Exploring public actors' beliefs about behavioural change for the mobility transition and their expectations for transdisciplinary collaborations

Politics and public administration are key actors when it comes to the implementation of behaviour change policies for sustainable mobility. We explore their beliefs on the matter and their expectations for transdisciplinary cooperations with scientific actors.

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GAIA 35/S1 (2026): 245 – 253

Abstract
Policy measures are central to shaping individual mobility behaviour, and a coherent policy approach is essential to advance sustainable transport transitions. While research provides extensive insights into the malleability of mobility behaviour, little is known about what policymakers and administrators know about behaviour change. This study addresses the gap through qualitative interviews with 13 political and administrative actors in Berlin and Brandenburg, combining Sabatier's *Advocacy Coalition Framework* from 1988 and Michie and colleagues' *Behaviour Change Wheel*. We explore who public actors view as their allies for the transition, and their expectations for collaboration with scientific actors. Our findings indicate that public actors possess substantial knowledge of behavioural change measures, many of which align with the *Behaviour Change Wheel*. Yet, their beliefs about mobility behaviour change vary in sophistication, and systematic links between assumptions and interventions are lacking. Public actors tend to view civil society as a key ally. Understanding their specific expectations for cooperation with scientific actors strengthens transdisciplinary research processes.

Keywords
actor beliefs, actor coalitions, behaviour change, sustainable mobility transition, transdisciplinary, transport planning

Research has revealed a great amount of knowledge about the barriers to changing behaviour to be more climate-friendly, as well as which interventions and policy measures are promising. In the context of mobility, behavioural research has highlighted the importance of both psychological determinants, including beliefs, perceived behaviour control, habits, personal and social norms, as well as contextual factors, most notably transport infrastructure (Javaid et al. 2020). Moreover, the meta-analysis by Ivanova et al. (2020) shows that the transport sector is the sector in which changes in individual behaviour offer the greatest potential for reducing CO_2 emissions. The highest-potential mitigation actions include living car-free, switching to a battery-electric vehicle, and reducing air travel (Ivanova et al. 2020).

However, the comprehensive body of knowledge in behavioural and social science mobility research is no guarantee that this knowledge will find its way to the implementation actors. In transport studies, this issue is known as the "implementation gap" (Banister and Hickman 2013). To close the gap, Tsoi et al. (2021) recommend a better integration of local contexts into future policy-making. Within these local contexts, politics and administration play a central, coordinating, and steering role for the implementation of behaviour change policies. Therefore, our study aims for a better understanding of the implementation gap in local contexts by adopting a subnational, actor-centered perspective.

What do people in politics and administration know and think about how citizens' behaviour can be changed towards sustainable mobility? Which actors do they consider allies in the transition and what do they expect from transdisciplinary cooperations with scientific actors?

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https://doi.org/10.14512/gaia.35.S1.4
Received November 28, 2025, revised version accepted July 6, 2026 (double-blind peer review).

To answer these questions, we use qualitative interviews to explore the beliefs of individuals who are active in politics and administration at the subnational level in the fields of climate protection and/or sustainable mobility. We assume that their beliefs influence which political and planning measures they consider sensible and appropriate for changing the individual mobility behaviour of citizens.

Based on a better understanding of the views and beliefs of people in politics and administration, we can deduce how science can fruitfully engage with and support them. To explore this point in greater depth and facilitate transdisciplinary cooperation, we have also integrated the expectations of practitioners regarding future cooperation with science into the interviews. Our study lies at the intersection of psychological behavioural research, transdisciplinary mobility research, and transition research.

Theoretical background and research questions

Actor beliefs

As a theoretical basis for analysing the perspectives of the actors, we draw on the concept of *actor beliefs* outlined in the *Advocacy Coalition Framework (ACF)* as proposed by Sabatier (1988). At the heart of the *ACF* lies the assumption that actors in political systems do not act in a purely rational-technocratic manner but are guided by belief systems. These beliefs are defined as a "set of basic values, causal assumptions, and problem perceptions" (Sabatier 1988, p. 139). Beliefs are not understood as isolated, individual opinions, but as a structuring principle of political action and coalitions. The *ACF* differentiates three hierarchical levels of beliefs: 1. *Deep core beliefs* that relate to fundamental values and worldviews and are rather independent from a specific policy field; 2. *Policy core beliefs* that are concerned with fundamental positions within a policy subsystem (e. g., regarding the role of the state within the energy transition); 3. *Secondary beliefs* which refer to specific policy measures, interventions, and instruments to be implemented within a specific subsystem.

The *ACF* has been applied to various policy fields and sustainability transition issues, mostly with a focus on actors' interrelations and coalitions (e. g., Markard et al. 2016) but also with a focus on actors' beliefs (e. g., Schröder and Klinger 2024). In the following, we will mainly focus our analysis on actors' beliefs about behavioural change but also explore their perceived allies and their expectations for cooperations with scientific actors. Since we do not have previous assumptions about how behaviour change related beliefs influence actor coalitions, we assume that exploring stakeholder beliefs regarding behavioural change in the context of the mobility transition is, as a first step, a valuable contribution.

Behaviour change

There is an extensive body of knowledge about behaviour change in general (e. g., Schultz 2014, Amel et al. 2017, Huebner et al. 2023) and, more specifically, for sustainable mobility (e. g., Bamberg et al. 2011, Klöckner and Blöbaum 2010). Of the various frameworks that have been applied to analyse behaviour change, the *Behaviour Change Wheel (BCW;* Michie et al. 2011) is one of the few concepts that connects the sources of individual behaviour, intervention functions, and policy categories. It has been widely applied to behaviour change intervention studies in different policy subsystems; often with a focus on public health and recently in the field of mobility behaviour change (Guzmics and Kutzner 2025, Krusche et al. 2022). The *BCW* consists of three layers (figure 1). At the core of the wheel are three interacting components that generate behaviour: *capability* (physical and psychological), *opportunity* (all the factors outside the individual to make the behaviour possible or activate it), and *motivation* (including unconscious decision-making processes, habits, and emotions). These three sources result in the "COM-B" model of behaviour change (Michie et al. 2011). In intervention design, the purpose of this approach is to determine the behavioural target and the components of the behaviour system that would need to be modified to achieve it. For example, in one context it may be sufficient to improve the individual's capability for the target behaviour, while in another context changes in all three components would be required (Michie et al. 2011).

The middle layer refers to intervention functions. In other words, measures that intentionally address one or more of the sources of behaviour – without specifying which actors could

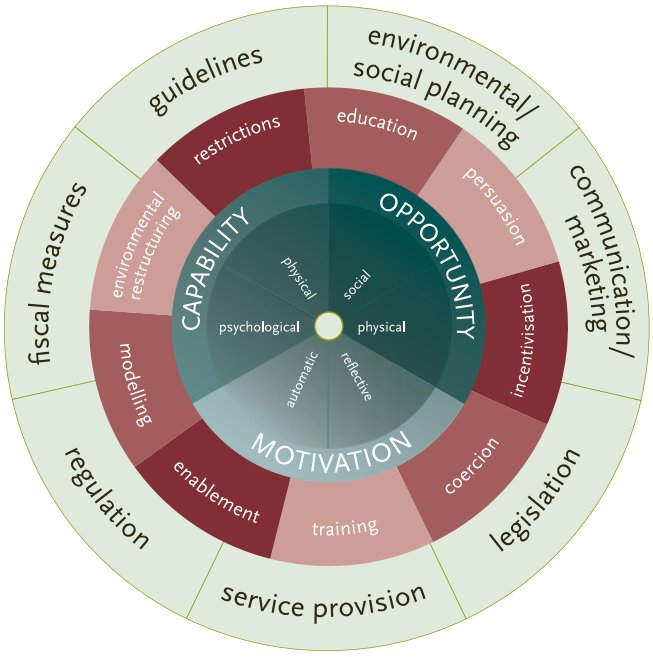


FIGURE 1: The *Behaviour Change Wheel* (Michie et al. 2011, p. 7). Sources of behaviour are placed at the center of the wheel, while intervention functions are displayed in the middle, and the outer layer contains policy categories. This framework was used as a starting point to code the interview material from qualitative interviews with political and administrative actors in Berlin and Brandenburg, Germany, regarding public actors' beliefs about individual mobility behaviour change.

implement the intervention. The outer layer represents the perspective of political implementation, referring to policy categories. In summary, the *BCW* conceptually links individual sources of behaviour, intervention design, and political action, which makes it a useful framework to categorise actors' beliefs regarding behaviour change.

Actor beliefs about behaviour change

The *ACF* has been combined and enriched with other theoretical frameworks (e.g., with transition management, Loorbach 2010; and in a qualitative interview study, Schröder and Klinger 2024). Using the example of the planning process for a car-free, urban neighbourhood, they demonstrate how the progressive core beliefs of planning stakeholders contribute to the actual implementation of the new mobility paradigm. For our analysis, we adopt a similar approach by using the *BCW* as a complementary concept to categorise and systematise actors' beliefs about mobility behaviour change.

We assume that actors' secondary beliefs from the *ACF* correspond to beliefs about the middle and outer layer of the *BCW* (i.e., beliefs about interventions and policy categories). Furthermore, we suppose that actors' core beliefs from the *ACF* relate to the core of the *BCW* (i.e., general beliefs about individual sources of behaviour change). Finally, deep core beliefs do not directly correspond with the *BCW,* since the *BCW* does not refer to normative convictions or fundamental values.

Against this background, we formulate the following three key research questions in the present study:

1. What beliefs do actors in politics and administration have about how citizens' behaviour can be changed in the direction of sustainable mobility?
2. Which actors do the stakeholders see as allies and "coalition partners"?
3. What expectations do actors in politics and administration have of cooperations with science?

Method

To answer our research questions, we chose an exploratory approach, using a qualitative research design, and conducted 13 expert interviews (see online supplement, appendix A)[1]. We consider this approach to be well-suited to obtaining contextualised, rich descriptions of the subjective perspectives of actors engaged in the transport transition (von Kardorff 1995). The respondents are practitioners in Berlin or Brandenburg, Germany, in the field of mobility and transport. We employed purposive sampling to include stakeholders across the key dimensions relevant to the mobility transition. To reflect potentially differing views, we included both political and administrative actors. Furthermore, to ensure variation in spatial settings, we included participants from inner and outer districts in Berlin, as well as from urban and rural areas in Brandenburg. The expert interviews were conducted between February and July 2022 and took place either in person or online at various locations, depending on the preferences of the respondents. A semi-structured interview guide was developed (see online supplement, appendix B)[1]. All interviews were transcribed verbatim.

The interview material was evaluated on the basis of the procedure for a content-structuring qualitative content analysis, as described by Kuckartz and Rädiker (2024), using the software *MAXQDA 24* (VERBI Software GmbH). The data was analysed in a multi-stage process of category formation. In the first coding phase, the material was coded using overarching main categories relating to the three layers of the *BCW* and actors' expectations of cooperation with science. In a second coding phase, the codes were further developed and differentiated based on the material, resulting in more precise and, in some cases, new coding. Finally, the coded data was evaluated categorically and related to the characteristics of the interview participants. The *AI Assist* software from *MAXQDA 24* was used to support the summarisation and analysis of the codes. The final coding guideline is provided in appendix C (see online supplement)[1].

Results

Beliefs of practitioners regarding behavioural change

In general, the interviews show that the practitioners surveyed have a very nuanced understanding of behavioural change and acknowledge that it is important yet hard to achieve. On the one hand, they emphasise the high relevance of behavioural change for a climate transformation. On the other hand, the question of what it takes to get people to change their behaviour in the area of mobility, or in general, is described as "the royal question" that is "always difficult" (12_M_V_BB, 28).

Although the task of governing behaviour is part of their everyday work, the respondents are aware that their assumptions about the mechanisms of behavioural change are based predominantly on personal assessments and experiences.

General beliefs about behavioural change

Changing established behaviour is always a challenge because it means changing mentalities and habits (8_P_BB, 46). The interviewees are aware that measures to change habits can lead to uncertainty and anxiety for many people. It is assumed that, particularly in the mobility transition, there is a fear of being overwhelmed in an already challenging everyday life, as well as fears of social exclusion. However, if people perceive an individual advantage, they are quite motivated to change their habits. Such advantages can take the form of cost or time savings, increased comfort, or greater safety. It is assumed that the willingness to engage in sustainable mobility behaviour increases when it is experienced as pleasant, enjoyable, or fun, or when it has a positive effect on their social life or health.

1 Online supplement available at *https://doi.org/10.14512/gaia.35.S1.4.suppl*.

And ultimately, we can only achieve this by showing people the benefits. On the one hand, through fiscal incentives, or by showing them that this other form of mobility can be an added bonus for their lives. 10_M_P_BB, 38

Almost all interviewees cite the practicality and accessibility of sustainable mobility options as a fundamental prerequisite for changing habits. In sum, motivation and opportunity are perceived to be much more important for mobility behaviour change than capability.

In addition, the importance of existing social norms and discourses, as well as cultural factors, is also emphasised. Some interviewees describe the mobility transition as a comprehensive process of social reflection and emancipation that takes time. If public opinion changes and sustainable mobility behaviour becomes established as the social norm, this could contribute to individual behavioural change.

Specific beliefs about behaviour change

The interview findings regarding specific beliefs about behaviour change for sustainable mobility fit well within the *BCW's* framework of interventions and policies[2] (see online supplement, appendix D)[1].

Policy level: Spatial planning

The settlement structure is seen as a major and very long-term factor influencing individual mobility behaviour. Against this backdrop, one interviewee from the political sphere in Brandenburg criticises the construction of new residential areas on the outskirts:

So, what's still happening here is that residential areas are being slapped down somewhere on the outskirts, in the middle of the forest, and there's nothing there. And as soon as you want to go shopping, as soon as you want to do anything, you always have to travel long distances. And that means it's a foregone conclusion that everyone will need a car. And those are just the kinds of things that annoy me.

09_M_P_BB, 76

To avoid this, it is particularly important to build cities that are dense and compact. This can reduce and avoid traffic. In a city where everything can be found within a short distance, cars are superfluous. To encourage fewer people to drive into the city, multi-lane access roads can be dismantled. Providing parking in the city centre should no longer be taken for granted as a planning principle. Longer walking distances to car parks are seen as a good way of changing mobility behaviour towards less car use.

And it starts with me saying that the car shouldn't be parked right outside the front door. It has to be just as far away as the nearest tram stop or bus stop. You have to walk the same distance to your car as you do to the tram, otherwise you have no choice at all. Then you always get in the car.

12_M_V_BB, 32

The quality of public spaces is cited as another important factor influencing mobility behaviour. If public spaces are designed in such a way that people feel comfortable and safe, travelling from place to place becomes an attractive activity – walking and cycling must be perceived as something that improves the quality of life. Spacious paths and more urban greenery can encourage "strolling".

Intervention level: Transport infrastructure

Respondents agree that infrastructure has a major influence on the choice of transport mode. If more people are to use climate-friendly modes of transport, the range of options offered must be improved. Respondents assume that infrastructure can have not only functional, but also normative effects on mobility behaviour.

People choose their mode of transport based on the infrastructure on offer, in other words the quantity, quality, design, and signal effect. We have seen this in the car-friendly city.

06_M_V_B, 24

Accordingly, the development of attractive, safe, and accessible infrastructure for eco-friendly transport is seen as a key prerequisite for achieving sustainable behavioural change in the area of mobility. In addition to the expansion and optimisation of public transport, access to sustainable mobility for all population groups is also cited as an important aspect. Similarly, respondents consider improving bicycle infrastructure to be a decisive lever for getting more people onto their bikes. This includes the expansion and qualitative upgrading of the cycle path network, the creation of secure bicycle parking facilities, and the integration of cargo bikes.

Respondents consider new technologies to play a minor role in changing behaviour. Although the interviewees regard the expansion of the charging infrastructure for electric cars and e-bikes as an important aspect of promoting e-mobility, they mention this as an aspect of infrastructure expansion. There is also hope that sharing services and on-demand buses can be offered more efficiently and cheaply through technological innovations, such as multimodal apps and autonomous driving, thereby improving public transport provision, especially in rural areas.

Policy level: Financial and fiscal policies

In addition, respondents point to the importance of tax policy instruments. The abolition of existing tax privileges, around company car regulations for example, is considered to be a particularly effective instrument for changing behaviour. The abolition or reform of the commuter allowance is also mentioned in this context, as a sensible measure to influence behaviour.

2 The questions presented during the interviews focused on which measures the respondents considered sensible. Therefore, the discussion mainly revolves around measures that are subjectively viewed as effective, and any "mentions" were viewed as positive.

Intervention level: Incentives

Financial incentives are cited as one of the key levers for sustainable mobility behaviour. Instead of direct subsidies for certain modes of transport, it is proposed that a mobility allowance be provided, which citizens can use flexibly for various environmentally friendly options. The *Deutschlandticket* (at the time of the survey: the *9-Euro-Ticket* for all public transit in Germany in a month) is considered a positive example of an effective incentive.

Intervention level: Coercion

The necessity of increasing the cost of climate-damaging behaviour is emphasised. An increase in energy prices could lead to people increasingly seeking climate-friendly alternatives. Measures, such as higher parking fees or the introduction of a city toll, are also mentioned as ways of making motorised private transport less attractive. Several respondents argue that internalising external costs would also lead to greater fairness.

Policy level: Communication

Professional communication of climate protection measures is essential to motivate people to change their behaviour. However, "moral appeals" (11_M_V_BB, 30) should be avoided.

Furthermore, it is important to clarify that climate protection does not come "for free". Politicians and administrators should send a clear message that people will have to drive less in the future:

> *We need the options, and of course we also need a clear message to the people. A clear message means, folks, this is no longer possible.* 08_M_P_BB, 74

To avoid contributing to social polarisation through climate protection measures, it is very important to show people that their realities are being considered. Communication should therefore become more inclusive, target group specific, and diverse, for example through multilingualism, and age- and youth-appropriate language, and by specifically addressing people who are very keen car drivers.

Intervention level: Persuasion

Framing effects must be considered. Individual climate protection through behavioural change must not be perceived as a sacrifice. Instead, positive framing and emphasising the individual benefits or positive effects on social justice are important. In the mobility sector, it is helpful to communicate behavioural changes not only as a contribution to climate protection, but also in terms of road safety, health, and the quality of life.

Intervention level: Modelling

Some of the politicians surveyed see themselves as role models and try to influence the behaviour of citizens by setting an example themselves, for example, by coming to work by bicycle instead by car. On the other hand, other respondents report that they have now abandoned this strategy and do not consider it effective.

Intervention level: Education

Opinions vary widely on the importance and impact of education. On the one hand, there is a conviction that sustainable mobility measures must be supported by society and that education is the key to this:

> *And perhaps that's also sustainability education in schools, [...] What sustainability means, and these interdependencies with traffic and transport and so on and so forth – addressing these issues in school, so to speak, so that I don't have to go and convince people later on when they're 50 or 40.* 7_M_V, 12

On the other hand, a certain scepticism about climate education is noticeable. There is a perceived risk that climate education is only reaching people who are already interested and that knowledge is no guarantee for action. Furthermore, there are warnings about the use of moral appeals which are considered ineffective and might lead to reactance.

Intervention level: Restriction

The views of the respondents on bans as a tool for behavioural change are very heterogeneous. Some respondents reject bans on principle, arguing that bans are hardly enforceable in a free country. Other respondents consider bans to be a necessary, albeit last resort, means of bringing about behavioural change. One interviewee believes that education and persuasion are important, but that ultimately only bans can bring about real behavioural change:

> *At the end of the day, probably only through bans, I really believe.* 08_M_P_BB, 67–68

Another respondent stated that regulatory aspects have not been sufficiently taken into account in the current landscape of mobility measures, and that this topic remains largely overlooked in public debate. Many interviewees showed a certain reluctance to explicitly use the word "ban" or to seriously consider such measures.

Policy meta-level: Governance

When implementing policies to change behaviour, a balanced approach and a clever combination of restrictive and incentivizing interventions should be considered: a "carrot and stick" approach is needed (12_M_V_BB, 32). Climate-friendly behaviour should be rewarded, and less sustainable behaviour should be associated with higher costs or other restrictions:

> *So, you say quite clearly: we are introducing a penalty and bonus system. People who engage in climate-friendly, health-promoting activities will be rewarded or supported. And people who don't do that will simply have to bear higher costs.* 04_M_P_B, 4

Rising parking fees are cited as a concrete example. One example mentioned is Vienna, where a reduction in car traffic was the result of not only the introduction of cheaper public transport tickets, but also the implementation of significantly higher park- >

ing costs. Some respondents warn that restrictive measures, without the simultaneous improvement of attractive alternatives, are more likely to lead to resistance than to behavioural change. However, there are differing views on the right balance between restrictive and incentivizing measures.

Early information and the involvement of those affected are considered important to increase acceptance and the willingness to participate amongst citizens. Neighbourhood-based participation projects are particularly suitable for discussing concrete changes and integrating the abstract topic of climate protection more strongly into the concrete reality of local life.

Perceived allies and actor coalitions

When asked about potential supporters and allies for the transport transition, practitioners' responses indicate that virtually none of them are strategically building advocacy coalitions for the transition. However, most actors regard civil society initiatives as a very important force in driving the transition forward (mentioned by nine out of the 13 interview partners). The advantage of local neighbourhood initiatives is their ability to credibly advocate for the overarching goal of improving the quality of life, rather than merely representing a single group of transport users (e. g., only cyclists or only car drivers). In turn, the latter applies to "the cycling bubble" (M6_BV_114). Their role is viewed predominantly positively, as they are regarded, particularly in Berlin, as professional and highly effective, and the passing of the *Berlin Mobility Act*[3] is causally attributed to them. However, some respondents question whether cycling initiatives always truly act as allies in their interaction with politics and the administration:

> *So, you can really see that, at least here, a very strong civil society has emerged, one that [...] supports the transport transition – though that doesn't necessarily mean it will ultimately support us, because, of course, you can also end up in contradictions and conflicts [...]*
> *[Civil society], on the other hand, is also [...] there to provide the appropriate public context for political action. And perhaps that means occasionally putting political action in a less favourable light. And then everyone has to answer the question for themselves – and I really don't mean this in a derogatory way: is it then beneficial or rather not beneficial to the common purpose?* M1_B_P, 42

On the one hand, civil society is seen here as having an important societal role in exerting pressure on the political and administrative spheres. However, at the same time, it sometimes overshoots the mark, thereby preventing the formation of a genuine coalition with the political and administrative spheres to achieve the shared goal of a transport transition.

Apart from civil society, other actors are seen as important supporters of the transport transition, including change agents in administrative institutions, progressive networks for planners, regional public transit companies, shared mobility providers, users in general, companies, political actors, and "the young generation" specifically. These actors are mentioned by at least one and a maximum of three interview partners.

Science as a supporter and ally for the transport transition is mentioned by three interview partners. When asked about their wishes regarding future collaboration with science, the respondents named several factors, which are outlined below.

Practitioners' expectations regarding cooperation with scientific actors

The expectations of the practitioners surveyed regarding cooperation with scientific actors can be divided into three main categories: 1. results, 2. formats of cooperation, and 3. framework conditions of cooperation.

Regarding the results of cooperation, practitioners want *integrated* and *context-specific concepts* rather than many small-scale individual projects. They want a more systemic view and viable overall concepts for specific areas (e. g., a neighbourhood; "a transformation concept rather than a technology concept" [01_M_P_B, 132]).

In addition, there is a need for *data and facts* on mobility behaviour. This includes *policy impact assessments for specific areas* (e. g., what exactly happens to traffic flows when a motorised individual transport lane is reduced? "How do people move differently?" [05_M_V_B, 80]). Science should critically monitor politics and administration and provide honest feedback. Scientific studies are highly valued by practitioners due to their neutrality and reliability and can be used *to support arguments for change and new approaches*. Interviewees also mentioned that arguments based on scientific data and findings are needed to justify decisions if they are challenged in court.

Practitioners express a need for support from science in the areas of *communication, behavioural change, and acceptance*. Practitioners would like to see concrete recommendations and suggestions for improvement, such as how communication, but also how the political measures themselves, can be designed in such a way that acceptance of the mobility transition becomes possible. Specifically, there is hope that science can help with clever concepts to reach target groups that are not already convinced of the mobility transition.

Regarding the formats of cooperation, *real-world laboratories* are cited as a successful structure of cooperation. Overall, practitioners would like to see a joint approach to practical testing and experimentation with new solutions. They hope that cooperation with science will create a *space for creativity and a positive culture of learning from mistakes* – a space that does not exist in everyday administrative work. If innovation in administration is to succeed, it needs external actors. One interviewee even goes so far as to say that he would like to entrust academia with the task of fundamentally reforming the district office:

3 The *Berlin Mobility Act* came into force in 2018 and started a comprehensive mobility transition process for Berlin, Germany: *https://gesetze.berlin.de/perma?d=jlr-NNLBE00004859NN00000000090*. For more details see Becker and Sterz (2021) and Becker et al. (2021).

My impression is that we don't lack concepts and know-how, but rather implementation. So, I would need social researchers who can shake up the structure of this district office.

06_M_V_B, 178

Practitioners also hope that *academics will help them expand their skills:*

that they work together with the people in the administration and together see, OK, we dare to do it [...] they [the researchers] teach them how to do new things, so to speak. 07_M_V_B, 68

However, a prerequisite of this is that the scientists work closely with the people from the administration over the long term, for example through longer job shadowing or temporary staff exchanges. The scientists' current and extensive knowledge is seen as a valuable resource from which politics and administration can benefit.

In addition to experimental, public forms of cooperation, some respondents also expressed a desire for non-public, *confidential,* and *dialogue-based consultation formats* with sufficient time. For example, background discussions between scientists and transport policy spokespersons in the state parliament.

Regarding framework conditions, practitioners express a *need for staff resources in local administration* to assign a person to help shape joint projects with research partners. One interviewee, who has extensive experience in collaborating with research actors, says:

That would be really helpful, because we are hopelessly overwhelmed with all these wonderful third-party funded projects, funding programs, [...] to always do it in such a way that, so to speak, both sides are then also reasonably secured in terms of personnel, to take over the management.

01_M_P_B, 127

If funding calls stipulate that the local authority must contribute a substantial amount of its own funds, this is seen by local authority actors as a major hurdle to cooperation with academia, because local authority budgets are already very tight.

Discussion and implications

The results of our qualitative interview study show that the respondents generally have a great deal of knowledge about influencing factors and measures for behavioural change. Many of the measures mentioned by practitioners from politics and administration are also intensively discussed in behavioural and mobility research and considered to be effective. The measures mentioned could be easily integrated into the *BCW*. However, adaptations are necessary when applying the *BCW* to the mobility field. Based on the interview material, we specified infrastructural and technological aspects as part of the original intervention category "environmental restructuring". Furthermore, we added "governance" as a new category of the *BCW* to capture the beliefs of public actors on how different interventions or policies should be combined. This highlights that a well-designed governance of the mobility transition is more than a list of singular policies and needs a coordinated approach. This could be represented by a fourth, outer layer of the *BCW,* when applying it to the field of mobility behaviour.

The extent and complexity of beliefs about behavioural change varies greatly among the respondents. In addition, there is no systematic link between fundamental assumptions about sources of behaviour, intervention functions, and appropriate policies. For example, habits are cited as an important influencing factor, but no corresponding measures are mentioned (e.g., free monthly public transit tickets for new residents).

At the subnational governance level, which is the focus here, it is striking that technology and technological development are assigned a subordinate role in changing behaviour towards climate protection and sustainable mobility. This may be due to the fact that technology policy tends to be pursued at the national or supra-national level (Bose Styczynski and Hughes 2019). However, the interviews also suggest that the respondents are convinced that the mobility transition is not currently failing because of technology, but because of a lack of political will and a lack of acceptance (in terms of attitudes and behaviour) among the population. The expectations of mobility practitioners in politics and administration regarding cooperation with science are summarised in table 1. Based on this (non-exhaustive) overview, reflecting the potential benefits from a practitioner's view can help scientists to clarify mutual expectations when establishing trans- >

TABLE 1: Expectations of mobility practitioners in politics and administration towards transdisciplinary cooperation with scientists in Berlin and Brandenburg, Germany.

PREFERRED FORMATS FOR TRANSDISCIPLINARY COOPERATION	EXPECTED BENEFITS FROM TRANSDISCIPLINARY COOPERATION
■ longer job shadowing or temporary staff exchanges	■ context-specific transformation concepts
■ real-world laboratories	■ skill improvement
■ space for creativity	■ data and facts
■ a positive culture of learning from mistakes	■ arguments for change
■ confidential and dialogue-based consultation formats	■ policy impact assessments
	■ recommendations on communication, behavioural change, and acceptance

disciplinary cooperations. We recommend that scientists reflect about the "menu" of specific benefits for practitioners they can offer in a particular project and incorporate this into the initial phase of transdisciplinary research processes (i. e., "collaborative problem framing and building a collaborative research team", Lang et al. 2012, p. 28). Moreover, considering the interests of the practice partners in the initial project design helps to ensure their ongoing engagement.

The interview results also highlight the tension that administrative actors face when they want to implement something new for the mobility transition, but at the same time operate within an existing legal framework that is not necessarily innovation-friendly. Science is assigned the role of being a catalyst for innovation within the administration itself, which is similar to the concept of "catalytic science" (Renn 2019).

The interview results also highlight the tension that administrative actors face when they want to implement something new for the mobility transition, but at the same time operate within an existing legal framework that is not necessarily innovation-friendly.

Limitations and research implications

One limitation of this study is that, even though we did not explicitly recruit advocates for the transition, the practitioners we interviewed mainly turned out to be "progressive" actors. This self-selection bias may have occurred simply because the interview partners were willing to take the time to be interviewed on the topics of climate protection, the mobility transition, and behavioural change. Thus, another task for future research could be to explicitly recruit non-progressive interview partners and focus on their perspectives.

Furthermore, related concepts to capture subjective views of professionals should be explored, such as subjective theories (Beck and Fisch 2009), mental models (van den Broek et al. 2021), or the theory of planned behaviour (McNamara and Rizzo 2023). We also consider it a limitation that we were only able to use some of the interview questions explicitly on actors' beliefs about behaviour change. In the future, it would be advisable to go into greater depth and tailor the qualitative analysis specifically to subjective theories on the matter (Lang and Ruesch Schweizer 2020). Furthermore, due to limited project funding and resources, we were only able to conduct interviews with actors in Berlin and Brandenburg, Germany. However, this allowed us to investigate the local contexts of policymaking, which Tsoi et al. (2021) regard as crucial for understanding and reducing the implementation gap.

The exploratory, qualitative approach of our study means that our results are limited to the current small sample. We do not claim that our results can be generalised to all actors in politics and administration related to transport, or beyond this sector. However, when it comes to new research topics, it generally makes sense to begin with exploratory, qualitative studies (Schüll 2009). Further studies could take a quantitative approach with a larger sample size to yield representative results. The coding system, which we have adapted from the *BCW* for the context of mobility and transport and further developed on the basis of qualitative empirical evidence, could then be used to design items for quantitative questionnaire-based studies. When designing research funding programs in the field of transdisciplinary research on climate protection and sustainable mobility, we strongly recommend that the practical partners also be provided with staff resources, as some of our respondents explicitly requested additional resources. This has already been demonstrated in a few calls for proposals in recent years. Otherwise, transdisciplinary cooperation with academia will lead to fatigue and the overburdening of the practical partners in the long term. They will then lose interest in participating as cooperation partners in projects that are primarily research oriented.

Overall, we consider it an important task for academia to communicate more strongly the interrelationships between factors influencing behaviour, interventions, and policies, and to offer tailor-made training courses on this matter for actors in politics and administration to contribute to the success of the mobility transition.

Acknowledgements: We would like to thank all interview partners who participated in this study and allowed us to better understand their views. We also appreciate the valuable suggestions and comments from the reviewers, which substantially improved this manuscript.
Funding: Part of this study was funded by the Einstein Foundation Berlin and the the German Federal Ministry of Research, Technology and Space (BMFTR) (FKZ 01UU1902A/B).
Competing interests: The authors declare no competing interests.
Informed consent statement: Informed consent was obtained from all subjects involved in the study.
Authors' contributions: *SB, MO:* initial research design; *MO, SB:* empirical investigation; *SH, SB, MO:* empirical analysis and interpretation; *SB, SH:* manuscript writing; *SB, SH, MO:* manuscript revision.

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