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We Can Build a New Tomorrow – Competencies for Transformative Spatial Planning in Swedish Municipalities

Dick Magnusson, Linköping University
Kristina Trygg, Linköping University
Ida Grundel, Linköping University
Sabrina Fredin, Blekinge Institute of Technology

Abstract

This article highlights the urgent need to explore how transformative planning can be put into practice and what competencies urban and regional planners need to facilitate this transition. There is a consensus that traditional planning, with its rigid and structured approaches, is inadequate to address the challenges of climate change. Instead, more proactive, transformative planning practices are needed. This study presents the results of a questionnaire conducted among planning managers in Swedish municipalities, aiming to deepen the understanding of how municipalities can achieve climate neutrality by identifying the necessary competencies among planners. The results identify five competence categories: technical knowledge (including climate adaptation), broad knowledge in various areas, analytical skills, coordination and cooperation, and communication. Our findings thus suggest that current planning practices in Swedish municipalities are largely traditional rather than transformative, but also that the focus is on adaptation rather than mitigation. We argue that this can partly be explained by the concept of obduracy, and how frames and persistent traditions affect the way planning managers think of the future, making it difficult to envision a future beyond current challenges and demands, but also the importance of thinking more visionary about planning to achieve climate neutrality and transformations.

Keywords
Transformative spatial planning, obduracy, urban and regional planning, Sweden

Authors:
Dick Magnusson (*corresponding author*), Department of Thematic Studies – Technology and Social Change, Linköping University, Sweden, dick.magnusson@liu.se , ORCID: 0000-0001-7060-9282
Kristina Trygg, Department of Thematic Studies – Technology and Social Change, Linköping University, Sweden, kristina.trygg@liu.se, ORCID: 0000-0003-0121-2729
Ida Grundel, Department of Thematic Studies – Technology and Social Change, Linköping University, Sweden, ida.grundel@liu.se, ORCID: 0000-0002-3691-0044
Sabrina Fredin, Department of Spatial Planning, Blekinge Institute of Technology, Sweden, sabrina.fredin@bth.se , ORCID: 0000-0003-3866-3961

Introduction

More and more cities, both large and small ones, are proclaiming themselves to be climate-neutral in a foreseeable future, as a response to the urgent climate crisis. One of the main challenges to manage this transformation is not the lack of climate-friendly ideas and technologies, but the capacity and knowledge to implement these and the growing demand for transformative planning practices (Albrechts et al., 2020; Shi & Fitzgerald, 2023). This implies that radical changes in current planning practices are needed (Albrechts et al., 2020; Castán Broto et al., 2019; Hölscher & Frantzeskaki, 2021; Hölscher et al., 2022; Hölscher, 2019; Wolfram, 2019), and that today's societal challenges cannot be addressed with traditional planning approaches that are inert and inflexible (Albrechts et al., 2020; Gunn and Hillier, 2014; Persson, 2019; Rauws et al., 2014). Transformation and transformative planning are often discussed in the context of a changing role for planning, and especially as something different from traditional planning (Olesen, 2023; Persson, 2019). Planning encompasses a variety of practices, centring on planners' activities, actions, and interactions to guide future developments. However, there remains uncertainty about how to implement transformative practices. Unlike traditional planning, transformative planning aims to be more proactive and innovative (Albrechts, 2010; 2020). This requires planners to envision a future that is radically and structurally different from the present (Albrechts, 2020), while continuously facing the uncertainties posed by climate change. Planners frequently grapple with managing uncertainties in their daily work (Healey, 1992). Several studies focusing on the professional role, practices, skills and competencies of planners point to a growing demand for planners to address more and more complex planning issues, especially in relation to the growing challenges posed by climate change (cf. Farhangi et al., 2023; Parker et al., 2020). The question is whether the complexity of dealing with transformative processes and climate change requires new ways of working (practice) beyond the more technical expertise of planning and place-based decision making (Othengrafen & Levin-Keitel, 2019).

We argue that there is a pressing need to examine how transformative planning can be operationalized in practice and what competencies urban and regional planners require to facilitate such a transition. This study presents findings from a questionnaire conducted among planning managers in Swedish municipalities, exploring their views on the competencies necessary to advance transformative planning practices toward climate neutrality. Our findings indicate that current planning practices in Swedish municipalities remain largely traditional rather than transformative.

Traditional and rational planning approaches tend to be expert-driven, primarily emphasizing technical competencies in decision-making (Allmendinger, 2017). Since the 1980s, following the

communicative turn in planning, there has been an increasing emphasis on planners as facilitators and mediators, requiring skills in negotiation, collaboration, and stakeholder engagement (Healey, 1997). More recently, the discourse on transformative planning (Albrechts et al., 2020) has underscored the need for visionary, forward-looking approaches. However, the planning literature highlights significant challenges in institutionalizing transformative practices and ensuring their continuity beyond isolated initiatives (Healey, 2006). Given that spatial planning inherently involves uncertainty, instability, and value conflicts (Schön, 1983), many transformative efforts struggle to persist, often curtailed by political shifts or constrained by structural limitations within municipalities. As a result, planners frequently prioritize short-term, immediate concerns over long-term strategic transformations, which becomes especially clear in our study when analysing competencies needed regarding climate mitigation, which is regularly put aside in favour of climate adaptation.

This study contributes to the debate on how to embed transformative planning as a sustained working method in Swedish municipalities. We argue that without a fundamental shift in competencies and planning methodologies, municipalities will struggle to drive the radical changes necessary to address contemporary crises—most critically, climate change. Transformative planning must move beyond an aspirational concept and become an integrated and institutionalized approach within municipal planning structures. By identifying the specific expertise and competencies needed to enable this shift, our study aims to deepen the knowledge on how municipalities can work with climate neutrality.

To understand the analysed planning practices in this specific context, some core aspects defining the Swedish planning context need to be mentioned. In Sweden, the municipalities have taxation rights, a strong self-government and what usually is called ‘planning monopoly’, i.e. the sole responsibility for drawing up land-use plans, as regulated in the Planning and Building Act (2010:900). Compared to other countries, the municipalities do thus have a strong position considering urban and regional planning, especially in relation to the weak regional level, and they have possibilities and a mandate to have a large influence of the climate mitigation and adaptation measures, both in planning and in broader strategy making (Fenton et al., 2015; Persson, 2019). This does not mean that they have complete control over all planning matters, as the state, through the County Administrative Board, reviews the plans (Planning and Building Act, 2010:900). The planning manager (often called 'planchef’ but may have different titles) has a central role in urban and regional development matters in the municipalities. They lead and coordinate planning, both in terms of comprehensive planning and detailed development planning and are usually responsible for recruiting staff and allocating tasks. Thus, the respondents in our survey are the planning managers, as their knowledge of present challenges,

competencies as well as strategic considerations are of interest for us to understand competencies for transformative planning.

This article therefore reflects on the practices, competencies and expertise needed for transformative planning practices now and in the future, with a focus on climate change and climate neutrality. Even though the focus is on Sweden, we believe that the results are of relevance for other contexts, as the challenges when addressing climate change are similar in various countries, resulting in a need to discuss relevant planning competencies in different countries.

We begin by developing the theoretical concepts used in the paper, focusing on transformative planning and competencies and the concept of obduracy, followed by a description of the methods used. This is followed by a presentation of the results from the questionnaire, the discussion, and finally the conclusion.

Theory

Transformation requires purposeful interventions to re-configurate cities towards sustainable cities (McCormick et al., 2013). Although the level of ambition varies widely among city policies and programs, climate policies often pose significant challenges to contemporary political, economic, technological, and administrative systems. This means that entire economic and spatial systems need to be structurally transformed and redesigned to decarbonize energy and transport systems (Hölscher & Frantzeskaki, 2021).

Transformative governance capacities to steer towards sustainability are widely discussed in the literature on transformative change, often in combination with radical change and planning for more unpredictable futures (Castán Broto et al., 2019; Hölscher et al., 2022; Hölscher et al, 2019a; Wolfram, 2016; 2019). In line with the increasing urgency to address climate change and shift to more radical change processes, planners are seen as one of the key actors in addressing these urgent crises. Scholars emphasize the need for effective transformative governance (Bulkeley & Castán Broto, 2013; Bulkeley & Newell, 2010; Castán Broto et al., 2019) and more long-term solutions to reach climate neutrality (Albrechts et al., 2020; Loorbach, 2014). This puts pressure on planners to be both forward-looking and efficient and responsive to challenges and crises. The literature on transformation has emphasized the importance of experimentation and ‘co-creation’, where a variety of actors from civil society, research institutions, business and industry should work together to find solutions that can deal with the increasing complexity of society and more complex societal challenges (Loorbach, 2010). Municipal work with experimentation through co-creation has been described as a shift towards experimental governance (Berglund-Snoddgrass, 2020; Kronsell, 2018), including planning through

experimentation, living labs, test beds, and pilots. Current governance structures make it difficult for planners to be more radical and innovative, whereas experimental governance aims to open up other ways of working outside the more rigid municipal structures. As much of the practice of planning has shifted and partly takes place through and in networks where many actors have power and responsibility for solving complex societal challenges, it could be expected that planners will have to take on more leadership roles to foster participation and collaboration, build coalitions for change, and engage in policy making (Purkarthofer, 2022). As such, this is not a new phenomenon, as planning has evolved towards fragmented governance systems where planners have become important key actors as network managers negotiating between public and private interests (Sehested, 2009).

The complexity and changing environment of planning may require new skills and areas of expertise among planners, as they will also need to understand the drivers of private actors and their business models, as well as the functions and role of implementing new technologies that can help steer towards climate neutrality (Wallsten, et al., 2021). This is further driven by the ways in which private actors are increasingly involved in shaping urban transformations, acting beyond the role of traditional public sector planners and engineers, but through an evolving range of urban expertise, including private consultancies, architectural firms, local economic development specialists, heritage and environmental experts, community advisory agencies, engineering and infrastructure firms, and IT companies (Robin & Acuto, 2023). This includes the increasing involvement of global consultancies that are developing new evaluation methods, tools and indicators to measure the progress of, for example, the 2030 Agenda, putting increasing pressure on planners to develop new technical skills and be able to interpret new forms of data (Croese & Duminy, 2023). Campbell (2014) has already warned of an increasing trend towards specialization in planning, and the need for planning generalists to tackle wicked planning problems.

In line with the communicative and collaborative turn in planning by the end of the 1980s (see e.g. Healey, 1992; Innes, 1995) a previous study in California on how urban planners value skills and competencies in their work, communication was identified as the most important skill needed (Guzzetta & Bollens, 2003). Planning and planners have changed over the last 20 years. Firstly, because the world around us is changing and we are facing new societal challenges. Secondly, and as mentioned earlier, planning is a process where both planning and planners need to adapt to the increasing complexity where planning is a key instrument to deal with transformative change. Even though there are earlier studies focusing on planners' skills and competencies (e.g. Campbell, 2012; Forester, 1999; Grange, 2016; Howe & Kaufman, 1979; Howe, 1980; Lauria & Long, 2017), those studies rather address the planner's ethics and moral

compass. So far, few studies have addressed the practices, competencies and expertise needed to deal with transformative change. In a more recent study of planners in German cities, Othengrafen & Levin-Keitel (2019) identified six ideal types of planners based on planners' own perceptions and the roles they tend to take on in practice to 'get things done'. These ideal types are the locally specific analysts, the experienced generalists, the reactive pragmatists, the project-oriented planners, the compensatory facilitators, and the innovative designers. In most of the roles, the more traditional planning practices, such as technocratic planning models and more goal-oriented tasks, means and outcomes, were dominant. This can be explained by existing legislation and government structures, focusing on more goal-specific and short-term tasks and following the legal and technical requirements of land use planning.

In order to better understand the factors that influence and may limit the understanding of future planning practices, we use the concept of obduracy as a way to find explanations beyond institutional structures, which will be further explained in the next section.

Obduracy in planning

Moving towards transformative planning practices will require overcoming urban obduracy, highlighting that adoption of climate neutrality does not necessarily mean implementation. Urban artifacts, a legacy of past planning decisions, can become obstacles when turning towards more transformative planning processes to deal with climate change and which requires a change of existing structures in the municipalities (Hommels, 2005). This is expressed by Hommels (2005), arguing that existing urban design and infrastructures limit possible future reconfigurations by generating obduracy and stability:

> "Once the high-voltage electricity distribution system is in place, it is hardly conceivable to deconstruct it and shift to a decentralized system of windmill power generation; once a city's downtown area, including all its buildings, roads, and distribution networks, is there, it displays obduracy and offers resistance to change" (Hommels, 2005, p. 329).

Hommels (2005) proposes three explanations and conceptualisations of obduracy[1], which relates both to technological development and to broader systemic changes: dominant frames, embeddedness and persistent traditions.

[1] Hommel's use of the concept of obduracy stems from the STS field, with references to actor-network theory and the social construction of technology. However, it bears resemblance to the concept of path dependence. The concept has been widely used in economic theory and the history of technology. For example, David uses the QWERTY keyboard as an example of path dependence (David, 1985). The concept has also been used in organizational theory (Sydow, Schreyögg & Koch, 2009), which focuses on how organizations develop inertia and become inflexible and inefficient over time. Critique has been raised against the concept because it is sometimes used superficially to argue that "history matters" without delving deeply enough into the analysis (David, 2007).

Frames relate to the role and strategies of actors involved in the design of technological artefacts and systems, and how city planners, engineers, users and other groups are constrained by fixed ways of thinking and interacting. The focus is here directed towards dominating paradigms and highlighting the struggle for dominance among groups with diverging views (Foley et al., 2020; Gopakumar, 2020). It relates to the SCOT-model (Pinch & Bijker, 1984), as how the technological frame is developed during interactions among relevant social groups and how artefacts and systems after closure becomes a part of a technological frame (Hommels, 2005).

Embeddedness refers to how each artifact is embedded in a larger system or network. The focus is here directed towards the interconnectedness of elements. The change of one artifact will require other artifacts to adjust to this change meaning that the degree of embeddedness determines the degree of obduracy. The urban biogas system is for example embedded in a greater network of regional agricultural resource provision and waste management (Mutter, 2019). In that sense, existing structures and systems are difficult to change and adjust to more sustainable structures and systems.

Persistent traditions, according to Hommels (2005), focus on understanding how long-term values and traditions keep influencing the development of technology for a long time, it is of an enduring character. Emphasis is put on the wider cultural context and on the 'momentum' that technical systems gain when they have expanded to a size and importance that it involves many different categories of actors, substantial economic investments, and further technical and organisational connections to other systems. This makes systems more difficult to change (cf. Hughes, 1983). Legacy and history help explain the trajectories and regimes of urban development, and how the role of collectively shared rules and values shape development on a meso- and macro-level. Persistent traditions are also the broader and taken-for-granted values and practices (Hommels, 2005).

In that sense, obduracy sets limits to agency restricting what people can perceive, envision, desire and decide (Kirkman, 2008). As Hommel's concept is closely connected to sociotechnical studies of infrastructure, in this article we utilize the concept as an analytical lens to understand the planning managers' views of the future competences in relation to climate change and climate neutrality. Technology is embedded in those views, as well as the persistent traditions, based on experience and education, as a way to understand how historical structures shape present and future development, both through material restrictions but also in terms of values and practices.

In summary, the two main perspectives in the theory section focus on the role of planners in sustainability and transformative practices, as well as the concept of obduracy. Planners are considered key actors in urban transformation, yet emerging challenges highlight the need for

new skills and competencies, particularly in understanding and engaging with new technologies and involving private stakeholders. Regarding obduracy, the framework emphasizes the constraints on ways of thinking and interacting, the long-term persistence of traditions, and the close interconnectedness of social and technical components. These perspectives help us analyse the responses in our survey to understand the challenges of transforming cities and planning practices.

Table 1 - Summary of models of obduracy. Source: Hommels, 2005.

	Frames	Embeddedness	Persistent Traditions
Explanatory mechanisms	Obduracy explained by constrained ways of thinking and interacting	Obduracy explained by the close interconnectedness of social and technical elements	Obduracy explained by the long-term persistence of traditions
Concepts and metaphors	Technological frame Paradigms Mental models (Professional) worldviews	Actor networks Irreversibility Fixity and mobility of space	Momentum Trajectories City-building regime Archetypes
Intellectual traditions where these concepts can be found	Social construction of technology (SCOT) History of planning	Actor-network theory (ANT) Urban geography	Large technical systems approach (LTS) History of technology Urban history
Type of explanation	Interactionist conception of obduracy	Relational conception of obduracy	Enduring conception of obduracy

Methods

The data collection was conducted in the form of an open-ended questionnaire, where the collected data were generally qualitative but with possibilities for some quantitative analysis. This method was chosen in order to obtain a broad response rate with a geographical and demographic spread among planning managers in Swedish municipalities. The approach was important because we wanted to include all municipalities in Sweden and to be as comprehensive as possible, which would not be possible if the study was conducted through semi-structured interviews.

The questionnaire was sent out as part of a larger research project ("Planners as agents for the transition towards sustainable cities and regions", 2021-2025) with several rounds of empirical data collection. The overall project focuses on competencies for transformative planning practices in the future and, more specifically, how planning education programs at the bachelor and master level should evolve to train future planners to meet the challenges posed by climate change and climate neutrality policies.

Survey design and distribution

The questionnaire was developed in workshops within the research group and later sent as a test version to the researchers and colleagues involved. The questionnaire included an introduction to the research project, the purpose of the survey, and contact information for the principal investigator. A total of 12 questions were asked, divided into four parts, with the first part including background questions such as which municipality they worked in, job title, time in the position, time in the urban and regional planning profession, and education. The background questions were based on parameters that could be used for further analysis. We used open-ended questions because we did not want to limit the respondents' answers, and we wanted to leave open the possibility of using quotations to show their reasoning, which is closer to qualitative data. An advantage of this approach, combining questionnaires with a high degree of open-ended questions, is that we were able to obtain a broad representation of respondents geographically (May & Torhell, 2013) and responses that gave us the possibility of a deeper qualitative analysis, compared to a mainly quantitative analysis. The disadvantage is the amount of data that needs to be managed and the need for a rigorous coding scheme. The coding process is described in more detail below.

The open-ended questions then focused on the main challenges municipalities are facing today, the most important competencies planners have to deal with climate change, lacking competencies, changing competency requirements in recent years, future changes (10-15 years from today) in planners' competencies in general as well as in relation to climate change specifically, and finally, what recommendations they have for planning education to meet future challenges.

One shortcoming of the survey is that the questions were rather open-ended in terms of the context they could address. By asking about the challenges and necessary competencies, respondents could interpret the question as mainly referring to present challenges in their own municipality or more broadly. Providing open-ended questions allows us to see if the response has a narrower focus or contains a broader discussion. We took this into account when drawing conclusions from the data. The questionnaire was sent to planning managers from all

municipalities in Sweden. As mentioned above, Swedish municipalities have a planning monopoly and planning issues are dealt with by them. The managers thus have an important strategic role in understanding future needs, and compared to the planners working with specific projects, the managers need to have an overview of how the planning landscape is changing, as well as to understand the municipalities' position in future development, both in terms of challenges and strategies to meet the challenges.

Prior to sending out the survey, municipal websites were searched to identify planning department heads and managers. Municipalities that had not posted contact information for planning managers were contacted to identify an appropriate respondent. There is a difference between how Swedish municipalities are organized regarding planning, as some larger municipalities have several divisions working with planning, and might thus organizationally separate comprehensive and detailed planning. Comprehensive planning reflects the comprehensive plan, according to the Planning and Building act, which is more strategic and long-term and covers the whole municipality, while detailed planning reflects the detailed development plan, which focuses on legally binding plans for specific areas and is more detailed as these are the base for the actual building permits. In smaller municipalities, there is usually only one division covering all levels of planning. Due to these differences, respondents' positions varied, and it was reasonable that the municipality could decide on the most appropriate respondent in certain cases.

31 Swedish municipalities have merged their spatial planning administration units among 2-4 neighbouring municipalities. This is a trend that has occurred over the last decade, and it is mostly, although not always, small municipalities, population-wise, that have done this. The mergers are the result of diminishing resources and the need to lower costs by sharing staff. However, this is not only seen as a disadvantage because it gives the opportunity to together hire staff with more specific competencies than one municipality could alone (cf. Grundel & Magnusson, 2023). 12 out of 13 mergers resulted in the same contact person, while 1 merger resulted in two different planning managers.

In total, we identified 302 recipients representing all Swedish municipalities. In total, these municipalities make up 272 planning administration units (although some are divided into divisions). The survey was sent by e-mail using the survey tool Survey & Report. The link to the survey could be forwarded if the recipient considered another manager more suitable. The survey was sent on September 25, 2023, with a first reminder on October 10 and a second reminder on October 25, 2023.

Response rate and response analysis

The response rate is 30% based on 90 respondents out of 302 recipients. In relation to Sweden's 290 municipalities, this corresponds to 31%. Municipalities with a merged spatial planning administration were counted as different municipalities. The response rate was relatively low. According to Sammut et al. (2021), the response rate has decreased in recent years, both in general and especially for web surveys, due to difficulties in identifying respondents, a general increase in the number of requests, and a general decrease in people's willingness to participate. Sammut et al. (2021) further argue that when surveys take more time, the number of participants decreases, which has been taken into account in this study by keeping it shorter and informing about the time frame. Having the university as the sender typically leads to higher response rate than private companies, which is an advantage in this survey (Fan & Yan, 2010).

The respondents are geographically distributed according to Sweden's three large regions, Norrland 31% (northern Sweden), Svealand 28% (central Sweden) and Götaland 33% (southern Sweden), see Table 2. The response rate is higher in Central Sweden, especially in terms of amount. The response rate is fairly consistent across the three regions, in terms of percentage.

Table 2 - Geographical distribution of responses

Part of Sweden	Number of municipalities	Respondents	Response rate in region (%)
Svealand	96	27	28
Götaland	140	46	33
Norrland	54	17	31
Sum	290	90	31

If the results are distributed according to SKR's (Swedish Association of Local Authorities and Regions) municipality classification of 2023 (SKR, 2023) (see Table 3), the share is relatively evenly distributed. The category of medium-sized cities and municipalities near medium-sized cities is over-represented and contains 7 percentage points more than the other categories. The municipalities that have merged the planning units with neighbouring municipalities are not visible in the statistics, but it can be noted that four of them belong to larger cities and municipalities near larger cities and one municipality belongs to smaller towns/urban areas and rural municipalities.

Table 3 - Municipalities group classification, based on SKR (2023)

Classification of Swedish municipalities	Total responses	Total	Share within category
Large cities and municipalities near large cities	13	46	28%
Medium-sized towns and municipalities near medium-sized towns	39	110	35%
Smaller towns/urban areas and rural municipalities	38	134	28%

Coding and analysis

The material received was first organized in Microsoft Excel to perform a preliminary analysis and identify quantities in the initial background questions. The data was then coded using thematic analysis with inductive inference in Atlas.ti. This method is useful when a large amount of data needs to be processed to create a comprehensive and detailed compilation that highlights the complexity of an issue (Braun & Clarke, 2006). Themes were selected through repeated reading and discussion, resulting in recurring concepts that were later synthesized into major themes. Themes were contextualized through quotes and supplemented with quotes that were unique and relevant. In a thematic analysis, it is important to be aware that the researcher has an active role in selecting the themes identified (Braun & Clarke, 2006). For example, it is not the amount of data that determines whether it becomes a theme, but the relevance of a theme according to the research. The themes were also analysed in terms of frequency to add a quantitative aspect.

The majority of respondents, 73 percent, had been in their position for less than five years and 22 percent for less than one year. However, the majority had longer experience in planning, with more than two-thirds having worked for ten years or more. The managers' own education was mainly in urban and regional planning (43%, comprising both programs in human geography or physical planning), architecture (17%), related fields such as environmental science or civil engineering (22%), or something else such as economics or law (18%)[2].

Results

This section presents the results of the survey. First, we discuss that climate adaptation is the most important aspect in the results, the results from the perspective of planners' competencies to manage climate change, then we discuss missing competencies, followed by future competencies.

[2] Analyzing the correlation between different factors, such as time in the current position or education, with view on lacking competences would be an interesting further study, especially analyzing if that matters for obduracy, but this was outside the scope of this paper.

Climate adaptation in focus

How can the results be understood? Some of the answers can be found in the initial question of the survey, which asked which was the most pressing climate-related matters within each municipality. This question was posed to find an entrance point into the subject and to ascertain the concerns that were most salient for the planning managers.

It was clear that the most pressing matters focused on questions relating to climate adaptation, rather than climate mitigation. 52 of the municipalities (58%) replied that they were most concerned about flooding following torrential rain, but also in relation to high flows in rivers. In 12 of the replies, they also connected these issues to risk matters like erosion and landslides, and in the coastal municipalities, rising sea levels are also mentioned.

> "Extreme weather! The level of knowledge among the general public is low when it comes to preparing for, for example, the highest tide. Extreme weather has usually been associated with 'autumn rush' (= those who have holiday homes and boats have not experienced it on site) but now also appears in the summer. It is also extreme weather that has caused our biggest problems. Torrential rain in combination with clogged drains (everything from trees to garbage cans (!)) has caused the water to take other paths."

In 29 responses, other effects of climate change were mentioned, especially heat waves and forest fires. It is clear that these matters, connected to climate effects and adaptation, are more urgent for these municipalities, especially given that Sweden had a few years of serious heat waves and forest fires, but also flooding in the fall and in the summer. Mentioned in relation to this is to how to handle the built environment in relation to these challenges. It is often argued by the respondents that, even though it is difficult, they can calculate and navigate adaptation measures in new areas, but the adaptation of buildings and infrastructure is costly.

Concerning mitigation matters, the main topic is transport and planning, i.e. aiming to reduce travel by car. It is argued that this transition happens too slowly, but also that it is both a structural and a behavioural matter, making it difficult to change: "Get people to choose bicycles or public transport instead of cars. Get the car out of the city centre". In a few responses, energy supply is mentioned, but generally that is connected to the power deficit in the energy system, especially in southern Sweden, rather than a transition to non-fossil energy sources.

Two other groups of replies that stand out concern organizational matters and resources to work with climate matters (20 replies), and a lack of political support (14 replies). One municipality states that: "As a small organization, it is difficult to manage the transition. We do not have experts in the services, which creates difficulties in meeting increasingly stringent requirements." Another one states that: "[It is a challenge] to coordinate climate issues and find ways forward that make a difference. The level of expertise and the amount of time allocated to the issues is also a challenge". It is not only small municipalities, in terms of population, that

mention a lack of resources, even though they are the majority, there are also a few of the top 20 most populous municipalities in Sweden that mention the same challenge.

The lack of political support is mentioned in both large and small, in terms of population, municipalities. It is clear that the issue of climate adaptation is not considered to be prioritized enough: “To get the issue on the political agenda, to get the organization to tackle a diffuse issue, to take action.” Another one states that: “Make politicians realize that climate work means we need to change our behaviours. If we are to meet the municipality's climate goals, it needs to be incorporated into everything we do.” It reflects a frustration of being limited by the politicians and structure in which the planners work.

An important difference between the replies from various municipalities is that the ones with a low population in more rural areas to a large degree reply that a major challenge relates to the resources allocated to climate matters (Table 4). It is clear that, and not surprising given the situation among small municipalities in Sweden, the smaller and rural municipalities account for a bigger share here. To summarize the results, it is clear that climate adaptation is the most important matter in terms of challenge as well as competencies.

Table 4 – Municipalities identifying resources as main challenge

SKR classification	Quantity of respondents identifying resources as challenge	Sample size within classification	Share within category
Large cities and municipalities near large cities	2	13	15,4%
Medium-sized towns and municipalities near medium-sized towns	7	39	17,9%
Smaller towns/urban areas and rural municipalities	11	38	28,9%

Planners' competencies for dealing with climate change

Two questions in the questionnaire focused on the competencies currently needed to deal with climate issues. The responses reflected the general competencies that planning managers identified as necessary for planners today, as well as competencies specific to climate change. This does not mean that these competencies should be seen as a list of competencies that are present or absent today; they are the ones mentioned by the managers in the survey.

The responses fell into five different larger categories: Deeper understanding of technical issues and solutions (including climate adaptation), broad knowledge in various areas, analytical

skills, coordination and collaboration, and communication. Table 5 below shows the categories, the number of times they occurred, and sample quotes. The categories, and thus quantity of occurrences, represent the most common responses in the survey. There are codes that, when put together, could form categories pointing to very specific topics or challenges (e.g. that they had no planner employed full time due to limited resources). However, none of these codes occurred more than five times in total. We excluded these small categories from the table below.. There is also a rather substantial gap between four of the categories and communication, but as the latter still made out a distinct category, we decided to include it. The sample quotes may include contradictory statements, as they reflect a span within the categories.

A large proportion of the responses pointed to specific technical issues, and specifically asking for deeper knowledge about these, and thus competencies, sometimes related to climate adaptation and reasoning, but often without broader reflection. In another study, technical skills were rated low (cf. Guzzetta & Bollens, 2003), which is in contrast to our results, but as we see the strong connection to climate adaptation issues, these responses showed more reflection in terms of understanding the relationships between the built environment and new developments, as well as trade-offs between interests. This is a growing concern in Swedish municipalities, and stormwater management and geotechnical issues are mentioned in particular. The quotes contain some contradictory statements, especially regarding technical knowledge, reflecting diverse ideas about the role of the planner. In many cases it is thus difficult to distinguish whether the respondents expect planners to become experts on technical issues or whether they argue that planners need to know more about these issues in general, although it is likely to be the latter in most cases.

As seen above, several specific competencies are mentioned, implying that planners need basic knowledge of these issues. Climate change is of course specifically mentioned (15 responses), but also knowledge of the Planning and Building Act and the Swedish Environmental Code, sustainable mobility and economics. These topics show a wide variety, ranging from very specific knowledge on one topic to a long list of competences. This reflects the challenging task of planners to “know a little bit about many different topics” and to be a generalist (Campbell, 2014), and this list is growing. Dealing with climate change is becoming a competence that is seen as basic knowledge, something that has arguably changed over the last 15-20 years.

It is also clear that strong analytical skills are highly valued, and this should be seen in the light of the broad range of skills required. In order to manage all the demands of planning projects, it is necessary to be able to sort out the most important issues, to step back and understand the process and the project as a whole, and how it relates to existing built structures, and how to make judgments about trade-offs between interests. Often these are “wicked

problems" (Crowley & Head, 2017) that cannot be solved without considering those who gain and those who lose from decisions.

Table 5 – Results from the question "What are the most important competencies (such as expertise, abilities and skills) planners have today to address climate issues?"

Category	Number of occurrences	Example quotations
Deeper understanding of **technical issues and solutions** (Climate adaptation, stormwater management, flooding, geotechnical competence, water and sewage competence)	54	'Understanding of the possible consequences of a changing climate and what this means with regard to, for example, stormwater management, management of flooding problems' 'take into account erosion risk, preserve greenery to avoid heat islands in urban areas, avoid building in areas with a risk of flooding, etc.' 'Knowledge of climate adaptation and how it can be addressed in physical planning'
Broad knowledge in various areas (e.g. climate change in general, regulations, broad knowledge, sustainable mobility, economy, green structures)	53	'General knowledge about planning for new projects and districts, and the transport needs it gives rise to.' 'Knowledge of the detailed development plan instrument (Swedish – detaljplan) and how it can be used to avoid risks linked to climate change.'
Analytical skills (Holistic perspective, trade-offs, complexity)	46	'A holistic approach with broad knowledge, understanding of connections and consequences is required' 'It is important to be able to make trade-offs between different interests. Sometimes one thing weighs more heavily than another and the planner must be able to make that assessment. It is raising conflicts of interest and the importance of making assessments and trade-offs that needs to be developed.'
Coordination and collaboration (Collect data from experts, project managers, manage knowledge from investigations, bring in competence from other departments)	42	'I don't think that the planners who work with detailed development plans need to have expert knowledge; we have colleagues at the Department of Water and Sanitation and also consultants who produce studies.' 'the ability to manage projects and rather know what expert knowledge is required and when. This is because projects are becoming increasingly complex and planners cannot rely on all the knowledge' 'Collaboration skills, so that they can get help from others with expertise in areas such as flood issues, infrastructure and technical operations.'
Communication	12	'Rhetorical skills so that climate issues are taken seriously.' 'An important ability in this context would be to translate and make comprehensible both the complex societal challenges and technical intricacies into something that is understandable for decision-makers and laypeople, and to explain why a choice of path in the small (detailed development plan) is important in the large context (global, climate, etc.)'

Linked to analytical skills is an increasing demand for skills in coordination, collaboration, and project and process leadership. Many of the responses elaborated on the point that planners cannot have all the skills themselves but need to collaborate and draw on the research of experts. It is then argued that in order to be able to place qualified orders for investigations, it is necessary to have some basic knowledge of the issues, but not to be an expert. Rather, it is important to be able to read and make decisions based on the research. There are also several responses that focus on the ability to work with other departments within the municipality and to use the skills of others.

The category "communication" mainly refers to the ability to communicate with politicians and the general public. This shows that the importance of communication as an important skill for planners has not diminished over the years as e.g. Guzzetta & Bollens pointed to in 2003. It rather seems that communication skills have become even more important in relation to the increasing complexity of planning and for planners be able to navigate many different interests and stakeholders. Many of the responses reflect the need to present complex issues in a clear but persuasive manner. In these responses we can see a more normative stance compared to other responses, reflecting the respondents' opinion that climate issues should be taken more seriously.

To summarize this section, it is clear that adaptation issues are more present than mitigation issues, something that can be seen throughout the responses in the survey.

Lacking competences

We asked the planning managers if there are specific skills that are lacking among planners today. In general, the most frequent answer was that there is no specific competence missing, but that it might be a question of resources, or that planners are not considered experts, but rather generalists who need to work with others: "A physical planner or similar is not an expert on these issues. Experience contributes to the fact that knowledge can vary". Most of the responses are in line with this and relate to the responses presented in the section above.

One aspect that stands out is the responses that refer to very specific technical issues. These are generally water-related issues, such as flooding (number of respondents stating this being 10), climate adaptation (n=9), and geotechnology (n=8). One response also reflects the tension between theoretical and practical knowledge:

> "I see a risk that too many younger people increasingly want to move away from finding good technical solutions in detailed development plans and instead want to work more strategically towards comprehensive plans and the like. Then a large proportion of urban planning education programs at Swedish universities have become too theoretical and not aimed at finding technical solutions. There is also a

> lack of knowledge within municipalities in issues concerning geotechnics and more, which results in costly investigations."

> "Overall, there is a lack of real cutting-edge expertise and it is possible that many of the country's planners adopt an approach that is too comprehensive when it comes to climate issues."

The quotes above are interesting as the role of university education can be debated. The role of an education needs to be generalised to certain extent and teaching "solutions" is not really possible as context and place specificity matter, as well as the planning levels. The role of comprehensive planning and approaches is to identify the challenges, and based on that consult expert knowledge. It is also clear in the responses that those who responded to these specific, often technical, questions as lacking competence rarely reflected on the general competence of planners, but also responded to the same lack of competence as the greatest challenges they currently face. For example, one municipality responded that they have the following challenges "Flooding, high water, torrential rain" and replied the following as lacking competencies: "Expertise in geotechnical/bearing capacity and engineering and natural measures related to water. Expertise in water issues." This was evident in most of these responses, which also showed some signs of frustration at the lack of in-house competence.

When returning to Othengrafen and Levin-Keitel's (2019) and their six types of planners it is also clear that the competences asked for by the planning managers are mainly focusing on technical knowledge and formal practices, rather than on skills or approaches supporting transformative planning such as experimentation, living labs or social innovations.

Future competences

Two of the questions asked what future competencies are lacking. The questions addressed future competencies in general, but also more specifically related to climate change. As the answers did not differ significantly from the previous questions (issues related to analytical skills, basic knowledge, coordination, technical issues and rhetoric are among the most common answers), we will present in this section the specific issues that differ from the previous questions.

One of the most important differences is that digitalization is mentioned more explicitly, especially with regard to general competences. The frequency is still not very high (n=13), which is surprising since digitization issues are increasingly emphasized in society and by national authorities, such as the digitization of the planning process, as well as the growing issue of AI. However, AI, GIS and visualization are aspects that are specifically mentioned, as can be seen in these three quotes: "embrace the digital planning process with all that it entails", "AI-GIS,

someone who can use the power of AI to create scenario analyses, maps and other documentation" and "also be able to manage the conditions for subsequent developments, whether it is the use of parametric design, AI or something else that is difficult to predict today".

Another specific difference is that 15 of the respondents answered that planners need a broader knowledge base. This is similar to the previous questions, but the specific argument is that there is a need for a broader knowledge base as issues, especially those related to climate change, become more complex:

> "Expanded knowledge in virtually all issues related to climate, both how planning can affect climate emissions and how we can meet climate change with adaptation in planning. Knowledge is growing within the planning profession but needs to grow further."

> "Difficult to answer, I see challenges in general with planner roles becoming increasingly broader and expected to handle more and more issues. I see a need for planners in combination with expertise for the work to be the result to be successful."

Questions regarding competence among individuals vs organizations were generally phrased similarly compared to the previous questions, that the competence, skills and knowledge is necessary within the organization or through consultants rather than being key competences among planners. A few responses stood out, as these pointed to the importance of support from the national level: "We see a need to either have more cutting-edge expertise within the municipal organization, or better data from government agencies to be able to make comprehensive assessments."

One aspect that is more frequently mentioned in this question is the need for constant further education. It is mentioned in relation to the aspect of a need for more broad knowledge, and that it means that knowledge needs to be updated, and that planners need to keep up with the latest research. In the UK, the discussion on life-long learning in planning has grown over the last years, as for example Parker and Maidment (2024) discuss the importance of creating space and possibilities for reflexion, i.e. towards an outward-looking perspective and the impact of planning, and this developing a stronger collective professional coherence. The debate revolves around practices of further education and connecting to the planning education once taken, while further developing skills, knowledge and keeping up with the latest research, and which spaces for reflection and reflexion that are available. A key challenge in Sweden is the limited resources in smaller municipalities (cf. Grundel & Magnusson, 2023), which can make it difficult to prioritize these kinds of activities. There are clear tendencies of replies that reflect the limitations found in the obduracy theory. This also lies in the core of planning, the embeddedness of technologies, artefacts, systems, and social factors: "The ability to understand the specific conditions of a place and the opportunities and limitations it creates". The core of planning is the

analysis of a place and understanding the different solutions possible and making judgements about them. This can also be reflected in the following quote, which also points towards how frames and persistent traditions restricts possibilities.

> "I would say that there is a focus on cars from, for example, other civil servants here at the municipality, and that residents expect to be able to drive everywhere. I have not yet had time to try out ideas such as suggesting parking that is not right outside the door. However, this is a municipality with long distances and no public transport to speak of (or very limited, in other words). So, I can also see that there is, and will continue to be, a desire and a need to drive cars. But there would probably need to be a change in attitude, or at least some understanding that it might be worthwhile trying something new."

Finally, it should be mentioned that several respondents answered that it was very difficult to answer this question. In combination with the fact that climate adaptation was mentioned much more frequently that mitigation questions, it is interesting to see that the future perspective was not very different compared with today.

Discussion

In this section we will discuss the results from the questionnaire conducted among planning managers in Swedish municipalities and aim to deepen the understanding of how municipalities can achieve climate neutrality by identifying the necessary competencies among planners. Specifically, we have asked what the most important competencies planners need to address climate change are, what the competencies that are currently lacking are, how competency requirements have evolved in recent years, what the anticipated changes in planners' competencies over the next 10-15 years both generally and specifically related to climate change are, and recommendations for planning education to prepare for future challenges. We reflect on the responses through the lens of obduracy and transformative planning practices.

Obduracy limiting future visions?

The results from the questionnaire showed that the ideas of future competencies needed from planners, both generally and in relation to climate change, still remained relatively close to the competencies expected today, but are also aligned with past studies. That was especially clear when comparing the question focusing on both present competence as well as competences needed 10-15 years from now. A broad competence, with certain specific knowledge areas, together with communicative, analytical and coordination skills, has been at the core of the planning profession for a long time (Healey, 1992; Othengrafen & Levin-Keitel, 2019).

The main focus was also mainly connected to aspects of adaptation, rather than mitigation. Some explanations for this might be found through the obduracy concept (Hommels, 2005), and how frames and persistent traditions affect the way planners and, in this case, planning managers think about the future. The conceptualizations of obduracy can be found in the responses highlighting how frames, embeddedness and traditions set the boundaries within which sustainable transformation can happen. These can remain rigid, even when they are no longer beneficial or relevant. This can result in social stagnation or resistance to progressive ideas. Actors might also be strongly influenced by the culture and habits from within the organization they work in (Purkarthofer, 2022). The respondents emphasize that it is important to make the complex social challenges understandable for a variety of different groups.

Dominant frames within obduracy are competing ideas or interpretations used by different groups in their struggle for control over a specific technology, building, or structure. On the one hand, planners will be navigating between dominating frames from different groups such as experts and consultants, but also politicians, all with competing interests, which arguably calls for a conservative way of thinking of the possibilities of planning. On the other hand, planning managers themselves are an important group, which does recruit future planners, and their own views of future development will likely shape the competencies they think are needed. If that frame is quite traditionalist and cautious, mainly based on today's requirements and challenges, transformative change is arguably less likely. However, as was presented above, the respondents also point towards the lack of political support, which limits possibilities to be transformative, as well as the very fact that planning is highly context dependent and how embeddedness is always present, and that lies in the core of the thinking of planners. It is thus difficult or impossible to expect planners to think totally differently about the future.

One can further argue that while planners will be exposed to different dominating frames allowing for different perspectives, there is a risk that planners adopt some of these dominating frames unreflectively and by doing that reinforce dominating frames. These dominating frames might support or hinder sustainable transformation. But irreconcilable dominating frames might also lead to inaction which indirectly enforces the status-quo and thus hinders sustainable transformation.

Because persistent traditions are taken-for-granted values, which develop over time through experience, education, and continuous knowledge acquisition, it requires a considerable amount of self-reflection on the part of the planner to become aware of these underlying values meaning they might play an important role when weighing different interests or methods. Responses point towards the fact that trade-offs are at the heart of planning, and we can suggest that persistent traditions are reflected in the very management of trade-offs. They may

subconsciously steer planners in a particular direction when weighing different interests or different methods for a proposal. Persistent traditions may also limit how readily planners can incorporate a long-term transformative perspective into established decision-making processes, but they can also generate opinions on the challenges and solutions that need to be implemented, together with the expected competences needed.

Many of the survey responses focus on the already built environment and how the built environment can be adapted. In this sense, the responses highlight the embeddedness that makes it difficult to change existing structures and systems, especially in relation to risks of e.g. flooding. More ambitious goals for sustainable transformation may be constrained by existing structures and systems that limit what is possible and what is not, which may also reflect the greatest challenges that are at hand at the moment, which mostly relate to climate adaptation, which is also the responsibility they can control. This may reflect a more modest view among planners of what is possible in terms of transformative planning.

One of the differences between the expected present and future competences needed concerned digitalization, even though the number of responses focusing on this was, in our view. surprisingly low given the attention posed on for example AI at the moment. Digitalization has been part of the planning process for a long time through GIS and visualizations. There is also a growing debate about the possibilities and limitations of AI (cf. Sanchez et al., 2022). Since the survey focused on the future of the planning profession, we expected this topic to receive more attention in the responses. However, it was given limited focus. Still, some of the answers pointed towards its potential impact. It is however understandable that planning managers might have limited experience and thus understanding on these evolving technologies, and that is a challenge for planners in general, how to understand and even assess possibilities and limitations of innovative technologies.

Adaptation and competencies

Recent calls for more transformative and radical change in planning have focused on what should be achieved and the role planners should play in more complex planning issues. It is often mentioned that it is necessary to be responsive and proactive to achieve transformative goals for climate change (cf. Albrechts et al, 2020; Bulkeley & Castán Broto, 2013; Healey, 2007). A more consistent understanding of planning practices seems to be needed to better understand this. The debate about what competences, skills, expertise or practices a transformative planner needs, points towards arguments that planners need to be visionary, to want to change the current situation and to imagine something radically different from today (Albrechts, 2010; Healey, 2007). As we have shown in this article, the role of the planner is still what is often

referred to as traditional planning (cf. Albrechts, 2020; Gunn and Hillier, 2014; Persson, 2019; Rauws et al., 2014), with competencies related to technical expertise, such as understanding more technical issues,and, as shown in this article, dealing with adaptation. However, respondents also pointed to more general and generic competences such as communication skills, the ability to work with other actors and analytical skills. This is not new and has been shown in previous studies (Guzetta & Bollens, 2003, Healey, 1992). Communication is often seen as an important skill for planners as navigators and facilitators. Grange (2016) argues that planning is undergoing politicization under the umbrella of neoliberal ideas. This politicization may silence planners, making the tension between viewing planners as neutral experts and viewing them as actors with agency in the process more apparent. Grange argues that planners may be silenced in these processes and that there is a need for fearless speech. However, planning organizations in Sweden are becoming more hierarchical. This could explain the focus on adaptation rather than mitigation in our responses; the political and institutional pressure to work with practical solutions that are arguably more value-neutral takes precedence over other ideas. However, as the managers pointed out, planners' ability to facilitate processes might also open up possibilities to discuss alternative solutions, although that is not an easy task.

We can see that five clusters of categories – technical issues (including climate adaptation), general knowledge in specific areas, analytical skills, coordination and cooperation, and communication – are what planning managers in Swedish municipalities believe and imagine to be the most important competences for dealing with climate change. These are not explicitly competences related to a transformative planner. Obviously, there are not many transformative practice competences being used in planning departments in Sweden at the moment, and the analysis shows that the explanation might be that the planning managers do not see how they can work transformatively. We can also see that there is a strong focus on climate adaptation, as recently many municipalities in Sweden had to face flooding, storm water or fires, which makes the situation more alarming. Here the municipalities have to deal with these issues in what is often called a reactive way.

It is interesting that when thinking about future skills needed to deal with climate change, planning managers did not mention more transformative skills, such as the ability to innovate, envision the future, represent interests and negotiate between different stakeholders or project managers.

The built environment and organisational structures, including formal rules and legislation, steer the planning process, especially in relation to land use planning (see also Othengrafen & Levin-Keitel, 2019), making it difficult for planners to think “outside the box” or within already

existing and dominant frameworks. Othengrafen and Levin-Keitel (2019, p. 122), discuss how the traditional planning practices are still present:

> "one cluster is dedicated to collaborative practices and only two clusters more or less consequently aim at innovation, experimentation and new approaches. One possible interpretation would be that both institutional and individual practices, routines and habits change very slowly. With regard to institutional practices, this might have its roots in the fact that urban planning as a public task is embedded in the political-administrative system, where both substantial and procedural legal requirements have already been laid down, determining the scope of the planning practices at the local level."

This ties in well with our understanding and interpretation, as responses and the resulting categories still stem from the institutional and organizational structures that are present. The room for manoeuvre is limited, and the planning managers are highly aware of that.

The complexity of planning may also lead planning managers to focus on generic competences and that planners should have more of a facilitating role, which may explain the main competences required. To have a more coordinating role, both in understanding specific issues and in communicating with experts, politicians, and the public, could thus be seen as increasingly important. We believe that this is a result of the planning system, which is often not open to imaginative and radical ideas and processes.

We can see that the result in this study is not new in the context of previous studies on planners' practices and competencies, but it stands in contrast to the literature on transformative planning practices about what planners should focus on. The situation where some of the effects of climate change such as flooding, heat waves and groundwater problems have meant that municipalities have had to deal with them as they occur. Many municipalities do not have sufficient resources to work proactively and in the long term. This is also the reason why municipalities are reactive rather than proactive when it comes to transformative planning practices. This is also related to the core of planning, which is that planning is inherently context and place specific. Therefore, locally embedded and tacit knowledge as competence lies in dealing with current problems such as floods and fires when they occur.

One final point is that economic interests and citizen involvement were barely mentioned in the responses, as these are core components in planning processes (cf. Albrechts, 2010). Given Loorbach's (2010) point about the importance of co-creation in transformative processes, the lack of mention of these components is an interesting result. Co-creation processes depend on many factors, but the frames within which planning managers work may limit their ability to consider this spontaneously, as finding solutions to climate adaptation often seems to be at the forefront of their minds.

Conclusion

This article has focused on the current and future competencies of urban and regional planners in order to achieve climate change, climate neutrality and, by extension, transformative planning. We have identified the competence needs for Swedish municipalities dealing with these issues by analysing the results of a questionnaire sent to planner managers in Swedish municipalities. The results indicate that five categories (deeper understanding of technical issues and solutions, including climate adaptation; broad knowledge in various areas; analytical skills; coordination and cooperation; communication) have been identified as what they consider to be the most important competences.

Analysing the results, it is clear that planners are more traditional than transformative in their planning practices. What we mean by this is that when faced with more complex climate change issues, planners become more reactive than proactive. This can be explained by the concept of obduracy, as planning is very much rooted in the persistent traditions (planning culture per se) and frames (the role of planners in dealing with climate change) based on both knowledge and experience as well as past planning decisions. This makes it difficult for planners to strive for radical change and transformative practices. Planning practice is structured around frameworks of rules, cultures and patterns. The role of planners to link knowledge to action, to shape better futures, is at the heart of planning. The planning managers seems to see the future as not particularly different from today, and this lies in the culture of planning, the scale of the challenges that we see as important to understand further in this context.

We can see a shift in planning practice that suggests that the specialist skills, expertise and competence on specific issues are being handled by consultants, leaving the planner in the municipalities to deal with more general skills such as coordination and communication with different stakeholders. Given the complexity of climate change, the planner has to deal with adaptation rather than mitigation, which is also closer to the responsibilities of municipalities and planners, as they have limited or no mandate to influence GHG emissions, with the small exception of sustainable mobility mentioned above. It is easy to fall into the trap of technical solutions to the problems posed by climate change, to the point of forgetting collective action for change. The answer to this could be communication and cooperation to facilitate and mediate.

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Conflict of interest

The authors declare no conflict of interest regarding this article's research, authorship, or publication.

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