

# Translations of climate change consequences at the local level: Climate change adaptation in Bergen and Stavanger municipalities in Norway

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## Funding information

The Research Council of Norway, Grant/Award Number: 302599

## Abstract

This paper uncovers a local-level approach to the likely adverse effects of climate change through climate change policies, measures and practices concerning climate change adaptation. The study is sustained by the literature that addresses climate change through a securitization lens, which has identified security discourses on climate change in terms of threat or risk. To understand the origin of local discourse, we have adopted the concepts of translations and translation zones from security studies, allowing us to define encounters between different conceptual expressions of ways to handle threats and risks. In this paper, 'translations' mean negotiations of meanings between security, threat and risk, and 'translation zones' indicate where these negotiations take place. Discourses are studied in the two Norwegian municipalities of Bergen and Stavanger. Both experience similar consequences of climate change and are bound to follow national laws and regulations for developing adaptive responses. Despite these similarities, translations and translation zones unveil differences in the organisation of adaptation work. Risk discourses thus allow several possible translation

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pathways, and adaptation remains a distinctly local phenomenon despite commonalities in risk discourse and translation processes.

#### KEYWORDS

climate risks, local climate change adaptation, risk discourse, translation zones, translations

## INTRODUCTION

Climate change adaptation is firmly placed on the international political agenda through agreements and reports (see, for instance, European Commission, 2021; IPCC, 2022, 2023) which underline that the way to enhance climate resilience is through adaptation. Varied and robust scholarly research forwarded by the United Nations' Intergovernmental Panel on Climate Change (IPCC) points out how climate change impacts local communities and how local communities must adapt to these impacts (see Malakar, 2013; Nemaokonde & Van Niekerk, 2023; Roberts, 2010). Climate change adaptation is often considered and studied as a distinctly local phenomenon, since its benefits tend to produce effects that are observed and dealt with in spatial contexts and the political and administrative domain of cities and towns, whether urban, suburban or rural (see, e.g. Araosa et al., 2016; Næss et al., 2005).

In Norway, the local level of government, municipalities, carries significant responsibility for handling crisis management and societal safety and security (see Fimreite et al., 2014). Its duties include the responsibility to respond to climate change impacts through climate change adaptation, which encompasses a variety of measures and activities to adjust to climate change and to reduce the risks from its potential adverse effects (Dannevig et al., 2012; Orderud & Naustdalslid, 2018; Wejs et al., 2014). Municipalities are tasked according to national regulations (NOU 2023:9,23:9, 2023), such as the Act on Municipal Emergency Preparedness, Civil Protection and Civil Defense (Sivilbeskyttelsesloven, 2010) and the Planning and Building Act (Plan- og bygningsloven, 2008). The first places the responsibility for preparedness and emergency on the municipalities, while the latter states that municipalities are accountable for planning and links adaptation directly with planning practices. However, several other actors, such as national and regional agencies, also participate in adaptation work in Norway. Thus, responsibilities are spread across sectors and different types of actors (see Westskog et al., 2017). This situation has led to a national policy development on adaptation that seems relatively weak, considering the challenges that climate change poses to Norway (see Neby et al., 2023). Nonetheless, in recent years, a few strong national policy initiatives (Meld. St. 33 2012-2013, 2013; Meld. St. 26 2022-2023, 2023) recognize that the Norwegian adaptation policy requires a more coordinated and integrated effort between the national and local levels.

We investigate the approaches that the Norwegian municipalities of Bergen and Stavanger have developed in response to and anticipation of the likely adverse effects of climate change through policies, measures and practices concerning climate change adaptation. The two cities have been selected due to their comparability in terms of geographical location, size, and water-related adaptation challenges. Both are located on the Norwegian southwest coast and are large cities in a Norwegian context. Bergen is Norway's second largest city and the capital of Vestland County. It is considered the rainiest city in Europe (Meze-Hausken, 2007), with an average of

2495 mm in annual precipitation (1991–2020 period). Sea-level rise and storm surges periodically threaten the city landmark, the UNESCO World Heritage old trading houses from the Hanseatic age, and stormwater management is a major issue (Kvamsås, 2022) – together with precipitation-related events such as local floods and landslides. Stavanger is the capital of Rogaland County and Norway's fourth largest city. Stavanger is prone to various water-related hazards, mainly fluvial flooding, rapid and intense rainfall, and sea-level rise (Jansen et al., 2022). The topographical difference – Bergen is mountainous, while Stavanger is flatter and surrounded by farmland – influences the nature and distribution of climate impacts. Extreme weather events like heavy precipitations, storms and hurricanes hit Stavanger in January 2007, 2017, and 2020, impacting the water system, sewage and other infrastructures, such as paved roads, as well as sectors such as agriculture and forestry. Bergen experienced a particularly dramatic event: in 2005, a landslide in the residential area of Hatlestad caused significant damage and fatalities (Lango, 2010, 2011). This tragic event changed the local agenda towards climate change, directing attention to the previously overlooked local effects of precipitation on steep hillsides.

We posit that the Bergen and Stavanger approaches to climate change adaptation are shaped by the relevant discourse among officials working in the local administration. Discourses have a Foucauldian connotation in this paper, as ideas and practices that give meaning to reality (Foucault, 1981). We seek to understand features of local adaptive responses as they manifest in discourses, identified by adopting the key concepts of translations and translation zones.

In security studies, translations are understood as encounters between different conceptual expressions of ways to handle threats or risks (Villumsen Berling et al., 2022). Examples include the experts and bureaucrats who provide meanings and definitions on how to cope with climate change consequences or technologies and the tools that influence certain working practices. Translation zones suggest the “points of observation” (Villumsen Berling et al., 2022: 3) where these negotiations occur, which can be a committee, an arena of discussion, a partnership, or a location within the wider governance system. In security studies, a way to study discourses is through the ideal types of ‘threatification’ and ‘riskification’ stemming from securitization theory (Buzan et al., 1998). Securitization is generally defined as the process by which a political issue becomes a matter of security via a securitizing move performed by certain actors to protect a referent object, such as the environment or society, from a threat (Buzan et al., 1998). Threat and risk discourses reflect words, concepts and narratives about threat and risk, respectively, by expressing that something is threatened or at stake. Researchers have widened securitization processes by including practices located largely at the professional level of security and safety management and associated with techno-bureaucratic actors and procedures (Bigo, 2002; Huysmans, 2006). This broadened field has led to research that has introduced risk into security studies by pointing out, for instance, the role of experts in safety and security and the use of risk analyses to manage security (see Petersen, 2008; Rasmussen, 2006). Hence, we ask the following research question: How do translations and translation zones shape the local discourse about climate change adaptation in Bergen and Stavanger? Through analysis of official municipal documents and semi-structured interviews with local officials, the paper contributes with knowledge about local approaches to adaptation in the context of threatification and riskification. Consequently, it adds to the debate on the relevance and importance of studying local adaptation from a discursive perspective.

The paper is structured as follows: first, we present the theoretical approach and outline the analytical dimensions. Second, we give an account of methodological

considerations, describing the research design and data. Third, we assess the two cases based on translations and translation zones for climate change adaptation, ending with a discussion on the adaptation discourses identified. Finally, we conclude by arguing that although translations and translation zones vary somewhat across the two municipal settings, the discourse about climate change adaptation is quite similar. Adaptation straddles climate policy, preparedness, and risk in both cities. However, a difference is evident in *who* the translating agents have been and, thus, *how* translation zones influence the discourse. The results show that Stavanger has a more singular emphasis on preparedness and societal safety and security, in contrast to a more multi-faceted situation in Bergen.

## THEORETICAL AND ANALYTICAL PERSPECTIVES

The theoretical backbone of this paper is influenced by the literature which studies climate change through a securitization lens (see, for instance, Diez et al., 2016; von Lucke, 2020) and proposes two different ideal types of securitization: 'threatification' and 'riskification' (Diez et al., 2016: 20-21). The suggestion is that security discourses about climate change have different dimensions – territorial, individual and planetary – but also that they can be understood in terms of substantial variation, i.e. threat or risk security discourses. Threat-oriented discourses are characterized by a sense of urgency to respond to potential threats with serious impact on states and society, while the risk-oriented discourses propose more long-term precautionary measures (Diez et al., 2016: 21). Both discourses concern the connotations given to climate change regarding "whose security matters, from what threats, by what means it is to be provided and which actors are responsible for providing it" (McDonald, 2021: 44). This leads our attention to the actors involved, their interpretation of threat and risk, and notions of appropriate response. Through processes involving the wider political-administrative system, meaning, responsibility and action are generated through discursive interactions and conversations.

The securitization literature suggests that most climate security discourses occur at international and national levels (Bremberg et al., 2022; Harrington, 2023; von Lucke, 2020) and are mainly threat-oriented. For instance, the United Nations and the European Union consider climate change a threat to human security and one of the most severe crises for global society (Hardt & de Armiño, 2023; Scott & Ku, 2018), calling for urgent interventions to protect values, life and society. At the same time, the relevant literature pinpoints the limits of security discourses on climate change in causing a securitization-based approach (see Dupont, 2019; Floyd, 2016; Warner & Boas, 2019). For example, in some countries, such as Norway (Morsut & Engen, 2022) or the Netherlands (Mees & Surian, 2023), a threat discourse does not imply a securitization process. In addition, this literature has mainly investigated the international and national levels of securitization of climate change. However, Bremberg et al. (2022: 341) argue that "there is still a limited understanding of how discourse and action on climate security develop and diffuse in and across different institutional settings in various policy fields and geographical contexts". By addressing Bremberg et al.'s argument, this paper sheds light on the relevance of the local level as a context for handling the consequences of climate change and of the type of discourse occurring at this level.

Risk can be considered a widening and deepening of security, a view that aligns with the scholars promoting risk practices, which increasingly overlap with those of security (see Aradau & Van Munster, 2007; Bigo, 2002; Lund Petersen, 2016). Risk

nevertheless has certain characteristics distinguishable from those of threats. Although researchers have contributed several definitions of risk (see Aven et al., 2011), commonalities exist: uncertainty, possibility and probability are the three most notable qualities, in addition to risk being perceived as acceptable, tolerable or intolerable, ambiguous or unambiguous (Renn, 2008). A threat, on the contrary, is identifiable, imminent and concrete (see Morsut & Engen, 2023). We argue that organizations may trigger a transformation process from threats to risks through risk analysis by analyzing a threat through qualitative and quantitative risk terminology (Aven & Flage, 2020). By example, there is a distance between the general scientific knowledge about climate related threats, and the scientific advice needed for specific local contexts: there is a need for a distillation and reinterpretation of science to create actionable guidance for local decision-makers (Kolstad et al., 2019). Risk analysis implies balancing and assessing different kinds of information through a critical and transparent discussion, which leads to a legitimation of certain decisions about how to cope with the uncertainty caused by the risk (Morsut & Engen, 2023). To deal with uncertainties, actors and societies organize themselves, implement action plans and create meaning to understand reality.

Villumsen Berling et al. (2022) argue that there is a need for concrete indications about discourse construction: what the origin of a certain discourse is, and which processes lie behind its formation. They suggest that the boundaries of both the security and risk fields have been erased. Consequently, a key challenge in security studies and risk governance studies is to understand where these two fields of study meet in terms of how a society copes with risk and uncertainties. Villumsen Berling et al. (2022) propose that the concepts of translations and translation zones are useful for exploring these boundaries. Since discourse shapes how we describe and understand the world (Foucault, 1972), that is, our knowledge, it becomes important to comprehend how and where this knowledge is generated, especially when risk and security epistemic communities intertwine as in the case of climate change.

We depart from the concepts of translation and translation zones as a framework of analysis to understand local discourses on adaptation. Translations are meetings and encounters of meanings and expressions about threats and risks, and their negotiation across functionally differentiated professions and disciplines, cultures and scales (Villumsen Berling et al., 2022: 17). Translations are initiated by actors who interrelate upon a given topic. Through their engagement meanings to reality are generated (ibidem: 4-5), exchanged and negotiated. Translations happen in the interdisciplinary intersection between academic disciplines, between academics and practitioners and between different communities of practice. Such settings are often complex, even at the local scale (Neby, 2019). The intersections represent a translation zone, defined as a "point of observation that describes (1) how different conceptual expressions of how to handle unwanted futures meet, and (2) how new meanings are negotiated" (Villumsen Berling et al., 2022: 3). When considering threats and risks, translation zones represent the *place or location* where risk analysis, risk governance and security considerations happen, providing points of observation of how risks and threats are embedded in the development and implementation of measures as well as the sense-making needed to create agency. These translation zones may challenge the epistemological foundations of security and risk fields, since social encounters may generate new meanings and understandings of reality. Hence, to reveal translations and translation zones, we need to consider the *actors* who translate and interpret reality, the *meeting places* where they interact and the *substantial frames of reference* for this communicative interaction.



Villumsen Berling et al. (2022: 200) suggest studying translations and translation zones following four analytical *categories*:

- 1) Identify actors to address which conceptual meanings they carry, how they exchange these conceptual meanings and whether certain conceptual meanings are more relevant than others.
- 2) Identify so-called 'claims on authority': "What is involved in making those claims appear legitimate and authoritative? (e.g. scientific evidence, language of necessity, utility, loyalty, state recognition, etc.)"
- 3) Identify discursive or physical channels that activate translations (e.g., "laws, regulations, digitalization, institutions, etc.")
- 4) Identify whether new concepts or organizational practices stem from the three categories above.

Our analysis broadly applies these categories to shed light on the local translations. In section 4, the four categories allow us to uncover local actors involved in the process of meaning-shaping. In section 5, we reflect on how actors' interactions and encounters define the translation zones in each municipality. Translation zones contributed to our understanding of discourses in the two cities presented in section 6.

## METHODS

The study is a comparative case study (Bartlett & Vavrus, 2017; Yin, 2014), scrutinizing two Norwegian municipalities with several commonalities, including geographical location and compliance with the same national laws and regulations. The research design straddles the most similar versus most different systems' design by exploratively focusing on the nature of discursive translation process taking place. The study does not attempt to reduce the number of possible explanations (as in a most similar systems design), neither does it aim to establish a common denominator by maximizing differences between cases (as in a most different systems design) (see e.g. Anckar, 2008). The phenomenon of interest is *how* translations occur, with less priority given to causal explanations of the outcome of translation processes.

We used similar and comparable sources from both cities. First, official public documents downloadable from the digital archives of the two municipalities or directly provided by local informants, such as plans, sectoral strategies and reports, have been scanned according to a broad approach, consisting of searching for words such as 'climate change', 'risk', 'adaptation', 'threat' and 'water'. This resulted in a more limited number of selected documents (see Table 1). A challenge is that the municipalities do not provide (at the time of writing this paper) a master strategy for climate change adaptation or a plan that encompasses the municipalities' definition of climate change adaptation or the constitutive elements of their adaptation approach.

For Stavanger, three reports provided by external consultancies were added (COWI, 2022, 2017; Proactima and The Governance Group, 2020) since they were often used as references in the above documents and by the informants and, thus, constitute an important source of information for achieving the goal of the paper.

The documents of Table 1 and the three Stavanger reports were manually coded in an Excel sheet and divided into what we call *discourses*, such as words, terms and ways to understand climate change, adaptation and risks; *actors*, those officials and experts beyond the writing of the documents; and *tools* (e.g. digital means, solutions, measures). The results of the coding were filtered through several questions, such as

**TABLE 1** Documents analyzed in Bergen and Stavanger.

Bergen		Stavanger				
Document	Department	Adopted	Document	Service Area/Department	Adopted	
1	Bergen Municipal Master Plan 2015–2030 (Bergen Municipality, 2015)	Planning and Building Department	24.07.2015	The social element of the Municipal Master Plan (Stavanger Municipality, 2020)	Stavanger Municipality	14.09.2020
2	Green Strategy 2022–2030 (Bergen Municipality, 2023a)	Climate Department	25.01.2023	The Green Plan (Stavanger Municipality, 2023a)	Stavanger Municipality	N/A
3	Nature Strategy for Bergen (Bergen Municipality, 2023b)	Urban Environment Department	29.03.2023	Climate and Environment Plan 2018–2030 (Stavanger Municipality, 2018)	Urban Environment and Development service area	26.11.2018
4	Bergen Municipal Land-use Plan 2018–2030 (Bergen Municipality, 2019a)	Planning and Building Department	19.07.2019	Land-use part of the Municipal Master Plan (Stavanger Municipality, 2023b)	Urban and Community Planning service area	19.06.2023
5	Master Plan for Water Supply 2019–2028 (Bergen Municipality, 2019b)	Bergen Water	19.06.2019	Water in Stavanger. Master Plan for Water Supply, Drainage, Water Environment and Storm Water 2019–2029 (Stavanger Municipality, 2019)	Stavanger Municipality	N/A
6	Municipal Sub-plan for Surface Water 2022–2030 (Bergen Municipality, 2019c)	Bergen Water	25.09.2019	See 5		
7	Bergen Risk and Vulnerability Analysis 2020: A safe city for the future (Bergen Municipality, 2019d)	House of Public Safety	28.02.2019	Comprehensive Risk and Vulnerability Analysis for Stavanger Municipality (RVA, 2024)	Preparedness and Community Development Department	22.05.2024 (last update on website)

which words define and describe adaptation, which problem framings adaptation brings into the realm of climate change, references and understanding of climate risk and climate threats (discourse), who is supposed to take action and in which form (actors), whether adaptation measures are taken with a sense of urgency and which relevant policies, technologies and resources are mobilized (tools). This manual coding was followed by an evaluation based on the four analytical categories developed by Villumsen Berling et al. (2022).

Second, semi-structured interviews were conducted by selecting informants from among the public administrative officials who work with climate change in general and with climate change adaptation in particular. The interviews complemented and enriched the document analysis since they contributed to filling gaps in the documents in terms of the exchange of meanings, relevance of certain connotations, legitimate claims of authority, scientific contributions in developing concepts, tools used to channel meanings, and possible new methods and concepts. Indeed, informants in Bergen and Stavanger offered a more detailed picture about adaptation than the official documents indicate.

The choice of informants was based on the municipality's organigram, retrieved online. However, a snowball approach was also essential: informants were asked whom they deemed the most suitable to answer the interview guide, allowing us to reach all the relevant informants in each municipality. The interview guide was organized according to the coding system of the document analysis to be sure to fill the gaps.

The interviews in Stavanger were carried out via Microsoft TEAMS, while, in Bergen, the interviews occurred at the informants' place of work. Interviews were recorded and anonymously stored in the TEAMS platform of the project [RISKSEC2.0]. Summaries were written for the interviews in Bergen, whereas the interviews in Stavanger were fully transcribed.

In Stavanger, 13 public officials in different positions (from the head of service area to the head of department and senior advisers and advisers) were interviewed from spring 2022 to spring 2023. They worked within the following departments: Preparedness and Community Development; Climate and Environment; Sports and Outdoor Environment; Water, Sewage, and Waste Disposal. The head of one service area was also interviewed.<sup>1</sup> For Bergen, the researchers involved in this paper have intimate knowledge based on previous research projects and collaborations that directly concerned climate adaptation (Kvamsås, 2022). Thus, the need for an exhaustive data collection process was less pronounced than in Stavanger. This resulted in 5 interviews conducted during the winter of 2023 with three leaders and two experts from five different departments in Bergen municipality: Climate, Planning and Building, Urban Environment, Bergen Water and the House of Public Safety.<sup>2</sup>

## TRANSLATIONS OF LOCAL CLIMATE CHANGE ADAPTATION IN BERGEN AND STAVANGER

In presenting the findings, we draw on the four categories from the theory section: actors and the conceptual meanings they carry, the claims of authority that accompany them, the identification of channels that activate translations and, finally, the identification of new concepts or organizational practices. Due to the level of detail, we have opted to display the findings based on assessing the municipalities separately. At the same time, we draw attention to comparative aspects to pinpoint similarities and differences.



## Translations in Bergen

The Climate Department, Bergen Water, the House of Public Safety, the Planning and Building Department, and the City Environment Department are key actors working with adaptation and climate risks and cooperate extensively. The city councilor for Urban Development has the political responsibility for these departments. After the first national Norwegian climate adaptation policy initiatives emerged in the early 2000s, the efforts to cope with climate change became more formalized in Bergen. The term adaptation was used from around 2007. Examples of formalization are the establishment of a climate section as part of the City Council and revisions of the city's master plan and the water and sewage plans (Groven et al., 2012). This move was in part a reaction to the 2005 Hatlestad landslide (see Lango, 2010, 2011) and Nesttun flooding, after which a few influential policy entrepreneurs within the municipal administration started advocating a more proactive approach to climate change adaptation based on risk-based ideals stemming from preparedness work (Bergen Informant N1.3, 2023).

Early on, officials connected their understanding of adaptation to concepts of physical risk with broad societal consequences, interacting with an increasingly strong political agenda for climate policies in general. The approach was cross-sectoral, as actors across the municipal organization and external actors were included, demonstrating that climate issues – including adaptation – are complex matters that cannot be solved by one actor or within one sectoral domain. Claims for authority and legitimacy thus developed from the collaborative efforts across hands-on actors, policymakers, and epistemic communities. In 2020, the Green Party pushed for more active climate policies, resulting in the establishment of the Climate Department in place of the Climate Section. This decision is an organizational innovation in Norwegian municipalities, as only Oslo and Bergen had such departments.<sup>3</sup> The Climate Department had independent professional responsibility for climate issues, such as the preparation and implementation of the Green Strategy (Bergen Municipality, 2023b) and tools such as annual action plans, climate dashboards, indicators and maps.

Climate change adaptation in Bergen largely revolves around water issues related to the built environment (e.g. buildings, roads, infrastructure). Bergen Water, the municipal water department, has been a prime mover for water-related issues in adaptation work (Kvamsås, 2022). The pivotal role of *all things water* directly connects to the Planning and Building Department's mandate and activities, as climate change adaptation is essential in societal and spatial planning. Planning is conducted based on laws and regulations at the national level and is an important tool for local politicians, hinting at a regulative-political claim to authority. Bergen Water has strong professional expertise in hydrology and modeling and its director is a former climate scientist. Its employees have participated in several international (mainly European Union) and national research projects, allowing good access to expertise from leading research environments. This feature signals an epistemic claim to authority based on the multi-disciplinary nature of climate-related research. Bergen Water has also often coordinated the research work within the municipality, establishing close collaborations across departments, and is also involved in a variety of development work with digital solutions: in collaboration with a private company and the National Meteorological Institute, the so-called Flood Cube, a digital warning board for precipitations, has been developed, as well as a guide on climate and overflow water. In the more specific water-related issues, we find actors have cross-sectoral, knowledge-intensive focus when trying to understand current challenges, combined with a techno-regulative planning approach to deal with these challenges.

Bergen has its own department for societal safety and security and preparedness, the so-called House of Public Safety, which is responsible for the municipality's risk and vulnerability analysis, among other tasks (Bergen Municipality, 2019d). This analysis is not explicitly connected to climate change but, rather, reviews 32 unwanted events regarding risk concerning the loss of life, health and material damage. Risks related to floods and landslides are most often mentioned, as is risk connected to infrastructure damage and public health problems. Certain risks relevant to adaptation include extreme weather, droughts, floods, and landslides. Importantly, the House of Public Safety is an organizational innovation drawing on legitimizing factors that extend beyond climate adaptation and climate risk. Within this department, societal safety and security and preparedness deal with adaptation-related risks within a larger framework for local risk mitigation and risk governance.

The Department for Urban Environment works with urban infrastructure, recreational areas, and transport by road, bicycle, and walking. Parks and urban spaces serve many functions for both recreation and play, as well as to absorb heavy rainfall and stormwater. Adaptation and climate risks are concerns for projects implemented through this department, but they are not formally stated as official policy responsibilities.

Several departments in Bergen cooperate with other municipalities in the field of climate and climate risk within their area of expertise. For instance, the Climate Department participates in the national I-Front network,<sup>4</sup> supported by the Norwegian Environment Agency and the Norwegian Association of Local and Regional Authorities. Together with other municipalities, Bergen Water uses a measurement and assessment tool called *betterWATER*. The departments also cooperate with national authorities, such as the Norwegian Environment Agency, the Directorate for Civil Preparedness and the Norwegian Water Resources and Energy Directorate. The latter prepares flood zone and risk assessments for selected vulnerable watercourses in Bergen.

From the interviews, we received confirmation that municipal leadership meetings are important for highlighting and discussing issues that cut across departments, as adaptation and climate risks do. There are examples of formalized professional networks within the municipality, such as the climate risk network led by the Climate Department, which brings relevant professionals from different municipal departments together.

## Translations in Stavanger

The Preparedness and Community Development Department belongs to Urban and Community Planning, one of the seven so-called service areas of the municipality, and is the key actor in adaptation work. It started its engagement with climate change adaptation in the mid-2000s. This department bears the strategic responsibility for coordinating adaptation work across departments that are not directly responsible for climate change adaptation but nonetheless carry out adaptation measures. Like in Bergen, it grounds the concept of adaptation in physical risks that could severely impact the local community. The same goes for how the department translates societal safety and security and preparedness into approaches concerning adaptation-related risks. The department has developed a profound competence in adaptation (Stavanger Informant N2.1), but it does not use a cross-departmental approach in its understanding of adaptation, like in Bergen. It rather relies on external Norwegian consultancies to obtain risk and vulnerability analyses or reports about relevant

adaptation issues. In addition, long-standing cooperation with Norwegian research institutions, such as CICERO, the University of Stavanger, and Western Norway Research Institute, has provided the scientific know-how to support adaptation measures adopted by the department. In particular, the University of Stavanger is known for contributing to the societal safety and security approach and has a strong tradition in geology and petroleum-related subjects. 'Societal safety and security' is an umbrella term used in Norway to refer to the systematic work done to protect Norwegian society against negative events that threaten basic values and functions and endanger life and health (see Morsut, 2020; Meld. St. 10, 2017). This means that the department is the legitimate actor in dealing with adaptation. This claim of authority has ensured the municipality's participation in relevant international and national collaborations that can support its adaptation work (Stavanger Informants N2.1, 2022; Stavanger Informant N2.2, 2022), such as the European Union's Horizon 2020 project UrbanNatureLabs (European Commission, 2024), the Covenant of Mayors and the European Union Mission for 100 climate-neutral and smart cities by 2030 (European Commission, 2023). At the national level, the Norwegian Environment Agency and the Norwegian Water Resources and Energy Directorate are the two main authorities the municipality cooperates with, for example, in the I-Front network, together with Bergen. Locally, Stavanger belongs to the Climate Network Jæren, financed by the Norwegian Environment Agency, and to the Climate Change Adaptation Forum, launched by the County of Rogaland in autumn 2021.

Such networks are valuable for information flow and knowledge exchange needed to strengthen cooperation activities within climate change adaptation. The networks help legitimate an understanding of adaptation that concerns risk management, risk analysis, and governance promoted by the Preparedness and Community Development Department itself (Stavanger Informants N2.1, 2022; Stavanger Informant N2.2, 2022). The Department has established a fruitful cooperation with the Maps and Digital Services Department under the same service area, for the provision of digital tools (e.g. digital maps, modeling) that ease the adaptation work (Stavanger Informants N2.1, 2022; Stavanger Informant N2.2, 2022; Stavanger Informant N2.10, 2022). Digital tools represent physical channels that activate translations – actors utilize these tools, transform knowledge into new technology and apply these technologies to understand adaptation. Accordingly, the department utilizes these digital tools to approach risk analysis and management by developing and forming the Comprehensive Risk and Vulnerability Analysis for Stavanger Municipality (RVA, 2024). Other channels are strategies and plans regarding climate change, where adaptation is presented as the measure to create a safe and resilient municipality by preventing and mitigating climate risks (Stavanger Municipality, 2023a).

Within the Urban Environment and Development service area, three departments are of relevance for adaptation: Climate and Environment, Sports and the Outdoor Environment and Water, Sewage and Waste Disposal (Stavanger Informant N2.4, 2023; Stavanger Informant N2.6, 2023; Stavanger Informant N2.8, 2023; Stavanger Informant N2.9, 2023). These departments do not formally possess official policy responsibilities on adaptation. However, the Water, Sewage and Waste Disposal Department introduced the position of a water management expert in adaptation in 2018 (Stavanger Informants N2.3, 2023; Stavanger Informant N2.6, 2023) due to risks related to water supply, drainage, water environment and stormwater, which increased rainfall has intensified in recent years (Stavanger Municipality, 2023a; Stavanger Municipality, 2020; Stavanger Municipality, 2018). We argue that this new actor indicates a new way to translate adaptation in terms of risk management but with a strong focus on water. There is no indication of direct translations of adaptation taken

from the Preparedness and Community Development Department, although the Water, Sewage and Waste Disposal Department applies similar terminologies. The two departments are aware of each other's tasks, but they do not report any formal cooperation concerning the provision of risk analyses and climate risk management (Stavanger Informants N2.1, 2022; Stavanger Informant N2.2, 2022; Stavanger Informants N2.3, 2023; Stavanger Informant N2.6, 2023).

## TRANSLATION ZONES IN BERGEN AND STAVANGER

Our translation-based analysis revealed the translation zones in the two municipalities. As pointed out in the theory, translation zones are “point of observation that describes (1) how different conceptual expressions of how to handle unwanted futures meet, and (2) how new meanings are negotiated” (Villumsen Berling et al., 2022: 3). From the analysis above, we argue that translation zones invest different departments in Bergen, while one department seems to have a dominant position in Stavanger. In both cases, translation zones unfold thanks to processes of meaning-shaping that involve internal and external actors, representing the intersection between different academic disciplines and communities of practice.

### Translation zones in Bergen

Arguably, three interconnected zones have contributed in different ways to shaping the translation of climate issues into political-administrative realities. The first relates to the city's actual challenges regarding water and it is shaped by three key actors: Bergen Water, the Planning and Building Department, and the City Environment Department. Here, known challenges regarding stormwater management and the built environment intersect with a clear epistemic orientation, where the development of knowledge and expertise interconnects with professional knowledge actors locally, nationally, and internationally (see Kolstad et al., 2019). This provides an arena where climate services and climate modeling represent a baseline for cooperation and the development of measures to manage adaptation and risk (for a typical example, see Paasche et al., 2021). The somewhat epistemic and technical character of this translation zone leads the attention to issues of engineering and problem-solving in the face of climate impacts (Bergen Municipality, 2023b; 2019a; 2019b; 2015; Bergen Informant N1.1, 2023; Bergen Informant N1.4, 2023; Bergen Informant N1.5, 2023). This zone has a regulative basis of authority (planning and infrastructure issues) that is clearly supported by an epistemic orientation: knowledge becomes a prime mover for translating climate impacts and risks into municipal realities.

The second relates to the political impetus for strengthened policy initiatives in the climate field, including adaptation. Here, the first establishment of the climate plans of the Climate Section – and later, the Climate Department – interacted with national and international political initiatives and local environmental political actors. The 2019 declaration of a climate emergency and the 2020 creation of the Climate Department allowed the Green Strategy (Bergen Municipality, 2023a) to develop, which in turn influenced the interpretation of adaptation issues and the construction of measures to deal with them. Moreover, in this translation zone, the climate issue emerged as a matter of political interest, suggesting that the translation's orientation is more political-administrative than technical and instrumental. The Green Strategy process deliberately included stakeholders and communities external to the municipality, with

clear cross-sectoral attention to the societal ramifications of the strategy (Bergen Municipality, 2023a). Here, the translation zone is marked by a broad, multi-actor constellation, where the claim to authority rests with the 'necessity to act' on climate issues. New organizational and practical elements are represented by the establishment of the Climate Department and the open and inclusive approach taken to create the Green Strategy.

The third translation zone stems from the connection between experienced climate-related events and issues of societal security and preparedness. This translation zone is directly oriented towards the physical aspects of climate risks and revolves around discussions of emergency response, surveillance of possible climate impacts and events, and the role of proactive risk assessments. In particular, the Hatlestad landslide provided an important impetus for interpreting climate-related natural hazards as a matter of risk (Lango, 2011). The establishment of the House of Public Safety followed an inclusive approach that included stakeholders – both municipal and external – in a broader assessment of risks relevant to societal security and preparedness. In this work, a few policy entrepreneurs proved important as drivers and translators, as this work connected directly to the development of the city's efforts concerning risk and vulnerability analyses (Bergen Municipality, 2019d; Bergen Informant N1.3, 2023; Bergen Informant N1.4, 2023). Here, the claim to authority is based on two main factors: the first is the physically experienced climate risks and the risk governance frameworks of a more general character; the second concerns the 'totality' of issues within the social security domain, which entails a broad, multi-faceted actor constellation.

Intersections between these three translation zones are visible. For instance, several actors – both individual and organizational – have been important for more than one translation zone. Moreover, the substantial elaborations in these zones reflect regulative couplings between, e.g. planning measures and risk assessments, cross-sectoral cooperation and the development of knowledge, and the political and professional-administrative work on strategies and the development of measures. In this sense, translations of climate issues into issues of risk simultaneously follow both specific and more generic trajectories. This process allows for heterogeneity and ambiguity but can also be interpreted as a new and innovative way of handling challenges.

## Translation zones in Stavanger

While we identified three translation zones in Bergen, the main translation zone in Stavanger stems from the Preparedness and Community Development Department. This department represents our privileged point of observation on how meanings and understandings of adaptation have progressed in the municipality. This is reflected in the Land-use Part of the Municipal Master Plan (Stavanger Municipality, 2023b) which recognizes the strong relationship between societal safety and security and climate change adaptation, which also includes prevention and preparedness thinking, risk and vulnerability analyses and contingency planning. According to the interviews with the Preparedness and Community Development Department, adaptation is anchored in this epistemological understanding and its adaptation work since the mid-2000s has been consistent with a societal safety and security approach. Notably, informants from other departments did not express the same view about the relationship between societal safety and security and adaptation, nor did they use the term 'climate risk' (Stavanger Informant N2.3, 2023; Stavanger Informant, N2.4, 2023; Stavanger Informant N2.14, 2023). One of the informants working in the Preparedness and Community Development Department stated:



Adaptation has become one of the most important things we do in terms of societal safety and security since we already see climate change unfolding in front of us, and we have to deal with extreme amounts of rainfall now and will experience more long-term climate change consequences like sea-level rise. So, the question is, for example, how to secure the seafront of the city against this. (Stavanger Informant N2.1, 2022)

According to this epistemological understanding, adaptation is translated into climate risks and their management through preparedness and prevention measures and planning, often including support from channels such as digital risk maps and analyses, sensors, early warning systems, risk and probability models, software like ArcGIS and scenario simulations to monitor climate risks are also employed in the adaptation work (Stavanger Informant N2.1, 2022; Stavanger Informant N2.2, 2022; Stavanger Informants N2.3, 2023; N2.7, 2023; N2.10, 2023). These translations are constantly negotiated, not only between this and the other municipal departments but also with external consultancies which provide risk analyses (Stavanger Informants N2.1, 2022; Stavanger Informant N2.2, 2022; Stavanger Informant N2.15, 2022; Stavanger Informant N2.16, 2022; Stavanger Informant N2.5, 2023; N2.7, 2023), but through the authoritative voice of one department.

One of the main outcomes of this negotiation is the provision of analyses on climate change with a risk approach characterized by uncertainty. Although some informants point out that we live in a time of high uncertainty about climate change and climate risk, the same informants profess to have the skills and expertise to navigate this uncertainty through procedures and practices within the framework of societal safety and security since climate change adaptation has gradually been embedded in their daily work and routines. Such a risk approach reflects recent developments in risk science (Aven, 2020) and has guided, for instance, the Comprehensive Risk and Vulnerability Analysis in Stavanger (RVA, 2024).

We have argued for translations of adaptation in terms of climate risks, preparedness, prevention measures, and planning, mainly stemming from one relevant translation zone. Nonetheless, the presence of a water management expert in adaptation in the Water, Sewage, and Waste Disposal Department deserves special attention because this department represents a slightly different point of observation since it provides a conceptual expression of adaptation in terms of water risk management. Its work is sustained by the Master Plan for Water Supply, Drainage, Water Environment, and Stormwater (Stavanger Municipality, 2019), which highlights that the so-called climate-adapted Stormwater Management and Water Environment area represents the most important investment for the municipality in terms of adaptation. The master plan follows the principle of prevention by proposing adaptation solutions to avoid the release of heavy precipitation into the public water system with consequent floods. Solutions include building water basins and extending green areas in the critical junctures of the city. The ambition of the plan is to build a city that can withstand inundations of water.

## CLIMATE SECURITY DISCOURSES: TWO CITIES, SAME RISK DISCOURSE

Despite different translation zones, there are analogous narratives, meanings, and concepts in both Bergen and Stavanger concerning climate change adaptation. The two municipalities frame this issue according to risk discourses that follow similar patterns. This has happened in settings where the same national regulations apply,



but where the organization of the cities differs, the climatic challenges diverge, and where translation processes have taken different forms.

Not surprisingly – due to binding regulatory rules at the national level – the risk discourse is embedded in risk and vulnerability analyses, which guide the adaptation work. In Bergen, risks are generally not specifically connected to climate change but rather to unwanted events. Bergen's risk and vulnerability analysis covers 32 unwanted events, and those related to nature and the environment are most relevant for adaptation, such as extreme weather, droughts, floods, and landslides (Bergen Municipality, 2019d). A Bergen informant (Bergen Informant N1.1, 2023) stated:

Risk drives the adaptation discourse. When regulating, climate risks, such as landslides, floods, and surface water, are taken into account, and they request avalanche and flood zone mapping in accordance with the Norwegian Water Resources and Energy Directorate templates and requirements. ...This is an established system.

In Stavanger, 48 negative events are assessed, 26 of which relate to climate change. Climate risks include extreme precipitations, increased temperatures and higher sea levels, which, if not properly managed, may lead to floods, landslides and forest fires (RVA, 2024). In addition, climate risks have cascading effects that can be unpredictable, posing a direct danger to life and health and making it more difficult to organize crisis management in the municipality. There is a constant follow-up of climate risks:

There is continuous work on climate change adaptation within a risk picture that is dynamic – it does not remain the same. If you say that we should have a climate change strategy by 2030 or 2040, then you must have something to check on the way: are these the focus areas, or do we need something else? (Stavanger Informant N2.7, 2023)

In Bergen, in addition to the risk and vulnerability analysis, the Green Strategy (Bergen Municipality, 2019d, 2023a) considers climate risks at some length across different priorities and promotes risk assessments related to not reaching climate targets. Risks related to climate impacts and their mitigation are important parts of the action plan for implementing the Green Strategy. The strategy divides climate risk into transition risk, liability risk, financial risk and implementation risk, in addition to physical climate risk. These risk concepts are linked to national discourses in an official report about climate risk (NOU 2018:17,18:17, 2018; see also Morsut & Engen, 2022). A Bergen informant (Bergen Informant N1.2, 2023) outlined that:

The concept of climate risk allows us to work more holistically with adaptation and developing methods. The financial industry has made the concept of climate risk its own. We are working to ensure that municipalities operationalize more broadly than financial risk and liability risk, which are also affected by the municipalities. The concept of climate risk can connect several elements of climate change in municipal everyday life. Cross-border risk and transition risk make it possible to work more holistically with the climate in the municipality.

The same narrative as Bergen's Green Strategy is present in Stavanger Municipality's Climate and Environment Plan (Stavanger Municipality, 2018), while risk

concepts related to national discourses are mainly traceable in the analyses and reports provided by external consultancies (COWI, 2022, 2017; Proactima and The Governance Group, 2020). There is an acknowledgement, especially among the public officers from the Preparedness and Community Development Department, that the typology of climate risk is an asset for coping with challenges of adaptation related to the local economy, which still relies heavily on the oil and gas industry (see Engen & Morsut, 2024).

The main difference between Bergen and Stavanger is *who* frames this risk discourse. In Bergen, the water authorities assess climate risk to avoid floods and damage by mapping the runoff line for the entire city in the digital Bergen map and adopting a municipal sub-plan for stormwater. It feeds into municipal plans that are the domain of the Planning and Building Department. In contrast, the Green Strategy shows how adaptation and risk issues do not have to come across as detailed, technical matters but can be framed as general concerns alongside other necessary climate transitions within the city. The Climate Department was responsible for preparing the Green Strategy.

In Stavanger, the risk discourse stems from the societal safety and security frame which is very much rooted in the Preparedness and Community Development Department. Societal safety and security concerns all issues related to a policy aiming to make Norwegian society resilient, not only the climate. Climate change is a fact that needs to be dealt with by adaptation, which – as a common denominator for the consequences associated with climate change – includes preparedness and prevention measures, the calculation of climate risks by using risk and vulnerability analyses and the risk management of water. This understanding subsumes a certain degree of pragmatism and realism, which can indicate a sense of normality in dealing with climate change and its consequences.

The local adaptation policy is informed by this risk discourse, although we could detect certain contextual differences. First, adaptation in Bergen seems partly crisis-driven. The Hatlestad landslide represented a powerful wake-up call since it led to a political and administrative change. The event showed how prevention, preparedness, and planning – as adaptation measures – are essential to avoid loss of life. On the contrary, Stavanger has not experienced any severe event that can be considered a catalyst for change in the approach to adaptation.

Furthermore, within local self-government, the two municipalities have organized the adaptation-related work quite differently. Bergen employs a parliamentary governance structure, where the city government is the executive body – accountable to the city council. The parliamentary model emphasizes the role of a political executive committee, paving the way for structural arrangements based on political initiatives. This arrangement allows for more direct political engagement in climate issues, as the city government states its four-year plans as a political framework for the governance of the city (Oseland, 2019) but leaves follow-up to the executive. In this context, Bergen has emphasized the relevance of water management through Bergen Water, which promotes an approach to climate change that combines preparedness, adaptation, and planning. In coordination with the Planning and Building Department, considerable weight is placed on regulatory, long-term planning processes. The establishment of the Climate Department shows a willingness to make climate work more visible as a separate area. In contrast, Stavanger employs the traditional *alderman* model rather than a parliamentary governance structure. Thus, within the distinction between politics and administration in the *alderman* model, competence and knowledge about adaptation have been developed without establishing new departments. Instead, the responsibility for adaptation lies with an existing one – the

Preparedness and Community Development Department. This department has become a central hub for preparedness, characterized by entrepreneurial spirit among certain employees who use the whole societal security toolbox in their adaptation work. However, the issue at hand here is not the two cities' governance structures per se, but rather how and where translations happen in terms of the risk discourse. Although these are clearly interlinked, governance structures in this context are a matter of the actors as translators and their interaction shaping translation zones.

In addition, in Bergen, climate change and water-related issues seem more strongly correlated than in Stavanger, which only recently has started to include adaptation in the water department. In Bergen, there is a longer tradition of *steering* water, and the city was an early adopter of various adaptation measures, becoming the first Norwegian municipality with a municipal sub-plan for surface water (Bergen Municipality, 2019c; Kvamsås, 2023). This climate-water linkage is strengthened by the cooperation between Bergen Water and the Planning and Building Department mentioned above.

Finally, there is broadening cooperation between researchers, universities, and various departments in Bergen, which gives access to qualified employees and research collaboration. Perhaps more importantly, there is a local network of actors with vested and joint interests in climate issues in general and adaptation issues in particular (Langeland et al. 2013). This situation has led Bergen to build in-house competence to a greater extent than Stavanger. Indeed, Stavanger relies more on external consultants providing relevant risk analyses, allowing municipal officials to deal with climate risks. Here, there is a pragmatic stance in translating climate change adaptation into concrete climate risks, thanks to long-standing and continuous work with risk and vulnerability analyses, contingency planning, and networking, with external consultancies.

## CONCLUSION

This paper has addressed how translations and translation zones shape the local discourse. The concepts of translation and translation zones have been useful for grasping negotiations about meanings concerning security, threat, and risk performed by local public officials. The main difference outlined rests in the type and amount of translation zones, which results in slightly different approaches to adaptation, while the local risk discourse is quite similar. We show how two cities that are comparable in terms of climatic challenges, size, and resources, that are subject to the same national regulations, but with variations in governance structure and processes, can operate within similar discourses – but still arrive at slightly different adaptation practices. This tells us, firstly, that risk discourses allow several possible translation pathways, and, secondly, that adaptation remains a distinctly local phenomenon despite commonalities in risk discourse and translation processes.

We uncover certain contextual differences – the presence of past crises related to climate change, local self-government organization, the relevance of water issues, and knowledge development. Whereas the local context indeed seems to matter for the framing of an adaptation discourse, we can, nonetheless, conclude that the adaptation of the two municipalities rests within a national regulatory policy framework that is still developing. In addition, local actors have dissimilar adaptation needs, even facing the same phenomena. For instance, intense precipitation has different effects in the two cities because of the topographic differences between them. However, the role of local organizational variations, access to epistemological communities, and specific

experiences is as important as the physical climatic variables. The identification of these contextual dimensions allowed us to differentiate the *general* adaptation approach in the two cities: in Bergen, adaptation rests in a climate discourse where adaptation is one of the components, while in Stavanger, adaptation is very much anchored in a societal safety and security tradition.

This finding is somewhat surprising, given that Bergen has more direct experience with the adverse effects of climate change and that societal security and preparedness have been high on the agenda – but it also signals that the political-administrative realities and epistemological communities have an important mediating effect on the climate change adaptation discourse: translation zones matter. As the national and international framing of climate change adaptation continues to develop and mature, we conclude that the distance between national policy initiatives and local approaches remains relatively large while the expected demand for adaptation is increasing. Consequently, the development of municipal climate change adaptation approaches should be followed closely, not least as the specific character of adaptation can be unveiled through studies of translation and translation zones as eminently local constructions.

## ACKNOWLEDGMENTS

The study was funded by the Research Council of Norway (grant number 302599), supporting the project *RISKSEC2.0 Local climate change adaptation: from risk governance to securitization strategies? (2020–2025)*. The authors thank Hanna Kvamsås, who, in an early stage of the project, collected and systematized the data on Bergen used in this paper. In addition, the authors thank the reviewers for their comments that contributed to improve the paper.

## CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

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## ENDNOTES

- <sup>1</sup> Stavanger municipality is organized into seven service areas: health and welfare, growth and education, urban and community planning, urban environment and development, economy and organization, citizen and community contact and innovation and support services. Each area is divided into departments, which vary in number.
- <sup>2</sup> The names of municipal entities are not standardized within or across the two municipalities. Particularly in Bergen, the labeling practice in English could cause confusion. Throughout the article, we employ the term ‘department’ as an equivalent to the Norwegian term *etat* (in Bergen) or *avdeling* (in Stavanger) but also use more specific entity names where appropriate. The following entities (official translations) all have the same formal organizational status as departments (*etat*) within the city of Bergen: the Climate Agency, the Planning and Building Authority, Bergen Water, the Western Norway House of Public Safety and the Urban Environment Department.
- <sup>3</sup> It is worth reporting that after the 2023 local elections, the new political majority suggested to shut down the Climate Agency. In spring 2024, the new City Council announced several administrative reorganizations, including the dismantling of the agency. The decision to do so was formally made in August 2024, effectively downscaling the city’s climate-specific professional-administrative apparatus by moving both personnel and tasks to other units. Notably, this happened after the collection of data for the present paper.
- <sup>4</sup> The I-Front network consists of 13 urban municipalities, including Bergen and Stavanger, and contributes to the further development of coordinated work on climate change adaptation in Norway by being an arena for knowledge development, exchange and skills enhancement.

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**How to cite this article:** Morsut, Claudia, Ole Andreas Engen, Simon Neby, and Elisabeth Angell. 2024. "Translations of Climate Change Consequences at the Local Level: Climate Change Adaptation in Bergen and Stavanger Municipalities in Norway." *Risk, Hazards, & Crisis in Public Policy* 15, 468–90.

<https://doi.org/10.1002/rhc3.12320>