Institutional Aspects which Condition Sustainable Urban Mobility Planning - A Brief Literature Review

Working paper

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TRITA-ABE-RPT 2327
KTH Architecture and the Built Environment (ABE)
Stockholm 2023

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Abstract

Sustainable Urban Mobility Planning (SUMP) has been developed and, to various extent, applied throughout the EU during the 2010s. Apart from handling subject matters of sustainable mobility, SUMPs unavoidably involve issues of governance and the handling of a variety of institutional aspects. Broadening the system boundaries of sustainable mobility with an accessibility focus and accommodating uncertainty by foresight methods further adds to institutional and governance complexity in SUM planning. As part of the research project Triple Access Planning for Uncertain Futures, this working paper provides an overview of institutional and governance issues which influence sustainable urban mobility planning. The paper attends to the research questions (1) - what does the literature say about the influence of institutional and governance conditions over sustainable urban mobility planning processes?, and (2) - what do insights from research literature imply for SUMP practice? Based on searches in the Scopus and TRID databases, a final selection of 36 articles was made as a basis for overarching insights about the nature of institutional and governance aspects of SUMP that needs to inform the enhancement of the SUMP guidelines. It is found that planners need to be aware of local context; to stick to basic planning principles but allow practical discretion. Institutional and governance factors needs to be attended to throughout the planning process. The literature also points to that there are limits to integration and participation in SUM planning. Planners should consider where and when these aspects contribute the most. Planning also need to accommodate processual reflexivity, iteration, and local discretion, and the planning organisation would benefit from developing its institutional capacity for handling a developed SUM planning when it comes to a broad perspective on accessibility and uncertainty. Based on these insights and a critical analysis of the current SUMP framework that is informed by the reviewed literature, some modifications of the SUMP process model is brought forward to better acknowledge institutional and governance aspects of sustainable mobility planning.

Acknowledgements

The Triple Access Planning for Uncertain Futures research project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 875022. In Sweden funding is provided by the Swedish Energy Agency.
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1. Introduction

Sustainable Urban Mobility Planning (SUMP) has been developed and, to various extent, applied throughout the EU during the 2010s. This approach to mobility planning is supported by a set of planning guidelines (Rupprecht Consult, 2019) that in a prescriptive manner provide transport planners with key instructions on how to develop and implement sustainable urban mobility in an urban or metropolitan context. By the promotion of SUMPs, the European Commission aims to widen the scope and integration of different aspects concerning sustainability in transport planning. Apart from handling subject matters of sustainable mobility, SUMPs unavoidably involve issues of governance and the handling of a variety of institutional aspects such as horizontal and vertical integration of actors and perspectives, managing regulations, creating legitimate policy solutions and mobilising capacity for change. Issues such as these may have significant influence over both SUM planning and its implementation.

The existing guidelines mainly focus on what should be included in a SUM planning process in order to achieve a well-developed SUMP on a fairly concrete level, presented as a cyclical model consisting of four main phases – 1) preparation and analysis; 2) strategy development; 3) measure planning and 4) implementation and monitoring, each phase in turn consisting of three steps and several suggested activities for each step.

Fig 1: The SUMP cycle as depicted by Rupprecht Consult (2019).
The guidelines seem to implicitly assume that consensus will be reached on which strategic direction and which measures to decide upon for developing urban mobility. How to deal with contested subject areas and conflicting perspectives on, for example, what characterises a desirable development, are only briefly touched upon in the guidelines, apart from a description of what distinguishes SUMP from previously pre-dominant approaches to mobility planning (Rupprecht Consult, 2019). However, a supplementary manual pays attention to institutional cooperation (Cré et al., 2016). These matters may still (re)appear as complications, or even effective barriers to planning, during the SUM planning process. Several complications can be expected to arise in the organisational and institutional structures, in the interactions among involved actors, as well as in the governance process dynamics and politics of SUM planning, contributing to the ever-prevailing implementation gap in sustainable mobility policy.

In the European research project Triple Access Planning for Uncertain Futures, we study how SUMP can be enhanced by (1) shifting the main focus in SUM planning from mobility towards accessibility planning, with an understanding of accessibility as resulting from a combination of not only mobility, but also physical proximity and digital accessibility (Lyons & Davidson, 2016), and by (2) actively acknowledging and embracing the uncertainties which inevitably permeates long-term strategic planning by practically applying scenario planning and other foresight methods. Broadening the system boundaries with an accessibility focus, and accommodating uncertainty by foresight methods, further adds to institutional and governance complexity in SUM planning. As part of the research program, this working paper provides an overview of institutional and governance issues which influence sustainable urban mobility planning. The paper does not make any claims for providing a systematic literature review, but might be of interest for other researchers, as it nonetheless points to interesting themes and further reading.

**Aim and research questions**

This working paper aims at identifying overarching themes and insights in the literature regarding how institutional and governance conditions influence sustainable urban mobility planning. The paper further aims to discuss implications of those insights for SUMP practice, and to provide practical advice on how to handle such implications.

The paper attends to the following two research questions:
1. What does the literature say about the influence of institutional and governance conditions over sustainable urban mobility planning processes?
2. What do insights from research literature imply for SUMP practice?

**Some core concepts defined**

In this section we introduce some core concepts to our analysis. The concepts institutions and governance are key to the purpose of this literature review. We also introduce the concepts power and uncertainty, as aspects of those concepts might carry significant influence over institutional and governance conditions.
We approach the concept of institutions by drawing upon Rye, Monois, Hrelja & Isaksson (2018), who stress that institutions are defined in various ways – by North (1990:98) as “the humanly devised constraints that structure political, economic and social interaction”, by Jessop (2001:1238) as “complex emergent phenomena, whose reproduction is in-complete, provisional, and unstable, and which coevolve with a range of other complex emergent phenomena” and by Aoki (2007:6) as “self-sustaining, salient patterns of social interactions, as represented by meaningful rules that every agent knows and are incorporated as agents’ shared beliefs about how the game is played and to be played”. Institutions are in the reviewed literature also discussed from the perspective of formal and informal arrangements as different – sometimes opposing and sometimes complementary – elements of institutional structures and governance practice. The SUMP guidelines can be considered an attempt to strengthen the institutional capacity (Healey, 1998) of planning bodies to address sustainable urban mobility by directing attention to certain instrumental, supportive procedures. Magalhães, Healey & Madanipour (2003) defines institutional capacity as the knowledge resources, relational resources and the mobilisation capacity of actors and institutions in governance. As a development of the concept of institutions for specific applications within the field of strengthening capacity in organisations, institutional capacity captures a situated ability to navigate the specific institutional ‘landscape’, which, when made explicit, may strengthen planning and implementation of sustainable urban mobility.

The concept of governance has, as in the case of institutions, several meanings in the literature. Rhodes (1996) finds that it is used to describe a development in steering from formal government to new processes of governing, a change in conditions of ordered rule or to a new approach by which society is governed. Government, in turn, can be defined as “the formal institutions of the state and their monopoly of legitimate coercive power” (Stoker, 1998:17). Rhodes (1996) describes governance broadly as a retraction of the role of the state, as a corporate governance where rule is shared between private and public bodies, as having a broad systemic scope, a distribution of power and with democratic legitimacy and authority. This multi-faceted definition implies a more complex mode of decision- and policy making in planning. Governance has come to be viewed in a multi-level perspective in a European Union context as “a conceptual framework for profiling the ‘arrangement’ of policy-making activity performed within and across politico-administrative institutions located at different territorial levels” (Stephenson, 2013:817) and has, as such, become a normative model for the design of institutional practice. While the concept of government is often used for describing formal decision-making and exercise of power, governance, in addition to the formal, often refer to also more informal ways of managing organisations or planning processes, and their implementation.

Another concept which unavoidably permeates planning, institutions and governance is power, which can be described from various theoretical and philosophical viewpoints. We draw upon the four-dimensional framework of complementary forms of power presented by Hrelja, Richardson & Isaksson (2013) as 1) based on open conflict between different actors with different interests and agendas, coming to surface in formal decisions, as described by Dahl (1969), 2) exercised through non-decisions and mobilising bias by exclusion of people, perspectives, issues or conflicts as described by Bachrach & Baratz (1962), 3) subtle mechanisms that lead to the control of people’s desires and wishes, thereby avoiding conflicts to arise as
described by Luke (1974) and 4) discursive power as described by Foucault (1976) focusing on the practices in governing that produce and reproduce dominant modes of thought, subjectivities and behavior.

The concept of uncertainty, defined by Walker et al. (2003:8) as “any departure from the unachievable ideal of complete determinism” sets the other concepts in a certain perspective. Uncertainty implicates that we cannot assume future stability in the contextual conditions for sustainable urban mobility planning. The future is manifold and volatile due to unforeseen events arising from internal and external non-linear development ‘off the radar’. In the case of institutions, uncertainty will make ‘the humanly devised constraints’ as mentioned by North (1990) less predictable and more in line with the definitions by Jessop (2001) above as ‘complex emergent phenomena’. The shift from government to governance has also contributed to increased complexity and thus increased uncertainty about the outcome of planning processes, not least due to the informal nature of many of the activities and power relations governance regimes.

Walker et al. (2010:918, see also Lyons & Davidson, 2016) identifies four levels of uncertainty:

- **Level 1** uncertainty can be described adequately in statistical terms. It is often captured in the form of a (single) forecast (usually trend based) with a confidence interval.
- **Level 2** uncertainty implies that there are alternative, trend-based futures, and some estimate can be made of the probability of each of them.
- **Level 3** uncertainty represents deep uncertainty about the mechanisms and functional relationships being studied. We know neither the functional relationships nor the statistical properties, and there is little scientific basis for placing believable probabilities on scenarios. This uncertainty is often captured in the form of a wide range of plausible scenarios.
- **Level 4** uncertainty implies the deepest level of uncertainty; in this case, we only know that we do not know.

From the perspective of sustainable urban mobility planning, and when applied to analyse institutional and governance aspects influencing planning processes and outcomes, an interpretation of ‘level 1’ uncertainty could be to identify and handle aspects that could cause deviations from achieving the ambition of the SUMP process. Level 2 uncertainty could then imply, e.g., a set of foreseeable changes in institutional structure and power relations or in the format of the final SUMP product. Level 3 uncertainty could mean that the future institutional structure and its performance are highly uncertain and might shift significantly from the current situation, with potentially strong influence on conditions for planning and implementation. Level 4 uncertainty could mean that we would have to accept severe limits to what planning can achieve due to the prospect of dramatically different conditions for development. In the literature on deep uncertainty, several DMDU (Decision-Making under Deep Uncertainty) approaches have been developed (Stanton & Roelich 2021; Marchau et al, 2019) that emphasise adaptivity of the content of planning to uncertain conditions. However, the literature on institutional and organisational uncertainty, and its influence over planning, is more limited (Stanton & Roelich, 2021). Dealing with uncertain futures in a transition perspective is yet another, in the SUMP and DMDU-context sparsely mentioned, field that offers complementary insights on systemic transition and paradigm shift, based on e.g.
complexity theory combined with transition theory (Geels & Schot, 2010; Rotmans & Loorbach, 2009). This field of knowledge provides additional concepts for the understanding of how to deal with uncertainty that may also be related to institutions and organizations towards flexibility, robustness, connectedness, self-organised order and diversity, and which influences the possibilities of accommodating uncertainty in planning.

Overview of the working paper

The remaining parts of the working paper is structured into a methods chapter, where selection and review process for the literature review and an overview of the reviewed literature are presented (chapter 2). After that, the literature review itself is presented in chapter 3. The chapter attends to the first research question. In chapter 4, overarching insights from the literature are presented. Chapter 5 then provides some in-depth discussion on implications for SUMP planning. These chapters 4 and 5 attend to the second research question. Finally, in chapter 6, some conclusions are drawn.
2. Method

Selection and review process

This working paper builds on a semi-structured review of research literature concerned with institutional and governance aspects influencing strategic transport planning in general and sustainable urban mobility planning specifically. The literature has been identified mainly through searches in the research databases Scopus and TRID. Searches combined words such as ‘institution*’ and ‘govern*’ with concepts such as ‘sustainable mobility’ and ‘sustainable transport*’ (see Figure 1). The searches resulted in a representative selection of studies, and was instrumental for limiting the influence of our pre-understandings and biases as researchers over the literature selection. Research on institutional and governance aspects is extensive and spans a wide range of theoretical and analytical concepts. Therefore, this review reflects one of several possible representative selections of studies.

The searches resulted in more than 3,000 records (see Figure 1). In a first screening, potentially relevant articles were selected based on a consideration of article title and abstract. In a second screening also the introduction and conclusion sections of the articles were considered. Articles were included in the review if they were empirically concerned with (1) sustainable urban mobility planning specifically, or strategic transport planning more generally, and (2) institutional aspects which influence the organisation, preparation or implementation of such plans. Almost exclusively, reviewed articles related to a European context and were published after the year 2000. Only articles in English have been considered. Eventually, 36 articles were considered relevant, were reviewed and sorted into themes inductively during an iterative reading and analysis of the material. In addition to the articles identified through structured searches, a few articles have been included following snowballing of references, and suggestions within the research group of the project Triple Access Planning for Uncertain Futures.

The screening and final selection of articles has to some extent unavoidably been influenced by the individual judgement of us as researchers. The study does not make any claims for being fully comprehensive or systematic, nor fully representative of themes in the literature. Even so, based on our judgment and prior knowledge of institutional and governance research and planning literature, we consider the selection of articles and our choice of inductively identified thematic categories to reflect major research themes related to the influence of institutional and governance aspects in sustainable urban mobility planning.
Overview of literature

Table 1 provides an overview of the reviewed studies, and the inductively chosen themes which structure the review. During the integrated reading and analysis, five broad themes of relevance for sustainable urban mobility planning emerged. These themes reflect an intuitive sorting process based on the main focus and findings in each study. A few references appear in more than one theme, although we have strived to sort each study into one theme only. In the next chapter, the reviewed studies are briefly presented according to these themes.
Table 1: Overview of the references included in the review, sorted according to the themes inductively chosen during the integrated reading and analysis of the literature. Articles marked by (*) have been snowballed or recommended by fellow researchers.

<table>
<thead>
<tr>
<th>Themes in literature</th>
<th>References on SUMP-literature</th>
<th>References on SUMP-related literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Integrating policy sectors and levels of government</td>
<td>Okraszewskia et al., 2018*</td>
<td>Stead, 2016; Tennay et al., 2016; Vigar 2017*; Hrelja, 2015; Hrelja et al., 2017; Rye et al., 2018; Hirschhorn et al., 2020; Hull, 2008</td>
</tr>
<tr>
<td>C. Participation in planning</td>
<td>van der Linde et al., 2021; Mozos-Blanco et al., 2018; Klimová &amp; Pinho, 2020; Reigner &amp; Brenac, 2019</td>
<td>Freudendal-Pedersen &amp; Kesselring, 2016; Angeldou et al., 2020; Lindenauf &amp; Böhler-Baadeker, 2014; Fenton, 2016; Sorla-Lara &amp; Banister, 2017, 2018</td>
</tr>
<tr>
<td>D. Planning contexts and process dynamics</td>
<td>Klimová &amp; Pinho, 2020; Papaioannou et al., 2016</td>
<td>Canitez, 2020*; Fenton &amp; Gustafsson, 2015; Foltynová et al., 2020; Imran &amp; Pearce, 2014; Isaksson et al., 2017; Hrelja, Richardson &amp; Isaksson, 2013; Macário &amp; Marques, 2008*; Pettersson et al., 2021; Rye &amp; Hrelja, 2020; Stanton &amp; Roelich, 2021*; Vigar, 2000; Werland, 2020*</td>
</tr>
</tbody>
</table>
3. Themes and findings concerning institutional and governance aspects of SUM planning

The reviewed studies are sorted according to four themes. Each theme is introduced by a brief characterisation of the literature in the theme, followed by descriptions of each article. The descriptions are fairly extensive in length in order to give room for more specific insights from the literature. If you are looking for a brief overarching summary, you can turn to the chapter 4, where the findings from the review are interpreted and translated into a few popularized, overarching insights.

A. Overarching challenges and recommendations

A few articles provide overviews of challenges specifically related to effective sustainable urban mobility planning, and summarises general normative recommendations to approach those barriers. Those articles present both formal and informal institutional aspects, however with a main focus on formal aspects. Challenges and recommendations are somewhat overwhelmingly, if not vaguely, described in some studies, which might reflect an ambition to provide insights relevant for the heterogenic and varying planning contexts throughout Europe. They provide few straightforward practical advice on how to translate insights into local, contextualised approaches and practices for achieving effective SUM planning. There is a tendency not to further problematise or delve into details of the challenges, or the difficulties associated with influencing current institutional and governance conditions. Informal institutional conditions are generally approached in an instrumentally rational way which does not reflect the inherently normative and politically contested character of mobility planning, or the difficulties of establishing and sustaining support for specific policies and strategies in such contested environments. As an example, one of several general recommendations is to “provide effective political support for the policies adopted” (May et al. 2017). Establishing and sustaining political support and legitimacy for the SUM, its strategies, objectives and planning orientation is evidently an important aspect, but one which can also be approached and problematised as the very core – and main challenge – of planning. In one sense, the recommendation to provide political support is, in its simplicity, a distillate of the complicated nest of institutional and governance aspects intrinsic to the process of SUM planning that we aim to somewhat unpack and provide a deeper and more nuanced view of in this review. Nonetheless, the general barriers and recommendations described in the literature provide valuable insights into institutional aspects to consider when approaching and carrying out SUM planning.

General overviews of aspects influencing SUM planning

May (2015) provides a well-cited overview of institutional barriers to sustainable mobility planning. The study refers to previous studies, for example the European Conference of Ministers of Transport (ECMT 2002), which highlights six principal barriers due to: poor policy integration and coordination; counterproductive institutional roles; unsupportive regulatory frameworks; weaknesses in financing
and pricing; poor data quality and quantity; limited public support and lack of political resolve. A similar set of barriers are also outlined by the ELTISplus *State of the Art Report* (2012) and have been reflected in the subsequent versions of SUMP Guidelines (for example, Rupprecht Consult 2019). According to May (2015), those institutional barriers are highly consistent also with previous EU-level studies:

- Conflicting institutional roles, both vertically and horizontally;
- Hesitant political commitment to the principles of sustainability and to the solutions needed;
- Poor integration between policy sectors, and particularly between transport and land use;
- Inappropriate financing, both for plan preparation and implementation;
- Limited skills in option generation and undue emphasis on supply-side solutions;
- Limited public support and lack of experience in stakeholder involvement; and
- Poor data and lack of evidence of the performance of specific solutions. (ELTISplus 2012)

In addition, May (2015), with reference to Atkins (2005) and May (2009) identify problems related to weaknesses in monitoring, target setting, appraisal and implementation.

Kalakou et al. (2021) has identified fifteen challenges related to SUM planning and implementation regarding, for example: anchoring and gradually developing sustainability thinking; institutional cooperation and inclusion of decision-makers; developing and sustaining competencies which span an increasingly complex mobility field; sustaining and transferring knowledge; understanding political interests and attaining political support; involving citizens in relevant ways; estimating feasibility and acceptance of measures, especially for novel measures with yet uncertain effects; identification and utilisation of synergies; and applying research knowledge and good practice with consideration of contextual factors which might impede success.

In a study of Czech cities, Jordová & Bruhová-Foltýnová (2021) illustrate how barriers might reflect informal institutional aspects. They identify a lack of communication among actors, low level of trust, lacking political appreciation of needs for changes in travel behaviors, and significant differences in actor perceptions of solutions and relevant measures. Differences in professional competences among institutions, and changes in political majorities following elections, also complicate planning.

Additional overviews of barriers have been provided by among others May (2005) and Banister (2005). For overviews of previous research, see also for example Kalakou et al. (2021) and Bardal et al. (2020).

Several studies provide normative suggestions, for example focused on how national frameworks can support SUMPs. May et al. (2017) provide a list of nine recommendations based on two previous reports (ECMT 2002, 2006) and empirical studies of national frameworks for SUMPs in six European countries:
• establish a national policy framework for urban travel which supports and influences policy on land use, health and the environment, and maintain consistency in the framework over time;
• improve institutional coordination and cooperation, horizontally between national policies and vertically between tiers of government;
• decentralise responsibilities where possible and centralise them where necessary while facilitating the coordination of all elements of transport policy at a local level and maintaining a national auditing role over cities’ performance;
• support local or regional authorities in the development, appraisal, monitoring and evaluation of integrated, sustainable, urban travel strategies and encourage the development of the technical skills required;
• encourage effective public participation, partnerships and communication and provide effective political support for adopted policies;
• provide a supportive legal and regulatory framework, particularly for public transport, demand management, emissions and safety;
• ensure a comprehensive pricing and fiscal structure which sends appropriate signals to users and operators;
• rationalise financing and investment streams so that they are consistent across all modes and avoid any undue bias towards infrastructure-based solutions;
• improve data collection, monitoring and research, particularly by consistently monitoring the implementation of urban transport policies.

May et al. (2017) also formulates 20 criteria characterising a supportive framework for sustainable urban mobility planning, based on the above nine recommendations, and notes that countries generally perform badly in relation to half of them. The normative literature also suggest certain decision-making processes and tools. A few studies concern specific support tools for SUM processes such as web-based assessments of sustainable urban transport policies (see for example de Stasio et al. 2016), and application of certain planning and decision-making processes (see for example Carteni et al. 2017). Another example is provided by Founta et al. (2020) who have developed a course package, or a ‘capacity building program’, aimed at strengthening the capacity of small and medium sized cities to implement innovative transport schemes and raise awareness of benefits of innovative policy measures. An ambition is to strengthen local authorities as learning organisations within a constantly changing mobility landscape. There are also studies exploring methods for multi-criteria evaluation to assess and compare SUMP’s (see for example Kiba-Janiak & Witkowski (2019).

Bardal et al. (2020) exemplifies another normative strand of studies – in their case based on Norwegian insights – which in comparison to the above examples adopt a more context-sensitive and explorative approach to SUM planning. The study identifies preparation of policy packages which combine ‘push’ and ‘pull’ measures, strategic communication, and making room for trials and step-by-step introduction of policy measures as success factors for SUM planning.

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Path-dependencies and challenges when making shifts towards sustainable mobility

A few articles – among them Banister’s seminal article which sketches out a paradigm for sustainable mobility – attends to challenges and recommendations for making a shift from conventional transport planning. This literature discusses sustainable mobility mostly on a strategic and conceptual level, related to dynamics and tensions between more transformative ambitions, and incremental approaches for changing planning practice.

Banister (2008) provides a normative view on what constitutes a sustainable mobility paradigm, as well as necessary conditions to achieve a shift towards such a paradigm. At an overarching level, Banister points at the importance of involving communities and stakeholders and making it evident that intended policy measures work and will prove effective while also being perceived as equitable, in order to build public acceptability for radical change. Information, involvement, packaging of measures, marketing of benefits, adopting policies in stages, achieving consistency between different measures and policy sectors, and a planning framework which allows successive adaptability of plans, are important elements in promoting public acceptability. A central part of sustainable mobility planning is to explore ways of building cooperation, support, and coalitions with actors willing to take on a collective responsibility.

In outlining a Triple Access System approach to accessibility, Lyons & Davidson (2016) address the need shift from a predict-and-provide approach towards a more sustainable paradigm, similar to Banister’s paradigm shift. They describe two contrasting pathways for policymaking under uncertainty and which consider the dynamics between different elements contributing to accessibility: a regime-compliant pathway, in which adherence to current trends and the nature of the world as we have known it pushes policy, and a regime-testing pathway, in which visions of the future pull policy decisions. To better accommodate uncertainty in policy and decision-making, a shift towards regime-testing policy-making pathways is promoted.

While both Banister and Lyons & Davidson frame a more sustainable mobility paradigm and outline ways forward, Berger et al. (2014, in Fenton 2016) contribute by noting four critical challenges for such shifts: unintended rebound effects or ineffective outcomes; deviating understandings of what sustainable mobility implies; path dependencies and vested interests; and strategies which fail to reflect needs of different groups. Hysing (2009, in Fenton 2016) also point at barriers related to path dependencies, technological lock-in, vested interests, dominant discourse, unsupportive organisational settings and lack of policy integration. According to Fenton, incrementalism, which is fueled by a strive for consensus and strong channels for citizen participation, reinforce path-dependency in the transport system. This may hamper consideration of potential radical shifts and alternative futures.

Marsden & McDonald (2019) explore, more specifically, institutional issues which might impede a shift in forecasting and decision-making practices. Politicians might prefer one central forecast rather than being confronted with different futu-
re development trajectories. Presenting broad spans of potential futures might also decrease the credibility of planning in the eyes of politicians. Although planners acknowledged the importance of accommodating deviating trends and future trajectories, they found it difficult to incorporate them into current planning tools. Today’s models are complicated enough, and there are limited time and resources to account for potentially changing travel patterns. Uncertainty in future demand is accepted in principle, but not incorporated in practice. Practices and guidance of central government is, further, understood to carry great influence over the consideration of uncertainty, and is difficult to diverge from due to resource dependency. The historic development of assessment methods seems to constrain which future directions that can be considered. There is a socio-technical lock-in, with large investments and skills contributing to sustain current practices. The authors suggest that incremental development of appraisal tools will not be sufficient. To achieve a more fundamental change in practices, the debate on transport needs to be reframed. The authors thereby point at the insufficiency of suggesting or trying out new practices without embedding them in a broader (re)framing.

B. Integrating policy sectors and levels of government

One strand of literature concerns horizontal integration of transport planning and other relevant policy sectors such as land use, and vertical integration and coordination among different tiers of government. The reviewed literature in this theme problematises policy integration by relating to formal (such as legislative or organisational frameworks) and informal (such as social networks, norms and values) aspects which influence conditions for horizontal and vertical integration in practice. The literature also regards how different forms of knowledge is used – or not used – in ways which can support or hamper policy integration.

A (lack of) multi-level perspective in SUM planning

At an overarching level, Okraszewska et al. (2018) promote analysing and approaching SUMP from a perspective of the multiple planning levels which influence the transport system and its development: macro, meso, and micro. According to the authors, most SUMP do not include such a multi-level perspective, and those that do have not integrated the analyses of the different levels. The authors promote the use of multilevel transport models to support integration.

Formal and informal institutional influence over policy integration

Fragmented and diversified tiers of government and complex urban policy agendas increases the need for policy integration in planning both horizontally and vertically, as well as attending to both formal and informal means of governance. Stead (2016) has studied the role of policy instruments to promote ‘soft’ forms of governance, which he associates with elements of (informal) persuasion and coordination to promote policy integration and sustainable development in practice. Stead identifies five categories of policy instruments which are increasingly used following the shift from traditional government to governance, and which Stead terms ‘soft’ instruments: (a) policy indicators and targets; (b) benchmarking; (c) policy transfer and best practices; (d) policy experimentation and innovation; and (e) visioning/envisioning. Stead concludes that it is important to recognise that there are limits to the level of policy integration that can be achieved in practice.
In complex, democratic political systems, incoherence may be unavoidable. It is contestable to what extent soft forms of governance can promote greater policy integration, but no single instrument is sufficient. According to Stead, instruments need to be combined.

In a study of the integration of land use planning and public transport, Hrelja (2015) states that it is important to align such work with the institutionalised traditions, norms and objectives by which planning practices are governed in the specific organisation. Integration therefore requires what Hrelja terms a ‘normative component’ to ensure its implementation: the aspects that should be integrated ought to be aligned with established discourses and rationales. For example, while deliberation and striving for consensus among relevant policy makers and officials might prove effective in some organisations, it is no panacea for integration. In a related study, Hrelja et al. (2017) shows that informal institutions help regional and local authorities to negotiate the constraints of formal, statutory institutions and ‘oil the wheels’ in delivering measure and policies. However, there are limits to how far informal institutions can help overcoming formal restrictions to integration, and by their very nature informal institutions are difficult to influence or modify. Relying on informal institutions to fill gaps in formal responsibilities may be a risky strategy and might prove especially problematic when unpopular decisions are made. In a similar vein, Rye et al. (2018), in a study of national and regional policy levels, identify informal institutions as smoothing critical interfaces where formal institutions otherwise produce sub-optimal (public) transport solutions. Formal and informal institutions can, accordingly, be highly complementary. Informal institutions are additions to the institutional landscape and cannot function without the formal institutions. Informal institutions might be understood as being used to circumvent formal procedures, while not necessarily appearing to be challenging the formal institution. Hirschhorn et al. (2020) complements the two elements of formal and informal institutions with a third element – individuals’ agency – in a study of public transport governance. Key actors, formal frameworks and informal institutions co-exist, interact and work alongside each other to facilitate collective decision-making on issues ranging from integrating land use and transport to dealing with budget constraints. The authors conclude that sustainable transport developments would benefit from an improved understanding of how policy-making and implementation unfold in practice.

Another example of difficulties achieving policy integration is provided by Hull (2008), who identifies contradictions and tensions within a fragmented UK government structure, both vertically between tiers of government and horizontally within each tier. Potentially radical approaches to transport planning at the local level are undermined by national and regional funding schemes which do not encourage integrated transport strategies. At the local level, different professional and departmental cultures and values, an absence of mechanisms for policy integration, insufficient resources and technical skills to implement sustainable solutions, and insufficient baseline data, further hampers policy integration. Visions of what constitutes sustainable transport might also vary between professions, and transport policy suggestions often conflict with other sector policies and agendas. According to Hull, the sustainability paradigm needs to be shared by all relevant actors, and favorably be supported by senior politicians and officials,
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for policy integration to be strengthened. Shared responsibility and continuous engagement across departments and agencies, both nationally and locally, might trigger more effective collaboration, and provide opportunity to establish trust and an increased understanding of different professional cultures and attitudes.

**Use and non-use of complementary forms of knowledge**

In a Scandinavian study of integrated planning, Tennøy et al. (2016) illustrates more specific obstacles to policy integration by problematising usage of different knowledge(s). Tennøy shows that there are contradictions in planners’ actual use of knowledge in planning processes. While expert knowledge is used for understanding, explaining, and arguing for integrated developments of land-use and transport, planners also disregard or oust expert knowledge when legitimising contradictory measures that are included in plans. This neglect may be the result of knowledge being unknown, reliance on older planning paradigms, or self-censorship in situations when knowledge contradicts the structural power associated with political agendas or objectives. Strengthened integration of land-use and transport planning requires changed framings in planning, but such processes of change might cause clashes among different types of knowledge. Integrated planning increases complexity and the span of different objectives and knowledge. In such complexity, how expert knowledge is used, and how it influences planning, is not obvious.

Vigar (2017) problematises perceptions of transport planning as relying on particular ‘technical’ knowledge forms characterized on the one side by instrumental means-end rationality and forecasting models, and on the other political decision-making which do not sufficiently regard outcomes of such technical work. Vigar argues that the usefulness of different and broader form of knowledge when confronting complex problems should be acknowledged and articulated in everyday transport planning. Reflexivity and a communicative, transdisciplinary and learning-oriented approach in which different forms of lay and expert knowledge is shared and exchanged can enhance quality and legitimacy of processes and outputs, build trust and possibly result in reframing of issues. Transport planning, according to Vigar, should address the different forms of knowledge that coexist in planning processes. This would imply an opening up of specific tools for debate, but also facilitating stakeholder involvement in the design of policy processes. Vigar provides a heuristic categorisation of four closely interlinked forms of knowledge: embodied/local knowledge; technical/codified knowledge; practice-centered knowledge about what actually works; and political knowledge. There is a need for situated judgment, or phronesis, to bridge knowledge forms and to integrate technical rationality with value rationality. Vigar suggests scenario building as one technique to synthesise knowledge by attempting to influence, rather than responding to, the future. Still, Vigar also recognises problems inherent in such knowledge-integrating approaches related to, for example, resource intensity, representation of voices, skills to facilitate processes, and trust and willingness to engage in such work. Tennøy’s and Vigar’s attention to different knowledge forms, and accommodation of different knowledges in planning, also relates to the next theme in the review, which regards participation and co-creation, and challenges related to broader inclusion of actors in planning.
C. Participation in planning

Several studies point at benefits of participatory practices, integrating interdisciplinary knowledges and reflecting broadly on what constitutes sustainable mobility. But broadened processes are also associated with challenges. Some studies problematise the normative assumption in SUMP guidelines that participation should characterise the full process of developing and implementing SUMPs, and point at difficulties of achieving a representative set of voices. Two articles in our review more specifically attend to participation in transport scenario-building.

Public participation and citizen involvement

Freudendal-Pedersen & Kesselring (2016) normatively argues that sustainable mobility planning is in need of reflexivity, interdisciplinarity and exchange of ideas and concepts to shape powerful and strong visions and policies. They exemplify with ‘collaborative storytelling’ as one way to broaden thinking and break with path-dependencies. Instead of relying on increasingly complex transport models and simulations, focus could be turned to staging intersections where storytelling, a new argumentative rationality, and the construction of desirable mobilities futures, both gain space and become realistic. The authors relate to a normative ideal of ‘successful communication’, with reference to Habermas, based on trustful and – ideally – a power-free communicative setting. Angelidou et al. (2020), in a likewise normative way, discuss co-creation processes involving citizens in planning as a promising way to facilitate innovation, strengthening citizen-centric governance, and creating more effective, inclusive and democratic development policies. Citizen engagement from the outset of and throughout the planning process is considered crucial for developing impactful and sustainable solutions, and for contributing to empowerment and community building.

Lindenau & Böhler-Baederker (2014) state that mobility planning without participatory principles cannot be considered sustainable urban mobility planning, and that participation can contribute to more effective and efficient processes and outcomes. However, there are general difficulties in carrying out effective participation in practice. These difficulties relate to principal questions of which democratic and representative function participation actually fulfils, whether participation contributes to acceptance of specific policies or measures, and whether participation results in improved quality of decisions. In practice, cities face problems related to how to progress after stakeholder involvement, consider the results in the planning process, and integrate them into decision-making. This gap between ideals expressed in SUMP guidelines and practice is also identified in additional studies. In a comparison of Spanish SUMPs, Mozos-Blanco et al. (2018) note that “public participation continues to be addressed more in theoretical than in practical terms.” (ibid, p. 53) Also Klímová & Pinho (2020), in studying Czech and Portuguese SUMP practices, identify difficulties to involve stakeholders throughout the process to the extent suggested in SUMP guidelines.

van der Linde et al. (2021) have studied involvement practices in Malmö, Sweden, and Utrecht, the Netherlands. Interviewed planners state that while SUMP guidelines highlight the involvement of stakeholders, citizens and non-government organisations are not always able to think strategically in relation to sustainable urban mobility planning. Involvement does not necessarily bring added value to
the process. Interviewees see benefits with engaging other relevant public planning actors, but perceive such activities as time consuming and identify a deficit in knowledge and experience of ways and methods to coordinate policy. In a study of the development and implementation of sustainable mobility strategies in Basel, Switzerland, Fenton (2016) has noted the importance of committed individuals capable of expanding the ‘strategy space’ of processes. Participation can be one way to expand the ‘strategy space’, yet may also generate divergent or contradictory development directions, and thereby result in incrementalism. A rapid transition to sustainable mobility is, according to Fenton, thus likely to require increased politicisation of strategies by both politicians and civil servants.

In a study of French SUMPs, Reigner & Brenac (2019) question the influence and representativeness of citizen participation in SUMPs. They state that sustainable mobility planning has of yet not resulted in any significant decrease in car travel, while actual citizen involvement has also been limited. From a Marxist critical perspective, SUMPs are, like all planning, seen as supporting neoliberal city branding focused on increasing the attractiveness of city cores. This strengthens territorial inequality, as traffic is pushed outwards and continues to expand in the urban periphery. The authors find current developments being made possible by a depoliticisation of transport policy by grounding planning in ideas of developments being shaped by individuals making rational decisions. A call for a re-politicisation is made. The conclusions resemble Rye & Hrelja (2020, see also next section), who identify ambiguities in SUMP policies which favor traffic calming measures in city cores, while increased traffic is accommodated in urban peripheries.

Co-creation and participatory approaches to scenarios and back-casting
Soria-Lara & Banister (2018) have studied how participatory methods to do back-casting may help to bridge a gap between expert-led normative scenarios and policy action. Through a study in Andalusia, Spain, the authors draw eight conclusions which reflect both obstacles and support for collaborative scenario planning:

• selection of participants may differ between different stages of back-casting to provide relevant competences and experiences in each stage;
• participatory techniques should be combined as both directed and less directed approaches are needed to enable creative thinking as well as obtaining relevant results;
• collaborative back-casting can promote learning among participants and establish more holistic understandings, but requires that the scenario building process is iterative and facilitates exchange of different views;
• a ‘neutral’ and knowledgeable mediator can provide favorable conditions and procedures for sharing knowledge and finding a balance between different kinds of knowledges and terminologies in order to avoid risks of certain knowledge types being privileged;
• to help participants to consider disruptive transport futures and unusual policy solutions, ‘wild cards’ – understood as highly influential events but which have low probability of occurring – and radical outliers in scenarios can assist discussions;
• if participants have difficulties discussing longer-term futures which are necessary to break with current trends, a solution can be to introduce shorter and mid-term intermediate milestones on the path towards the distant future, and
narratives of how past interruptions have led to dramatic change can assist thinking;
• when assessing feasibility, acceptability and potential implementation barriers, representation of broad competencies which span political, financial and social aspects can assist, but contradictions and possible synergies between outcomes might make it difficult to identify a single pathway;
• processes need to be customised for each particular situation. The complexity of problems and responses are of a political nature which makes it difficult to reach consensus. Attending to collaboration as a continuous process, and at the same time addressing barriers to implementation, might be a way to bridge the implementation gap.

In a related paper, relatable to the findings of Vigar (2017, see also previous section), Soria-Lara & Banister (2017) elaborate on difficulties related to sharing knowledge among participants in collaborative scenario building. Interaction includes both explicit’ knowledge which is easily codified and expressed in words and numbers, and ‘tacit’ knowledge which is rooted in personal experience in a specific context and harder to share. For example, transport planners tend to favor quantifications, while land-use planners are more used to deal with qualitative information. Soria-Lara & Banister also identify institutional barriers due to political reluctance to carry out bottom-up participatory approaches, and a perception of participation activities as being time-consuming. The authors note that previous literature provides few examples of implementing adaptive policy frameworks in transport planning, and that bottom-up approaches can help to gain insights into barriers associated with adaptive policy frameworks and potentially overcome them. This attention to barriers for bottom-up approaches points towards the next theme in the review, which regards the importance of considering context in setting up SUMP processes.

D. Planning contexts and process dynamics

Literature has highlighted the importance of attending to local institutional contexts and conditions, including various process dynamics such as path-dependencies and lock-ins stemming from mental models and attitudes, norms and politics, which might influence the applicability of certain planning approaches and practices, as well as the effectiveness and outcomes of processes. Local differences are also understood to influence the transferability of knowledge, processes, and practices between different planning settings. A common recommendation in the literature is to consider these situated conditions beforehand and adapt processes and the methods accordingly in order to improve conditions for a successful, effective outcome.

Attend to the planning and decision-making context

Isaksson et al. (2017) note that new policy ambitions are normally implemented in pre-existing contexts with policy arrangements which may have evolved over several years, resulting in complex settings which consist of a mix of aims and instruments. With reference to Steele (2011) they claim that planning needs to “rel[y] on a thorough understanding of the often complex and messy institutional conditions that characterize planning and policy making in practice” (Isaksson et al. 2017:50). They borrow the term ‘policy layering’ from Rayner & Howlett (2009) to describe situations
where different goals, instruments and programs are being added and stacked on top of each other over time, which results in incoherence and inconsistencies. They also find elements of what Rayner & Howlett call ‘drift’, understood as policy goals changing while instruments used to implement them remain unchanged, which makes practices inconsistent and inefficient in relation to policy. Rayner & Howlett have also defined the concept ‘conversion’, as a situation where new instruments or practices are introduced but not proving effective due to inconsistent policy.

In a meta-review of infrastructure-related case studies concerned with decision making under deep uncertainty (DMDU), Stanton & Roelich (2021) identify that previous literature has only given limited consideration to the decision-making context, which might hinder the application of DMDU tools and their results in practice. Institutional, organisational and individual aspects may impede uptake and successful implementation of DMDU methods. Most studies have focused on developing tools to evaluate robustness and adaptivity of planning, while fewer studies have attended to practical implementation. The authors note that the scenarios developed in the majority of studies did not consider social, cultural, financial and political uncertainties, implying that such elements of the institutional context were overlooked. Complexity, deviating actor motivations and perceptions, framings and agency in decision-making processes were also given limited attention in the studies. The feasibility and acceptability of methods and options can, in addition, depend on specific organisational objectives and cultures which might limit the decision space and affect the applicability of DMDU methods. Overlooking such aspects might result in a mismatch between a specific method and the decision-making framework it is intended to support. Similar to Hrelja (2015) and others, Stanton & Roelich state that DMDU methods need to fit with established systems of governance and decision-making frameworks. As the organisational context bounds the decision space, the selection of DMDU approach needs to be carefully considered based on a thorough understanding of the context, and preferably selected in collaboration with stakeholders. Also the bounded rationality preferences of involved individuals need to be recognised. A way forward could also be to stick to the essential principles of DMDU approaches but modify and combine specific methods in ways appropriate to the local context.

In a study of how SUMPs in Czech and Portuguese cities follow SUMP guidelines, Klímová & Pinho (2020) are concerned with SUM planning more generally, but nonetheless in a similar way identify the need for attending to and supporting overarching principles of sustainable mobility, while allowing for discretion and deviation from guidelines for planning practice to fit the specific context. The study confirms that SUMP practices are, and need to be, heterogeneous.

**Challenges to transfer processes and knowledge**

A strand of literature is concerned with context in a different way, namely specific conditions for sustaining and transferring SUMP-related knowledge. Wereland (2020) points at the importance of creating a multi-level diffusion network which supports uptake of knowledge, and development and implementation of effective SUMP measures. The author identifies several mechanisms on different tiers of government which hinder or enhance diffusion, such as formal hierarchy, coercion, conditionality, competition, learning, networking, and the influence of policy.
entrepreneurs. Also, aspects such as international or inter-urban interdependencies, varying legislative standards on different levels, clarity in the organizational and institutional structure, and exchange of best practices, are identified. Canitez (2020) studies how a developed institutional framework may support policy transfer between different institutional settings. A fragmented governance system can be an effective barrier to policy transfer. Attempts at direct policy transfers without addressing disparity of institutional contexts are likely to fail. Canitez suggests that locating policy transfer into a broader institutional framework may overcome such problems.

On a sidenote, it can also be mentioned that Papaioannou et al. (2016) study ambitions to sustain a national SUMP network in Greece. In comparison with the above-mentioned studies, Macário & Marques (2008) provide a both nuanced and generally valid account of preconditions for the transferability of sustainable urban mobility policy measures and policy packages, as they note that transferability is dependent on contextual and institutional factors.

Path-dependency, discursive power and mental models

Imran & Pearce (2014) study discursive path dependencies – or, in other words, established understandings and ways of talking about transport policy – among policymakers as barriers to sustainable urban transport. Discourse constructed in the past and which is continuously reiterated may create and sustain a specific pathway, such as road-based policy pathways, which help actors to ignore calls for sustainable transport and reject change in policy direction and implementation. In a study of implementing mobility management measures in a municipal organisation, Hrelja, Richardson & Isaksson (2013) exemplify how radical and confrontational attempts to break road-focused path dependencies may result in the same watering down of initial ambitions as less controversial, more consensual policies. When handling controversial sustainable mobility measures, politicians and officers may hold conflicting understandings about how to best address problems, and it might be more beneficial to develop deliberative strategies of raising awareness, creating new consciousness or institutionalising desired discursive shifts.

Vigar (2000) studies the actual impacts of a ‘new realism’ shift in policy and rhetoric in the UK from predict-and-provide to managing travel demand. The study is based on an understanding that insights on a need to manage demand does not establish itself in a linear way. Vigar has previously identified four categories of barriers in transport policy: financial, organisational, cultural, and political (Vigar 1997; Pemberton & Vigar 1998). Vigar finds a ‘cultural baggage’ of technically grounded ways of thinking about and solving problems which emphasizes technical fixes. Some transport planners are reluctant to reconsider road proposals which have been proposed based on technical arguments, while land-use planners feel that they are unable to confront the technical arguments. Vigar finds that travel demand strategies have difficulties affecting practice, especially in cities with a low degree of congestion, due to: (1) dominant perceptions of roads equating with economic development; (2) political commitment to road construction; (3) lack of politically tradeable alternatives to road schemes; and (4) a continued will to meet, rather than manage, demand among certain officers. A continued emphasis on technical aspects also masks the political nature of transport planning. With reference to Hukkinen (1995, p. 102), Vigar states that there is a tendency of seeing po-
Pettersson et al. (2021) have studied how mental models among policy influencers affect implementation of sustainable transport policy. Mental and physical path dependencies were investigated in Stockholm and Gothenburg. By studying storylines, established perceptions which support car-focused planning could be identified. The authors identified different views among interviewees and differences regarding what was seen as key activities in their work. Also, geographical incoherencies were identified, such as objectives of reduced car use in central parts of a city, while road capacity is added in more peripheral areas (see also Reigner & Brenac 2019, and Rye & Hrelja 2020 below). According to the authors, this highlights an interplay between institutional and physical path dependencies due to previous decisions on infrastructure investments.

Similar to mental path dependencies, cognitive biases influence how officials and politicians perceive their area of influence when it comes to reducing car-use and promoting sustainable travel modes (Fenton & Gustafsson 2015). And, also in a similar vein, Rye & Hrelja (2020) identify that dominant problematisations and framings of cars in transport policy making in a number of European cities result in ‘silences’ or ambiguities – for example by restrictive measures being limited to the central city – which may result in increased car-dependence outside the city center. The authors call for explicit policy problematisations of car-travel beyond the limited geographies of city centers. Foltýnová et al. (2020) shows that planners who agree on a general definition of sustainable urban mobility are also supportive of ‘pull’ measures, while attitudes are divided regarding restrictive ‘push’ measures. Value differences may be influential as an overarching agreement on a strategy is translated into actual measures.
4. Overarching insights from the literature

The reviewed literature has illuminated important institutional and governance aspects which influence conditions to carry out effective SUM planning, as well as ambitions to make a shift from mobility to accessibility planning, and better accommodating uncertainty in SUMP’s. In this chapter, the review results are translated into a few overarching insights of relevance for effective SUM planning and integration of broadened planning perspectives and agendas. The review results in chapter 3 and these overarching insights serve as a response to the first research question in chapter 1 - *What does the literature say about the influence of institutional and governance conditions over sustainable urban mobility planning processes?*

**Be (a)ware of context – stick to principles, but allow practical discretion!**

In published overviews of barriers and challenges to SUM planning, the importance of attending to institutional and governance conditions are implicitly raised (see May 2015). For example, attention is given to barriers related to conflicting institutional roles, hesitant political commitment, and poor integration of policy sectors. Kalakou et al. (2021) more explicitly stress that research and good practice should be applied with consideration of contextual factors at hand. Still, there is a tendency in overviews of SUMP challenges to treat local institutional and contextual aspects in a somewhat distanced way. Institutional and governance conditions are in some accounts approached as simply instrumental aspects which planning can control and overcome. Such a view is, for example, expressed in normative suggestions such as “provide a supportive legal and regulatory framework”, “improve institutional coordination and cooperation”, and “provide effective political support” (see May et al. 2017, p. 5).

Other literature calls for more in-depth consideration of institutional and governance conditions, and suggests that approaches and methods ought to be adapted to local circumstances in order to be effective. Approaches and planning instruments might be more successfully implemented if discursive as well as practical path-dependencies, lock-ins and ‘cultural baggage’ in organisations are attended to (Imran & Pearce 2014; Vigar 2000; Marsden & McDonald 2019), and approaches to integrate policy sectors are aligned with institutionalised traditions, norms and objectives (Hrelja 2015). Given the varying planning conditions among cities throughout Europe, planning should stick to the overarching principles of sustainable mobility, while allowing for deviation from guidelines in practice, since SUM planning is, and needs to be, heterogeneous to align with local planning contexts (Klimova & Pinho 2020). Also transferability of planning approaches and policy is dependent on contextual and institutional factors, and transfer of policy without addressing differences in institutional contexts are likely to fail (Macário & Margues 2008; Canitez 2020). Choices of planning instruments and approaches
in general, as well as instruments and approaches for shaping scenarios and decision making under deep uncertainty more specifically, need to be made based on an understanding of the context at hand, and preferably in collaboration with local stakeholders. Essential principles should be followed, while approaches might be modified or combined (Stanton & Roelich 2021).

These insights point at the following general recommendations for how to approach SUM-planning:

• Consider established, local institutional and contextual conditions (formal as well as informal), how these influence SUM planning, and the possibilities to influence and shift such conditions.

• Hold on to overarching principles of sustainable urban mobility, accessibility, and consideration of uncertainty, while encouraging a deliberate choice of specific methods and planning tools – or combinations of tools – to operationalise the principles in practice.

• Learn from previous examples and empirically grounded insights on how to practically approach and accommodate broader perspectives on accessibility and uncertainty.

**Attend to institutional and governance dynamics throughout the planning process!**

Hirschhorn et al. (2020) stress that sustainable mobility planning would benefit from a deeper understanding of how policy making and implementation unfold in practice. Literature points at how processes are influenced by value conflicts (Hull 2008) and mental models (Fenton & Gustafsson, 2015; Pettersson et al. 2021), varying translations of overarching agreements on sustainability into measures and practices (Foltýnová et al. 2020), limiting and differing problematisations and framings of problems and solutions (Rye & Hrelja 2020; Jordová & Bruhová-Foltýnová 2021), ‘cultural baggage’ of technically grounded ways of thinking about and solving problems (Vigar 2000), and discursive path dependencies (İmran & Pearce 2014). Available knowledge on sustainable solutions might also be ignored due to, for example, political considerations (Tennöy et al. 2016).

Throughout, planning processes are imbued with power and influenced not only by (more stable) institutional and contextual conditions, but also by informal and/or implicit institutional and governance dynamics. These insights point at the following general recommendations:

• Planning approaches should consider institutional and governance dynamics throughout the planning process. This might help to consider the process to be open to successive influence, iterative and changing, with different phases of the planning process overlapping rather than following a linear, stepwise progression.

• These institutional and governance dynamics call for continuous reflection and adaptation with regards to how the process is influenced by successively emerging issues and conditions.
There are limits to participation – consider where it contributes the most!

Involvement of political representatives and other stakeholders is stressed as a core principle of sustainable urban mobility planning in the SUMP guidelines. While involvement can contribute to transparency, quality and wider perspectives being considered, extensive involvement has also been problematised. Studies identify difficulties related to involving stakeholders throughout a SUMP process, time consumption and lacking experience associated with involvement, difficulties to achieve strategic thinking and questionable processual value of some participatory processes (van der Linde et al. 2021; Klimova & Pinho 2020). Also, principal questions are raised regarding what democratic and representative function participation fulfills, whether it contributes to increased acceptance of outputs, improved quality of decisions, and how to take results into account in continued planning and decision-making.

This points at the following general recommendations:
• Given limited resources, in combination with difficulties associated with achieving and making use of extensive stakeholder involvement, it seems relevant to prioritise at which stages involvement of stakeholders bring most value (be it democratic, processual and/or implementation-related values).
• Tailor the representation of stakeholders to each phase in the planning process.

There are limits to integration – consider the level of ambition!

According to literature, there are limits to the level of policy integration that can be achieved. Some degree of incoherence among policy sectors, such as transport and land-use policy, may be inevitable. There is also no evident, single best approach to achieve policy integration (Stead 2016). In some organisational and institutional settings, deliberation and striving to reach consensus among policymakers and officials might prove effective, while not in others. Deliberation (including the span of participatory approaches) is no panacea for integration (Hrelja 2015). Informal institutional conditions, including differing values, discourses and framings of problems and solutions in the mobility system, influence also attitudes towards policy integration (Hrelja et al. 2017). Like planning approaches in general, approaches to integrated planning need to be aligned with institutional traditions, norms and objectives (Hrelja 2015). A combination of instruments and approaches might be effective (Stead 2016). Introducing approaches to accommodate uncertainty and a broader definition of accessibility widens the planning scope and thereby further adds to the need for policy integration.

This points at the following general recommendations:
• Acknowledge that accommodation of uncertainty and a broad conceptualisation of accessibility increases the scope and complexity of planning, adds additional process dynamics, and reinforces challenges associated with policy integration.
• Consider to what extent, and by which means, perspectives can be accommodated and integrated with sensitivity for the local context and institutional conditions.
Accommodate processual reflexivity and complementary forms of knowledge!

Vigar (2017) distinguishes between four types of complementary knowledge which, if they are reflected in planning processes, can support reflexivity and learning: technical/codified knowledge, embodied/local knowledge, practice-centered knowledge about what works in practice, and political knowledge. By providing room for situated judgment among participants, different knowledge forms might be bridged and integrated. A ‘neutral’ but knowledgeable process facilitator can establish favorable conditions for sharing knowledge and avoid certain forms of knowledge dominating discussions (Soria-Lara & Banister 2018).

It points at the following general recommendations:
• Accommodate successive reflection over the process, which ways of knowing that are given room, and what additional ways of knowing could bring additional perspectives.
• Consider to consult a process facilitator who can help bridge different forms of knowledge.

Develop the institutional capacity of the planning organisation!

All of the above insights point at the importance of striving for an organisation with the resources, mandates and competences to both carrying out the SUMP process, and at the same time manage the possibilities and challenges with triple access planning for uncertain futures as well as the institutional and governance complexity. This calls for enhancing the institutional capacity by handling and reflecting upon, the institutional challenges that arise. This, in turn, includes accommodating processual reflexivity as mentioned in the previous section. In their definition of the concept, Healey (1998) and Magalhães, Healey & Madanipour (2003) bring forward three main aspects that capture many of the findings in the literature: (1) knowledge resources – including the actors’ norms, perceptions, competences, mandates, resources, missions and visions; (2) relational resources – the actors’ social networks and social capital; and (3) mobilising capacity - steering tools, incentives, operational tactics and strategies and ‘negotiation techniques’ of the various actors. Much of this is already highlighted in the SUMP guidelines (Cré et al, 2016; Rupprecht, 2019), and is found implicitly in much of the reviewed literature. What is emphasised here is the need for a developed institutional awareness, especially concerning informal aspects, as a strategic meta-perspective on SUM planning.

This points at the following general recommendations:
• Map and learn about the knowledge resources, relational resources and mobilisation capacity that are carried by the appointed actors and actor groups for the SUMP process. Identify the strengths and weaknesses in the actor network and institutional frameworks that needs to be handled before going into planning action.
• Include reflexivity in the design of the process so that it becomes a systematic and continuously recurring planning activity. Apart from supporting the process, it should lead to long-term increase of the institutional capacity of the organisation.
• Learn from the above-mentioned analysis and adjust the resources, mandates and competences in the organisation as well as the institutional framework of local policy, decisions and assignments to tailor the process. Evaluate the institutional capacity in a systematic manner at several stages in the process in order to prevent lock-ins due to conflicts or lack of competence, social capital or mobilisation deficits.
5. Implications for SUMP practice

Taking the above insights into consideration, we now attend to the SUMP guidelines (Rupprecht 2019) to discuss gaps in how institutional and contextual aspects are considered in the guidelines, and how the guidelines might be developed to better accommodate institutional aspects of TAP and uncertainty. This replies to the second research question - What do insights from research literature imply for SUMP practice? In a first step, it is done by revisiting the SUMP guidelines for a critical reading supported by the core concepts presented in chapter 1. After that, the main stages of the SUMP procedure promoted in Rupprecht (2019) are examined and possible development discussed.

Analysis: A critically informed re-visit of the SUMP guidelines

An underlying assumption in this review is that TAP (Lyons 2021) and the prospect of better accommodating uncertainty causes increased complexity which might motivate developed SUMP framework and guidelines. A re-visit of the guidelines (the 2nd edition, Rupprecht consultants, 2019) and the manual for institutional cooperation (Cré et al, 2016), after having gone through the literature (chapter 3) and the overarching insights (chapter 4), brings forward additional critical insights for this development. As a simple way of analysing the relationship between the guidelines and the findings and insights from the literature, we depart from the initially (in chapter 1) presented core concepts of institutions, governance, power and uncertainty.

Informal institutions are not explicit in the SUMP framework and guidelines.

While several of the reviewed studies highlight informal institutions and action as highly influential and important as a balancing force in the SUMP process, those matters are mostly implicit or even invisible in the current SUMP guidelines. The guidelines have a strong focus on producing a planning document, whereas informal institutions are more or less treated in terms of stakeholders and citizens – rather than as structures, frameworks or institutional practice. In the reviewed literature, the stable character of formal institutions seems to support lock ins, path dependencies and obduracy that causes fragility and lack of flexibility for unforeseen events and changing planning conditions. Informal institutions appear as more adaptable to new challenges due to their more fluid character, and informal institutional practice appear as important for dealing with such challenges when formal institutional instruments are insufficient. The SUMP guidelines, including the manual for institutional cooperation, focus on identifying the actors and their interests and agendas, and then on establishing formal agreements for cooperation. Informal institutions in the sense of discourse, mental models, norms and attitudes are not made explicit. For SUM practice, it would be beneficial to pay more attention to the ways in which these informal institutions are produced and
reproduced for each phase, step and activity in the SUMP process. While this is important, it is at the same time difficult to provide detailed instructions for, so a general suggestion could be to provide resources and arenas for strategic deliberations throughout the process.

**Governance is addressed, but mainly as a matter of operational planning performance.**

The initially outlined broad definition of governance is traceable in several of the studies (e.g. Hrelja, 2015; Hull, 2008; May, 2015; 2017; Okraszewska et al., 2018; Stead, 2016). Taken as a whole, the SUMP-guidelines and especially the manual for institutional cooperation highlight several aspects of governance, including the multi-level perspective and vertical-horizontal integration challenge, however in a general fashion. The 12-step procedural SUMP cycle is focused on ‘doing planning’ and producing tangible results and not so much on reflection and adaptation to the underlying informal governance aspects. As a result, the guidelines are ‘universal’ and do not very much consider contextual factors, although several of the proposed activities for SUMP step 1 and 2 (Rupprecht, 2019:31) are explicit in advocating adaption to existing policy and the different actors’ agendas and interests. This can be understood as a way of bridging various differences within the EU regarding steering cultures and formal planning systems, but it reflects the task to support planning practice in a firm and easy-to-grasp manner with the aim to produce SUMP plans in accordance with the EU SUMP framework. Again, informal aspects are difficult to describe in detail, which supports the overarching character of the insights from our literature review, and especially emphasize the need for attending to contextual factors and institutional and governance dynamics, and to allow for processual reflexivity throughout the process.

**Power is not explicitly discussed in the SUMP guidelines.**

The literature review is not extensive regarding the issue of power in sustainable urban mobility planning. Most of the studies do not research or reveal power-relations. However, formation of discourse (Imran & Pearce, 2014), policy frames and culture, as mentioned by Hrelja, Richardson & Isaksson (2013) and Vigar (2000), can be considered as expressions of power-struggle, and so can the use and non-use of various forms of knowledge (Tennöy et al, 2016; Vigar, 2017). While both the TAP perspective (Lyons, 2021) and SUMP (Rupprecht, 2019) are based on the idea of moving from an established ‘predict-and-provide paradigm’ to a more sustainable and people-oriented ‘decide-and-provide-paradigm’, the struggle for establishing different modes of discourse in informal planning practice is seldom brought to light in planning documents. The SUMP guidelines direct attention towards the (municipal) public officials but are not very detailed about the importance of political dynamics, the actors on other levels of planning and of the horizontal networks of power and interaction between sectors within the municipal organization. Stakeholders and citizens are viewed as informal actors that can be involved in the process but that do not seem to have any central role. The guidelines place the initiative in the hands of the planning officials and consider both decision-makers and stakeholders as “external” to the core team for developing the SUMP.
Institutional uncertainty is not raised as a challenge in the SUMP guidelines. On a general level, the SUMP guidelines mostly consider unknown futures as a continuation of the present. Where scenarios are discussed, it is mainly normative substantial planning alternatives that are conceived, not explorative scenarios. The reviewed literature has for the most not (Stanton & Roelich 2021 and Vigar 2017 being exceptions) indicated any outspoken approaches to uncertainty in general or institutional uncertainty in particular either. As Stanton & Roelich (2021) point out, most approaches to decision making under uncertainty focus on the practical development and implementation of plans from a planning content point of view and do not consider uncertainty surrounding institutional, organisational or personal aspects. Robustness and flexibility are the desirable qualities of these approaches. Systems perspectives, as in the case of TAS, is mostly missing. In relation to the four levels of uncertainty, a reading of the SUMP guidelines and the manual for institutional cooperation shows that:

- Level 1 uncertainty is highlighted in the form of tactical measures and activities for handling conflict and various interests of stakeholders. Actors are mainly considered as stable entities with fixed agendas. The message in the guidelines is that following the guidelines will secure a successful outcome from the institutional perspective.
- Level 2 uncertainty is considered mainly concerning the content of planning – that is, the scenario-building and the production of planning alternatives that will lead to the generation of policy packages for sustainable urban mobility. Explorative scenarios for the world “outside” of the SUMP-related planning system as well as institutional uncertainty for the organization or the institutional governance practice as such are not elaborated on.
- Level 3 uncertainty - deep uncertainty, about institutional mechanisms and functional relationships in planning – is not treated in the guidelines or the manual. Here, the literature review highlights the influence from mechanisms and factors such as cognitive bias, unawareness of shared mental models and discursive reproduction of norms and ideas, path dependencies and the use and non-use of different forms of knowledge as aspects that may contribute to uncertainty.
- Level 4 uncertainty implies the deepest level of recognized uncertainty; in this case, we only know that we do not know. Since level 3 uncertainty is not handled in the guidelines or in the manual, level 4 uncertainty is not discussed either.

‘Good planning’ as the enemy of planning for uncertain futures?
It can be argued that informal institutions and governance action are moderately emphasised and detailed in the guidelines, possibly due to the strong instrumental rationality of a still pre-dominant technological approach to planning as linear, sub-divisive (stepwise), expert-dominated and (assumed) value neutral. The literature, on the contrary, highlights that the logic of the formal processes often induces path dependencies, that mental models, cognitive biases and discursive power play a dominant role in the shadow of the rationalised ‘story’ of successful (formal) planning and that results are often rationalized afterwards as being aligned with goals and targets due to effective planning action (Fenton & Gustafsson, 2015), where in many cases it is to a large extent the informal actions taken that actually brings out the results (Hrelja, 2015). This also seems to be one of the main reasons
for many of the highlighted challenges and barriers found in the literature and why several studies point out a lack of horizontal and vertical integration. The story of good planning in this sense seems to become one of its own worst enemies.

As an alternative, a new argumentative rationality (Freudendal-Pedersen & Kesselring, 2016), and the explorative construction of desirable mobilities futures (Lyons & Davidson, 2016), is appointed in the literature. Our findings call for better articulating how informal institution-building can be transformed into (visible and structured) planning action. This, in turn, as well as the overarching insights in the previous section, calls for a more contextual, deliberative, reflexive, and deeply integrative form of planning than the current guidelines prescribe or emphasize. In the next section we therefore outline a sketch for an expanded SUMP model where these aspects can be made more visible and explicit.

A modified SUMP framework considering institutional and governance aspects

The overarching insights and reflections presented above indicate the need for making the institutional and governance aspects more visible in the current stepwise procedural SUMP model. The model itself focuses to a large extent on the procedures as such, and not the institutional and governance settings and structures that the procedures are embedded in. Further, in light of the insights from the literature, and given that institutional complexity is not made explicit in the guidelines, the model would benefit from being simplified in order to allow for contextual adaptation. In this regard, the four main phases of the model – 1) preparation and analysis; 2) strategy development; 3) measure planning and 4) implementation and monitoring (Rupprecht, 2019) are here considered sufficient, and the detailed steps and activities tied to the model in the guidelines may be considered more as a menu of activity options to choose from.

Additionally, the model could be modified by adding an ‘outer contextual field’ that represents the institutional and governance aspects of SUMP planning (see figure 3 below). As such, it visualises the stable institutional structures and conceptual frames for the action that takes place ‘within’ the current SUMP model. If we also consider a core-periphery dimension of the modified model, we can imagine concrete policy output from action at the center of the model, while ‘soft’, informal structures and governance arrangements – what we call level 1 - lie closely outside the center (that consists of the current four-stage / 12 step model in the current guidelines) and the stable formal institutional structures constitutes the most peripheral part of the ‘outer field’ (level 2). Throughout the planning process there are continuous iterations and interaction between ‘plan production’ at the center of the model and the institutional and governance conditions in the outer field (level 1 + 2).

Most of the reviewed literature look at sustainable mobility planning on a strategic level but there are also studies that deal with the more small-scale and small-step procedures of informal tactical tinkering and running the process on an operative level. In a sense, the proposed modified SUMP model above can be said to be
divided into a more operative part (the center of the model), a tactical part (level 1 of soft/informal institutions and governance action) and a strategic part (dealing with level 2 of hard/formal institutions).

Having established this idea of the relationship between the procedures of the existing stepwise SUMP-model (center of the model) on the one hand and the institutional and governance aspects (level 1 and 2) on the other, we can identify a number of concepts and measures that can be of interest for a developed SUMP-process for dealing with TAP and uncertainty. Many of these concepts should not be tightly bound to one specific stage or step but instead exist as recurrent “loops” and relations between institutional structures and planning procedures, mediated by governance and soft institutional structures. The character of these loops and relations can be articulated by introducing specific procedures in the planning process but draws its motifs and logic from the design of the governance and institutional structures and the way institutional and governance practice is played out due to the organisation’s institutional capacity and the power-relations related to the dominant planning discourse.

The modified model is of course a strong simplification of these relations and can be considered as a guiding concept rather than a full transcription of reality. This ‘vagueness’ is, in line with our insights from literature, deliberate to allow for contextual adaptation rather than being a detailed prescription.
How to enable enhanced accommodation of institutional, TAP and uncertainty perspectives in SUMP?

In this section, we elaborate one step further on the findings from the literature review and the reading of the SUMP guidelines by developing concrete examples and suggestions for enabling a better integration of institutional and governance aspects from the perspective of TAP and uncertainty in SUM planning processes. Our way of doing this is by ‘answering’ to the general recommendations presented in the previous section about overarching insights from the literature review, below formulated as ‘How-questions’. The ambition is to highlight some enablers that are not yet as emphasized in the current SUMP guidelines. Also, TAP and uncertainty are considered, although the reviewed literature doesn’t cover all aspects of these themes. As revealed in the section Analysis: a critical re-visit of the SUMP guidelines there is need for further research and development to fill in the gaps. In accordance with the overarching insights presented above, these suggestions should be seen as just that – potential tools to facilitate SUMP processes. This section provides examples of ways which might be useful in accommodating TAP and uncertainty, but the usability of these tools should be discussed related to the specific local context.

Context, principles and practical discretion

How to consider established local institutional and contextual conditions?

Alignment of planning approaches to local conditions requires a developed knowledge about local conditions and suggests a mapping of the contextual conditions; making an inventory of the formal and informal institutional settings and governance practices. For this purpose, the concept of institutional capacity (Healey, 1998; Magalhães, Healey & Madanipour, 2003) can be useful in the first phase of the planning process, preparation and analysis, when knowledge and relational resources and mobilisation capabilities can be identified. This is already advocated to some extent in the guidelines. However, our suggestion here is to pay even more attention to the informal aspects of institutional practice, such as norms, values, mental models and discourse, as well as tools and incentives for implementation that are useful to map already from the beginning. By identifying these aspects through mapping and deliberation on the resources and frames for the process, they can be made more explicit already from the beginning and thereby hopefully lowering the institutional uncertainty from informal aspects otherwise being ‘invisible’ in planning action.

How to hold on to overarching principles of SUMP, sustainable urban mobility, accessibility and consideration of uncertainty, while encouraging a deliberate choice between specific methods and planning tools – or combinations of tools – to operationalise the principles in practice?

TAP concerns the interplay of systems of spatial proximity, mobility-based accessibility and digital connectivity (Lyons, 2021). Each of these systems add further institutional complexity that needs to be treated in a strategic and conceptual way by developing locally adapted practices for the relationships between the systems.
Such practices can be supported by the eight general SUMP principles mentioned in the guidelines (Rupprecht, 2019), but need to be based on local conditions. This means that the project team need to elaborate on the concepts of TAP and the general SUMP principles as an activity of its own, in the early preparation and analysis phase as part of explicitly framing the SUMP process in relation to existing visions, goals and policies. To initially formulate local overarching principles that can strategically guide the process is one of the insights from the literature review. Based on the eight general SUMP principles (Rupprecht, 2019) and the TAP concepts, local SUM principles can be formulated and related to the locally adapted practices (as mentioned above). Next, for going from such principles to actions and measures, a focus on strategic actions is natural for the preparation and analysis phase as well as for the strategy development phase, but naturally shifts to a focus on tactical actions later in the process and operative implementation and evaluation at the end.

The point of distinguishing between strategic, tactical and operative actions is to look at the level of (and need for) incremental and small-step treatment of uncertainty. All three modes of action are required simultaneously, but with varying emphasis for their relative importance for each main stage of the SUMP process model. It is wise to identify what actions that are strategic, tactical or operative by nature and prioritise them accordingly in order to maintain a balance between strategic perspectives and incrementalism.

How to be inspired by different examples and empirically grounded insights on how to practically approach and accommodate broader perspectives on accessibility and uncertainty?

Another insight from the literature review is to provide a variety of approaches, examples and insights. While this on the one hand requires a planning organisation that has a clear mandate and an institutional capacity to design the process, monitor uncertainty and decide upon the choice of such approaches, examples and insights, it is also a matter of creating a learning environment, where examples and insights may be taken up. This in turn calls for different kinds of knowledge to be integrated (Tennøy et al., 2016; Vigar, 2017) and can be supported by a co-creative process design, in the reviewed literature described and discussed by Soria-Lara & Banister (2017; 2018).

Institutional and governance dynamics throughout the planning process

How to consider institutional and governance dynamics throughout the process?

The early mapping and identifying of the institutional ‘landscape’ have already been pointed out as an important feature for learning about the local context and critical factors for successful planning. Especially the informal aspects, mentioned by e.g. Werland (2020) need to be made explicit so that the process design can be tailored to these circumstances. The modified SUMP framework proposed in this literature review suggests that there are activities that could be revisited throughout the process. This points to the need for designing a process that is iterative, open, nonlinear and cyclical to allow for continuous reflection and adaptation (see below).
How to establish and maintain continuous reflection and adaptation with regards to how the process is influenced by successively emerging issues and conditions?

This goes back to establishing continuous monitoring, and iteratively reflecting upon how formal and informal institutions affect, and are affected by, tactical and operational actions within the ongoing process. Needless to say, it requires knowledge about the institutional landscape from initial mapping, but this is where it also becomes important to integrate routine reflections and ‘control stations’ along the process. In this regard, the process flow should be open for going back to previous phases and steps for adjustments. Especially when working with scenario-building and developing measures, it is wise to work cyclically in more than one loop to arrive at viable alternatives (see Soria-Lara & Banister, 2017).

The question of handling uncertainties due to emerging issues and conditions by continuous reflection and adaptation is, in line with the modified SUMP-model, about keeping the process open and avoid lock in’s and path dependencies. Banister (2008) suggests creating a planning framework which allows successive adaptability of the SUMP. Not least does this imply looking at the tactical level of informal governance action (level 2 in the expanded model) and carefully choose tools and measures that respond to changed circumstances (incremental steering within the framework of strategic navigation). Creating a routine for monitoring the process, mentioned by Stanton & Roelich (2021) can be important. Furthermore, Banister (2008) advocates the packaging of measures and to adopt policies in a stagewise manner which will allow for a successful implementation even under influence of sudden shifts in external and internal circumstances. While monitoring is raised in the current SUMP guidelines, the considering of uncertainty when monitoring is not.

Some lock-ins are of a social nature and concerns conflict and power-struggles over hegemonic discourse and concrete options for policy measures. Conflict can be dealt with in various ways, and the literature indicates that confrontational approaches for creating transitional change can sometimes be counterproductive (Hrelja, Richardson & Isaksson, 2013). Deliberative strategies of raising awareness or institutionalising desired discursive shifts towards sustainable accessibility is advocated, which can be translated to designing the process for co-creation, including a diversity of actors and formally, among the constellation of actors, deciding upon important agreements and negotiations along the way. These measures are mentioned in the guidelines, but for other reasons.

A feature of the process that is raised by e.g Bardal et al (2020) is the possibility to experiment and create testbeds or labs for real world-trials. Such a test arena can be an important feature and may be established in the second half of the SUMP process when policy packages are being put together in order to maintain creativity and to identify alternative paths (which may lead to loops back to earlier stages of the process). It is an important part of the institutional learning process and requires the establishing of feedback mechanisms and the possibility for creating loops in the process timeline.
Limits to participation

How to prioritise at which stages involvement of stakeholders bring most value?

In the literature, several studies encourage involvement (Banister, 2008), stakeholder involvement (Angelidou et al, 2020; Vigar, 2017), effective public participation, partnerships (May, 2017) and communication, information and marketing of benefits (Banister, 2008), while at the same time, among others Klimova & Pinho (2020) and van der Linde et al (2021) raises difficulties with stakeholder and citizen involvement in the process. As previously put forward, knowledge about the institutional landscape is key for deciding upon when and where actors comes in and may be allowed to influence the process in forums for open deliberation and should be considered in the same strategic and adaptive manner as the design of the process as a whole.

How to tailor representation to each stage in the planning process?

May (2017) argues for providing effective political support for the policies adopted. The early design of the process is important for creating a formal decision area for anchoring progress. Politicians, but also other actors, also act more informally in the process, and to make informal governance more explicit, having the decision-makers as a part-taker in arenas for experimentation may also be a way of developing institutional capacity, dealing with the ‘cultural baggage’ of the local institutional context (Vigar, 2000) and developing a learning organisation where various kinds of knowledge can be integrated (Tennøy et al, 2016; Vigar, 2017). The point of distinguishing between forums for open deliberation, formal decision-areas and more informal experimentation arenas is that the dividing line between various ‘spaces’ for producing discourse can be distinguished, which opens for a strategic sorting of actors and activities between strategic, tactical, and operational actions as well as situations where different forms of knowledge – lay, normative, expert etc – can be modulated. Not least is the scenario-building key for learning from explorative and normative scenarios. As Soria-Lara and Banister (2018) emphasize, the success of a structured scenario exercise is to pay attention to who is invited and who gets to talk.

Limits to integration

How to acknowledge that accommodation of uncertainty and a broad conceptualization of accessibility increases the scope and complexity of planning, adds additional process dynamics, and reinforces challenges associated with policy integration?

Several articles highlight the importance of acknowledging challenges and avoiding barriers and obstacles. They also point prescriptively at ways of improving the SUMP process (e.g. Kakalou et al, 2021; May, 2017). The learning perspective on the process is emphasized in the literature as important for developing knowledge about these factors - expressed as uncertainties - and could be stressed throughout the SUMP process, especially in combination with designing the process as iterative, open, nonlinear and cyclical. It can be especially important to ‘move’ iteratively between the center, level 1 and level 2 in the modified SUMP model (figure 3).
Vertical and horizontal integration of different processes and perspectives is mentioned by May (2017) for achieving consistency between different measures and policy sectors. It requires a strategic overview, where a multi-level perspective is advocated in the literature (Okraszewska et al, 2018; Werland, 2020), which here can provide a framework for the mapping of the vertical-horizontal interaction and how different relations between levels and actors can be developed to support integration. This mapping exercise (Vigar, 2017) can be part of the initial phase of the SUM planning process. The multi-level perspective also allows for continuous follow-up by studying how different niche actors develop relations and aggregate and negotiate progress along the process.

How to consider to what extent, and by which means, perspectives can be accommodated and integrated with sensitivity for the local context and institutional conditions?

This question concerns both policy integration and knowledge integration, avoidance of policy layering and handling potential conflicts between different interests, actors and tiers of government. Integrated planning and a broader conceptualisation of accessibility may challenge existing institutional structures, which points back to the previous paragraphs about tailoring the process to involve the different actors in the various process phases and to attend to institutional and governance dynamics.

Several articles point at the importance of integrating different types of knowledge in the planning processes (Hrelja, 2015; Soria-Lara & Banister, 2017; Tennøy et al, 2016; Vigar, 2017). Increased complexity in SUMP due not least to consideration of digitalisation (TAP) and uncertainty might require both adaptive pathways into the future and adaptable/flexible organisations, where learning becomes crucial. The concept of co-creation or co-production (found in the reviewed literature in e. g. Angelidou et al, 2020; Lindenau & Böhler-Baederker, 2014,) can support the creation of forums and arenas for deliberative action in the SUMP process. It both requires and infuses a participative and communicative ‘layer’ to the rational process in the existing guidelines. However, it seems important to distinguish between different forms of co-creation depending on what is in focus and who the stakeholders are in order to maintain and develop a good dialogue (se e. g. Reigner & Brenac, 2019; Rye & Hrelja, 2020).

Crucial arrangements to be made in order to strengthen knowledge integration and co-creation is to carefully design the planning process in a structured and comprehensive way. Arrangements for the entire process could be supported by the structured use of established tools (Stead, 2016), in order to ‘equalise’ the balance between different actors and create traceability and transparency (Soria-Lara & Banister, 2018). Decision-makers, companies and citizens may operate based on differing norms, values and stakes, which may require a tailored process in order to create appropriate contextualized and actor-sensitive ways of communication and collaboration. Organising the co-creative SUMP-process into creative forums and formal and informal decision areas can facilitate both tailored communication, help avoid lock in’s due to formal institutional constraints and maintain creative and experimental thinking during the various phases of the process.
Accommodate processual reflexivity and complementary forms of knowledge

How to accommodate successive reflection over the process, which ways of knowing that are given room, and what additional ways of knowing could bring additional perspectives.

This question concerns the whole planning process. Considering how informal institutional practice, discursive formations and mental models have been found to shape action, one of the most important lessons is to create a cyclical and iterative process. As suggested, the SUM planning taskforce needs to iterate between planning procedures and measures (center in figure 3), the soft (level 1) institutions and governance practice and the (level 2) hard institutional structures in an iterative fashion. Especially, scenario-building and –evaluation are highlighted as a means for reflexivity and for adjusting to contextual and institutional process dynamics (Soria-Lara & Banister, 2018). This may also include identifying critical factors (barriers and enablers) with regards to uncertainty and complexity of both planning content and procedures during the process.

Explicit inter- and transdisciplinary dialogue for making sense of critical factors, visions, goals, and scenarios before producing policy packages can be supportive for avoiding discursive path dependency and institutional lock in. Careful attention should be paid to how activities for producing results are designed so that power-relations and hegemonic discourse can be curbed to give room for alternative views to be tested. This also concerns who is invited and who is not and how well different perspectives are represented. This way of tailoring the process, which may be one of the most challenging tasks for managing SUM planning, may also lower the risk for layering and parallel policy making as reported by Isaksson (2017).

Consider to consult a process facilitator who can help bridge different forms of knowledge.

This recommendation corresponds to what is suggested in the SUMP guidelines (Rupprecht, 2019:64), and highlights the situation that often there are not enough resources or expertise available for handling the complex task to do SUM planning considering uncertainties and the broad conceptualisation of accessibility suggested by Lyons (2021).

How to develop the institutional capacity of the planning organization?

Possible answers to this question is to a large extent already presented in the last paragraphs in the last section of chapter 4. Below we present some brief additional comments on these paragraphs.

How to map and learn about the knowledge resources, relation resources and mobilisation capacity?

It has previously in this section been put forward to map institutional capacity of knowledge, relations and mobilisation resources as a way of learning about the local context. This should be done initially in the process and involve all actors that
have a central role in planning and implementation. At least, actors and their relational resources, knowledge resources and mobilisation ability should be included in the mapping.

*How to identify the strengths and weaknesses in the actor network and institutional frameworks that needs to be handled before going into planning action?*

The mapping of institutional capacity can be complemented by using a structured set of tools (Stead, 2016), where also strengths and weaknesses of the organisation can be included, preferably in a co-creative setting in order for learning to take place (Vigar, 2017). This is an important activity for creating a basis for formulating overarching guiding principles and critical factors for the development of scenarios and alternatives.

*How to include reflexivity in the design of the process so that it becomes a systematic and continuously recurring planning activity?*

This question is, to a large extent answered regarding accommodating processual reflexivity and complementary forms of knowledge, see the above section. It should be emphasised that this should hold for the whole process in order to warrant long-term learning and institutionalisation of good practices.

*How to learn from the above-mentioned analysis and evaluate the institutional capacity in a systematic manner at several stages in the process to prevent lock-ins due to conflicts or lack of competence, social capital or mobilisation?*

Some of the DMDU-approaches that are presented in Stanton & Roelich (2021) emphasise monitoring and evaluation of the progress of the development of planning content and its implementation. The same idea can be extended to the institutional and governance settings for the local SUMP situation. This includes formulation of evaluation criteria, deliberative assessment of the process and its institutional structure, context and decision-making culture.
Figure 4: The proposed modified SUMP process model with added examples of activities for the whole process for considering informal institutional and governance aspects and for addressing institutional uncertainty. The figure should be considered as an illustration only, when it comes to the examples of activities. Some are mentioned in the text in section 5 while others are examples of additional, not mentioned, activities that could be integrated. The original 12 step illustration comes from Rupprecht Consult, 2019.
6. Concluding discussion

This working paper has addressed potential gaps in current SUMP guidelines by attending to research literature on formal and informal institutional and governance conditions of relevance for SUMP processes, and an additional consideration of Triple Access Planning and uncertainty in sustainable urban mobility planning.

The paper has attended to the following research questions:
1. What does the literature say about the influence of institutional and governance conditions over sustainable urban mobility planning processes?
2. What do insights from research literature imply for SUMP practice?

In this concluding section, we will elaborate on these two questions, informed by the results of the literature review and the development of ‘enablers’ for an enhanced SUMP process (chapter 4 and 5).

How do governance and institutional conditions affect SUMP processes and conditions for considering Triple Access Planning and deep uncertainty?

The literature review has revealed several relevant themes for making governance and institutional aspects explicit in SUMPs:
A. Overarching challenges and recommendations
B. Integrating policy sectors and levels of government
C. Participation in planning
D. Planning contexts and process dynamics

These cover important aspects especially of informal institutional practice that are not explicitly treated in the SUMP guidelines or the manual on institutional cooperation. Although some of the reviewed studies form the basis of the SUMP guidelines, taken together with other studies they show a knowledge gap between research and the guidelines where the literature review makes a contribution concerning:
• Mechanisms and factors such as mental models, lock in’s and path dependencies that focuses on the process dynamics and the design of the process and contextual settings rather than the planning content (policy).
• The relationship between governance and institutions on the one hand and uncertainty on the other.
• An emphasis on local context, informal institutions and governance practice and a meta-perspective on institutions by making them explicit in the process.
• Both the existing SUMP guidelines and the manual on institutional cooperation address governance and institutional conditions. However, comparing the guidelines and the findings of the literature review has revealed some gaps and lacking perspectives:
• Informal institutions are treated in the guidelines as actors, not as structures or action. Consequently, there is a focus on organising stakeholders and their agendas. Informal practice and contextual and structural aspects are sparsely considered. Here, the literature review has identified the need for a more sensitive and adaptive approach to these aspects.

• Governance is consequently related to the formal arrangement of actors in the guidelines, missing out on the tactical and operational levels of tinkering and tailoring of the process as an act of balance between strategic and incremental process management.

• Power is discussed only implicitly – if not even made invisible – in many of the prescriptions in the guidelines. Thereby they are also hard to grasp as a characteristic of governance and institutional action while still being a major contributor to institutional uncertainty. The literature review identifies power-struggle as the conflict over diverging discourses and mental models as well as through various barriers and challenges.

• Uncertainty is viewed in the guidelines mainly as the risk of not achieving a SUMP that is aligned with the guidelines – a level 1 uncertainty. Level 2 uncertainty is considered only when it comes to the development of policy, e.g. as scenario-making. Deep uncertainty (level 3 or 4 uncertainty) and uncertainty from an institutional perspective is generally almost not considered at all.

Some themes in the found literature that are almost entirely missing are digitalisation and politics, which have not been key search words, but could be expected to be touched upon in studies on the institutional and governance aspects of sustainable urban mobility planning. As mentioned in chapter 2, the set of key words is only one possible set of many, and different key words could have rendered different results.

All in all, the literature review and the analysis of the gap between the findings of the review and the SUMP guidelines reveal potentials for a developed SUMP process model and guidelines for a more adaptive and transformative mode of planning where uncertainty and a broadened conceptualisation of accessibility can be better incorporated. Uncertainty arising from the institutional and governance aspects as such, may be explicitly addressed and transformed into process activities and policy measures.

What do insights from research literature say about how SUMP guidelines may be enhanced?

The literature review has led to some overarching insights about the nature of institutional and governance aspects of SUMP that needs to inform the enhancement of the SUMP guidelines:

• Be aware of context – stick to principles but allow practical discretion.

• Attend to institutional and governance factors throughout the planning process.

• There are limits to integration and participation – consider where and when they contribute the most.

• Accommodate processual reflexivity, iteration, and local discretion.

• Develop institutional capacity in the planning organisation.
These insights have led to a broad set of general recommendations and suggestions on how to enhance both the guidelines and the SUMP process with respect to triple access planning and uncertainty. As they have already been presented at some length in the previous section, we here settle with noting that there is a need for making informal institutional and governance aspects more explicit, and for treating the SUMP process in a more iterative, open, nonlinear and cyclical way in order to accommodate deep uncertainty. One suggestion presented in this literature review is to modify the SUMP process model by an outer field containing two levels of institutional aspects. Within this field, continuous mapping, anchoring, co-creation, reflexive learning and adaptation takes place throughout the process or, concerning some aspects, in a more orchestrated manner, targeting specific activities.

The most fundamental improvement to strengthen the shift to a regime-testing and sustainable mobility paradigm would perhaps be to alter the ontology of mobility planning from a technological-rational dominated worldview to one that is more pluralistic and that acknowledges the social production of (unknown) futures and the multiplicity of trajectories stemming from such production. In relation to ambitions to shift from the dominant predict-and-provide and regime-compliant pathway paradigm in mobility planning (Banister, 2008; Lyons & Davidson, 2016), towards a more transformative, regime-testing SUM planning which better accommodates Triple Access Planning and uncertainty, it is important to note that strengthened adaptation comes with the risk of, in effect, contributing to sustaining current planning regimes rather than challenging them. Practices and plans which are made more adaptable might strengthen the resilience and longevity of previous planning approaches and sustain dominant planning orientations, and thereby result in avoidance of more transformative pathways. In that sense, SUM planning that accommodates uncertainty with the aim to enforce a transition towards sustainable accessibility might be better helped by characteristics such as in-depth reflexivity and scrutiny of practices and its outcomes, rather than by strengthening incremental adaptation of those very practices and outcomes. At least, active reflexivity seems to be needed to make way for effective adaptation in practice.
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