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Theorizing power and agency in state-initiated municipal climate change adaptation: integrating reflexive capacity into adaptive capacity

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Abstract. Based on a review of existing research on adaptive capacity, we identify a research gap in theorizing institutions, power structures, and agency in municipal climate change adaptation processes. Drawing on sociological institutionalism, governmentality, and communicative planning theory, we use post-structuralist concepts of *power to* to elucidate the collective (de-)mobilization of existing stocks of capacities within municipal institutions of adaptation with a focus on structural power and agency in participation processes. The concept of reflexive capacity is introduced as the ability of organizations such as municipal administrations to incorporate diverse stakeholders and knowledge into decision-making processes in a local context, which is derived from the relationship of *power with* with *power over*. The emergence and transformation of reflexive capacity are illustrated and discussed with one case study municipality in Germany, revealing the potential of this concept for the analysis of participation in adaptation processes and the power structures that are inherent to them. In the paper, we incorporate the concept of reflexive capacity with established concepts of adaptive capacity, creating an integrated framework termed institutional adaptive capacity. The analysis concludes that examining power structures and agency in the context of climate change adaptation explains how capacity stocks and individual psychosocial capacity mobilization are institutionally embedded and influenced by reflexive capacity. We argue that the consideration of power structures and agency can provide a complementary approach to explaining adaptive capacity and call for further transdisciplinary empirical research on this topic in different settings of state-initiated adaptation processes.

1 Introduction

As the climate crisis intensifies, the need to understand how local institutions and power structures influence and limit adaptation practices at the local level is becoming increasingly acknowledged and studied (Boda and Jerneck, 2019; Eriksen and Selboe, 2015). Transformational adaptation, understood as systemic changes in societal responses to climate change impacts (Zografos et al., 2020), faces significant barriers, hindered by vested interests; institutional path dependencies; and entrenched practices, cultures, norms, and belief systems (IPCC, 2022). These barriers and complexities hold relevance for the context-specific study of municipal adaptation practices and contexts, as understanding the interplay among local institutions, power structures, and sociocultural dynamics becomes crucial for identifying the specific challenges that municipalities face in their pursuit of transformative adaptation.

The concept of adaptive capacity (AC), generally understood as "the ability of a system to adjust to climate change" (IPCC, 2022), plays an important role in the academic discourse on climate change adaptation at the local level. Investigating AC is vital for understanding local adaptation actions because it informs us about the societal ability to respond to climate change, enabling the identification of vulnerabilities and barriers and the design of contextually relevant interventions to build resilience (Elrick-Barr et al., 2023). It has been discussed by scholars from different disciplines with different ontological and epistemological perspectives (Handmer, 2003; Smit and Wandel, 2006; Mortreux

and Barnett, 2017). Epistemologically, some scholars view adaptive capacity (AC) from a realist perspective, stating that it is a quantifiable entity unaffected by individual perceptions (Mortreux and Barnett, 2017). This notion can be identified in methodologies that scrutinize AC via quantifiable facts, investigating it across varying scales and systems, e.g., by employing composite indexes such as the adaptive capacity wheel (Gupta et al., 2010). Other studies dispute this viewpoint. Favoring a constructivist stance suggests that AC is a profoundly social construct that is significantly impacted by the social and institutional landscapes of a given locale (Goldman et al., 2018). Epistemologically, this is noticeable in more interpretivist perspectives, focusing on assessing the determinants of adaptive capacity through qualitative methodologies. These highlight, for example, the subjective experiences and interpretations of the local municipalities (Mortreux and Barnett, 2017). These studies underline that AC is not a detached characteristic of a socioecological system. Instead, its determinants are deeply embedded in and shaped by context-dependent institutional settings. Despite acknowledging the significant role of the context-dependent settings that influence adaptive capacity, a scarcity of empirical research focusing on the institutional factors that enable or hinder the mobilization of AC is still evident (Bettini et al., 2015; Huntjens et al., 2012), highlighting the potential for a relational and much more reflexive interpretation that considers AC to be an interconnected and a highly dynamic part of an institutional configuration such as in a municipality rather than a quantifiable entity (Goldman et al., 2018).

This paper sets out to accomplish two primary objectives: first, we develop a theoretical framework of "reflexive capacity" that aims at grasping the extent to which technologies of power influence subjects' mentalities and practices and therefore the mobilization of adaptive capacity in adaptation processes. Using an analytical perspective informed by sociological institutionalism, communicative planning theory, and governmentality, we conceptually and empirically elaborate on examples of how AC in a municipal context is rooted within a system of individual and collective adaptation action, power constellations, and capacity. We then link reflexive capacity with existing perceptions of adaptive capacity, subsequently encapsulating these integrated notions within the framework of "institutional adaptive capacity". A variety of studies have already explored the interplay of power dynamics in local-level adaptation contexts (see, e.g., Eriksen and Selboe, 2015; Brink and Wamsler, 2017). The contribution of this paper lies in conceptually embedding adaptation action within a comprehensive theoretical framework embedded in the adaptive capacity discourse. Finally, we apply this concept to a rural municipality in southwestern Germany, demonstrating the value and insights gained from employing a reflexive capacity lens in understanding local adaptation action.

2   Mobilizing and enhancing adaptive capacity: transdisciplinary research in small German municipalities

In Germany's federal political system, municipalities have the sovereignty and responsibility to plan for climate change adaptation within a cascading legal and regulatory framework set by the federal and state levels, which includes, for instance, spatial development and planning. However, climate change adaptation is not a mandatory task for municipalities in Germany (Bubecka et al., 2016). In November 2023, the German parliament passed the Federal Climate Adaptation law and presented it to the Federal Council consisting of the 16 German states, where it awaits further legislative approval (Deutscher Bundestag, 2023). This law is set to mandate that all federal states require their municipalities and districts to create comprehensive adaptation plans through their own state laws, although the specific development and contents of these plans will remain under local jurisdiction (BMUV, 2023). Consequently, local contextual factors decisively influence how climate change adaptation is practiced, which actors are involved, and how AC is mobilized. This central relevance of local contextual factors calls for a relational ontology of AC, with a focus on formal and informal institutions, values, power, and participation.

This study draws heavily on insights gained as part of the Local Competence Development for Climate Change Adaptation in Small and Medium-Sized Municipalities and Districts transdisciplinary research project (hereafter referred to as LoKlim) in the southwestern state of Baden-Württemberg, Germany. The project was implemented from January 2020 to March 2023 by an interdisciplinary team (see below) from the University of Freiburg, six municipal governments (Fig. 1) with varying constellations of stakeholders in each case (such as citizens, council members, community leaders, business representatives, and others), with the aim to collaboratively develop innovative climate change adaptation planning processes and tangible adaptation strategies and measures specifically targeting smaller towns and rural districts. In Germany, like elsewhere, small- and medium-sized municipalities lag behind larger cities in devising systematic adaptation action and in developing and implementing structured adaptation plans (Vetter et al., 2017; Fila et al., 2023). While our study draws on experiences across all six municipalities, an in-depth analysis of one municipality forms the empirical focus. With this municipality that is deliberately not named, intensive co-productive collaboration on adaptation planning took place from September 2020 to November 2022. By focusing on one undisclosed municipality, we are able to unpack nuanced insights into the reflexive practices and power dynamics involved in the development of a climate change adaptation strategy, while also respecting research ethics and confidentiality agreements. Data collection relied on a predominantly qualitative research methodology. This included focus groups with the respective local orga-

Figure 1. Case study cities (red dots) and districts (red areas) of the LoKlim project. Source: the authors.

nizational core groups in the municipalities (which planned the local processes) and expert interviews with participants of the adaptation planning workshops, during which a municipal adaptation strategy was developed. Moreover, participatory observation was used to identify and understand local practices, dynamics, and stakeholder interactions during the workshops. Lastly, document analysis of core group and workshop meetings served to obtain a detailed understanding of the adaptation processes.

3 Deconstructing institutions and power dynamics in municipal adaptation processes

Understanding the complex power dynamics in adaptation is more than an academic endeavor: it has practical implications for both the effectiveness and the justice outcomes of adaptation (Fünfgeld and Schmid, 2020). In the following, we illuminate these power interactions by examining and combining a range of distinct theoretical constructs all guided by a post-structuralist perspective. In the first instance, we investigate the complex interactions between formal and informal institutions through a sociological institutionalism lens, their impact on the mobilization of AC with institutional structures deeply ingrained, and their manifested values. Communicative planning theory (CPT) provides crucial insight into the transformative role of human agency within local planning practices, emphasizing the significance of diverse stakeholder involvement and deliberation in shaping AC in response to climate change. Incorporating a detailed analysis of power dynamics and governmentality into communicative planning theory, we untangle the complexities of adaptation planning, shedding light on the interplay of *power to*, *power with*, and *power over* and how this shapes and is shaped by the local climate change adaptation context.

3.1 Overview: approaches to and critiques of adaptive capacity (AC)

As a starting point for examining different conceptualizations of AC, we follow Elrick-Barr et al. (2023), who usefully distinguished between three different generations of discourses on AC: firstly, those that view AC as a set of *stocks of capacity*; secondly, those emphasizing the individual *mobilization* of capacity, and thirdly, discourses that highlight the *transfer* of capacity. The first generation conceptualizes AC through the lens of tangible asset measurement across natural, physical, and financial capitals (Mortreux and Barnett, 2017). Using this perspective entails an analysis of resources like the existing lack of allocated budget and personnel for adaptation measures and the presence of necessary adaptation infrastructure, signifying the focus on tangible assets that are instrumental in climate change adaptation efforts. These approaches have been critiqued for suggesting a direct correlation between high AC and effective adaptation outcomes (Pelling and High, 2005). The second generation (Elrick-Barr et al., 2023) explores factors influencing AC mobilization and demobilization. Adopting this approach in the mentioned municipality, we examine psychological factors such as the planners' motivation and belief in their ability to successfully execute adaptation measures. Although this perspective offers new insights, it has been criticized for its individualized focus, neglecting collective forms of AC and institutional systems' dynamics (Eriksen et al., 2020; Barnes et al., 2020). Elrick-Barr et al. (2023) derived from this criticism a need for a third-generation AC conceptualization that not only addresses these challenges but also recognizes that actors and groups do not act independently but are embedded in institutional systems and transferring capacity. Considering the objectives of this paper, we support this claim and provide further conceptual elaboration below.

A key question that emerges concerns the role of organizational settings in the development of (and barriers to) AC. One of the most intensively studied areas in the AC literature on public sector organizations focuses on the roles of knowledge and learning (Campos et al., 2017; Clissold et al., 2020). Here, emphasis is placed not only on political and social learning in networks (Pelling and High, 2005) but also on double- and triple-loop learning that progresses from policy cycle improvement to learning cycle reframing and learning cycle transformation (Pahl-Wostl, 2009; Huntjens et al., 2012). Related to this are studies that highlight the ability to access and interpret data and information on the effects of climate change and on possible adaptation action (Bettini et al., 2015). More recently, critical contributions have underscored the in- and/or exclusion and (mis-)recognition of different forms of knowledge and associated institutionalized injustices in adaptation (Nightingale et al., 2020), including from the perspective of environmental justice concerns (Klepp and Fünfgeld, 2022). Zografos et al.'s (2020) case study on a superblock project in Barcelona underscores that transfor-

mative adaptation is embedded in sociopolitical dynamics, highlighting conflicts between differing visions. Municipal administrations need to navigate these divergent views to achieve transformative change (Zografos et al., 2020). The privatization of climate adaptation science to private contractors and organizations has also been critically observed (Keele, 2019; Webber and Donner, 2017). These interventions also raise critical questions about the role of different forms of knowledge (e.g., expert knowledge) in municipal adaptation. The recent academic discourse emphasizes the mainstreaming of adaptation to accelerate municipal actions and enhance AC building (Braunschweiger and Pütz, 2021; Wamsler and Pauleit, 2016).

In their case study on adaptation to erosion in Flagler Beach (FL, USA), Boda and Jerneck (2019) apply an actor-centered collective action strategy analysis. This reveals how collective action of various stakeholders helps overcome existing barriers to AC. Furthermore, they emphasize how power, particularly evident within multi-level governance systems, can act as a restraining force. While these perspectives uncover dynamics from actors at different scales, they fail to fully theorize local adaptation action from a post-structuralist perspective, which encapsulates the interactions and influences of social practices, discourses, and power (Svarstad et al., 2018). Although power relations have a substantial impact on adaptation outcomes and perceptions of risks and potential measures, they remain insufficiently explored and discussed in AC academic discourse (Brisbois and de Loë 2016; Eriksen and Selboe, 2015; Woroniecki et al., 2019). Brink and Wamsler's (2019) study on Swedish citizens highlights the importance of aligning institutional climate adaptation efforts with individuals' inner dimensions, such as values, gender, and sense of place, therefore bringing attention to often-overlooked subjective aspects that profoundly influence climate adaptation dynamics. This paper aims to explicitly incorporate the notions of participation and power issues into the conceptualization of AC, based on concepts influenced by post-structuralism.

3.2 Sociological institutionalism: analyzing the institutional embeddedness of adaptive capacity

New institutionalism (NI), emphasizing complex institution–politics interactions, is helpful for understanding public sector adaptation processes (Sorensen, 2017). It rejects the traditional view of institutions as exclusively formal entities, recognizing instead their embeddedness in social, spatial, and temporal contexts and their capacity for change over time (Davies and Trounstine, 2012). Notable strands of NI include rational choice institutionalism (RCI), critiqued for its neglect of social and political aspects in institutional dynamics (Gailing and Hamedinger, 2019; Farrell, 2018), and historical institutionalism (HI), critiqued for its overemphasis on the role of history in shaping outcomes (Ansell, 2021; Sorensen, 2017). However, for our research, sociolog-

ical institutionalism (SI), another key strand of NI, provides the most valuable perspective on municipal AC (Sorensen, 2017). SI focuses on the informal norms and practices that make up the "soft infrastructure of the governance of social life" (Healey, 2007). From an SI perspective, institutions are seen as cultural artifacts underpinned by informal norms and practices. When applied to climate change adaptation in public sector organizations, SI seeks to explore the mutual influence and evolution between organizations and their social and spatial contexts (Healey, 2006). It necessitates a social constructivist approach to interpreting municipal actors' activities within these contexts. Institutional change, according to this perspective, is largely driven by changing actor constellations with differing values and the development and transformation of values and norms by existing actors (Gualini, 2017; Servillo and van den Broeck, 2012; Pierson, 2004).

Through the lens of SI, the analysis of power constellations involves examining resources, strategies, organization, and modes of calculation among various agents (Servillo and van den Broeck, 2012; Jessop and Morgan, 2022; Gailing and Hamedinger, 2019). SI enriches our understanding of AC by underscoring how societal values and norms shape adaptation responses and AC mobilization. Adaptation is a cross-cutting issue involving diverse actors with dynamic relationships, and their participation in formal and informal planning processes is power-dependent (Sorensen, 2017). Power dynamics affect institutional evolution, organizational structures, scalar configurations, and established norms and values (Healey, 2006; Servillo and van den Broeck, 2012), reflecting its embedded and dynamic nature within adaptation processes.

3.3 Communicative planning theory: grasping participation and agency

For the analysis of the transformation of human agency in the "micro practices of planning" (Westin, 2022), we resort to key perspectives in communicative planning theory (CPT). Originating from Habermas' (1981) concept of "communicative action", CPT involves the equal involvement of stakeholders in public planning, as each brings unique knowledge, experience, values, and norms (Healey, 2007) that contribute to understanding AC building. For planning processes, this means that there are no objectively right solutions to problems like adaptation but that the negotiation of solutions takes place in a socially constructed and normative framework (Healey, 2010). Pioneers of CPT saw the possibility of shaping the processes of public planning in a more egalitarian and equitable way through the involvement of different stakeholders with their values and experiences. Consequently, effective AC building requires the inclusion of relevant stakeholders. In adaptation, deliberation – regarded by CPT as the crucial process of openly considering and evaluating diverse options – serves to incorporate a broad spec-

trum of perspectives, thus preventing a focus on the interests of a single group or individual (Zimmermann, 2019). This presupposes a general openness towards the involvement of different actors, which ultimately leads to the development of shared understandings of goals and projects (Healey, 2010). Regarding the intersectional issues in adaptation planning, shared understandings are crucial, particularly when individual adaptive capacities are constrained, and municipal administrators depend on external stakeholders. Analyzing communicative planning processes helps identify stakeholders, their influence, and how their mobilization and changes in these processes impact AC.

CPT faces criticism for its claim of fostering power-free and equal planning, given the inescapable social differences (Hillier, 2003). This is clear in adaptation contexts where conflicting measures preclude compromises and result in uneven consideration of positions. Further, Purcell (2009) critiques CPT's tendency to perpetuate the status quo by framing processes as democratic without effecting systemic power shifts in the long term. Despite the criticisms, CPT can provide valuable new impulses for bridging theory and practice by considering participation and its influence in dynamic processes (Friedmann, 2008). However, it is necessary to address the criticisms listed and to provide CPT with a more critical concept of power to be feasible in examining AC.

3.4 The interchange of power in adaptation processes: proposing a post-structuralist perspective

We focus on three distinct notions of power – power to, power with, and power over (Westin, 2022) – into which we embed the theoretical concepts of SI, CPT, and governmentality. The capability to act as power to, which arises from the reproduction of social configurations, represents a post-structuralist Foucauldian approach and can both restrict and facilitate social action (Westin, 2022; Morriss, 2002; Haugaard, 2003). In our approach, power to is primarily shaped by both formal and informal institutions, viewed through the lens of sociological institutionalism (SI).

Power over refers to the ability to exert control over other stakeholders. It may involve the use of force, coercion, or manipulation to achieve a certain desirable outcome or to shape the behavior of individuals and groups (Westin, 2022). Power over is per se not reprehensible. Westin distinguishes normatively between illegitimate and legitimate power over (see also Haugaard, 2015; Mansbridge, 2012). For legitimacy being normative and strongly dependent on the local context and criteria used to evaluate it (Connelly et al., 2006), we do not apply such a distinction. In order to explain agency through power over in adaptation processes, this publication draws on the concept of governmentality, which describes the ensemble of practices and institutions of power and knowledge (Fletcher, 2010). Governmentality is used to examine the ways in which knowledge and power are used to shape the behavior and beliefs of individuals and groups within a

society, particularly in relation to policies and institutions (Svarstad et al., 2018). According to Fletcher (2010), four different dimensions of governmentality are central to environmental governance such as adaptation. These dimensions may contradict each other, stand for themselves, or overlap: "sovereign power" explains the top-down enforcement of regulation, "discipline" describes governance through the internalization of values and norms, "neoliberal rationality" labels the establishment of an incentive structure to optimize results, and "truth" refers to the governance of individuals through widely accepted norms that shape and influence our understanding (Fletcher, 2010). Power with, also referred to as "empowerment" (Woroniecki et al., 2019), describes the exercise of power regarding common goals as opposed to the exercise of control over others (Haugaard, 2015). The concept of governmentality allows for reflection on how governments induce citizens to conform to government priorities (Svarstad et al., 2018). Communicative planning is thus insufficient in explaining power with. Consequently, we draw on CPT to allow for a more profound consideration of agency and to enable a better understanding as to what degree power is exercised collectively. The different notions of power interrelate and can be considered to be analytical dimensions that emerge in the context of adaptation processes (Westin, 2022). Analyzing features of power may enhance state-initiated process studies to build collective AC by identifying not only power holders but also their methods of exertion, their impact on AC, and further entities involved.

Foucault's ideas on governmentality reveal a close relational connection and mutual dependence between spatiality and social processes (Ettlinger, 2011). As a starting point for an analysis of power relations, Foucault suggests the examination of practices at the bottom of hierarchical societies, as this would be where power relations materialize through the daily practices of leaders, citizens, and institutions (Foucault, 1980). From an epistemological point of view, emphasizing everyday practices that may deviate from dominant societal norms prevents the pre-selection of case studies that merely conform to the broader societal narrative. Instead, these deviations become the intriguing focal points (Foucault, 2007). According to this understanding, "place" is not seen as a spatial–temporal delimited container but rather as a relational connection between various actors across space and time (Massey, 1993). Governmentality, conceptualized as a set of various forms of governance, helps to reveal how power is reproduced by subjects through techniques of governing over a distance (Rose, 2007). Thus, power is not viewed as destructive but rather as productive to social relationships (Ettlinger, 2011). Examining practices at the microscale, as presented later in this case study, helps identify the manifestation of underlying power relations. However, the true source of power might not be found at this level, as it often arises from a wider social and economic context (Foucault, 1982). Starting with a bottom-up analysis from the micro-level of everyday practices that challenge, reproduce, and shape societal

norms and existing power dynamics and connecting upwards to broader-scale sources of power inherent in various dimensions of governmentality help recognize the different roots of power (Ettlinger, 2011).

4 Theorizing and applying the reflexive capacity lens to a municipal adaptation process

Healey (2007) emphasizes that new arenas for negotiating planning problems also fundamentally change the discourses of planners toward the new actors and within their own organizations. Healey proposes the notion of reflexive capacity to comprehend existing behavior patterns, structured by local institutions, and to assess the transformative potential of new actors as they impact planners' values and norms, thus altering practices and shaping institutional spaces (Healey, 2007). Moreover, Healey's idea of "institutional reflexivity" (Healey, 2010) conceptualizes the need for organizations such as administrations to reflect on their normative and regulative frameworks in response to changing societal values. Hence, reflexivity can foster responsive planning and promote sustainable, equitable environments. In furthering the call for a third-generation AC (Elrick-Barr et al., 2023), we propose expanding current understandings of AC through the integration of reflexive capacity, underpinning collective mobilization and institutional dynamics. As Healey's work clearly lacks an explicit theoretical framework for reflexive capacity, we aim to complement this gap with theories of SI, CPT, and governmentality. By merging SI, CPT, and governmentality, we thereby put forward an analytical framework for reflexive capacity (Fig. 2).

4.1 Framing reflexive capacity and institutional adaptive capacity

Based on a post-structural understanding, dispositional power to is shaped by structural power through the institutional frame, including both formal and informal institutions (Westin, 2022). The exercise of agency in state-initiated adaptation processes takes place both as power with and as power over (Woroniecki et al., 2019). We introduce reflexive capacity as a concept to capture the relational ability to involve diverse stakeholders and knowledge in decision-making processes of adaptation, which is derived from the relationship of power with with power to, or in other words, the balance between exercising power in a shared manner and exercising power over others. In research settings, a predominant level of power with signifies a notable reflexive capacity.

Therefore, according to our theorization, the existence of reflexive capacity can transform an institutional frame that is shaped by adaptation-restricting local regulations or practices or preserve a supportive institutional frame consisting of formal and informal institutions in an SI understanding (Healey, 2007; Servillo and van den Broeck, 2012) for long-term adaptation in the sense of institutional mainstream-ing (Braunschweiger and Pütz, 2021). On the contrary, a marginalized reflexive capacity sustains restrictive institutional frames and has a long-term negative impact on those that support adaptation. Through structural power, transformed institutional frameworks then have an impact on the long-term power to of those adapting in municipal organizations. By incorporating reflexive capacity into the adaptive capacity discourse, we aim to broaden the understanding of the dimensions of AC within adaptation processes (stocks, individual mobilization, reflexive capacity) and their nexus (Fig. 3): reflective capacity, in relation to capacity stocks (e.g., financial resources, social learning, knowledge), elucidates how local power structures can mobilize resources through diverse involvement as well as facilitate or hinder capacity transfer. By integrating reflexive capacity with *individual capacity mobilization*, we aim to broaden the understanding beyond predominantly psychosocial factors (e.g., adaptation belief, motivation).

4.2 Examining reflexive capacity in a small German municipality

At the start of the process in the unnamed municipality, it became apparent that the institutional framework for adaptation was rather unfavorable at the time: formally, there were no strategic plans that fundamentally addressed adaptation; 3 years prior to the start of the LoKlim project and its transdisciplinary adaptation process, a "municipal development program" was initiated and formally approved by the local council in 2017, which set forth the municipality's primary development goals up until 2030. While the strategic document acknowledged climate change adaptation as an urban planning challenge and a concerning issue for the future, the outlined measures primarily focused on climate mitigation and energy topics. In this context there was no explicit consideration taken regarding the potential impacts of climate change and related adaptation responses. When examined by the researchers involved in the LoKlim project, the municipal administration displayed that some areas, such as city planning, had considered adaptation in their regular planning processes solely to a low degree. However, explicit references to climate change adaptation were absent across the broader administrative framework. In terms of capacity stocks, early insights from a focus group at the beginning of the project revealed that the role of the climate mitigation officer encompassed a 10 % responsibility for climate adaptation, accompanied by a modest budget allocation for measures. There was also only limited awareness of potential climate change impacts and corresponding adaptation measures at the municipal scale.
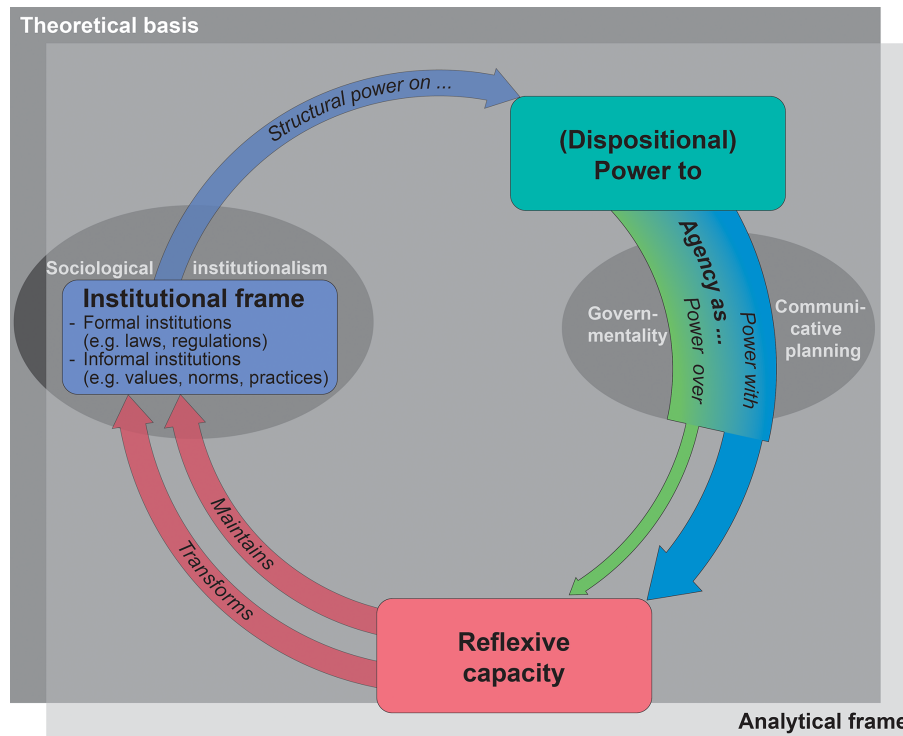
Figure 2. Reflexive capacity in state-initiated climate change adaptation processes. Source: the authors.
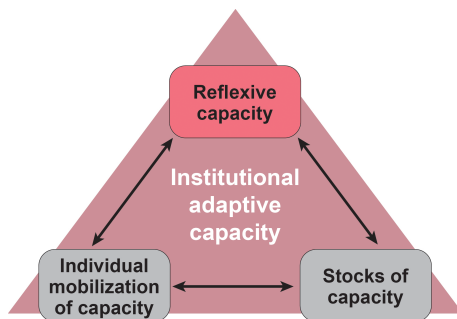

Figure 3. Framing institutional adaptive capacity. Source: the authors.

4.2.1 Setting the stage: preliminary observations and actions

Kicking off the transdisciplinary process in January 2021, the researchers organized a workshop to discuss the potential impacts of climate change on the municipality. The workshop included representatives from a spectrum of municipal administrative departments, such as urban and environmental planning, transport, education, and finance. The workshop featured projections based on the RCP8.5 scenario, tailored specifically to the municipal level (for the detailed methodology see Riach et al., 2023). According to this scenario, the municipality could expect a significant temperature increase (approximately 1.3 K) and nearly twice as many heat days

(> 30 °C) between 2021–2050 compared to the 1971–2000 period. These values place the municipality among those with the highest values in rank in terms of temperature increase across Baden-Württemberg. Winter precipitation is expected to rise slightly. However, the model projections for summer precipitation and heavy rainfall remain uncertain. In this workshop, potential impacts were assessed with the help of local stakeholders who could provide valuable insights into local conditions. This local knowledge included information on vulnerable groups and economic sectors as well as their perception of climate change effects.

The municipality's representatives acknowledged the pervasiveness of climate change impacts across all sectors. They identified the unique status of their municipality as a tourist hub with a focus on a relatively large health resort, which attracts a significant number of elderly and vulnerable people in addition to the already-old demographic of the population. Not only did workshop participants emphasize this point during preliminary discussions with the project team, but so did the mayor. Upon recognizing these findings, the municipal administration agreed to the researcher's suggestion to establish a core group. This group was designed to provide organizational support and guidance, thereby distributing adaptation responsibilities across various sectors and enhancing their capability to act as power to. The core group was moderated by the researchers and comprised of selected administrative members, which included two senior members from the planning and construction department; one senior staff mem-

ber from the transportation and environment department; and the climate mitigation manager, who was also assigned with the formal responsibility of adaptation within the administration. In addition, owing to the perceived vulnerability mentioned above, the head of the health resort and a director of a private social nursing service were included in the core group to contribute their expertise and therefore mobilize additional capacities. During a focus group discussion, the core group representatives revealed a variety of perspectives on the municipality's possible adaptation action: the health resort representative and the mayor (the latter was not in the core group but was included in initial discussions with the researchers) pointed out that adaptation measures should align with, and ideally boost, the municipality's economic and tourism growth. On the other hand, the private social services representative highlighted the considerable social vulnerabilities present in the municipality, advocating for just action to address climate impacts on vulnerable groups such as children and the elderly.

4.2.2 Unpacking power dynamics through power with and power over in adaptation processes

During the transdisciplinary project, each municipality's core group arranged three stakeholder workshops to co-develop an adaptation strategy. In the studied municipality, this core group incorporated a diverse array of stakeholders (in total between 20 and 30 participants in the various workshops), including municipal staff, political representatives from the local council, NGOs, and business representatives. Additionally, a representative sample of 40 citizens was invited, with the prospect of diversifying the knowledge included in the workshop process. Eventually, however, only three randomly selected individuals took part throughout the three workshops. The initial workshop aimed to establish a shared vision for a climate-adapted municipality by 2050, along with sub-visions for seven key urban planning areas: urban planning/housing/construction, mobility, nature conservation/biodiversity, water, agriculture/forestry, economy, and tourism/healthcare/social matters. These visions guided the co-development (in total over 300 measures) in the second workshop and the prioritization of these measures for the adaptation strategy (29 prioritized measures in the strategy) in the third workshop. As we progress, given our reflexive capacity lens, we particularly aim to focus on the processual elements of this strategy's emergence during and after the deliberation to deconstruct the underlying power dynamics.

Although a broad openness was shown towards the participation of diverse perspectives in the deliberation and decision-making, which would be indicative of a high degree of power with, certain elements of structural power that have limited the agency of participants are evident. The first workshop revealed a significant gender imbalance (21 men, 6 women), potentially limiting comprehensive deliberation and suggesting diminished power with. Furthermore, the re-

searcher's observation protocol highlighted a disproportionate representation of older individuals, which could further constrain the breadth of perspectives. While this could not be confirmed by the participant list as we have not collected age data, the core group affirmed this issue during a meeting for the planning of the second workshop. As a result, it can be assumed that the perspectives of younger people and women were significantly underrepresented, especially at the beginning of the workshop process. To address this imbalance, the core group planned to involve more stakeholders, which led to a rise in female participation to 45 % by the third workshop. For a better representation of younger people, a local high school's working group on sustainability was included in the second workshop. However, the researchers observed that the discussion dynamics seemed to intimidate the younger participants. As a result, they contributed less than other workshop participants and did not wish to participate in the last workshop, where adaptation measures were prioritized for the final strategy.

Besides these examples that illustrate power with was substantial but constrained by certain factors, there were also instances highlighting the exercise of power over during the deliberation process. The initial influence exerted by the mayor regarding the health and tourism sector, alongside references to this sector during the introductory workshop and stakeholder workshops, as well as the inclusion of the health resort representative in the core group, led to this sector being overrepresented throughout the process compared to other areas of adaptation. At the project's concluding focus group in this municipality, the health resort representative disclosed their primary goal: the integration of developmental aspirations of both holidaymakers and businesses into the municipal adaptation process. This can be interpreted as a form of disciplining power or subtle influence according to Foucault's concept of governmentality. Here, the mayor's wishes were internalized as a norm and considered throughout the process by most participants, especially by members of staff. The presence of neoliberal rationality emerges here as another overlapping dimension of governmentality, revealing that adaptation is clearly subordinated to, and ideally even reinforced by, the economic development goals of the municipality. The adaptation strategy, collaboratively forged during the workshop process, also partially reflects aspects of neoliberal rationality. The embodiment of neoliberal rationality becomes evident through the implementation of specific measures. This includes the creation of incentive structures, such as financial subsidies designed to encourage the installation of cisterns in new residential constructions, thereby distributing funds for adaptation to property owners. On the contrary, the adaptation strategy included many measures that also present contradictions to the idea of neoliberal rationality, as seen in the support of solidarity-based and adaptive agriculture by the municipality or the development of car-free climate-change-resilient neighborhoods.

Another form of governmentality, the presence of truth, was also evident: the understanding of climate change adaptation as incremental, as advocated by certain actors, including the head of the health resort, who is a member of the core group, is embedded in existing practices and policies. While some stakeholders, especially those not affiliated with the municipal administration, advocated for a more transformative approach to more just adaptation, the actual adaptation concept seems to lean more towards an incremental understanding of adaptation. The health care representative in the core group expressed her frustration that, even 1 year into the implementation phase following the project's completion, she observed neither significant changes in the planning structure from before the adaptation project nor any efforts of inclusion towards new stakeholders who were involved during the planning phase. Not only did these subtle influences surface as a form of governmentality but so did traditional aspects of sovereign power. This was notable when, following the workshop process and the strategy's joint development by the researchers and the on-site core group, the mayor intervened before its consideration in the council. During a strategy meeting between the municipal administration representatives and the researchers, the mayor voiced concerns over specific measures, notably within the realm of transportation. The mayor, due to his interpretation of his leadership position, stepped in to revise the proposed final adaptation plan. The mayor's intervention, heavily influenced by previous controversies in the transportation sector, resulted in a contentious overhaul and subtle tweaking of some measures in the adaptation plan, prior to their presentation to the elected local council members for approval.

5 Discussion

The result of considering power with and power over shows that various power structures and dynamics have influenced the process. Despite the deliberation being designed to be open to various stakeholders, the process showed considerable limitations in shared power with. These outcomes, which highlight the unjust representation of specific groups in planning processes, are consistent with previous research findings that point to the underrepresentation of women (e.g., Pearse, 2017; Bauriedl, 2015) and youth (e.g., Thompson-Hall et al., 2016) in adaptation planning. Moreover, the power dynamics significantly influencing the adaptation process were revealed through the analysis of different dimensions of governmentality. If reflexive capacity is indeed derived from the relationship between power with and power over, the result clearly demonstrates the reflexive capacity in this municipality's process. In consequence, the positive expression of power with (with the mentioned limitations) and the negative expression of power over more or less balance out. The reflexive capacity started to transform the local institutional framework for adaptation.

This transformation is noticeable in both formal institutions, such as the council's adoption of the concept, and in informal ones. For example, in a focus group discussion, core group representatives reported that including stakeholders broadened their perspectives on adaptation, indicating a shift in their values and practices. This aligns with Brink and Wamsler's (2019) call for a more explicit consideration of aligning institutional efforts with the inner worldviews and values of individuals.

Power dynamics outside the administration began to shift, becoming particularly evident in areas like the social nursing services and health resorts. This shift not only highlighted their capability for adaptation but also spurred these organizations to initiate their own autonomous adaptation plans. As a limitation, interviews conducted in May 2023 reveal that the implementation of the co-productively developed strategy and measures predominantly take place with stakeholders within the administration. The transformative potential from the process, with the involvement of various stakeholders and thus the collective mobilization of capacities in a power with sense, is only present to a small extent, which indicates a reduction in reflexive capacity. These findings are in line with empirical findings from other cases, which highlight that participation in adaptation varies greatly in planning and implementation (Clar and Steurer, 2019), and it is imperative to institutionalize just and inclusive structures in the implementation phase as well (Chu et al., 2016).

The manifestations of the dimensions of governmentality in the case study highlight the varied scalar layers and roots of power relations and dynamics within the analysis: neoliberal rationality focuses on the external (especially economic) structures that directly influence agency (Fletcher, 2010). As a result, the emphasis on adaptation measures in this case study, particularly emphasizing adaptation measures that support profitable sectors like tourism, can be traced back to the socialization of actors within the global and national neoliberal economic system and policy landscape and, in turn, its influence on them (see also Leitch, 2023). Governing through truth (in accordance with a particular conception of nature) and discipline (internalization of norms and values) contrasts with neoliberal rationality as their focus lies with the subjects' internal states and self-disciplining rather than on external structures (Fletcher, 2010). From the case study, for instance, self-discipline was evident in that the dominant actors in the process particularly prioritized and communicated incremental and technical approaches (see also Wamsler et al., 2020; Nightingale et al., 2020). There was also some space for more transformative approaches and especially natural-based solutions.

These structuring impacts on agency thus operate on different spatial levels depending on the examined governmentality. Such influencing factors are constantly being reconfigured; at the same time, power does not operate absolutely but can vary significantly depending on the contexts and subjects (Foucault, 2007; Ettlinger, 2011). A reflexive analysis

aims to trace how power affects subjects and is reproduced or challenged through practices and thus, in turn, shapes adaptation processes significantly. The concept of reflexive capacity does not claim to provide a complete overview of power structures and power dynamics in adaptation processes but rather offers an approach that more strongly emphasizes everyday practices and their inherent power dynamics. The emphasis on the microscale within the case study reveals how the arrangement of stakeholders and their empowerment can have a substantial effect on both the mobilization and the transfer of capacities. This framing of agency, therefore, may unveil new pathways for transformative adaptation (Woroniecki et al., 2019; Pelling and High, 2005). The analysis further reveals that structuring factors, like the impact of the neoliberal economic system, play a significant role in shaping the behavior of actors. Approaches informed by neoliberal-oriented power frames (e.g., Brand et al., 2020) or historical institutionalism, which concentrates on the development of dominant constellations of institutions (such as in Gussmann and Hinkel, 2020, or Alexandra and Rickards, 2021), might explore more profoundly how global and national economic and political systems shape adaptation processes. By shifting the scale analysis from a micro-level to a national level while incorporating governmentality as an analytical lens, as Keskitalo et al. (2012) did in their study of three European countries, we can more explicitly understand how national policy landscapes influence adaptation policies and practices across different scales. As Woroniecki et al. (2019) argue, power should therefore not be viewed as an ontological category but rather as heavily dependent on the reflected concept of power in the study. In adaptation research, it is important to self-reflect on the elements that constitute a framework for analyzing power dynamics and structures and to understand how these elements affect the research outcomes (Woroniecki et al., 2019).

6   Conclusion

The literature review on adaptive capacity revealed a scarcity of theoretical embedding of participation, power, and institutions. This literature gap highlights the need for more in-depth exploration, particularly within the context of agency and structure, which can significantly affect climate change adaptation processes at the municipal level. Our in-depth study of one municipality revealed that the reflexive capacity lens provides a valuable analytical lens for understanding how municipalities mobilize or demobilize collective capacity for strategic adaptation planning. The level of reflexive capacity, determined by the interplay between power with and power over, is crucial for shaping how climate change adaptation processes alter institutional frameworks in the given contexts. The analyzed municipality displayed a moderate level of reflexive capacity, which facilitated initial transformative changes within its institutional framework. Over time,

the municipality's transformative potential diminished as reflexive capacity decreased due to insufficient stakeholder inclusion during the implementation phase. Our framework explores micro-practices to identify the manifestations of power structures and dynamics, connecting them to extra-local influences by intertwining reflexive capacity with various roots of power. In doing so, we go beyond descriptive studies of power dynamics and offer a more nuanced examination of the ongoing processes in local adaptation action, being guided by a relational ontology (focus on the interdependent nature of actors and systems with reflexive capacity being intertwined in this interdependent system) and post-structuralist epistemology (examination of how knowledge in adaptation is produced and how it shapes adaptation processes and outcomes).

To conclude, the analysis of power structures and agency in the context of climate change adaptation can be a fruitful approach to explain the extent to which stocks of capacity and the individual psychosocial mobilization of capacity that exist in the local context are embedded in institutional contexts and are (de-)mobilized through reflexive capacity. The approach is not intended to contradict existing discourses of AC but to complement it by examining the nexus of the different dimensions of institutional adaptive capacity and their relation to each other. By using sociological institutionalism to explain the embeddedness of structural power in local institutions and their influence on agency, as well as by drawing on governmentality and communicative planning theory to explain notions of agency through power over and power with, we theoretically conceptualize the complex and dynamic state-initiated adaptation processes of organizations such as municipal governments and can compare different characteristics in case study contexts. Considering reflexive capacity offers the potential to look at the inclusivity of dynamic participatory processes and structures of climate change adaptation and to identify similarities and differences in empirical cases. Therefore, this publication aims to stimulate the discourse on power in adaptation-capacity-building processes. Our study focused on processes limited in time and scope to the municipal level and geographically similar contexts. Therefore, we advocate for additional transdisciplinary analyses in diverse contexts to further validate and expand on our findings.

Author contributions.   DF: conceptualization, data collection and analysis, visualization, writing (original draft and revised manuscript) (70 %); HF: conceptualization, writing (review and editing), data collection, funding acquisition (20 %); SL: concep-

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