



OPEN ACCESS

EDITED BY

Stylios Ioannis Tzagkarakis,
Hellenic Open University, Greece

REVIEWED BY

Sulaimon Adigun Muse,
Lagos State University of Education LASUED,
Nigeria
Meike Levin-Keitel,
University of Vienna, Austria

*CORRESPONDENCE

Antonia Graf
✉ antonia.graf@uni-muenster.de

RECEIVED 22 April 2024

ACCEPTED 27 January 2025

PUBLISHED 13 March 2025

CITATION

Graf A and Kantel AJ (2025) Planning
sustainable and inclusive transformation: an
energy democracy perspective on urban
mobility.

Front. Polit. Sci. 7:1421569.

doi: 10.3389/fpos.2025.1421569

COPYRIGHT

© 2025 Graf and Kantel. This is an
open-access article distributed under the
terms of the [Creative Commons Attribution
License \(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use, distribution or
reproduction in other forums is permitted,
provided the original author(s) and the
copyright owner(s) are credited and that the
original publication in this journal is cited, in
accordance with accepted academic
practice. No use, distribution or reproduction
is permitted which does not comply with
these terms.

Planning sustainable and inclusive transformation: an energy democracy perspective on urban mobility

Antonia Graf^{1*} and Anne J. Kantel²

¹Institute for Political Science, University of Münster, Münster, Germany, ²Fraunhofer Institute for Systems and Innovation Research, Karlsruhe, Germany

Increasingly, calls for more democratic engagement in the mobility transformation are enriching scholarly and policy discussions at the intersection of 'green' policies and the goal of a just and inclusive transformation process. In this paper, we examine how expectations for a sustainable mobility transformation unfold in the political debate within the German federal democratic system. In other words, we seek to understand along which normative expectations the planned mobility transformations are envisioned to be diffused. We identify constitutive elements from the literature on energy democracy and examine mobility planning documents at the regional governance level in Germany against this background. Specifically, we conduct a content analysis of nine state mobility plans and ask how political expectations for sustainable urban mobility transformation unfold in relation to perspectives of energy democracy in order to better assess the democratic dimension in transformation planning. Our research shows that expectations related to financial costs, infrastructure, and spatial considerations shape the interpretation of democratic principles such as citizen participation and needs, which are dominantly framed as accessibility challenges. We argue that central elements of energy democracy appeals do not yet resonate in mobility planning and that much remains to be done, if the normative goal of an energy *democratic* and *sustainable* urban mobility is also the goal of transformation efforts.

KEYWORDS

energy democracy, mobility transformation, sustainability, inclusion, participation

1 Introduction

The provision and consumption of mobility infrastructure and public mobility services is one of the fundamental preconditions for people to participate in contemporary societies' everyday life (Dorantes and Murauskaite-Bull, 2023). Increasingly, activists, policymakers, and the academic community have been calling for a socially inclusive and participatory re-setting of infrastructures, technologies, processes, and discourses in the urban mobility sector that take the diversity of people and their needs into consideration (Jenkins, 2019; Verlinghieri and Schwanen, 2020; Sheller, 2018). However, there is a lot of uncertainty about what a sustainable mobility transformation should concretely look like and how, with, and for whom it should be developed and implemented. Current policy efforts in urban mobility transitions face severe challenges: Ideally, they have to be ecologically effective, economically feasible, technologically sound, socially just and inclusive. What each of these facets of sustainable transitions mean- in other words, how they are interpreted and attributed meaning to by various actors in the socio-ecological system - is complex, context-dependent and inherently political (Sovacool et al., 2019; Pichler, 2023; Chateau et al., 2021).

In this light, this paper examines how political expectations for a sustainable mobility transition unfold in the political debate within the German federal democratic system. Conceptually, we use the notion of energy democracy as a heuristic to analyse what state-level visions in Germany have to offer to respond to the vision of a just, inclusive and green transformation of the mobility sector. In other words, we seek to understand what conceptions related to democracy underpin urban mobility transitions at the state level in Germany.

Mobility patterns in many parts of the world have played a central role in contributing to current environmental and social challenges (Rosen, 2001; Cass et al., 2005). Fossil fuel-based and carbon-locked mobility processes and travel and transport infrastructures contribute significantly to today's challenges of carbon emissions and social exclusion in many parts of contemporary society (Cass et al., 2005). There is thus a need to radically transform urban mobility. At the same time, transformation to sustainability in the sector has been slow and often inadequate, largely due to a disconnect between societal visions and the actual policy interventions needed to drive systemic change. Policymakers are often constrained by institutional path dependencies, competing priorities, fragmented governance and a lack of cohesive narratives and expectations among stakeholder groups, resulting in piecemeal, inadequate or delayed implementation (Moradi and Vagnoni, 2018; Reichenbach and Fleischer, 2023).

In addition, efforts to transform urban mobility systems, such as reducing car dependency, expanding public transport or promoting active travel modes, can face public legitimacy challenges (Epprecht et al., 2014; Loy et al., 2021). Measures implemented in mobility transitions can deeply disrupt established routines and behaviors making it more difficult for transition policies to gain widespread public support if they are perceived as radically altering dominant systems of "behavior, practices and cultural models" (Kivimaa et al., 2021, 118).

This tension between the need for environmental sustainability and required political and societal interventions unfolds in the context of a normative demand, promoted by societal groups as well as overarching policies such as the EU Green Deal, that sustainability transitions, also in urban mobility, should be democratically shaped (European Commission, n.d.; Szulecki and Overland, 2020). Achieving such a transition requires not only addressing socio-technical goals, such as adopting fossil-free transport modes and promoting sustainable mobility practices, but also ensuring that the entire transformation process is inclusive, participatory and accessible (European Commission, 2024). Democratic transformations require the active participation of diverse stakeholders, including marginalised and vulnerable groups in processes, that go beyond simply providing information or token consultation, to ensure that the benefits and burdens of change are equitably distributed (Radtke and Renn, 2024). Inclusivity means that policies must take into account the different mobility needs of different populations, such as low-income communities, people with disabilities, and those living in underserved areas, and who may be disproportionately affected by changes such as shifts in public transport routes or restrictions on car use, to ensure a standard of living and well-being that is considered 'normal' in the respective society for all (Lodovici and Torchio, 2015).

Calls for more democracy in the energy transition often combine normative and pragmatic arguments, for example, by suggesting that public participation as a democratic tenet might secure social acceptance of energy transition measures (pragmatic

as well as contribute to increased considerations of social justice tenets (normative) (Szulecki and Overland, 2020).

The energy democracy movement recognises the interaction of energy systems with political, economic, institutional and cultural aspects of society and aims to redistribute political, social and economic power in society through sustainable energy transformation, thus radically transforming the democratic energy systems. Energy democracy highlights the challenge of democratic participation to promote socially inclusive technological development within socio-ecological transition processes. To the best of our knowledge, there is no agreement on a clear definition of what 'energy democracy' entails. Nevertheless, energy democracy scholarship provides a number of pointers to the normative vision of what a democratic, sustainable and equitable energy transition should look like. In particular, it focuses on participatory governance structures that enable access to energy production and consumption systems by different groups and highlights issues of justice as well as potential benefits of decentralised governance (Jenkins, 2019; Burke and Stephens, 2017; Stephens, 2019; Osicka et al., 2023; Szulecki and Overland, 2020).

Energy democracy – as an academic perspective – thus offers a heuristic device for interlinking social justice considerations, energy and mobility transitions, and democratic tenets (Stephens, 2019). In principle, energy democracy allows us to focus on questions about who controls technology and infrastructures, who frames discourses and decides transition pathways in urban mobility planning, and who loses or benefits from existing and new infrastructures and practices in the sector. We use the theoretical lens of energy democracy to ask how these expectations relate to, contribute to, challenge and potentially fall short of democratic principles as articulated in the energy democracy debate. Methodologically, we conduct a content analysis of nine state-level mobility development plans in Germany to identify how expectations and demands for urban mobility design are presented. In doing so, we ask: How does energy democracy speak to the socio-ecological transition of urban mobility planning at the level of regional governance, and how does energy democracy as a normative direction and mode of transition realisation relate to urban planning processes?

The analysis shows that democratic participation in state-level urban mobility plans in Germany is primarily interpreted through the lens of 'accessibility' articulated through understandings of material accessibility through resources and access to the built environment, and social accessibility. While accessibility encompasses multiple dimensions - physical, social, cultural and economic - and is indeed a critical pillar of democratic transitions, we argue that the *Länder* mobility plans fall short of capturing the full complexity of democratic transitions towards sustainability (Young, 2002; Szulecki and Overland, 2020).

In the following section, we briefly introduce current scholarship of energy democracy and elaborate on the characteristics of the academic and activist term as well as on our understanding of sustainable and inclusive mobility. Section 3 outlines the method of a content analysis employed to analyse nine state-level mobility development plans in Germany. Section 4 displays the results of the analysis highlighting the role accessibility plays in interpretations of democratic tenets in Germany's regional mobility transformation. In section 5 we discuss these findings through the lens of energy democracy tenets and conclude the paper in section 6 with initial

ideas of what a research path of “mobility democracy” could add to furthering sustainable and inclusive mobility planning.

2 Energy democracy as a heuristic to explore the normative expectations of sustainable and just mobility transitions

Energy democracy can be understood from two interrelated perspectives: As a social movement and as an emerging academic concept. From an activist perspective, energy democracy is a vision promoted by social movements calling for the democratisation and sustainability of energy systems. This vision advocates for the right of citizens to have socially inclusive access to and control over decisions related to affordable and increasingly clean energy (Becker and Naumann, 2017). Activists seek to destabilise the current fossil fuel-based energy system and replace it not only with renewable energy, but with democratic structures that prioritise citizen participation, empowerment, and control (Burke and Stephens, 2017; Szulecki, 2017). The normative stance of the energy democracy agenda is front and centre here: The old, technocratic model of regulation is no longer adequate to meet today’s challenges of much-needed sustainability transitions. Instead, increased public participation in resource governance and energy policy is assumed to lead to more inclusive, equitable, and environmentally sustainable governance (Szulecki and Overland, 2020).

Academically, energy democracy connects this activist vision to broader debates about power, justice, and governance in energy transitions (Feldpausch-Parker et al., 2019; Osička et al., 2023). Despite its growing prominence, however, a precise definition of energy democracy remains elusive, and a key question remains unanswered: What makes energy democracy democratic? Or rather, what are the concepts that underpin the goals and processes of a democratic energy transformation (Szulecki, 2017; Szulecki and Overland, 2020; Chilvers and Pallett, 2018)?

2.1 Main tenets of energy democracy

One of the central focal points of energy democracy considerations is the idea of decentralised energy systems. *Decentralisation*, the idea goes, could allow for greater community control, leading to a more equitable distribution of benefits (van Veelen and van der Horst, 2018). However, a large body of research - mostly from development studies on the decentralisation of governance in the Global South - has shown that the decentralisation of structures does not necessarily lead to increased democratic participation. Scholars distinguish between technical decentralisation, such as the devolution of administrative responsibilities, and “real,” i.e., democratic, decentralisation, which is political and necessarily involves power-sharing mechanisms (Bergh, 2004; Devas and Delay, 2006). Decentralisation, community-based approaches, and other alternatives to incumbent energy systems therefore need to be carefully designed and implemented if they are to achieve the desired outcomes of more citizen control (i.e., power).

Closely related to the point of decentralisation is the principle of citizen *participation* in the energy democracy literature (Chilvers and

Pallett, 2018). Citizen participation should consist of informed and conscious political subjects representing (diverse) populations in a transparent and inclusive decision-making process (Szulecki, 2017). Participatory forms of governance can vary and, for example, encompass formal and informal venues of democratic participation (Radtke and Renn, 2024). Moreover, they can both contribute to a goal and be the goals themselves (van Veelen and van der Horst, 2018).

Similarly, *social justice* considerations are key focal points of the energy democracy literature (Denise and Weinrub, 2017; Osička et al., 2023; Jenkins, 2019), although the relationship between energy justice and energy democracy remains contested. For example, while Osička et al. (2023) emphasise the interconnectedness of energy justice and energy democracy, presenting them as closely related yet distinct concepts, Jenkins argues that while energy democracy promotes the idea of distributed ownership and participation, these models must be critically evaluated from an energy justice perspective to ensure that ownership structures actually empower marginalised groups (Jenkins, 2019). Similarly, Droubi et al. (2022) note that energy democracy often falls short of real justice because it tends to focus on local community issues while ignoring broader systemic challenges. Nevertheless, justice considerations in regard to distributive, procedural, and recognitional justice constitute an important aspect in current urban planning processes and contribute significantly to social inclusivity or modes of social exclusion (Sheller, 2018; Verlinghieri and Schwanen, 2020; Osička et al., 2023; Jenkins et al., 2016; Sovacool et al., 2017). This is also true for scholarship on mobility justice that, for example, examines justice assumptions behind the high reliance on place-based accessibility planning (Stafford and Baldwin, 2018) and the lack of considering a diversity of needs in accessibility planning (Linovski et al., 2018; Hidayati et al., 2021).

Related to Jenkins’ and Droubi et al.’s justice and system level challenge, *power dynamics* are at the centre of many energy democracy’s studies. In their literature review on energy democracy, Szulecki and Overland (2020) identify scholarship on power in transition processes as one of the main themes in the literature, which is echoing energy democracy activists’ claims to “resist” fossil fuel-based systems, “reclaim” control over energy infrastructure and services, and “restructure” them through the implementation of alternative practices and goals (Burke and Stephens, 2017, 37). This stream of literature emphasises the role of constitutive and relational power dynamics through the normative goal of energy democracy to re-politicise the technocratic sphere of energy transitions (van Veelen and van der Horst, 2018; Feldpausch-Parker et al., 2019). This involves questioning who controls energy resources, what technologies are used, and how energy decisions are made, thereby exposing hidden power relations within the energy system (Burke and Stephens, 2017; Thombs, 2019). These power dynamics have important implications not only for the energy system transition, but also for the urban mobility sector, where similar issues of social inclusion, participation, and equity come to the fore.

Energy democracy as a heuristic allows us to assess how these tenets outlined above underpin expectations of urban mobility planning and opens up a space to re-imagine sustainable, just inclusive mobility as an ideal political goal (Szulecki and Overland, 2020), in which citizens - and their diverse needs - are part of the solution to achieve socially inclusive and participatory mobility systems (Judson et al., 2022).

2.2 Sustainable and inclusive mobility through an energy democracy lens

We understand mobility as the potential to move. In contrast to transport, mobility does not only portray overcoming a distance in space between two or more places and the accessibility of locations with specific vehicles (Rammler, 2016). Instead, mobility considers the societal aspects of the transport system (Urry, 2007) and emphasises a socio-cultural dimension of mobility in contrast to the technocentric view (Freudental-Pedersen and Kesselring, 2016; Graf and Sonnberger, 2020; Sonnberger and Graf, 2021). Mobility as the ability to move ('motility') or its impossibility (immobility) may also include the journey of information via communication or the (dis)abled body and its possibilities to use certain infrastructures (Uteng and Cresswell, 2008) and can ultimately be understood as a concept describing a movement-based society (Sheller and Urry, 2006). Since we focus on urban planning on a sub-national level, we conceptualise the relevant movements here as the collectively provided but individual potential for movement - on foot, bike, in public urban transport, or by using motorised or automatic vehicles - in the course of everyday life in a city. This description involves the physical act of travel but also mobility as a social practice of participating in economic, social, and political activities (Hidayati et al., 2021; Sheller, 2018).

There is an almost undisputed consensus that in light of ongoing climate and energy crises the transport sector needs to change. However, different ideas of transformation come together under the label of 'sustainable mobility'. This includes a dematerialised, safe, digitalised and resilient future mobility (Rammler, 2016). Given that it is well planned, sustainable mobility contains the promise to maintain both good accessibility and a high-quality environment (Banister, 2008, 74). Depending on the strategy for sustainability, terms like accessibility, high-quality environment, resilience, safety, etc. can have very different and sometimes even contradictory meanings (Rammler, 2016). Despite this heterogeneity, a set of dominant normative demands can be identified in the public debate on sustainable mobility. On the one hand, these demands include that the mobility sector must be decarbonised because otherwise, the (national) emission reduction targets will not be met and the fossil energy system cannot be replaced by renewable energies (Umweltbundesamt, 2024). On the other hand, public debates increasingly call for a socially inclusive dimension of mobility transitions: "It is crucial that mobility is available and affordable for all" (European Commission, 2024; see also Verlinghieri and Schwanen, 2020; Sheller, 2018; Agora Verkehrswende, 2017; Bürgerrat, 2024).

Inclusive mobility includes the perspective of users in planning processes. In other words, sustainable mobility must also be participatory, i.e., give people the opportunity to - at the very least - express their opinions and be heard. In addition to physical, social and digital accessibility, it is the democratic integration of sustainable mobility that can make a difference in the acceptance of mobility measures and ensure that the needs of both majority and minority groups are represented (Verlinghieri and Schwanen, 2020; Sheller, 2018). Democratic integration is based on principles of participatory governance and integration of people into the planning process (Geurs et al., 2024). Depending on its orientation and depth, participation may include power share among participation givers and takers and potentially challenges established power structures (Arnstein, 1969). Participation can take different forms, from public consultations on

mobility infrastructure to everyday practices, such as how citizens use or contest transport services. Participation also includes discursive practices, where the language of urban planning explicitly recognises marginalised groups.

While the 'green' part in sustainable mobility transition is already well established in transformation debates, social inclusion and participation are rather newly discussed features in that area. Social inclusion is the notion that people can experience and participate equally in social life. It is the "process of improving the terms of participation for society" to grant access and equal rights, "particularly for people who are disadvantaged" for various reasons (United Nations Department of Economic and Social Affairs, 2016, 17). Social exclusion then is defined as "the process in which individuals or entire communities of people are systematically blocked from or denied full access to various rights, opportunities, and resources that are normally available to members of a different group, and which are fundamental to social integration within that particular group" (Inoi et al., 2017, 4,224). Social exclusion reaches beyond measures of poverty and offers a "more multidimensional, multi-layered and dynamic concept of deprivation" (Lucas, 2012, 106) including a lack, or denial, of resources, rights, goods, and services resulting in a systemic inability to participate in relationships and activities.

Mobility plays a crucial part in how people experience social inclusion or exclusion in their everyday life, which includes activities such as commuting to one's workplace, going to the grocery store, visiting a doctor's office, visiting friends, the theatre or attending a public hearing (in both the physical as well as the virtual realm). Access to transport or mobility options is thus central to social inclusion efforts in urban settings and goes beyond considerations of geographic proximity.

3 Method

We use energy democracy as a heuristic device to examine the representations of sustainable urban mobility transitions in the mobility plans of nine German states (*Länder*). We do so because energy democracy as a concept takes up the normative aspirations of sustainable mobility as a socially just, inclusive, participatory and environmentally friendly transformation of energy systems by placing citizens at the centre of democratic participation, which is proposed to be a relevant requirement for sustainable urban mobility transitions in democratic systems.

With a systematic reading of the mobility plans, we can access expectations about future developments which might occur from these facets of spatial planning and the transformation it points to. Statements of what is possible in the future own a reality-constituting character because they make developments conceivable. Due to the background of scholars like Chateau et al. (2021), Jasanoff and Kim (2015a,b), Anderson (1991), Taylor (2004), or Appadurai (1990) it becomes clear: What is estimated as part of the future can be considered as a synonym for "normative expectations which are intrinsic for all social action" (Berkhout, 2006, 299). The expectations in this paper refer both to the material as well as social means of mobility, helping people to realise a way from A to B and take part in daily life with all its inherent social routines. To approach the expectations about future transformations, we systematically read mobility plans to make their potential relationship with energy

democracy visible with the help of an empirical assessment. In line with the future constituting aspiration, we pay special attention to content of the plans, which are also shaped in the usage of language, arguments, representations, and visual appearances concerning the future of mobility transformations.

3.1 Content analysis of nine *Länder* mobility plans

To analyse the plans in light of the previously outlined tenets of energy democracy (section 2), we performed a content analysis of policy documents with the help of MAXQDA. The software allowed us to code the texts and to organise the codes for a systematic re-reading. We applied the perspective of energy democracy as an expression of how mobility ought to be in the future to the analysed policy documents. In doing so, we aim to reconstruct meaning-making processes that are directed into the future.

We collected the mobility plans of the *Länder* in Germany, expecting that they provide transformation pathways for the implementation of sustainable, accordingly eco-friendly, inclusive, and participative urban mobility. Nine of 16 *Länder* have such a plan, which allowed us to consider the mobility plans of Schleswig-Holstein, Sachsen, Saarland, Bremen, Hamburg, Baden-Württemberg, Brandenburg, Mecklenburg-Vorpommern, and Berlin. We identified the plans via a Google search and a systematic search on the homepages of the *Länder* governments. The plans differ in length, form, and actuality; lengths range from 150 to 330 pages, the plans are mostly carefully designed (many pictures, coordinated colors, structure giving elements), and the plans were published between 2014 and 2021. Although the body of documents is small, it allowed us to derive insights into how sustainable urban mobility is envisioned by policy administrations in the German *Länder* and what expectations about sustainable urban mobility transformation occur through the lens of energy democracy.

The selection of cases is strongly driven by the existence of mobility plans. Even though we focus on only nine out of 16 *Länder* here, it should be noted that all of them are involved in mobility planning. For example, some *Länder* have specific bicycle plans, strategy papers, or participation concepts that include mobility as one of many topics under the head of city development. On the other hand, the lack of coherent mobility plans in half of the states is at least an indication that mobility planning in Germany is not a top priority for the sub-national governments as they do not regard the existence of such plans as mandatory for a successful mobility transformation. It is striking that a third of the *Länder* with mobility concepts are city states. This once again underlines the importance of local and regional governance for sustainable urban transformations and, at the same time, points to a potential gap in the (vertical) multi-level governance of mobility.

This gap makes the governance level of *Länder* an interesting case for the analysis of future expectation against the backdrop of energy democracy: *Länder* perform a mediator or gatekeeping function for the transfer and implementation of policies between the federal government and local levels, such as cities. Potentially, *Länder* plans help cities on the local level to reduce the cost of policy implementation by providing knowledge, upstream procedures and support services. In addition, their function for the legitimisation of national standards should not be underestimated. *Länder* provide a point of reference in

the polyphonic debate on transformation and thus offer orientation for regional and local governance levels. If a *Land* emphasises the importance of a policy and defines responsibilities for it, local actors are at least partially relieved of justifying its relevance, which also enables a better flow of information and arguments among actors of different governance levels.

To gain access to the processes of meaning making, we used a dual strategy: First, we identified important paragraphs with the help of search terms. Second, we coded the selected paragraphs with the help of sub-questions. The search terms served as entry points to the analysis of the plans in our otherwise inductive approach. The applied search terms are results resonating with concept of energy democracy with regard to sustainable mobility transformation, especially in relation to (environmental) justice and participation. Regarding justice, we paid special attention to persons or groups vulnerable to exclusion (people with special needs such as caregivers, children, elderly, disabled, or digitally excluded) and buzzwords, such as inclusion, diversity, and gender. We worked with participation in terms of deliberation, but also via partaking instruments such as stakeholder dialogs, public hearings, and so on. To further develop the search terms inductively and code the relevant paragraphs (and at least the subsequent and the previous section), we applied sub-questions to the mobility plans which referred to expectations and energy democracy: What democratic elements do future visions of sustainable mobility contain, and how are they expressed? What expectations of justice and participation become obvious, and how do they occur in representations, symbols, and discourses? What role does mobility play, and what do we learn about the interplay with society? What do we learn about new institutions and practices and the allocation and distribution of funds and resources?

Methodologically, expectations are performative and relational concepts of meaning making (Rommteit and Wynne, 2017). In the context of the policy documents analysed in this paper and our interest in sustainable mobility transitions, we locate them epistemologically in the broader field of interpretive policy analysis. To our knowledge, the combination of search terms with sub-questions does not follow an established manual for interpretive policy analysis. However, the proceeding is inspired by the approaches of Kuckartz (2014), Mayring (2022), and Schreier (2012); especially due to re-adjustment (e.g., iterative development) of categories and due to interpreting the data in the context of research questions including hidden semantic structures.

4 Results

In the conceptual section, we have described energy democracy as the idea that energy transformation and democracy need to be thought together. Since the mobility sector has to develop in a sustainable and inclusive way, we ask what expectations of green, inclusive, and participatory mobility unfold in policy documents on the governance level of the *Länder*.

In general, the results show that each of the state's mobility plans analysed in this study deal with the topic of sustainable urban mobility but to a different degree and in different ways. The *Länder* focus in particular on the provision of public transportation. All the plans we studied do not call into question the need for sustainable

transformation. Rather, the *Länder* express a certain determination to master the challenge ahead and initiate the mobility transformation. However, contrary to our expectation, we could hardly find results on the topic of diversity, that are also named as such, particularly in regard to the heterogeneity of groups within the population that these plans seek or should aim to serve.

Furthermore, environmental protection visions (as an important part of sustainability) play a much smaller role than expected. The topic of environmental protection occurs as a kind of silent background consensus, which sets a frame for planned developments, but is hardly explicitly explored. More obviously present in the plans of the *Länder* are topics that deal with the social aspects of sustainability, such as consequences of inequality or the participation of people with reduced mobility options in daily life.

Specifically, the topic of *accessibility* largely constitutes the expectations of sustainable urban mobility transformation in the plans of the *Länder* by directly or indirectly referring to it; at the same time constituting a specific semantic field. As we will explain in the following, we identify two forms of accessibility, which partly overlap but also have their own specific facets. Resource dependent accessibility (4.1) mainly recurs on *prices as barriers* for customers but also on the *usage of space* in the transformation as well as the accessibility in the built environment for people with and without disabilities. The second variant is social (in)accessibility (4.2). We find this in the discussion on needs in and for the transformation, and also in a shift we call *from caring to partaking*, and in the topoi of *expertise and acceptance*.

4.1 Resource dependent accessibility

4.1.1 Prices

One important topic with regard to the use of services in public transport are *prices as barriers*, which are seen as an excluding factor to mobility especially for seniors, pupils, the child-rich, apprentices, persons with disabilities, caregivers, and children. The plans clearly state that prices should be so low that they do not constitute a barrier to access. Instead, they should be designed in such a way that no one is excluded from the realisation of mobility opportunities. The plans unanimously emphasise that mobility should remain affordable despite the transformation. On the other hand, we find no indication in these texts that the prices for public transport may become affordable precisely because of the transformation; possibly also at the expense of the car.

Particularly, the affordability of public transport options for various - but often specifically named - groups is highlighted in this regard. In the example below, reference is made to mobility as being a part of public services of general interest. This, the quote continues, is the reason why the requirements of people with disabilities must be taken into account as well as of elderly people and those who perform care work.

“Public transport is a part of services of general interest. Accordingly, it is important to integrate the requirements of people with mobility impairments. This applies not only to people with mental and/or physical limitations, but also to elderly persons with walkers and passengers with baby carriages or bicycles” (Saarland – Ministerium für Wirtschaft, Arbeit, Energie und Verkehr, 2021, 41, translated from German by the authors).

With the reference to the “general interest,” mobility is semantically taken off the market in this quote from Saarland. The distance to the market economy expressed therein can be read as a reference to the discourse that addresses the possibilities for the profitability of public transport. Following from that, it is not surprising that the city of Hamburg chooses to finance social tariffs with subsidies (Hamburg, 2017, 17). Verbally Berlin goes even one step further in the mobility plan: The aim is “ensuring mobility regardless of gender, living situation and income” (Berlin – Senatsverwaltung Umwelt, Verkehr und Klimaschutz, 2021, 20, translated from German by the authors). Low prices in the plans should therefore continue to encourage people to realise mobility, independent from their socio-demographic situation. At the same time the idea of social compensation for high financial barriers to access mobility options also confirms the central role of fares for the *Länder*.

Considering the number of social fares and the diversity of the different social offers, the question arises as to whether the sum of the deviations from the ‘normal passenger’ may not have long since represented ‘the normal’ itself. This in turn raises the question of what the standard for accessibility actually is when the ‘normal’ is increasingly eroding. If we consider the ‘normal passenger’ as an able-bodied, white, middle-age, middle-class person, it becomes clear that those addressees are most likely not in the centre of sustainable mobility transformation focusing on ecological and social justice. If we follow this thought experiment for once, one could think about what it means to align a transformation with a standard that has long since ceased to exist and may never have existed. Are the plans of the *Länder* trying to align mobility systems with social tariffs to an ideal passenger that does not exist, instead of aligning themselves with the travelers who (want to) use public transport regularly and are dependent on it?

Given the great importance of financial access to mobility options in the plans, the *Länder* are attributing importance to economic factors. Mobility scholar Banister (2008) in contrast pleads for sustainable mobility planning to turn away from time and money as central planning components. He instead calls for alternative planning practices that pay more attention to the journey itself; considerations to increase the quality of stay during the journey belong in this area, for example through additional services at mobility stations such as Wi-Fi or greenery to enjoy when changing modes of transport. This would mean viewing accessibility not as dependent on financial resources, but as a resource in itself. By upgrading accessibility to a resource in itself and comparatively deemphasizing compensation and the effort involved, the traditional planning practice of focusing on the effective time for a route and the costs incurred would be exposed to scrutiny. Although the desire to integrate disadvantaged people is clearly pronounced, a shift towards alternative planning cultures beside subsidising the ‘normal fare’ is not yet discernible at the governance level of the *Länder*.

4.1.2 Space

In the plans that we studied, there is no doubt that spatial scarcity is perceived as a problem and that motorised individual traffic, i.e., predominantly cars and trucks, has a large share in contributing to the problem. Especially the issue of stationary traffic, which blocks public space for other forms of use. In Bremen, parked cars are clearly identified as a problem, but no solution has yet been found.

“The manifold barriers to pedestrian traffic, primarily due to parked cars [...] are to be removed, thus ensuring a space (re)gain

for pedestrian traffic. A permanent program is to be implemented to make it more difficult for cars to park illegally and to keep pedestrian and emergency routes clear” (*Bremen – Der Senator für Umwelt, Bau und Verkehr*, 2014, 141, translated from German by the authors).

With the “emergency routes” and the “pedestrian traffic,” mobility transformation as a security issue is touched upon. Although in this example a “permanent program” is desired, topics such as turning away from the car-friendly city, space justice for pedestrians and cyclists or tougher sanctions for violations of the law are not mentioned in the plans. The *Länder* and their attempt for sustainable mobility transformations seem to be struggling with the privileging of the motor vehicle, which was initiated in Germany before the Second World War and fully unfolded with the permission to park in public spaces in 1966 (Andreas, 2023). Although the texts clearly state, as in the quote above, that planning so far has been one-sided in favor of the car, that existing law is often broken by motorists and that space should be used differently, the tone in the plans seeking to address this challenge is rather moderate and the outrage is limited. Despite a clear problem statement and an articulation for the necessity to redistribute space, ideas how to organize this process remain absent in the plans. Instead, the *Länder* speak of desirable change in a pragmatic tone. This suggests the conclusion that the concept of car-centricity is criticised with regard to the issue of space, but the need to change the dominance of automobility for a sustainable transformation and the priority of motorised individual traffic on the streets, which would have to be changed for a fairer distribution of space, is not explicitly referred to in the plans.

4.1.3 Accessibility in the built environment

In addition to missing resources as barriers to accessibility in sustainable mobility transformation, infrastructural barriers are also addressed. We found numerous examples in which barrier-free access to mobility options is addressed in the plans. As in the example below, it is described as a goal to work towards unrestricted access, which serves people with and without disabilities, since “barrier-free access to buses and trains” may benefit “all passengers”:

“Goal 3: 100% of stations barrier-free. Complete accessibility of local public transport is an issue of paramount importance - and required by law. Ensuring step-free, barrier-free access to buses and trains guarantees convenient use of local transportation for all passengers” (*Schleswig-Holstein – Ministerium für Wirtschaft, Verkehr, Arbeit, Technologie und Tourismus*, 2021, 9, translated from German by the authors).

Quotes of this kind connect infrastructure with accessibility so that these terms appear as directly related. While accessibility is created through inclusive infrastructure, conversely it is also clear that exclusion is also generated through infrastructure and often still represents the status quo. Infrastructure therefore has a direct social impact, which is also addressed in the plans.

Contrary to our expectations, digital infrastructures do not play an important role in the texts. Instead, we find some evidence for the importance of personal service at train stations. Transport providers see a task to “maintain active, serviced stations and develop them as accessible mobility centers” (*Ministerium für Infrastruktur und*

Landesplanung des Landes Brandenburg, 2017, 35, translated from German by the authors) to provide transport with “environmentally friendly, comfortable and barrier-free vehicles, and qualified workers” (*Baden-Württemberg Ministerium für Umwelt, Naturschutz und Verkehr* 2010, 113, translated from German by the authors). While integrated ticketing, autonomous driving and (other) AI-features seem to constitute an important part of the (academic and public) debate on sustainable urban mobility transformations, the importance of in-person consultation is emphasised in the plans of the *Länder*.

4.2 Social (in)accessibility

4.2.1 Expertise and acceptance

All the plans mention citizen participation in one way or another. In most texts, participation has the task of creating acceptance for sustainable mobility transformations. To this end, Saxony, Bremen and Mecklenburg-Vorpommern, frequently emphasise the importance of formal participation, while stressing the “limits of the process” in a representative democracy:

“In addition to involving citizens, it was an important task from the outset to provide information about the scope, but above all about the limits of the process, so as not to raise false expectations” (*Bremen – Der Senator für Umwelt, Bau und Verkehr*, 2014, 14, translated from German by the authors).

In this case, it remains unclear what the “false expectations” and the “limits of the process” are: Is it about decision-making power, the duration of the procedures, the binding effect for the municipality or the type and manner of the procedure? The fulfilment of participatory duties by municipalities and other stakeholders does not indicate an equal relationship between participation providers and participation takers. Dialog on eye-level is usually seen as a prerequisite for power sharing in participation (Arnstein, 1969), which can be seen as a yardstick for high-quality participation. As the *Länder* focus primarily on the creation of acceptance and less on the way in which this acceptance is to be achieved with the help of participation, readers learn little about the quality standards for participation in the mobility plans.

The involvement of citizens for “creative mobility solutions [...] in the districts” is requested for the offer of mobility options, for example, in the form of school bus attendants as well as local transport and public transport customer advisory boards (*Baden-Württemberg Ministerium für Umwelt, Naturschutz und Verkehr*, 2010, 132). What all these offers have in common is that they need the voluntary cooperation and work “free of charge” of citizens in order to be realised.

The leadership of individuals is praised, as is the evocation of so-called “solidarity-based mobility” (*Mecklenburg Vorpommern*, 2018, 16).

“A functioning society thrives on the willingness of its citizens to actively assume responsibility. This willingness finds expression in civic engagement. This solidarity, practiced voluntarily and free of charge, forms a network for the cohesion of society” (*Baden-Württemberg Ministerium für Umwelt, Naturschutz und Verkehr*, 2010, 21, translated from German by the authors).

Contrary to the statements about transport as a precondition for an active social life (see in the following ‘from caring to partaking’),

solidarity-based mobility appears here as a form of mobility that is carried by the citizens: voluntarily and free of charge. Different readings may come into play here. Of course, the involvement of citizens in mobility services can also be read as a particularly active form of participation. This would perhaps follow the logic of the ‘prosumer,’ who is himself involved in the production and provision of products and services that he wants to consume and use. However, precisely because the text does not offer much information about the procedures and intensity of participation, but addresses the involvement of citizens as desirable and necessary, it could also be argued that the responsibility for mobility transformation is partly outsourced to citizens and that solidarity-based mobility goes hand in hand with an abdication of responsibility for sustainability by the *Länder*.

4.2.2 From caring to partaking

Looking at future mobility planning of the *Länder* against the backdrop of energy democracy reveals the importance of participation as a topic. At the very least, many plans refer to the importance of participation for the realisation of mobility planning (Mecklenburg Vorpommern, 2018, 135). In this context, some countries particularly emphasise the independent use of mobility options by people with disabilities. We detected several examples in the texts where participation becomes what one could call an empowerment or enablement approach.

“According to the Saxon Integration Act 49, structural and other facilities, means of transport, technical commodities, information processing systems, etc. are barrier-free if they are accessible and usable for people with disabilities in the generally customary manner, without any particular impediment and, in principle, without outside assistance” (Sächsisches Staatsministerium für Wirtschaft, Arbeit und Verkehr, 2019, 79, translated from German by the authors).

The above quote, taken from a mobility plan from Saxony, is representative of similar articulations in plans from Mecklenburg Vorpommern (2018, 133), Saarland – Ministerium für Wirtschaft, Arbeit, Energie und Verkehr (2021, 58) or Bremen – Der Senator für Umwelt, Bau und Verkehr (2014, 83). It describes a turn away from traditional ideas of care with an implicit power asymmetry in so far as abled persons care for those people with special needs to the empowerment of people for a self-determined, independent usage of transport modes “without any particular impediment and, in principle, without outside assistance” (Sächsisches Staatsministerium für Wirtschaft, Arbeit und Verkehr, 2019, 79, translated from German by the authors). Even if it cannot be said that the UN Convention on the Rights of Persons with Disabilities of 2008 has been implemented in a pacifying way in Germany in the last 14 years, the change of perspective that its promoting, is evident in the plans: *being* disabled by one’s environment comes to the fore while *having* a disability seems to fade into the background. In some examples independence and self-determination appear as an inherent human right that must be made possible. It is not an external resource that is sometimes distributed and sometimes not.

Saxony takes up an important feature of the UN Convention on the Rights of Persons with Disabilities, which guarantees the self-determined mobility of and accessibility for people with disabilities (Art. 9 and 20). The convention was ratified in 2008 and the

implementation into national law should have been completed in 2022. The rare examples in the plans on the self-determined use of transport modes in the context of the closely linked topic of empowerment confirms that the implementation of the convention is delayed. Although the advances in adapting infrastructures for self-determined mobility fall far short of the expectations the convention describes, the change in perspective is also promising because it suggests a different way of thinking about mobility: The de-coupling of the ability to move (motility) from the enabled body.

4.2.3 Needs

The countries’ plans address people’s needs in several places. The expectation of sustainable mobility is characterised by meeting people’s needs as far as possible under the given circumstances. The texts take the stance that mobility offers should be made for people in which a service concept to cater to specific needs is recognisable. Yet, these considerations are not differentiated in many cases: We frequently find general labels of groups instead of the specific needs of these groups, such as “the elderly,” or “people with disabilities” (Hansel and Graf, 2023). Nevertheless, the heterogeneity of needs gets at least some attention in the plans and can be considered as a first step towards better accessibility, although the people themselves do not have their say here. The needs are attributed to them, albeit benevolently. At the same time, the texts are far removed from a critical discussion of needs and, in particular, the discussion about needs and the satisfiers associated with satisfying them is not discussed any further.

Needs tend to become an umbrella term for the claims and demands that citizens may have, but what exactly they want or how certain impairments manifest themselves is not specified. Although the orientation towards people’s needs takes up space in the texts, in order to meet them with regard to mobility options, the needs would have to be assessed more precisely. This means that ‘needs-based’-approaches in the plans run the risk of becoming a nice-to-have-feature, but are underspecified in the details. However, in some instances, the needs of people occur with greater differentiation. This is the case when its central importance is highlighted, for example, when projects only get funded if “accessibility for all” is a given feature (Mecklenburg Vorpommern, 2018, 134; Sächsisches Staatsministerium für Wirtschaft, Arbeit und Verkehr, 2019, 56). Furthermore, we find examples where concrete initiatives are applied in the plans (e.g., walking distance between transport modes). Contrarily to the general addressees mentioned above, we find also expressions like the following:

“Accessibility is more than lowering curbs for certain “special groups.” If the mobility needs of the elderly in particular are taken into account, a much broader approach is required. [...] In particular, this means taking into account the higher probability of human error and the slower speed at which older people tend to travel. These needs coincide with those of children in traffic” (Mecklenburg Vorpommern, 2018, 136, translated from German by the authors).

The quotation marks around “special groups” signal at least some distance to the expression and indicate a reflexive moment of those who wrote the plans. This example stands for messages in the plans that show a certain sensitivity in speaking about people’s needs. Furthermore, in this quotation, synergies between different needs, as in the previous quote between children and the elderly, might indicate

a different thinking about mobility. So, the “needs-oriented”-approach here is not to consider the needs to specific groups of people in a vacuum and place various groups of people in separate silos next to each other. Moreover, this approach does not focus on specific points of infrastructure and services within the urban mobility system. Instead, the vision is to benefit from synergies among diverse sets of needs and create a matrix of interrelated needs from a whole-system points of view, to design urban mobility suitable for various kinds of needs. Although the abstract level of needs questioned above is less diffuse in this example, and there is concrete talk of a greater tendency for children or elderly people to make mistakes, further steps would have to be taken to address this in mobility planning.

5 Discussion

To better understand the future character of sustainable transformations, we asked how energy democracy as a heuristic helps us understand the democratic conceptions that are underpinning urban mobility transformations. This paper used a content analysis of different state-level mobility plans to assess if and how regional governance in Germany responds to the normative claim to design and implement a green and just mobility transformation that allows all citizens participation and control in the transformation of urban mobility. The interpretative policy analysis of nine mobility plans of the *Länder* in Germany revealed several interesting aspects in regard to expectations on this governance level in the German urban mobility sector. The relationship between energy democracy and sustainable and inclusive mobility transformations becomes particularly visible in the topoi of accessibility, even though the interpretation of accessibility by the regional governance level falls short of energy democracy’s normative demand for a sustainable and just transformation as discussed further below. State expectations around access to sustainable mobility options against the background of energy democracy unfold among two distinct but interrelated aspects:

- 1 Resource-dependent accessibility – prices, space and infrastructures as barriers; and
- 2 Social accessibility – filled with topics around acceptance, participation, and needs.

While these two aspects are interrelated and not mutually exclusive, they each feature distinct characteristics worthy of highlighting: *Resource-dependent accessibility* focuses on access to (or lack of) *material* resources by an individual or a group that allows them to access (i.e., participate in sustainable) mobility services. The price for mobility is still central to contemporary mobility planning and thus reveals a close proximity to traditional planning practices characterised by a focus on time and money. Accessibility of the built environments highlights the need for policies to address physical infrastructures as a barrier for different groups of people - with physical and mental disabilities, elderly people as well as children (i.e., caregivers with strollers).

Social accessibility emphasises the topic of participation, acceptance, and needs. Concretely, it refers to the necessity of acceptance for the success of the mobility transformation. It highlights the importance of integrating people into decision-making processes and aligning the transformation among people’s diverse needs to achieve a level of acceptance. In this regard, social accessibility conceptualises participation as an instrumental process for the

legitimation of urban mobility transformations; democratic participation is not a goal on its own.

Looking at the mobility planning of the *Länder* through the analytical perspective of energy democracy reveals the exclusions that are inherently linked to the concept of accessibility. In the context of resource-dependent accessibility, factors such as pricing and limited spatial availability play a significant role in constituting exclusion. In the context of social accessibility, a lack of access to decision-making processes also effectively excludes citizens from shaping mobility transformations. Following Lucas (2012), we can identify a clear connection between socio-demographic factors—such as income—and inadequate access to mobility options, which can lead to transport poverty. This situation reinforces social exclusion in a negative feedback loop. Additionally, infrastructural barriers within the built environment further exclude individuals from utilising sustainable mobility options, placing the system of physical infrastructure at the centre of this discussion. The visibility of these infrastructural issues likely stems from their tangible nature and the degree to which they fall within the influence of policymakers and stakeholders.

It is thus important to acknowledge that the development and implementation of alternatives that challenge and potentially transform the current fossil-fuel-based system may exceed the interests, capabilities, and capacities of state-level administrations. The influence of various policy actors on the regional level to mitigate the persistence of exclusions—such as pricing, spatial limitations, infrastructure inadequacies, and the lack of co-determination—varies significantly. While financial barriers to access can be addressed relatively easily through compensation measures, and infrastructures can be reconstructed (albeit at substantial cost), the acceptance of transformation processes cannot be unilaterally procured by the *Länder*. Instead, acceptance must also be actively granted by citizens themselves. In this regard, the *Länder*, as key actors in the transformation, may be inclined to concentrate on aspects they believe they can effectively influence, particularly given the existing deficit in participatory orientation and co-determination in mobility planning. Devolution (in terms of administrative decentralization) might also play a role here in that the *Länder* might see the local level (rather than the regional one) as the relevant governance level to actively engage citizens in transition processes, albeit this would focus more on the implementation of measures instead of the co-design of narratives, visions, and expectations around urban mobility planning.

Yet, the aspiration for a socially inclusive, participatory, and green mobility transformation is a goal shared by politicians, administrators, and citizens—and across levels of governance - alike. Therefore, creating opportunities for citizens to participate and co-constitute a sustainable mobility sector is something that could certainly be expected in the mobility planning for the coming years.

At the moment, however, citizen participation in the mobility plans predominantly occurs in the form of formal participation, lacking power-sharing mechanisms necessary to alter existing decision-making processes. There is a noticeable absence of information regarding the interaction or exchange of knowledge among policymakers, citizens, and planning offices. In fact, evidence of active citizen participation in these planning processes is scarce. The plans largely require citizen involvement only when they are asked to support mobility options, such as community buses, through voluntary work (see section 4). Conversely, when it comes to co-creation, the limits of participatory procedures are often

emphasised to avoid “raising false expectations” (Bremen – Der Senator für Umwelt, Bau und Verkehr, 2014, 14).

Moreover, the tone of the plans in regard to system transformation remains moderate, even in instances of rule violations like parking offenses, and there is no fundamental questioning of the car-centric city model within the texts. This is particularly noteworthy given that fostering co-determination could potentially enhance the success of the transformation. Given the magnitude of the transformation required, this lack of engagement is surprising, especially considering the presence of a comparatively well-established civil society focused on inclusion in the regions in Germany. Organisations, such as seniors associations, disability rights groups, and social counselling services, which prioritise the interests of their constituents, are well-positioned as representatives to ensure participation in decision-making processes (Rucht, 2023). It is possible that the process of exchange is so established and institutionalised that it does not warrant specific mention in the plans. However, it is equally likely that the current process is technocratised to a point that it is silencing relevant power imbalances to a point that even well-organised civil society groups lack access to decision-making processes. At the same time, the texts do highlight the importance of public acceptance, suggesting that a greater emphasis on the implementation of participatory processes and their procedural details could have been anticipated. Such an emphasis would not only align with the principles of inclusion but also foster a more democratic approach to mobility planning in the *Länder*.

The meaning of participation in the texts appears to align closely with the concept of needs as articulated in the plans. The needs of people with disabilities are taken seriously and their importance for participation in public life is not unappreciated. Social tariffs for people with disabilities of all kinds illustrate the scope of the transformation and at the same time testify for an institutionalisation of visions for a mobility transformation that recognises special needs. The linking of project funding to accessibility also indicates the importance of barrier-free technologies in this regard. Occasionally, the plans also reference the specific challenges faced by, for example, children or the elderly, but further steps would have to be taken to address this in actual mobility planning. Generally, these needs are addressed in a rather generalised manner, often subsumed under broad categories such as groups with ‘special needs’. The generalisation suggests that needs are being articulated on behalf of the affected individuals without engaging them directly in the process. The aggregation of needs is understandable given the character of the plans. When it comes to the implementation of sustainable mobility plans it is surprising, as it overlooks the potential contradictions and heterogeneity among these needs – once again omitting questions of power dynamics from the democratic process suggested in parts of the public debate.

The findings suggest important implications for regional governance and the role of the *Länder* as actors in the mobility planning process. Despite the significant emphasis on ‘accessibility’, ‘participation’, and ‘needs’ as conceptions of democracy underpinnings within the mobility plans, these tenets are often described without references to consultation with the individuals and associations they represent. This lack of communication does not

support a definitive conclusion about the effectiveness of the planning process. However, it does indicate that the *Länder* may not be fulfilling their essential role as mediators between national and subnational interests. As a result, the exchange of information is insufficient, which hinders the potential for mutual learning across different governance levels (Kern and Burkeley, 2009). This lack of interaction could also raise questions regarding social recognition, as posited by Young (2002), a challenge also highlighted by the literature of energy justice in connection with energy democracy (Jenkins, 2019; Droubi et al., 2022). Without participation, marginalised voices may not receive the necessary acknowledgment, thereby affecting the overall inclusivity of the planning process by impacting the relationship between the government - in this case the *Länder* - and its citizens.

The present study highlights that, from the perspective of an energy democracy lens, the need for participatory processes in the transport sector has yet to be integrated into the plans of the *Länder*. Instead, the focus of the mobility transformation primarily centres on addressing social aspects, such as income compensation, while democratic participation aimed at restructuring and redistributing power remains a secondary concern. As noted in section 4, the environmental dimension appears to be treated as a background consensus within the plans, rather than an active priority.

6 Conclusion

The analysis reveals that democratic participation in state-level urban mobility plans in Germany is predominantly framed through the concept of ‘accessibility’. While accessibility encompasses various dimensions - physical, social, cultural, and economic - and serves as a critical pillar of democratic transformations, it fails to capture the full complexity required for transformations towards sustainability. Young (2002) already argued more than two decades ago that genuine inclusive participation extends beyond mere access; it necessitates addressing power dynamics and enhancing deliberative quality to ensure that marginalised voices are neither tokenised nor overshadowed by dominant groups. This highlights the importance of moving beyond a narrow focus on accessibility to embrace a more comprehensive framework that recognises and addresses the complexities of democratic participation in the context of sustainable urban mobility.

Consequently, the potential for sustainable development and effective governance at the regional level in Germany is not being fully realised in the *Länder* plans under study. Urban mobility governance in Germany appears to be entrenched in a carbon-locked pathway, limiting the scope for transformative change. The plans analysed tend to provide public transport options that coexist alongside existing carbon-dominant structures, rather than actively fostering alternative practices, technologies, and decision-making mechanisms that could move society beyond its car-centric orientation. The *Länder* articulate ambitious goals and even semantically address the need to empower those in need. However, the question of implementation is largely treated in the plans as a question of access and therefore has significant implications for achieving a sustainable mobility transformation. It represents, at the very least, a missed opportunity to offer

knowledge, guidance, and legitimacy for sustainability practices at this specific governance level as an important link between the national and city level. By not prioritising participatory governance and the integration of environmental considerations, the plans risk perpetuating a status quo that undermines efforts towards a sustainable urban mobility future.

So what path would a ‘mobility democracy’ perspective take based on our results? To fully embrace the concept of sustainable and inclusive mobility as outlined in section 2, ‘acceptability’ must be framed within a broader, relational understanding of ‘accessibility’. Farrington and Farrington (2005) describe this through a “nested” framework that links social inclusion, accessibility, and social justice, emphasising the interconnectedness of these elements. This approach recognises that accessibility cannot be treated as a simple, one-dimensional measure that merely provides individuals with the infrastructure or ability to use a particular mode of transportation. Instead, it requires a deeper relational view, where accessibility also encompasses the capacity to shape and influence decision-making processes (i.e., outcomes) and guide the future goals (i.e., visions) of urban mobility transformations.

The narrow framing of accessibility present in the *Länder* plans reduces mobility transformations to technocratic processes, predefining both the direction of change and who should be included how, thus leaving little room for discussions about underlying power imbalances. By sidestepping these power dynamics, the current plans fail to address the broader implications of mobility transformations—namely, who stands to benefit or lose from particular policies, and whose values and interests are embedded in those decisions. As Mullen and Marsden (2016) argue, such approaches risk privileging policy solutions that overlook the complex social justice dimensions inherent in mobility transformations, allowing certain groups to be marginalised while reinforcing existing inequalities. Therefore, a more inclusive and participatory framework is essential to ensure that mobility transformations not only advance the ecological but also the social side of sustainability which can be translated into the promotion of equity and democratic legitimacy.

While from a normative, “liberal democratic point of view democracy may seem an inherent part of the effective response to climate change [and sustainability transformation challenges], broader comparative research shows that though democracy may be desirable in its own right, it does not guarantee success in decarbonisation” (Szulecki and Overland, 2020, 9). The notion that co-determination in democratic decision-making does not automatically lead to more environmental protection underlines the importance of partaking in political processes in but especially also beyond established participation channels and points towards the necessity of a (co-)constitutive and relational understanding of power dynamics in modes of (group) representation. Participation can of course take place through more informal modes, such as public protests, grassroots initiatives, and other forms of practices of citizen resistance, which can probably not be accounted for in a mobility plan, but need to be (and already are in some spaces in the German governance system) recognised as important avenues for democratic participation and access in mobility transformations.

Of course, these activities would also be more likely to be expected from NGOs and citizens’ initiatives in the field than on the governance level of the *Länder*. But the findings also show how much potential there is for energy democracy in the mobility sector and how fundamental the need is to advance the sustainable mobility transformations through a mobility democracy lens.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

AG: Writing – original draft, Writing – review & editing. AK: Writing – original draft, Writing – review & editing.

Funding

The author(s) declare that financial support was received for the research and/or publication of this article. This research also incorporates findings from the SmartHubs project, which is funded at the University of Münster by the European Research Area Network (ERA-Net), funding code 01UV2151B.

Acknowledgments

We are grateful for the feedback of the participants of the conference by the DVPW Working Group Umweltpolitik/Global Change in February 2023 and the conference by the DGfG Working Group Mobility and Transport (AK MoVe) in June 2023. We would also like to thank student assistants Jonah Schwope, Nina Kleen, Linus Pingel and Tomma Wagner for their research support. Some paragraphs have been proofread (not written) using DeepL Write to improve readability.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher’s note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

References

- Agora Verkehrswende. (2017). Transforming transport to ensure tomorrow's mobility 12 insights into the Verkehrswende. Available at: https://www.agora-verkehrswende.de/fileadmin/Projekte/2017/12_Thesen/Agora-Verkehrswende-12-Insights_EN_WEB.pdf (Accessed February 3, 2025).
- Anderson, B. (1991). *Imagined communities. Reflections on the origin and spread of nationalism*. London, NY: Verso.
- Andreas, K. (2023). Deutschlands Weg in die Automobilgesellschaft. Verkehrspolitik im Schatten des NS. Bundeszentrale für politische Bildung of 2023. Available at: <https://www.bpb.de/shop/zeitschriften/apuz/lokale-verkehrswende-2023/543680/deutschlands-weg-in-die-automobilgesellschaft/> (Accessed March 28, 2024).
- Appadurai, A. (1990). Disjuncture and difference in the global cultural economy. *Theory Cult. Soc.* 7, 295–310. doi: 10.1177/026327690007002017
- Arnstein, S. R. (1969). A ladder of citizen participation. *J. Am. Inst. Plann.* 35, 216–224. doi: 10.1080/01944366908977225
- Baden-Württemberg Ministerium für Umwelt, Naturschutz und Verkehr (2010). Generalverkehrsplan baden-württemberg. Available at: https://www.baden-wuerttemberg.de/fileadmin/redaktion/dateien/Altdateien/202/101214_Generalverkehrsplan_2010.pdf (Accessed September 27, 2024).
- Banister, D. (2008). The sustainable mobility paradigm. *Transp. Policy* 15, 73–80. doi: 10.1016/j.tranpol.2007.10.005
- Becker, S., and Naumann, M. (2017). Energy democracy: mapping the debate on energy alternatives. *Geogr. Compass* 11, 1–13. doi: 10.1111/gec3.12321
- Bergh, S. (2004). Democratic decentralisation and local participation: a review of recent research. *Dev. Pract.* 14, 780–790. doi: 10.1080/0961452042000284012
- Berkhout, F. (2006). Normative expectations in systems innovation. *Tech. Anal. Strat. Manag.* 18, 299–311. doi: 10.1080/09537320600777010
- Berlin – Senatsverwaltung Umwelt, Verkehr und Klimaschutz (2021). Stadtentwicklungsplan Mobilität und Verkehr Berlin 2030. Berlin: Senatsverwaltung Umwelt, Verkehr und Klimaschutz. Available at: https://www.berlin.de/sen/uvk/assets/verkehr/verkehrspolitik/step/broschuere_stepmove.pdf?ts=1728983466 (Accessed February 02, 2025).
- Bremen – Der Senator für Umwelt, Bau und Verkehr (Ed.) (2014). Verkehrsentwicklungsplan Bremen 2025. Bremen: Der Senator für Umwelt, Bau und Verkehr. Available at: https://bau.bremen.de/sixcms/media.php/13/VEP_Bremen_2025_Leseversion_144dpi.pdf (Accessed February 3, 2025).
- Bürgerrat (2024). 20 recommendations on transport transition. Available at: <https://www.buergerrat.de/en/news/20-recommendations-on-transport-transition/> (Accessed February 4, 2024).
- Burke, M. J., and Stephens, J. C. (2017). Energy democracy: goals and policy instruments for sociotechnical transitions. *Energy Res. Soc. Sci.* 33, 35–48. doi: 10.1016/j.erss.2017.09.024
- Cass, N., Shove, E., and Urry, J. (2005). Social exclusion, mobility and access. *Sociol. Rev.* 53, 539–555. doi: 10.1111/j.1467-954X.2005.00565.x
- Chateau, Z., Devine-Wright, P., and Wills, J. (2021). Integrating sociotechnical and spatial imaginaries in researching energy futures. *Energy Res. Soc. Sci.* 80:102207. doi: 10.1016/j.erss.2021.102207
- Chilvers, J., and Pallett, H. (2018). Energy democracies and publics in the making: a relational agenda for research and practice. *Front. Commun.* 3:14. doi: 10.3389/fcomm.2018.00014
- Denise, F., and Weinrub, A. (2017). *Energy democracy: Advancing Equity in Clean Energy Solutions*. Washington, DC: Island Press.
- Devas, N., and Delay, S. (2006). Local democracy and the challenges of decentralising the state: an international perspective. *Local Gov. Stud.* 32, 677–695. doi: 10.1080/03003930600896293
- Dorantes, L. M., and Murauskaite-Bull, I. (2023). Revisiting transport poverty in Europe through a systemic review. *Transp. Res. Proc.* 72, 3861–3868. doi: 10.1016/j.trpro.2023.11.497
- Droubi, S., Heffron, R. J., and McCauley, D. (2022). A critical review of energy democracy: a failure to deliver justice? *Energy Res. Soc. Sci.* 86:102444. doi: 10.1016/j.erss.2021.102444
- Epprecht, N., von Wirth, T., Stünzi, C., and Blumer, Y. B. (2014). Anticipating transitions beyond the current mobility regimes: how acceptability matters. *Futures* 60, 30–40. doi: 10.1016/j.futures.2014.04.001
- European Commission. (2024). An inclusive energy transition Cordis Result Pack. Available at: https://publications.europa.eu/resource/cellar/87982b03-1be2-11ef-a251-01aa75ed71a1.0001.03/DOC_1 (Accessed September 27, 2024).
- European Commission. Green transition. Available at: https://reform-support.ec.europa.eu/what-we-do/green-transition_en#:~:text=The%20European%20Green%20Deal%20aims,just%20and%20inclusive%20for%20all (Accessed September 27, 2024).
- Farrington, J., and Farrington, C. (2005). Rural accessibility, social inclusion and social justice: towards conceptualisation. *J. Transp. Geogr.* 13, 1–12. doi: 10.1016/j.jtrangeo.2004.10.002
- Feldpausch-Parker, A. M., Endres, D., and Peterson, T. R. (2019). Editorial: a research agenda for energy democracy. *Front. Commun.* 4:53. doi: 10.3389/fcomm.2019.00053
- Freudendal-Pedersen, M., and Kesselring, S. (2016). Mobilities, futures and the City: repositioning discourses – changing perspectives – rethinking policies. *Mobilities* 11, 575–586. doi: 10.1080/17450101.2016.1211825
- Geurs, K., Grigolon, A., Münzel, K., Gkiotsalitis, K., Duran-Rodas, D., and Büttner, B. (2024). The Smarthubs integration ladder: a conceptual model for the categorisation of shared mobility hubs. *Transp. Rev.* 44, 112–139. doi: 10.1080/01441647.2023.2239499
- Graf, A., and Sonnberger, M. (2020). Responsibility, rationality, and acceptance: how future users of autonomous driving are constructed in stakeholders' sociotechnical imaginaries. *Public Understand. Sci.* 29, 61–75. doi: 10.1177/0963662519885550
- Hamburg (2017). *Mobilität in Hamburg Die Ziele: Leitbild und Handlungsziele der Verkehrsentwicklungsplanung in Hamburg*. Hamburg: Behörde für Wirtschaft, Verkehr und Innovation. Available at: <https://www.hamburg.de/resource/blob/193432/d0c811fcd4f8e3f80c178234de614b5a/mobilitaet-in-hamburg-die-ziele-data.pdf> (Accessed February 3, 2025).
- Hansel, J., and Graf, A. (2023). Subjectification, technology, and rationality – sustainable transformation of the mobility sector from a governmentality perspective. In: *Towards user-centric transport in Europe*. 3. eds. I. Keseru and A. Randhahn (Cham: Springer International Publishing), 215–234.
- Hidayati, I., Tan, W., and Yamu, C. (2021). Conceptualizing mobility inequality: mobility and accessibility for the marginalized. *J. Plan. Lit.* 36, 492–507. doi: 10.1177/08854122211012898
- Inoi, H., Nishiwaki, M., and Doi, K. (2017). Social exclusion related to mobility in urban area. *Transp. Res. Proc.* 25, 4219–4228. doi: 10.1016/j.trpro.2017.05.373
- Janoff, S., and Kim, S. H. (2015a). Future imperfect: science, technology, and the imaginations of modernity. In: S. Janoff/S. H. Kim (Eds.). *Dreamscapes of modernity. Sociotechnical imaginaries and the fabrication of power*. London: The University of Chicago Press, 1–33.
- Janoff, S., and Kim, S. H. (2015b). *Dreamscapes of modernity: Sociotechnical imaginaries and the fabrication of power*. London, The University of Chicago Press.
- Jenkins, K. E. H. (2019). Energy justice, energy democracy, and sustainability: normative approaches to the consumer ownership of renewables. In: *Energy transition. Financing consumer co-ownership in renewables*. ed. J. Lowitzsch (Cham: Springer International Publishing), 79–97.
- Jenkins, K., McCauley, D., Heffron, R., Stephan, H., and Rehner, R. (2016). Energy justice: a conceptual review. *Energy Res. Soc. Sci.* 11, 174–182. doi: 10.1016/j.erss.2015.10.004
- Judson, E., Fitch-Roy, O., and Soutar, I. (2022). Energy democracy: A digital future? *Energy Res. Soc. Sci.* 91:102732. doi: 10.1016/j.erss.2022.102732
- Kern, K., and Berkeley, H. (2009). Cities, Europeanization and multi-level governance: governing climate change through transnational municipal networks. *J. Common Mark. Stud.* 47, 309–332. doi: 10.1111/j.1468-5965.2009.00806.x
- Kivimaa, P., Laakso, S., Lonkila, A., and Kaljonen, M. (2021). Moving beyond disruptive innovation: a review of disruption in sustainability transitions. *Environ. Innov. Soc. Trans.* 38, 110–126. doi: 10.1016/j.eist.2020.12.001
- Kuckartz, U. (2014). *Qualitative text analysis*. Thousand Oaks, CA: SAGE Publications.
- Linovski, O., Baker, D. M., and Manaugh, K. (2018). Equity in practice? Evaluations of equity in planning for bus rapid transit. *Transp. Res. A Policy Pract.* 113, 75–87. doi: 10.1016/j.tra.2018.03.030
- Lodovici, M. S., and Torchio, N. (2015). Social inclusion in EU public transport. Directorate-General for Internal Policies. Available at: [https://www.europarl.europa.eu/RegData/etudes/STUD/2015/540351/IPOL_STU\(2015\)540351_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2015/540351/IPOL_STU(2015)540351_EN.pdf) (Accessed March 2, 2025).
- Loy, L. S., Tröger, J., Prior, P., and Reese, G. (2021). Global citizens – global jet setters? The relation between global identity, sufficiency orientation, travelling, and a socio-ecological transformation of the mobility system. *Front. Psychol.* 12:622842. doi: 10.3389/fpsyg.2021.622842
- Lucas, K. (2012). Transport and social exclusion: where are we now? *Transp. Policy* 20, 105–113. doi: 10.1016/j.tranpol.2012.01.013
- Mayring, P. (2022). *Qualitative content analysis: A step-by-step guide*. Los Angeles: Sage.
- Mecklenburg Vorpommern (2018). *Integrierter Landesverkehrsplan. Schwerin: Mecklenburg Vorpommern*.
- Ministerium für Infrastruktur und Landesplanung des Landes Brandenburg (Ed.) (2017). *Mobilitätsstrategie Brandenburg 2030*. Potsdam: Ministerium für Infrastruktur und Landesplanung des Landes Brandenburg. Available at: <https://mil.brandenburg.de/sixcms/media.php/9/Mobilitaetsstrategie-Brandenburg-2030.pdf> (Accessed February 3, 2025).

- Moradi, A., and Vagnoni, E. (2018). A multi-level perspective analysis of urban mobility system dynamics: what are the future transition pathways? *Technol. Forecast. Soc. Chang.* 126, 231–243. doi: 10.1016/j.techfore.2017.09.002
- Mullen, C., and Marsden, G. (2016). Mobility justice in low carbon energy transition. *Energy Res. Soc. Sci.* 18, 109–117. doi: 10.1016/j.erss.2016.03.026
- Osička, J., Szulecki, K., and Jenkins, K. E. H. (2023). Energy justice and energy democracy: separated twins, rival concepts or just buzzwords? *Energy Res. Soc. Sci.* 104:103266. doi: 10.1016/j.erss.2023.103266
- Pichler, M. (2023). Political dimensions of social-ecological transformations: polity, politics, policy. *Sustainability* 19:612. doi: 10.1080/15487733.2023.2222612
- Radtke, J., and Renn, O. (2024). Participation in energy transitions: a comparison of policy styles. *Energy Res. Soc. Sci.* 118:103743. doi: 10.1016/j.erss.2024.103743
- Rammner, S. (2016). “Nachhaltige Mobilität: Gestaltungsszenarien und Zukunftsbilder” in Handbuch Verkehrspolitik. ed. O. Schwedes (Cham: Springer Nachschlage Wissen).
- Reichenbach, M., and Fleischer, T. (2023). From ambition to implementation: institutionalisation as a key challenge for a sustainable mobility transition in Germany. *Energ Sustain Soc* 13, 1–16. doi: 10.1186/s13705-023-00392-6
- Rommetveit, K., and Wynne, B. (2017). Technoscience, imagined publics and public imaginations. *Public Understand. Sci.* 26, 133–147. doi: 10.1177/0963662516663057
- Rosen, P. (2001). Towards sustainable and democratic urban transport: constructivism, planning and policy. *Tech. Anal. Strat. Manag.* 13, 117–135. doi: 10.1080/09537320120040482
- Rucht, D. (2023). Social movements a theoretical approach. Oxford: Oxford University Press.
- Saarland – Ministerium für Wirtschaft, Arbeit, Energie und Verkehr (2021). Verkehrsentwicklungsplan ÖPNV (VEP ÖPNV). Saarland: Ministerium für Wirtschaft, Arbeit, Energie und Verkehr. Available at: https://www.saarland.de/SharedDocs/Downloads/DE/mukmav/verkehr/%C3%96PNV/dld_roadmap_vep_oepnv.pdf?__blob=publicationFile&v=1 (Accessed February 3, 2025).
- Sächsisches Staatsministerium für Wirtschaft, Arbeit und Verkehr (Ed.) (2019). Mobilität für Sachsen – Landesverkehrsplan 2030. Dresden: Entwurf - zur Anhörung/Beteiligung - .
- Schleswig-Holstein – Ministerium für Wirtschaft, Verkehr, Arbeit, Technologie und Tourismus (2021). Landesweiter Nahverkehrsplan bis. (2027). Kiel: Ministerium für Wirtschaft, Verkehr, Arbeit, Technologie und Tourismus. Available at: https://unternehmen.nah.sh/assets/2021/Landesweiter-Nahverkehrsplan-2022-bis-2027_final.pdf (Accessed February 3, 2025).
- Schreier, M. (2012). Qualitative content analysis in practice. London: Sage Pub.
- Sheller, M. (2018). Mobility justice: The politics of movement in an age of extremes. London: Verso.
- Sheller, M., and Urry, J. (2006). The new Mobilities paradigm. *Environ. Plan. A* 38, 207–226. doi: 10.1068/a37268
- Sonnberger, M., and Graf, A. (2021). Sociocultural dimensions of mobility transitions to come: introduction to the special issue. *Sustainability* 17, 173–184. doi: 10.1080/15487733.2021.1927359
- Sovacool, B. K., Burke, M., Baker, L., Kotikalapudi, C. K., and Wlokas, H. (2017). New frontiers and conceptual frameworks for energy justice. *Energy Policy* 105, 677–691. doi: 10.1016/j.enpol.2017.03.005
- Sovacool, B., Kester, J., Noel, L., and de Rubens, G. Z. (2019). Contested visions and sociotechnical expectations of electric mobility and vehicle-to-grid innovation in five Nordic countries. *Environ. Innov. Soc. Trans.* 31, 170–183. doi: 10.1016/j.eist.2018.11.006
- Stafford, L., and Baldwin, C. (2018). Planning walkable neighborhoods. *J. Plan. Lit.* 33, 17–30. doi: 10.1177/0885412217704649
- Stephens, J. C. (2019). Energy democracy: redistributing power to the people through renewable transformation. *Environ. Sci. Policy Sustain. Dev.* 61, 4–13. doi: 10.1080/00139157.2019.1564212
- Szulecki, K. (2017). Conceptualizing energy democracy. *Environ. Polit.* 27, 21–41. doi: 10.1080/09644016.2017.1387294
- Szulecki, K., and Overland, I. (2020). Energy democracy as a process, an outcome and a goal: a conceptual review. *Energy Res. Soc. Sci.* 69:101768. doi: 10.1016/j.erss.2020.101768
- Taylor, C. (2004). Modern social imaginaries. Durham, NC: Duke University Press.
- Thombs, R. P. (2019). When democracy meets energy transitions: a typology of social power and energy system scale. *Energy Res. Soc. Sci.* 52, 159–168. doi: 10.1016/j.erss.2019.02.020
- Umweltbundesamt (2024). Klimaemissionen sinken 2023 um 10,1 Prozent – größter Rückgang seit 1990. Available at: <https://www.umweltbundesamt.de/presse/pressemitteilungen/klimaemissionen-sinken-2023-um-101-prozent> (Accessed April 2, 2024).
- United Nations Department of Economic and Social Affairs (2016). Identifying social inclusion and exclusion. In: Report on the World Social Situation. 17–31. doi: 10.18356/5aa151e0-en
- Urry, J. (2007). Mobilities. Cambridge, MA: Polity Press.
- Uteng, T. P., and Cresswell, T. (2008). Gendered Mobilities. London: Routledge.
- van Veelen, B., and van der Horst, D. (2018). What is energy democracy? Connecting social science energy research and political theory. *Energy Res. Soc. Sci.* 46, 19–28. doi: 10.1016/j.erss.2018.06.010
- Verlinghieri, E., and Schwanen, T. (2020). Transport and mobility justice: evolving discussions. *J. Transp. Geogr.* 87:102798. doi: 10.1016/j.jtrangeo.2020.102798
- Young, I. M. (2002). Inclusion and democracy. Oxford: Oxford University Press.