Mainstreaming resilience in urban policy making? Insights from Christchurch and Rotterdam

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ABSTRACT

Despite the burgeoning popularity of resilience as an urban policy narrative, we know little about how policymakers and planners approach the challenge of operationalising urban resilience or what problems they face. Although their ultimate goal is presumably to integrate resilience goals into sectoral policy and decision-making as well as to dissolve policy silos, the concept of mainstreaming has received relatively little attention in urban resilience literature so far. To address this void, we use the concept of mainstreaming to analyse the two cities of Christchurch and Rotterdam, both participants in the Rockefeller Foundation's 100 Resilient Cities Programme. We identify three main challenges that are apparent in both cities despite their contextual differences. The first is to make resilience a top priority for policymaking and planning because it competes with other urban development agendas for political commitment. Secondly, institutionalising cross-sector governance constitutes a challenge because participation in 100 Resilient Cities brings few incentives for institutional reforms. The third challenge – to actively engage decision-makers from public and private sectors – arises because urban policymakers and planners are not sufficiently equipped to convince them to invest additional resources in terms of personnel, time and money and to dissolve conflicts of interest between them. In the light of these challenges, we argue that participating in 100 Resilient Cities is a relevant but not sufficient first step towards mainstreaming urban resilience in Christchurch and Rotterdam. In addition to developing a resilience strategy and appointing a Chief Resilience Officer, formal changes (for instance in procedural law and national policymaking) are required, to address the challenges identified.

1. Introduction

The introduction of the concept of resilience in the social sciences, including in urban and regional studies, was justified by the need to respond to global threats such as climate change and international terrorism (Walker and Cooper, 2011). With the same rationale, the concept has pervaded public policy fields of national security, critical infrastructure protection, financial risk management and urban planning (ibid.). The increasing attention paid to resilience as an urban policy narrative (Béné et al., 2017) is demonstrated by international initiatives such as ICLEI's Resilient Cities Programme (www.resilientcities2019.iclei.org) and the UN-HABITAT Urban Resilience Hub (www.urbanresiliencehub.org). Resilience is mentioned explicitly in the Sustainable Development Goals, in the Paris Agreement and the New Urban Agenda, and it represents the core of the Sendai Framework for Disaster Risk Reduction. In the course of this worldwide "resilience movement", hundreds of city administrations have developed strategies and programmes striving to enhance the resilience of their cities and citizens.

Two cities that have recently gained prominence in the urban resilience community are Rotterdam (Netherlands) and Christchurch (New Zealand). Whilst Rotterdam has received considerable appreciation for pursuing adaptive urban water and flood management (e.g. Dunn et al., 2017), Christchurch has been recognised for its response to and recovery from a devastating series of earthquakes in 2010 and 2011 (e.g. Bennett et al., 2014). Although both cities are situated in considerably different socio-political and environmental contexts and have had dissimilar experiences with disasters in recent decades, they share common approaches to operationalise urban resilience, as both cities participate in the Rockefeller Foundation's 100 Resilient Cities Programme (hereafter: 100RC). There is no doubt that 100RC not only joined the trend to apply resilience theory to urban development and

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planning but has also been a major driving force behind it. The Rockefeller Foundation has dedicated USD 100 million funding to the programme, supporting no less than 100 cities around the globe to develop a resilience strategy and to appoint a so-called Chief Resilience Officer, who "acts as the city's point person for resilience building, helping to coordinate all of the city's resilience efforts" (Berkowitz, 2015). 100RC has collaborated with other international NGOs as well as with private tech firms and consultancies to create a global resilience market (Leitner et al., 2018). In particular, the policy design and implementation strategies of the participating cities have attracted increasing attention from urban resilience researchers (e.g. Fastenrath et al., 2019; Spaans and Waterhout, 2017).

100RC defines urban resilience as "the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience" (100RC, 2019). Chronic stresses are day-to-day or cyclical negative impacts on the city's fabric, such as drier summers or recurrent heavy rainfall, but also growing social inequality or high unemployment. Acute shocks are sudden events such as earthquakes, floods or terrorist attacks (ibid.). Similar interpretations of urban resilience exist in academic debates in the domain of urban studies. For instance, Meerow et al. (2016, p. 39) define urban resilience as "the ability of an urban system – and all its constituent socio-ecological and socio-technical networks across temporal and spatial scales – to maintain or rapidly return to desired functions in the face of a disturbance, to adapt to change, and to quickly transform systems that limit current or future adaptive capacity".

Importantly, urban resilience is associated not only with modifying the built environment of a city but increasingly with changing the structures and practices in risk management and governance arrangements (Coaffee and Lee, 2016). As such, urban resilience represents a prime example of a newly emerging cross-cutting policy goal concerning areas of urban planning, infrastructure management, environmental management, risk management and social policy alike. Accordingly, to enhance urban resilience, scholars advocate establishing new governance networks across different policy sectors (Bourgon, 2009), dissolving governance silos (Coaffee et al., 2018) and enhancing cooperation between different public and private actors as well as between these and society (Marana et al., 2018). It follows that the commonest approach to operationalise urban resilience can be described as mainstreaming: the integration of resilience goals into policy and decision-making in the city (cf. Massey and Huitema, 2013). Although the concept of mainstreaming is regularly applied in the sub-areas of (urban) climate resilience (Friend et al., 2014; Saito, 2013) and climate adaptation (Runhaar et al., 2018; Uittenbroek, 2015), it is not yet part of the standard repertoire of the broader debate on urban resilience (see Johnson and Blackburn, 2014 for an exception). Likewise, 100RC does not use this concept in its "City Resilience Index" (Arup and RF, 2015) or in its mid-term evaluation report (Urban Institute, 2018). A report on early insights into how participating cities operationalise resilience does use the concept of mainstreaming, but without specifically defining it (100RC, 2016).

In this study, we use the concept of mainstreaming to contribute to existing literature dealing with challenges to operationalising urban resilience (Coaffee et al., 2018; Chandler and Coaffee, 2017). Indeed, little is known about how policymakers and planners approach these challenges and what problems they face. Because mainstreaming resilience goals in policymaking and decision-making in the city can be described as the ultimate goal of operationalising urban resilience, we analyse two cities that use similar approaches in this regard as both of them participate in 100RC. Christchurch and Rotterdam were among the first cities accepted to participate in 100RC and both published their resilience strategies and appointed a Chief Resilience Officer in 2016 (Rotterdam, 2016; CCC, 2016). Almost three years of experience with the strategy and with the role of the Chief Resilience Officer provide a sufficient knowledge base to address the following research question:

In how far does participation in 100RC contribute to mainstreaming urban resilience in policy and decision-making in Christchurch and Rotterdam?

In the next section, we give an overview on how current risk management and governance literature discusses problems of operationalising urban resilience. We introduce the concept of mainstreaming and develop analytical sub-sections for the empirical analysis. In section three, we explain the methodology that we applied in this study. In section four, we analyse how urban resilience has been operationalised in Christchurch and Rotterdam, focusing on the cities' participation in 100RC. In particular, we identify and analyse challenges that policymakers and planners face with regard to mainstreaming urban resilience. It is important to mention that we are not seeking to evaluate the success of implementing the resilience strategies. Rather, we seek to enrich academic and practical debates on operationalising urban resilience by defining and analysing requirements for mainstreaming. In the remaining two sections, we discuss the identified challenges in the light of the existing literature and come up with some suggestions to stimulate mainstreaming, supplementing the measures taken in the context of 100RC.

2. Mainstreaming urban resilience: political commitment, governance networks and active engagement of decision-makers and citizens

The aspirations that accompany the concept of urban resilience could hardly be more ambitious. Scholarly and grey literature both highlight the potential to adapt to and/or mitigate various problems, including the negative consequences of climate change (Boyd and Juhola, 2015), greater risk of terrorist attacks (Coaffee, 2009), natural hazards (Hutter et al., 2013), failing infrastructure systems (Amin, 2002) and economic decline (Hassink, 2010). In short, urban resilience promises to provide guidance on how to deal with an increasingly complex and interconnected world where the failure of one sub-system can easily cascade to other sub-systems of the city. Consequently, urban resilience literature often frames cities as complex adaptive systems, acknowledging the interdependent character of social, ecological, technical, economic and other systems in a city and highlighting their self-organisation (Meerow et al., 2016). The success story in the rise of this concept can be ascribed to the concept's interpretative flexibility (Amir and Kant, 2018), allowing it to be applied to various policy and action fields. Accordingly, some authors, such as Baggio et al. (2015), argue that resilience can serve as a boundary concept bridging different epistemic divides and creating identity to structure common practices across different communities of knowledge production.

However, the concept's inflationary use and interpretive flexibility also have a potential downside when it comes to its application in policy practice. Davoudi et al. (2017) argue that resilience risks becoming "an empty signifier which can be filled with multiple meanings and which can serve conflicting political, economic, and social interests". This assumption raises criticism about the concept's applicability and usefulness (Béné et al., 2017; Brunetta and Caldarice, 2019; Mikulewicz, 2019). For instance, some scholars criticise the concept of urban resilience for not capturing adequately the political dimension of resilience. Critical scholars rightfully pose the question of "resilience for whom?" (White and O'Hare, 2014; Lebel et al., 2006), highlighting the fact that resilience measures regularly privilege certain social groups over others. Meerow and Newell (2019) have recently broadened the focus and provide an analytical framework for urban resilience, raising questions of "resilience for whom, what, where, when, and why?". Those questions not only allow an exploration of who benefits from certain resilience measures but also indicate that it matters what kind of system or sub-system is intended to become resilient. Indeed, Chelleri et al. (2015) identify potential trade-offs between these systems or sub-systems when resilience measures are implemented. Moreover, the questions introduced by Meerow and Newell point to potential spatial

and temporal trade-offs of resilience policies and raise questions of who has the power to define what resilience is and how the concept is used. Ultimately, the win–win paradigm that is often promulgated with the introduction of the concept into political practice seems difficult to sustain.

100RC has already been criticised for not capturing some of the abovementioned criticism on the concept of resilience (Leitner et al., 2018). However, the focus of this study is not to assess the effectiveness of 100RC as a nongovernmental organisation or as a city network. Rather, it focuses on the role of city administrations that use the procedures, repertoire and framing provided by 100RC to enhance resilience in their cities. Cities participating in 100RC have assigned themselves an active role in operationalising urban resilience and fostering institutional transformation (Urban Institute, 2018). Yet, urban resilience is usually not a distinct policy field in the sense of comprising substantive authority, institutional order and substantive expertise (cf. Massey and Huitema, 2013). Therefore, policymakers and planners are now faced with the task of mainstreaming urban resilience in policy and decision-making. Here, mainstreaming means that resilience objectives are integrated into existing sectoral policies and decision-making practices.

We borrow the concept of mainstreaming from climate change and development literature, where it is described as a specific form of environmental policy integration (Adelle and Russel, 2013; Rauken et al., 2013). It was first put on the policy agenda at the World Summit on Sustainable Development in Johannesburg in 2002 (McEvoy et al., 2008) at which issues of climate adaptation were integrated into development work, poverty reduction and risk management (Huq and Reid, 2004; Klein et al., 2007; Uittenbroek, 2014). Mainstreaming as a concept for policy integration is nowadays used for both climate adaptation and mitigation policies and is no longer restricted to development aid (Brouwer et al., 2013; Vasileiadou and Tuinstra, 2013). A particular strand of mainstreaming literature draws attention to the local level of policy integration (Rauken et al., 2013; Sharma and Tomar, 2010; Wejs et al., 2014), stressing the particular role of cities and their governments for climate adaptation, urban design and spatial planning as well as the local variation of potential climate impacts (Uittenbroek, 2014, 16 ff.).

Although literatures on climate adaptation and urban resilience overlap significantly (e.g. Fünfgeld and McEvoy, 2012; Mikulewicz, 2019; Tschakert and Dietrich, 2010; Vedeld et al., 2016; Woodruff et al., 2018), the concept of mainstreaming has not yet received much attention in academic debates on urban resilience. This study attempts to introduce the concept of mainstreaming to urban resilience research in order to enrich academic debates by identifying common challenges in operationalising resilience and to make suggestions on how to stimulate mainstreaming so as to enhance urban resilience. As Runhaar et al. (2018) show, mainstreaming can contribute to create synergy effects between different sectors as well, as it represents a potentially resource-efficient and effective policy strategy because budgets can be combined. However, in contrast to a "dedicated approach", where specialised, stand-alone policies and programmes are developed (Uittenbroek et al., 2014), mainstreaming might also run the risk of diminishing issue visibility and attention (Runhaar et al., 2018). With regard to policy implementation, both the literature on mainstreaming – particularly mainstreaming in local climate adaptation – as well as the literature on challenges to operationalise urban resilience cluster around three mutually related but distinct issues.

Firstly, in response to an overly rationalist way of risk management that relies on monitoring and prediction, introducing urban resilience as a new policy goal is often associated with a paradigm shift that highlights the need for adaptation, flexibility and contingency planning (Perelman, 2007). This shift is accompanied by a change in focus – from managing risk to managing vulnerability and contingency (Oels, 2013). The literature suggests that such a paradigm shift is very difficult to achieve because relevant actors, such as risk managers, have been trained to work in a predict-and-control environment and epistemic traditions are hard to change (Huck and Monstadt, 2019). In addition, Normandin et al. (2019, p. 21) argue that a paradigm shift requires cultural change, including a transformation of interests and powers, incentives, and knowledge dissemination. Very similar challenges are described in the literature on mainstreaming climate adaptation. There it is argued that for any policy integration to be effective, there must be some political commitment (Massey and Huitema, 2013). Uittenbroek et al. (2014) distinguish between direct and indirect political commitment. Whilst direct political commitment refers to setting a political agenda, allocating resources and endorsing specific policies, indirect political commitment is mainly obtained through finding synergies by policy coupling and combining resources (ibid., p. 1044). As resilience applies to and connects different policy fields, such as urban planning, natural resource management and crisis management, we contend that mainstreaming urban resilience equally requires political commitment in the sense of anchoring resilience as a new overarching policy paradigm and allocating resources, as well as in the sense of finding synergies by policy coupling.

Secondly, the governance-related literature on urban resilience calls for new governance models that highlight the need for governance networks across sectoral, administrative and territorial boundaries. Organisational fragmentation and institutional silos are perceived as vulnerabilities because they prevent efficient and effective collaboration of relevant stakeholders, including private and public actors. For instance, Almklov et al. (2012) point to the fragmented management of interdependent infrastructure systems and Vedeld et al. (2016) call for strengthening multi-level governance arrangements for urban resilience. Similarly, in climate adaptation literature the need has been stressed for multi-level (Bauer and Steurer, 2014) and multi-sector (Dewulf et al., 2015) governance networks. In particular, the notion of "intra- and inter-organisational mainstreaming" promotes the idea of collaboration and networking across departmental and sectoral boundaries "to generate shared understandings and knowledge, develop competence and steer collective issues of adaptation" (Wamsler and Pauleit, 2016, p. 73). Some authors, such as Frazier et al. (2010), stress the challenges that accompany networked governance arrangements for urban resilience, in that different stakeholder groups might have diverging perceptions and interests. As Sanchez et al. (2018, p. 2) argue, this divergence might result in "organisations cherry picking specific aspects and leaving other aspects unaddressed, polemic turf-wars that will not result in action and, most challenging, a lack of cohesion in attempts to achieve meaningful urban resilience". Hence, to mainstream urban resilience, it is necessary to establish and maintain cross-boundary governance networks to identify synergies and resolve conflicts of interest.

Thirdly urban resilience literature highlights the fact that enhancing resilience is not merely an issue of public policy but requires active engagement and support from the private sector as well as from citizens (Marana et al., 2018). For instance, decision-making and planning of private infrastructure and health providers greatly influence a city's resilience (Monstadt and Schmidt, 2019; Zaidi and Pelling, 2015). Moreover, it is argued that effective disaster prevention and recovery requires citizen involvement and extensive public participation (Vallance, 2015). Accordingly, approaches of public–private partnerships (Dunn-Cavelty and Suter, 2009) and citizen engagement (Pearce, 2003) have become prominent not only in the literature on operationalising urban resilience but also in the literature on mainstreaming climate adaptation (Friend et al., 2014; Uittenbroek et al., 2014). However, engaging these different stakeholder groups is challenging because they often have diverging interests (McConnell and Drennan, 2006). The challenge for policymakers and planners becomes an issue of developing and applying appropriate methods and techniques to convince these different stakeholder groups to engage actively in resilience-building measures (Uittenbroek et al., 2014). Therefore, mainstreaming urban resilience requires the commitment and active

engagement not only of decision-makers from public and private sectors but also of citizens.

3. Methodology

Participation in 100RC usually starts with developing a resilience strategy in accordance to a standardised procedure. An agenda-setting workshop including the opportunity for broad stakeholder participation is followed by a preliminary resilience assessment to identify "discovery areas". Working groups for each "discovery area" are tasked with identifying potential actions for improvement. Finally, cross-cutting issues are identified in workshops. With the help of an external partner – in the cases of Rotterdam and Christchurch, with AECOM[1] – the municipalities write up their resilience strategies on the basis of these assessments; the strategies include a vertical hierarchy covering a vision, goals and proposed projects. In addition, 100RC covers the costs of appointing a so-called Chief Resilience Officer for two years, who reports directly to the Chief Executive in the municipal administration and/or to the mayor. Both cities opted to retain this position after the 100RC funding period. Furthermore, participation in 100RC includes access to "platform partners" such as Microsoft or Siemens, who offer resilience services as well as access to other cities of the network to share knowledge and best practices (see Arup and RF, 2015; Urban Institute, 2018; 100RC, 2016 for further details).

We concentrate our analysis on the process of developing the resilience strategy, on the set-up of the official policy document and on the role of the Chief Resilience Officer in each city, and we delineate specific challenges that policymakers and planners face in mainstreaming urban resilience. Our main source of information is 55 expert interviews with municipal representatives, participants in the strategy development process, Chief Resilience Officers and their resilience teams, and with other relevant stakeholders, such as emergency managers at regional and national levels, providers and network owners of critical infrastructure services, civil servants, politicians and 100RC staff. In both cases, potential interviewees were chosen from a list of people and organisations that had contributed to the development of the resilience strategy in question (see appendices of Gemeente Rotterdam, 2016; CCC, 2016). In addition, the selection of interviewees was based on conceptual considerations such as the coverage of different governmental levels and different policy fields. To identify key informants in the respective cities, preliminary meetings were held with other researchers who had conducted empirical research on the cases and use was made of the snowball technique. Interviews took place between October 2017 and May 2019 and lasted between 45 and 120 min. Appendix 1 provides an overview.

The interviews took place during field research in Christchurch (April, May 2018 and October, November, December 2018) and Rotterdam (October, November, December 2017 and April, May 2019). They were conducted with the help of semi-structured interview guidelines containing open-ended questions. The guidelines were mainly informed by preliminary literature and document analyses. The interviews were structured along the analytical categories developed above. However, interviewees were also encouraged to discuss further problems, challenges and opportunities of operationalising resilience they deemed important. Interviews were audio-recorded, transcribed and coded by the lead author. Although the benefits of personal contact are obvious (Hennink et al., 2011), for organisational and financial reasons, six out of the 55 interviews had to be conducted remotely via Skype video calls.

We used Qualitative Content Analysis (QCA; Gläser and Laudel,

2013) to identify and distil particular challenges that policymakers and planners face in mainstreaming urban resilience and to categorise them. Instead of an "open coding" exercise in which the researcher goes through the interview transcripts and indexes all text segments that contain relevant information, QCA starts from a theoretically derived set of categories. To develop the categories, we drew on the literature review presented in section 2 and then further refined them in light of the empirical analysis. The categories include challenges and opportunities related to 1) making resilience a top priority for policymaking and planning, 2) establishing and maintaining cross-boundary governance networks, and 3) achieving active engagement and support from decision-makers from public and private sectors as well as citizens. Although this set leaves room for adjustment, it provides a certain structure to the analysis of interview transcripts. QCA then reduces the data stepwise and extracts relevant information from the interview transcripts in order to make the information manageable. This is in line with Hennink et al.'s (2011, 4 ff.) approach of the "qualitative research cycle", in which research design, data collection and data analysis constitute interconnected stages of research which acknowledge the inductive nature of qualitative research, but, at the same time, continuously alternate with deductive reasoning. Finally, much effort was expended in triangulating interview data with other information sources such as policy documents, plans and strategies – particularly the cities' resilience strategies – audits, cabinet papers, project reports, newspaper articles and the plethora of academic research available on the cases of Rotterdam and Christchurch.

4. Rotterdam and Christchurch as participants in 100RC: Challenges in mainstreaming urban resilience

By singling out Rotterdam and Christchurch, we study two cities in different parts of the world that have had dissimilar experiences with disasters over recent decades. Whilst Christchurch experienced a series of devastating earthquakes in 2010 and 2011 that caused 185 deaths and destroyed much of the city's built environment, Rotterdam has not suffered any similarly destructive catastrophe since the Second World War. This difference not only has implications on how resilience is perceived in the two cities but also profoundly shapes the policy discourse as well as the public debate on urban risk management.

New Zealand is located in the western part of the Ring of Fire: an area of the Pacific Ocean where tectonic plates are colliding and hence prone to earthquakes, volcanic eruptions and tsunamis. Due to the uncontrollability of such natural hazards and due to their frequent occurrence, disaster risk management in New Zealand focuses on response and recovery. New Zealand was one of the first countries to apply the concept of resilience to national policymaking (Britton and Clark, 2000). Recently, a new National Resilience Strategy was published (New Zealand Government, 2019). This policy reveals a paradigm shift from a purely protectionist to a more adaptive approach in risk management. In the Netherlands, there are similar signs of an imminent paradigm shift in risk management, particularly in flood management (Restemeyer et al., 2016), as exemplified by the National Adaptation Strategy (Ministry of Infrastructure and the Environment, 2016) and the new Delta Programme (Ministry of Infrastructure and Water Management, 2018). However, resilience as a concept is only slowly entering policy discourses in the Netherlands. This does not mean that the Netherlands has tended not to attach as much importance to resilience issues, merely that the use of resilience as a term for policymaking is relatively new.

Despite their differences, the two cases have much in common. Historically, both Christchurch and Rotterdam were built on land that is geologically unsuitable for settlement. Settlement was only possible due to progressive use of engineering works, such as dams and drainage systems (Watts, 2011; Borger and Ligtendag, 1998). Without such infrastructure, Christchurch would sink into a swamp and most of Rotterdam would be under seawater. In this sense, since their

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[1] AECOM is an international consultancy firm. The acronym stands for architecture, engineering, construction, operations, and management. AECOM was one of several "platform partners" in the 100RC network providing strategic consultancy services to participating cities.

establishment, both cities have dealt with urban resilience issues by managing the risks posed by water. Nowadays, the cities share another feature with respect to urban resilience: both have been admitted to 100RC. In both cities, participation was a political decision supported by the mayors, although for slightly different reasons: Rotterdam saw an opportunity to extend its successful work in the areas of climate change adaptation and integrated water management to other areas such as social affairs, security and infrastructure management. In addition, the concept of resilience seemed to enjoy greater acceptance amongst politicians than the concept of sustainability at that time (Hommels, 2018). In Christchurch, there was growing dissatisfaction about the way the national government initiated the recovery process after the Canterbury Earthquake Series. According to some interviewees (e.g. 31, 48) and commentators (e.g. Bennett et al., 2014; Vallance, 2015), the opportunity was missed to make institutional changes and strengthen the city administration. Participation in 100RC was linked to the hope of making up for this missed opportunity. Despite these differences in context and political discourse (adaptation and preparation in Rotterdam versus recovery in Christchurch), the mayors of both cities recognised the opportunity to link different policy fields and were attracted by the idea of entering a city network for knowledge sharing (Interviews 1, 4, 31, 48). Tables 1 and 2 provide brief overviews of the resilience strategies of both cities.

4.1. Challenges in gaining political commitment

Despite the initial support of the mayors, the resilience strategies did not receive unreserved support in the two cities. In Christchurch, the prescriptive timeframe imposed by 100RC to develop the resilience strategy did not align with the particularities of recovering from an earthquake (Interviews 31, 46, 47). In the midst of the recovery process, it was not a key priority of many stakeholders to develop a new strategy – especially because it relates to the more distant future (Interviews 46, 47, 48). Scarce resources in terms of time and money seemed to be better invested in restoring urban life as quickly as possible. Public pressure and media attention were enormously high and put a great strain on many actors (Interviews 23, 26, 27), most of whom had to deal with private losses and psychological stress themselves (Interviews 22, 44). In addition, at the time, there was a prevailing fear of another earthquake. A civil servant from the city council describes the situation as follows:

"In a city like this, with this scale of reconstruction as a result of the biggest natural disasters in our history going on… it was a really crowded place to try and have a conversation about resilience. […] It was a struggle to find out exactly where you fit in and what your entry level was in this wider conversation around recovery. […] So, in hindsight, is resilience the right conversation for Christchurch? Absolutely. Was the timing perfect? Probably not. […] …you're struggling for air time and there is so many other things going on." (Interview 31)

In Rotterdam, it became clear that the resilience strategy competes with other existing initiatives and visions of the city (Interviews 18, 51). Not only has the municipal government agreed to transform Rotterdam into a resilient city, but there are official strategies and visions for the city's sustainability, circular economy and energy transition, to name just a few. Interviewees describe the resilience strategy in Rotterdam as lacking political commitment by comparison with other visions such as sustainability or circular economy, in that there is no dedicated political target and no programme office with associated funding (Interviews 1, 4, 51). Hence, advocates of the resilience strategy in Rotterdam face similar challenges as their counterparts in Christchurch. They have to seek opportunities to link resilience with other urban policy goals in a way to create positive spin-offs and they have to look for ways to combine existing sectoral funding for cross-sectoral resilience work (Interviews 4, 8, 31, 46, 51) – key essentials in the indirect approach to gain political commitment to mainstreaming.

In our analysis, we also found that the set-up of resilience strategies hinders their anchoring as an overarching policy goal. The strategies were developed along the guidelines of 100RC and in cooperation with international consultancy AECOM. Experiences gained throughout this process could be shared within a global network of cities and assistance for implementation could be acquired from international tech and engineering companies, such as Cisco and Siemens. In a way, 100RC created a small world of its own that Leitner et al. (2018) call the "resilience complex". Consequently, the resilience strategy risks becoming a somewhat siloed policy document that has not been formally legitimised by higher levels of government. By contrast, the Rotterdam Adaptation Strategy (Rotterdam Climate Initiative, 2013) is based on knowledge developed through the nationally funded programme "Knowledge for Climate" (www.knowledgeforclimate.nl) and is closely related to the National Adaptation Strategy (Ministry of Infrastructure and the Environment, 2016); multi-level policymaking like this is a core

Table 1
Structure of the Rotterdam Resilience Strategy (based on Gemeente Rotterdam, 2016).

Rotterdam Resilience Strategy		
Vision	*7 resilience goals*	*68 resilience actions*
In 2030 Rotterdam will be a city where… "…strong citizens respect each other and are continuously developing themselves"	Rotterdam: A balanced society: "Skilled and healthy citizens in a balanced society"	e.g. "We-Society"
"…the energy infrastructure provides for an efficient and sustainable energy supply in port and city"	World port city built on clean and reliable energy: "Towards a flexible energy infrastructure for an efficient and sustainable energy mix in Port and City"	e.g. "Rotterdam energy infrastructure plan"
"…climate adaptation has penetrated into the mainstream of city operations and water has added value for the city and our water management system is 'cyberproof'*"	Rotterdam Cyber Port City: "Rotterdam aims to be a cyber resilient city and port; an important condition required to attract new business and investment"	e.g. "Cyber Deltaplan"
"…the underground is being used in such a way that it supports the growth and development of the city"	Climate-resilient Rotterdam to the next level: "Climate proof plus 'cyberproof'* critical infrastructure"	e.g. "Adaptive waterfront development"
"…we have embraced digitisation without making us dependent, and we have ensured a best practice level of cyber security"	Infrastructure ready for the 21st century: "A robust and resilient underground infrastructure as a physical basis for a resilient Rotterdam"	e.g. "The subsurface above ground"**
"…self-organisation in the city gets enough room and a flexible local government supports if really needed" "…is part of our daily thinking and acting."	Rotterdam Networkcity – truly our city: "Residents, public and private organisations, businesses and knowledge institutions together determine the resilience of the city"	e.g. "World Expo 2025"
	Anchoring resilience in the city: "With stakeholders in the neighbourhoods, sharing knowledge and a facilitating organisation"	e.g. "Resilient Delfshaven"

* Here, "cyberproof" is intended to mean "cyber secure".

** The phrase used in the consultation document (Gemeente Rotterdam, 2016) in relation to giving the ground under Rotterdam due prominence in planning and projects.

Table 2
Structure of the Greater Christchurch Resilience Strategy (based on CCC, 2016).

Resilient Greater Christchurch			
2 guiding principles	*4 resilience goals*	*11 resilience programmes*	*> 50 resilience actions (evolving)*
• A meaningful Treaty partnership with Ngāi Tahu	Connect: "We are connected communities living in adaptable places"	Connect people	e.g. "Selwyn Newcomers and Migrants Strategy"
		Create adaptable places	e.g. "Suburban Centre Masterplans"
		Improve the quality, choice and affordability of housing	e.g. "Christchurch City Council Housing Policy"
• Consistency and collaboration across all tiers of government	Participate: "We are a community that participates in shaping our future"	Build participation and trust in decision-making	e.g. "Let's Plan – Waimakariri Red Zone engagement process"
		Support community organisations and leaders	e.g. "Lyttelton Time Bank"
	Prosper: "We are prosperous by sustaining the vitality of the environment, fostering innovation and attracting people"	Connect internationally	e.g. "Ministry of Awesome"
		Foster a culture of innovation	e.g. "Creative Industries Support Fund"
		Sustain the vitality of the natural environment	e.g. "Food Resilience Network Action Plan"
	Understand: "We understand risks to be better prepared for future challenges"	Improve community understanding and acceptance of risk	e.g. "Dudley Creek and Flockton Basin Flood Mitigation Schemes"
		Manage the risks we face	e.g. "Increase in Building Code seismic standards"
		Securing our future in the eastern parts of Christchurch	e.g. "Regenerate Christchurch"

factor for policy success (Dewulf et al., 2015).

Christchurch counteracted the risk of developing the resilience strategy as an alienated policy document: the municipality closely linked the strategy to the existing Urban Development Strategy (CCC et al., 2007), a strategy developed for the metropolitan region of Greater Christchurch in a partnership between the city government of Christchurch, its neighbouring districts of Waimakariri and Selwyn, the National Transportation Agency and the Regional Environmental Agency. An interviewee describes the resilience strategy as "putting a resilience lens on the Urban Development Strategy" (Interview 29). Although not a statutory strategy, the resilience strategy is thereby closely connected to an existing network of actors in a formal setting, which might give it greater influence (Interviews 29, 46, 48). However, this might also deprive the resilience strategy from greater visibility, as actors might perceive it as a by-product of the Urban Development Strategy (Interview 30) and not as an overarching leitmotif of the city: such misperception is one of the main disadvantages of mainstreaming as described by Runhaar et al. (2018).

In summary, introducing a resilience strategy and appointing a Chief Resilience Officer have not yet led to resilience being anchored as an overarching and generally accepted policy goal in the two cities. Urban resilience rather represents one out of many urban agendas with which it competes for political commitment and the allocation of resources. The fact that the resilience strategies are embedded only marginally in multi-level policymaking processes further challenges their viability. In both cases, the result is that actors have to seek actively for synergies and potential links between resilience and other policy goals and hence have to try to obtain indirect political commitment.

4.2. Challenges in institutionalising governance networks

Although the resilience strategies might not be statutory and are perceived by some stakeholders as a rather informal guideline for action (Interviews 2, 24, 29), they still represent the most holistic attempts of policymaking in Christchurch and Rotterdam. Informants in both cities report that the strategy development process contributed to forging new links between previously separated policy fields and to making new contacts within and beyond the city's administrative boundaries (Interviews 1, 4, 15, 21, 22, 28, 29, 31, 45, 52). The benefits of defining a common vision and of gaining a similar understanding of resilience have been stressed (Interviews 8, 45, 46). Informants from both cities also highlight the benefits of mutual learning in the global

network of participating cities (Interviews 4, 8, 18, 20, 47, 48) as well as the fact that participation in 100RC has contributed to the municipal administrations seeing themselves in a leadership position (Interview 21). In addition, in both cities the Chief Resilience Officers are playing increasingly important roles in formal decision-making, as they are key informants when new city plans and city visions are being developed (Interviews 47, 51).

Nevertheless, whilst the mid-term report of 100RC reaffirms the goal of supporting institutional transformation (Urban Institute, 2018, p. 10), both cities face considerable challenges to institutionalising cross-boundary governance networks and to maintaining the relationships built up during the development phase of the strategy. In Rotterdam, for example, it is proving to be difficult to involve external stakeholders, such as private infrastructure managers and network owners (Interviews 3, 14, 52). In addition, overlapping territorial jurisdictions (for instance, of water authorities, safety regions, provinces, municipalities and infrastructure providers) complicate cooperation (Interviews 49, 50). In Christchurch, the network of actors is characterised by the experience acquired during the response to and the recovery after the series of earthquakes in 2010 and 2011. Recovery and repair were accompanied by significant disputes about who should bear the costs of recovery (Interviews 21, 33, 36, 39, 48) and who has the power to define what the future city of Christchurch should look like (for a detailed discussion, see Bennett et al., 2014). For example, at the time of data collection, national and local governments were still arguing about how to share the costs of reconstruction and increased demands for maintenance (Interviews 39, 46, 48). Any kind of network management has to take these strained relations into account, which makes any cross-boundary collaboration a highly political issue.

With respect to the set-up of the strategies, Christchurch took the aspect of cross-territorial connectivity into account at an early stage in the development of its strategy. From the outset, the neighbouring districts of Waimakariri and Selwyn were included: they were co-signatories of the application to join 100RC. Thus, the strategy was extended from Christchurch's administrative boundaries to the Greater Christchurch Metropolitan Region. Interviewees retrospectively commended this approach for better fitting the spatial scope of the experienced disaster and for creating the option of addressing issues that reach beyond the city's boundaries, such as transportation, regional development and regional risk management (Interviews 22, 25, 29, 31, 46, 48). However, as is the case for Rotterdam, the strategy itself entails only small incentives for actors to institutionalise new cross-boundary relationships: cooperation is mostly restricted to the scope and

timespan of the projects defined in the strategy, which brings the risk that established relationships could gradually disintegrate after a particular project is completed (Interviews 1, 8). Furthermore, the voluntary character of the strategies does indeed encourage cross-boundary collaboration whenever different actors share common interests and potentially benefit from one another. However, we could identify only small incentives to connect actors with diverging interests or to foster negotiations for the redistribution of resources.

The main issue is that connections between different initiatives listed in the resilience strategies and between different actors are mainly maintained by the Chief Resilience Officer (CRO) as "the city's point person for resilience building" (Berkowitz, 2015). Limited resources in terms of time, money and personnel were mentioned by a range of interviewees (23, 31, 47, 51, 52) as a major impediment hampering the connections between different actors that were built during the strategy development process. For example, one informant stated: "It is simply too much to manage it all" (Interview 51) and another one argued: "…just putting one CRO in ain't gonna make a city resilient" (Interview 32). The Chief Resilience Officers of both cities have to set priorities and decide which projects they want to support (Interviews 47, 51). However, prioritisation also means that other projects and initiatives are not taken into account, even though they could benefit from being viewed through a resilience lens (Interviews 47, 51). One informant pointed to a weakness related to the role of the Chief Resilience Officer as a single point person for building up the actor network: "*If [the Chief Resilience Officer] was hit by a truck tomorrow – God forbid – then everything would be gone. There would be almost no one left to continue the resilience work in the city.*" (Interview 33)

In summary, the endeavours associated with participating in 100RC have not yet led to considerable changes in urban governance structures in Christchurch and Rotterdam. Although the development phases of the resilience strategies have contributed to drawing new cross-boundary relations between some actors, the strategies seem to provide small incentives for actors to maintain and further consolidate these networks. Rather, they function on a voluntary and project-centred basis, which constrains cross-boundary cooperation both in time and in relation to the participating actors. In the absence of such incentives, the role of the Chief Resilience Officer as a network manager seems to be daunting.

4.3. Challenges in gaining active engagement of public and private decision-makers and citizens

Whilst it was relatively easy to convince political decision-makers to participate in 100RC because it brings financial benefits (Interview 46), in both cities, informants report difficulties with regard to securing the active engagement of these decision-makers (Interviews 4, 47). In particular, informants referred to the challenge of getting decision-makers from different departments of the municipality to be equally enthusiastic about the concept of resilience (Interviews 46, 51). Although all initiatives listed in the strategy refer to one or several aspects of resilience as defined by 100RC, the added value of the strategy is that it provides links and develops synergies between the individual initiatives (Interviews 4, 8, 20, 31). As such, what stakeholders perceive as one of the most important benefits of participating in 100RC is indeed an opportunity to mainstream resilience in policy and decision-making. However, it also represents one of the biggest challenges (Interviews 31, 47, 51, 52).

"Adopting the resilience lens" (Interview 4) often requires project managers and policymakers to consider issues that were previously beyond their remit. This entails investing additional resources in terms of personnel, time and money. One of the main challenges with regard to convincing political decision-makers to invest these additional resources is that the added value of resilience measures is hard to demonstrate, let alone to quantify (Interviews 1, 46). Whilst other urban agendas are backed up by concrete and measurable goals, such as to become CO_2 neutral by 2050, resilience as a goal seems to be too complex to be expressed in such concrete terms:

> "*We are also living in a political climate… we have a city council that needs to approve budget, etc. Therefore, on the one hand you want to show results. […] But if you can't measure it, how can you show the results?*" (Interview 1)

With regard to decision-makers from the private sector, the City Resilience Framework (Arup and RF, 2015) used by the cities to develop the strategy seems to be well suited to attract a range of different actors to engage in the process (see Section 4.2). However, it does not seem to be fully suited to convince them to buy into the idea and to agree to long-term investments. Although one of the main tasks of the resilience teams in Rotterdam and Christchurch lies in advocating resilience, in explaining the concept and in demonstrating its usefulness within and beyond the municipal administration (Interviews, 4, 8, 31, 47), they seem to lack customised tools or mechanisms to demonstrate the added value of their initiative. Decision-makers from the private sector are difficult to access because they participate in other forums (Interviews 5, 7, 13, 30), speak a different language (Interviews 6, 15, 50) and are often unfamiliar with the way municipalities work (Interviews 15, 53). In this vein, one interviewee (46) regrets that the support of 100RC "pretty much stops after the planning stage". Another interviewee (29) refers to the risk of the resilience strategy remaining "a shiny new document with the flavour of the month" that might be substituted by "the next thing that comes along".

Attracting public support for and actively engaging citizens in the strategy is similarly challenging in both cities. In Christchurch, a major public participation process took place around the time that the city started its resilience initiative. The development of the Christchurch Recovery Plan included an unprecedented dimension of public participation under the guidance of the city council (Bennett et al., 2014). Unfortunately, the enthusiasm of the citizen was considerably reduced when the national government took over the planning process in a non-transparent manner under the state of national emergency (Vallance, 2015). Setting up another large-scale participation procedure for the resilience strategy did not seem to be appropriate at that time. Nevertheless, the 100RC process improved the relationship between the municipality and native Māori communities and gave Māori a stronger role in urban development planning (Interviews 29, 32, 48). Māori worldviews and knowledge proved to be in line with resilience thinking and hence contributed to developing a mutual vision for the city. Moreover, the strategy includes a range of bottom-up initiatives, such as the development of a "time bank" to strengthen community cohesion and the resilience team cooperates with grassroot initiatives such as the "Gap Fillers" to promote public participation in urban development issues (Interviews 46, 47, 48).

Rotterdam, too, decided to put a strong focus on social cohesion in their resilience projects, concentrating on some of the most deprived areas of the city (Interviews 51, 52). However, the process of developing the strategy also served as a mechanism to pre-select who has the power to articulate needs and interests (Hommels, 2018). Indeed, compared to other municipal programmes, such as the Rotterdam Water Sensitive Initiative, public participation in the resilience strategy is limited. This might be because the strategy is interpreted more as a high-level consultation document rather than as an action plan (Interviews 1, 15). Nevertheless, similar to Christchurch, Rotterdam is increasingly investing in educating the general public, as can be seen in events such as the Rotterdam Venture Café (www.venturecaferotterdam.org), which regularly hosts themed evenings on urban resilience and how to achieve it. The city also cooperates with the Rotterdam University of Applied Sciences, which offers courses and exchange programmes on urban resilience. In addition, the city is increasingly collaborating with the local arts scene to promote urban resilience thinking among Rotterdam's citizens and to initiate a wider public debate on urban resilience (Interviews 8, 51).

In summary, developing a resilience strategy and appointing a Chief Resilience Officer has only partly succeeded in actively engaging decision-makers from the public and private sectors as well as citizens. For instance, the resilience teams in Christchurch and Rotterdam found it difficult to obtain public support during the development phases of their strategies because at this stage they made only limited use of public participation processes. However, they are now showing great creativity to inspire the public about their initiative, linking it to the local arts scene, grassroots movement and educational system. Comparable mechanisms seem to be failing to convince decision-makers, particularly those from the private sector: the interviewees attribute this largely to the resilience teams lacking sufficient techniques, mechanisms and meeting places to demonstrate the added value of resilience.

5. The limits of 100RC in mainstreaming urban resilience

Applying the concept of mainstreaming to empirical research on the resilience initiatives in Rotterdam and Christchurch provides valuable insights for the academic debate on operationalising urban resilience. As such, our study has revealed particular problems that planners and decision-makers in both cities face despite the considerable differences in their socio-political and environmental contexts and their dissimilar experiences with disasters in recent decades. In the light of our findings, we argue that although developing a resilience strategy and appointing a Chief Resilience Officer are relevant first steps to mainstream urban resilience in Christchurch and Rotterdam, they are not sufficient. If these endeavours are not backed up by institutional changes, for instance in procedural law and national policymaking, we see a risk that they will lead only to incremental changes tied to specific project scopes and timeframes. In the following, we discuss three problems we have identified that policymakers and planners face with regard to mainstreaming urban resilience and, in order to address them, make some suggestions for supplementing the measures taken in the context of 100RC.

Firstly, contrary to what the policy guidelines of 100RC suggest, anchoring resilience as a new overarching policy paradigm does not take place in an institutional vacuum. Rather, resilience competes with existing urban agendas and other policy goals for direct political commitment, such as the allocation of resources and visibility on the political agenda. Consequently, policymakers and planners in Christchurch and Rotterdam seek to enhance indirect political commitment by identifying cross-sectoral synergies, policy coupling and combining resources (cf. Uittenbroek et al., 2014). Essentially, their work is made difficult by the lack of political mandate from higher levels of government. In the absence of a national support programme on developing urban resilience strategies or other mechanisms of political legitimation, resilience strategies such as those of Christchurch and Rotterdam run the risk of being alienated and gaining little attention in the overall political discourse. Therefore, for mainstreaming urban resilience in policy and decision-making, endeavours have to go beyond developing an urban resilience strategy and appointing a Chief Resilience Officer in the city. Rather, national policies on these issues are required, in order to provide direct links to urban resilience strategies. For instance, the application of the concept of resilience to policy reforms in national risk management arrangements could provide city administrations with guidance and a political mandate to mainstream urban resilience. As the case of Melbourne, for example, demonstrates, national policies supporting an urban resilience strategy can considerably stimulate the implementation of ambitious urban resilience programmes (Fastenrath et al., 2019). In addition, such guidance might give resilience direction and limit its risk of becoming an empty signifier serving conflicting interests (cf. Davoudi et al., 2017). Whilst Rotterdam might benefit from the country's positive experiences in multi-level governance for adaptive flood management (Dunn et al., 2017), Christchurch might be able to link the resilience strategy closely to the new National Disaster

Resilience Strategy (New Zealand Government, 2019). The coming years will show if these opportunities will be seized.

Secondly, by participating in 100RC, cities enter a network of actors working jointly on issues of urban resilience and consisting mainly of other participating cities and their Chief Resilience Officers, private consultancies and tech firms. Leitner et al. (2018) call this the "resilience complex". However, this network of actors differs greatly from what scholars of urban resilience would call governance networks that reach beyond sectoral, administrative and territorial boundaries (Almklov et al., 2012; Vedeld et al., 2016; Ernstson et al., 2010). Rather than being an assemblage of actors who are held together by a common commitment to or interest in a particular city and its citizens, actors in the "resilience complex" are connected by a common interest in urban resilience in general or in the economic opportunities that the resilience market might bring (Leitner et al., 2018). This common interest has been shown to have positive effects for participating cities in terms of learning, public awareness, knowledge dissemination and obtaining a leadership role and prominence in the urban resilience movement. However, it does not necessarily contribute to institutionalising governance networks that are required to define synergies, couple sectoral policies and combine budgets, which are among the key essentials of mainstreaming (Uittenbroek et al., 2014). Actors who enter this sort of governance network mostly join voluntarily: for instance, by participating in the development of the resilience strategy or in some affiliated projects. Accordingly, cooperation is limited to those actors who benefit from specific projects and rarely extend beyond a project's scope or duration. This limited cooperation reflects an incremental notion of operationalising resilience as urban experiments (Fastenrath et al., 2019; Wakefield, 2019) and an understanding of cities as experimental labs (Evans, 2011). In such networks, critical questions of resilience for whom, what, where and why (cf. Meerow and Newell, 2019) are not necessarily addressed, simply because some stakeholders are not included in the process. Profound mainstreaming, however, would require all relevant actors – including those with diverging interests – to join in. Moreover, it would require that these governance networks remain in place in the long term. Institutional incentives and amendments in procedural law should support endeavours such as the appointment of a Chief Resilience Officer to manage and maintain governance networks. Such incentives could include not only procedural guidelines or mandatory knowledge exchange, but also penalties for relevant organisations that have regularly behaved uncooperatively, or rewards for particularly cooperative behaviour. They could also include the establishment of cross-sectoral and cross-territorial budgeting for planning, development and assessment processes, particularly for processes related to risk management. As such, they could help to solve issues of spatial trade-offs (resilience where?) and cross-sectoral trade-offs (resilience of what?) (cf. Meerow and Newell, 2019) and to put the win–win paradigm underlying the policy guidelines of 100RC (cf. Leitner et al., 2018) in perspective.

Thirdly, attracting the support and active engagement of decision-makers from the public and private sectors as well as of citizens (Marana et al., 2018) should not be taken for granted but instead seen as a resource-intensive and daunting process for those tasked with this assignment. This viewpoint stands in contrast to the win–win paradigm underlying the policy guidelines of 100RC (Leitner et al., 2018) that implies that different actor groups are equally easy to convince of the added value of resilience because everybody can benefit from it. Accordingly, the guidelines do not provide guidance on how to engage with different groups of stakeholders, such as decision-makers from public and private sectors or citizens, particularly in the case of reluctant actors. Neither do the guidelines provide guidance on how to deal with diverging interests of different actor groups. Our analysis shows that different stakeholder groups demand different ways of communication and that urban policymakers and planners are not equally equipped to attract their support and active engagement. Whilst the Chief Resilience Officers and their teams in Christchurch and

Rotterdam show great creativity with respect to generating public support, they struggle to convince strategic decision-makers, particularly those from private sectors. This is no surprise, given that policy-makers and planners are usually trained to involve citizens in planning processes and can use a broad repertoire of techniques that have been developed over recent decades to enhance public participation but are usually less familiar with attracting private businesses. Because citizen engagement (Pearce, 2003) and public–private cooperation (Dunn-Cavelty and Suter, 2009) are equally important for mainstreaming urban resilience, we suggest that policymakers and planners would particularly benefit from being supported in order to convince decision-makers from the private sector. This support should supplement formal institutional changes and incentives (see the preceding paragraph) and could include the development of techniques and mechanisms to access appropriate forums and meeting places and to translate public policy jargon into the language of private companies. It could include support for the design of business cases for resilience, also demonstrating the added value of resilience, as the support could include providing more specific guidance on how to deal with conflicting interests in particular project settings.

6. Conclusion

The often-described triumphal rise of the concept of urban resilience at the international level becomes a much more difficult path when it comes to operationalising resilience in cities. A range of scholarly literature, including this paper, has illustrated the enormous upswing of the concept by showing that resilience is prominently represented in international agreements such as the Sendai Framework for Disaster Risk Reduction or the Sustainable Development Goals. In this light, the impression could be gained that participation in programmes such as 100RC means resilience is already a top priority on urban policy agendas, that relevant stakeholders are politically committed and actively engaged and that self-organised cross-boundary governance networks evolve spontaneously because resilience serves everyone's interests equally. However, applying the concept of mainstreaming in empirical research on resilience operationalisation processes in Christchurch and Rotterdam shows how contested and resource-intensive these processes are and how problem-laden the task of mainstreaming is for policymakers and planners.

It goes without saying that cities potentially benefit in many ways from participating in initiatives such as 100RC. In particular, cities that have not previously made use of the concept of resilience may benefit by starting a public debate about potential chronic stresses and acute shocks and by developing ways of preparing for and responding to them. Raising public and policy awareness is indeed a key prerequisite for any resilience action to be effective (Molin Valdés et al., 2013). For Christchurch and Rotterdam, there is no doubt that without their participation in 100RC, the resilience debate in the cities would be a different one, if it existed at all. In addition, the municipal administrations have adopted a leadership role in the urban resilience movement, providing them with visibility within and beyond their administrative jurisdictions. The Chief Resilience Officers in both cities contribute to defining and implementing cross-sectoral resilience projects and thus to providing meeting places for relevant stakeholders who would otherwise not necessarily get together. Finally, the development of a resilience strategy that includes broad stakeholder participation contributes to a common understanding of resilience and of the major urban governance challenges along the pathways to urban resilience. These are valuable requirements for mainstreaming urban resilience in policy and decision-making (cf. Runhaar et al., 2018; Uittenbroek et al., 2014; Wamsler and Pauleit, 2016). Our analysis, however, raises serious doubts as to whether these efforts will be sufficient to integrate resilience goals in sectoral policy and decision-making as well as to dissolve policy silos.

Policymakers and planners who approach the task of mainstreaming urban resilience walk a thin line between the desires to create synergy effects between different sectors and to provide a resource-efficient and effective policy strategy on the one hand, and the risk of diminishing issue visibility and attention on the other hand (cf. Runhaar et al., 2018). Nevertheless, mainstreaming urban resilience should stimulate structural rather than incremental innovations in policymaking, planning and decision-making procedures across different public and private domains. The added value of resilience initiatives is not only to provide a "resilience lens" to different policy areas – as two of our interviewees (4, 29) put it – but ultimately to coordinate and combine different policies and decision-making processes so as to generate synergies and increase efficiency. Ideally, these coordination processes are not project-based but institutionalised in order to be effective in the long term. Relying solely on the 100RC blueprint of resilience policies to achieve this sort of change would be naïve to some extent, as it does not sufficiently address the main problems that policymakers and planners face. Rather, this blueprint needs to be supplemented by structural changes in national or city policymaking to enhance political commitment, by institutional incentives and amendments in procedural law supporting the establishment of governance networks and by support mechanisms and training for urban policy makers and planners to raise active engagement of different stakeholder groups, including decision-makers from the private sector.

Applying the concept of mainstreaming in research on operationalising urban resilience has helped us to delineate some specific problems of policymakers and planners and to provide suggestions for supporting them. Therefore, we encourage other researchers to apply the concept and its affiliated methods, processes, and epistemologies to further specify particular problems of operationalising urban resilience in policy practice and to identify ways to approach them. For instance, this study has only touched on issues of equality and justice. We suggest future research be carried out on mainstreaming urban resilience to analyse more explicitly by whom and for whom resilience is operationalised (cf. Meerow and Newell, 2019). Such research could contribute to better understanding of the roles, interests and motives of different actors, such as international consultancies and tech firms, and also of the city administrations that are taking part in resilience initiatives like 100RC. Applying the concept of mainstreaming could help research on urban resilience to go beyond demonstrating the negative effects of siloed governance arrangements (Almklov et al., 2012; Vedeld et al., 2016; de Bruijne and van Eeten, 2007). Instead, it should focus on why certain actors and actor groups in a city are more, or less, active and on finding out how to involve resistant actors and those with diverging interests. Finally, the literature on measuring and assessing urban resilience (Prior and Hagmann, 2013) should not merely be criticised for not accounting for the evolutionary character of cities (Davoudi, 2012). More constructively, its findings could be translated into mechanisms and techniques that help urban policymakers and planners to demonstrate the added value of resilience to decision-makers from public and private sectors. As more and more cities make use of the concept of resilience in policymaking and planning, we expect empirical research on cities around the world will yield answers to these and similar questions.

CRediT authorship contribution statement

Andreas Huck: Conceptualization, Methodology, Formal analysis, Investigation, Writing - original draft, Visualization, Project administration. **Jochen Monstadt:** Conceptualization, Writing - review & editing, Supervision. **Peter Driessen:** Conceptualization, Writing - review & editing, Supervision.

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Declaration of Competing Interest

Appendix A. Overview of interviews

Interview #	Case study	Organisation	Date	Place
1	ROT	Municipality of Rotterdam: civil servant	04.10.2017	Rotterdam
2	ROT	Municipality of Rotterdam: civil servant	06.10.2017	Rotterdam
3	ROT	Municipality of Rotterdam: civil servant	13.10.2017	Rotterdam
4	ROT	Municipality of Rotterdam: civil servant	25.10.2017	Rotterdam
5	ROT	Ministry of Infrastructure and Water Management: civil servant	27.10.2017	The Hague
6	ROT	Next Generation Infrastructure: senior manager	30.10.2017	Delft
7	ROT	Evides Waterbedrijf: senior manager	31.10.2017	Rotterdam
8	ROT	Municipality of Rotterdam: civil servant	01.11.2017	Rotterdam
9	ROT	Municipality of Rotterdam: civil servant (2 interviewees)	01.11.2017	Rotterdam
10	ROT	Municipality of Rotterdam: policy adviser	06.11.2017	Rotterdam
11	ROT	Safety Region Rotterdam Rijnmond: civil servant	29.11.2017	Rotterdam
12	ROT	Port of Rotterdam: senior manager	06.12.2017	Rotterdam
13	ROT	Stedin: senior manager	08.12.2017	Utrecht
14	ROT	TNO: senior manager	13.12.2017	Utrecht
15	ROT	TNO: senior manager	13.12.2017	The Hague
16	ROT	Rijkswaterstaat: civil servant	20.12.2017	Utrecht
17	ROT	Rijkswaterstaat: civil servant	20.12.2017	Utrecht
18	ROT	100 Resilient Cities: senior manager	12.01.2018	Skype interview
19	ROT	Ministry of Security and Justice: civil servant	23.01.2018	The Hague
20	CHCH	100 Resilient Cities: senior manager	15.02.2018	Skype interview
21	CHCH	Resilient Organisations Ltd: senior manager	09.04.2018	Christchurch
22	CHCH	Canterbury Civil Defence and Emergency Management Group: civil servant	16.04.2018	Christchurch
23	CHCH	Stronger Christchurch Infrastructure Rebuilt Team: senior manager	19.04.2018	Christchurch
24	CHCH	Canterbury University: senior academic (engineering)	20.04.2018	Christchurch
25	CHCH	Lincoln University: senior academic (environmental management)	26.04.2018	Lincoln
26	CHCH	Canterbury Lifelines Group: senior adviser	30.04.2018	Christchurch
27	CHCH	Canterbury Earthquake Recovery Authority: senior manager	30.04.2018	Christchurch
28	CHCH	Waimakariri District Council: civil servant	02.05.2018	Rangiora
29	CHCH	Greater Christchurch Partnership: senior manager	03.05.2018	Christchurch
30	CHCH	Development Christchurch Ltd: senior manager & National Infrastructure Unit: board member (2 interviewees)	04.05.2018	Christchurch
31	CHCH	Christchurch City Council: civil servant	07.05.2018	Christchurch
32	CHCH	Christchurch City Council: civil servant	08.05.2018	Christchurch
33	CHCH	Canterbury Lifelines Group: senior adviser	10.05.2018	Christchurch (follow-up interview # 26)
34	CHCH	National Lifelines Council: senior adviser & Land Information New Zealand: senior manager (2 interviewees)	14.05.2018	Skype interview
35	CHCH	Canterbury Lifelines Group: senior manager	21.05.2018	Christchurch
36	CHCH	Christchurch City Council: civil servant	25.05.2018	Christchurch
37	CHCH	Stronger Christchurch Infrastructure Rebuilt Team: senior manager	25.05.2018	Christchurch (follow-up interview # 23)
38	CHCH	Wellington Lifelines Group: senior manager	18.10.2018	Wellington
39	CHCH	Christchurch City Council: civil servant	23.10.2018	Christchurch (follow-up interview # 36)
40	CHCH	Canterbury Earthquake Recovery Authority: senior manager	23.10.2018	Christchurch (follow-up interview # 27)
41	CHCH	Canterbury Earthquake Recovery Authority: senior adviser	25.10.2018	Tai Tapu
42	CHCH	Canterbury Civil Defence and Emergency Management Group: civil servant & Christchurch City Council: civil servant (2 interviewees)	26.10.2018	Christchurch
43	CHCH	Ministry of Civil Defence and Emergency Management: civil servant	30.10.2018	Christchurch
44	CHCH	Orion: senior managers (2 interviewees)	31.10.2018	Christchurch
45	CHCH	Canterbury Civil Defence and Emergency Management Group: civil servant	01.11.2018	Christchurch (follow-up interview # 22)
46	CHCH	Resilient Organisations Ltd: senior managers (2 interviewees)	15.11.2018	Christchurch
47	CHCH	Christchurch City Council: civil servants (2 interviewees)	07.12.2018	Christchurch
48	CHCH	Christchurch City Council: politician	14.12.2018	Christchurch
49	ROT	Ministry of Security and Justice: civil servant	04.04.2019	The Hague (follow-up interview # 19)
50	ROT	Ministry of Infrastructure and Water Management: civil servant	04.04.2019	The Hague
51	ROT	Municipality of Rotterdam: civil servant	26.04.2019	Skype interview (follow-up interview # 4)
52	ROT	Municipality of Rotterdam: civil servant	16.05.2019	Skype interview (follow-up interview # 8)

53	ROT	Municipality of Rotterdam: civil servant	16.05.2019	Skype interview (follow-up interview # 9)
54	ROT	Safety Region Rotterdam Rijnmond: civil servant	21.05.2019	Rotterdam
55	ROT	Safety Region Rotterdam Rijnmond: civil servant	21.05.2019	Rotterdam

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