SWIMMING AGAINST THE CURRENT

THE ROLE OF SOCIAL MOVEMENTS IN PLANNING FOR URBAN CLIMATE RESILIENCE

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Master Thesis
October, 2023

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Abstract

Becoming resilient has become a key objective for many cities, especially in the Global North. However, it appears to be challenging to plan for resilience that stimulates, alongside robustness to climate events, the capacity to continuously adapt and transform to improved circumstances, known as evolutionary resilience. At the same time, the community dimension of planning for urban climate resilience seems to be underdeveloped in both policy-making and scientific literature. By adopting a social movement perspective, this research aimed to investigate how social movements can contribute to planning for urban climate resilience. The research takes the social movement Fluss Bad Berlin as its subject for a case study. This movement aims to reclaim the river Spree for its citizens by realising a swimming location in the heart of Berlin. To fulfil the aim of this research a framing analysis of literature, policy documents, social media, and interviews with Berlin stakeholders was employed to: 1) determine Berlin's approach to planning for urban climate resilience, and 2) examine how Fluss Bad positioned itself based on this approach. The findings showed that movements like Fluss Bad can help to promote evolutionary resilience as they foster societal discourse through the positive experience of river swimming. They raise awareness of societal and sustainability issues, such as water pollution, climate concerns and liveability. To advance evolutionary resilience, cities should actively engage with initiatives like Fluss Bad, to emphasise adaptability, stakeholder involvement, broader societal objectives and eventually realise sustainable transformation. Addressing city administration issues, like staffing and resources, appeared to be crucial for enabling the administration to incorporate local initiatives and movements into Berlin's approach to planning for urban climate resilience. Additionally, cities should encourage spatial experimentation to promote sustainable transformations and increase political and societal support by letting citizens experience the advantages of these transformations. For movements like Fluss Bad, broadening their appeal beyond their current audience through positive experiences is recommended, while avoiding an overly radical and green image. In this way, social movements can play a vital role in reshaping cities' political priorities towards sustainable transformations.

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1. Introduction

1.1 Background

Over the past decade cities have been actively advocating the importance of becoming climate resilient (Wardekker, 2021). Residents of cities are particularly vulnerable to climate events due to the geographical location of cities, the high amount of sealed surface and the large accumulation of residents and capital who are at risk of being affected by the consequences of climate change and global warming (Wardekker, 2021; Revi et al., 2014; Koop & Van Leeuwen, 2017; Rosenzweig et al., 2018). In addition to addressing climate-related issues, such as the heat island effect and increasing flood risks, urban regions face multiple challenges in supplementary fields like housing shortages, ageing population, refugees or other socio-economic issues. Consequently, these challenges compete for the attention of policymakers resulting in trade-offs between urban climate policies and other social and economic interests (Marschütz et al., 2020). Furthermore, the exact impact of climate change is uncertain and unpredictable and it is up to cities to find out how to become more adaptive to uncertain climate futures. Therefore, cities are exploring and developing climate-resilient solutions that are creative, and holistic (thus being able to tackle multiple problems at once), and that can deal with this increasing uncertainty (Wardekker, 2021).

The concept of resilience within the domain of urban planning can be explained as the capacity of a city to withstand or adapt to disturbances as well as the ability to adapt and transform to changing socio-ecological conditions (Laeni et al., 2019; Davoudi, 2012; Holling, 1973). City administrations expect resilience to be a suitable solution to climate events, but also to a broad range of socio-economic dilemmas characterised by uncertainty and complexity (Davoudi et al., 2013). As a consequence, cities and international organisations have started to increasingly work together through forming networks in which knowledge is shared on how to best become resilient. A few examples of organisations are the World Bank City Resilience Program, C40 Cities and 100 Resilient Cities. These networks aim to help cities become resilient to the many challenges urban areas face in the 21st century of which climate change is seen as a main challenge (Wardekker, 2021; March & Swyngedouw, 2022).

Nevertheless, this call for resilient cities remains dependent on traditional methodological tools, institutional frameworks, techno-managerial solutions, and 'predict and prevent approaches' (Kaika, 2017; Wardekker 2022). These resilience agendas depend on paths that proceed to question the same aspects, such as how to best monitor resilience, use the smartest technologies and big data, determine whether to look for top-down or bottom-up solutions, and whether to emphasise the market or people (Kaika, 2017). Marschütz et al. (2020) argued that these trade-offs often result in the neglect of citizens' perspectives due to a tendency towards top-down and techno-scientific assessment of climate risks. Furthermore, Laeni et al. (2019) found that in climate resilience strategies economic growth and competitiveness are often prioritised over broader social outcomes.

Based on the above, it can be said that the term resilience is contested and subjected to different interpretations, meaning it is not something that can simply be strived for without careful consideration that incorporates multiple viewpoints. Correspondingly, within the scientific debate there is a general concurrence surrounding the importance of stressing citizens' perspectives within resilience planning and emphasising broader societal goals to ensure a more inclusive and just outcome (Marschütz et al., 2020; Wardekker, 2022). Kaika

(2017) implies that an inclusive resilience-building process can only be reached through actively engaging and empowering citizens so they can take on new roles and responsibilities. Community initiatives come with new perspectives, as they are known to provide for experimenting and learning that produce alternative and creative strategies and pathways which are developed in a bottom-up way reflecting the needs of locals (Horlings & Franklin, 2022). Therefore, they potentially could contribute to initiating a change towards more future-proof social and spatial interventions which contribute to building urban climate resilience. However, current scientific literature expresses concern about whether communities have the necessary capacity or agency to take matters into their own hands and engage in 'true' resilience processes (Davis et al., 2021). On top of this, communities that start initiatives are known to encounter challenges with connecting the initiative and expanding its goals to a wider socio-spatial scale to increase their transformative potential (Horlings & Franklin, 2022).

Social movements are currently proving to be successful in engaging and empowering citizens as they are becoming more prevalent and are gaining widespread media attention (Svensson & Wahlström, 2021). A recent example is grassroots movement Extinction Rebellion, which at the time of writing this thesis, is continuously occupying an arterial highway in The Hague as an ongoing protest to demand the Dutch government to stop subsidising fossil fuel (NOS, 2023). On the first day of this protest Extinction Rebellion mobilised around 25.000 individuals into collective action and about 2000 of them were arrested by the police (Extinction Rebellion, 2023). A social movement does not need to be characterised by activism or civil disobedience. Social movements exist on all scales and can also be highly local and focused on changing the surroundings, including examples such as temporary urbanism, sustainable community housing developments or outdoor educational and arts initiatives (Silva, 2016; Horlings & Franklin, 2022). A more specific example of a social movement is the Flussbad initiative in Berlin which pursues the development of an urban swimming location in the heart of Berlin to improve overall liveability. These initiatives have in common that they call for collective action as a result of current politics and planning, and thus the desire to take matters into one's own hands (Silva, 2016).

Such movements strategically position themselves to mobilise citizens to engage in collective action in order to achieve their goals (Snow et al., 2018). If they succeed in doing so, it can be suggested that movements which focus on social and climate issues have the potential to contribute to urban climate resilience as they foster citizen engagement, empowerment, policy change and community-based problem-solving. These factors augment the perspective of resilience which currently receives little attention in urban planning, such as strategies characterised by bottom-up methods, long-term change, and more inclusive approaches (Kaika, 2017; Wardekker, 2021). This research considers whether the strategies employed by these movements could provide valuable insights for communities or local initiatives to move beyond the local initiative and scale out to increase their transformative potential. Therefore, it is relevant to investigate how these movements strategically position themselves within the context they operate in and how this positioning contributes to planning for urban climate resilience. Additionally, cities may adopt lessons from this into their climate resilience strategies in order to better facilitate local community initiatives and social movements and move beyond vested methods for resilience, and consequently, help to engage and empower residents to enhance resilience building.

1.2 Research aim

The aim of this research is to investigate how social movements can contribute to planning for urban climate resilience. This will first be done by analysing urban climate strategies in the German capital Berlin to indicate how they aim to plan for climate resilience. Secondly, an effort was made to create a deeper understanding of how a social movement for urban development, Fluss Bad Berlin, strategically determines their goals and actions based on the context they operate in. Furthermore, this research aims to provide recommendations for both cities and social movements to improve planning for urban climate resilience by identifying learned lessons from the Fluss Bad in Berlin.

Considering the aforementioned research aim the main research question is formulated:

How can social movements contribute to planning for urban climate resilience and which lessons can be learned from the Fluss Bad initiative?

To help answer the main research question the following sub-questions have been drafted:
1. How can urban climate resilience and social movements be conceptualised?
2. What is Berlin's approach to planning for urban climate resilience?
3. How does Fluss Bad position itself based on Berlin's approach to planning for urban climate resilience?

1.3 Theoretical approach

As the concept of urban climate resilience has a broad range of definitions, the theoretical approach of this thesis will begin by conceptualising urban climate resilience. More specifically, this will be done by explaining the notions of equilibrium and evolutionary resilience-thinking. Attention will be paid to the criticisms derived from scientific literature on the use of resilience in planning by categorising them based on the aspects of resilience as identified by Laeni et al. (2019): strategy, process, and outcome. This will underscore the importance of adopting a more evolutionary perspective of resilience consisting of a broad involvement of citizens and communities in the resilience planning process. This is thought to be necessary in order to move beyond resilience strategies which solely rely on technical solutions and which favour economic growth outcomes. Consequently, the theoretical chapter will focus on the community perspective of planning for urban climate resilience. As this perspective is thought to be underdeveloped in scientific literature, and considering the growing presence of social movements in society, the theoretical chapter will provide argumentation for adopting a social movement perspective to further advance the community dimension of resilience. A main argument in favour of this decision was the selection of the case study, Fluss Bad, which can be identified as a social movement rather than a community initiative. After choosing a social movement perspective, this chapter will continue to explain the concept of collective action framing, which proves to be beneficial for analysing the strategies social movements employ to attract and mobilise citizens for collective action. Based on Martin (2003), a framework will be created that can be used to investigate how social movements strategically position themselves within the context they operate in by incorporating motivational framing, diagnostic framing, and prognostic framing. Finally, the theoretical framework will culminate in a conceptual framework outlining three steps that will guide the empirical phase of this research.

1.4 Research design

Berlin, a major European city and capital of Germany, challenged by multiple climate and social issues is the main focus of this research. A four-month stay abroad in this city facilitated the research of this thesis. A qualitative research design will be employed to gain a deeper understanding of resilience planning of a single case study: Berlin and the strategies of a social movement which has the potential to contribute to urban climate resilience. The movement in question will be the Fluss Bad project, an initiative started by citizens to create a swimming area in the Spree River, made possible by a natural filter system. To address the research questions effectively, a three-step approach based on the theoretical section of this research with each employing a distinct methodology will be followed. First, planning for climate resilience in Berlin will be studied through a literature review, analysis of policy documents and conducting semi-structured interviews with stakeholders (i.e. government employees or researchers) involved in city-level resilience planning. Second, attention will be paid to the way Fluss Bad formulates its broader goals and the strategies it employs through analysing the movement's collective action framing. This will be done through studying social media outreach (i.e. Instagram posts, newspaper articles) and conducting additional semi-structured interviews with individuals involved in the Fluss Bad and other grassroots movements in Berlin such as Changing Cities and The Floating University. In the final step, both analyses will be combined to answer the main research question, identify dilemmas and opportunities, and provide recommendations for urban climate resilience planning in Berlin and other cities.

Figure 1 Impression of the case study, from left to right: expected location of Fluss Bad in the Spree (Author, 2023), the Fluss Bad team during Berliner Klimatag (Author, 2023), and swimming competition in the Spree organised by Fluss Bad (Hauschild, 2015)

1.5 Academic and societal relevance

Academic relevance
Within planning for urban climate resilience there is a common agreement that a greater emphasis should be put on incorporating the perspectives of citizens and communities. Additionally, there is a consensus that communities should be able to, after a climate event, adapt and transform into improved conditions. However, the current scientific debate questions whether communities have the necessary agency or capacity to do so (Davis et al., 2021). Furthermore, a knowledge gap in understanding how communities can engage in resilience planning, especially concerning their adaptability and transformability exists

(Wardekker, 2021). A way for communities to engage in resilience planning is the establishment of local initiatives, however, these initiatives face multiple challenges that hamper their effectiveness. A prominent challenge is the issue of scaling, which entails the endeavour of the initiative to connect their goals and actions to wider socio-spatial levels and scales in order to increase their transformative potential (Horlings & Franklin, 2022). The success of this scaling effort heavily depends on the local context the initiative operates in, hence, local governance plays a crucial role in this as well. Nevertheless, there remains a limited understanding regarding how governance can support initiatives towards systemic transformative change (Horlings & Franklin, 2022). Therefore, this research seeks to contribute to these knowledge gaps by investigating the community dimension of resilience planning by proposing and operationalizing a social movement perspective, and carefully considering the contextual factors at play. By doing so, it aims to advance the underdeveloped concept of community resilience in urban climate resilience planning.

Societal relevance
According to existing literature, current resilience planning approaches often fail to incorporate the needs and perspectives of citizens (Kaika, 2017; Marschütz et al., 2020; Laeni et al., 2019). Local initiatives, as a result of the involvement of citizens in resilience planning, aim to empower citizens and communities to engage in local societal and climate issues. Nevertheless, these initiatives face multiple challenges as the local governance often does not know how to facilitate and support these initiatives (Horlings & Franklin, 2022). The findings of this research hold relevance for society as it aims to address both issues and offer insights into potential solutions. By deriving learned lessons within current resilience planning approaches in Berlin and examining the role of the Fluss Bad initiative to amplify community perspectives and foster environmental engagement, this research seeks to contribute to planning for urban climate resilience. It aspires to achieve this by providing recommendations on how initiatives like the Fluss Bad could contribute to planning for urban climate resilience and how the city in which they operate could facilitate these efforts.

1.6 Reading guide

This thesis is structured in the following way: Chapter 2 consists of a theoretical framework in which definitions of the key concepts and theories will be explained based on existing literature. In Chapter 3 you can find the research design and chosen methods for conducting this research. Additionally, Chapter 4 presents the results of the empirical data collection and Chapter 5 consists of a discussion and conclusion where the results will be compared to the findings of the theoretical framework and where recommendations for both cities and social movements are formulated.

2. Operationalising urban climate resilience and unfolding the potential of social movements

This chapter provides an overview of the existing literature on the concepts included in this thesis. As stated in the introductory text of this thesis, resilience is a concept that has many different definitions and interpretations. Therefore it is important to first better understand the variety of this concept and how it has been operationalised within the urban context. Furthermore, after reviewing critical literature on the use of resilience in urban planning, the importance of the involvement of citizens, communities and social movements in the resilience-building process is highlighted as currently cities adopt equilibrium-minded perspectives on resilience which rely on maintaining robustness and often prioritise economic growth objectives. Considering the importance of involving citizens in planning for urban climate resilience and the characteristics of the case study of this research, the Fluss Bad, the focus of this chapter will narrow towards the role social movements play in resilience. Hence, the chapter will elaborate upon how these initiatives engage in collective action, mobilise potential participants and how the discursive context they operate in is of importance in this. Finally, this chapter ends with a conceptual framework based on the existing literature accompanied by an explanation of the steps taken in this research.

2.1 Conceptualising urban climate resilience

The concept of resilience is by no means a new concept, as it can be traced back all the way to the Classical period where resilio or resilire were used as terms indicating 'shrinking', 'avoiding', 'leaping' or 'to spring back' and was first used in a scientific context in the 1600s (Davoudi, 2012; Alexander, 2013; Wardekker, 2021). However, only in the 1960s, the resilience concept entered the field of ecology and since then multiple meanings have emerged, originating from different world views and scientific traditions (Davoudi, 2012). Also in the domain of urban planning, resilience has become increasingly popular. Due to its frequent use the popularity of resilience planning is sometimes coined as the 'Resilience Renaissance' (Bahadur et al., 2010) or the 'Race to Resilience' (UNFCC, 2021). The growing popularity of resilience in planning can be attributed to academic research which portrayed resilience as an advantageous solution, particularly in uncertain situations (Wardekker, 2021). Resilience owes this positive notion to its flexible definition which can be adapted to specific needs and contexts (Wardekker, 2021). Besides this, this flexibility is thought to create the potential of triggering bottom-up innovation and connecting stakeholders from different fields (Davoudi, 2012; Restemeyer et al., 2015; Wardekker, 2021; Wardekker, 2022). Past research has paid a lot of attention to identifying different interpretations and noticed that resilience planning is mainly influenced by a more traditional equilibrium perspective or by the more recently developed evolutionary perspective (Laeni et al., 2019).

Equilibrium resilience
The overarching concept of equilibrium resilience consists of two perspectives of resilience thinking: engineering resilience and ecological resilience (Wardekker, 2021). However, as this research focuses on resilience planning in the urban context it will adopt the overarching concept of equilibrium resilience. Wardekker (2021) explained that for a city to be considered resilient according to the equilibrium perspective, it means that the city is able to prevent the disruption of its functionality, structure, and identity. The disturbances that this perspective focuses on are primarily short-term shocks and acute stressors such as floods, droughts, and heat waves. More importantly, the focus often lies on a single disturbance rather than on an

integrated approach to tackling multiple disturbances. The main essence according to urban planning strategies using an equilibrium perspective is to avoid catastrophic impacts and to preserve what people have built in a city. Avoiding and preserving are reached through the use of, for example, prevent-prepare-respond-recover frameworks (Wardekker, 2021). The use of this perspective in urban planning generally leads to top-down governance consisting of fast, controlled and directive action. In the urban context, this perspective on resilience is focused on critical infrastructures and extreme weather events (floods, droughts, and heat waves) and uses tools such as early warning systems, forecasting tools and stress tests (Wardekker, 2021). While this approach allows for easy integration into existing science and practice and does help to strengthen resilience and reduce vulnerabilities within a system it is criticised in the literature for ignoring slowly changing processes (Wardekker, 2021). A crucial consequence is the limited attention to social processes, such as people's memories, stories and relationships, which are known to either enhance or reduce resilience (Davoudi et al., 2013). However, research identified a recent shift which moves from approaches primarily focussing on resistance and control towards a more integrated and adaptive approach, recognised as an evolutionary resilience perspective (Restemeyer et al., 2015; Laeni et al., 2019).

Towards evolutionary resilience
Existing literature shows that the dominant resilience perspective or operationalisation of resilience policy remains too focused on the traditional notion of increasing robustness and resistance through technical protection measures (Restemeyer et al., 2015; Laeni et al., 2019; Kempenaar et al., 2022). This means that the prevailing perspective of resilience used in planning practice is an equilibrium perspective (Wardekker, 2021, 2022; Kaika, 2017; Marschütz et al., 2020). However, although urban planning seems to be largely influenced by the equilibrium resilience perspective, there is a common understanding that there needs to be a shift towards more evolutionary resilience thinking (Restemeyer et al., 2015; Laeni et al., 2019). The notion of stable or multiple equilibria is not accepted in, as coined by Davoudi et al. (2013), the third face of resilience: the socio-ecological perspective. Resilience thinking through a socio-ecological perspective focuses on the interplay between ecosystems and humans, introducing principles such as self-(re)organisation, adaptiveness, and learning (Wardekker, 2021). In this perspective people and nature are viewed as interdependent systems and resilience is interpreted as '…the ability of complex social-ecological systems to change, adapt or transform in response to stresses and strains." (Davoudi et al., 2013, p. 309). The capacity to transform is why Davoudi et al. (2013) call this perspective 'evolutionary resilience'.

In cities, evolutionary resilience relates to the interaction between cities and long-term changes such as climate change, urbanisation, socio-economic change, and demographic change. The focus is thus primarily on long-term change and slow trends. Following an evolutionary resilience perspective, these problems are multi-causal and therefore demand to be assessed in an integrated way (Wardekker, 2021). Wardekker (2021) argues that the moral starting point in evolutionary resilience is to be progressive and dynamic, but also to challenge existing practices. It aspires to use creativity and imagination to build capacity (Davoudi et al., 2013). In the urban context, this leads to raising questions of what aspects of the city should be preserved; who and what are replaced; and who bears the costs and who benefits (Wardekker, 2021). Solutions for being resilient according to this perspective are building flexibility through multi-functional spaces, active learning through urban experimentation and future-oriented design (Wardekker, 2021).

Robustness, adaptability and transformability

An evolutionary perspective on resilience hangs on the dynamic interplay between three attributes: robustness, adaptability, and transformability (Davoudi, 2012). In contrast, equilibrium resilience thinking often relies heavily on the importance of being persistent. Persistence or robustness are indeed key factors of resilience as they imply the capacity to withstand external threats (Holling, 1973; Godschalk, 2003; Davoudi, 2012). However, from an evolutionary resilience perspective, a resilient city should extend beyond just being robust (Davoudi, 2012; Restemeyer et al., 2015). Davoudi (2012) suggests that adaptability and transformability, in addition to robustness, are essential in resilience planning. These attributes expand the equilibrium perspective of resilience by emphasising the role of institutions, leadership, social capital, and social learning (Olsson et al., 2006).

In practice, the resilience attributes can be recognised in multiple ways. Initially, it can be manifested in a city's effort to enhance their chances of resisting disturbances (being persistent and robust), through for example, building and maintaining dikes (Davoudi et al., 2013; Restemeyer et al., 2015). This approach aligns with an equilibrium perspective. However, following an evolutionary standpoint, a city should not only be robust but also be able to absorb disturbances "without crossing a threshold into an undesirable and possibly irreversible trajectory" (Davoudi et al., 2013, p.311), hence, emphasising adaptability. Cities can prepare the physical environment, like constructing houses on poles or permitting controlled flooding. Nonetheless, cities must incorporate a social dimension, making resilience a societal responsibility. This calls for a change in people's mindsets and an increase in the willingness of citizens to actively engage in, for example, flood risk management (Restemeyer et al., 2015). Finally, resilience planning should strive to move towards improved trajectories by fostering innovation and transformation (Davoudi et al., 2013). Transformability can be illustrated by the shift in mindset, from "fighting the water" to "living with the water" (Restemeyer et al., 2015. p.47). This shift emphasises the ability of a city to adapt to new insights and continuously innovate and search for the most appropriate way of dealing with climate events (Restemeyer et al., 2015).

2.2 A critical perspective on planning for resilience

Resilience is not a concept to be used or strived for without careful consideration. Various scholars have criticised in particular the equilibrium-based resilience thinking and instead advocated an evolutionary resilience perspective (Davoudi, 2012; Davoudi et al., 2013; Laeni et al., 2019; Wardekker, 2021). Based on these criticisms, Laeni et al. (2019) developed a framework consisting of three aspects essential to resilience planning: strategy, process, and outcome. In this framework Laeni et al. (2019) allocated the main critical perspectives to one of these three aspects. On top of that, the framework identifies the different interpretations of these aspects from the equilibrium perspective or the evolutionary perspective. This research adopts a similar framework inspired by Laeni et al. (2019). However, in this research context the criticism of resilience as provided by Laeni et al. (2019) was complemented with additional criticism from a political ecology perspective (Table 1). Below the main criticisms of resilience in planning are elaborated upon and categorised by the aspects of resilience planning: strategy, process, and outcome.

Strategy: difficult to operationalise and relying on technical solutions
As argued by Laeni et al. (2019) the concept of resilience is multi-interpretable and abstract, which offers certain advantages but also poses challenges in terms of practical implementation, in particular when resilience planning strives to adopt an evolutionary lens. The latter explains why current resilience planning remains to rely on resistance and recovery (robustness) strategies rather than pursuing a holistic and transformative approach (Laeni et al., 2019). This is emphasised by March and Swyngedouw (2022) as they explain that the prevailing notion of resilience as a shock absorber often poses challenges when attempting to translate it into practical action, particularly when it involves raising critical questions regarding the reason, methods, and beneficiaries of resilience planning. Furthermore, formulating strategies for resilience often fails to address underlying causes and the political dimension resulting in relying on technical solutions (Kaika, 2017; March & Swyngedouw, 2022; Laeni et al., 2019). An example of the ignorance of underlying causes in resilience strategies is provided by Kaika (2017) as she based her critique on Sustainable Development Goal (SDG) 11: "Make cities and human settlements inclusive, safe, resilient and sustainable". She points out that being labelled as resilient, which in essence is the objective of SDG 11, means that you can take more suffering, deprivation or environmental degradation in the future. As Kaika (2017, p.95) illustrates:

> "Every time you say, "Oh, they're resilient, [it actually] means you can do something else, [something] new to [my community]. … We were not born to be resilient; we are *conditioned* to be resilient. I don't want to be resilient … [I want to] fix the things that [create the need for us to] be resilient [in the first place]" [emphasis added].

March and Swyngedouw (2022) take a similar stance as Kaika: "Urban resilience seems to take a form where eco-gentrification paves the way - and not surprisingly so - to a more resilient urbanity" (p. 4). They explain how urban resilience is not free of contradiction and how cities (especially) in the Global North position themselves as important actors in tackling climate change. March and Swyngedouw (2022) emphasise the importance of problematising mainstream socio-environmental discourses and visions that depoliticise the nature of environmental problems, reducing them to mere technical and managerial challenges, a point also raised by Kaika (2017). This overreliance on technical and managerial solutions consequently leads to a situation where the resilience of some places is realised at the cost of increasing vulnerability and exposure in other places (March and Swyngedouw, 2022). This is because "smart" and technical solutions rely on the extraction of resources like lithium and copper which are often being extracted in the most vulnerable places on the earth causing exposure to hazards, dispossession of land, and thus increasing vulnerability of both the physical environment and its population (March & Swyngedouw, 2022).

Process: shifting responsibility to the local level and low inclusion
Concerning the resilience process, Laeni et al. (2019) argue that due to the abstract nature of the concept, resilience planning in practice can lead to uncertainty regarding where the responsibility for building resilience lies. On top of this, the different interpretations give rise to ambiguity concerning the nature of the problem and, ultimately, who is responsible for its resolution (Leani et al., 2019). Consequently, disagreements may arise regarding the best approaches to achieve resilience, such as determining what is an acceptable solution. Wardekker (2022) points out that these different interpretations often remain hidden in the discussion but are likely to cause difficulties when concrete intervention strategies need to be

designed. Therefore, recent literature underscores the importance of being explicit about designing and building resilient urban features (Wardekker, 2022).

Considering who is included in the process of developing resilience strategies, Laeni et al. (2019) found that primarily 'insiders', such as policy officials, experts and consultants, are involved. International NGOs often also play a dominant role, while local NGOs and civil society organisations have limited participation. This is in contradiction to the aim of achieving an inclusive resilience process which is necessary for developing an integrated and holistic approach. As a reaction to this, Kaika (2017) proposes to emphasise social dissensus rather than consensus to address exclusion in resilience planning and the favouring of techno-managerial solutions. She argues that practices of dissensus could act as guidance for what needs to be urgently addressed and where. Hence, these will act as living indicators emphasising the role of local communities in urban climate resilience. For local communities to act as living indicators Kaika (2017) advocates for actively involving and empowering citizens, enabling them to take on new roles and responsibilities. This includes giving them agency to identify and address urgent issues based on their daily experiences.

Outcome: resilience as a homogenous state and prioritising economic objectives
A criticism of the desired outcome of resilience planning is that resilience is often perceived as a homogenous state (March & Swyngedouw, 2022; Davoudi et al., 2013; Vale, 2014). Resilience of climate-induced hazards is almost always a primary concern of the poor and disempowered (March & Swyngedouw, 2022). Hence, urban resilience is uneven and shaped by unequal exposure to risk (March & Swyngedouw, 2022). The latter point is supported by Davoudi et al. (2013) and Vale (2014), as they argue that resilience is 'becoming' not 'being'. What this means essentially is that resilience is not only a 'performance' after a shock or climate event but it is a process with no clear start or end. It is a process that continually needs to be sustained and enhanced through adaptability and transformability (Davoudi et al., 2013). Therefore, resilience cannot be systemically applied as a homogenous situation but it is unevenly divided across a city and its communities (Vale, 2014). Vale (2014) acknowledges the promise of the concept of resilience but deems the prevalent misconception within resilience planning of resilience being a homogenous state to be problematic.

Furthermore, Laeni et al. (2019) emphasise the risk of adopting resilience as a normative aim and depoliticising it. They argue that this could result in disregarding potential (positive or negative) outcomes of resilience. Laeni et al. (2019) highlight that policymakers often employ the notion of resilience as a desired goal, inadvertently neglecting its political nature and consequently utilising it in a way that disregards power dynamics. As a consequence, already marginalised communities may face additional risks. Besides that, Laeni et al. (2019) showed that within urban resilience approaches there is often still a prevailing focus on economic growth and competitiveness while little attention is paid to broader social outcomes, despite the policy's ambition to adopt a more evolutionary interpretation of resilience and focus on broader societal interests along with safety and protection.

Table 1 Adapted framework consisting of the aspects of urban climate resilience planning (Laeni et al., 2019)

	Equilibrium resilience	Evolutionary resilience
Strategy (Laeni et al., 2019; March & Swyngedouw, 2022; Kaika, 2017)	Protection and recovery Robustness Preparedness Resistance Failure to address underlying issues and the political dimension Relying on technical solutions	Safety, adaptation and transformation Holistic Integrated Adaptive
Process (Laeni et al., 2019; Wardekker, 2022; Kaika, 2017)	Exclusionary Traditional top-down process Narrow stakeholder involvement Ambiguity on the responsibility for becoming resilience	Inclusionary Open and dynamic process Focus on opening up political voices and stakeholder collaboration Broad stakeholder involvement Practices forged out of dissensus
Outcome (Laeni et al., 2019; March & Swyngedouw, 2022; Davoudi et al., 2013; Vale, 2014).	Resilience as homogenous state Depoliticisation Economic interest Economic growth and competitiveness protected from floods and disturbances	Societal interest Broader societal interest along with safety and protection

The framework presented in Table 1, drawing from critical literature on resilience planning, highlights the importance of adopting an evolutionary resilience perspective. Taking on such a perspective entails a shift towards more holistic and integrated strategies, moving beyond solely relying on technical solutions. Furthermore, the resilience planning process should strive for explicitness considering the design and implementation of resilient strategies to clarify responsibilities and facilitate concrete action. Additionally, it advocates for more inclusive resilience planning processes which involve a wide range of stakeholders and practices forged out of dissensus. This entails including local and vulnerable communities within resilience planning by enabling them to identify underlying causes and urgent issues. Finally, anticipated outcomes of resilience planning must reflect broader societal interests and move beyond a sole focus on economic growth and competitiveness while recognising that resilience is not a homogenous state and that its burdens and benefits are unevenly distributed.

The above-mentioned explanation of evolutionary resilience outlines the specific definition of urban climate resilience adopted for the purpose of this research. Recognising the important role communities can play according to evolutionary resilience, it becomes relevant to further explore how communities can contribute to urban climate resilience processes.

2.3 The role of 'communities' in developing urban climate resilience

Community resilience
Next to the distinction between equilibrium and evolutionary resilience, Wardekker (2021) suggests an additional differentiation, namely between community resilience and system resilience. Building upon the earlier sections of this chapter which primarily centred on how

cities aim to develop urban climate resilience (system resilience) this section will focus on the role communities can play in building urban climate resilience (community resilience).

System resilience, as its name implies, targets the urban system and how a city is able to maintain its functions and the well-being of its population while it tries to understand the system as a whole (Da Silva et al., 2012). This also means that system resilience tends to have a large-scale and 'top-down' perspective (Wardekker, 2021). Community resilience takes a more people-centric approach by analysing how communities deal with climate event-induced disturbances through local capacities, resources, and adaptation (Wardekker, 2021). Consequently, aspects indicating insufficient community resilience can be considered a disruption of social cohesion and a decline in community wellness through impacts on the quality of daily life. When considering climate events, community resilience relates to the capacity of communities to self-organise as first responders as they often cannot fully rely on authorities or because current resilience planning is perceived as insufficient to meet the communities' needs (Wardekker, 2021; Marschütz et al., 2020; Wardekker, 2022).

Research done by Mehmood (2015) helps to understand how evolutionary resilience thinking can help communities shape their environment. His contribution consists of a case study of the bottom-up initiative 'Transition Towns' in the UK which aims to help villages, towns and cities to transform into resilient places. Mehmood (2015) argues that communities play a vital role in resilient place shaping through their capacity for active learning, robustness, ability to innovate and adaptability to change. Within this movement this was done by, for example, emphasising community building and identities, and creating alliances for societal projects. The community's learning capacity was boosted via knowledge sharing and establishing participatory democratic governance for creative bottom-up initiatives. Mehmood (2015) concludes by stating that initiatives or communities that are socially innovative are an important source for building resilience.

Although Davis et al. (2021) acknowledge the growing importance of communities in urban climate resilience, they point towards a current scientific debate which questions whether communities have the necessary agency or capacity to bring about this acclaimed evolutionary perspective as resilience is: "apolitical, conservative and therefore can hinder transformation" (Davis et al., 2021, p. 1565). Furthermore, Horlings and Franklin (2022) underscore the challenges community initiatives face, especially concerning the concept of 'scaling'. Scaling, in this context, pertains to an initiative's ability to connect with wider socio-spatial levels and scales, thereby increasing its transformative potential (Horlings & Franklin, 2022). They argue that this is especially difficult for communities as people often have limited energy and time available to act upon innovative ideas, but also the lack of a stable and facilitative context, underscoring the importance of local governance.

Fluss Bad: a community initiative or social movement?
According to Wardekker (2021) this community resilience perspective, as outlined by Mehmood (2015), which is characterised by communities' bottom-up capacity for self-determination and engaging in long-term change, is currently underdeveloped in urban resilience literature. Hence, Wardekker (2021) argues for an expansion of both scientific and institutional toolboxes to support communities in developing adaptive and transformative capacities and enable them to think about their futures while remaining mindful of present-day concerns.

Nevertheless, when taking a closer look at the case study employed in this research one could question if Fluss Bad can be defined as a community initiative. A community initiative is often thought of as a highly local project initiated by residents with the desire to bring about gradual adaptation or immediate transformation in the condition of their direct living environment (Horlings & Franklin, 2022). Although Fluss Bad has a local geographical focus, creating a swimming location in the neighbourhood of Mitte, it can be better defined as a social movement rather than solely seen as a community initiative. Mitte is by no means a normal resident neighbourhood, especially the specific location where the Fluss Bad initiative is active. This specific part of Mitte is surrounded by cultural heritage, famous museums, and tourist landmarks such as the Humboldt Forum, Berliner Dom and Lustgarten. This means that there is no close-knit resident community centred around the Fluss Bad location; rather, it functions as a hub for passers-by, including both tourists and Berliners. However, as the Fluss Bad initiative aims to be realised at such a prominent location, right in the eye of the public, they purposely aim to function as a citywide example, thus, expanding and scaling out their goals beyond neighbourhood boundaries. Therefore, Fluss Bad is a social movement as it aims to spread its vision beyond Mitte. Nevertheless, one would expect that this engagement with the local environment could result in some extent of community feeling but also through Fluss Bad being a self-organised, thus bottom-up, citizen collective. Taking this into account, adopting a social movement perspective might help to further advance the understanding of a resilient community development perspective in planning for urban climate resilience.

2.4 The added value of a social movement perspective

Over the past decades social movements have become more and more apparent in society and they appear to be successful in mobilising citizens to participate in activities. In existing studies on social movements, it is common to come across references to research done by Snow and Benford (Sandberg, 2006). Borrowing Goffman's (1974) term of 'frame' Snow and Benford's main argument is, based on a range of articles (Snow et al., 1986; Snow & Benford, 1998, 1992), that the 'schemata of interpretation' or frames and the ability needed to construct these influence the success of a social movement. A frame provides a focus or attention and gathers multiple elements into one package and thus can contribute to reshaping events or actors and how they relate to each other (Svensson & Wahlström, 2021).

Collective action framing
When talking about frames in social movement theory, the frames discussed are mainly 'collective action frames' (Sandberg, 2006). Collective action can be defined as the coordinated efforts by individuals or groups to achieve a common goal. Collection action framing is then a tool that helps to understand how collective meaning-making activities function and what factors contribute to the failure or success of collective action (Snow et al., 2018). More concretely this refers to the framing of goals and activities to appeal to the collective group (Martin, 2003). In this way, collective action framing plays a crucial role in shaping and mobilising individuals towards a common goal while creating a collective identity. In employing collective action framing there is often a distinction made between: 1) motivational framing - why should we act (based on the collective's values and identity)?; 2) diagnostic framing - what is the problem?; and 3) prognostic framing - how should we act? (Snow & Benford, 1992; Martin, 2003; Snow et al., 2018; Svensson & Wahlström, 2021).

In her study, Martin (2003) examined the application of collection action framing within neighbourhood collective action, drawing on the motivational, diagnostic, and prognostic framing distinctions proposed by Snow and Benford (1992). First, she investigated motivational framing, conceptualising it as framing in which the collective's values are articulated which defines its identity and helps understand why they decided to take action. Second, Martin (2003) interpreted diagnostic framing as how collectives define problems, allocate blame, or address the root causes of these issues. Third, prognostic framing consists of the proposed solutions to these identified problems. According to Martin (2003), this approach facilitates the separate analysis of dynamic, integrated organisational discourses. While acknowledging the somewhat artificial nature of this approach, she argued that it is still a suitable tool for investigating the development of place-based agendas for activism and collective action. Table 2 presents a framework that was developed based on Matin (2003), consisting of guiding questions that help in dissecting how social movements employ collective action framing.

Table 2 Collective action framing: motivational, diagnostic and prognostic framing (based on Martin, 2003)

Framing	Focus	Guiding questions
Motivational	Descriptions of the community/movement/focus area explaining the movement's (shared) values	What are the collective's characteristics and shared values?
Diagnostic	Focuses on identifying and understanding the problem or challenges, and the assigning of cause and blame	What are the problems and challenges according to the collective?
		What are the underlying causes according to the collective?
		Who is to blame?
Prognostic	Certain types of action to solve problems	What are the collective's proposed actions?

Collective action framing within different discursive contexts
According to Snow et al. (2018), it is important for those who employ collective action frames to do this strategically and, thus tailor their messages and actions to align with preexisting beliefs and discussion. Essentially, it is expected that the likelihood of the social movement being successful will be greater when their messages and actions harmonise with ongoing conversation in society. In this way, the cause of a social movement will be more understandable and appealing to the people they aim to mobilise into collective action. Similarly, Svensson and Wahlström (2021) argue that these discursive contexts provide ideas and concepts to determine collective action framing approaches. Therefore, it can be considered relevant to identify the dominant discourses within an urban context to analyse and understand the decisions and behaviour of social movements. Svensson and Wahlström (2021) identify three main political rationalities which function as the major discourses for

shaping climate governance: green governmentality, ecological modernisation and civic environmentalism.

1. Green governmentality: science-driven and centralised top-down process of climate managerialism;
2. Ecological modernisation: bottom-up process, identifying multiple agents as responsible for climate governance, modernist mindset;
3. Civic environmentalism: promoting an ecocentric and just world order, identifying inequitable power structures such as capitalism and patriarchy.

It is important to realise that these three discourses do not include all possible examples of political rationalities. However, these examples are interesting to take into account as, on the one hand, they influence collective action framing of social movements, and on the other hand, they consist of similarities between equilibrium resilience thinking and evolutionary resilience thinking. Green governmentality has a focus on technical solutions and top-down governance processes and reaching goals through international target setting and monitoring which corresponds with equilibrium resilience thinking. Ecological modernisation recognises that the responsibility for climate governance lies with more agents than the state and supranational institutions as is the case in green governmentality discourse. However, ecological modernisation discourse distinguishes itself by trusting in the free market to solve the climate crisis (Svensson & Wahlström, 2021). Its modernistic mindset sees the climate crisis as an opportunity for development. This focus on development is similar to the focus equilibrium resilience has on prioritising economic growth. Finally, civic environmentalism discourse is seen as a green radical thought which promotes an ecocentric and just world order. The focus of this discourse is on identifying power structures such as capitalism and patriarchy for inadequate climate governance. Solutions that are included in this approach are for example abandonment of fossil fuels or transforming socio-economic structures (Svensson & Wahlström, 2021). The latter discourse is more challenging to link to resilience thinking, however, similarities can be found with evolutionary resilience thinking and the importance of including community resilience. As mentioned before the dominant use of the concept resilience comes with multiple criticisms that ask for more inclusive and community-driven approaches. An increased focus on community resilience could lead to addressing limitations in and complementing existing approaches and challenging power structures as civic environmentalism aims to accomplish.

Taking this into consideration, it is important for this research when adopting a social movement perspective to recognise the influence that prevailing discourses within which social movements operate have on employing their collective action framing. This in turn, influences their role in contributing to planning for urban climate resilience.

2.5 Conceptual framework: merging urban climate resilience and collective action framing

After discussing the relevant theories and conceptualising urban climate resilience and social movements, this section will continue to explain the conceptual framework developed for this research context. The conceptual framework consists of three steps that will ultimately answer the central research question of this thesis:

How can social movements contribute to planning for urban climate resilience and which lessons can be learned from the Fluss Bad initiative?

Step 1: Planning for urban climate resilience in Berlin
The conceptual framework that will be used in this research largely originates from the framework created by Laeni et al. (2019) and the criticisms on resilience planning discussed in this chapter (Table 1). To analyse planning for urban climate resilience in Berlin, or to establish Berlin's urban climate resilience discourse, data will be collected on the strategy, process and outcome of Berlin's resilience planning approach. This will be done while looking through an evolutionary resilience lens, meaning that it will be important to pay attention to the interplay between robustness, adaptability, and transformability within the resilience approaches.

Step 2: Collective action framing of Fluss Bad
One of the main aims of this research is to investigate the role of the Fluss Bad initiative in building urban climate resilience. Based on the literature that was discussed in this chapter, a social movement perspective will be employed to investigate the community dimension and its potential contribution to resilience planning in Berlin. Thus, after determining Berlin's approach to planning for urban climate resilience as explained in step 1, the focus will be on the Fluss Bad movement to analyse how, through collective action framing, this movement positions itself within the urban climate resilience discourse of Berlin. In order to dissect the manner of collective action framing of Fluss Bad a similar approach will be employed as Martin (2003). Based on Martin (2003) a framework was developed (Table 2) depicting motivational framing, diagnostic framing, and prognostic framing. These three framing types will be identified to determine the manner of collective action framing of Fluss Bad.

Step 3: Combining both analyses
The final step of this research is to combine both analyses and determine how a social movement like Fluss Bad contributes to planning for urban climate resilience. Within this step lessons based on the Fluss Bad movement and Berlin will be derived to formulate recommendations for both planning for urban climate resilience as well as for social movements.

The next chapter will further elaborate on the exact demarcations of this research as well as explain the used methods to answer its research questions.

3. Methods

This chapter presents an outline of the methods used in this research. It starts with explaining the research design. Additionally, as this research was based on the case study of Fluss Bad Berlin, the second section consists of an argumentation for selecting the case study. Furthermore, the data collection process as well as the data analysis are explained. Finally, the chapter concludes with ethical considerations.

3.1 Research design

The primary aim of this research is to get a deeper understanding of the role social movements play in planning for urban climate resilience. To achieve this, a qualitative research design centred around a single case study was developed. To explore the importance of social movements in resilience planning a literature review on the key concepts and theories was conducted. This review of existing literature served as the foundation for the theoretical framework of this research as well as helped address sub-question 1. Based on this theoretical framework, three research steps were established, each employing a different methodology. These steps can be linked to sub-questions 2 and 3. To answer sub-question 2, the first step that will be made is to determine the resilience planning approach of Berlin. Thoughts and experiences influencing decisions about Berlin's urban climate resilience strategies will be collected through conducting semi-structured interviews. Additionally, policy documents and secondary literature will be analysed to create a deeper understanding of the research context and its resilience planning approaches. The second step, vital for addressing sub-question 3, will consist of analysing the collective action framing of Fluss Bad. This will be achieved through a combination of semi-structured interviews, and an assessment of media outreach and newspaper articles. In the final step of this research the results of the preceding steps will be combined. Ultimately, the insights will collectively provide the answer to the overarching research question.

3.2 Selection of case study

For this research a case study was chosen as this allows for investigating a contemporary phenomenon within a real-life context (Yin, 2013). It is a single case study on the functioning of the Fluss Bad initiative within the resilience planning context of the city of Berlin. This research acknowledges that the decision to use a single-case study diminishes chances for generalising results and thus questions the reliability of these findings. However, this approach offers specificity and an opportunity to provide a "thick description" of insights while focusing on the phenomena at hand instead of risking dilution caused by additionally linking and relating to other cases. On top of that it is important to emphasise that the aim of this research was not to reach generalisation. Instead, the presented results will offer an opportunity to learn lessons about how initiatives like Fluss Bad position themselves within the resilience planning context they operate in. Consequently, these lessons can be shared with other cities that face broadly similar conditions.

As this research consisted of a four-month exchange abroad to the city of Berlin, it was a deliberate choice to make the German capital the central focus of this thesis. The decision to select the exchange abroad location was made before defining the research aim, allowing for the development of a research focus that aligned logically, remained relevant, and was well-suited to Berlin. The city offers an interesting case as on the one hand it often is seen as one of

the greenest cities in Europe and a frontrunner in a variety of aspects (Mahlkow & Donner, 2017; Vulova et al., 2023). On the other hand, Berlin is also known to have challenging circumstances which hamper the effective implementation of urban climate resilience measurements (Mahlkow & Donner, 2017). On top of that, research in the field of climate policy in Berlin underscores the insufficient engagement of residents in climate resilience efforts (Mahlkow & Donner, 2017; Heiland et al., 2012).

The selection of Berlin was the main reason to look for a relevant case study which operates in the same city. Based on the aim of this research, the Fluss Bad initiative appeared to be a suitable case study as it is a project initiated and evolved into an NGO by two Berlin-based architects to transform a section of the river Spree into a natural swimming pool. Although the initiative does not explicitly describe itself as a project to promote community resilience or to adapt to climate change, it does not mean it is impossible to indirectly contribute to these aspects. The initiative aims to revitalise the river and create or reclaim a recreational space which will provide society with a way to find relief from urban heat island effects and offer solutions for water management-related challenges. According to its members, Fluss Bad can be seen as a social movement for urban liveability, raising climate awareness and enriching public space. Furthermore, Fluss Bad appears to be rather successful considering it moved from being viewed as a "utopian fantasy" (Holcim Foundation, 2017) to an initiative with over 500 members that appeared to be taken seriously by the city's administration as it was incorporated in the 2016 policy on urban development and climate as well as it was assigned funding (Senatsverwaltung für Stadtentwicklung und Umwelt, 2016).

3.3 Analysing planning for urban climate resilience in Berlin

Literature review on the resilience planning approaches in Berlin
To analyse urban climate resilience approaches in Berlin an additional literature review was completed. Existing literature on the development and implementation of resilience strategies in Berlin was analysed and aimed at gaining a nuanced understanding of the context of urban climate policies. Furthermore, this literature was used to indicate opportunities, and challenges but also criticisms of current resilience approaches developed by Berlin's administration. The results of this analysis will be presented in Chapter 4 and an overview of the sources is provided in Table 3. All sources were derived from academic databases or search engines like Google Scholar and Smartcat using search terms such as: 'Berlin', 'climate resilience', 'climate change adaptation', 'Fluss Bad', 'urban development', 'urban planning'.

The literature in Table 3 was analysed through critically determining potential research gaps or trends with a focus on strategy, process and outcome as defined in Chapter 2. The article by Marotta (2017) focuses on both Berlin and Fluss Bad and was therefore used to understand contextual aspects of Fluss Bad as well as its origin.

Table 3 Overview of reviewed literature on Berlin's resilience planning policies

Source	Keywords
Conradt, T., Engelhardt, H., Menz, C., Vicente-Serrano, S.M., Álvarez Farizo, B., Peña-Angulo, D., Domínguez-Castro, F., Eklundh, L., Jin, H., Boincean, B., Murphy, C. and Ignacio López-Moreno, J. (2023). Cross-sectoral impacts of the 2018–2019 Central European drought and climate resilience in the German part of the Elbe River basin. *Regional Environmental Change*, 23(1).	Central European drought; Elbe River basin; Eastern Germany; Drought indices; Drought impacts; Cross-sectoral
Heiland, S., Wilke, C. and Rittel, K. (2012). Urban Climate Change Adaptation Strategies - The Example of the Urban Development Plan Berlin. *UVP-report*, 26(1), pp.44–49.	Climate adaptation; Urban climate; Urban development planning
Mahlkow, N. and Donner, J. (2017). From Planning to Implementation? The Role of Climate Change Adaptation Plans to Tackle Heat Stress: A Case Study of Berlin, Germany. *Journal of Planning Education and Research*, 37(4), pp.385–396.	Berlin; Climate change Adaptation; Constellation analysis; Policy instruments; Urban heat.
Mahlkow, N., Lakes, T., Donner, J., Köppel, J. and Schreurs, M. (2016). Developing storylines for urban climate governance by using Constellation Analysis — insights from a case study in Berlin, Germany. *Urban Climate*, 17, pp.266–283.	Climate change adaptation; Urban heat; Urban governance strategies; Urban development; Storylines; Constellation Analysis
Marotta, I. (2017). Strategies of Urban Regeneration for the Historical City: Flussbad Berlin. *Agathon | International Journal of Architecture, Art and Design*, 1, pp.41–46.	River renewal, Museum Island, Flussbad Berlin
Straka, M. and Sodoudi, S. (2019). Evaluating climate change adaptation strategies and scenarios of enhanced vertical and horizontal compactness at urban scale (a case study for Berlin). *Landscape and Urban Planning*, 183, pp.68–78.	Climate change adaptation; Enhanced compactness; Urban heat island; Urban modelling; Urban development; Urban planning
Vulova, S., Duarte Rocha, A., Meier, F., Nouri, H., Schulz, C., Soulsby, C., Tetzlaff, D. and Kleinschmit, B. (2023). City-wide, high-resolution mapping of evapotranspiration to guide climate-resilient planning. *Remote Sensing of Environment*, 287, p.113487.	Local Climate Zones; Latent heat flux, Cooling cities, Urban heat island; Urban planning; Water scarcity; Nature-based solutions; Satellite remote sensing; NDVI; Phenology; Transpiration

Policy document analysis of urban climate resilience approaches
In addition to the literature review, a policy document analysis was included in this data collection as policy documents provide insights into how the city administration of Berlin understands and addresses the challenges of climate change. Moreover, they offer a clear

picture of the chosen strategy, the process and the desired outcomes that shape their approach to climate adaptation. Table 4 provides an overview of the selected policy documents that are considered in this research. As Berlin did not develop a policy which solely focuses on 'climate resilience' but did develop multiple documents on 'climate adaptation' (which is an aspect of climate resilience) the latter form the majority of documents included in the policy analysis. The documents in Table 4 are included in the analysis as they hold the ability to create insight into Berlin's developed strategies for the increasing challenges of climate change. Policy on urban development and climate mitigation were included given their contextual relevance and the overlap of these themes with climate adaptation. The selected period of these documents ranges from 2011 to 2021. In this way, the period when the city administration of Berlin first began to publish strategies on climate mitigation and adaptation as well as the most recent policies were included. The documents were retrieved from the official online portal of Berlin, www.berlin.de, which hosts a diverse range of information related to various subjects in the city. Although most documents are originally published in German, some contain an English summary or version. In instances where only English summaries were present, these were analysed, and additional relevant German sections were translated using the DeepL online translating software. These relevant sections were revealed by searching for terms such as, but not limited to, 'resilience', 'citizens', 'society', 'community', or 'adaptation'. When no English summary was available but a German summary was provided, the entire summary was translated using DeepL and examined. In cases where a document was available in English, the document as a whole was analysed.

Considering the data analysis of these policy documents, the selected documents presented in Table 4 have been coded using the qualitative research software Atlas.ti. The coding process consisted of both deductively and inductively derived codes. All code groups and codes can be found in the codebook presented in Appendix A. The deductive codes are based on the theoretical framework of this research (Table 1) and, as the purpose for analysing these policy documents is to determine the urban climate resilience approach of Berlin, the following code groups were established: strategy, process, and outcome. Consequently, these code groups have been used to guide the inductive coding process.

Table 4 Overview policy documents

Title policy document	Organisation responsible for document + publication year	Topic of document
Stadtentwicklungsplan (StEP) Klima	Senatsverwaltung für Stadtentwicklung, Bauen und Wohnen (2011)	Urban development plan with focus on climate
Klimaanpassung für Berlin - Maßnahmen und Beispiele	Senatsverwaltung für Stadtentwicklung und Umwelt (2014)	Instruments/projects serving climate adaptation and urban quality of life
Berlin Strategy - Urban Development Concept Berlin 2030 (StEK 2030)	Senatsverwaltung für Stadtentwicklung und Umwelt (2015)	Strategy for the city's future based on status report from 2013

Adapting to the Impacts of Climate Change in Berlin - AFOK Executive Summary	Senatsverwaltung für Stadtentwicklung und Umwelt (2016)	Provides a basis for actively adapting to climate change by offering future climate scenarios, analysis of vulnerabilities and adaptation strategies
StEP Klima KONKRET	Senatsverwaltung Bauen und Wohnen (2016)	Deepening of 2011 strategy focused on practice and measures
Climate protection in Berlin	Senatsverwaltung für Umwelt, Mobilität und Klima Schütz (2018)	Factsheet providing an overview of Berlin's role in climate change, goals and approaches
BEK 2030 - Berlin Energy and Climate Protection Programme 2030	Senatsverwaltung für Umwelt, Mobilität und Klima Schütz (2019)	An integrated approach to climate protection and climate change mitigation mainly focused on reducing CO_2 emissions
Stadtentwicklungsplan Klima 2.0	Senatsverwaltung Bauen und Wohnen (2021)	Urban development plan with focus on climate

Semi-structured interviews: planning for urban climate resilience in Berlin
Finally, to help understand and determine the urban climate resilience discourse of Berlin, thoughts about and experiences with resilience planning have been collected through conducting interviews with relevant actors in the field. To understand the reasons behind the development of specific strategies it is important to look at the underlying motivations and considerations. Moreover, the experiences and opinions of involved actors as a result of the impact and effectiveness of these strategies are of importance as well. Interviews allow for investigating these motivations, experiences and opinions and provide insights into personal views in addition to the information from policy documents. Table 5 provides an overview of all respondents who participated in an interview. It is important to point out that for this research's purpose interviews will be conducted on two levels: 1) resilience planning in Berlin and 2) experiences of actors involved in social movements, particularly Fluss Bad. The data collection and analysis of the latter will be elaborated upon in section 3.4 of this chapter. Respondents were included in the data set when they were: 1) based in Berlin and 2) possess experience in either resilience planning strategies in the city or have knowledge and experience with social movements. To further increase the diversity of the gathered perspective actors from multiple fields, such as policymakers, architects, academia and active members, were included in the research sample.

On the resilience planning level, interview respondents were gathered by employing a snowball sampling method. The sampling process was initiated by sending emails to employees of Berlin's city administration who were thought to have expertise in climate adaptation policies. These initial contacts then helped in expanding the respondent sample as they provided information on other potential interviewees and in some cases established contact with them. The conducted interviews were semi-structured and carried out and

transcribed in English, which was not the first language for all participants. Two of the in total, including both the resilience planning level and social movement level, nine interviews were held online while six took place face-to-face at locations convenient for the participants. One participant preferred to respond to a set of preformulated questions with written answers due to language restrictions. All other interviews were conducted in generally the same manner, however, based on the expertise of the interviewee and the comprehensiveness of their answers some questions were skipped or additional questions were asked.

Considering the focus of this research on both resilience planning in Berlin and social movements, two different interview guides (see Appendix B and C) were developed. The interview guide used for interviews with respondents based in the resilience planning field (Appendix B) roughly consisted of questions about the history and the process of climate resilience in Berlin, the current challenges and strategies relating to that and the role communities or movements (potentially) play in these strategies. Furthermore, respondents were also asked about their opinion and experience with Fluss Bad.

After conducting, the interviews were transcribed using the recordings which were made during the interviews. To analyse the interviews the same code book (Appendix A) as developed for the analysis of the policy documents was employed to code the transcripts. Similarly, the deductive code groups (strategy, process and outcome) were applied to guide the inductive coding process.

Table 5 Overview of interview respondents

Respondent (R - x)	Organisation	Function	Date of conducting	Manner of conducting
1	Klimaschutz (climate protection) department, district Mitte	Policymaker	27/4	Video-call
2	Changing Cities (NGO)	Communication officer	2/5	Face to face
3	Fluss Bad Berlin (NGO)	Architect	3/5	Face to face
4	Fluss Bad Berlin (NGO)	Active member	19/5	Face to face
5	Private company employee in spatial domain	Consultant	22/5	Face to face
6	Floating University (NGO)	Architect	14/6	Face to face
7	Senatsverwaltung für Stadtentwicklung, Bauen und Wohnen (Senate Department for Urban Development, Building and Housing)	Project manager	16/6	Face to face

8	Senatsverwaltung für Stadtentwicklung, Bauen und Wohnen (Senate Department for Urban Development, Building and Housing)	Volunteer in Stadtwerkstatt (participatory city development process)	21/6	Written response by email
9	Humboldt Universität Berlin	Researcher on climate adaptation in Berlin	27/6	Video-call

3.4 Analysing collective action framing of the Fluss Bad movement

Semi-structured interviews: social movements in Berlin

To cultivate a comprehension of the collective action framing of the Fluss Bad initiative, it was necessary to engage in interviews with stakeholders and participants connected to Fluss Bad. This approach made it possible to identify some of the individual motivations and underlying causes driving active involvement in this social movement. Moreover, adopting interviews as a method in this research will contribute to understanding the reasons behind the selection of specific organised activities, as well as the strategic choices made by the movement, contingent upon the context in which they operate. In alignment with the approach previously discussed, a sample of potential interview respondents was formed utilising the snowball sampling method. This consisted of email correspondence with members of the organisation of Fluss Bad. Initially, the intent was to exclusively incorporate individuals directly associated with Fluss Bad, given its central role as the primary case of this research. However, as a result of employing a snowball-sampling method, after the first interview with the initiator of Fluss Bad, contact was established with actors involved in other social movements operating in Berlin, such as Changing Cities and the Floating University. As a result, it was deemed advantageous to broaden the sample criteria as it created the potential of gaining valuable insights into the functioning of Fluss Bad from the viewpoint of other movements. Furthermore, it offered a deeper understanding of the strategies employed by these other movements. An overview of the different interview respondents is presented in Table 5.

To conduct the interviews with actors involved in social movements a second interview guide was developed (Appendix C). This interview guide focussed on history, process, strategies and challenges as well but then in relation to the social movement. Moreover, it also consisted of questions about the recruitment and maintenance of members. Interviewees were also asked about how their movement fits within the city's climate resilience strategy. If the interviewee was part of a different social movement than Fluss Bad, they were also questioned about their opinion of Fluss Bad. Both interview guides proved to be helpful as a starting point in creating more clarity on how social movements potentially contribute to climate adaptation and how these movements position themselves based on the climate resilience narrative of Berlin.

In the analysis of the gathered interview data, a consistent approach was maintained through utilising the same code book (Appendix A). However, given the specific purpose of this set of interviews, which was to deconstruct the collective action framing of Fluss Bad, a different set of deductive code groups was applied to the transcripts. These groups, namely 'motivational', 'diagnostic', and 'prognostic', were based on the theoretical framework of this research,

Consequently, they served as guiding codes during the inductive coding process. Examples of inductive codes are 'need for positive stories and visualisation' or 'conflicting/competing needs and aspects'. It is important to point out that, while the line of questioning directed at the respondents differed from the previously described interviews, social movement actors were also queried about their experiences with the resilience approach in Berlin. Therefore, these interviews also provided useful information for determining the urban climate resilience approach in Berlin and deductive code groups 'strategy', 'process', and 'outcome' could also be applied to these transcripts.

Social media outreach analysis and newspaper articles
Next to the semi-structured interviews various other data sources were integrated into the data collection process. Interviews predominantly offer insights into stakeholder perspectives. To move beyond this useful, but individual-centred method, additional data sources were included. These additional materials were included to create a deeper understanding of Fluss Bad. For example how the movement functions, how it resonates with its members and the public and how it faces the challenges within the city of Berlin. Appendix D shows which additional materials were used for this aim. A selection of Instagram posts on Fluss Bad's social media account was analysed. Instagram is one of the main mediums the movement uses and functions as an example of how the movement communicates its motivations, activities, news and emotions to the public. To indicate Instagram's significance for Fluss Bad, it is noteworthy that in July 2023, Fluss Bad shared a total of 17 visual posts, with some days featuring multiple posts, with their 3145 followers.

Besides Instagram posts, observations of organised activities by the researcher created the opportunity to retrieve experiential insights for understanding Fluss Bad's collective identity and to see if they foster some sense of belonging. But most importantly to investigate how they employ their strategies in practice. Finally, to add an external perspective on the movement various newspaper articles were included as well. An effort was made to include articles from different periods as well as to include local, regional, and international newspapers. This allowed for understanding how the public's perception of the movement has evolved while including articles from different papers provided some nuance. The newspaper articles in Appendix D were retrieved by using the search term "Fluss Bad" on LexisNexis looking at both articles published in German and English language. German articles were translated using DeepL.

While these sources were valuable in enhancing the contextual understanding of the research topic, it is important to acknowledge that they were not subjected to detailed examination. The primary focus of this thesis relies on policy documents and interviews and sources mentioned in this section served a complementary role. Nevertheless, these additional materials created a broader contextualisation of the findings and added depth to an overall understanding of the research focus.

The primary methods of inquiry concerning collective action framing were interviews, but additional material was also used. Unlike the main methods, the chosen approach for these additional materials was to form a holistic understanding through thoroughly reading and scrutinising the material and visuals. Attention was paid to the material's components and then comparing them with other elements of the collected data to indicate patterns and themes. The newspaper articles, however, were analysed through inductive coding for

organisational purposes. During the observations of activities, emphasis was put on who participated in these activities and on assessing the atmosphere. Visualisations provided by Fluss Bad's Instagram account in the form of pictures, also prove to be a useful source to get an idea of the atmosphere and the people participating during activities and are in particular appropriate for analysing the prognostic framing process of Fluss Bad.

3.5 Ethical considerations

Before formulating and finalising the exact research questions, preliminary work was dedicated to becoming more familiar with the context of Berlin. This involved a few explorative conversations with experienced actors in the field of urban planning who had ties to Berlin. This helped the researcher, an 'outsider' in Berlin, to better understand relevant study areas in a new city. Being unfamiliar with the research context also contributed to this research as this enabled me to identify certain aspects that locals might overlook due to their routine perception.

In this research, interviews formed a substantial part of the data collection privacy considerations were essential as research respondents have the right to privacy and confidentiality. Potential respondents were initially provided with detailed information about the research aims, and those who agreed to take part were presented with a consent form (Appendix E) that included options to remain anonymous and allow the recording of the interview. All respondents agreed to the recording of the interviews and consequently, the recordings were stored on a device secured by a password and were deleted upon completion of this master thesis. As one respondent wished to remain anonymous, it was chosen to keep all respondents anonymous through the use of pseudonyms. While respondents had the opportunity to withdraw or seek clarifications, none chose to do so, nor did anyone request access to interview transcripts or quotations used in the research.

As previously mentioned, all interview respondents are native German speakers. Due to my limited proficiency in German, it was necessary to conduct the interviews in English and use translation software to understand policy documents and additional data. This approach was chosen as accommodating respondents to speak their mother tongue would have led to a lower quality of the interviews and consequently this would have compromised the quality of the data as well. During the interviews, respondents were given time to adapt to English and in some cases German words were used. The latter did not lead to misunderstanding as I participated in a German course before starting the data collection phase which helped to put words in the right context. Although some respondents saw speaking English as a challenge, no issues arose during any of the interviews and the interviews were experienced as pleasant and interesting by both sides.

4. Planning for urban climate resilience in Berlin and Fluss Bad's collective action framing

4.1 Setting the scene

The following section was written to create some understanding of the context in which the case study is situated. The text below provides a better basis for interpreting the forthcoming research findings on how a social movement initiated by Berliners for urban river swimming can contribute to urban climate resilience by first explaining the contextual backdrop of Berlin and Fluss Bad.

Berlin: a pioneer when it comes to resilience planning?
With about 3.8 million inhabitants and an area that covers 891 km² capital, Berlin is the largest city in Germany (Statistik Berlin Brandenburg, 2023; Vulova et al., 2023). Berlin is, among other things, characterised by its distinctive green infrastructure and open spaces such as Tempelhofer Feld and Tiergarten. The city has one of the highest percentages of green infrastructure among European cities and is therefore often thought of as being a 'pioneer city' when it comes to building resilient green cities (Mahlkow & Donner, 2017; Vulova et al., 2023).

Figure 2 Example of distinct open green space in Berlin, from left to right: Tempelhofer Feld (Future Landscapes, 2018), and Tiergarten (Expedia, 2023)

Nevertheless, Berlin experiences climate change pressure and in 2019 it was the first of Germany's 16 Federal States to declare a state of climate emergency (Senate Department for the Environment, Urban Mobility, Consumer Protection and Climate Action, 2022). In the case of Berlin, the changing climate will mean that its citizens face extreme cold days in winter and extreme hot days in summer (Vulova et al., 2023). Research shows that during heat waves between the period of 1990-2006 mortality rates were especially high in the densely built-up area of Berlin (Straka & Sodoudi, 2019). The city is seen as a hotspot for heat stress in both the inner city centre and outskirts which emphasises the importance of climate change adaptation measures (Vulova et al., 2023; Mahlkow et al., 2016). Furthermore, research about Berlin and Germany focused on modelling climate change impact showed that although Germany is aware of the risk of droughts it is among the least prepared countries with no appropriate management plan in place (Conradt et al., 2023). Conradt et al. (2023) argue for installing warning systems for droughts and other stress factors in both natural and societal systems together with further development of appropriate action plans. The composing of adequate climate action plans will be challenging as Berlin is expected to grow substantially and on top of that is known to be in a precarious economic situation (Mahlkow & Donner, 2017). The city

of Berlin first started to react to the worsening state of the climate in 2011 by publishing climate adaptation strategies and the need to become more resilient was soon vocalised in these documents as well (Senatsverwaltung für Stadtentwicklung und Umwelt, 2016). The necessity of Berlin having to build resilience is further stipulated by Berlin's involvement in collaborative networks of cities, such as C40 Cities, which all strive to become more resilient.

Fluss Bad: an initiative towards urban river swimming
Fluss Bad Berlin is an urban development initiative of the residents of Berlin. The Fluss Bad project's main goal is to transform a part of the river Spree into a public swimming place and clean the water through nature-based solutions. Only in a few cities is it possible to swim in inner-city waters, which makes it a unique selling point. Urban river swimming offers a cooling escape from heat stress which is becoming more and more urgent in cities due to climate change and the increase in the frequency of hot spells (Senatsverwaltung für Stadtentwicklung und Umwelt, 2016). Following the original plan of Fluss Bad's initiators, Fluss Bad is aimed to be realised at Kupfergraben. Kupfergraben is a side canal of the Spree which flows through the city district Mitte which houses many of Berlin's popular sightseeing highlights and landmarks such as the Humboldt Forum and Museum Island (Figure 3).

Figure 3 Map of the districts in Berlin with a red circle indicating the focus area of the Fluss Bad (Author, 2023)

Mitte is the historic city centre of Berlin and has transformed from being a relatively 'normal' neighbourhood that housed the headquarters of the German Democratic Republic to being the city's main hotspot to attract and accommodate tourists (Marotta, 2017). From the 1990s onward Mitte has known touristification processes and the Museum Island has been part of Unesco's World Heritage since 1999 due to its architectural and cultural characteristics. Consequently, this led to the neighbourhood no longer being occupied by the original Berliners as it became too expensive and overcrowded (Marotta, 2017).

Figure 4 Berlin Mitte, from left to right: Berliner Dom (Author, 2023), Pergamon Museum at Museum Island (Zscharnt, 2019), and tourist boat along the Fernsehturm and Humboldt Forum (Author, 2023)

Throughout history, the Spree has known many functions: a way of transport, a means of defence, a source of food, waste disposal, as an energy supply as well as a place for leisure (Marotta, 2017). Now the water of the Spree is primarily used for the transport of goods and tourists but is thought to be too polluted to be suitable for other leisure activities such as swimming. Fluss Bad portrays itself as an initiative that aims to make the river a place for Berliners again. 750 metres of the canal is meant to be transformed into a freely accessible swimming pool (Figure 5 & 6). To ensure the water quality is sufficient for swimming, the other 850-metre-long upper section of the canal is meant to become an urban biotope landscape consisting of reed that will purify the water of the Spree while at the same time functioning as an urban wetland (Figure 5 & 7). The realisation of this public non-commercial recreation place is expected to lead to significant diversification and increased quality of public space.
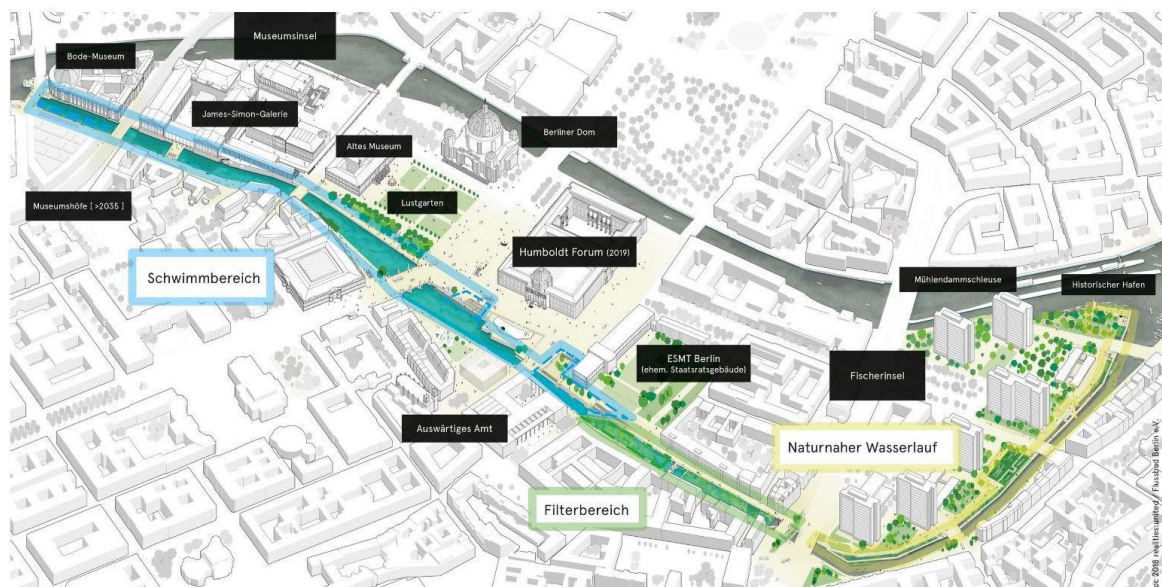

Figure 5 Schematic plan of the Fluss Bad showing from left to right: swimming section, filter section, and (near) natural watercourse (Flussbad Berlin e.V., 2018)
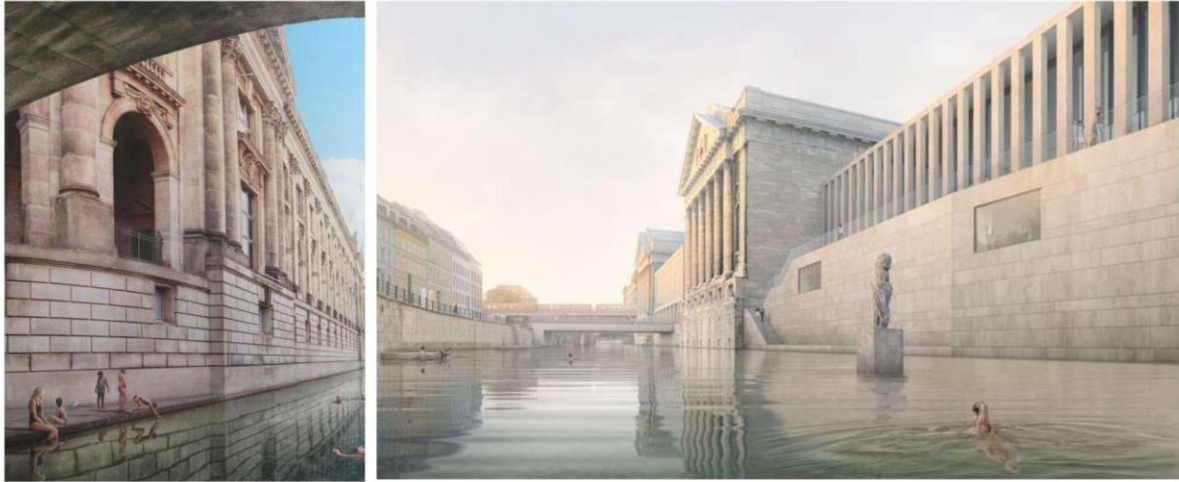
Figure 6 Visualisation swimming section along Museum Island (realities:united, 2019c; 2019d)

Figure 7 Fluss Bad visualisation from left to right: stairs to enter the Spree next to Humboldt Forum, filtering of the Spree with reet, and the section along Fischerinsel (near-) natural watercourse (realities:united, 2019e; 2019a; 2019b)

The concept of Fluss Bad Berlin was already pitched to the city of Berlin by architects Tim and Jan Edler in 1998. Back then it was rejected and put aside as a 'utopian fantasy'. However, in 2012 the design won multiple prizes in the Global Lafarge Holcim Awards. After receiving these prizes the architects were determined to found the non-profit organisation 'Fluss Bad Berlin' and saw this as an opportunity "to transform a project for Berlin into a project for Berliners" (R-3). Winning the awards brought the design to receive international attention, enabled the development of a network and opened up discussions in the Senate of Berlin, which eventually led to the funding and realisation of Fluss Bad Garten and Fluss Bad Pokal (Hugron, 2019). Fluss Bad Garten is a public space made available to the Fluss Bad organisation to provide information on the initiative and organise activities "to anchor the project in the consciousness of Berliners" (Senatsverwaltung für Stadtentwicklung, Bauen und Wohnen, 2023) (Figure 8). Fluss Bad Pokal is an annual sports event allowing participants to swim in the Spree, however, after lifting COVID-19 restrictions a permit for organising this event was not given by the government (Figure 8). According to Berlin's climate adaptation policy from 2016 the Fluss Bad project was to be realised by the end of 2018 (Senatsverwaltung

Bauen und Wohnen, 2016). However, in reality the construction at the site still has not started yet.

Figure 8 Current state Fluss Bad, from left to right: Fluss Bad Garten information signs (Author, 2023), direction sign for Fluss Bad Garten coffee bus (Author, 2023), and the Fluss Bad Pokal along the Pergamon Museum (Fendt, 2018)

Until now, pursuing the realisation of the project has resulted in an initiative that expanded from an initiative that started with fifteen enthusiasts in 2012 into an initiative with over 500 members (Flussbad Berlin e.V., 2021). On the official website of Fluss Bad, it is stated that these members not only stand for the idea of Fluss Bad Berlin but also see themselves as part of a social movement that wants to open up and enrich public space (Flussbad Berlin e.V., 2021). At the moment of writing this thesis, Fluss Bad finds itself in deep water as it appears to be uncertain whether Fluss Bad in its current form will be realised. Furthermore, the project is challenged by a lot of controversy calling the project a waste of public funds and accusing it of being a greenwashing project (R-3). This evokes questioning the viability of initiatives such as Fluss Bad in Berlin. However, these challenges also underscore the significance of studying how the context of Berlin shapes the attempts of Fluss Bad to keep pursuing its goals.

4.2 Planning for urban climate resilience in Berlin

The results presented below were derived from policy documents as well as from a literature review and are complemented by experiences from interviews with stakeholders in the field. The first section explains Berlin's urban climate resilience strategy, the process of developing this strategy and the desired anticipated outcome.

Strategy: focus on equilibrium resilience and green-blue infrastructure
The quotation below presents an example of how resilience comes back in climate adaptation and mitigation strategies:

> "Berlin must become more resilient. Adapting the city to climate change is crucial for it to grow without losing quality of life. Berlin must be designed in such a way that heavy rain no longer leads to flooding and that people and nature can survive even long periods of heat." (Senatsverwaltung Bauen und Wohnen, 2016, p. 91)

This quotation indicates how resilience is defined in policies. Namely as climate adaptation. It highlights the urgency for Berlin to adapt to climate change which is specifically directed towards addressing heat spells and heavy rain. The given reason for this, as stated in the policy, is that Berlin needs to be able to expand physically while ensuring that the quality of life does not diminish. Good quality of life, according to this statement, is established when there are no longer floods due to heavy rain and citizens can endure hot spells. When looking at other policy documents, heat and heavy rain are indeed seen as the main threats to the liveability of the city. Although some documents aim to be slightly more ambitious by phrasing that "... the quality of life and sojourning in the city can be enhanced" (Senatsverwaltung für Stadtentwicklung und Umwelt, 2016, p. 17) instead of being maintained. Overall, the definition of resilience as provided by the policy documents remains rather limited to an equilibrium perspective of resilience and in some cases is used synonymously with climate adaptation:

> "Resilience: The ability of a social or ecological system to withstand external disturbances or shocks and to resume function after longer or shorter periods of time and maintaining its structure" (Senatsverwaltung für Stadtentwicklung und Umwelt, 2016, p. 27)

> "Climate resilience: Resilience refers to the ability of a social or ecosystem to withstand external disturbances or shocks, i.e. to maintain its basic organisation - also through structural adaptation - and to continue to fulfil its functions or to resume them after some time. Climate resilience in this sense means: adaptability to climate change" (Senatsverwaltung Bauen und Wohnen, 2021, p. 131)

However when taking a closer look at the use of resilience in approaches to reach resilience that specifically mention the concept these often relate to making vegetation and greenery more resilient, through for example "... planting more native species resistant to stress" (Senatsverwaltung für Stadtentwicklung und Umwelt, 2016, p. 19). According to Respondent 9, who researches climate adaptation in Berlin, Berlin's resilience strategies rely on the promotion of green-blue infrastructure as a key approach. This results in measures such as increasing and improving urban green and more nature-based solutions for retaining rainwaters at the location where it falls instead of channelling it away (R-9). Resilience policies state that these measures are supposed to be integrated with climate mitigation measures. However, in practice, it appeared to be challenging to implement both proposed climate protection and climate adaptation measures as they turned out to compromise each other. A frequently mentioned example of this are Berlin's attempts to both hold onto the compact city principle in order to reduce CO2 emissions and to increase and improve urban green spaces. This means that if the city wants to hold on to being compact it will need to develop dwellings and infrastructure within the city instead of expanding horizontally. This is said to compromise the green open spaces within the city which are of importance for climate adaptation goals. According to an employee of one of Berlins' administrative districts who currently works on implementing climate adaptation policy, this is still an issue despite the implementation of a new climate adaptation policy in 2021 (R-1). The compromising of climate adaptation measures is related to Berlin's challenged economic situation as well. This results in a prioritising of development that strengthens the city's economic situation, such as attracting investors, which does not tend to be development that enhances climate resilience. Considering this and the competition between climate change mitigation and adaptation measures could even imply an increase in the vulnerability to urban heat (Mahlkow et al., 2016). Currently, climate mitigation measures and climate adaptation measures are seen as

two distinct topics which are integrated through complementing each other; however, practice shows that policy requires better implementation and combining the two to prevent the compromising of adaptation measures as an employee of one of Berlin's administrative districts remarked:

> "It's more that there is a clear definition but I guess sometimes the cut is too clear. We have to build all buildings in the inner city, then we only think in this frame of climate change but we also have to think about climate adaptation because it is mixed in a way". (R-1)

Several scientific articles discuss and criticise the implementation of resilience strategies in Berlin. The criticisms presented highlight that although policies identify climate impact and provide options for actions, they mostly outline prospects instead of proposing rigid regulations (Mahlkow & Donner, 2017.) This means that planners often feel overwhelmed by the many different concepts the policies mention. Consequently, policy documents consisting of frameworks that are perceived as vague were often found to be neglected in practice (Mahlkow & Donner, 2017). Actors that worked with the policies pleaded for binding citywide strategies that are easy to integrate into their workflow; as they did not have the capacity and lacked strategy to operationalise the proposed measures on a local level (Mahlkow & Donner, 2017). Although these criticisms are primarily based on Berlin's early resilience strategies, the lack of a concrete, accessible and holistic plan is still causing difficulties in the implementation of more recent policies. Respondent 5, a former administrative employee now working as a consultant in urban planning, explained that while climate adaptation measures are considered in new development projects or when renovating streets, a comprehensive city-wide proactive approach is still notably absent as he stated: "Berlin has no real proactive plan, to roll things out across the whole city, that is not happening" (R-5). Respondent 9, a researcher in the field of climate adaptation, points out that the proposed measures are not the issue but the lack of obligations to actually adopt these measures is. He indicated that: "the city is very very reluctant to put up obligations" (R-9). As a result, the city utilises subsidy programs as incentives to stimulate the adoption of climate adaptation.

An important explanation for a lack of a holistic approach but also for why it appears to be so difficult to implement measures is the general capacity of the city's administration. Respondent 5, a former government employee, said the following:

> "…the administration of Berlin is so run down. They don't have enough employees, they don't have enough money. Because of that they can hardly do the work they need to do. If you look around the streets are demolished, we have so many problems and we struggle with maintaining what we have and we hardly can maintain what is outside so there is nearly no capacity for new things. Implementing change in Berlin is extremely difficult because of this situation." (R-5)

The situation explained by Respondent 5 which was caused by the city administration being understaffed and under-resourced, was emphasised by Respondent 9 who researches climate adaptation in Berlin:

> "…working for the administration is so unpopular and simply not nice. If employees are motivated they quit. And if they don't quit, it is because they have either never wanted to or they have learned to simply survive at the job. Long story short, people are not really there to do their best at the job. Because if they did, they would walk straight into burnout. Clearly this leads to very conservative, very strict application of the law. Meaning that if you want to get a green roof,

if you want to get a system that collects rainwater, in the end, most likely, if it's not the easy standard solution of the sixties there will be some reason not to do it." (R-9)

This statement shows that due to the working circumstances within the city administration, approaches that require more complex solutions, for example, approaches which involve community engagement, and increase social learning, will most likely not be implemented. Two other respondents who currently work at the city administration gave a more nuanced answer but still indicated that sadly because they are understaffed and under-resourced they do not really have the time "to look over the border of the desk" (R-7).

Process: inconsistent involvement of urban society
According to Mahlkow and Donner (2017) in Berlin's earlier resilience strategies there was a lack of participation in the creation of these strategies. Heiland et al. (2012) concur with this and argue for higher involvement of local stakeholders as well as permanent and institutionalised stakeholder involvement in climate adaptation measures, such as collaboration with housing associations. Policy documents developed in 2016 mention that the urban community has been involved in developing tools for adapting to climate change (Senatsverwaltung Bauen und Wohnen, 2016). However, these also suggest improved coordination and communication with the urban society, especially concerning a redesign of responsibilities and cost absorptions (Senatsverwaltung Bauen und Wohnen, 2016). Often, this results in a framing of communities as entities to inform and encourage behaviour change. They are not so much included in the resilience building process, but seen as a necessity to communicate or inform towards rather than communicating with. On top of this, urban society or the urban community in this sense is framed as individuals with their own responsibility to adapt or change behaviour. Although directed towards climate mitigation instead towards resilience, the quotation below is a good example of how citizens are seen as part of the solution by policymakers.

> "In addition, each and every one of us can contribute to climate protection through the choices we make with regard to shopping, travel and transport. As far as mobility is concerned, we are paving the way towards climate protection by expanding the network of cycle paths, buses and trains – and in doing so, we are emphasising accessibility. This will make it easier to leave the car in the garage and use public means of transport or a bike instead. Climate protection means actively shaping the future – that is why I am looking forward to implementing the BEK 2030 together with the citizens of Berlin." (Senatsverwaltung für Umwelt, Mobilität und Klima Schütz, 2019, p. 3)

The quote shows that climate protection is framed as a task for which society as a whole is responsible. Some policy documents explained how citizens were included in the creation of these documents. For example through online discussion platforms, workshops, projects at elementary schools or as explained below:

> "We organised a focussed, interdisciplinary programme of work and discussion, inviting the general public and institutional players from the community, the economy, science and politics in Berlin to play a role in developing our future. This programme generated a lively response in the city forums and associated workshops. I am delighted that so many people took an active part". (Senatsverwaltung für Stadtentwicklung und Umwelt, 2015, p. 4)

While policies emphasise the importance of involving societal stakeholders in policy development and implementation processes, particularly in areas such as informing,

consultation, awareness-raising, and encouraging behavioural change, the actual implementation of these stakeholder involvement efforts remains rather inconsistent in Berlin and fluctuates in priority. Respondents 1 and 7 who both work at the city administration first expressed difficulties considering the communication with local stakeholders. They explained that during participation processes there often is a misunderstanding about the scope of influence local actors have. Respondent 1 explained that people often come to her with wishes she has no influence on at the level she works. Currently, efforts are being made to improve this communication by framing topics in a certain way so policymakers can use the input they receive. Additionally, Respondent 7 made clear that she often encounters timing dilemmas in involving local stakeholders: early involvement may lead to a lack of understanding among stakeholders, while late involvement can leave stakeholders feeling excluded. These examples reflect the current challenges in Berlin's attempts for open and dynamic participation processes, highlighting the need for a more accessible and successful framework to facilitate such engagement.

A broad stakeholder involvement is especially challenging when the capacity of the city administration is low as was explained earlier in this chapter. Considering this, it was mentioned by respondents that the involvement of stakeholders, in particular the involvement of local initiatives, really depends on which policymakers are involved in a project on the administration level, as a former employee of the city's administration explained:

> "If you have people there who take the initiatives into account, who really want to care for it then it might work well. But you have lots of people working at the administration that don't really care about anything. And of course, then you don't have a big impact." (R-5)

An important aspect which influences this is the current political composition of Berlin. Respondent 7, who works as a project manager in Berlin's urban development department explained that when Die Linke (left-wing political party) was in the senate more guidelines for citizen participation were developed and engagement processes were initiated. However, with the current political composition these were neglected or participation projects were shut off, as pointed out by Respondent, who is an active member of Fluss Bad:

> "...when (Andreas) Geisel (from the social democrats) took over the Stadtentwicklung Senatorship he was already closing down the participation projects, I mean in the past we had lots of these little participation offices, and then they are not working anymore, first they said there is corona, but even after corona they did not open again. It shows that they are not really interested in discussions with the neighbourhoods." (R-4)

The lack of interest of politicians to discuss with the neighbourhoods as indicated by Respondent 4 in the quote above was emphasised by Respondent 7 who works with these politicians as a project manager:

> "We have politicians here since February, they don't think participation is so important. Climate adaptation? Yes a little bit, but the public should talk about it with us and discuss? No, no we don't do this...". (R-7)

If certain political parties, which are more left-wing or identify as green, make up the political discourse in Berlin it is noticeable that more effort is made to establish a broad stakeholder involvement in urban planning and climate-related measures. In the past, certain project groups were installed specifically to include different actors from society in policy-making on

these topics. Currently, Berlin's political composition is largely dominated by the conservative party which means that a narrow stakeholder involvement is the reality in Berlin at the moment resulting in the discontinuation of participation projects and top-down processes with a focus on technical solutions.

Outcome: aligning climate resilience and growth objectives, money making and heritage protection
Climate adaptation or resilience strategies in Berlin are guided by the desired outcome of accommodating the city to expand according to the growing demand for housing while remaining liveable. Looking at Berlin's most recent climate adaptation strategy from 2021 the overarching objective is to advance Berlin's development sustainable, socially equitably, and: "… to create climate-protecting and at the same time heat-reducing and water-sensitive structures for a liveable city." (Senatsverwaltung Bauen und Wohnen, 2021, p. 4). In their strategies there are no clear formulations on whose interests are prioritised, and often the city as a whole is considered as the area that needs to become resilient. However, there is some focus on vulnerable parts of society within the strategies, such as areas that are more vulnerable to flooding or where public health is more fragile. Thus, one could argue that Berlin aspires with its described goals of sustainable and socially equitably a desired outcome that considers broader societal interests along with increased safety and robustness through creating heat-reducing and water-sensitive structures.

However, in practice these outcomes are not reflected in reality according to the experiences of the interview respondents. Based on these experiences it appears that other aspects besides building resilience or improving liveability are prioritised by decision makers in Berlin. In its strategies emphasis is put on the necessity of Berlin to continue to grow, physically but also economically. In practice these two goals of Berlin needing to grow and be liveable, are conflicting in a way that more climate adaptation goals which are more socially focused are compromised by developing new urban structures and prioritising profit making. Climate adaptation solutions are thought of as increasing rents and costing resources as they need long-term maintenance to be effective which often results in both public and private actors prioritise making a profit instead of committing to costly, long-term climate adaptation investments. This is illustrated by Respondent 9, a researcher in the field of climate adaptation, as he points out the lack of incentives to commit to climate adaptation measures:

> "… take for example private, large-scale housing companies. They are there for the money, they are not there for climate adaptation. At the moment I am referring to speculation and second-hand insights, but I mean if you read the climate adaptation strategy of the city, the climate of Berlin will turn to the climate of Toulouse by 2100. These people don't think 2100. You see, the incentives, there are very little to actually do things." (R-9)

Respondent 4, who is an active member of Fluss Bad, also experiences the compromising of liveability goals and detects a prevailing neo-liberal mindset among policymakers: "Here (in Berlin Mitte) it is very much driven by where can we do better business, where can we get more money" (R-4). He used the example of e-scooters and delivery services such as Getir and Flink to indicate that in Berlin decisions about business opportunities and economic gains seem to take precedence over other urban priorities, compared to other cities where e-scooters and delivery services are being banned from city centres due to their nuisance.

Another desired objective that constructs the implementation of resilience strategies is the maintenance and protection of heritage. In Berlin it is challenging to apply climate adaptation measures to existing urban structures as these are thought to damage the cultural heritage status of the buildings. Urban development focused on adaptability and transformability, such as Fluss Bad, is also constrained by holding onto heritage and maintaining the physical environment as it is. According to Respondent 1, who works on climate adaptation at the district level, even the placement of trees is discouraged as trees block the view to buildings with a protected heritage status. This example illustrates a power struggle that resides in Berlin considering urban development and measures for climate resilience. In the end, politicians are the decision makers and if the politicians value heritage and economic profit over climate resilience, actually implementing these measures becomes very difficult. Among interview respondents outside the city's administration there seemed to be a thought considering the reason behind heritage and economic profit being prioritised by politicians. According to Respondent 6, architect and initiator of Floating University, a similar initiative as Fluss Bad, the arguments presented against the implementation of, for example, Fluss Bad are pretences and there are other underlying issues that relate to city politics: "It is all pretended arguments. There it is really about who has more power basically. That is where city politics suddenly become important". Following Respondent 8, who was a volunteer in a participatory urban development process, there is a continuous struggle for power that influences the strategies of social movements in Berlin. He explained that:

> "… on the one hand conservative initiatives try to assert their interests mainly through lobbying, networking in the political and economic space and cooperation with dominant media companies, and on the other hand, progressive initiatives try to advance their issues through activism, cooperation with other initiatives, demonstrations and other forms of emancipatory or solidarity actions". (R-8)

This conflict between goals such as conserving heritage and the necessity of climate adaptation illustrates the complexity actors operate in, resulting in trade-offs between heritage, economic profit, and resilience outcomes. The dynamics of this conflict between goals are intertwined with city politics and the distribution of power. So, although Berlin aspires to contribute to broader societal goals, due to the existing power struggles in city politics in which conservative mindsets take the upper hand, heritage protection and economic gain appear to construct the aspired goals mentioned in climate adaptation strategies by hampering the implementation of measures.

Berlin's planning for climate resilience: equilibrium or evolutionary minded?
To summarise, the concept of resilience is woven into various policy documents and is often viewed as the ultimate end goal of successful climate adaptation and mitigation efforts. The general understanding of resilience seems to be limited to an equilibrium perspective as strategies are focused on being prepared, protecting, and strengthening in order to bounce back to the status quo, therefore, the interplay between resilience concepts, such as robustness, adaptability and transformability is minimal as the focus is mainly on robustness and to some extent on adaptability. Attempts to include societal stakeholders were made but strong policy on including residents or local initiatives as well as on the implementation of measures was not really put in place. Stakeholder involvement remains inconsistent, with the involvement of residents often framed as a one-way communication of information rather than a collaborative process. Furthermore, the outcome pursued by Berlin's strategy is to align climate resilience with growth objectives while maintaining a liveable and sustainable urban

environment. This shows that Berlin aspires to reach a more evolutionary outcome of resilience. However, the reality shows a disconnect between the goals outlined in the strategy and the actual decisions made.

Table 6 Berlin's urban climate resilience approach based on the presented results (Author, 2023)

	Results
Strategy	Aspire to enhance quality of life through adaptation and aim for an integrative approach
	Resilience as an end goal
	Withstand shocks, resume and maintain function/status quo
	Resilient vegetation and green-blue infrastructure
	No holistic approach
	Implementation of (more ambitious) measures remains difficult due to lack of capacity
Process	Policies aim for broad stakeholder involvement in both the development of strategies and the implementation
	Involvement remains limited
	Responsibility is put on the individual
	Lack of capacity and willingness as well as the current political composition hamper broad participation processes resulting in narrow stakeholder involvement
Outcome	Aspire broader societal outcomes along with safety and protection
	Prioritising (economic) growth and heritage objective
	The power struggle between conservative and progressive mindsets

The results presented in Table 6 provide a useful illustration for analysing how Fluss Bad reacts to the urban climate resilience discourse in Berlin. Fluss Bad is mentioned in several of the analysed policy documents as an example or best practice for resilience planning. According to Senatsverwaltung Bauen und Wohnen (2016), Fluss Bad can be a unique selling point, offering relief for hot spells, and becoming an urban biotope landscape while increasing the quality of public space. Hence, Fluss Bad is presented as a green-blue infrastructure measurement but with adapting and transforming capability to enhance the overall liveability of public society.

Respondents 1 and 7, who both work at the city administration, initially were positive about Fluss Bad. Respondent 7 expressed that she believes it is a good tool for an inclusive use of the inner city and to give public space back to the people, especially to those who can't afford a spacious house in the city. However, they recognised that Fluss Bad is a very large, thus costly and ambitious project. Respondent 1 pointed out that although it would be beneficial for climate resilience and a lot of people support Fluss Bad, there is no guarantee that allocating resources to this project would yield a better outcome compared to other possible, less ambitious, investments. As the picture painted in Table 6 shows Berlin's climate resilience

approach seems to be unfavourable for ambitious initiatives such as Fluss Bad and explains why the initiative is currently facing difficulties. The latter is also stipulated in local newspaper articles that display the sharp and loaded debate surrounding the project in which neither side shies away from defamation (Berliner Zeitung, 2023; Deutsche Welle Arts and Culture, 2016). The next section will elaborate further on how Fluss Bad responds to the situation in Berlin by analysing their collective action framing.

4.3 Fluss Bad's collective action framing

To analyse the collective action framing of the Fluss Bad initiative, the motivational, diagnostic, and prognostic framing processes of Fluss Bad were identified. This was done to get a deeper understanding of how Fluss Bad positions itself according to the urban climate resilience discourse of Berlin as outlined in 4.2.

Motivational framing: beyond cleaning the river and swimming
Motivational framing refers to information about the characteristics of the collective and their shared values. What are the values behind initiating Fluss Bad, bringing members together and mobilising them for collective action? One would expect that the main reason would be to address the need for a place to cool down against the backdrop of an increase in hot spells as it was mentioned as such in policy documents on climate adaptation (Senatsverwaltung Bauen und Wohnen, 2016). However, in reality it appeared that the main underlying reason for founding Fluss Bad was the neglect of waterways in discussion on urban development. Respondent 3, architect and one of the initiators of Fluss Bad, explained that one of the reasons to came up with the idea of creating a swimming location in this historic, prominent city centre was to bring back Berliners to the area as a reaction to the touristification of the city centre and neglection of the waterways that run through it. They hoped to prevent the city centre from becoming one of these dense historic centres in which residents are pushed away:

> "… we know how dangerous developments focused on touristification are in the sense that you have densified historic centres in the end but there are no people anymore. So it was this idea of using this piece of land, making it accessible, bringing people into contact with the water again, making it liveable, bringing back Berliners to the city centre, and to say: look there is also something which is for you". (R-3)

> "We want to establish a better neighbourhood for everyone, making this water part of your life, because the water was just there, and used like… how to say this… a rubbish bin, you know? They didn't care". (R-4)

Based on the explanations of the respondents involved in Fluss Bad it appeared that the impulse for cleaning the river extends beyond valuing climatic factors. Respondent 3 mentioned that because it is such a small section of the river, cleaning just this section is not a real contribution to having a clean Spree. An issue in Berlin relating to climate change, and more specifically to heavy rain, is the overflow of the sewage system into the river. A large part of Berlin has a mixed-sewage system, which means that sewage can overflow and spill into the river in spells of heavy rain, potentially polluting the water. Creating the swimming location and the natural filtering system on this specific section of the river will not solve this issue entirely. However, what is more important for the initiators is that they hope realising Fluss Bad on this prominent location would start the debate on sustainability questions as well as on social questions and that it can be a motor for other change.

> "… So our project is no real contribution to cleaning the river as it is just cleaning a very small fraction of the river. It is only changing a little part of the original problem of the overflow of the mixed sewage system into the river. But it is always trying to do these things with the idea that if you do it in one location it becomes a motor for other things because you start a debate you know?". (R-3)

The importance of the location of Fluss Bad and the opportunity it offers to let people think about their environment was also emphasised by Respondent 6, who is an initiator of Floating University, an initiative that aims to motivate people to get more involved in society and their environment:

> "… I think that a place like Fluss Bad is very important, because, yes they are only creating a place where people can swim, but there are all these things that need to be done to make it possible for people to swim there. These are all political questions, climate resilience questions, and so on, and they talk about why can't we swim in it now. That is why it is a great place. I think Fluss Bad has a much more important location in terms of bringing all these questions on the table and that is what they are also doing." (R-6)

The overall ambition of Fluss Bad is for people not to see Fluss Bad as a project for swimming fanatics but as a project that goes beyond swimming, getting people to think about their environment while improving overall liveability. Respondent 4, an active member of Fluss Bad, explained that he decided to take part in the project as he lived nearby, had the time to invest and, in fact, did enjoy swimming. Nevertheless, his main motivation was to contribute to something that he thinks will improve the living environment as illustrated by the quote below:

> "… we said we are not just these kind of posh young rich guys who want to have an exciting project and others have to pay for it. So we just said: okay we are normal people living here and we just want to improve the environment and water body, giving also the general public something back." (R4).

The collective values which motivate Fluss Bad members into action can therefore be seen as the desire to revitalise the city centre, counteract the touristification trend, and reintegrate Berliners into the heart of the city. While cleaning the river for climate considerations and realising a swimming location can also be indicated as important values, respondents illustrated a deeper motivation. Beyond presenting themselves to society merely as enthusiasts of swimming, they hope that Fluss Bad can lead to a discussion on broader sustainability and social questions, in which Fluss Bad will function as a catalyst for narratives on change.

Diagnostic framing: conservative mindset and profit maximisation versus liveability for all?
Motivational framing processes involve emotional and psychological factors that encourage individuals to pursue specific goals. Diagnostic framing processes as explained in this section focus on the problem and challenges identified by Fluss Bad which according to them need to be addressed.

As already mentioned in the motivational frame, a reason to initiate Fluss Bad and organise the movement around it was to improve the living environment. More specifically, this means that currently the city centre is not experienced as a liveable place for Berliners and that

residents are neither involved nor considered in the development of their surroundings. According to the respondents, one of the underlying causes for this situation is that other aspects are prioritised before liveability, such as tourism, profit maximisation and heritage protection. As illustrated by an active member of Fluss Bad when he was asked about the role citizen initiatives play in Berlin:

> "You also need these kinds of social places where people can meet and help each other. In the past it was just part of the city planning, then everything turned to profit maximisation and now I think it is time to go back a little bit to where we already once were: decommercialization". (R-4)

The quote above shows an important aspect of a diagnostic frame as it explains how the desired situation would look like if there were no problems according to this respondent. A desired situation, in this case, would be one where commercialisation is not the main priority in urban development. Respondent 4 is part of Fluss Bad as he wants to contribute to having "a better environment for the people who live here first, and then for tourists" (R4). The current problem he highlights is that urban development choices which are currently being made in the city centre are made to attract tourists, and therefore attract profit, instead of to improve the liveability for locals.

Another problem which closely relates to this is the prioritising of heritage protection in this location. According to one of the initiators of Fluss Bad the project receives a lot of criticism. One of the main arguments used against Fluss Bad is that realising the project will damage the heritage status of the location. Respondents provided multiple explanations for why according to them heritage protection is prioritised over liveability aspects. Respondent 3, initiator of Fluss Bad, suspects that the group that is vocal against the project uses the argument of heritage protection to hide another underlying motive, which relates to attracting the 'wrong' kind of people to the historic city centre:

> "One estimate from my side is, and it is a bit dark, but through a lot of conversations we had over the last years, we think that the argument of heritage protection very often is used by people who fear that the 'wrong people' would actually come to the city centre, and the wrong people are then not the cultural civilised part of our city but will be foreigners, drunks, and punks and all kind of groups we do not want to have in our historic city centre. Because here we have museums and high culture and please don't encourage these people to come here. That is my impression. That argument is of course not being spoken out loud but put under the umbrella of heritage protection and that we basically endanger UNESCO world heritage". (R-3)

This quote suggests that heritage protection is used because of a fear for the 'other' part of society that does not value 'high culture' and therefore does not fit within this setting. Although this is merely a speculation from one of the respondents and we have to remain careful with the interpretation as it only shows one side of the discussion, this quote is a genuine concern which may tell us something about the underlying contesting values in which the Fluss Bad debate takes place. Another explanation provided by Respondent 3 is that in Berlin the debate on urban planning is held by a conservative group of people which is experienced as being not inclusive, especially for younger generations:

> "… when you go to events which are about the development of the historic city centre you come into a room and 75% of the people have grey hair and or white hair, and most of them are men.

They are not very inclusive, I would say. Basically, it is like you have to grow up before your opinion starts to matter. That is how this discussion is going on, and that is a problem." (R-3)

Consequently, this lack of openness and dominant conservative mindset is thought to hamper experimentation and progressive change. This was further illustrated by Respondent 2, who is an experienced communication employee of Changing Cities, a similar initiative as Fluss Bad:

"... I think you have a very strong hierarchy in the administration which is not very open to innovation. It is more like we just do the basic things. I mean if you are working in the administration the worst thing you can do is to try something new. If you do things like we have done in the last decades nobody will complain. You can just continue to work. I think this is a problem in the structure, they don't think of change... many actually don't want change, I think. They want things to be like they are, as smooth and unproblematic as possible. And of course, they know there is something with climate change, we have to do something, but we cannot do it just like tomorrow, and then they don't see the need as the climate change is not solved within an election period". (R-2)

She explained that there is no incentive for the city administration to invest resources in innovative projects or to make big changes that go beyond the crucial tasks of the administration. According to her, this is especially a concern for aspects that demand long-term solutions and do not show immediate results within an election period, such as climate change. This also strongly related to what was mentioned earlier considering the administration being understaffed and under-resourced.

Overall, the diagnostic framing process of Fluss Bad identified several problems and challenges. Respondents perceived the city centre as lacking liveability because the priorities of decision-makers often lean towards tourism, profit maximisation, and heritage preservation over enhancing the quality of life. Furthermore, the debate on urban development is experienced as conservative and not inclusive. Additionally, there is speculation of a fear that others will bring nuisance to this UNESCO heritage site among those who appreciate high culture. While opinions seem to differ on whether it is the conservative mindset or the unfavourable conditions within the administration that hinder change and experimentation in the urban setting, the outcome remains consistent, the implementation of actual change is perceived as extremely difficult. Consequently, the change that does happen takes a long time to be implemented and is often thought to be too little for people to experience the advantages. This contributes to a feeling of path dependency as due to a lack of positive experiences of past changes, support for additional change and transformations will remain low.

Prognostic framing: the positive experience of swimming in the river
Prognostic framing processes consist of the events and activities which the collective organises or initiates to address the problems and challenges which were identified in the diagnostic framing process, and therefore help understand how social movements respond to what was discussed before.

Important aspects which influence the decision-making of Fluss Bad concerning activities and solutions are the characteristics of climate change issues and the presumptions associated with them. Multiple respondents touched upon the negative associations with climate change that exist within society. For example, climate change is connected with having to give up certain things, such as travelling by car. On top of that, it is a problem which is difficult to grasp as it is not very tangible and takes a long time to see the advantages of climate change measures.

Therefore, Fluss Bad, and similar initiatives such as Changing Cities and Floating University, deliberately choose to see motivation, problems and solutions related to liveability and with the goal of creating something tangible connected to the local surroundings. Respondent 3, architect and initiator of Fluss Bad, emphasised this by saying the following:

> "We aim to make something tangible, you know? It is not very sexy to debate about certain things when you cannot convey the value of them to the people. I think that has been a big problem of the green movement and the ecological movement, that a lot of these projects were associated with laws, with having less, and with not doing things anymore. But you can also transform, you can say let's take the resources you have and by making them usable you make people understand what they have in front of their door, and if they fight for it, if they change their behaviour and if we invest money in certain systems we can make it accessible throughout the whole city, and in other cities as well. I think that is actually the strategy behind the project. It is less about the coolest project that does the most, it is more about starting things and by starting them to bring people on board and to create political pressure to change other things." (R-3)

Among the respondents there appeared to be an assumption that if you would directly advocate for climate change-related goals it will be harder to mobilise people to take action. Respondent 5, a former employee of the city's administration, emphasised this by giving an example of a referendum initiated earlier this year to move Berlin's goal to be carbon neutral in 2050 to aiming to be carbon neutral in 2030. He explained that the majority of people that came to vote, voted in favour of bringing the goal forward to 2050. However, as the turn-up to the referendum was too low it was not implemented in the law implying that it is difficult to mobilise people for climate goals. Hence, Fluss Bad chose to provide solutions for improving the liveability and public space through urban development. This is reflected in the activities they organise such as participating in the World Clean-up Day and guided tours (called Flusslauf) along the Spree to inform interested people about Fluss Bad's goals (Figure 9).

Figure 9 Overview Fluss Bad Instagram posts: World Clean-up Day and Flusslauf (Fluss Bad e.V., 2023a; 2023b; 2023c)

Another factor of the action Fluss Bad undertakes highlighted by respondents is a focus on positivity and visualisation in their activities. As was mentioned in the diagnostic framing section Fluss Bad faces criticism which revolves around the project damaging the cultural heritage status, being too costly, and in general, unrealistic. This criticism, which is actively

made vocal in local newspapers and on social media, created a negative connotation for Fluss Bad. Therefore, the movement chose strategies that focus on creating positive stories and experiences, as explained by Respondent 4, an active member of Fluss Bad:

> "I mean, due to Corona it has been a little bit calm now for the last three years, and I think now we have to re-establish the permanent work a little bit, just to be a bit more noisy and have a positive appearance in the society. Because we have a lot of haters and people who do not like the project and who are just thinking that we are wasting money. I think we have to get back to the situation where we had lots of positive activities and the press was talking about it." (R-4)

Within these strategies, visualisation plays an important role. This is why they chose to organise activities which happen in the location of Fluss Bad Garten while trying to appeal to the whole of society (Figure 10). The activities they organise range from recording podcasts, talks in Fluss Bad Garten (on topics like inclusivity), small-scale music concerts, yoga classes and picnics. To involve younger generations workshops are organised in which children learn to build water filtering systems.
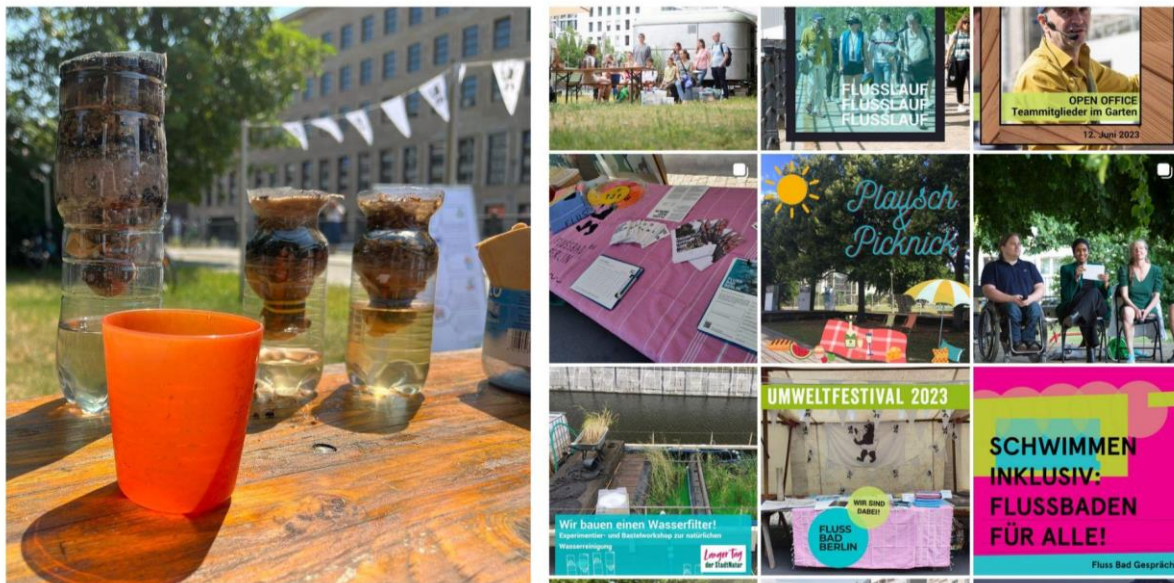

Figure 10 Self-made water filter at a workshop for children (Author, 2023) and an overview of recent posts on Fluss Bad Instagram (Flussbad Berlin e.V., 2023d)

However, the best way to visualise and let people experience Fluss Bad is to create the possibility for people to swim into the river. Before Corona Fluss Bad organised a yearly swimming competition Fluss Bad Pokal which appeared to be an essential positive activity for the project as illustrated by Respondent 3, architect and founder of Fluss Bad:

> "I think Fluss Bad Pokal was very important because it makes people feel. So in the beginning there were not even 100 participants, but at the last Pokal we had nearly 800 registered swimmers. People really wanted to test it. And then you can notice that the canal looks narrow and black from the top but if you are inside you notice it is huge, it is crystal clear water, it is amazing to see the view, to see the city from that perspective. So people come out happily, you know? I think there was no case that the people who came out of the water were not smiling. That was very important ." (R-3)

Currently, due to reinforced restrictions, Fluss Bad Pokal is not allowed to be organised anymore. Therefore, the organisation is looking for other ways to get people into the water. Respondent 4, who is an active Fluss Bad member, explained that now the initiative spends a significant amount of time testing the water quality to prove that it is clean enough to swim in and finding ways to show people that the water is in fact clean. According to the respondents, most of the time the water is clean enough, with exceptions during periods of heavy rainfall. This led to the dividing of the project into phases with the main aim of realising a swimming location which meant the additional measures (i.e. natural water filtering) to be postponed. By prioritising the swimming aspect of Fluss Bad, and making it more tangible and achievable, they hope to break the current negative stigma of Fluss Bad. In this way, they hope that people will change their negative associations to positive ones, which they hope will result in more support for the movement and backing for the implementation of the other aspects of the project.

Considering the challenges Fluss Bad faces a change in government that is more receptive to their ideas would be beneficial to get a full realisation of the project, or to break through the ceiling as mentioned by Respondent 9 a researcher in the field of climate adaptation:

> "Pointless, no. But definitely, they will hit the ceiling due to the current circumstances. And they do regularly hit the ceiling. It doesn't mean that what they do below the ceiling is worthless. On the contrary." (R-9)

This is shared among the Fluss Bad respondents as well as they indicate to remain hopeful for the future and say: "okay we don't hesitate" and "we don't let them (the critics) bring us down, so we will continue". Nevertheless, Respondent 4, active Fluss Bad member, stressed the need to be more vocal and proactive:

> "I think we need to be more brave doing things. For the moment, we were very often thinking that we should probably remain calm, not to disturb these officials so they don't have this bad feeling when Fluss Bad is mentioned. But I think now we have been calm and the other group was louder and now the city's administration took their noise to work against us. That is why we need a little bit more activity." (R-4)

He gave as an example activities that had a more guerilla character, such as just jumping into the Spree. He recounts an exchange with the police when inquiring about the potential penalties for swimming in the Spree:

> "That is why I was calling the officials, and saying what would be the penalty if I did just jump into the water, and the guy was really funny, he was at first a little bit shocked that I was asking this, he said: we don't have a penalty catalogue. Then I said: oh that is fine then I can do it. Then he realised that I was quite old, and he said: but you should be a good example for young people and not do things like this. Then I said: I think swimming in the city is quite a good example. Now as we know there is no real penalty, they could just probably ask you for 25 euros, I am keen on doing this. These are the things we should probably do. Like flash mobs, we call them 'splash mobs', these have a bit more of a positive attitude to probably also a young target group. People who are more connected on TikTok, Instagram, whatever." (R-4)

Fluss Bad's collective action framing: a motor for societal debate through jumping into the Spree
In conclusion, Fluss Bad's motivational framing process transcends the label of mere swimming fanatics, as its members envision a larger overarching goal. They seek to revitalise

Berlin's city centre and hope to initiate the discussion on broader societal and sustainability issues. Their underlying motivations include countering touristification in the city centre and reintegrating Berliners into their urban heart. In analysing the diagnostic framing process, respondents identified the low quality of liveability in the city centre as a main problem. This was mainly thought to be a result of the prevailing conservative mindset dominating urban development debates and prioritising profit, tourism, and heritage preservation. Finally, Fluss Bad's prognostic framing process emphasised tangible goals for overall liveability, instead of a sole focus on climate goals to prevent them from portraying themselves as merely a green movement. Respondents stressed the significance of positive storytelling through visualisation and creating opportunities for people to experience swimming in the Spree. Table 7 provides an accumulation of the results presented in paragraph 4.3.

Table 7 Flussbad's collective action framing based on the presented results (Author, 2023)

Framing	Results
Motivational	Revitalise the city centre
	Do not characterise themselves as merely fanatic swimmers
	Counteract touristification
	Reintegrate Berliners into the city centre
	Initiate discussion on broader sustainability and social questions
Diagnostic	The city centre has a low quality of liveability because prioritising of tourism, profit-making and heritage protection
	Urban development debate is dominated by conservative mindsets and not inclusive
	Implementation of change or experimentation is difficult
Prognostic	Preferred focus on tangible goals for liveability rather than on climate change, through activities such as guided city tours, talks on societal issues in Fluss Bad Garten, and clean-up actions
	Organise activities that help tell positive stories, visualise ideas through activities that let people experience swimming into the Spree, small-scale music concerts, and picnics
	Perhaps necessary to be more vocal, proactive and 'just jump into the river'

After analysing Berlin's urban climate resilience approach and Fluss Bad's collective action framing process the following chapter will provide the final step of this thesis, namely the integration of both analyses to determine how movements such as Fluss Bad's contribute to planning for urban climate resilience. Furthermore, learned lessons based on Fluss Bad and Berlin will be identified to, ultimately, formulate recommendations aimed at enhancing initiatives such as Fluss Bad in shaping urban climate resilience approaches.

5. Reflection and conclusion

The final chapter of this research first starts with a conclusion in which the research questions are answered and the findings of this research are linked to the academic literature that was considered in the theoretical chapter of this thesis. Consequently, the main research question will be answered through finalising the third and last research step: combine both analyses and determine how a social movement like Fluss Bad and their strategy for collective action position themselves according to the urban climate resilience context of Berlin. Second, this chapter provides recommendations for both policymakers and social movements. Third, the chapter concludes with some reflections on the research process and suggestions for future research.

5.1 Conclusion

This research has attempted to create a deeper understanding of the role social movements play in cities' attempts to enhance urban climate resilience. This was done by investigating how these movements position themselves within a city's urban climate resilience context. A reminder of the main research question of this thesis:

How can social movements contribute to planning for urban climate resilience and which lessons can be learned from the Fluss Bad initiative?

Before answering the main research question the three sub-questions of this research will be addressed. First, based on the theories discussed in Chapter 2 urban climate resilience was conceptualised as, following Laeni et al. (2019), evolutionary resilience emphasising adaptable and transformative capacity, broad stakeholder involvement and prioritising societal goals over economic objectives. Additionally, critical literature on planning for resilience argues that to prevent the neglect of citizens' perspectives and their capacity to become resilient it is necessary to further develop the resilient community perspective. Wardekker (2021) indicated that this perspective currently is underdeveloped, therefore, this thesis has attempted to employ a different perspective to advance this community dimension of resilience, namely that of social movements. Social movements have become more apparent in society and have been addressed in a broad body of collective action framing literature. Based on the characteristics of Fluss Bad, this research conceptualises social movements as self-organised, bottom-up citizen collectives pursuing broader societal objectives and impact.

Second, this research has analysed Berlin's planning approach for urban climate resilience by looking at literature, policy documents and conducting interviews with stakeholders in the field. Berlin's approach to climate resilience planning reveals an aspiration for an evolutionary resilience perspective. This perspective can be seen in their resilience planning strategy, process, and outcomes, as these aim to address broader societal outcomes while safeguarding against climate events through proposing green-blue infrastructure and inclusive stakeholder engagement. However, practical implementation paints a different picture, leaning more towards an equilibrium resilience perspective. Although policies aim to increase adaptive capacity to climate events, their measures and implementation largely focus on bolstering robustness and maintaining the status quo. Implementation overall remains rather difficult and due to the current political environment, societal stakeholders are insufficiently involved in the development of resilience approaches. Besides this, the wide range of concepts was perceived as vague and overwhelming, and the absence of adequate capacity to translate them into concrete action often resulted in the entire neglect of resilience policies in Berlin. These

findings corroborate the findings of March and Swyngedouw (2022) and Laeni et al. (2019) who emphasised the difficulties in operationalisation of the concept of resilience in planning. Furthermore, in practice, Berlin tends to prioritise growth and economic objectives, resulting in the compromising of climate resilience measures. This dichotomy underscores a misalignment between stated objectives and actual decision-making. Furthermore, it complies with Laeni et al. (2019) and Kaika (2017) who argued that in resilience planning often economic growth is prioritised over societal interests and its process lacks inclusivity. Moreover, Kaika (2017), March and Swyngedouw (2022) and Laeni et al. (2019) have all underscored the oversight of the political dimension in resilience planning. Notably, the recognition of the influence the political dimension can have on the implementation of resilience measures is absent from Berlin's resilience policies as well. As presented in the outcomes of this research, there is an impact of the political dimensions, characterised by neoliberal perspectives that prioritise profit-making and tourism over the goal of enhancing overall liveability. In this way, an urban climate discourse for Berlin was established that influenced the collective action framing of Fluss Bad.

Third, through dissecting the way of collective action framing of Fluss Bad, by analysing social media outreach and conducting interviews, this thesis outlined how Fluss Bad positions itself based on Berlin's approach to planning for urban climate resilience. The motivational framing of Fluss Bad mainly consisted of the shared desire to revitalise the city centre through counteracting touristification and reintegrating Berliners into the heart of the city. Members did not want to be seen as swimming fanatics but hoped to initiate discussions on broader sustainability and social issues. The latter can be connected to the scaling aspect of community initiatives indicated by Horlings and Franklin (2022). Fluss Bad directly specified its desire to be a motor for initiating societal debate as well as wanting to set an example for the rest of the city. Hence, scaling out and connecting with wider socio-spatial levels and scales to increase its transformative potential is part of Fluss Bad's motivational framing. However, similar to community initiatives, Fluss Bad as a social movement faces difficulties which underscore the importance of local governance to facilitate and support initiatives, ultimately enhancing sustainable transformations. Closely related to the motivational framing, the diagnostic framing of Fluss Bad consisted of dissatisfaction with the low liveability of Berlin's inner city. Respondents believed the underlying cause for this is the prioritising of tourism, profit-making and heritage protection by those powerful enough to make decisions or influence the decision-making process. Moreover, respondents indicated that they perceived the urban development discourse to be dominated by conservative perspectives, hindering inclusivity and hampering implementation and experimentation. Therefore, one could argue that the diagnostic framing of Fluss Bad is influenced by the discursive context they operate, a point also implied by Svensson and Wahlström (2021). Finally, the prognostic framing of Fluss Bad entailed pursuing tangible liveability goals through organising guided city tours, talks in Fluss Bad Garten on societal issues and clean-up actions. Respondents emphasised the importance of visualisation and positive storytelling through experiencing river swimming. Furthermore, they pointed out the possibility of becoming more vocal and proactive by just jumping into the river.

Finally, to formulate an answer to the main research question of this thesis drawing from the presented results, one could argue that initiatives like Fluss Bad have the potential to steer Berlin towards a more evolutionary resilience *acting* as opposed to merely aspiring evolutionary resilience *thinking*.

Based on the results presented in this research Berlin has the potential to transition towards a resilience approach consisting of a dynamic interplay of robustness, adaptability and transformability through actively involving initiatives like Fluss Bad in their urban climate resilience strategies. Mainly because the collective action framing of Fluss Bad showed that initiatives are motivated to address broader societal outcomes through urban development. In the case of Fluss Bad: they foster the potential to catalyse societal discourse through the positive experience of swimming in the Spree. The realisation of the project, but also already the presence of the movement, can significantly contribute to raising awareness for societal as well as sustainability questions. The sight of individuals swimming in the river can prompt questions and discussion on topics such as water pollution and other climate concerns (i.e. hot spells). Furthermore, it highlights dilemmas related to the "right to the city", pinpointing underlying tensions between tourism, profit-making and the needs of Berliners. Ultimately, Fluss Bad aims to engage people in their environment, showing them what they have at hand and hopefully inspire them to care more deeply about their surroundings, and perhaps, take measures to protect and preserve it.

However, as this research has shown as well, the success of Fluss Bad is not limitless or easy to get hold of. Its success heavily relies on the political composition in Berlin and currently the dominant presence of conservative parties, fuelled by assertive criticism in the media, functions as a barrier to the potential of Fluss Bad. Nevertheless, the existence of this political power struggle which is evident in the debate on urban development in Berlin underscores the importance of the work initiatives such as Fluss Bad are doing. Namely, as through their collective action they highlight this power struggle, initiate debate, involve and engage people and above all provide political pressure.

5.3 Recommendations

Based on the outcomes of this research, recommendations for both Berlin to enhance planning for urban climate resilience and Fluss Bad to strengthen their collective were formulated.

In the case of Berlin, it appeared to be of importance to address and improve the circumstances at the city administration which is perceived as being understaffed and under-resourced. Because of these current circumstances addressing urgent and necessary aspects of urban development is pushing the limits of Berlin's city administration, let alone focusing on and facilitating large and ambitious projects such as Fluss Bad that pursue sustainable transformability becomes nearly impossible. Although realising there is no quick fix for this problem and also recognising the political dimension of this dilemma, an improved capacity of the city's administration can be considered necessary for Berlin to be able to move towards evolutionary resilience acting to involve initiatives like Fluss Bad that stimulate including broad stakeholder involvement in the resilience planning process and prioritising broad societal outcomes. It is recommended for Berlin, but also for other similar cities, to support initiatives like Fluss Bad and successfully bring such projects to realisation to actively engage people with their surroundings, enhancing their quality of life by fostering adaptability and transformability in the face of climate events. Facilitating these projects and transforming urban space is likely to set in motion city-wide sustainable transformations. As people directly experience the benefits of these urban climate resilience initiatives, it's anticipated that both societal and political support for these measures will grow. Without giving citizens the opportunity to witness firsthand the advantages of these sustainable transformations in their

direct living environment, creating support for such changes becomes highly unlikely. Thus, if Berlin desires to move towards evolutionary acting, it should additionally be more accommodating and supportive of physical changes and experimentation in the living environment.

As the political landscape and urban climate resilience approach of Berlin influence Fluss Bad's success, it can be considered crucial for the movement to engage and convince more people to recognise the importance of urban development for enhancing the quality of life as well as potentially influencing their voting behaviour. Fluss bad can play a role in reshaping Berlin's political priorities towards liveability and sustainability goals. To achieve this, it is recommended for Fluss Bad to broaden its appeal beyond its current audience. While they invest in podcasts and talks on societal and sustainability topics, these efforts may mainly resonate with those already interested and convinced. These actions could contribute to strengthening the movement from within or stimulate connection to like-minded individuals and organisations, however, focusing on activities that provide the positive experience of river swimming could reach a wider audience. A hopeful start is shown in Figure 11, which shows that at the time of writing this concluding chapter people decided to jump into the Spree and share the positive experience. Additionally, as was also mentioned by respondents, Fluss Bad and other similar movements should be mindful of being perceived as overly 'green' or excessively radical, as this may not attract broader societal support. Indirectly, a lesson for more activist movements could be derived from this. Namely, framing issues locally rather than globally by emphasising what's visible and possible in people's direct surroundings through advocating for urban development for liveability as a solution to sustainability challenges.

flussbadberlin Schwimmen im Spreekanal?! Im Moment leider noch nicht erlaubt...aber hoffentlich bald ganz legal. Diese Drei haben es schon mal ausprobiert:)! Da es seit einem Monat keinen Überlauf der Mischwasserkanalisation in den Bereich des Spreekanals gab, können wir aus Fluss Bad Perspektive grünes Licht für diese Schwimmaktion geben. Das Wasser mag zwar grün sein (wie die meisten Berliner Badestellen im Umland), ist aber unbedenklich in punkto Wasserqualität.

Translation:
"Swimming in the Spree Canal?! At the moment, unfortunately, not yet allowed...but hopefully soon quite legal. These three have already tried it:)! Since there has been no overflow of the combined sewer into the Spreekanal area for a month, we can give the green light for this swim from a Fluss Bad perspective. The water may be green (like most of Berlin's swimming spots in the surrounding area), but it is harmless in terms of water quality."

@flussbadberlin 21/09/2023, instagram

Figure 11 Post on Fluss Bad's social media account (Flussbad Berlin e.V., 2023e)

5.4 Reflection
This section will elaborate on the research process that led to the presented results and outcome of this thesis. While the applied methods in this thesis yielded the appropriate results to answer the research questions, when provided with the possibility to move back in time it

may be an improvement to revise the interview guides in a way so that they will be a better fit to the chosen structure in the results chapter of this thesis. Due to the current form of the interview guides it was challenging to categorise the results derived from the interviews based on the strategy, process, outcome; and motivational, diagnostic and, prognostic structures without having some overlap between sections. Furthermore, as this research consisted of a single-case study it is impossible to generalise the findings of this thesis. However, this is not considered to be a shortcoming as, first, providing generalisation was never the intention of this research, and second, the findings of this research still managed to provide learned lessons and recommendations on the contribution of social movements to planning for urban climate resilience for cases that operate in a similar context. Furthermore, reflecting upon the data collection process, it became evident that it was immensely valuable to be physically present in Berlin. Being in Berlin enabled the observation and experiencing of the focus area, interacting and walking around with interview respondents thus, allowing for gaining a deeper understanding of the research context.

Another aspect deemed important to reflect upon is the potential bias created by Fluss Bad which was not touched upon in this research before this. As Wardekker (2021) pointed out, a common pitfall of initiatives such as Fluss Bad is that the individuals who participate often are the ones who can afford to think about the future. This means that people who are most likely to be vulnerable to climate events, citizens with a lower socio-economic status who are concerned with ensuring primary necessities of life, are not included in these collective action processes. This was something that was raised during the interviews with Fluss Bad members as they expressed having difficulties with involving certain groups of the population for which participating in a local initiative is simply not a priority. This pitfall influences the credibility of the Fluss Bad as an initiative for 'all Berliners' when mainly consisting of voices that have the resources to participate, as well as the capacity of the Fluss Bad to contribute to inclusive resilience planning. Hence, this is an aspect that needs to be kept in mind while reading and interpreting the findings of this research.

5.5 Suggestions for future research

Finally, this thesis concludes with suggestions for future research. One suggestion, which relates to the lack of capacity of the city administration, is to investigate whether established local initiatives can in some way contribute to this issue by complementing the existing deficiencies at the government level by fostering collaboration between initiatives and the city administration. Research on this could potentially contribute to more sustainable, inclusive and participatory urban governance. However, an important aspect of this is to remain mindful of what this means for movements or initiatives when they are incorporated or co-opted by city planning and if they run the risk of losing their bottom-up qualities.

This research hoped to contribute to the existing academic literature by advancing the community dimension of planning for urban climate resilience through employing a social movement perspective. It appeared to be rather challenging to define the concepts and determine in which aspects they differ or intertwine. Therefore, it could be interesting to further look into the relationship between communities and social movements, and how they both are linked with resilience planning. For example, is it possible that a social movement is the foundation for community building and vice versa? To research this, it will be important to look at multiple different bottom-up initiatives as well as at different cities in which they

operate to for example compare the community perspective with the social movement perspective to establish a concrete conceptualisation.

Finally, this research has implied to have determined an urban climate resilience discourse for Berlin without employing a discourse analysis. However, the story presented in this research did provide some insight, through analysing framing processes, into how used language and institutionalisation influence each other. For example, how what is stated (and how it is framed) in policy documents or said by policymakers accumulated in how Berlin plans for urban climate resilience and influences the actions taken by Fluss Bad. This creates windows of opportunity to further investigate the theoretical challenge of how the use of language determines what happens in practice.

6. Acknowledgements

I would like to thank a few people who helped me finish this last chapter of my master's program: my interview respondents for sharing their stories and helping me understand an unfamiliar city; all my friends and family for visiting and letting me be a tourist during my time in Berlin; my mom for helping me move but also for making pictures at Fluss Bad Garten when I was too shy; my dad although he didn't get the chance to see me go to Berlin, he always encouraged me to travel abroad and inspired me to create and speak my own voice; Ingmar for a lot more than just cooking me all those meals (although I hope he will continue to cook for me after handing in this thesis), and finally, I would like to thank my supervisor Dr. Margo van den Brink for her guidance along this thesis process and her contagious enthusiasm which helped me to remain confident in the decisions I made.

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8. Appendices

Appendix A Codebook deductive and inductive codes

Code group	Code group description	Codes	Quotation example
Strategy	What is the main focus of resilience strategies; thoughts and experiences on current strategies; how is resilience defined	Focus on measures related to green-blue infrastructure Conflicting strategies Indicating a need for more rigid tools and a more holistic approach Mentioning resilience Capacity of city administration	*"The key approach of the city is to promote green-blue infrastructure. Meaning we want to have more urban green, we want to have more decentralised rainwater management. Meaning when it rains the rain stays and it is not channelled away."* (R-9)
Process	Who are involved in developing strategies; what are the thoughts and experiences relating to involving a broad range of societal actors; what difficulties arise with these approaches	Ways of involving societal actors Communication with societal actors	*"But mitigation and adaptation belong together - not only in Berlin. This needs to be communicated more intensely. It is essential to inform the urban community about upcoming risks and to underline that action is needed – and especially how the individual can do something."* (Senatsverwaltung für Stadtentwicklung und Umwelt, 2016)
Outcome	What are desired outcomes; which are prioritised; challenges and experiences relating to these trade-offs	Conflicting/competing needs and aspects Prioritising of neo-liberal aspects and economic growth	*The principle of a compact city remains unchanged. The task of Berlin's urban development is to decouple the city's growth from any unwanted consequences. (...) Increasing growth even presents the city with the opportunity of implementing adaptation measures on a larger scale (...)"* (Senatsverwaltung Bauen und Wohnen, 2016)
Motivational	Reasons for initiating the social movement; why it is thought necessary to take action	Start public debate on a range of societal aspect	*"(...) we must transform it to not only be a proposal for Berlin but to make it a proposal by Berliners. That was the time when we then founded the non-profit*

			association.” (R-3)
Diagnostic	Underlying problems according to social movements	Conservative mindset Prioritising of neo-liberal aspects and economic growth	*“You also need these kinds of social places where people can meet and help each other. In the past it was just part of the city planning, then everything to profit maximisation and now I think it is time to go a little bit to where we were already once, decommercialization.”* (R-4)
Prognostic	The actions of social movements based on the motivational and diagnostic framing	Proposed activities and events Desire to represent a perspective beyond cleaning the river/swimming Need for positive stories and visualisation	*“I think we need to be more brave doing things. We were very often calm, to not disturb these officials so when Fluss Bad is mentioned they don't have this bad feeling. But I think now we were calm and the other group was louder and now they took their noise to work against it. That is why we need a little bit more activities.”* (R-4)

INTERVIEW GUIDE - urban climate resilience in Berlin

Aim of the interview
1) Gain a better understanding of climate resilience in Berlin according to Berlin's urban climate resilience strategy and more particular on which resilience perspective is dominant;
2) See if community building and or local initiatives are part of the strategy and in what way;
3) What are the perspectives on initiatives like Fluss Bad and their role in resilience building.

Introduction	a. Refer to consent form b. Introduction researcher and interviewer c. Introduction of the interviewee i. Role and involvement in climate adaptation

History/process development so far	a. Origin climate adaptation in Berlin
	    i. Key aspects back then
	    ii. Definition climate resilience
	b. Differences between strategy then and now

Current challenges and strategies	a. Main climate challenges
	b. Main overall challenges
	c. Development of the strategy
	d. Key aspects of most recently climate adaptation strategy
	    i. Plans and solutions
	    ii. Population groups where these focus on
	    iii. Communities of the city as a whole
	    iv. Meaning of climate adaptation to Berlin
	e. Framing of resilience within strategy
	    i. Definition and focus
	f. Difficulties and pitfall of the strategy
	g. Successes of the strategy

Importance of community building in relation to climate resilience	a. Community building in climate adaptation strategy b. Contribution of community building to climate resilience
Fluss Bad example	a. Their goals and strategy b. Contribution to climate resilience c. Connection to local government d. Overall impact of movement e. Other examples of movements in Berlin
Reflection and future	a. Successes, opportunities b. Barriers, challenges, constraints c. Learned lessons d. Future prospects
Concluding and snowball	a. Additions and questions b. Snowball

INTERVIEW GUIDE - social movements in Berlin

Aim of the interview
1) Gain a better understanding of resilience planning in Berlin according to Berlin's urban climate resilience strategy and how social movements function within this context;
2) See how social movements adapt their strategies to planning for urban climate resilience in Berlin;
3) What are the perspectives on social movements like Fluss Bad and their role in resilience building

Introduction	a. Refer to consent form
	b. Introduction researcher and interviewer
	c. Introduction of the interviewee
	    i. Role and involvement in movement
	    ii. Motivation for involvement in movement

History/process development of social movement so far	Can you tell me more about the social movement that you are part of? a. Origin b. Goals c. Strategy, activities, events d. Daily functioning e. Mobilising and maintaining members f. Means and tools to reach goals g. Comparisons to other movements
Movement and city's climate adaptation strategy	What is the relationship between the social movement and the city's government? a. Does the movement fit within the city's strategy (for climate adaptation)? b. How are these social movements connected/supported by the government? c. Does the local government focus on community building?
Current challenges and strategies	What do you know about Berlin's strategy to become resilient? a. Main challenges b. Solutions to overcome challenges c. What does striving for resilience mean in Berlin (robustness, transformability etc.)?
Movement members	Who are the members of the movement? a. In what ways are they active? b. Attracting and sustaining members c. Community feeling
Importance of social movement in relation to climate resilience	What do you think the role of social movements can be in climate resilience? a. How is climate resilience part of your movement? b. What is the impact of social movements? How could it be greater?
Fluss Bad example	a. Goals and strategy b. Contribution to climate resilience
Reflection and future	a. Successes, opportunities b. Barriers, challenges, constraints

	c. Learned lessons
	d. Future prospects
Concluding and snowball	a. Additions and questions
	b. Snowball

Appendix D Overview additional research that is included in the data collection

Type	Title	Organisation	Topic	Date
Instagram posts	Multiple	Fluss Bad Berlin (NGO)	Posts considering new and past activities + news relating to Fluss Bad	4/2023 - 8/2023
Researcher observation at activity	Umwelt Festival	Grüne Liga (NGO)	Festival were 'green' initiatives (such as Fluss Bad) present their work and ideas	6/2023
Researcher observation at activity	"Wir bauen einen Wasserfilter!"	Fluss Bad Berlin(NGO)	Water filter building workshop for children in Fluss Bad Garten	6/2023
Newspaper article	River Swimming in the city	Deutsche Welle Visit Germany	Explains Fluss Bad project	7/2015
Newspaper article	In a stately spot - a canal for the people	The New York Times	Explains Fluss Bad project	10/2015
Newspaper article	Will a river pool turn Berlin's Mitte into a trashy beach party	Deutsche Welle Arts and Culture	Explains Fluss Bad project	10/2016
Newspaper article	Ambitious project begins to convert sewage-polluted Berlin canal into swimming area using natural reed beds	The Telegraph	Explains Fluss Bad project	7/2018
Newspaper article	"Wir brauchen in den Kiezen ein Reach auf Schatten" Grünen Fraktionschefin Silke Gebel über Straßen voller Tücher, neue Unterrichtszeiten und die Flussbad-Pläne	Der Tagesspiegel	Discusses importance climate protection in Berlin	8/2022

| Newspaper article | Ins Wasser gefallen; Das Umfeld des Schlosses soll umgestaltet werden. Doch für das Flussbad wird es schwierig | Berliner Zeitung | Challenges realisation Fluss Bad | 4/2023 |

Appendix E Consent form

Consent form participation interview

Research project: Master thesis Sustainability, Society & Planning
University of Groningen, Faculty of Spatial Sciences
Student/researcher: Hanne Punt
Research topic: The role of community building in climate adaptation

Dear participant,

First, I would like to thank you for taking the time to participate in this interview. The main aim of this interview is to create a better understanding of climate adaptation in Berlin and how community building and becoming resilient are part of this. Additionally, I aim to investigate whether community-building initiatives can contribute to climate resilience in the urban context.

The interview is expected to last about an hour, depending on the length of the answers and any additional questions that may arise from your answers. The interview will be recorded and transcribed to benefit analysis and to ultimately answer my main question. Should you wish, you can receive a copy of the transcript for approval or possibly just the quotes I will use in my thesis.

For further questions you can contact:
Hanne Punt
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+31 6 487 068 45

I hereby declare that:
I voluntarily agree to participate in this research project	YES/NO
The results of this interview may be processed in this research project	YES/NO
Permission to have the interview recorded for processing	YES/NO
Give permission to use my name in the research project	YES/NO

       When NO

       Pseudonym may be used (e.g. respondent 1)   YES/NO

Name interview participant..
Email...
(not mandatory, should you wish to receive the transcript/ used citations and/or be kept informed of the results of the survey, which will be completed in mid-July)
Date..
Signature..