

# Review of the Nexus Framework on Neighborhood Resilience

*Bridging human and other-than-human perspectives in urban design, from a Dutch urban climate adaptation perspective*

**Author(s)**

Erwin, Stephanie; Kluck, Jeroen

**Publication date**

2023

**Document Version**

Final published version

**Published in**

Public Spaces and Urban Resilience

**License**

CC BY-SA

[Link to publication](#)

**Citation for published version (APA):**

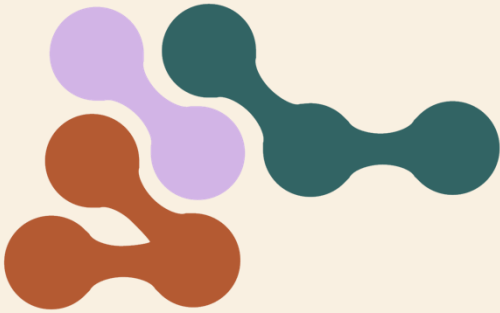
Erwin, S., & Kluck, J. (2023). Review of the Nexus Framework on Neighborhood Resilience: Bridging human and other-than-human perspectives in urban design, from a Dutch urban climate adaptation perspective. In B. Boon, M. de Waal, & F. Suurenbroek (Eds.), *Public Spaces and Urban Resilience: State of affairs in Dutch cities and exploring human and non-human perspectives* (1.0 ed.). Hogeschool van Amsterdam.

**General rights**

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

**Disclaimer/Complaints regulations**

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please contact the library: <https://www.amsterdamuas.com/library/contact/questions>, or send a letter to: University Library (Library of the University of Amsterdam and Amsterdam University of Applied Sciences), Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.



# Public Spaces and Urban Resilience

STATE OF AFFAIRS IN DUTCH CITIES and  
EXPLORING HUMAN AND NON-HUMAN PERSPECTIVES

From Prevention to Resilience

2020 – 2022

# Public Spaces and Urban Resilience

STATE OF AFFAIRS IN DUTCH CITIES and  
EXPLORING HUMAN AND NON-HUMAN PERSPECTIVES

## EDITORS

Boudewijn Boon, Martijn de Waal, and Frank Suurenbroek

## RESEARCH PROJECT

From Prevention to Resilience

## DATE

February 2023

## FINANCED BY

The Netherlands Organisation for Health Research and Development (ZonMw)

## COLLABORATION

This project is a collaboration between the Amsterdam University of Applied Sciences (AUAS) Chair of Spatial Urban Transformation (Faculty of Technology) and Chair of Civic Interaction Design (Faculty of Digital Media and Creative Industries), together with the following partners: Harvard University, The Bartlett at UCL, The University of Sydney, City Space Architecture, UNStudio, Pakhuis de Zwijger, The Beach, Arcam, PBL Netherlands Environmental Assessment Agency.

## VERSION

1.0

## CITE AS:

Boon, B., Suurenbroek, F., & M. de Waal (2023) *Public Spaces and Urban Resilience: State of affairs in Dutch cities and exploring human and non-human perspectives*. Amsterdam: Amsterdam University of Applied Sciences.

---

# Introduction

This collection of articles contains contributions to the research project 'From Prevention to Resilience' (FPtP). In this project, the research team has generated insights and tools for designers, policymakers, and other professionals to contribute to more resilient cities and neighborhoods. The point of departure was public space as a site for intervention, while learning from the ongoing developments revolving around the Covid-19 pandemic.

During the early phases of the pandemic, governments initially focused on preventing the virus from spreading. Public spaces came to be seen as potential places for contamination. In response, fences, markings, and barrier tapes were put into place to orchestrate people's movement and promote physical distance. With our research project, we explored the role that public space could play besides such often ad hoc preventive measures. What other challenges can public space tackle with regard to the various shocks and stressors that hit cities and neighborhoods, now and in the future? And how to tackle these challenges in an integral way?

An integral approach to designing public spaces involves many disciplines, and it is to a great extent dependent on local governments' take on public spaces. To this end, we asked relevant experts to share their disciplinary reflections on a design perspective we have developed in the FPtP project, called *Human / Non-Human Public Spaces*. An earlier version of this design perspective was handed over to experts to provide feedback from an urban climate adaptation perspective and from a governance and cultural change perspective. Stephanie Erwin and Jeroen Kluck provide concrete feedback on the design perspective and offer a discussion in relation to the field of

*Public Spaces and Urban Resilience: State of the art in Dutch cities and exploring human and non-human perspectives.*



urban climate resilience. Alex Straathof offers an essayistic text in which he reflects on some of the key notions of the design perspective, reflecting on some of the key notions of the design perspective based on cultural theory and his experience with interventions on the neighborhood level.

In parallel, we commissioned two independent experts in the field of spatial development and governance to make a preliminary analysis of the impact of COVID-19 on the government perspectives on public spaces. Both experts were given the same question, but they applied different methods. Hugo Verschoor Plug conducted an analysis on two national policy documents and six 'omgevingsvisies' – i.e., strategies on spatial planning and the environment – of large and middle-sized cities: Amsterdam, Breda, The Hague, Groningen, Rotterdam and Zwolle. Denise Vrolijk was asked to interview professionals from a cross-section of Dutch Cities in order to obtain their perspectives on how local governments viewed the role of public spaces in relation to resilience. Together, these analyses provide an overview of the current state of affairs in public space and urban resilience.

We thank the authors for sharing their expertise and insights and thereby contribute to the FPtR project. This project is funded by The Netherlands Organization for Health Research and Development (ZonMw), part of the subsidy round 'COVID 19: Maatschappelijke Dynamiek', project nr. 10430032010029.



# Table of Contents

<b>INTRODUCTION .....</b>	<b>3</b>
<b>TABLE OF CONTENTS.....</b>	<b>5</b>
<b>1. REVIEW OF THE NEXUS FRAMEWORK ON NEIGHBORHOOD RESILIENCE: BRIDGING HUMAN AND OTHER-THAN-HUMAN PERSPECTIVES IN URBAN DESIGN, FROM A DUTCH URBAN CLIMATE ADAPTATION PERSPECTIVE .....</b>	<b>6</b>
<b>2. VEERKRACHT CULTUURTHEORETISCH BEZIEN .....</b>	<b>18</b>
<b>3. ONDERZOEK STAND VAN ZAKEN PUBLIEKE RUIMTE.....</b>	<b>28</b>
<b>4. VEERKRACHTIGE PUBLIEKE RUIMTE VRAAGT OM INTEGRALE BLIK.....</b>	<b>43</b>



# 1. Review of the Nexus Framework on Neighborhood Resilience:

## Bridging human and other-than-human perspectives in urban design, from a Dutch urban climate adaptation perspective

Stephanie Erwin and Jeroen Kluck

This essay is a contribution to the research project 'From Prevention to Resilience' funded by ZonMw. Motivated by the Covid-19 pandemic, this research project explored how public space and forms of civic engagement can contribute to working towards more resilient urban neighborhoods. The project engaged a community of practice (CoP) to inform the research and to disseminate and critically discuss research outcomes. This essay, and the bundle it is part of, is the outcome of one of these engagements. The authors of this specific essay were asked to offer their disciplinary perspective on a first version of the *Human / Non-Human Public Spaces* design perspective, at that time still titled *Nexus Framework on Neighborhood Resilience* (click [here](#) and a PDF of this version will be downloaded). The authors were asked to do so based on their field of expertise, being climate-resilient cities. The authors have written this essay in coordination with the research team. To grasp the content of this essay and to take lessons from it, we encourage readers to first get familiar with the first version of the design perspective.

### CITE AS:

Erwin, S. and J. Kluck (2023) Review of the Nexus Framework on Neighborhood Resilience: Bridging human and other-than-human perspectives in urban design, from a Dutch urban climate adaptation perspective. In Boon, B., Suurenbroek, F., & M. de Waal (Eds.), *Public Spaces and Urban Resilience: State of affairs in Dutch cities and exploring human and non-human perspectives*. Amsterdam: Amsterdam University of Applied Sciences

*Public Spaces and Urban Resilience: State of the art in Dutch cities and exploring human and non-human perspectives.*



The intention of this essay is to reflect on the *Nexus Framework on Neighborhood Resilience* from the perspective of urban climate resilience. This essay will be comprised of three sections. Firstly, we will attempt to contribute to the theoretical grounding of the framework by discussing the scholarship related to resilience. Secondly, we will briefly describe urban climate resilience in the Dutch context. Lastly, we will review the framework and its various parts as they relate to the field of urban climate resilience in the Netherlands.

## Establishing the context and defining (urban) resilience

To reflect upon the framework on neighborhood resilience and its role in urban climate resilience, one must first understand its connection to urban resilience in the broader scholarship context. We found it helpful to first briefly review what has already been written on the topic of urban resiliency. Neighborhood resilience is a relatively new specification of the more prolific and widely used term, urban resilience. For this review we assume that neighborhood resilience has the same connotation as urban resilience. The term urban resilience has been adopted by many industries and professions, each with its own definitions and applications. In the article *Contrasting the framing of urban climate resilience*, Wardekker writes "The notion of urban (climate) resilience has become highly popular in both research and practice. However, the concept is inherently malleable; it can be framed in diverse ways, emphasizing different problems, causes, moral judgements, and solutions" (Wardekker, 2021 p. 1). To further position the framework within the context of urban resilience, we will explore a few examples on this subject below.

### Defining urban resilience

In the article *Defining urban resilience*, the authors define urban resilience broadly by combining framing contrasts in the following way: "Urban resilience refers to the ability of an urban system-and all its constituent socio-ecological and socio-technical networks across temporal and spatial scales to maintain or rapidly return to desired functions in the face of a disturbance, to adapt to change, and to quickly transform systems that limit current or future adaptive capacity" (S. Meerow et al., 2017, p. 3).

### Rethinking the urban resilience

The article *Rethinking the urban resilience: Extension and connotation* by R. Ba et al. (2022) goes further to say that the term urban resilience is multifaceted and presents a conceptual three-tier classification of urban resilience comprising of complex systems, social units, and infrastructure. Complex systems are comprised of economy, ecosystems, ICT systems, and

*Public Spaces and Urban Resilience: State of the art in Dutch cities and exploring human and non-human perspectives.*





culture. Social units are comprised of individuals, communities, and organizations. Infrastructure is comprised of power systems, transportation, communications, and buildings. The authors present the case that there are six-dimensional characteristics of urban resilience. They are as follows: adaptation, robustness, restoration, redundancy, resourcefulness, and learnability and must be considered when defining urban resilience. The authors offer their redefinition of urban resilience as "The ability of an urban system and its constituent infrastructure, social units, and complex systems across temporal, spatial, and anthropic scales in physical, social, cyber, and cognitive spaces to forewarn, respond, and mitigate external and internal disruptions, maintain and adapt itself above the necessary functionality, and then quickly recover and learn to transform to the desired level of urban function" (R. Ba et al., 2022 p. 402). This article mainly focuses on the water aspects of urban resilience.

### Contrasting the framing of urban climate resilience

Through an exhaustive literature review and framing analysis, Wardekker summarizes four urban resilience framings and their typical applications and analytical methods, as presented in figure 1. From his literature review, the author was able to link contrasting resiliency themes to better define the topic. The framings, equilibrium versus evolutionary resilience and systems versus community resilience are combined and contrasted to form an urban resilience matrix which helps planners and designers pinpoint exactly which resiliency framing best suits their needs (Wardekker, 2021). This framing is helpful to reference when considering the nexus framework on neighbourhood resilience.

<b>Framing focus:</b>	<b>Short-term equilibrium</b>	<b>Long-term evolution</b>
<b>Systems</b>	<p><b>Urban Shock-Proofing</b></p> <p>E.g.: Disaster engineering, economic resilience.</p> <p>Typical methods: models, stress tests.</p>	<p><b>Resilience Planning</b></p> <p>E.g.: adaptation &amp; transformation, flexible planning &amp; design; adaptive management.</p> <p>Typical methods: planning tools, assessment tools, design research, scenarios.</p>
<b>People &amp; communities</b>	<p><b>Community Disaster Resilience</b></p> <p>E.g.: Self-sufficiency; social aspects of disaster planning &amp; preparedness.</p> <p>Typical methods: indicators, surveys, interviews, case studies.</p>	<p><b>Resilient Community Development</b></p> <p>E.g.: Social innovation, social justice, grassroots action, bottom-up transformative governance.</p> <p>Typical methods: possibly case studies, creative tools, narrative collection, citizen science.</p>

Fig. 1 Wardekker’s urban resilience matrix “cross-comparison of urban resilience framings and their typical applications and analytical methods.” (Wardekker, 2021 p. 7)

From these three pieces of scholarship, it is easy to see that one must consider not only the short-term impact, but the long-term as well. Both temporal scales must be thoughtfully considered when implementing urban resilience. Additionally, urban resilience goes further than infrastructure, ecology, and climate – one must look at all the components of the urban context - - specifically, the more qualitative, “softer” aspects of urban resilience, including, but not limited to, social and cultural systems. We will reflect on the framework in relation to the scholarship in the last section of this essay. In the next section, we will discuss urban climate resilience as a subset of urban resilience, while focussing on the Dutch context, as it is more aligned with our experience.

## Dutch urban resilience context with a focus on climate adaptation

Urban climate resilience is equivalent to prevention, or rather, the act of trying to prevent damage. Historically, the Dutch have focused the efforts on preventative measures related to water management. Specifically, coastal storm surges, fluvial flooding, and stormwater surface flooding. The coastal and regional defences consist of dikes and other mega constructions. These measures are meant to prevent flooding. In the western part of the Netherlands the Dutch have chosen to build them so high that the expected failure is once per 10,000 years. In more recent years, attention to design, governance, and participation has been given to reduce the impact and facilitate recovery after a disaster (Bosoni, M., et al., 2021).

Many Dutch [re]development projects use a multi-disciplinary approach to the [re]design of urban areas. For example, it is common to see adaptive, flood-proof buildings in projects. As well as designing to reduce drought to limit subsidence and therefore preventing possible structural damage to buildings. Another popular topic is the incorporation of greenery into urban areas to mitigate heat stress and improve livability.

In 2018, the Netherlands officially prioritized climate adaptation in the Delta Programme through the Delta Plan on Spatial Adaptation. "The central government, provinces, municipalities, and district water boards re-acknowledge the collective ambition of having the Netherlands climate-proof and water-resilient by 2050" (Delta Programme, 2018). Through this new policy, new development projects should be designed with that ambition in mind. All existing urban areas are expected to be retrofitted or rebuilt at least once every 30 years to ensure that all urban areas will be water resilient and climate-proof by 2050. However, in practice, making Dutch urban areas more climate resilient has proven difficult for several reasons.

What is sufficient?

The first major hurdle for Dutch policymakers was to determine what is sufficiently climate resilient. This is not only a matter of estimating the effect of climate change on the weather



extremes, and the impact of those new extremes, but also a matter of determining how often a certain flood or heat event or level of drought would be acceptable. For stormwater surface or fluvial flooding, this is relatively simple, as the damage of a cloudburst can be predicted through modelling. For urban heat stress, it is much harder to decide on what is sufficiently climate resilient. Although people die because of urban heat stress, there is not a clear threshold of outside temperatures in which fewer people die. For the liveability of an urban area, it is extremely difficult to determine an acceptable threshold temperature, as situations and contexts can be disparate. (e.g., age and health of person, land use, time of day). Additionally, deaths resulting from urban heat stress are less related to urban design and planning and more related to housing and healthcare. For the time being, Dutch municipalities seem to have settled for design guidelines which reduce heat risk, but do not try to solve all problems (Kleerekoper et al., 2021). For example, with a guideline aiming at urban designs in which each house is within 300m of a cool spot, Dutch municipalities try to be more heat resilient.

### Implementation and effectiveness

The second hurdle is that urban climate resilience is challenging to implement in practice. Urban [re]development is a complex, multifaceted, time-consuming process with many stakeholders. Ensuring the implementation of climate adaptive measures into projects has been an arduous task. Most projects are under pressure because of time and budgetary constraints. Adding unclear or poorly understood climate adaptation guidelines might work in opposition to the desired outcome. However, many levels of government are trying to solve this, by making clear what is needed, by highlighting example projects, and by stimulating knowledge exchange. In the publication *The climate is right up your street*, researchers show to retrofit ten neighbourhood typologies to make them more climate resilient (Kluck, J. et al., 2018).

Urban climate resilience is perceived positively and is suggested to improve liveability. It is common to see municipal initiatives that encourage residents to be more climate adaptive. However, not all climate adaptive measures are created equal – one might argue that some of the most common interventions could be considered greenwashing in the grand scheme of urban climate resilience. While increasing the amount of green in an urban area does indeed help with all aspects of climate adaptation (Demuzere et al., 2014; Derkzen, van Teeffelen & Verburg, 2015), it is in the implementation that the effectiveness is lost.

For example, planters to decorate one's sidewalk or rain barrels for stormwater capture and reuse are both presented as effective urban climate adaptation. While both can improve one's enjoyment of their environment, their singular climate adaptive impact is negligible as is shown below. Simply placing a few planters will not reduce heat stress in any measure. It takes municipal-wide greening to see a reduction of temperatures. The general rule of thumb is for every 10% of additional greening, you can expect to see a 0.25-0.5 °C reduction in air



temperature (Steenefeld et al., 2018; Witteveen & Bos, 2014; Kleerekoper et al., 2018). On a really sweltering day (+30 °C) a reduction of 0,5 or 1 °C is imperceivable. To illustrate this further, consider the typical residential situation in the Netherlands. The average roof is 60m<sup>2</sup>; 1mm of rain over 1m<sup>2</sup> is equal to 1 litre of water. An extreme rain event which might cause flooding is defined as 20mm in one hour. With that being said, 20mm of rainfall on this roof would be 1200 litres of water. A large rain barrel of two hundred litres, would be filled with only one-sixth of the rainfall, reducing the amount of water which can contribute to flooding with only 17% -- even less if the barrel were not empty or if the rainfall is more extreme. These examples illustrate the need for a comprehensive, systematic approach to affect positive change in urban climate resilience.

### Reflection

How does the Dutch approach to urban climate resilience fit within the previously discussed scholarship? Using Wardekker's urban resilience matrix to assess the most common implementation of urban resilience in the Netherlands, it becomes clear that the Dutch seem to focus more on the systems framing – short-term, urban shock-proofing and long-term resilience planning – almost always with an emphasis on climate adaptation. Although, it should be noted that the “softer” aspects of urban resilience are becoming more prolific in the Dutch context.

### What is the nexus framework on neighbourhood resilience and how does it relate to urban resilience as previously discussed in this essay?

The Nexus Framework on Neighbourhood Resilience is an output of the project: From Prevention to Resilience. It was developed to offer guidance to urban designers to address shocks and stressors when building more resilient communities through public space and civic engagement. The authors attempt to emphasize the need for neighbourhood resilience by making the statement: "The impacts of climate change are already clearly visible, through issues such as urban heat and flooding, while the effects of biodiversity loss, such as food and resource accessibility, are not clearly visible yet" (The Nexus Framework on Neighbourhood Resilience, 2022 p. 1). In the following section, we will connect the project examples within the framework back to the scholarship previously discussed in this essay. We will also look at each component of the framework and discuss its context and application within the context of Dutch urban climate resilience.

### Framing the framework with scholarship

As it relates to Defining urban resilience

The framework offers mostly project examples that fit within the socio-ecological network. However, there are a few project examples that could fit within both the socio-ecological and



socio-technical networks, such as Growing Codesign, Nikola Bašić's Greetings to the Sun, and Maxi Nirschl's Talking to the Trees. These three projects are examples of how technology can be used to potentially communicate with nature. However, these examples do not seem to have the temporal and spatial scales present. They do not present a clear pathway to return to a desired function nor display inherently the ability to transform systems that limit adaptive capacity (S. Meerow et al., 2017).

#### As it relates to Rethinking the urban resilience

The project examples could span all three classifications of urban resilience. As mentioned above, most of the projects have socio-ecological components, which fall within the complex systems and social units classifications. *Rethinking the urban resilience* breaks infrastructure into power systems, transportation, communication, and buildings (R. Ba et al., 2022). The projects wildlife bridges, water squares, and skate parks theoretically would be described as infrastructure. However, the six-dimensional characteristics are not inherently evident with the project examples presented in the framework. This could be because there is limited space to explain each project. As with the previous comparison, there is a missing link between temporal, spatial, and anthropic scales.

#### As it relates to Contrasting the framing of urban climate resilience

*Contrasting the framing of urban climate resilience* clearly presents four framings for urban climate resilience. For this essay, we attempted to fit the framework project examples into the urban resilience matrix but were unsuccessful. Many of the projects could possibly span multiple framings or fit in none at all. This exercise has shown that the link between the project examples and disaster prevention and rebound is missing.

#### Context and application as the framework relates to Dutch urban climate resilience

Below we will separately discuss the various components of the framework and explain how the framework relates to Dutch urban climate resilience in

##### Human and other-than-human communities

The framework specifies that it "creates an artificial divide" between the human and other-than-human communities to differentiate issues of resiliency (The Nexus Framework on Neighbourhood Resilience, 2022 p. 1). The authors argue that projects are usually designed for humans, suggesting implicitly that other-than-human communities are not considered. Additionally, they suggest that the separation of the communities forces diverse disciplines to come together to work integrally. The framework stresses that "other organisms also reside in



urban neighbourhoods, and these are considered in the framework for both inclusive and pragmatic reasons" (The Nexus Framework on Neighbourhood Resilience, 2022 p. 1).

The authors of the framework, in our opinion, are correct in that other-than-humans are essential and should be considered in the design. We view it positively that other-than-humans are presented apart from humans, as it draws the attention to the potential disparate approaches. Although designing for other-than-humans, is widespread in landscape and urban design, it is refreshing that it is specifically mentioned within the framework because in practice these types of design interventions are often lost in the practical implementation. As a result, cities are not as green and biodiverse as needed. For urban climate resilient design, green interventions are logical. Climate adaptation was initially focussed on reducing risks for humans. However, more attention is being paid to combat biodiversity loss in climate adaptation projects. The need for a healthy ecosystem to reduce climate risks is gaining more traction within urban and community planning. E.g. Healthy trees can better withstand drought, capture more rainfall, offer more shade, and provide habitat for other-than-humans. This special attention to other-than-humans in the framework is therefore a positive aspect of the framework.

Five concepts: agency, connection, diversity, rhythm, and abilities

The framework uses five important concepts to compare and contrast human and other-than-human communities," setting the dialog between different disciplines" (The Nexus Framework on Neighbourhood Resilience, 2022 p. 1). The concepts are agency, connection, diversity, rhythm, and abilities. For each community type, the authors define the concepts and offer relevant examples.

The five concepts are logical and, after some thought, essential for creating a resilient neighbourhood. The concepts defined within the framework are meant to inform active designers. In our experience, these concepts are used in practice regularly. This is because landscape architects are trained to consider more than just the technical application of design and engineering. Every concept, whether it is directly used or if another similar term is used instead, is inherently a part of the design process. For example, when designing a large urban area, contemporary landscape architects will seek to facilitate agency by empowering citizens through moments of participation and engagement. Often, they will research the applicable biomes and the keystone species to design for other-than-humans. Landscape architects use information gleaned from human and other-than-human residents to inform the design of the facilities, elements, plant selection and site layout. Agency, connection, rhythm diversity and ability are important concepts and play a key role in common urban design practice and partly also in urban climate adaptation.



## Spatial and civic design

The framework suggests that two design disciplines, spatial design, and civic design, can contribute to the conditions for urban (neighbourhood) resilience. The authors offer definitions for each discipline – essentially, spatial design focuses on how spatial elements and qualities can address societal issues; civic design focuses on the more social aspects of society. Both disciplines have their own distinctions yet there is quite a bit of overlap. "The spatial aspects of public space play an important role in facilitating public life of local residents, while civic initiatives are important in enabling local residents to be represented and to organize themselves in the face of shocks and stressors" (The Nexus Framework on Neighbourhood Resilience, 2022 p. 1).

The definitions and examples of both disciplines, leaves more to be desired. Spatial design is inherently civic because a spatial designer is designing primarily for citizens. It is true that contemporary civic is not always spatial. However, one of the earliest articles ever published on the topic of civic design, *An Introduction to the Study of Civic Design*, details spatial design and social aspects in defining civic design (S.D. Adshead, 1910). If we apply that connotation to the framework's projects, it can be confusing as some of projects could fit into one or both disciplines. This section could be made stronger by making the distinctions between the two disciplines more explicit. Or alternatively, removing the disciplinary distinctions altogether.

## Quadrants

The second page of the framework is where all the different terms and components are brought together. It is comprised of four quadrants, one for each of the five concepts: agency, connection, diversity, rhythm, and abilities. The y-axis is spatial and civic design, and the x-axis is human and other-than-human communities. The quadrants are civic/other-than-human, civic/human, spatial/human, and spatial/other-than-human. Within each quadrant, there are challenges, and examples highlighting projects that attempt to consider each combination of concepts, communities, and disciplines. Each project has a brief description and image.

In design, it is important to show precedents to inform and inspire. Overall, the visual design of the quadrants reinforces the relationships between the communities and disciplines. The framework does a decent job offering easy to grasp project examples.

## Project examples

Some of the project examples are duplicated throughout the quadrants. It is unclear if that was intentional because of the possible overlaps, or if the projects were serving as "placeholders." Additionally, some of the projects seemed to be unrelated to the concept of urban or neighbourhood resilience. In the project "Growing Codesign" within the civic/other-than-human



quadrant, plants become co-designers. If one looks at the context, one could assume that the authors are suggesting that the plants are co-designing either a project or providing meaningful feedback within the planning or design process. However, after investigating the project outside of the framework, it became clear that, the researchers are harvesting "electrophysiological signals emitted by plants with medical sensing technology as the base for plant-human creative-aesthetic collaborations" (Growing co-design, 2022). It is not clear how this project contributes to neighbourhood resilience and could be perceived as a gimmick.

## Summary framework review and conclusions

The framework gave us the opportunity (and task) to consider on climate adaptation and resilience. We see urban climate adaptation as a subset of urban resilience. The framework might help in some way in urban climate adaptation. The focus on the other-than-humans (next to humans) is useful as green and biodiversity quite often gets too little attention in practice. Furthermore, the other-than-human distinction is essential in climate adaptation as many interventions are nature based. The division between civic and spatial is for urban climate resilience not so useful. The five concepts that are articulated in the framework echo the current common approach of landscape architects and urban designers in designing urban areas, but do not specifically help in climate adaptation.

As climate resilience is an essential element in urban resilience, the framework could have been stronger if it would have a more complete and helping function for urban climate resilience. Now the two main obstructors for a quick implementation of urban climate adaptation in practice are not addressed. The framework does not help in defining what is sufficiently climate resilient and provides only little help in overcoming the problem of the complex reality with so many different goals. This would require a more technical approach. However, the five concepts might make it possible to be in contact with each other (agency and diversity), find their needs (ability and rhythm) and to determine locally on a climate resilience and create positive energy for the (climate) resilient design of a neighbourhood.

## References

Adshead, S. D. (1910). An Introduction to the Study of Civic Design. *Town Planning Review*, 1(1), 3–16.  
<https://doi.org/https://doi.org/10.3828/tpr.1.1.k25421150511g571>





- Ba, R., Wang, C., Kou, L., Guo, X., & Zhang, H. (2022). Rethinking the urban resilience: Extension and connotation. *Journal of Safety Science and Resilience*, 3(4), 398–403. <https://doi.org/10.1016/j.jnlssr.2022.08.004>
- Bosoni, M., Tempels, B., & Hartmann, T. (2021). Understanding integration within the Dutch multi-layer safety approach to flood risk management. *International Journal of River Basin Management*, 1–7. <https://doi.org/10.1080/15715124.2021.1915321>
- Delta Programme (2021) National Delta Programme 2021—staying on track in climate-proofing the Netherlands. Dutch Ministry of Infrastructure and Water Management, the Ministry of Agriculture, Nature and Food Quality, and the Ministry of the Interior and Kingdom Relations. <https://english.deltaprogramma.nl/binaries/delta-commissioner/documenten/publications/2020/09/15/dp2021-eng-printversie/DP2021+ENG+printversie.pdf>
- Demuzere, M., Orru, K., Heidrich, O., Olazabal, E., Geneletti, D., Orru, H., Bhawe, A. G., Mittal, N., Feliu, E., & Faehnle, M. (2014). Mitigating and adapting to climate change: multi-functional and multi-scale assessment of Green Urban Infrastructure. *Journal of Environmental Management*, 146, 107–115. <https://doi.org/10.1016/j.jenvman.2014.07.025>
- Derkzen, M. L., van Teeffelen, A. J. A., & Verburg, P. H. (2015). Quantifying urban ecosystem services based on high-resolution data of urban green space: an assessment for Rotterdam, the Netherlands. *Journal of Applied Ecology*, 52, 1020–1032. <http://dx.doi.org/10.1111/1365-2654.12469>
- Derkzen, M. L., van Teeffelen, A. J. A., & Verburg, P. H. (2017). Green Infrastructure for urban climate adaptation: How do residents' views on climate impacts and green infrastructure shape adaptation preferences? *Landscape and Urban Planning*, 157, 106–130. <https://doi.org/10.1016/j.landurbplan.2016.05.027>
- Growing co-design. Growing CoDesign. (n.d.). Retrieved November 21, 2022, from <https://www.growingcodesign.com/about>
- Kluck, J., R. Loeve, W.J. Bakker, L. Kleerekoper, M.M. Rouvoet, R. Wentink, J.H. Viscaal, E.J. Klok en F.C. Boogaard (2018). *The climate is right up your street: The value of retrofitting in residential streets: A book of examples*. Amsterdam University of Applied Sciences: Faculty of Technology, research program Urban Technology, ISBN 978-94-92644-06-0. 76p
- Kleerekoper, L., Jacobs, C., Van der Kuur, J., Kluck, J. & Wilschut, L. (2018). *Baten van een groener Haarlem. Baten in euro's, graden verkoeling en leefbaarheid*. Hogeschool van Amsterdam.

Kleerekoper, L., Kluck, J., Klok, L., Solcerová, A., & Loeve, R. (2021). A practical approach towards designing heat resilient cities. Amsterdam; Amsterdam University of Applied Science.  
[https://www.hva.nl/binaries/content/assets/subsites/kc-techniek/publicaties-klimaatbestendige-stad/kleerekoper\\_2021\\_ibc2021-poster\\_210908.pdf?1638465042832](https://www.hva.nl/binaries/content/assets/subsites/kc-techniek/publicaties-klimaatbestendige-stad/kleerekoper_2021_ibc2021-poster_210908.pdf?1638465042832)

Meerow, S., Newell, J. P., & Stults, M. (2016). Defining urban resilience: A Review. *Landscape and Urban Planning*, 147, 38–49. <https://doi.org/10.1016/j.landurbplan.2015.11.011>

Steenefeld, G.J., Klompaker, J.O., Groen, R.J. & Holtslag, A.A. (2018). An urban climate assessment and management tool for combined heat and air quality judgements at neighbourhood scales. *Resources, Conservation and Recycling*, 132, 204-217

Wardekker, A. (2021). Contrasting the framing of urban climate resilience. *Sustainable Cities and Society*, 75, 103258. <https://doi.org/10.1016/j.scs.2021.103258>

Witteveen+Bos (2014). UCAM: Urban Climate Assessment & Management eindrapport, Rapport GV1102-2/14- 023.839.  
[https://ruimtelijkeadaptatie.nl/publish/pages/114614/ucam\\_eindrapport.pdf](https://ruimtelijkeadaptatie.nl/publish/pages/114614/ucam_eindrapport.pdf)

