Climate Risk Management 28 (2020) 100223

Contents lists available at ScienceDirect

Climate Risk Management

journal homepage: www.elsevier.com/locate/crm

Local narratives of change as an entry point for building urban climate resilience

Benedikt Marschütz[a], Scott Bremer[b], Hens Runhaar[a,c], Dries Hegger[a], Heleen Mees[a], Joost Vervoort[a], Arjan Wardekker[a,b,*]

[a] Copernicus Institute of Sustainable Development, Utrecht University, Utrecht, the Netherlands
[b] Centre for the Study of the Sciences and the Humanities, University of Bergen, Bergen, Norway
[c] Forest and Nature Conservation Policy Group, Wageningen University and Research, Wageningen, the Netherlands

ARTICLE INFO

Keywords:
Climate resilience
Narrative analysis
Citizen engagement
Flooding

ABSTRACT

Cities face increasing risks due to climate change, and many cities are actively working towards increasing their climate resilience. Climate change-induced risks and interventions to reduce these risks do not only impact urban risk management systems and infrastructures, but also people's daily lives. In order to build public support for climate adaptation and resilience-building and stimulate collaboration between authorities and citizens, it is necessary that adaptation and resilience-building are locally meaningful. Thus, interventions should be rooted in citizens' concerns and aspirations for their city. Urban policymakers and researchers have started the search for better citizen participation in adaptation. However, tools to connect the relatively strategic and long-term notions of adaptation to a gradually changing climate held by planners and scientists with how citizens experience today's climate and weather remain elusive. This paper investigates the use of 'narratives of change' as an approach to elicit perceptions of past, present and future weather, water, and climate, and how these relate to citizens' desired futures. We tested this by eliciting and comparing narratives of change from authorities and from citizens in the Dutch city of Dordrecht. Our analysis of the process showed that historical events, embedded in local memory and identity, have a surprisingly strong impact on how climate change is perceived and acted upon today. This contributes to an awareness and sense of urgency of some climate risks (e.g. flood risks). However, it also shifts attention away from other risks (e.g. intensified heat stress). The analysis highlighted commonalities, like shared concerns about climate change and desires to collaborate, but also differences in how climate change, impacts, and action are conceptualized. There are possibilities for collaboration and mutual learning, as well as areas of potential disagreement and conflict. We conclude that narratives are a useful tool to better connect the governance of climate adaptation with peoples' daily experience of climate risks and climate resilience, thereby potentially increasing public support for and participation in resilience-building.

1. Introduction

Climate change is becoming an increasingly prevalent challenge for cities, with potential impacts including flooding, drought, public health, water quality and availability, food supply, biodiversity, and changes in tourism (McCarthy et al., 2010; McGranahan

* Corresponding author at: P.O. Box 80115, 3508TC Utrecht, The Netherlands.
E-mail address: J.A.Wardekker@uu.nl (A. Wardekker).

https://doi.org/10.1016/j.crm.2020.100223
Received 11 July 2019; Received in revised form 12 March 2020; Accepted 20 March 2020
Available online 24 March 2020

et al., 2007; Bulkeley, 2013; IPCC, 2014a; OECD, 2010; UN, 2016; White, 2010). Cities are particularly vulnerable to climate change, due to the high concentration of built environment, people and economic capital, and this is particularly the case for urbanizing deltas with densely populated low-lying areas (OECD, 2010; Albers et al., 2015). They are also being portrayed as key actors for providing solutions to climate challenges (Gordon and McCann, 2005; White, 2010; Rosenzweig et al., 2010, 2011; Bulkeley, 2013; Collier et al., 2013; UN, 2016). Many cities are developing plans to reduce climate change risks and emissions, and to increase their climate resilience. They are also actively learning from each other, borrowing and modifying each other's mitigation and adaptation approaches, through networks and organizations such as ICLEI and 100 Resilient Cities (Ilgen et al., 2019).

Cities' climate policies and actions introduce both benefits and burdens, which are not always evenly distributed among their citizens (Kates, 2000). They change the way the city is shaped and functions (Fankhauser, 2010; Narain et al., 2011; Viguié and Hallegatte, 2012; Hinkel et al., 2014) and impact citizens' daily lives (White, 2010; Stead, 2014). There are trade-offs and synergies between urban climate policies and other policy goals and societal interests (e.g. Bulkeley and Betsill, 2013; Viguié and Hallegatte, 2012; IPCC, 2014a; IPCC, 2014b). Classic approaches to climate risk management have focused on top-down, technoscientific assessment of climate risks, and these often neglect the perspectives citizens, who bear both the impacts of climate change and the costs of actions (cf. Dessai and Van der Sluijs, 2007; Adger et al., 2012; Bremer, 2017). Bottom-up and resilience-based approaches emphasize the centrality of citizens, and the need for their active involvement (Wardekker et al., 2010). For example, 100 Resilient Cities relate urban resilience to "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" (Rockefeller Foundation, 2020). More formal definitions in the literature include: "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" (Meerow et al., 2016). While urban resilience literature itself shows similar patterns of both top-down and bottom-up approaches, most go beyond the municipality as sole actor, and 'community resilience' approaches in particular stress the involvement of local stakeholders and citizens (Wardekker, 2018, in press). E.g. "Community resilience is the existence, development, and engagement of community resources by community members to thrive in an environment characterized by change, uncertainty, unpredictability, and surprise" (Magis, 2010). Founding climate actions on citizens' own lives and aspirations for a livable city is arguably more fair and legitimate and more likely to be implemented by the citizens who feel heard (Adger et al., 2012; McDonald et al., 2015; Marschütz, 2018; Marschütz, 2019; UN, 2011). Community-oriented, co-development and citizen-led approaches to climate science and policy are becoming more prominent (Hegger et al., 2017; Wildschut, 2017; Bremer et al., 2019; Wardekker, 2018; Mees et al., 2019). Methods for engaging citizens are increasingly being studied, but existing studies show i) above all that governmental actors struggle with how to relate to citizens; ii) practices are often messy and in development (Uittenbroek et al 2019); and iii) a large heterogeneity in approaches.

Community-centred climate action means acknowledging the city-specificity of resilience, and that cities are highly heterogenous communities with diverging ideas of resilience. Local conditions, political choices, actors' perceptions of what matters, and public support define what is suitable and what works where (Runhaar et al., 2012; Brown, 2016; Wardekker et al., 2010, 2016; Wilk, 2016; Ilgen et al., 2019). Urban actors 'frame' the challenges of resilience-building in very different ways (Wardekker, in press); determining how they see the problem, causes, moral choices and judgements, and appropriate solutions (Entman, 1993). Citizens, for instance, may look differently at climate change than the authorities responsible for managing its impacts. This comprises aspects such as: culture, identity, history, worldviews, place-attachment, agency, feeling of ownership, incentives, practical barriers, time horizons and stimuli to action, and the complex interaction of climate change with other concerns that people face in their daily lives (e.g. Adger et al., 2012; Buys et al., 2012; Runhaar et al., 2012; Moser, 2010, 2014; Moser and Boykoff, 2013; Capstick and Pidgeon, 2014; Taylor et al., 2014; O'Neill and Graham, 2016; Bremer et al., 2020). A fine-grained, place-based approach is needed to analyze how different societal actors engage with climate change.

This paper focuses on 'narratives of change' as a concept to explore the aspirations of both policymakers and citizens in building resilient cities. In our conception, narratives link stories and events in individuals' lives with the social identities and discourses that define cities. Narratives are both derived from and constitutive of social perceptions of the 'good life', visions of 'desirable futures', and preferred actions to reach these (Somers, 1994; McBeth et al., 2014; Paschen and Ison, 2014; Bremer et al, 2017). Narratives link identities with a place, its circumstances and challenges, and show how actors perceive their agency (role and ownership of actions) (Adger et al., 2012; Moser, 2014). In doing so, we argue that narratives can connect factual happenings in a place (specific climate impacts) with people's values, "turning matters of fact, into matters of concern" (Krauß et al., 2018a,b; Krauß et al., 2019). This paper contributes to insights into how citizens' voices can be included in climate action, thereby stimulating more fair, legitimate, better informed and effective practices. We will do this by exploring whether and how narratives can be a useful concept for building community resilience to climate change. We argue that (a) narratives show how climate change is locally embedded (local specificity), and that (b) comparing the narratives of different actor groups, such as citizens and authorities, highlights the differences and overlaps in how these groups approach climate resilience (differing perspectives/framing), and consequently how they might collaborate.

First, we describe how we operationalized the notion of narratives into a methodology for analyzing how climate change is locally embedded (Section 2). Secondly, to explore the practical usefulness and potential insights that might be derived from narratives, we applied this in a live case study, where policymakers attempt to collaborate with citizens on climate adaptation and resilience, in the Dutch city of Dordrecht. We investigated how authorities (section 3.1) and citizens (3.2) experience climate change through their narratives, and analyzed how both groups differ (3.3). Finally, we reflect on the consequences: how narratives might impact and be used as a tool in resilience-building and broader climate risk governance (section 4).

2. Methods

2.1. Narrative research

Narrative research has come to mean different things to different social science and humanities disciplines, giving rise to a vibrant field of (sometimes conflicting) methods and frameworks for making sense of the stories that invest meaning in social life (Bremer et al., 2017; Fløttum and Gjerstad, 2017). Here we employ narrative as a social science concept for interpreting how people – as 'storied animals' - cognitively make sense of their complex experience of the neighbourhood where they live, and invest it with values and meaning (Bruner, 1991; Herman, 2003). Similarly, narratives show how climate change, as a matter of concern, appears in the stories people tell about the ways they live in their local place, and their hopes for the future. We thus focused our attention on how narratives structure and impart particular understandings of climate change impacts, by linking diverse events into unified wholes, and conveying knowledge (Polkinghorne, 1991). The narrativity of knowledge is important because narratives both open up and limit how knowledge is generated and communicated. For instance, narratives can unlock and make explicit the often tacit and culturally embedded understandings in a specific place. But knowledge is restricted to a casual narrative structure, and can be highly fluid, "… stories can change according to context and perspective, but above all in light of new experiences" (Meisch, 2019; p. 639). This, for us, marks narratives as distinct from other concepts like discourses. While discourses (in a Foucauldian sense) can be relatively stable and institutionalised structures that establish what is talked about by whom and how, narratives reflect the particular experiences of individuals and groups in a time and place, and are told to a particular effect; to give sense, a moral, or seek a response. Notwithstanding this, public- or *meta*-narratives can arguably take root in a socio-cultural context and act as a social structure, like discourse (Krauß and Bremer, 2020).

Our focus on how narratives as cognitive structures for imparting sense and knowledge had implications for our methodological approach. On one hand, we drew on interviews as a way of eliciting these narrative structures; "If we consider […] that we all internally register our experiences as stories, it follows that we can bring forth the subjective experiences of others, and meaning attached to them, through interviews" (Bremer et al., 2017; p. 671). In this way, we use narratives both as a method for eliciting peoples cognitive experience as stories in interviews (Bremer et al., 2017), and as a conceptual lens for categorising and interpreting the messiness of these experiences and imparted knowledge as transcribed interview talk (Bremer and Funtowicz, 2015). Specifically, our analysis followed a phenomenological (Wertz et al., 2011) and hermeneutic (Czarniawska, 2004) reading of interview transcripts that highlighted where people imparted an understanding – a certain sense or meaning – based on a connected set of experiences and knowledge claims. We were less interested in, for example, structural elements of narratives relative to a 'beginning-middle-end', or 'complication-reaction-resolution' (Fløttum and Gjerstad, 2017). We analysed certain fragments of interview talk as narratives where we considered they conveyed sense-making, which may otherwise not be formally considered 'narratives'.

The focus on narratives as cognitive or knowledge structures implies that we pay less attention to other potentially important or interesting facets of narratives. For instance, narratives are also cultural artefacts, a material trace of our cultural representations of things (including climate change and its impacts) (Herman, 2003). Furthermore, narratives involve affect; where they seek to give a certain moral, or stimulate emotional responses. As we found, many peoples' stories are highly charged with emotion, inviting the listener to share the fear or excitement people felt in facing the rising flood levels. Likewise, as morals or narrative ethics, narratives "deal with the narrative structure of moral action and the significance of narration for moral action" (Meisch, 2019; p. 631). This is an important facet of narratives and narrative research (see Taylor, 2016) that we struggled to account for in our focus on cognition, but is an important complement to understanding narratives as knowledge. We did, for instance, expect that any sense-making within narrative telling would often imply what is the next 'right thing to do', as a moral obligation of accepting the understanding imparted by the story. This affective aspect of narratives links to a wider body of literature on the affective dimensions of climate change (cf. Roelvink and Zolkos 2011, Rose and Wylie 2006, Verlie 2019).

2.2. Empirical approach

We focussed our study on the perspectives of, and interaction between, 'official' actors (particularly authorities) and citizens. The methods employed aimed to zoom in on these targeted groups and their interaction. We employed a step-wise approach:

1. Desktop analysis
2. 'Helicopter' (exploratory) interviews (n = 5)
3. Stakeholder analysis
4. Detailed interviews on context (n = 3) and authority & citizen narratives (n = 20)
5. Analysis of the empirical material collected

We performed a desktop analysis to set the scene, reviewing scientific literature and policy documents on climate change, resilience and adaptation in the Netherlands and Dordrecht specifically. Dordrecht provides an interesting case, because it is highly climate vulnerable due to its location, and the municipality is actively looking for ways of engaging and codesigning adaptation with its citizens. We then conducted helicopter interviews (n = 5) with key local or regional actors with a wide overview of the case and actors involved. This step provides a better overview of the case, and access to material not accessible to a desktop analysis. This stage also included a meeting with the municipality to decide on the specific neighbourhood that we would focus on. Based on the helicopter interviews and a closer analysis of available documents, we then conducted a more detailed stakeholder analysis. We made

inventories of candidates for further interviews based on: (a) institutional stakeholders with influence over the issue, whether that be through political or social status, specific knowledge, formal legal power or responsibility, and/or who can shape concrete adaptation activities (cf. Reed et al., 2009; André et al., 2012; Bremer et al., 2017); and (b) relevant citizens and groups in the case study neighbourhood.

Detailed contextual interviews (n = 3) were conducted with actors with specific detailed knowledge of local history, geography, and current affairs, which emerged in the helicopter interviews as important. These were open, narrative interviews: guided only by a few open questions and topics, designed as 'conversations with a purpose' (Paulson, 2011). Several site visits were conducted at this stage as well. Finally, a set of detailed narrative interviews (n = 20) were conducted with both representatives of authorities and citizens, which yielded both public/institutional and individual narratives (McBeth et al., 2014). These were semi-structured narrative interviews, taking an 'episodic' approach that zoomed in on specific events related to weather, water and climate, and connected actions (Mattingly and Lawlor, 2000; Paulson, 2011). These events could take place in one's lifetime or beyond (past, future). This approach matches well with the topics studied, such as extreme weather events. The interview protocols and (very limited) background materials, were designed for each group. These (and the analysis) took into account that policymakers may sometimes speak for their organisation but are also individuals, and citizens are individuals but may also be affiliated with organisations.

One particular consideration was the nature of the sample of interviews. In disadvantaged neighbourhoods, standard snowball sampling via existing contacts at for example the Municipality, may lead to sampling bias. Those known in official channels may be the well-educated and advantaged, rather than the disadvantaged residents and groups. Similarly, obtaining access to disadvantaged communities can be difficult because they may be unaware or uninterested in the topic studied. Helicopter interviews with the Municipality also indicated that they had many established contacts with active citizens that were already active on climate adaptation and already well-embedded within the governmental context, for instance because they were former civil servants. Consequently, we contacted residents mainly via a neighbourhood organisation; Vogelnest. This group involves a social entrepreneur and social workers that run a neighbourhood centre and café that functions as a hub where locals can get a free cup of coffee and socialize and that runs various community programs. We visited the neighbourhood and centre several days and talked to visitors and other residents suggested by the centre, in an informal setting and focused on weather and water in their surroundings (rather than climate change adaptation directly). This helped us to speak to a variety of residents, most of whom were indeed among the disadvantaged. For official actors, sampling bias and difficulties in obtaining access are less present in the Dutch context (this depends on national and local institutional context and cannot be assumed in all countries). We did pay extra attention to interviewing respondents from different municipal departments to cover expertise-dependent perspectives.

2.3. Analytical procedure

Interviews were recorded and transcribed, and analysed in an iterative way. Narrative analysis aims to shed light on plots, characterization, narration, complications, reactions, and possible outcomes (Lejano et al., 2013; Fløttum and Gjerstad, 2017), which is done by re-reading and re-listening to the recordings (Bremer et al., 2017). Initially, notes were taken, keywords were listed, and interview summaries were made, with a focus on identifying and faithfully representing interviewees' stories in their entirety (Syed and Nelson, 2015; Bremer et al., 2017). In parallel, word frequency diagrams of interviewees' responses used as a first exploratory tool, to qualitatively scan for frequently occurring topics, providing a first overview of key themes.

We developed a coding scheme for in-depth analysis of the interview transcripts (Saldaña, 2015): structured hierarchical labelling to highlight and categorize words, lines or sections in transcripts. This scheme has been used to structure the analysis of qualitative material: it highlights key responses, structures them, and facilitates comparison within and between interviews transcripts (Weston et al., 2001; Babbie, 2007; Saldaña, 2015; Syed and Nelson, 2015). Code development was based on initial reading of the transcripts and on scientific literature (Smith, 2000; Saldaña, 2015; Neuendorf, 2018). We used several test applications to transcripts to refine the scheme into a streamlined 'codebook': the coding scheme plus guidelines for application, including inclusion and exclusion criteria for applying codes. Four main categories were considered: (i) actors (who is speaking or referred to), (ii) context (when, where, etc.), (iii) content (experiences, issue framing, perceptions), and (iv) visions (expectations, hopes). Because we expected subtle differences in how actors perceived issues, we drew upon framing analysis (e.g. Entman, 1993; De Boer et al., 2010; Runhaar et al., 2015; Wardekker, in press) for codes that highlight how respondents conceptualise and frame the problem, causes, morals, and solutions. See Table 1 and Supplement 1. The coding scheme was used to cluster interview responses into common narratives, starting

Table 1
Outline of the coding scheme (full codebook in Supplement 1).

Main category	Sub categories	References
Actors	–	Mattingly & Lawlor, 2000; Lejano et al., 2013; De Fina & Georgakopolou, 2015; Milojević & Inayatullah, 2015; Bremer et al, 2017; Fløttum & Gjerstad, 2017
Context	Temporal focus; Place / location; Conceptual focus	Somers, 1994; Mattingly & Lawlor, 2000; Fraser, 2004; Wiles et al., 2005; De Boer et al., 2010; Wardekker & Lorenz, 2019; Bremer et al, 2017
Content	Framing; Perceptions; Other content	Connelly & Clandinin, 1990; Angus et al., 1999; Mattingly & Lawlor, 2000; De Fina, 2009; De Boer et al., 2010; Wertz et al., 2011; Lejano et al., 2013; Bremer & Funtowicz, 2015; De Fina & Georgakopolou, 2015; Wardekker & Lorenz, 2019; Bremer et al, 2017; Fløttum & Gjerstad, 2017
Visions	–	Mishler, 1991; Viken & Nyseth 2009; Hewitson, 2014; Bremer et al, 2017

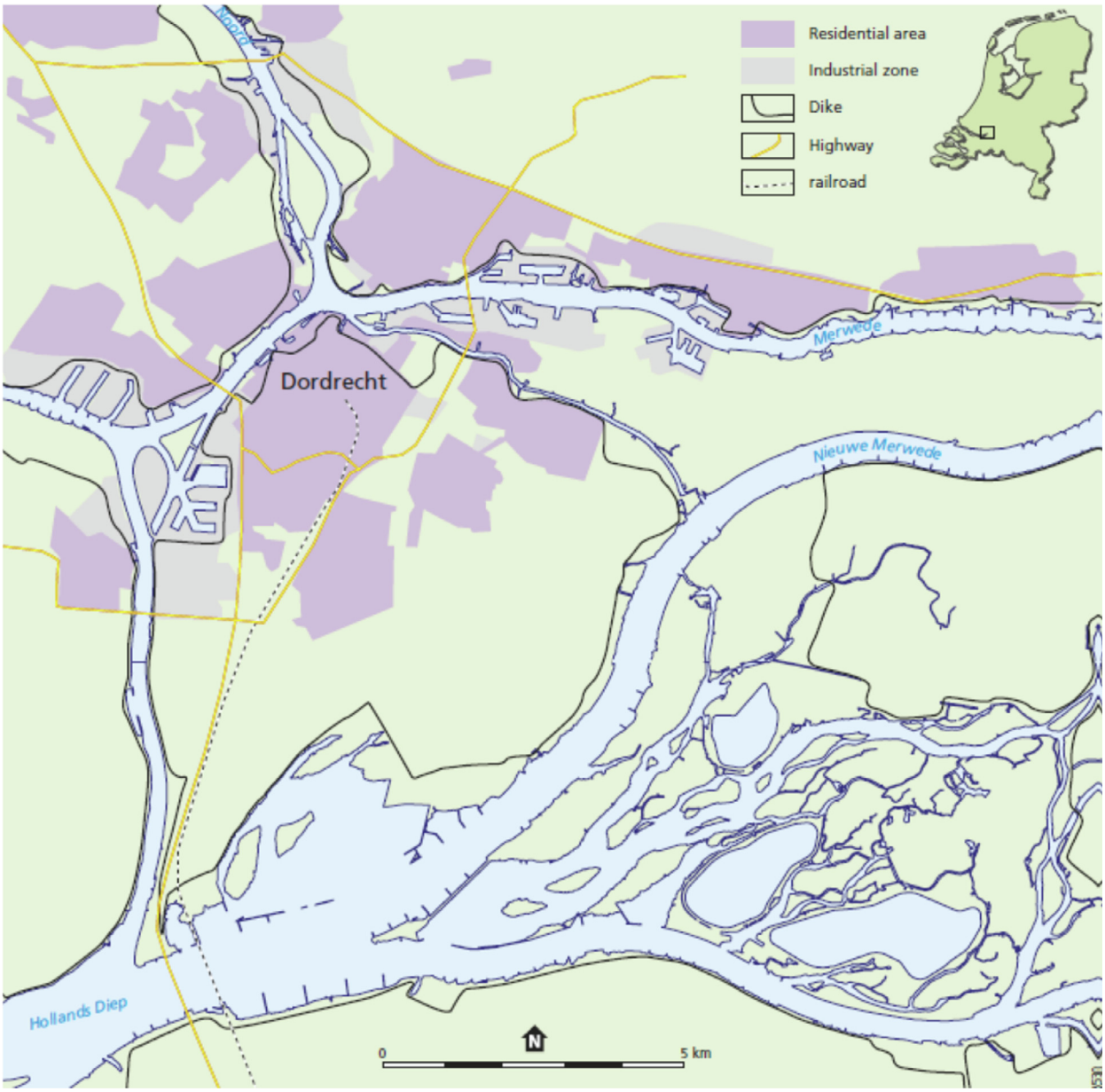

Fig. 1. the Isle of Dordrecht (upper right corner: position of Dordrecht in The Netherlands (map by Ton Markus, Faculty of Geosciences, Utrecht University; from Hegger et al. 2014; reprinted with permission).

with general narrative themes and then moving into more detail (sub-narratives, lines of reasoning, plot lines, similarities, differences). Several specific queries were run in NVIVO to facilitate this (Supplement 2).

2.4. Case study: Dordrecht

Dordrecht (Fig. 1) is a city and municipality of ca. 120.000 inhabitants in the west of the Netherlands, just east of Rotterdam and close to the sea. It is among the oldest Dutch cities, originating as a river exchange point and trading port. The stretch of land on which Dordrecht is located is surrounded by rivers on all sides, part of the Rhine-Meuse-Scheldt delta. Consequently, the city is highly sensitive to issues around weather, water, and climate (Krauß et al., 2018a,b, 2019; Marschütz, 2018, 2019). Parts of this 'Isle of Dordrecht' are below or at sea level, and major floods in the past have shaped the physical geography and culture of the region (Krauß et al., 2018b; Marschütz, 2018, 2019). The rivers are projected to face higher discharge rates in the future due to climate change, and consequently higher flood risks (Ligtvoet et al., 2013). Furthermore, flood protection measures downstream in Rotterdam that close the Rhine with the Maeslantkering storm surge barrier, could result in water backing up, increasing flood risks in

Table 2
Overview of elicited narratives of change among authorities and citizens in Dordrecht.

Narrative	Short description	Authorities	Citizens
Historical narratives	Past and ongoing struggles of the city with weather and water:*The disasters of 1421 and 1953 brought suffer and damage to Dordrecht.*	X	X
Identity narrative	Specificities of the city as being an island i.e. shaped by water:*Dordrecht was wealthy and important but is now a small island surrounded by water.*	X	X
Vulnerability narratives	Location and burdening constellation of threatening events:*The city faces specific risks due to sea and rivers and might drown again.*	X	–
Experiential narratives	Experiences with weather, water and climate change:*Sometimes it floods minorly but soon expected to be serious due to climate change.*	–	X
Adaptation narratives	Reason for and substance of adaptive measures by authorities:*History and climate change as reminders to avoid a new tragedy by acting on water.*	X	–
Holistic action narratives	Occurring adaptive and mitigative activities by citizens:*Some have pumps or collect water, others try to stop emitting CO_2 and are vegan.*	–	X
Socio-economic constraints narrative	Restraints towards effectively achieving climate resilience:*Old houses and poor inhabitants that are having problems in all spheres of lives while financial and social problems appear more important than the noticed threats.*	X(partial)	X(partial)
Governance narratives	Possibilities and constraints towards collectively tackling issues:*Achieving resilience together by thinking long-term and truly collaborate*	X(partial)	X(partial)
Future perspectives narratives	Stances for a future with climate change and remedies to threats:*Ambiguity to keep the island safe in the long run and limits of dikes are approaching, which is why alternative measures and preparation for disasters are needed.*	X	X

Dordrecht. The proximity to the coast also means that Dordrecht is sensitive to North Sea storms, and many areas have river clay soils, which reduce the uptake of rainwater into the ground during heavy precipitation. Dordrecht also struggles with socioeconomic challenges, and faces an urban development goal of 10.000–15.000 houses within current city limits. In case of a major flood scenario, the municipality estimates that there will be insufficient time to evacuate the population over the access roads off the Isle.

We focused on the Reeland/Vogelbuurt neighbourhood (elevation −0.5 m to + 0.5 m (AHN, 2018)). This area has experienced several flooding events due to heavy precipitation in recent years. The municipality recently started exploring how it can better cope with weather and climate adaptation in this neighbourhood. Local residents have also expressed interest, though residents (particularly disadvantaged groups) have traditionally not engaged with the municipality (Marschütz, 2018, 2019). Many social housing estates are scheduled for urban renewal or major maintenance in the coming years. Sewer replacements, redesign of public green spaces, and new sporting facilities are also planned. Consequently, this case provides a window of opportunity to take citizens' desires and climate change concerns into account when redesigning the area, and to show the role that local narratives could play in this process.

3. Results

3.1. Narratives of local officials and authorities

Interviewees from six public authorities provided insights into how extreme weather and water events and climate change are impacting the Dutch Delta in general, and Dordrecht in particular. Their stories were inductively clustered into seven main narratives (Table 2). Remarkably, strong references were made to historical events, in particular to the St. Elisabeth's Flood of 1421 and the North Sea Flood 'Watersnoodramp' of 1953. History was almost always referred to when narrating about present dangers out of high water-levels or severe rainfall. It was also used as example for what might happen in the future. Often, such historical narrations were made in a consecutive way, spanning through history since *"1953 was the flooding disaster, we had in 1998 and in 2015 and 2003 the problems with extreme rainfall in Dordrecht. And that experiences led to a new assessment of the water risks in those areas and adjustment of the plans, and not already the plans for risk mitigation, but also the plans for, of preparing crisis management"* (Marschütz, 2018).

Authorities did not only refer to history in a general, contextual sense. They also linked it specifically to a certain vulnerability in the area of Dordrecht. Such vulnerability is on the one hand referred to as present in Dordrecht due to its general location at a river 'crossroads' in the low-lying Dutch Delta, but on the other hand also emerges due to historically well-known disastrous combinations of high river-discharges, spring tide and westerly storms. Knowing this, a certain exposure and vulnerability is strongly emphasised since authorities were *"quite sure that there will be westerly storm winds in which we have to close all the sea-openings, and then in the meanwhile there will be a lot of rain in Germany for example, where the rivers get very high and then you close for two days or so all the gates, and the city will drown"* (Marschütz, 2018). Referring to this possibility, a certain perception of water and the exposure to water becomes apparent. This is why authorities also perceive Dordrecht as a city that is more alert than many other cities, and generally also more openly speaking about the risks it faces as a city. The Netherlands and Dordrecht are in general more exposed to water and thus more at risk, due to their geographic location below sea level. Dordrecht is particularly vulnerable to the above-mentioned combination of river discharge, North Sea storms, and general exposure to water-related risks. These vulnerabilities are explicitly and implicitly highlighted in stakeholders' stories: *"[…] very difficult but that's just the way it is. That is when you live in Dordrecht, that's the way it is"* (Marschütz, 2018). This vulnerability narrative (Dordrecht as 'bathtub', water coming from all directions) links multiple

types of water risks, ranging from severe flooding from rivers (discharge) and sea (storms) to modest issues such as precipitation-related flooding and groundwater issues.

Knowledge of water, weather and climate risks motivated interviewees to act upon them. This knowledge was a clear underlying motivator for strategic adaptation planning, through water management and spatial planning in particular (Marschuetz & Wardekker, 2018). This motivation and narrations of planned and occurring adaptation was captured in a separate 'adaptation' narrative since interviewees stated that *"[…] it helps that sometimes things occur […]"* (Marschütz, 2018). Furthermore, while water risks and occurring actions are (re)defining Dordrecht and appeared in various narrations, they were strongly linked with how local actors define the city and its character, as an 'island city'. This identity of Dordrecht is compromised out of its situation as a vulnerable island in a Delta, always at risk from flooding. Even more strongly does such island identity appear in the referrals to the St. Elisabeth flood that resulted in a relative decline of the city as it *"reclaimed vast areas of land back to the sea and made the city an island, which it remains today"* (Marschütz, 2019) and is defining its character. The loss from this flood and its effects became part of the city's cultural memory, especially since its "golden age" ended due to the event: *"We were very, very wealthy and important city, and never regained it after that flood. So that is something we should make sure it never happened again."*.

This relative decline left Dordrecht worse off compared to other big cities in the Netherlands. Though it is now economically healthy, it continues to face various socio-economic constraints, which some still relate back to the past flood-disasters. Discussion of these constraints appeared to be so significant in authorities' stories that this was clustered into a separate 'socio-economic constraints' narrative respectively. These constraints are important for Dordrecht because of the financial needs for safeguarding the city from the increasing impacts of climate change. Simultaneously, the city is also economically vulnerable, because citizens that are on average less wealthy than those of surrounding cities. Funds for adaptation and water safety will need to come from municipal authorities, and such measures are needed more in poor areas: *"the money […] is not coming from the people […] so it's the complexity. In a poor […] neighbourhood […] the hard surface/non-penetrable surface is larger [and the have] smaller gardens. That relationship I think it's very complex and how you organize that"* (Marschütz, 2018).

With such ongoing challenges making preparations for a future under climate change more complex, various perspectives on futures are comprised in a set of future perspectives narratives. Authorities unanimously voiced the need to keep the city liveable in a future impacted by more severe climate effects. Expected future challenges are expressed as 'causing worry', since impacts such as extreme rain and heat-stress are already stressing the city now. The challenge that authorities are voicing stems out of that fact that *"with this climate change, you know these extremes are unpredictable how high they come. So it's because of the kind of climate change we experience now with these extremes, you can't say that we, that there are no worries about breaching a dike, it's not that we not good at it, we know how to make it, but it's just not something you can do only for these extreme you cannot build it that high"*. Moreover, interviewees argued that events that previously happened only every now and then, are now expected to happen much more frequently. They expressed serious concern whether the city might depopulate due to increasing flood-occurrences. However, various new climate adaptation strategies were also voiced as being developed. For example, 'vertical evacuation' to ensure that people can stay safely in the area in case of a major dike-breach and inundation of large parts of the city. Preparing for such scenario was seen as challenging, due to potentially large impacts and need for many authorities to act in a coordinated manner. While authorities are preparing, they voiced concern around the behaviour of citizens in such situations. Therefore, authorities expressed a strong desire to preparing citizens and co-develop strategies to deal with flood events.

"[…] now we've got this water safety plan and we make sure that there are shelters. So we going to build shelters, not really build but we make sure, we going to look for high buildings and ask the people if they can look into transforming it quickly into a shelter. And if it's possible, maybe we have to pay them something, but make sure that there are shelters in the city. So if we cannot get off the island, stay safe in shelters." (Marschütz, 2018)

The authorities noted that improving the knowledge and open communication on the challenges and options also requires much collaboration between various stakeholders. These discussions were clustered as 'governance' narratives. Respondents suggested that an approach to governance was needed that stimulated collaboration between various actors. This included the five major government-agencies currently active on flood safety, semi-public agencies such as the housing corporation, NGOs and companies. They voiced citizen involvement as particularly crucial. Wherever public works might take place in the city, actors should try to combine various issues and opportunities. The city faces numerous transformations and large scale tasks; climate adaptation, the energy transition, a large urban development task, and many routine maintenance and redevelopment programs. Rather than tackling these separately, actors might combine them to transform neighbourhoods so that they are climate-resilient and fit for the future: *"For instance, we are going to build a lots of new houses in the coming years because there is a big demand for that, and if you're going to build you also want to do it in a more sustainable way, and also more, in the resilience for climate change should be a part of it. So we tried to give these, the whole building project, also an extra focus on that part"* (Marschütz, 2018).

Finally, interviewed authorities voiced a set of recommendations on how the situation for Dordrecht could be further improved. These drew upon known and voiced issues and policy options around extreme rain, sustainability, and newly developed and recently nationally mandated 'climate-stress tests'.

3.2. Narratives of citizens

Citizens narrated extensively about their experience with weather and water, and also voiced concern about climate change. History was extensively mentioned and historical narratives could be identified. Most prominently voiced was the big North Sea Flood of 1953. Many interviewees referred to the experiences of their immediate relatives. The St. Elisabeth flood of 1421, which made the city an island, was also narrated about. The fact that this flood created the island upon which the city now rests, appears as

a locally well-known historical fact. One interviewee narrated on the direct personal experience with the flood of 1953 and water in general:

*"[…] in the past (the water was sometimes high and sometimes low but not now) … my husband used to live on a house on the river, … he called I can't come home today because of the water … and that was totally normal, high, low, water in the houses, the people were prepared for that. We had the Watersnoodramp in 1953 and after that the … waterworks, and then it was over. […] Voorstraat that's our important street in the city […] and I lived there as a child and I have seen the water over the dike. […] in the middle of the night I heard a noise what I never heard, like a waterfall, so I looked out of my window and I saw the water, little streets in the full moon, it was full moon, over the dike (means small streams of water coming over the dike), and [transl.: very fast it became more so I woke up my father and mother and we woke up the neighbours and the whole street was awake and all looked on the water. […] I saw the worst of the worst, the Watersnoodramp. It was 1953, and I was 9 years old." (*Marschütz, 2018*)*

While those historical narrations are important reminders to citizens about the dangers from water, recent experiences appeared prominently as well. These included heavy rain events, which occurred during the last years, and floods that inundated parts of the old harbour. Consecutively, citizens narrated increasingly about their general experiences with water, weather and extreme events. We clustered these as 'experiential narratives'. These experiences were subsequently connected to fears for the future. Residents expressed concern regarding the possibility of experiencing another disaster such as in 1953. Citizens were well-aware of the dangers of a potential dike-breach. Moreover, they knew that that the combination of a storm coming from the sea and high river-discharges is potentially devastating for the city. They also highlighted the importance of their exposure to water: *"Dordrecht is under the sea level, and then with a few days of rain that a lot of problems are coming […] and then we flood"*. Among the interviewees there appears to be also a general and sometimes strong awareness about changes in water, environment and climate, which manifested in lively narrations about them:

*"I see that the water level becomes higher every year. The quay at the Merwede is flooding once a year, and this is a real problem. […] The world changes! […] Temperature! The temperature, it's now [June 2018] 29 degrees, warmer, and warmer and warmer. The North pole, down under, it's melting. The sea level is higher, higher, higher, also the rivers! […] and we need to do something about it. […] With the north pole and that it's melting there is more water, also from the rivers. The river is the connection to the sea and water is constantly becoming more." (*Marschütz, 2018*)*

However, while some of them seem to be aware, interviewees also referred to many others in their neighbourhood as being unaware. Thus, they voiced solutions: to educate people about the dangers from these changes, so that action can be fostered. Interviewees indicated that local inundations after big rain events were already a problem in the area, and that they are getting worse. They further referred to actions that they themselves are already now taking. These 'action narratives' focused on climate adaptation, such as buying pumps or collecting rainwater, but also on climate mitigation and general sustainability. Climate mitigation was vividly pointed out by referring to the consumption of fossil fuels, meat, flying: *"we all have to do our part […] as small individuals, to help. Like simple thing, the CO_2, we have one car, […] it's really a small thing […] but maybe if everyone thinks […] maybe it becomes a big thing. So I always think start with yourself. I don't eat a lot of meat, because that's really bad for the climate and for the air, so I cut my meat radically, one time a week, two times sometimes. So the small things I think, that's what I can do"*.

Citizens also expressed vividly their identification with the city and the risks it faces. This identity narrative focused on the state of being an island; this seemed most important to them in shaping their relation with the city, as well as their relationship with water and its impacts. Citizens also narrated on the current socio-economic constraints in the city and for citizens and the residents of the relatively poor Vogelbuurt in particular. Interviewees indicated this as a reason that many people do not really pay attention to changes in the environment and what is happening around them. They stressed that, for the many poor people in the city, their personal challenges around money, employment, health, and community are likely to be more important than the problems around water, flooding or the environment in general.

Prompting interviewees to take a look into the future, their narrations on future perspectives revealed their worries around future challenges such as big disasters similar to those in the past, but more remarkably also the risks due to climate induced sea-level rise that may put large parts of the Netherlands into trouble. They observe that once a large inundation of the city happens and major social disruptions are present, action might be taken on a large scale but they worry that then *"it's a bit too late by this point […] I don't think we are really that far away from a situation like that."*. Thus, they also refer to climate change and that disruptions are expected due to it, which is why action is paramount according to some narrations. Nevertheless, while mentioning the challenges for the future, various potential solutions and activities were also voiced that might alleviate these risks. Interviewed citizens vividly narrated about examples such as voluntary fire-brigades for water-related disasters, moving to other parts of the country where there is less of a risk from flooding and that finally, *"people should also make steps … probably in the end you have to return some land to the water to give it some space. That's what I think could be a solution. […] you can tell people what they should stock in their houses, like enough clean drinking water, food, so they can survive for 2–3 days or 2 weeks"*.

Lastly, narrations focused around constraints to collective problem solving and recommendations to improve governance of the mentioned challenges. Interviewees narrated on conflicting laws that foster people to put stones instead of grass into gardens and thus exacerbating water-related problems. Some interviewees also urged the municipal government to more strongly take a stand on how things ought to be in order to be climate-proof and fit for the future. Clearly emerging was the desire of interviewees to contribute to solving this challenges and being able to participate.

3.3. Comparison: Similarities and differences

Several similarities but also differences can be observed in the narratives of citizens and authorities. Some partial similarities are

also present, where the specifics diverge. See Table 2. A prominent similarity was displayed in the historical narratives conveyed by both citizens and authorities. These highlighted the strong influence of historical events, such as the floods of 1421 and 1953, on how urban actors currently observe both present and future happenings. This was combined with a strong shared identity narrative as an 'island' city, shaped by water, and residents as 'islanders'. These historical and identity narratives are deeply ingrained in the city's cultural history and displayed in local museums, 'flood walks', and physical artefacts such as floodstones indicating historical flood heights (Krauß et al., 2018b; Marschuetz and Wardekker, 2018). Together, they formed a common base in the narrated stories, and the way climate change and weather and water are problematized in these, among both citizens and authorities. Both groups indicated strong desire to improve local resilience, in the face of climate change. Other aspects diverged. Authorities focused on their task of safeguarding the city. Their narratives focused on conveying the city's vulnerability and the logical consequent need for large scale adaptation efforts to remedy the vulnerability and reduce the risks. Citizens referred to their experience of how climate change and water are affecting their lives. Their stories focus more holistically on the drivers of climate change and the broader local context, combining adaptation with mitigation and general sustainability actions that they themselves can, and do, implement.[1] Several partial overlaps in narratives again marked a similarity in problem perceptions, but divergence on what those imply. Socio-economic constraints are well-narrated by both groups, but authorities reasoned from budgetary constraints for adaptation and citizens from how poverty, unemployment, and social problems impact people's attention to environmental challenges. Both groups also highlighted the importance of collaboration on resilience-building between authorities, citizens, and other parties. Authorities noted that they are actively pursuing this, but citizens did not observe this taking place. Rather, they felt unheard, and were glad that they could express their experiences and views in the research process. The reason is unclear, but it may suggest that only a narrow section of the population is currently being reached.

4. Discussion

The findings of section 3 show that narratives provide valuable insights and may form a source of inspiration for scholars and practitioners who want to better connect the governance of climate adaptation with peoples' daily experience of climate risks and climate resilience. To reflect on the findings, we first provide a more general discussion on the role of narratives as a tool to situate climate change in local experiences (4.1); and in resilience building (4.2). We hold that a more explicit, systematic and comprehensive focus on narratives is relevant for debates that are being held in four related but discernable bodies of literature: citizen engagement in adaptation (4.3.1); knowledge co-production (4.3.2); and foresight for governance (4.3.3).

4.1. Narratives as tool to situate climate change in local experiences

Our case study illustrated the value of using local narratives as an entry point for understanding how local stakeholders such as citizens and policy-makers perceive and give meaning to climate change. While it is place-based, and the narratives are not necessarily representative for other cities, some general lessons can be learned. The open approach taken in our data collection yielded a very broad overview of perceptions and meanings. The case study also demonstrated the importance of shock events in the past – the 1953 Elisabeth flood – for how effects of climate change are perceived. The relevance of shock events has been reported earlier as an explanation for shifts in risk governance and differences in risk governance strategies (e.g. Burningham et al., 2008; Runhaar et al., 2010; Bradford et al., 2012; Lewandowski et al., 2016). Whereas historical events can help raising awareness among citizens about the need to prepare for climate change (cf. Haring et al., 2018), such events may 'crowd out' awareness of other climate change related risks. For example, our case study shows that awareness of heat stress is not very prominent among the citizens we interviewed. Similarly, a heavy focus on 'risk' may stress those aspects that are easily described in risk language or format ('riskification'), such as flood risks or security aspects. This can reduce focus on more gradual trends, aspects that people want to promote (positive versus negative/threat framing; desirable futures), or aspects that can't be quantified as risks and probabilities (cf. Dessai and Van der Sluijs, 2007; De Boer et al., 2010; Capela Lourenço et al., 2014; Diez et al., 2016). Narrative analysis therefore is a useful method to explore 'blind spots' in climate change perceptions. A second value of narrative analysis is that it helps identifying commonalities and differences in climate change perceptions among different actor groups. For instance, citizens and policy-makers appeared to differ partly in what climate risks are recognised and how much importance is associated to these risks. Too large deviations run the risk of undermining the legitimacy of public climate adaptation policies and reduce the willingness of citizens to contribute to adaptation measures themselves (see e.g. Hegger et al., 2017). Consequently, it is important for policymakers to be aware of the deviations and similarities between them and citizens in how they experience climate change, and to include this in participatory efforts and resilience-building.

A caveat of the approach is that narratives can be person and situation dependent. They can rely heavily on access to different actors and groups, for example disadvantaged communities. In our study, working with a neighbourhood centre proved very helpful. While the citizen narratives in Dordrecht were consistent, e.g. both advantaged and disadvantaged residents were highly aware of climate change, this cannot be assumed for more stratified communities. There is also the potential of mixing of roles. For example, some policymakers also used anecdotes of their personal experiences as residents. Similarly, residents may have roles in

[1] Integration of topics, e.g. adaptation and mitigation, is obviously challenging, because they tend to be different policy fields and departments. However, such institutional efforts at integrating different challenges are indeed emerging in the Netherlands (upcoming Environment Law and the Delta Program Spatial Adaptation).

neighbourhood platforms or other decision-making bodies or be (former) government employees. While we paid attention to this in our interview questions and coding, such aspects may always play a role. Nonetheless, such multiple roles are a facet of the local situation and given a wide range of interviewees, narratives provide a rich set of perspectives on the local situation.

4.2. Narratives as tool in resilience-building

Resilience is a flexible concept, and especially in 'messy' systems such as cities, a situated approach is needed that takes into account local values, concerns, aspirations, power dynamics, (local) knowledge, and agency (cf. Cote and Nightingale, 2012). Definitions of urban resilience in the scientific literature are diverging and in policy practice, the term is often used in a broad way, sometimes bordering on metaphorical use (cf. Meerow et al., 2016; Wardekker, in press). As a holistic concept, cities use it to explore and improve their situation in respect to a multitude of environmental, social, and economic challenges using a wide range of actions by the municipality and other local actors, including citizens. While 'climate resilience' was brought in as a way for climate adaptation to deal with uncertainties in climate change impact projections (Dessai and Van der Sluijs, 2007; Wardekker et al., 2010; Capela Lourenço et al., 2014), the concept is vulnerable to social uncertainty because resilience-building involves a wide range of interpretations, framings, and interests that are often left implicit (Wardekker, in press). The critical literature on urban resilience therefore emphasizes the need to make explicit the 'of what, to what' (Carpenter et al., 2001), or the 'who, what, when, where, and why' (Meerow et al., 2016) of resilience-building. We examined the potential role of local narratives of change in this process.

Our narrative approach allowed us to explore how citizens and authorities framed climate change and resilience, including the preferred or perceived problems, causes, moral evaluations, and solutions (cf. Entman, 1993). Both policymakers and citizens emphasized the causal aspects resulting in potential local problems (the 'to what?'): climate change and the water sensitivity of Dordrecht. Problem framing and solution framing differed. Authorities reasoned from 'vulnerability' and the solution of a strategic, managerial approach to resilience-building, focusing on structural and spatial adaptation planning. Citizens reasoned from experiences with weather extremes, and undesirable trends in the city and neighbourhood. Their preferred solutions were much more localized: practical small scale actions that they could (and were) implementing themselves. These issues relate to the 'of what' and 'to what', but also strongly to the actors they envisioned explicitly and implicitly as 'in the driver's seat' (who), the perceptions on the timescale and location of climate change impacts and preferences and interpretations of different adaptation actions (when, where). They also showed what people's motivations where, whether personal, environmental or social, for their views on impacts, responsibilities and adaptation actions (why). It showed their views on the interaction of challenges, such as how climate resilience and adaptation related to social-economic pressures, climate change mitigation, and the ongoing housing challenge and urban renewal. Socio-economic constraints were also discussed, hinting at normative priorities (moral framing) and trade-offs. These aspects involve some of the potential trade-offs, co-benefits, and other side-effects that resilience-building might have (cf. Chelleri et al., 2015). Consequently, the narratives clearly highlighted how authorities and citizens frame climate change and resilience, and how these mesh with their life-realities, concerns and aspirations.

A second challenge that is raised in the literature on urban resilience, is that it sometimes is applied in such a way that it leads to 'responsibilisation' of citizens and is used as an as excuse for government inaction (e.g. Davoudi et al., 2013; Krüger, 2019; Wardekker, in press). In other words, residents and communities are assumed or said to be (based on surviving prior disturbances) or told to be resilient, and made responsible for resilience-building. Resilience assumes local action emphasizes that local individuals and communities make use of their inherent resources (funds, networks, knowledge, participation in decision-making, etc.). However, some communities and individuals may be able to access and make use of local resources, but others may not. The latter are often the already disadvantaged and most vulnerable to climate change. Consequently, such communities may be made responsible for something they have little control over, through decisions that they had little influence in. Several authors have therefore argued that resilience-building needs to become more negotiated; an exchange of views on why and how it should take place and what the limitations and trade-offs are, including more explicit inclusion of local voices in the decision-making process and an openness to different framings of resilience (Harris et al., 2018; Krüger, 2019; Wardekker, in press). Our results show that narratives can play a role in this process. They highlighted both climatic and non-climatic aspects that citizens and authorities considered relevant to climate resilience. These involve trade-offs, and the narratives can be used in setting locally-based priorities by inventorying key issues of concern and ambitions. Narratives also provided information on local preferences regarding suitable (credible, legitimate, salient) knowledge, tools, and governance approaches (Cash et al., 2003; De Boer et al., 2010). In Dordrecht, all actors called for bottom-up governance and knowledge, as well as options that take into account local socio-economic constraints. The different problem/solution frames, focused-strategic (governments) or holistic-pragmatic (citizens), may involve diverging knowledge needs. Finally, jointly narrated concerns and aspirations offered a 'common ground' for authorities and citizens to collaborate. Such 'sameness' is important to build trust and start a conversation (Ilgen et al., 2019). However, differences are also important. They highlight trade-offs, as well as places where actors can learn from and supplement each other. If resilience plans can build on the shared narratives, and combine or cross-examine some of the diverging narratives, this would contribute to higher likelihood of public support, and more fair, legitimate, better informed and effective practices.

To summarize, narratives help uncover what matters to local actors in resilience-building, and can be used to spot similarities and differences in priorities, preferences, knowledge needs, and future visions. They help inventory local visions and preferences regarding the who, what, when, where and why of resilience-building, and help provide a more negotiated decision-making that can address some of the risks of the 'responsibilisation' of communities for their own resilience. There are also. Firstly, the value of narratives depend strongly on the amount of access to local actors and residents, particularly the disadvantaged. In our experience, it is helpful to work within the neighbourhood, through trusted neighbourhood actors rather than through 'official channels'. Secondly,

the narrations may depend on the narrator's perception of the researcher, timing of the conversation, formulation of questions, and the way interviewees are approached. Thirdly, local events, running local conflicts, and existing equity and power issues may mean that true negotiation and inclusiveness will be difficult and the narratives may provide insufficient overview of what's really taking place. Nonetheless, if collected and used in an openminded manner, they can provide a platform for improving participation of residents and other actors in resilience-building.

4.3. Broader value of narratives

4.3.1. Citizen engagement in adaptation

This study has shown the potential value of narratives for enhancing citizen engagement in climate adaptation. There is wide endorsement for the notion that citizen engagement is required for an effective, fair and legitimate adaptation planning (e.g. Wamsler, 2017; Mees, 2017; Kabisch et al., 2016; Van der Jagt et al., 2016; Burton and Mustelin, 2013) and environmental governance more generally (e.g. Driessen et al., 2012; Lemos and Agrawal, 2006). However, as this study has also highlighted, local authorities struggle with how to involve citizens in a way that citizens feel that they have been heard (e.g. Glaas et al., 2015; Meijer and Bolívar, 2016; Uittenbroek et al., 2019). Furthermore, it is well-known that participation processes are often biased by over-representation of the better-off and more highly educated citizens (e.g. Few et al., 2007; Schlosberg et al., 2017), and local authorities generally fail to involve other, less advantaged citizens in their participation processes (Uittenbroek et al., 2019). This may result in issues of procedural and distributive justice. Citizens' narratives have the potential to reduce such issues. They are expressions in the language of ordinary citizens of the knowledge, ideas, solutions and actions that citizens have about the changing climate, and how climate resilience can be built in their own locality and in their own daily lives. They have the potential to make participation processes accessible to all kinds of population groups, as citizens can express themselves in their own speak. This is particularly helpful for involving citizens that are normally less eloquent and well-spoken. As such, citizens' narratives could provide a valuable tool for local authorities to incorporate them into participation processes with citizens. Hence, the voices of different citizen groups are captured in a way that resonates with their place-based views and ideas. This may increase the extent to which the voices of all citizens are heard and actually influence adaptation planning. In turn, this may enhance citizen engagement in climate adaptation.

4.3.2. Knowledge co-production

Knowledge co-production, sustained interaction between researchers, policymakers and societal stakeholders including citizens, is increasingly seen as a fruitful way to address climate adaptation and mitigation challenges (Armitage et al. 2011; Hegger et al. 2012; Bremer and Meisch, 2017). It is argued to lead to more credible, salient, and legitimate knowledge production . Our findings show that unearthing local narratives has potential added value for such knowledge co-production processes in two ways. First, by identifying and systematically comparing narratives of authorities and citizens and considering these next to research-based knowledge, the space for finding solutions can be expanded. A key difference between the narratives of authorities and citizens is that the latter have a broader, practice-based, more holistic perspective than local authorities, linking climate adaptation closely with mitigation (holistic action narrative as coined in Table 2. This potentially signals that, from a citizen's perspective, the scope of the issues that are on the table can be broadened. This resonates with other literature that shows that the maneuvering room of authorities is broader than institutional actors might assume (e.g. Hegger et al., 2011). At the same time, the study of narratives has shown important similarities between the perspectives of citizens and authorities. The findings clearly show that the overall identity of Dordrecht as a city that has known intensive struggles against the water (historical narrative); and as an island surrounded by water (identity narrative) are shared between authorities and citizens.

Second, narratives are essentially a form of local knowledge, and therefore important to systematically include in knowledge co-production (Ravetz, 1999). The findings show salient differences in risk perception, where citizens' notions of how to act on climate change are more rooted in experiential knowledge while those of authorities are more rooted in science-inspired adaptation and vulnerability narratives. In addition, our findings have shown that 'local knowledge' could also mean: 'local bias'. Actors in the case study area, policymakers and citizens alike, had a tendency to emphasize water-related issues as opposed to other important climate threats. So unearthing local knowledge through the identification of narratives helps to identify leverage points for starting fruitful conversations, as well as potential biases.

This observation that local narratives add value to knowledge co-production resonates with other work on fruitful science-policy interactions. Hegger et al. (2012) have studied success conditions for joint knowledge production in climate adaptation. Two of their (ibid:61) success conditions pertain to discourses: i) there is a shared understanding on goals and problem definitions, and ii) perspectives of relevant stakeholders are recognized. Identifying and specifying local narratives can in itself increase stakeholder recognition, or as Bremer and Meisch (2017) would put it, knowledge co-production could lead to empowerment. Moreover, it can identify gaps and discrepancies in their shared understanding and therewith facilitate social learning about climate issues (ibid, p. 13). This way, citizen engagement in knowledge co-production could lead to the enhancement of 'joint production of public services' (ibid, p. 13). There are also potential pitfalls. Hegger et al. (2012) warn that understandings within a project context might deviate from those outside. Moreover, inclusion of multiple viewpoints and interests increases complexity of projects (Hegger et al., 2012:61). This suggests that sound expectation management is important: the fact that someone's voice is heard, will not necessarily mean that her/his views can find a place in a project. The latter observation corroborates the work of Bremer and Meisch (2017) who draw attention to the fact that knowledge co-production can come in different manifestations and fulfill different goals, by the authors categorized into eight different 'lenses on co-production'. Our findings have reconfirmed that there can be important synergies but also trade-offs between these goals. For instance, 'empowerment', 'public service improvement' and 'social learning'

might be conducive to each other, but there will certainly be limitations to this. We reiterate Bremer and Meisch's (2017:12) assertion 'that it is important for scholars to self-reflexively communicate how they use the term [knowledge co-production] and be mindful of what they 'buy into' by using the concept in certain ways.'

4.3.3. Foresight for governance

Finally, the importance of explicating the narratives of different societal actors relates intimately to the field of foresight, with its focus on the development of futures to be used as guides for planning – both in the form of desirable visions of the future and in the form of explorative scenarios that represent contextual challenges that different societal actors have to deal with. There is a significant body of literature that connects scenario development to the conception of narratives as described in this paper. This includes work on how narratives and discourses connect to imagined futures (Dryzek, 1997); the concept of socio-technical imaginaries as collectively enacted visions of the future (Jasanoff and Kim, 2015); the role of storytelling in the development of future scenarios (Bowman et al., 2013); the use of different worldviews as a way to frame diverse scenarios (De Vries, 1998; De Vries and Petersen, 2009) and how the perceived plausibility of scenarios relates to conceptions of past and present (Ramírez and Selin, 2014; Vervoort et al., 2015).

One important and widely recognized function of foresight in multi-stakeholder contexts is to create shared narratives of the future between societal actors who bring very different narratives to a planning process (Van der Heijden, 2005; Hebinck et al., 2018). The comparison of the key traits of narratives about past, present and future associated with different actor groups as elicited in the study presented here can be a key starting point for the formulation of shared visions that incorporate and bridge dimensions only brought to the table by certain actors (such as vulnerability narratives brought by municipalities and experiential narratives brought by citizens). However, a second important application of foresight is the creation and use of challenging, unexpected futures that raise fundamental questions for those involved in adaptation governance (Vervoort et al., 2014; Vervoort and Gupta, 2018). Developing diverse sets of scenarios using very different narrative framings as starting points will be very valuable to this function. For instance, different sets of scenarios could explore various challenging futures anticipated by citizens but not by local governments and vice versa; and based on this, scenarios that hybridize between narratives could be created that bring new, unanticipated challenges to the table that can be used for the testing of planning assumptions. Beyond visions and scenarios, different societal narratives could be explored in game-based foresight by making them the starting points of different roles in role-playing exercises to anticipate future issues and challenges around climate governance (Vervoort, 2019).

Practically, the work in Dordrecht Vogelbuurt continued with these narratives through a visioning and scenario workshop involving residents, policymakers and researchers (Wardekker et al, 2019). Preceding the workshop, three primers for visions were drafted by cross-examining and combining narratives of both policymakers and residents. They combined similarities and differences in narratives, and focused on 'close-knit island community', 'innovative connections', and 'water safe and waterwise'. These primers and the results of the narrative research were presented to participants and used as input. Participants then jointly designed visions for their ideal future, concrete options for the neighbourhood, pathways to the ideal future (scenarios), and potential surprises and crossroads that would need to be navigated. The narratives helped bring residents' perspectives to the foreground before the foresight process even started, and allowed us to include voices of people that are unlikely to participate in a more time-consuming and more formalized setting such as a foresight workshop.

5. Conclusions

We studied the use of 'narratives of change' as a way to explore how people experience climate change, in connection to their fears, hopes, and aspirations for building climate resilient cities. We employed an open, narrative approach to elicit perceptions of past, present and future weather, water, and climate, and how these relate to peoples' desired futures. We tested this approach in a case study in the Dutch city of Dordrecht, comparing narratives of authorities and citizens.

There were many commonalities between authorities and citizens. Both narrated richly about the city's long history with water. Particularly prevalent were the St. Elisabeth's Flood of 1421, forming the 'Isle of Dordrecht', and the North Sea Flood of 1953, causing many deaths across the Netherlands. This history is well-embedded in the city's cultural memory, manifesting in an 'island-identity'. These were connected to broader water challenges, from rivers, sea, rain, and groundwater. Several key differences emerged between authorities and citizens. Authorities emphasised a state of vulnerability that ought to be dealt with through adapting the city to extremes, in a strategic, managerial approach. Citizens referred to hands-on experiences with a worsening situation around water, weather and climate, and emphasised holistic, broad and practical climate actions, including adaptation and mitigation. The narratives highlighted shared underlying motivators and desire for collaboration on adaptation. Consequently, a shared vision emerged for a climate-resilient and safe future, although there were differences in how authorities and citizens frame problems and solutions.

Several things can be learned from this study. Firstly, the results showed a surprising impact of historical events, embedded in local cultural memory and identity, on how current and future climate change and climate action are interpreted and acted upon. This is rarely taken into account in climate policy, but may provide an important avenue for better local embedding of adaptation and mitigation. This effect improves awareness and sense of urgency for specific climate risks (e.g. floods), but also shifts attention away from others (e.g. heat stress). Further comparison between local and external narratives (e.g. scientific, (inter)national policy) is useful to explore potential blind spots in either. Secondly, elicited stories showed how climate change manifests itself in the local situation (local specificity) and live-realities of local actors, and what trade-offs and barriers climate action may face. Acknowledging these, and taking them onboard in resilience-building, could improve the quality of climate risk management by including multiple local perspectives and specificities in decision-making. Thirdly, narratives elicited both shared and diverging understandings,

perceptions and desires between actors. Similarities can facilitate collaboration by providing a 'common story' that helps identify shared goals and interests. Differences highlight different future visions and trade-offs, and where they can learn from and supplement each other.

We conclude that narratives provide a useful way to better connect climate risk management and urban resilience-building with people's daily, lived experience of climate change. They highlight important differences and similarities between actors' perceptions of climate risks and climate resilience, as well as emphases and potential blind spots in the way they assess these. They can contribute to public participation in adaptation, knowledge co-production, and co-design of future visions and scenarios. When cities take such narratives into account when (co–)designing climate resilient cities, this could improve public support for, and participation in resilience-building.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

This paper was funded through the EU ERA4CS / JPI Climate project CoCliServ "Co-development of place-based climate services for action". We thank Werner Krauß for providing comments & suggestions during the project.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.crm.2020.100223.

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