due to the varying climate conditions between the north and the south of the country, Chile deals with particular challenges in taking the pilot projects and their results to other parts of the country. Challenges also remain at a national level where the process of standardizing urban development needs to be steered in a more holistic and strategic manner. Cities and municipalities are driving forward local visions for their respective territories. In order to avoid inequalities and lack of coherence at the metropolitan and national level, the coordination of these efforts seems to be the need of the hour.

## Chennai – Ward Level Urban Greening Plan

Dr. Jayshree Vencatesan of the NGO “Care Earth Trust” introduced the participants to the activities that are being carried out to systematically increase public greening in the city. The already low green cover in the city was substantially reduced during a devastating cyclone in 2016. The NGO has conducted surveys to highlight that public greening in Chennai is very low and mainly consists of a few varieties of tree species. The organisation provided a greening strategy for the City of Chennai. Based on that strategy a ward level plan will be elaborated, strongly emphasizing on participation of stakeholders, and to provide implementation measures. Greening activities will be executed in a largely industrial area (ward no. 82) which has a population of low income groups. The Trust's activities in this area have shown that community mobilisation is enormously challenging due to high fluctuation of the population and consequential low identification and connection with the land.

Dr. Jayshree Vencatesan described how urban planning in Chennai lacks precision and also vision, with large parts of the area (including the green cover) being not sufficiently covered in maps. The initiative aims at using and creating more open source data and at utilising communication technology to reach and empower particularly women to take ownership over the newly grown plants and trees. The organisation is committed to building a connection between the people and the green spaces in order to create a bottom-up “dream scenario” of urban planning and greening.

Image 16: Introduction to CFCC Activities in Chennai, India





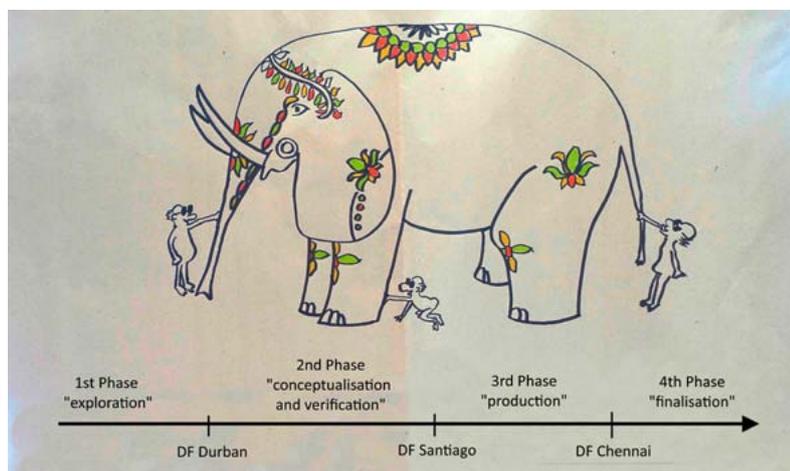
## The Sourcebook and the Climate-Proof Urban Development Approach (ClimPUDA)

The Sourcebook is the knowledge product of the CFCC project to disseminate good practices on climate-proof urban development from all over the globe. These examples are connected to the conceptual guiding framework of the project, the Climate-Proof Urban Development Approach (ClimPUDA). It is highlighting the effort of cities that are taking measures to be fit for climate change and serving as an inspiration for those cities that are looking to move in the same direction.

The Sourcebook promotes an integrated approach that is reflected by the four Fields of Action, the core elements of ClimPUDA:

1. Governance and Management
2. Policies and Strategies
3. From Policy to Action
4. Capacity Building

Image 17: Process of the Sourcebook



### Presentation of the Sourcebook and its process

At the Dialogue Forum, the conceptualization process of the Sourcebook and ClimPUDA was explained by using a parable, which originated on the Indian sub-continent. It is a story of a group of blind men who have never come across an elephant before. However, through touching an elephant for the first time, these blind men learn and conceptualize what it is like. Each blind man feels a different part of the elephant's body, but only one single part, such as the tail or the trunk. They then describe the elephant based on their limited experience and their descriptions of the elephant are different from each other.

Similarly, the Sourcebook and ClimPUDA needed to work with different perspectives and expectations from

a variety of stakeholders. The moral of the story can also be transferred by suggesting to look at climate-proof urban development in a holistic manner instead of approaching it from a sectoral point of view. The previous Dialogue Forums have been the key moments in collectively shaping the Sourcebook and ClimPUDA. After reflecting on the process thus far, the CFCC team presented the draft Sourcebook including the four Fields of Action of ClimPUDA for feedback and suggestions. In terms of format, one key feature of this knowledge product is its interactive and digital approach. The participants discovered that the Sourcebook in fact is not a "book" but an interactive e-paper that can be accessed online. It includes a broad range of linkages to complementary sources, both on- and offline.

Image 18: Presentation of the Sourcebook Process

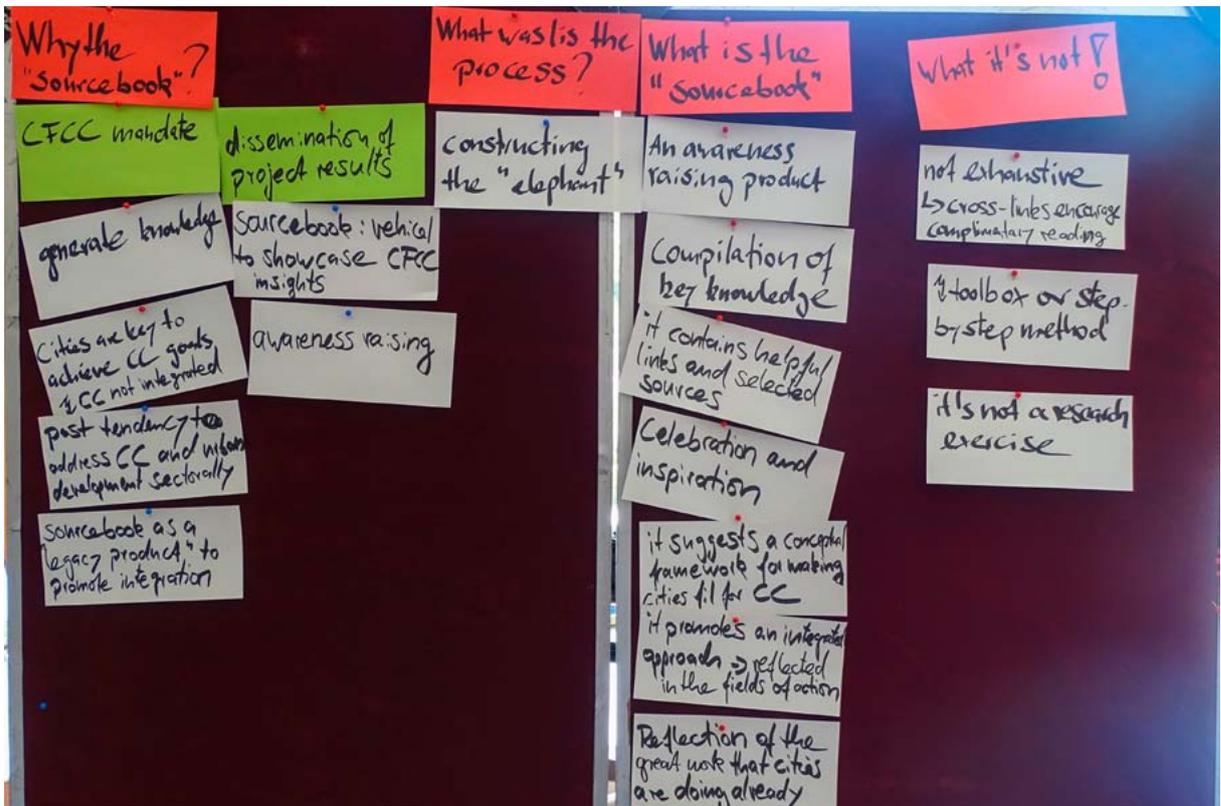


Image 19–22: Exploring the Sourcebook and the four Fields of Action





## Gallery Walks of German/Swedish Cities

Image 23: Presentation on City of Munich/Germany, Mr. Klaus Illigmann



Image 24: Presentation on City of Leipzig/Germany, Ms. Mary Uhlig



The participants were invited to learn about the current version of the Fields of Action more in detail. They had the chance to go through the content of the different Fields of Action and provide written comments, questions and additions while discussing with the CFCC team members on the approach. The aim was to provide general feedback and suggestions to the CFCC team. The input was collected and will feed into the finalisation of the Sourcebook.

The five European cities of Malmö (Sweden), Frankfurt am Main, Leipzig, Munich and Nuremberg (Germany) were invited to the Forum and presented a specific case study on climate-proof urban development. These same case studies will also be featured in the CFCC Sourcebook. Posters were prepared in order to present the case studies in a more visual form. They were kept up on the walls during the entire Forum to enable further discussions between the practitioners.

Case studies overview:

- Leipzig: Leipzig 2030 – Integrated Urban Development Concept
- Nuremberg: Forum on Climate Change Mitigation and Sustainable Development

- Munich: Redevelopment of Neuaubing-Westkreuz: A strive towards a Sustainable and Climate-Proof Neighbourhood
- Frankfurt am Main: “Masterplan 100% Klimaschutz” (Climate Change Mitigation)
- Malmö: Cloudburst Plan to Prevent Damages from Heavy Rainfall

During the gallery walks, the city representatives were presenting their case studies and answered questions from the participants. Contacts between the representatives of the CFCC partner cities and European cities were newly established or intensified to enable further replication of the different concepts, plans and projects. Although all the case studies have a different focus, e.g. a concept for the entire city or a project in a specific neighbourhood, a few similarities were observed. For example, in Leipzig and Munich, the inclusion of a broad participatory group in decision making to plan for neighbourhood renovation and cross-sectoral urban development for the city has shown the way for involvement of multiple stakeholders and capacity building of concerned groups in attaining goals of climate-proof urban development.

For more details, all posters can be viewed in the Annex of this report.

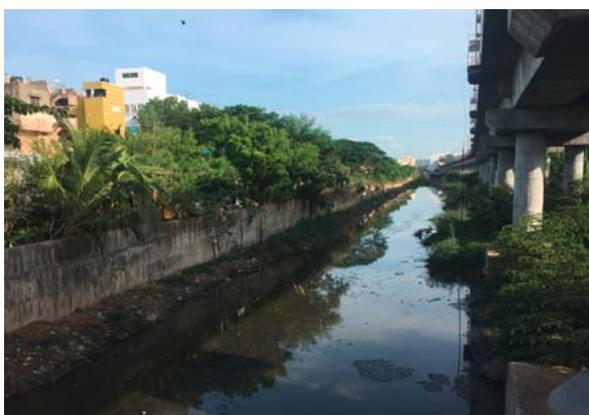
## Attention on the Buckingham Canal

The open ideas competition to reimagine the Buckingham Canal was chosen as a flagship project for deliberations during the Dialogue Forum. Three field visits and various presentations and activities to take steps to understand its challenges and propose solutions for a more liveable and climate-proof canal were organised for the group.

The series of activities was conducted in the following order:

1. Conceptual guiding framework for the group work: presentation of the Climate-Proof Urban Development Approach
2. Introducing the case study of the Buckingham Canal: presentation by Urban Design Collective on the 'Eyes on the Canal' ideas competition to 're-imagine' the Buckingham Canal and to involve local stakeholders in a participatory exercise (accompanied by a poster exhibition at the Dialogue Forum venue)
3. Experiencing the Buckingham Canal: visit of a specific stretch of the Canal through the 'Five Senses Walk' including a debrief in the group
4. Inspiration from other good practices in Chennai: field visits of the Kotturpuram Tree Park and Adyar Eco Park
5. Group work on 'Reimagining the Buckingham Canal' that brings together all the previous experiences: harvesting ideas for further development of the Canal activity through using the four Fields of Action

Image 25-27: The Buckingham Canal near Kotturpuram Metro Station





All Forum participants went on the “Five Senses Walk” along the canal. This walk had been designed by the partnering organisation Urban Design Collective as part of the open ideas competition for the Buckingham Canal whose results and winners will be published. It provides participants guidance to explore the Buckingham Canal at a stretch of 3 km and also asks the participants to record their observations and experiences during the walk (see annex for details).

### The Buckingham Canal – Background and Relevance

The Buckingham Canal is a manmade, saltwater, navigation canal that runs parallel to the Coromandel Coast in the north-south direction. It was built in phases from 1800 until 1882 and measures approximately 800 km in length from Vijayawada to Marakkanam. Within the Chennai metropolitan area, the canal connects the three rivers – Kosasthalaiyar,

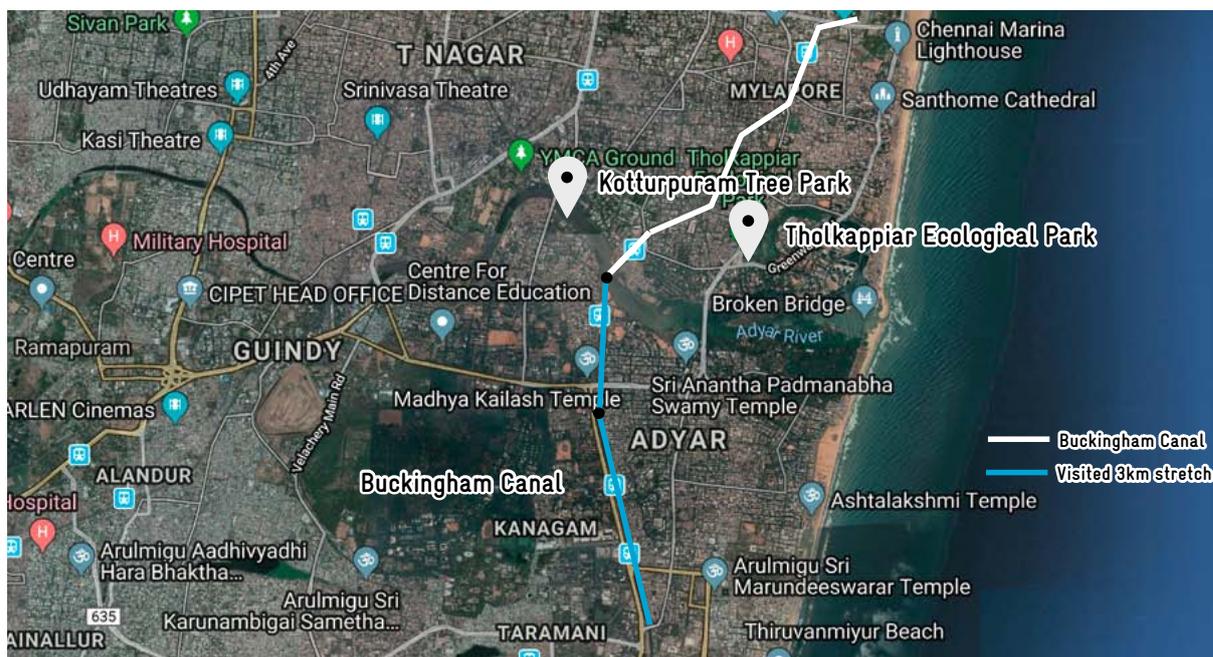
Cooum, and Adyar – that cut across Chennai. Though primarily constructed to transport goods from Vijayawada to Madras, the canal also helps manage floodwaters. Archival photographs show the canal to be an idyllic setting with lush green edges and wooden catamarans cruising its course. Today, however, the canal is faced with severe pollution woes with untreated sewage and solid waste finding their way into its waters. The numerous encroachments too have severely compromised its width and carrying capacity over long stretches within the Chennai Metropolitan Area. Over the years, various governmental agencies have struggled to revive the canal but continue to do so even to this date.

It is after the floods in 2015 that resulted in loss of lives and damages to public and private property that various citizen engagement plans were launched. One such project was ‘Eyes on the Canal’ by the Urban Design Collective.

Image 28–30: Going through the “Five Senses Walk” along the Buckingham Canal



Image 31: Map showing the three visited destinations



### Ideas Competition “Eyes on the Canal”

The Eyes on the Canal is an exercise in participatory planning to make the canal a liveable place for the residents of Chennai. The initiative involved various activities such as awareness walks, community engagement meetings and an open ideas competition to generate interest and ownership for the canal which has suffered from collective abandonment.

To raise awareness about the Canal, three local NGOs (lead: Urban Design Collective, partners: AgamSei, EFI (Environmental Foundation India) and WeBe Design Lab) were involved in public meetings, canal walks and to collect public perception. All results are published and archived at a dedicated website and social media page. All can be accessed by participants in the competition and interested citizens. The archive includes surveys, news articles, documents and reports by international organisations.

The competition opened on 23rd July 2018 and around 300 participants registered by the registration deadline of 23rd August. All participants were expected to send in their projects by the 23rd of September 2018. A jury selects the best ideas that are visionary and feasible. The selected ideas will be financially supported to be developed into detailed plan / implementable projects for a

period of 3 months. There is an agreement that the municipal authorities will take up the best ideas and explore possibilities of implementation.

### Good Practices: Field Visits

Two field visits to Adyar Eco Park and Kotturpuram Tree Park were organised with the intention to showcase some of the successful initiatives in Chennai that could help creating ideas regarding the Buckingham Canal project. The two visits were designed to help the participants see solutions from different approaches. While both initiatives aim to restore ecological balance in certain parts of the city, the approaches and strategies employed are completely different. The Adyar Eco Park is a government-led approach and part of a greater master plan to restore the Adyar River, it is of a rather large scale. The overall development was with very minimal public participation in the planning process. The public access to the park is still restricted with only a select number of entries allowed everyday on payment of a minimal entry fee. In contrast, the Kotturpuram Tree Park is a citizen-driven project, comparatively smaller in scale that has been built on the sole initiative and perseverance of volunteers and citizens, open to all and sustained mainly through citizen contribution with some support from the city administration.



### The Kotturpuram Tree Park

Having served as a dumping yard up to 2005, the 5 acre space was taken up as a joint project between the Public Works Department of Chennai and the local NGO “Nizhal” to convert it into a tree park. The NGO cleared the place, planted trees and watered them with the sole support of volunteers. The park is maintained by a small team of citizens that still rely on the support of additional volunteers. Schools bring children on

educational trips and the park is open to joggers and walkers in the morning and evening. It is also a haven for some rare flora and fauna.

The participants of the Dialogue Forum visited the park to understand the ground realities of a low-budget community driven ecological project that also demonstrates the reclamation of open spaces with public participation, strategies that work and challenges that are faced.

Image 32-35: At the Kotturpuram Tree Park



## The Adyar Eco Park

A second visit was organised to the Adyar Poonga, an ecological park set up by the government of Tamil Nadu in the Adyar estuary area of Chennai.

This fragile zone that had been encroached by thickets and illegal structures was to be converted into an eco park as per the directives of the high court to the state government in 2000. The park was inaugurated in 2011 and is frequently visited by educational institutions.

This project is part of a larger master plan to restore vegetation of the fresh water eco-systems of Coromandel

Coast. The park is to be developed in several phases of which 'part I' covering 58 acres has been completed. The initiative has been led by the government with the collaboration of forest consultants to protect tropical evergreen forests and restore the water bodies of this estuary.

Both the visits gave the participants ideas for the following as well as inspiration for what could be done in their own respective cities.

Image 36-38: Visit to the Adyar Eco Park

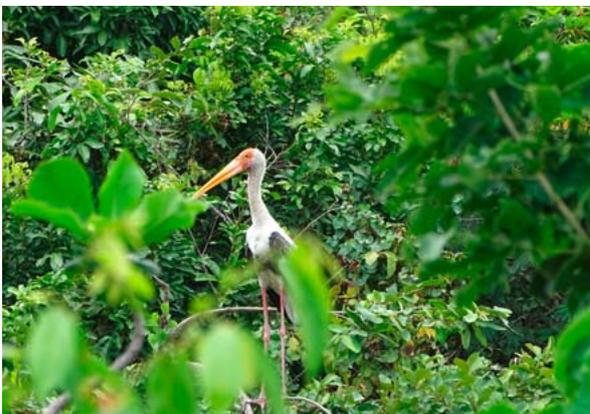




Image 39–40: Visit to the Adyar Eco Park



## Main Results of the Chennai Dialogue Forum 2018

### From Planning to Implementation – “Reimagining Chennai’s Buckingham Canal”

As a culmination of the presentations, visits and presence of experts, the group exercise on ‘Reimagining the Buckingham Canal’ was a crucial element of the Dialogue Forum. The participants were asked to tap into their expertise and experience from their respective cities while keeping in mind the field visits to the Buckingham Canal, Adyar Eco Park and Kotturpuram Tree Park. Technically, they were asked to reimagine a 3 km stretch of the Buckingham Canal with the help of the four Fields of Action of the Climate-Proof Urban

Development Approach in order to a) apply the Fields of Action to a realistic scenario and provide feedback on its usage and further development and b) produce concrete results that were subsequently presented to the city authorities, i.e. Chennai Smart City Mission and Greater Chennai Corporation.

The aggregated results of the group work clustered according to the four Fields of Action on Climate-Proof Urban Development are presented in [Box 5](#)



### Box 5: Fields of Action of the Climate-Proof Urban Development Approach

#### FIELDS OF ACTION OF THE CLIMATE-PROOF URBAN DEVELOPMENT APPROACH

##### 1. Governance and Management

- Ward level (administrative unit) and Chennai Rivers Restoration Trust relation is important
- Ward level and CRRT (River restoration) relation is important
- Connect to regional level as the canal flows through Tamil Nadu
- See stakeholders as an opportunity, not a hindrance
- Appoint a lead for the Project Steering Committee
- Get reliable data (household counts, GIS) to make good decisions and plan well
- Gather more data on water quality and social groups
- Citizen-generated public projects
- Governance needs to be solved before going into actions

##### 2. Policies and Strategies

- Disaster Management mitigation strategies: early warning system to be connected to climate change
- Set climate change as a performance target for govt. officials (like in Durban)
- Make clear distinctions between short, medium and long term strategies
- Policy position should have a long-term perspective
- Assess financial cost of flooding and damages
- Lift the fixed property rates (tax) up to 0.5 % and generate funding through that extra source of income
- Focus on basic services that benefit a large number of people
- Payment fees for parking can generate a source of income used for the works on the canal
- The "eyes on the canal" brand needs to be further developed and pursued
- Improve water quality by different measures
- Improve greening areas
- Jogging line along the river
- Improve and maintain open spaces

##### 3. Measures: From Policy to Action

- Public participation from Ward Level and Chennai Rivers Restoration Trust
- Easy access to waste disposal
- Explore funding for capital investment, public-private partnership, corporate social responsibility
- Bi-lateral funding? Bonds?
- To increase green areas have fewer walls to direct the flow of the canal and more natural ecosystems

##### 4. Capacity Building

- Climate Change knowledge education amongst the community
- Awareness campaign
- Involve local residents in the re-building (the works on the canal) in order to create a source of income and a sense of ownership that in turn helps to maintain the area in the long term
- Capacity building on all levels, especially youth, work extensively with schools



Image 41-43: Exercise “Reimagining the Buckingham Canal”





Image 44-46: Exercise "Reimagining the Buckingham Canal"





## Reflections on the four Fields of Action of ClimPUDA

Participants appreciated the integrated approach and the platform to move across different Fields of Action. Others remarked that the Climate-Proof Urban Development Approach served as a guide to move into strategic action planning. It gives structure, gathers all the data in one place for a first project planning on a low level. With regard to the Buckingham Canal, the exercise showed the great potential of the four Fields of Action as a tool to address the activity more holistically. By critically examining the individual Fields of Action as well as their interconnections, the fields were further developed and areas that needed further adjustment were unfolded. Most participants stated that ClimPUDA can grow into a very useful tool to be used at their respective cities and in other projects. The experience of applying the approach to the specific case of the Buckingham Canal in the Chennai Dialogue Forum was another important step towards the finalisation of the Sourcebook.

## Exchange with Chennai City Authority Representatives

On the last day of the Forum the group was addressed by chief guests Dr. D. Karthikeyan, IAS (Commissioner, Greater Chennai Corporation), Mr. Mantri Govinda Rao, IAS (Deputy Commissioner-Works, Greater Chennai Corporation) and Mr. Raj Cherubal (Chief Executive Officer, Chennai Smart Cities Limited). The opportunity was taken to also share highlights of the “Eyes on the Canal” initiative as well as the results of the Forum exercise “Reimagining the Buckingham Canal” with the city authority representatives. Dr. Karthikeyan expressed his gratitude for the Dialogue Forum to come to Chennai and he was impressed by the “Eyes on the Canal” project. He assured the participants and the CFCC project that the top ideas from the competition would be taken up for review and possibilities of implementation would be explored.

Image 47: Address by Mr. Cherubal



Image 48: Dr. D. Karthikeyan and Mr. Mantri Govinda



Image 49: Reflections by Dr. D. Karthikeyan and Mr. Mantri Govinda Rao





## 4. Way Forward and Conclusions

Towards the closure of the Dialogue Forum, the participants were asked to bring together all the different experiences made during the three days of field trips, presentations, group exercises and discussions – also in the informal parts around the workshop sessions.

In four groups, they discussed what they take away from the Forum and to what actions they commit to realise in their cities resulting from their experiences in Chennai. Moreover, the participants reflected on what they have learned individually and provided their feedback on the Forum:

### Box 6: Conclusions

#### Action plans for activities in the CFCC partner cities and the German and Swedish cities

##### Group Durban

###### General take-aways:

- There is a need to increase the planning capacity in the city (Durban), planning for the future.
- Integrated collection and use of data and knowledge and sharing e.g. Use data to assist early warning system, traffic, and other departments.
- More detailed engagements are required with all relevant actors including high-ranking officials and the general public.

###### Actions/targets for Durban:

1. Target increasing planning capacity of city planners to accommodate more integrated urban planning and bridging the gap between planning and implementation. E.g. target capacity building or skills/knowledge transfer to planning units of respective implementing departments.
2. Enhancing modelling and forecasting capabilities of the municipality through knowledge transfer and other types of support.
3. Promote centralised data management for more efficient and integrated data service provision in the city, e.g. update of central GIS system, or traffic flow or use of public space etc.
4. Elevate projects with many interested/affected actors to a strategic level to foster further integration and to enable more effective use of resources, setting or linking common strategic targets for integrating governance and reporting and identifying role players and drivers.

###### Specific tasks:

1. Support training of urban planners in the city related to climate change and integrated urban development; integrated planning etc.
2. Support skills/knowledge transfer through learning from best practice through CFCC climate proof urban development approach, other tools, methods instruments, Urban Design Lab.
3. Identify geographical area for support to test and practice integrated planning methods.



## Action plans for activities in the CFCC partner cities and the German and Swedish cities

### Group Santiago de Chile

Share lessons learned at the Dialogue Forum in Chennai with others in Chile:

1. Send a summary to the other departments
2. Collective presentation from both pilots to other key actors
3. Invite to a workshop in Matadero to open a talk
4. Engage citizens in early participation

Strengthen exchange: Climate Resilience Implementation Plan sharing experiences with the Providencia team from Durban:

1. Studying the material
2. Plan a connection among Urban Planning & Environment Department
3. Plan a Skype exchange

Propose an exchange with Malmö about environment to build a network with Providencia:

1. Connect a key actor from environment + urban + Malmö
2. Proposed fixed exchanges

Develop the INSEK<sup>1</sup> (Integrated Urban Development Concept) process in Providencia from the experience of Leipzig:

1. Develop the design of the strategy
2. Fix a Skype for exchange with representative of City of Leipzig (Mary Uhlig)

Replicate the methodology on INSEK in 5 other regions under national programme on Urban Regeneration:

1. Develop the design of the strategy on INSEK for Matadero
2. Develop a workshop for the 5 regions

Specific tasks:

1. Support training of urban planners in the city related to climate change and integrated urban development; integrated planning etc.
2. Support skills/knowledge transfer through learning from best practice through CFCC climate proof urban development approach, other tools, methods instruments, Urban Design Lab.
3. Identify geographical area for support to test and practice integrated planning methods.

### Group Chennai

Learning from partner cities:

1. Malmo: Cloudburst strategy can be effective
2. Munich: Greening Plan can provide some valuable insights into Chennai's initiative to improve green cover

Buckingham Canal:

1. Breakdown big "issues" into community-led micro projects that are in line with the larger goal. Micro-projects shouldn't contradict each other
2. More clarity and optimism on the 'Eyes on the Canal' Project
3. New ideas for the Buckingham canal project

Inspiration:

1. Start somewhere (even if it is only a small step but start)
2. "To inspire and be inspired" is the answer to make liveable cities

<sup>1</sup> INSEK in German: Integriertes Stadtentwicklungskonzept



### Group German and Swedish Cities

#### Networking in the future:

1. Find ways of networking in the future, e.g. CIM<sup>2</sup> in Chile with Leipzig, Santiago
2. Contact people that I met in this forum again to prepare meetings
3. Continue with Indian component
4. Concrete action: Eat more vegan food

#### Action:

1. Thinking on how to use the implementation on complex projects
2. Try to apply the 4 Fields Of Action on my project about youth participation

#### Sourcebook and colleagues / report back:

1. Present the forum and CFCC to my colleagues: inspire, connect, discuss potential
2. Present Sourcebook and CFCC project to my colleagues
3. Continue with Sourcebook
4. Report to my colleagues in the environmental department

### Box 7: Feedback for Chennai Dialogue Forum 2018

#### Feedback from participants on their individual learning throughout the Dialogue Forum

- New ways of communication are needed, it needs to be targeted and speak to emotions and minds
- Networking can be useful to adopt other experiences
- Motivate and "infect" more people at home
- The importance of listening to allow my perspective to change
- Capacity Building with more robustness, sometimes to high level. Engage with relevant people.
- It is critical for urban practitioners to understand their cities not only from a technical perspective, but to also to use their 5 senses as a tool of analysis and generate solutions that have positive climate change outcomes
- Public participation is important in addressing the needs of people
- Solid data is important! Involve scientific community
- Let's start - even if the need for change is overwhelming
- There is room to move away from overly technical analysis or over-elaboration and focus on impact. For this communication and understanding of multiple viewpoints and interests is instrumental in making solutions.
- The 4 Fields of Action are a good technique to help cities determine which climate actions to take first
- Climate-proof Urban Development Approach
  - Clearer guidance required
  - Make it more attractive to use
- The economy of Climate Change is like multiple actions of small ideas for big solutions
- Make climate-proof measures the easiest option for all stakeholders to use
- Climate-proofing is a process that takes time and needs the involvement of all cities
- Anything is possible! The Eco park - from dumpsite to bio diverse green area in just 15 years
- It needs communication and leadership to continue the process. The CFCC Sourcebook might support.

<sup>2</sup> CIM in German: Centrum für internationale Migration und Entwicklung



## Closing Address by Mr. Thomas Haberland, Policy Officer, Urban Development Policy, German Ministry of the Interior, Building and Community

Before Mr. Thomas Haberland addressed the audience with some remarks on his experience during the workshop days that he could attend, he received particular acknowledgements for his time and willingness to participate in this Dialogue Forum for several days and for his deep interest in getting to know the project at such a detailed level. In his address, Mr. Haberland expressed that he experiences it as very helpful for his work at the national level to see the work in action. Referring to Chennai's challenges in dealing with enormously high dwelling density, he emphasized the importance of developing long-term visions in city planning and connecting them with well-defined indicators, methods and instruments to improve the quality of living on the ground. He encouraged all participants from the partner cities to be visionary and to transmit strategies to concrete outcomes in their own cities. Mr. Haberland pointed out the combination of climate change and spatial planning and how urban development

Image 50: Mr. Thomas Haberland



influences societies. “In our partner cities, we all have our own tasks and we cannot do it alone, but need partners.”

## Cities Fit for the Future – The Way Forward

The third Dialogue Forum concluded the series of two Dialogue Forums that had started in February 2017 in Durban, South Africa and September 2017 in Santiago de Chile. Since the start of the series, the Forums have evolved in terms of content and organisation. However, they have kept the logic of connecting the participants, creating new ideas and committing to action on climate-proof urban development. The field trips have been an important element throughout to provide the Forum participants with a tangible approach to the situation in the respective partner city. The “Eyes on the Canal” walk culminated the field trip exposures by inviting the participants to fully dive into that particular environment. The input and analysis that the participants have provided is taken up by the CFCC project team and will be part of the final report to the government stakeholders on the Buckingham Canal.

The CFCC project has started in November 2015 and will end in June 2019. A final event of the CFCC project will take place in May 2019 in Germany.

In early 2019, the CFCC Sourcebook and its Climate-Proof Urban Development Approach will be finalised and published as an e-paper. All participants will be invited to share the Sourcebook among their colleagues and wider network to distribute inspiring ideas on climate-proof urban development. The intention is to engage more cities in integrated planning and to pave the way for a future of cities fit for climate change.

**Box 8: Results of the Buckingham Canal ideas competition**

**What happened to the Buckingham Canal after the Dialogue Forum?**

The open ideas competition titled 'Reimagining Chennai's Buckingham Canal' gained a lot of attention as over 80 teams handed in their ideas to revitalise the selected stretch of 3.5 km of the canal. Entries for the competition were received from all over India and even international architecture offices taking part. Twenty eight entries were shortlisted by an eminent international jury. According to the jury, the three winning entries stood out by their vision, innovative ideas, detailed proposals, ecological and climate change concerns as well as social inclusivity. A multi-stakeholder consultation including the government, private companies and civil society organisations is planned to identify implementable parts of the respective approaches and designs of the winning teams. They will be financially supported for three months until February 2019 to develop their ideas and present it to the authorities. The objective is to take up the approaches and designs to the Government and other stakeholders in March-April 2019 for possible implementation and to contribute to the transformation of the City of Chennai into a climate-proof liveable space.

From 21 to 28 October 2018, the 28 shortlisted ideas were displayed through a public exhibition in neighbourhood community halls and railway stations. It has been planned to make this a travelling exhibition to different parts of the city and to private companies located closer to the canal for larger outreach and collective action. (Status November 2018)

**Image 51: Group picture of the participants of the Dialogue Forum, together with the Commissioner and Deputy Commissioner of the Greater Chennai Corporation**





# 5. Annexes

City Poster Presentations (next pages 34–41)

## Grey to Green for a Climate Resilient City – Developing a Ward-Level Integrated Greening Plan through Public Participation

### Summary

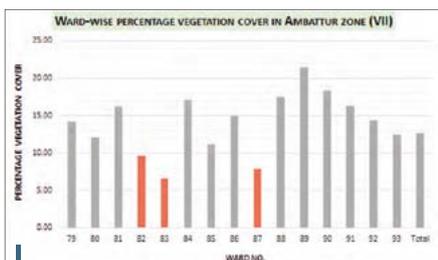
- Preparation of a greening plan for Ward 82 in order to facilitate implementation of the city-wide greening strategy of Chennai. Creation of a collective vision for improved green spaces meeting the community needs.
- Establishing of a good practice for implementing the greening plan in order to serve as a reference point for replication across the city of Chennai.
- Enhancing civic engagement in planning and caring for these 'socio-ecological spaces'. Integration of the green spaces into the urban fabric of the ward including pavements, medians, bridges, flyovers, bus shelters, private spaces, etc.

### General

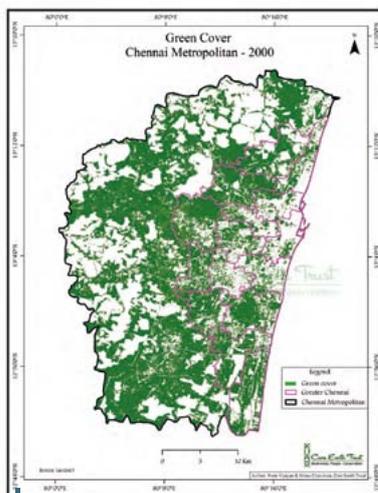
<b>Location</b>	Chennai, India
<b>Background/Introduction</b>	Chennai is a coastal megacity and located on the eastern coast of the Indian peninsula, facing the Bay of Bengal. It is a large metropolitan city and presently one of the most densely populated cities in India. The urban green cover is a valuable asset and key element of the city infrastructure, which helps to improve livability and contributes to the creation of a climate resilient city.
<b>Severe Climate Impacts</b>	Studies project that the average changes of maximum and minimum temperatures are expected to increase by 2.9°C and 3.3°C respectively by the end of the century. Additionally, the low-lying surface and close proximity to the sea makes Chennai vulnerable to flooding and waterlogging in many parts throughout the city after sporadic heavy rainfall events. Furthermore, water scarcity is also a climatic challenge Chennai is dealing with owing to the changing frequency and severity of droughts.
<b>Inhabitants</b>	Greater Chennai Corporation: 7.1 Million Ambattur zone VII: 509,460 Ward 82 in Ambattur zone: 43,279
<b>Responsible Bodies</b>	Care Earth Trust, Chennai, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Greater Chennai Corporation
<b>Status</b>	Ongoing
<b>Duration</b>	4 months; beginning August, 2018

### Context

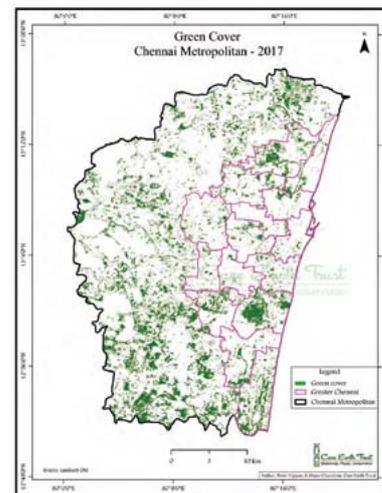
Located on the country's eastern coast, Chennai is at risk of extreme weather events including droughts, floods and storms accelerated by climate change. Further, climate change impacts associated with increased temperatures are exacerbated in urban areas like Chennai due to the urban heat island effect. Over the years, Chennai city has been losing its tree cover significantly. This can be explained due to rapid urban growth and poorly planned expansion. Moreover, in December 2016, the tropical cyclone *Vardah* resulted in the loss of numerous trees in the city. This decrease in Chennai's green cover has drastically reduced the city's ability to deal with extreme weather events. Improving urban green spaces is a low-cost local strategy that can easily be implemented in cities like Chennai as it is low-scale and only needs limited institutional support. Urban green spaces contribute to the reduction of greenhouse gas emissions and offer several co-benefits such as reducing temperatures, improving air quality, capturing rainwater and replenishing groundwater. Chennai is a large metropolitan city in India comprising 15 zones and 200 wards. Presently, an Integrated Greening Plan for ward 82 in Ambattur zone (VII) is being developed. Ward 82 is a typical area in north-western Chennai, which has undergone large and rapid losses of green cover during the past few years among other things due to the construction of new housing and industrial development. The zone also has a number of waterbodies, and thus the presence of good ground cover would help in reducing soil erosion and improving the quality of runoff to these waterbodies.



Ward-wise percentage vegetation cover in Ambattur zone. Source: Care Earth Trust



Green cover in Chennai Metropolitan Area for the year 2000 and 2017 (Care Earth Trust)



The Ward Level Integrated Greening Plan will be prepared by Care Earth Trust, Chennai, in collaboration with GIZ under the guidance of the Greater Chennai Corporation (GCC). The plan highlights the need to involve communities in creating a shared vision of their living environment including green spaces. It engages multiple stakeholders such as local residents, local businesses and several government departments (including Public Works, Highways, and Metro Water etc.). The aim of the plan is to raise public awareness of the importance of urban green spaces.



One of the possible design interventions for urban greening and stormwater management. Source: Care Earth Trust

### Relation to the Sourcebook's Fields of Action



### Expected Outcome

The expected project outcomes include the following:

- Different plans showing the current situation, for example uses and functions, property situation, sealed/covered surfaces, existing green spaces, street grid, basic infrastructure, and so on.
- Green plan 1:10,000 (concept).
- Up to five exemplary focus areas with detailed spatial planning, for example, for overcoming identified heat islands, or main traffic island areas, scale 1:1000 (1:500).
- Planting concept of trees and trees matrix.
- Ensuring a participatory process, involving the local communities and relevant stakeholders at different levels of the process; documenting the participation process for multiplication purpose.
- Preparation of geo-referenced plans that can be used in public GIS systems/open data applications.
- GCC has expressed commitment to multiply this approach, once successfully implemented in Ward 82.

### Process

The aim of the plan is to enhance green cover and urban storm water management in Ward 82. This should be realised by following an integrated urban development approach, analysing the different sectors that are directly and indirectly involved. It is important

that the plan is aligned to the city's development policies and strategies to ensure long-term perspective and planning. When developing the plan, the needs and priorities of the community are key. It is envisaged that the Ward-Level Integrated Greening Plan will form the basis for developing a citywide urban greening strategy. A detailed plan would enable GCC to invest in target group oriented, relevant spaces. Furthermore, the successful project implementation in the Ward would encourage and convince the GCC of the benefits of scaling up the project in other wards of Chennai.

The development of an integrated urban greening plan includes the following components:

- Surveying and compiling existing data. Mapping and rapid assessment of existing and potential public/green urban spaces for interventions aimed towards greening and reducing heat islands, and acting as natural storm-water catchments and augmenting the ground water.
- Concentrating on exemplary focus areas in the Ward and developing an integrated greening plan in cooperation with stakeholders including local communities.
- Presentation of results and dissemination to the public and city administration.

### Take-Aways

Although the project is at a nascent stage, a few essential aspects can be highlighted:

- Citizen participation is crucial when designing and maintaining urban green spaces.
- A detailed integrated plan of green infrastructure should include permeable surfaces, green roofs, rain gardens, street trees and so on.
- Starting to plan and implement a small-scale project (ward-level) can be useful as a testing ground before upscaling a project.



Potential traffic median in Ambattur for greening. Source: Care Earth Trust



Street view in Ambattur. Source: Care Earth Trust

## Climate Resilience Implementation Plan for eThekweni's Spatial Development Framework

### Summary

1. The Climate Resilience Implementation Plan (CRIP) is a means for integrating the Durban Climate Change Strategy (DCCS) and the city's Spatial Development Framework (SDF) through an itemised action plan.
2. The CRIP reflects climate resilient actions that are spatially relevant across ten sector themes. Those actions need to be managed and implemented by the sector departments.
3. This encourages more collaboration between various departments and actors and requires dealing with climate risk in a more proactive and productive manner.

### General

<b>Location</b>	eThekweni Metropolitan Municipality (City of Durban), South Africa
<b>Background/ Introduction</b>	Bound by the Indian Ocean and located in the Province of KwaZulu Natal, the eThekweni Metropolitan Municipality is the third largest city in South Africa. The Municipality spans an area of approximately 2555 km <sup>2</sup> and consists of a diverse society which faces various social, economic, environmental and governance challenges.
<b>Severe Climate Impacts</b>	<ul style="list-style-type: none"> <li>• Prone to flooding in low-lying/coastal areas with severe flood events in 2008 and 2017</li> <li>• Droughts</li> <li>• Sea-level rise and storm surges damage coastal infrastructure and assets</li> <li>• Urban heat islands in densely populated areas</li> <li>• Poor air quality and pollution in the industrial basin in the south of Durban</li> </ul>
<b>Inhabitants</b>	eThekweni Municipal area – 3.5 Million (2011 consensus)
<b>Responsible Body</b>	Department of Development, Planning, Environment & Management Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
<b>Status</b>	Realised
<b>Duration</b>	2016-2018

### Context

The eThekweni Municipality has been a leader for local climate change response in South Africa and globally. However, this has not always resulted in visible actions. Firstly, even though climate change integration is visible at strategic planning levels this is not always easily translated to operations and projects. Secondly, climate risk has not been fully integrated into sector risk profiles and subsequently not included in spatial plans. Thirdly, the development context of the city, with its high levels of poverty, informality and pressure for basic services across urban, peri-urban, and rural areas complicates governance requirements. Therefore, the municipality needs to look at urban planning and development in an integrated way by adding a climate lens to its development perspective. The SDF is the primary spatial response to the development context, needs and development vision of the municipality. Therefore, it is an important tool for managing urban growth and promoting integrated, inclusive, compact and resilient development. The CRIP provides a starting point for integrating climate sensitive spatial planning into the SDF.

### Relation to the Sourcebook's Fields of Action



Governance



Policies and Strategies



Measures



Capacity Development



Due to its location the city is prone to climate change in lower coastal areas. Source: Amna Schild



Durban beachfront and "Golden Mile". Source: Helene Epstein

### Process

The development of the CRIP was led by the eThekweni Municipality's Strategic Spatial Planning Branch, together with the Climate Protection Branch and the Energy Office supported by GIZ Cities for Climate Change (CFCC) and local experts. The approach taken to develop the CRIP included the following steps:

1. Review of the SDF to determine the extent and adequacy of existing provisions for climate change.
2. Development of a detailed analysis report that considered the city's strategic climate change plans and the implications for spatial planning.
3. Consultations with key municipal stakeholders and interactive workshop sessions. Stakeholders included municipal officials representing Spatial Planning and Land Use Management; Coastal, Storm Water and Catchment Management; Water and Sanitation; Environmental Planning and Climate Protection, the Energy Office and Transport sectors; and others.
4. Specific spatial responses were identified according to DCCS themes.
5. Recommendations were included in the SDF and its respective lower order plans and sector proposals.

The process was guided by a Project Steering Committee made up of the relevant stakeholders and governed by the lead departments within the municipality; namely, the Strategic Spatial Planning Branch (responsible for SDF), the Energy Office and the Climate Protection Branch (responsible for the coordination of climate change planning for the City including the DCCS); CFCC and was supported technically by a local expert service provider. The Committee met at various intervals to evaluate outputs and project milestones to improve or change direction where required. This consensus building spirit is common in South African government organisations.

### Outcome

The result of the development process was an Analysis Report followed by the Final Recommendations to be included in the SDF along with a list of sector-based implementation actions and projects. Narratives for the respective recommendations were written into the sector chapters in the SDF and the itemised list of actions and projects was attached to the SDF as an annexure. The final SDF for the 2017/2018 financial year containing the climate relevant editions was approved by the City Council in May 2017, and subsequently gazetted. This provided the official mandate for relevant departments to implement or act accordingly to address climate change related risks faced by the Municipality. Updates to the list of projects are undertaken as part of the annual review of the city's SDF.

In this way the CRIP can contribute to the spatial resilience and spatial transformation of the city. In some cases the actions of the CRIP influence and create the need to modify plans, in others the actions complement existing plans and initiatives. This encourages more collaboration between various city departments and actors. Furthermore, it requires



Kava Masbu Township in the North of Durban. Source: Amna Schild

dealing with climate risk in a more proactive and productive manner. To further enhance collaboration, implementing the CRIP is co-ordinated through the city's established climate change governance structures developed as part of its DCCS implementation framework. Included in this governance structure is the Municipal Climate Change Committee chaired by the eThekweni mayor, the DCCS Technical Task team (strategic) and the DCCS Sub-Committee (operational).

Examples of such actions include:

- Identification of open space areas that provide flood mitigation services.
- Update land use schemes to accommodate renewable energy installations.
- Amend land use schemes to incorporate mitigation measures for buildings to respond to increasing heat.
- Establish a working group to identify areas to which coastal infrastructure at risk could be relocated in the long term.

A further consultative workshop was held with key stakeholders to monitor implementation progress and identify any barriers and complementing actions to support implementation. A number of additional bilateral meetings were held with key sector departments to facilitate the implementation of the recommended actions. Implementation of the CRIP is an on-going process coordinated through the Strategic Spatial Planning Branch and supported by the Technical Task Team and its sub-structures as part of the implementation of the Durban Climate Change Strategy.

### Take-Aways

- Ensuring momentum of the project through collective responsibility for implementation and avoiding changes in the core team. Champions are needed in each sector of the municipality to drive climate change related proposals and actions.
- Upfront buy-in and consensus needs to be built between planning and implementing departments. Understanding the lead department and building support mechanisms around the lead department are essential for good cooperation.
- Creation of relevant steering bodies is important to continue support and guidance to implementation while this should be streamlined into existing governing bodies to avoid overburdening actors.
- Financing of climate actions through city budgets needs to consider an integrated approach. Smart actions have multiple co-benefits or the ability to leverage impact; in contrast to actions that compete for resources.
- Actions need to be based on evidence. Strong motivations are required for decision-making processes. Provisions need to be made for prioritisation of actions and subsequent modification or change of direction where relevant.
- Practitioners need specific implementation tools to help them translate the actions into tangible outcomes, for example changes to land use planning schemes and precinct plans.
- Solutions for climate change need to address multiple issues for a city and cannot exclusively respond to climate risk.



Informal settlements on Kennedy Road, Durban. Source: Johnny Miller



## Integrated climate-proof urban development The cases of Providencia and Matadero

### Summary

1. Application of the Compact City guiding urban concept, meaning a "city of short distances" with mixed-use development with a strong focus of climate-proof aspects
2. Two pilots are steered by different government levels: Providencia by the municipal government with a strong leadership of the Mayor; Matadero by the Ministry of Housing and Urbanism in coordination with the Santiago municipality
3. Successful replication of the City of Leipzig's Integrated Urban Development Concept, further replication of the pilots in Chile are envisaged

### General

Location	Santiago de Chile, Chile
Background/ Introduction	Santiago is the capital and biggest city of Chile. It lies in a valley flanked by the Andes to the east and the Chilean Coastal Range to the west.
Severe Climate Impacts	Water scarcity (frequent water cuts due to drought events) Heat island effect (particularly in central and southern areas of the city, including the area of Matadero) Flooding (recurrent floods at different areas of the city, including the area of Matadero)
Inhabitants	142,079 (Mun. of Providencia); 404,495 (Mun. of Santiago); 7,036,792 (metropolitan region)
Responsible Body	Municipality of Providencia and Matadero, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Status	Strategic definition in progress
Duration	1 year: starting in May 2018, until the approval of the strategies in May 2019.

### Context

Integrated urban development approaches are new in Chilean cities. This has led in many cases to a haphazard urban planning, which is what these pilot projects aim to tackle in the first place.

Providencia is a delimited area to carry out the pilot project, crossed by two parallel commercial avenues and counts with shopping streets and passages connecting them. It also has many educational institutions and high-density housing and is a main transportation axis suffering from frequent traffic jams.

On the other hand, Matadero is located within the municipality of Santiago, a different municipality in central Santiago metropolitan area. The name of the neighbourhood means "slaughterhouse" in Spanish, corresponding to its main economic activity. There are conflicts between housing, commerce and heritage, therefore achieving harmony on mixed-use development is a challenge to be solved by this pilot. In the last decade, there have been conflicts of interest between residents and businesses, resulting in many neighbours moving to other areas. Matadero is near the functional centre of Santiago and is well connected to public transport, making it an area whose housing development would offer a liveable urban standard.

*Providencia Plan Centro* is led by the municipal government of Providencia with a strong leadership of the Mayor. In the case of Matadero, the Ministry of Housing and Urbanism is implementing a programme in coordination with the Santiago municipal administration. Both pilots bring multiple local stakeholders together, mainly local businesses and residents, but also local practitioners from Leipzig, Germany.

### Relation to the Sourcebook's Fields of Action



Governance



Policies and Strategies



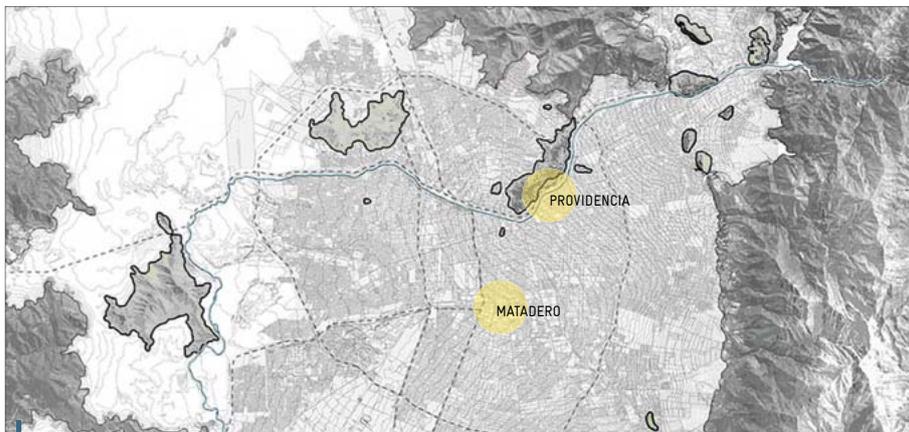
Measures



Capacity Development



Aerial view of the Providencia project area next to Mapocho river. © Providencia municipality



Map of Santiago in which the intervention areas of Matadero and Providencia projects are indicated. © Santiago municipality



Aerial view of Santiago downtown. © Santiago municipality

### Process

Providencia is following the criteria of the Compact City guiding urban concept, meaning a "city of short distances" with mixed-use development. Currently, the selected area is the most densified and diverse within the Municipality. The aim is to enhance commercial development, widening sidewalks, creating bike paths and reducing the space dedicated to private automobiles.

In the case of Matadero, the ministry aims at establishing an urban regeneration program of city centres with historic value across the country, using Matadero as one pilot, to be replicated in other five cities. The project aims also at reinforcing the mixed-use development approach and "city of short distances", while building new housing following climate friendly criteria, as well as renewing the sewage system and creating a new system of waste collection.

GIZ's Cities Fit for Climate Change (CFCC) project offered to support the process by providing training on integrated urban planning and other capacity building. Until August 2018, the process in both cases has seen the design of a working plan, a geographic delimitation of the territory where the intervention is implemented, as well as a comprehensive mapping of the areas including information about all relevant aspects for an integrated strategy: transport, economy, housing, environment,



The diversity of Matadero neighborhood in front of the Victor Manuel market. © Santiago municipality

etc. During this time, CFCC has provided training to technical working groups of the leading institutions carried out by urban planning consultants. The Chilean team of CFCC is developing a series of workshops using the example of Leipzig's Integrated Urban Development Concept "Leipzig 2030" to define the working groups and their communication structures. In addition, technical staff of Providencia have visited Leipzig to learn on sustainable mobility through trainings.

### Outcome

The main outcome until August 2018 is that for the first time in Chile urban planning is led in an integrated and proactive manner, rather than reacting to existing problems. The pilot projects have also promoted the debate on the need of having implementation strategies to develop an integrated urban development. In addition, GIZ is developing a toolbox for integrated climate-proof urban development which aims to facilitate this process. Also, in both pilot projects territorial information was made accessible through comprehensive maps for practitioners to enhance the efficiency of planning decisions. The design of the strategy and concept will be developed after the Cities Fit for Climate Change Dialogue Forum in Chennai from August 2018 onwards. Lastly, it is expected that the technical staff of the municipality and ministry will become replicant agents for further similar projects. Concretely, in the case of Matadero, the ministry aims to replicate the experience in further five Chilean regions.

### Take-Aways

- The political engagement at the national and local level was crucial for the successful development of the pilot projects. The top-down leadership steered the practitioners engagement setting by setting priorities in a multisectorial planning process.
- The definition of a step by step methodology that covers the whole picture of the integrated climate-proof planning process engaged practitioners, making it easier for them to know what they can contribute and when their contribution is necessary. The neutral platform proposed by CFCC facilitates the practitioner's exchange, contributing to the capacity building.
- "The real laboratory" approach facilitates the practitioners understanding of the need on working in a multisectorial coordination. On the one hand, once the existing portfolio is shared, practitioners identify their contribution to the process. On the other hand, the urban development projects portfolio has allocated funds, creating a possibility to incorporate climate change criteria at an early stage.
- The strategic planning helps to overcome political time frames due to the commitment of a wider group of actors that agree on a vision for the city's development, making a sustainable medium and long-term city development possible.



Cultural events in Matadero neighborhood. © Santiago municipality

On behalf of:

## Leipzig 2030 Integrated Urban Development Concept

### Summary

1. "Leipzig 2030" is the first cross-sectoral concept dealing with the constant growth of the city replacing the former concept "Leipzig 2020".
2. It has been developed based on an intensive participatory process within municipal departments and including civil society.
3. While addressing the new challenges of the city, it provides an overarching set of goals and spatial strategies to foster sustainable growth.

### General

Location	Leipzig, Germany
Background/ Introduction	After years of decline and slow consolidation during the decades succeeding the socialist system, Leipzig has now turned into a constantly growing city. The city is situated at the confluence of the White Elster, Pleisse and Parthe rivers in the mostly flat Saxon Lowland.
Severe Climate Impacts	Floods (last severe flood in 2013) Heatwaves (2015 recorded 21 days with more than 30°C, including days reaching 40°C)
Inhabitants	590,337
Responsible Body	City Planning Office, Office for Urban Renewal and Residential Funding, Mayor's Department
Status	Ongoing (elaboration phase completed)
Duration	2015–2018 (elaboration); until 2030 (implementation)



The city of Leipzig has a compact urban structure with functionally mixed buildings and green areas. Source: Shutterstock

### Context

After decades of demographic shrinkage, Leipzig's population started to increase again in 2002. This trend has accelerated since 2011, adding more than 10,000 new residents yearly. This vast and rapid growth made the framework conditions of the existing Integrated Urban Development Concept ("Leipzig 2020") obsolete, requiring a readjustment to respond to the new challenges. These include the increasing concern for climate change mitigation, the rising demands for jobs, affordable housing, the provision of enough social infrastructure and a sustainable traffic network, as well as the preservation of green and open areas. Consequently, the competition around available space increases and a balance between desirable limits of densification and the aim of avoiding new urban sprawl must be found. In addition, climate change induced weather events, such as overheated areas or increased recurrence of storm flooding events, are among the challenges that the concept needs to tackle.

In elaborating the "Leipzig 2030" concept, various units of the city administration, municipal utility companies, private companies, civil society organisations and citizens have participated.

The concept primarily provides guidance for collaboration within and for the actions of the city administration itself; it also serves as an orientation for public and privately-owned companies, as well as for social stakeholders and citizens. The concept's elaboration process has been financed by the federal and state budgets in the frame of the "Stadumbau Ost" ("City Reconstruction of Eastern German Cities") programme, which supports urban redevelopment in eastern German states. However, the concept's implementation will mainly be financed from the municipal budget except, for example, for measures in demarcated areas classified as having high socio-economic needs, which could receive EU, federal or state funding.

### Relation to the Sourcebook's Fields of Action



Governance



Policies and Strategies



Measures



Capacity Development

### Process

The concept's elaboration has been a discursive process, with debate and cooperation among the involved actors as core elements. The process has been led by the City Planning Office, which is part of the Department of Urban Development and Construction, and was supported by the Mayor's Department and the Office for Urban Renewal. More than 60 representatives of 20 municipal units took part. The integrated approach provides the advantage for the topics of climate change mitigation and adaptation that interactions – both synergies and conflicts – among topics, such as housing, traffic, open space, environment and commercial development, are included in the strategy at an early stage, and considered in the subsequent planning.

The concept's elaboration evolved through three phases:

1. Evaluation: all citizens were invited to participate in a public kick-off meeting through announcements in the local media. The meeting was opened by the mayor and presented the assessment results of the previous concept's implementation. After that, the 260 participating citizens discussed their opinions and wishes for the city's development until 2030 in small groups, identifying priority issues.



Participatory Process: Kick-off meeting. Source: City of Leipzig

2. Core definition: the priority issues were incorporated into monthly, cross-departmental topic-specific working groups (for example, green space and environment, climate change mitigation and technical infrastructure, housing, and so on) which defined the concept's objectives by topic. In interdisciplinary workshops representatives of the topic-specific working groups debated cross-cutting issues (for example, inclusion and equality of opportunities, digitization, health, and so on) and generated a city-wide spatial strategy for urban development. In addition, a "Strategy Forum" with the participation of the heads of all offices with spatial planning duties, tied the working process to the higher hierarchical levels.

A parallel public participation stream included a series of workshop discussions to discuss in depth the issues deriving from the kick-off meeting and the working groups, involving representatives of invited organisations (for example, nature protection associations, public space supporters, and so on), municipal utility companies (energy provider, energy and heating networks manager, water utility, and so on) and private companies affected by urban development issues (construction, real estate, and so on). Lastly, "District Forums" took place in each of four large city divisions to discuss the upcoming tasks at neighbourhood-level with the participation of pre-selected civil society representatives.

### Leipzig ensures quality of life:

- Balance between densification and open space
- Quality of public space and built environment
- Sustainable mobility
- Preventive strategy for climate protection and energy saving
- Maintenance and improvement of environmental quality
- District-related supply of cultural and sportive offers as well as green spaces

### Leipzig creates social stability:

- Equal opportunities in an inclusive city
- Collaborative district development
- Affordable housing
- Future-oriented offers of child care and education
- Lifelong learning
- Secure and safe city

Overarching set of goals INSEK Leipzig 2013. Source: City of Leipzig.

3. Drafting: all citizens were invited to participate in a public meeting through announcements in the local media. It presented the basic features of the results and 250 citizens had the chance to discuss these with representatives of the city administration and express their views. In addition, an existing online platform was used and "Neighbourhood Forums" took place in so called focus neighbourhoods to allow citizens to provide adjustments to the draft document.

### Outcome

Leipzig has achieved a strategy to steer the integrated urban development until 2030, including the drafting of specific strategies for the 63 neighbourhoods and instructions to define the implementation measures. In addition, the participatory culture across the city administration's departments and external stakeholders has been enhanced. Examples of specific climate-related objectives, which are included in the overall concept, are to pursue a preventive climate and energy strategy and reduce greenhouse gas emissions to 2.5 tons of CO<sub>2</sub> per inhabitant per year. By integrating the topics of energy, climate change mitigation and adaptation into an overall strategy, synergies and conflicts with other topics such as housing, transport, open space, environment or commercial development have been considered at an early stage.

After the concept has been passed by the city council, subsequent measures based on this urban development approach will be approved in the coming years. It thus gives guidance mainly to the city administration and the political representatives, but also provides orientation for stakeholders and civil society. In future phases the relevant municipal units – coordinated by the City Planning Office – will monitor the implementation of measures and the results will be published in reports.

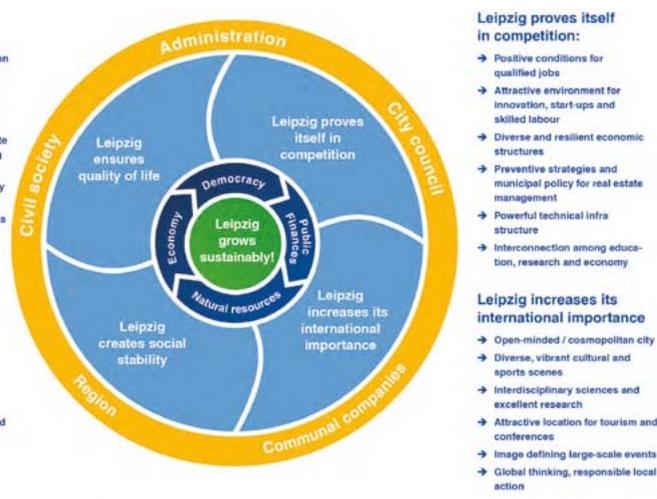
### Take-Aways

The most important lesson to be taken from Leipzig's approach to foster integrated, sustainable urban development, is that an Integrated Urban Development Concept is not to be seen as a static plan but as a continuous process. This includes the following necessities:

- The maintenance of the culture of cross-sectoral cooperation among different units and the provision of participation opportunities for civil society around all future-related questions is essential to realise the targeted development.
- A sustainability-oriented urban development monitoring system adapted to the Sustainable Development Goals can act as a basis to determine adjustments and further development according to the real progress and the changing needs for action.



Sustainable energy supply systems on an existing building: The solar system on the historically listed "Kathedrale" has a nominal power of 260 kWp and yearly avoids approx. 170t of CO<sub>2</sub>. Source: LVV



On behalf of:



Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

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## Forum on Climate Change Mitigation and Sustainable Development

### Summary

1. The Forum on Climate Change Mitigation and Sustainable Development is one of the eight expert forums of the Nuremberg Metropolitan Region.
2. It extends from the local up to the regional level, covering an area of 21,785 km<sup>2</sup>, treating rural-urban cooperation as an integral part of its activities.
3. The Forum brings together administrative, economic and scientific actors to strengthen the region's perspective on climate and sustainability issues, with a special focus on energy and climate mitigation.

### General

Location	Nuremberg, Germany
Background/Introduction	Nuremberg is located in northern Bavaria on the river Pegnitz and is the second largest city of the state.
Severe Climate Impacts	Floods (last severe flood in the city in 1995 and another one affecting the region in 2013) Storms (on August 28th, 2006 a strong storm caused serious damage in buildings)
Inhabitants	511,628 (city), 3,560,040 (metropolitan region)
Responsible Body	Nuremberg Metropolitan Region
Status	Ongoing
Duration	Since 2010

### Context

The Nuremberg Metropolitan Region is a voluntary association of municipal and district-level governments and economic actors across administrative borders, encompassing most of northern Bavaria around the city of Nuremberg. Specifically, the Forum on Climate Change Mitigation and Sustainable Development includes more than 90 actors. These actors are mostly municipal and district-level administrations, as well as actors from the local and regional economy and from science, particularly in the energy and renewable energy sectors. These institutions are represented in the Forum by mayors, deputy mayors, district administrators and administrative experts, as well as business leaders and scientists.

The target groups of the Forum are the municipal and district administrations themselves, aiming at enhancing their capacity to integrate mitigation aspects into their work. In addition, the Forum targets economic and industrial actors and households as agents with great potential to improve their energy use habits.

The Forum is mainly financed by the institution which the Managing Director works for, at present the City of Nuremberg. In the past it was financed by the local bank, the Volksbank Raiffeisenbank Nürnberg.

### Relation to the Sourcebook's Fields of Action



Governance



Policies and Strategies



Measures



Capacity Development



Boulevard in the city of Nuremberg. Photo: © Werner Geim

### Process

In 2010, the Metropolitan Region's Council Board established the Forum on Climate Change Mitigation and Sustainable Development and until today serves as one of its main actors. The Forum is constituted by three leading roles: a political spokesperson (Mayor of the City of Neumarkt), a technical spokesperson (Head of section Business Development and Investments at N-ERGIE electricity supplier company) and a managing director (Head of the Environment and Health Department of the City of Nuremberg).

An energy evaluation takes place approximately every three years, with the aim of measuring the energy use and the CO<sub>2</sub> emissions in the metropolitan region, and projecting future trends. The results of these periodic evaluations serve as key data for the Forum and its initiative groups to plan their work accordingly. The Economic Department of the City of Nuremberg commissioned a local energy sector association to undertake the 2010 evaluation. The 2013 follow up was commissioned by the Environment and Health Department and done by a municipal energy consulting firm.

Since its establishment, the Forum has met quarterly, each time in a different city in the region. At the meetings the participants discuss the strategic and financial issues relating to the Forum's activities. Since its foundation the Forum has been working on the following goals:

- Delivering a local contribution to global mitigation efforts (implementing the climate pact of the metropolitan region),
- Promoting urban-rural cooperation in the Nuremberg Metropolitan Region,
- Exchanging best practices,
- Improving the communication of mitigation competence both internally and externally.

To pursue the realisation of its goals the Forum has created seven initiative groups. Their main task is to develop strategies and plans which are to be implemented by private entities or municipal administrations of the Nuremberg Metropolitan Region in a coordinated manner. Each of the initiative groups focuses on a different topic:

1. Energy efficiency in the economy
2. Sustainable real estate
3. Regenerative energies – biomass
4. Combined heat (and cooling) and power
5. Housing and energy
6. Fair Metropolitan Region Nuremberg (fair trade initiative)
7. Mitigation managers

The technology-oriented initiative groups (the first five on the list) are coordinated by the association *ENERGIERegion*; the group „Fair Metropolitan Region Nuremberg“ is coordinated by a city councillor of the City of Schwabach and a representative local association promoting international cooperation; and lastly, the group “Mitigation managers” is coordinated by the climate change mitigation officer of the City of Nuremberg. The Forum's members participate in the overall Forum as well as in the initiative groups relevant to their area of expertise.

### Outcome

The main product developed by the overall Forum is an Agreement on Climate Change and Urban Development (“Klimapakt”). It establishes a list of guiding objectives with a strong focus on energy issues, but also including topics of other working areas of the Forum, such as sustainable mobility and climate-friendly agriculture. The Forum developed the draft agreement text which was then approved by the Nuremberg Metropolitan Region's Council Board. The first Agreement on Climate Change was developed in 2012 with the main goal of reducing CO<sub>2</sub> emissions for the entire region by up to 80 percent by 2050. In 2017, the Agreement was updated and set an even more ambitious goal: a 95 percent reduction of emissions by 2050.



Vertical greening on a facade. Photo: © Werner Geim

### Take-Aways

- Creating opportunities for exchange and networking is crucial when establishing cross-sectoral and regional working groups
- Peer-to-peer learning and sharing best practices is beneficial when creating a common vision
- Creating trust among stakeholders builds up long-term relationships
- Strong leadership enhances motivation and creates a good basis for setting ambitious goals



View over Nuremberg. Source: City of Nuremberg



„Liebesinsel“ at the river Pegnitz, City of Nuremberg. Photo: © Werner Geim



Playful fountain inviting pedestrians to interact. Photo: © Werner Geim

On behalf of:

## Redevelopment of Neuauubing-Westkreuz: striving towards a sustainable and climate-proof neighbourhood

### Summary

1. The neighbourhood of Neuauubing-Westkreuz is the city's newest re-development area.
2. The renovation project encompasses all economic, social and environmental targets and engages different local actors and citizens, enabling broad participatory decision-making. This neighbourhood is Munich's first re-development area to include integrated energy efficiency targets.
3. The project is supported by the federal urban development program "Soziale Stadt" (in English "Socially Integrated City") under which it is one of the biggest in Germany.

### General

<b>Location</b>	Munich, Germany
<b>Background/ Introduction</b>	Munich is Bavaria's capital and largest city. It is located on the elevated plains of Upper Bavaria in the northern Alpine foothills.
<b>Severe Climate Impacts</b>	Heat-island effect (compared to its rural environment, the city's temperature can be 3-10°C higher)
<b>Inhabitants</b>	1,550,000
<b>Responsible Body</b>	Department of Urban Planning, Unit "Housing and Urban Renewal" of the City of Munich in collaboration with the municipal "Munich Association for Urban Renewal"
<b>Status</b>	Under implementation
<b>Duration</b>	2014-2024

### Context

Neuauubing-Westkreuz is located in the western outskirts of Munich, around 12 km from the city hall. With an area of 350 hectares and a population of 23,000 inhabitants, it is mainly residential. Most of its buildings date back to the 1960s and 1970s and have poor energy standards. Various shopping centres and streets no longer meet today's requirements and have ceased to be attractive and competitive, leading to many shopping spaces being unused. Many streets and public spaces have an old, car-centred design which is not barrier-free and accessible, and are used as parking spaces, or due to their run-down condition are not appealing for residents to use. In some streets, due to the outdated design of the public space, there are conflicts over use between pedestrians and cyclists. Some green areas lack appropriate pathways and cycleways, acting more as barriers between residential areas, rather than as meeting and recreational spaces for residents.

The Munich Association for Urban Renewal is entrusted with implementing projects and measures, as a restructuring agency and trustee of the City of Munich. In addition, there are other city departments, and neighbourhood public and private organisations taking part. The participation of local businesses and residents is an integral part of the decision-making, as they are the main target groups of the redevelopment. The financing is 60% provided by the Federal Government and the Free State of Bavaria under the urban development program "Soziale Stadt" and 40% by the City of Munich. In addition, specific measures are financed by the EU's "2020 Smart City and Community Lighthouse Programme".

### Relation to the Sourcebook's Fields of Action



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View of street with priority for cyclists in Munich. Source: City of Munich, Michael Nagy



Map on the project area of Neuauubing-Westkreuz. Source: City of Munich

### Process

The redevelopment project has been carried out considering economic, environmental and social aspects with a strong focus on participation. Thus, the renewal process promotes an approach of holistic sustainability that integrates climate-proofing measures. The aim of the project is to preserve and upgrade the neighbourhood by strengthening the local economy, improving the supply of green space, the living environment and the public space, such as shopping areas, parks, roads, walkways, cycling lanes and squares. In addition, climate change mitigation and reduction of CO<sub>2</sub> emissions are central aspects of the redevelopment, particularly focusing on the use of renewable energy sources and energy saving, and with the target of making the neighbourhood CO<sub>2</sub> neutral by 2050.

In 2014, the Munich city council formally resolved to establish Neuauubing-Westkreuz as a redevelopment area and decided to use the existing integrated district development concept's targets and measures as the basis for action. The Munich Association for Urban Renewal, commissioned for the implementation, created a Project Group as an on-site committee to discuss and decide on the details of the implementation measures and to serve as a local networking platform. It is made up of citizens, local political representatives, associations and social institutions, as well as municipal departments, and is coordinated by the district management of the Munich Association for Urban Renewal. The aim is to consider and weigh up private and public interests at an early stage by involving all stakeholders. At its regular meetings, the Project Group also decides on applications to a programme for residents to receive funding for projects suggested by them. Citizen participation has also included, for example, asking the opinion of children and youth regarding the upgrading of a playground and a skating area.

Until 2016 the redevelopment project was part of the Federal Urban Development Programme "Aktive Zentren" (in English "Active Centres") and in 2017 it also changed to become part of the "Soziale Stadt" programme (in English "Socially Integrated City"). This has resulted in the possibility of fully financing measures proposed by residents, as well as supporting social and cultural projects. In addition, since 2016 the redevelopment process has been complemented by the so called "Smarter Together" project in the frame of the EU's "2020 Smart City and Community Lighthouse Programme". This project supports measures following a smart city approach supporting both mobility and logistics aspects, such as new energy systems, virtual power plants, specific energy refurbishments, integrated infrastructure and smart data management platforms, distribution stations for cargo, neighbourhood-adapted sharing of economic services, and so on.

### Outcome

Although the project is not yet finished there is already a list of successfully implemented measures. Thanks to the "Smarter Together" project, smart lighting poles have been installed, with LED-lights, movement sensors, WiFi and charging stations for electric vehicles. Also, consultants of the Munich Building Centre, a unit of the municipal Department of Health and Environment, provide a free energy checking and consulting service to residents to carry out an energy refurbishment of their homes. The consulting service analyses the energy consumption of the residential building, evaluate the building's structure, proposes various energy efficiency refurbishment measures and provides information about offers of support schemes. In terms of sustainable energy supply, the district heating network from the nearby geothermal power plant has been expanded and unused rooftops have been activated for solar power generation.

In addition, various commercial centres and shopping areas have been refurbished and upgraded, several streets and public spaces have gained in accessibility and now feature more attractive and greener landscaping, as well as walkways and cycleways that have been upgraded. Also, a community horticultural space has been created in the central green corridor of the neighbourhood, green areas have been upgraded and trees planted along streets. Another measure that has been achieved is the creation of four "Mobility Stations" next to the neighbourhood's train stations, offering a fleet of various sharing mobility options, such as electric cars, freight pedelecs, bikes, e-bikes and e-tricycles. Lastly, social and cultural activities bring neighbours together with the objectives of improving their quality of life and improving the reputation of Neuauubing-Westkreuz.

The project runs in cycles of four-year periods granted by the federal programme. The renewal of the project periods is subject to a positive evaluation of the implemented measures and a positive decision by the city council. Currently, the project duration is granted until 2024. In addition, there are further monitoring systems at the municipal level that are used to evaluate the project's process and outcomes.

### Take-Aways

- For participatory processes with different stakeholders:
  - Sufficient time needs to be scheduled.
  - Pictures and ideas need to be provided to the residents, rather than discussing from scratch.
- The engagement of residents and stakeholders can be effectively increased through:
  - Front-runner and showcase activities.
  - Including politicians and well-known people in the neighbourhood in the process.
- While preliminary analyses are important, the process should not be paralysed by them; instead, it should start with short-term projects to gain quick wins, before implementing the more complex actions.

On behalf of:



Landeshauptstadt  
München



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## "Masterplan 100% Klimaschutz" (Climate Change Mitigation)

### Summary

1. City of Frankfurt am Main intends to switch entirely to renewable energy by 2050.
2. To achieve this goal, the "Masterplan 100% Klimaschutz" (*Masterplan 100% Climate Change Mitigation*) was launched with clear guidelines and an ambitious approach.
3. It has a wide range of target groups: citizens, municipal departments, industry and private owners.

### General

Location	Frankfurt am Main, Germany
Background/Introduction	Frankfurt is located on the River Main, in the northernmost part of the Upper Rhine Plain, climatically one of the warmest regions and one of the biggest metropolitan areas in Germany.
Severe Climate Impacts	Floods (last severe flood in 2011) Heatwaves (13 days over 30°C yearly average)
Inhabitants	736,414 (city), 5,821,523 (Frankfurt-Rhine-Main metropolitan region)
Responsible Body	Municipal Energy Agency, City of Frankfurt am Main
Status	Plan elaboration completed (2015), implementation ongoing
Duration	2013-2050

### Context

Being one of the biggest metropolitan areas in Germany, reducing CO<sub>2</sub> emissions is one of the environmental priorities for the City of Frankfurt am Main. The 2008 "Energy and Climate Protection Concept" describes steps for reaching the target of reducing CO<sub>2</sub> emissions by 10% every five years. In 2012, the municipality decided to commit to a more ambitious goal and applied to a federal fund to finance a needs assessment. The main target is to reduce 95% of all CO<sub>2</sub> emissions and 50% of the local energy use until 2050 to become a city fully supplied by renewable energy by 2050.

The Municipal Energy Agency leads the elaboration and implementation of the plan with the collaboration of other municipal departments and civil society initiatives, businesses, local utilities, parliamentary groups, as well as other local councils of the metropolitan area. The plan has a wide range of target groups, such as citizens, municipal departments, industry and private owners.

The city was awarded funding from the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) for committing to a full renewable energy target. This covered 80% of the plan's cost in the period 2013–2016 and 40% in the period 2016–2018, while the rest is funded by the municipal budget. The implementation of specific measures is financed by each city department and its assigned actors with implementing competencies.

### Relation to the Sourcebook's Fields of Action



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Capacity Development



The city of Frankfurt was awarded funding from the BMU for committing to a full renewable energy target by 2050. Source: © City of Frankfurt am Main, photo: Tanja Schäfer

### Process

The "Masterplan 100% Klimaschutz" (*Masterplan 100% Climate Change Mitigation*) has been created based on a feasibility study which was completed in an interdisciplinary manner including a wide range of actors. Given that the municipal "Energy and Climate Protection Concept" of 2008 runs until 2020 and already features specific and budgeted measures, the Masterplan takes over those measures updating them considering the new objectives.

The city council nominated the Municipal Energy Agency as the executive body for the plan and gave it the task of creating a strategy to reach the target. This agency started by commissioning a feasibility study by the Fraunhofer Institutes for Building Physics (IBP) and for Solar Energy Systems (ISE), which analysed the sectors of electrical power, heating and transport in the city. This was followed by inviting around 30 relevant local actors to be part of an interdisciplinary Climate Change Mitigation Advisory Board with the task of drafting and reviewing the plan. These actors were selected considering their relevance in the local economy and society and their potential to produce a "multiplier" effect towards reaching the target. Examples of participating actors are universities, non-government organisations (NGOs), private sector organisations, the regional chamber of commerce and local churches. The Advisory Board held regular meetings initially to discuss the study's interim results, scenarios and financing models for the energy transition, and later the details of how to achieve the objectives.

In addition, six workshops focusing on "Building, Living, City Planning", "Energy Supply" and "Mobility" brought together the Advisory Board, municipal departments, the energy provider and construction companies. They discussed technical implementation details and aligning these with other objectives of the municipal departments. Moreover, several public "Citizens Forums" including topic-specific subgroups were organised and all citizens were invited to take part through advertising posters. "Neighbourhood Forums" were also held to discuss the objectives of the plan for specific areas with the residents. An information stand was also set up in a main square of the city to raise awareness about the objectives and collect citizens' input.

At the regional level, the Municipal Energy Agency is working with the regional association FrankfurtRhineMain on a joint energy concept that aims to supply the entire Frankfurt region with renewable energy by following a decentralization approach. In this regard, the Municipal Energy Agency and the Climate Protection Advisory Board took part in the meetings about the regional energy concept to align the objectives of the City of Frankfurt with those of the municipalities and stakeholders of the metropolitan region.

### Outcome

The "Masterplan 100% Klimaschutz" (*Masterplan 100% Climate Mitigation*) was published in 2015 and concluded that the target of completely supplying the city with renewable energy by 2050 is achievable. It also included guidelines to define measures, how to prioritise them and a time plan. Some measures are already being implemented and a few have been completed, such as connecting the heating pipeline systems of different districts. Also, the Municipal Energy Agency organised several competitions for ideas to allow citizens to suggest measures to achieve the plan's target. Around 40% of them have been implemented. For example, a pilot project to test an innovative organic photovoltaic installation as a façade-integrated solution. Other examples of urban planning-related measures include the district heating supply from combined heat and power in new development areas.

In terms of monitoring, the Municipal Energy Agency carries out an evaluation of the CO<sub>2</sub> emissions in the city regularly. In addition, the Municipal Energy Agency is required to submit to the city council an update report on the climate protection status every two years, which is also used to feed the decision-making process to update the plan.

The "Masterplan 100% Klimaschutz" (*Masterplan 100% Climate Mitigation*) continues as a long-term programme to reach the 2050 objective with funding from the Municipal Energy Agency and the implementing actors. The next steps include continuing with the implementation of the measures, updating and concretising them, for which the agency will prepare a draft proposal and discuss it with the Advisory Board and all the municipal departments involved. This proposal should then be approved by the city council. Further events for citizens participation may also be included.

### Take-Aways

- Wide-spread acceptance of the plan was achieved due to the involvement of civil society in its development and definition.
- Given the complex process, it is important to involve all stakeholders from the very beginning.
- In the implementation phase, the stakeholders' input and collaboration is crucial to accomplishing such an ambitious goal.

The collection of data for the CO<sub>2</sub> emissions evaluation is challenging, as some companies and network operators provide rough or inaccurate data or refuse to disclose any.



'Active-City Building - Speicherstrasse', apartment building in PlusEnergy style with, inter alia, PV systems on the roof and facade. Source: © City of Frankfurt am Main, Municipal Energy Agency, photo: Hanna Jaritz



Half of Frankfurt's area are parks and squares. Source: © City of Frankfurt am Main, Municipal Energy Agency, photo: Ulrike Wiedenfels



Solar recharging stations not only facilitate but also foster the change to more sustainable means of transport. Source: © City of Frankfurt am Main, Municipal Energy Agency, photo: Ulrike Wiedenfels

On behalf of:



## Cloudburst Plan to Prevent Damages from Heavy Rainfall

### Summary

1. First municipal strategic plan in Sweden to focus specifically on making a city resilient to cloudburst events and heavy rainfall.
2. The multifunctional approach prioritises solutions of climate change adaptation over traditional "grey" solutions.
3. Responsibility of making Malmö adapted to climate change does not only rely on the city administration, hence, the plan seeks cooperation among diverse stakeholders.

### General

Location	Malmö, Sweden
Background/Introduction	Malmö is a coastal city near the southwestern tip of Sweden. Despite its northern latitude, the climate is mild mainly thanks to the Gulf Stream.
Severe Climate Impacts	Cloudbursts causing floods (last severe flood in 2014)
Inhabitants	334,000
Responsible Body	Technical Board, Department of Housing
Status	Elaboration concluded, implementation ongoing
Duration	2015-2017 (Cloudburst Plan elaboration); since 2017 (Action Plan implementation)

### Context

On August 31st, 2014 Malmö suffered the effects of the cloudburst *Arvid*. In only a few hours 100 mm of rainwater were measured, which led to a severe disruption: around 2,000 houses were flooded, and some key functions of the city were shut down, particularly roads and public transport systems, while the hospital was subject to important disruptions and came close to being shut down. Damages to private and publicly owned property were very substantial. The insurance costs alone were calculated to be approximately €66 million. It is estimated that the cost for the whole community (including missed work days, illness, and so on) was much higher. As a result, the event became a wakeup call for the city administration to be prepared for similar situations in the future.



The flood in 2014 revealed needed measurements to counteract cloudbursts. Source: City of Malmö

The municipal bodies in charge of developing the cloudburst plan were the Technical Board which is shared by the Department of Housing and the Department of Streets and Parks, together with the departments of Environment, City Planning, Crisis and Preparedness and Public Services, as well as the regional public wastewater utility, named Va Syd. The plan aims at producing a direct change in all municipal departments of the city administration as well as in the wastewater utility, however, it also indirectly targets other actors, such as homeowners, mainly through awareness raising.

The costs of the plan's development process were shared by all departments involved through their regular budgets. Implementation is financed by the department responsible for each measure. For example, the Department of City Planning finances the measures regarding spatial planning and the wastewater utility finances measures involving water pipes.



Malmö is directly situated at the strait of Öresund. Source: CC0 Creative Commons



Green roof and Turning Torso tower in Malmö. Source: Jonathan Malmberg / Scandinavian Green Roof Institute

### Relation to the Sourcebook's Fields of Action



Governance



Policies and Strategies



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Capacity Development

### Process

The process of developing the Cloudburst Plan started in 2015 and has taken around two years until its approval by the City Council. The aim of the plan is to make the city more resilient to heavy rainfall and flooding by embedding an integrated cloudburst perspective in all planning processes. It aims at carrying out activities that minimise the risk of serious injuries, disruptions of vital services and death by 2025, and to guarantee that Malmö can handle a 100-year-rainfall event with only minimal material and personal damage by 2045. Additionally, the plan uses a multifunctional approach, meaning that flood preventive infrastructures also have other day-to-day functions, for example, a football field has been redesigned to act as a flood catchment area in case of a cloudburst.

The Cloudburst Plan's creation comprised two main phases: the elaboration of the plan itself and the creation of an Action Plan. The first phase is already completed and has been carried out by the Cloudburst Plan Coordinating Group including the above-mentioned municipal departments and the wastewater utility, who together designed a common strategy.

Three thematic working groups and six subgroups were also formed to analyse selected parts of the plan and to solve specific questions, for example, to identify areas in the city that could be flooded without damage and to find ways in which the water could be led to these areas. These groups met regularly during the first ten months of the elaboration phase. In addition, a reference group was formed, consisting of experts in related topics, local stakeholders and civil servants of the City of Copenhagen, who shared their city's experiences with a similar plan. With the knowledge generated in these activities, a draft of the plan was created and subsequently sent for comment to internal civil servants who had not been involved, as well as to external organisations, such as political parties, universities, NGOs, other local governments, and so on. Moreover, the plan's elaboration process has been fed by actual data gathered in various ways: flood risk mapping, tests of potential solutions, an analysis for a new sewer system, and a cost analysis of carrying out the plan versus doing nothing.



Pond in a residential area which also acts as storm water catchment. Source: Ulrika Pöppius

In terms of the formal distribution of responsibilities, the Department of Streets and Parks oversees the elaboration of the Cloudburst Plan and the Action Plan. The Department of Environment is responsible for coordinating the different municipal departments. The Department of City Planning integrates the regulations into the planning and building processes, and lastly, the Department of Crisis and Preparedness has the task of creating a Flood Preparedness Plan.

### Outcome

Although it is still early days to see on-the-ground results, there is a resulting strategic plan approved by the City Council, which specifies targets and responsibilities to include heavy rain considerations in Malmö's planning and decision-making processes. It also includes specific measures, such as refurbishing spaces owned by the municipality using cloudburst considerations. In addition, the wastewater utility has developed a website addressing homeowners and housing cooperatives to provide knowledge about what they can do for themselves if a big downpour occurs, as well as to raise awareness about the fact that they are responsible for water management on their property. The utility has also put in place a team of engineers that can visit houses to give advice about preventive actions.

After the plan was approved in 2017, the Cloudburst Plan Coordination Group turned into a Management Group and its focus switched to developing an Action Plan. This second plan will specify how the actions included in the Cloudburst Plan should be carried out. As part of this, the Management Group is drafting a questionnaire to measure the knowledge level on flood risk reduction among civil servants with the aim of subsequently providing training about embedding heavy rain considerations in all necessary work processes. In the future, the option of having a separate budget dedicated to implementing the plan's bigger technical actions, such as rebuilding parks and streets, will be discussed.

### Take-Aways

- Adopting a preventive approach by adapting the city to handle unusual heavy rainfall is more cost-effective than reacting to events and repairing the damages.
- Adaptation is an investment for the future, rather than a financial burden.
- Implementing changes in the city's infrastructure and the response patterns is not only the responsibility of the municipal administration, but also calls for the action of homeowners, housing cooperatives, businesses and citizens.
- The need for interdisciplinary work among all municipal departments and relevant actors in the city has become clear.
- Adapting the city for heavy rainfall requires an integrated and long-term perspective in all planning processes and cannot be achieved through "quick fixes".



City plan of Malmö with designation of its districts. Source: City of Malmö



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