

"Building a Smart, Resilient, Nature-based Future" by Robert Brears
 Full PDF available for download at <https://medium.com/mark-and-focus>

Climate Resilient Urban Areas: Governance, Design and Development in Coastal Delta Cities

By Rutger de Graaf-van Dinther



Cities in particular are vulnerable to climate change impacts. With more than half of the global population currently living in cities, climate change already has a profound impact on society. Climate change is increasingly demonstrated in the number of extreme weather events across the world, most profoundly impacting urban regions. Given the current and expected climate impacts in urban areas, cities have started initiatives to respond to these threats. Significant advances have been made in the fields of urban climate adaptation policy, research, and practice and global networks for capacity building and knowledge exchange have emerged.

The idea for this book on climate resilient urban areas emerged in 2019 when I wrote a short opinion article about the four capacities to increase the climate resilience of urban areas. This article was based on my PhD thesis Innovations in urban water management to reduce the vulnerability of cities which I published in 2009 at Delft University of Technology. The four capacities are: threshold capacity, coping capacity, recovery capacity and adaptive capacity.

Following the publication of my opinion article, Henk Ovink, the Special Envoy for International Water Affairs at Kingdom of the Netherlands, suggested to add a fifth component: transformative capacity. In the same week, Robert C. Brears, Series Editor of Climate Resilient Societies informed me about the potential opportunity to coordinate a book on climate resilient urban areas with Palgrave MacMillan. This is how the 2 years process of developing the outline of the book, inviting chapter authors, the writing and editing, started.

Climate resilience in urban areas is defined in this book as consisting of 5 pillars: threshold capacity, coping capacity, recovery capacity, adaptive capacity, and transformative capacity.

1. *Threshold capacity*: the capability to prevent damage by constructing a threshold against environmental variation, for example by construction a flood levee.
2. *Coping capacity*: the capability to deal with extreme weather conditions and reduce damage during such conditions.

RESILIENT URBAN CENTRES

3. *Recovery capacity*: capability to bounce back to a state equal to, or even better than, before the extreme event.
4. *Adaptive capacity*: capability to anticipate uncertain future developments.
5. *Transformative capacity*: the capability to create an enabling environment, strengthen stakeholder capacities, and identify and implement catalysing interventions to transition proactively to a climate-resilient society.

This framework is used as an integrative concept throughout the chapters. Resilience is an intrinsically inclusive and holistic concept that includes various themes, for instance technical resilience against natural hazards such as floods, droughts, and other extreme weather events. It also has strong social and governance dimensions, such as the presence and strength of neighbourhood social assistance networks in the event of disasters and stakeholders' capacity to innovate their working practice, enabling the transformation of their city. For coastal cities, the challenge of the resilience journey means utilising scientific knowledge, but also the knowledge of citizens, indigenous peoples, and practitioners. Measures and strategies on different scales are needed from national scale all the way down to neighbourhood, street, and building level. In some cases, optimising the existing urban infrastructure might be sufficient. More often, a transformation of the urban governance system is needed: resilience is by its essence systemic, and resilience interventions are also systemic. The systems level of impact often is not met with a suitable governance (formal and informal) system. To develop transformative interventions, this means creating soft spaces for transformation. For implementation and operations, this implies system changes in governance, collaborative models, and coalitions. The potential of innovative pilots to improve, replicate, and scale up is a key factor for transformative change. This book includes insights on different scales from areas of expertise such as engineering, social sciences, and urban design. Besides scientists from different fields, leading practitioners working in various global coastal cities have contributed to the book. Many of the book contributions are from the Netherlands, a country that is already partly located below sea level and that has centuries of experience of living with the threat of water. However, the book includes many examples and experiences and insights from coastal cities all over the world to present a global perspective.



Figure 1. Floating Pavilion in Rotterdam the Netherlands: example of a climate resilient innovation in a former port area (Source: Rutger de Graaf-van Dinther; Photo: René de Wit)

The different chapters in this book demonstrate that we are in a transition in how urban areas respond to climate threats and internal social dynamics. The size and urgency of climate impact is such that adaptation is no longer considered sufficient. Instead, transformation of the entire urban system is needed to anticipate on climate change impacts. For this purpose, four key elements can be extracted from the book.

- 1) *Implementing innovations at appropriate scale and speed*: system wide impact of innovations on an urban scale and global scale requires application at an appropriate scale and speed which is relevant compared to the magnitude and severity of urban climate change impacts.
- 2) *Planning and collaboration*: Inclusive transdisciplinary planning with local communities and experts is needed to mobilize the required local knowledge and support for the climate resilient transformation process.
- 3) *Capacity building at a local level*: Transformative climate resilience is characterised by community based local urban systems. Citizen empowerment and capacity building among local stakeholders are crucial success factors
- 4) *From sustainability to regeneration*: Urban development and redevelopment processes contribute to restore damaged ecosystems, by providing habitat and linkages to other nature areas.

Building transformative capacity is not only about changing water management but also about changing urban development and urban redevelopment practice. One of the ideas proposed in the book is to create Floating Communities as a climate resilient testing and learning environment for new transformative societal models to contribute to the transition to climate resilient urban areas.

The book is available [here](#)

*Rutger de Graaf-van Dinther is Applied Research Professor of Water Innovation at Rotterdam University of Applied Sciences, the Netherlands, and director/ founding partner of three water innovation companies: DeltaSync, Blue21 and Indymo.

palgrave
macmillan



SERIES EDITOR

Robert C. Brears is the founder of Our Future Water, Mitidaption, Mark and Focus, and is a Director on the International Board of the Indo Global Chamber of Commerce, Industries and Agriculture.

ABOUT THE SERIES

The *Palgrave Studies in Climate Resilient Societies* series provides readers with an understanding of what the terms resilience and climate resilient societies mean; the best practices and lessons learnt from various governments, in both non-OECD and OECD countries, implementing climate resilience policies (in other words what is 'desirable' or 'undesirable' when building climate resilient societies); an understanding of what a resilient society potentially looks like; knowledge of when resilience building requires slow transitions or rapid transformations; and knowledge on how governments can create coherent, forward-looking and flexible policy innovations to build climate resilient societies that: support the conservation of ecosystems; promote the sustainable use of natural resources; encourage sustainable practices and management systems; develop resilient and inclusive communities; ensure economic growth; and protect health and livelihoods from climatic extremes.

CONTACT FOR PROPOSALS

We welcome proposals from both academics and practitioners working in this highly interdisciplinary field. For further information about the series or if you would like to discuss a proposal please contact:

Rachael Ballard, Publisher | Geography, Environment and Sustainability | rachael.ballard@palgrave.com
Robert C. Brears, Series Editor | rcb.chc@hotmail.com

Learn more at palgrave.com

Part of **SPRINGER NATURE**