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Dealing with the epistemic-democratic tension in policy-making. Institutional design choices for multi-layered democratic innovations

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ABSTRACT
This study analyses a particularly auspicious and seemingly thriving kind of democratic innovation in terms of its potential to deal with epistemic and democratic demands to policy-making at the same time. In focus are highly complex, multi-layered arrangements of policy deliberation, consultation and advice that combine an array of input channels and actor groups in a shared quest for a joint, consensual solution to a policy problem. The study asks under which conditions these democratic innovations manage to deal with the double challenge of delivering reliable expertise *and* providing for substantive participation of all affected viewpoints. Two cases from the German environmental policy context are analyzed in-depth, i.e. the committee on the final storage of nuclear waste and the dialogue on the government's climate action plan. The comparative case analysis is guided by an assessment framework that builds on input-oriented democratic theory, participatory governance research as well as sociological and epistemological debates of expertise and knowledge in the policy context. Based on the case analyses, the study traces favourable institutional design conditions for striking a balance between the multiple normative demands at play.

Introduction

This study deals with one of political science's core theoretical debates: the relationship and tensions between the democratic legitimacy and the epistemic quality of political decision-making. The epistemic-democratic tension is as old as democratic politics, but it has recently become exacerbated by several broader societal shifts: Against the background of ever more complex societies, of quantum leaps in technical development and a widespread belief in the merits of 'evidence-based policy-making', the dependence of policy-making on expertise has grown (Fischer 2009; Jasanoff 2011; Holst and Molander 2017). The rise of powerful, detached expert bodies is one of the results of this development of 'expertization'. Together with a growing disenchantment with traditional elites and decreasing levels of political organization in parties and interest groups, it has

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given rise to public calls for more intensive and direct citizen participation (Brown 2009; Fischer 2009; Krick, Christensen, and Holst 2019).[1]

The conflict between epistemic and democratic demands to politics is sometimes seen as an irresolvable dilemma that lies essentially in the – naturally elitist – specialization logic of expertise and the inclusion imperative of democracy, which attributes equal participation rights to every citizen, irrespective of status or knowledge. Due to the complexity and essential contestedness of the idea of democracy, further tensions abound between core values of democracy, such as system effectiveness and citizen participation, or self-determination and representation.

This paper focuses on ways of reconciling the multiple normative demands in policy-making and traces favourable institutional design conditions. To this end, it analyses a certain, particularly auspicious kind of democratic innovation in terms of its potential to deal with the epistemic-democratic challenge: In focus are complex, multi-layered arrangements of policy deliberation, consultation and advice that aim at catering to both epistemic and democratic goals by combining several layers of input channels and decision arenas. Through these multiple channels of input, they integrate various actor groups (such as academics, political parties, interest groups, civil servants, NGOs, lay citzens, practitioners) in a shared quest for a joint, consensual solution to a policy problem.

Such multi-layered deliberative arrangements seem to spring up to an increasing extent in modern governance: A new study of the Norwegian context, for instance, demonstrates a tendency towards linking up classic expert commissions with annexed minipublics and online participation tools that can be read as a response to the recent 'participatory turn' in policy-making (Krick, Christensen, and Holst 2019). For the German context, recent studies have emphasized a tendency towards setting up institutional innovations that complement the traditional forms of policy advice and deliberation and a general extension, hybridization and informalization of the advisory system (Czada 2014; Veit, Hustedt, and Bach 2017). Such empirical developments correspond to a trend in deliberative democracy studies, where attention has shifted away from isolated minipublics towards a systems perspective that takes interconnections of deliberative fora and their political embedding into account (see e.g. Curato and Böker 2016; Mansbridge et al. 2012).

This study asks under which conditions these democratic innovations manage to score on both the epistemic and the democratic dimension, i.e. generate evidence- and expertise-based solutions *and* involve those affected by the policy issue in a comprehensive and meaningful way. To investigate this question, two particularly complex, ambitious and promising empirical cases are analyzed in-depth in terms of their ability to deliver on both dimensions: (a) the final storage committee and its participatory fora and (b) the climate protection dialogue, both set up on the German federal level.[2]

In the German context, arenas of policy advice and consultation are important governance devices. 'Ad hoc' established structures in particular are often set up as 'microcosms of the potentially interested segments of society' (Jasanoff 2005, 220) in order to build consensus and secure public acceptance (Brown 2008, 549). On conflictual issues, these arenas are expected to pave the way for policy formulation and legislation by way of discovering common ground, developing compromises, coordinating interests and ultimately speaking with one voice. Their authority builds on integrating the perspectives of practical, technical and academic experts as well as institutional representatives

(Jasanoff 2005; Pattyn 2019). The importance of such broadly composed coordination mechanisms in the phase of policy formulation has been described for other consensus-oriented political systems as well (see e.g. Christensen and Holst 2017; Krick and Holst 2021). It has to do with the fact that these systems disperse power in multiple ways and therefore need to coordinate across party fractions, societal interests and/or state levels. If, as in the German case, a consensus-oriented political culture emerges out of institutional constraints, the electorate will usually appreciate consensus- and compromise-oriented styles of policy-making, instead of sanctioning them, and this reconfirms the key role of coordination arenas once more.

The complex, multi-layered institutions of policy deliberation and advice in focus here have so far not been the explicit object of social scientific research. Empirical research has either focused on 'minipublics' and other participatory arrangements or on 'expert bodies' and (scientific) policy advice and they are naturally rooted in quite different disciplines and theoretical perspectives.[3] There are so far no studies on the merits or functioning of these complex, multi-level structures, although these arenas have a pronounced potential to meet a multiplicity of epistemic and democratic aims at the same time. This potential arises from the structural components of these institutions: Their multiple layers seem to allow for deficits of one venue being balanced by a neighboring venue with a different participation structure. What is more, by bringing together different types of policy actors within one and the same integrated structure, problematic dichotomies might be dissolved and different perspectives mediated (Chambers 2009; see also Mansbridge et al. 2012). For instance, when experts and citizens come together and interact in these integrated structures, room for mutual learning opens up and knowledge hierarchies can be moderated.

Complexity does not only provide opportunities, however. From the high normative goals and the multi-level structure, many possible conflicts, frictions and tensions follow – both between and within the two normative dimensions: The chances of societal input to resonate in the political sphere are likely to rise when the advisory and consultation endeavor is thoroughly embedded into the policy process and political players are involved early on (Hendricks 2016, 55; Setälä 2017, 854). Yet, such political embedding can easily undermine the independence of the generated expertise, which is one of the key bases of its reliability (Haas 2004, 576; Lentsch and Weingart 2011b, 15; Rowe and Frewer 2000, 14). While coordinated, widely approved policy advice radiates political and epistemic authority, consensus norms can come into conflict with the ubiquity and legitimacy of social contestation and its inherent epistemic and democratic virtues (Mansbridge et al. 2010, 69; Lövbrand, Pielke, and Beck 2011, 485; Young 2000, 125ff.). Furthermore, the 'degree of civility' (Mansbridge et al. 2012, 19) in deliberations tends to conflict with the degree of inclusion and the degree of transparency (Chambers 2005; Curato and Böker 2016): the smaller, less inclusive and more shielded from public gaze, the more respectful, fair and problem-solving the joint decision-making process is likely to be.

The study proceeds as follows: The upcoming section describes the study's research design, specifying its case selection strategy, methodology and research questions. After the normative assessment framework of epistemic and democratic worth is developed, the assessment criteria are systematically applied to the two empirical cases. The final section summarises and explains the achievements of the two cases and draws conclusions about institutional design conditions that help to moderate the above-sketched normative tensions.

The contribution of the study partly lies in its attention to the so far scarcely analyzed empirical phenomenon of multi-layered arenas of policy deliberation and advice. What is more, the study's equal interest in democratic and epistemic demands to policy-making draws attention to the interconnectedness of the two normative dimensions, allows to analyse their reconcilability and uncover conditions that can potentially inform design choices in the phase of policy development and advice. The perspective allows to develop theory on key normative tensions that bear relevance in democratic, expertise-based governance. This pertains in particular to the contested norms of consensus and transparency, as well as to the relationship of independence, relevance and impact of expertise in the policy context.

Research design: case selection, methods and research questions

As mentioned above, two in-depth case studies of the final storage committee (and its annexed participatory fora) and the climate protection dialogue lie at the heart of this study. These two cases were selected because (a) they represent quite different organizational structures and therefore qualify well for an analysis of institutional success conditions. The final storage case was, at its core, a traditional committee structure with an array of loosely annexed channels of external citizen and expert input. The climate protection dialogue was a network-like structure that involved different types of actors (stakeholders, lay, non-organized citizens, state representatives) through separate forums and was supported by scientific service providers.[4] Their mandates furthermore differed considerably in terms of their scope and the challenges connected to them. (b) They dealt with questions where the need for technical, scientific knowledge and pressures to extend public participation clash particularly strongly and where the double, epistemic-democratic challenge can thus be studied under a microscope. The issues in focus, climate protection and nuclear waste storage, are both not only highly technical, complex and risk-prone. They are also publicly contested and attended to by influential environmental pressure groups, which have been pushing strongly for a 'participatory turn' in policy-making all across Europe (Lövbrand, Pielke, and Beck 2011; Krick, Christensen, and Holst 2019). (c) The two cases seem to qualify as 'best practice' examples of reconciling high epistemic and democratic standards. Judging from those characteristics that are visible without conducting intensive case studies, i.e. the cases' self-descriptions and their structural setup, both cases are auspicious.[5] Both cases provided for thorough scientific support, strove for broad inclusion and conciliation between affected interests, linked up with the general public and were committed to a high level of transparency. Whether the two promising cases actually succeeded in delivering on both dimensions and how they dealt with tensions between the standards, needs to be analyzed in detail, however.

The study's key research questions are: Can innovative, complex institutions of policy deliberation and advice successfully reconcile modern society's simultaneous need for reliable expertise and democratic participation? Which mechanisms and conditions are decisive for balancing the multiple normative demands? Thus, the study aims at, first, assessing the different normative achievements of the two cases. This is led by a normative assessment framework, which develops criteria of epistemic and democratic worth and specifies the corresponding indicators that guide the empirical studies. Second, the quite different achievements, or 'scores', of the two cases on the two normative

dimensions will be explained, and conclusions about the conditions of democratic, epistemically sound and efficient decision-making will be drawn.

This study is particularly interested in those rules or conditions that can be influenced by *institutional design* efforts, i.e. purposeful intervention with the aim of reforming or establishing rules and habitualized practices of collective action (Olsen 1997, 205). In the context of this study, institutional design conditions refer to, for instance, the calibration of the mandate, the legal setup and embedding of an advisory arena or its (formal and informal) voice aggregation rules.

The study follows the interpretive logic of process tracing, i.e. a qualitative inquiry method that relies on within-case analysis of a sequence of events (see e.g. Waldner 2012). Through comprehensive investigations of two policy processes, in the midst of which two arenas of policy deliberation and advice stand, 'thick descriptions' are developed that allow an understanding of the cases' dynamics or 'storylines'. By tracing the process of policy development from agenda-setting and arena-setup to report-delivery and (possible) implementation in both cases, it can be shown 'how things hang together'. From these insights about relationships between 'events' or phenomena, conditions can be delineated for achieving high scores and reconciling the multiple normative demands. While the assessment aims primarily at in-case analysis for understanding the two dynamics, the comparison of the storylines post hoc helps to uncover similarities, differences and patterns across cases and this further adds to explaining the different outcomes and corroborating (un)favourable conditions.

While the selection of 'best practice' cases may be conducive to illuminating (un)favorable design conditions (for the goals in focus here), it also means that the cases are not typical ones. They moreover differ on several dimensions, which makes a juxtaposition interesting, but challenging. Of course, an in-depth analysis of two cases does not aim at sample representativeness and will not reveal causal laws. The standards of reliability and generalizability adhered to here differ from the quantitative paradigm. They rely first and foremost on the rigour, depth, transparency and consistency of the empirical analysis. Normative standards are made as transparent as possible and applied systematically. Through detailed case descriptions and process-tracing, it becomes understandable how the individual scores were achieved in the individual cases, how tensions were dealt with and why cases differ. On the strength of these insights' contextualization, some may bear value beyond the single case and inform design choices under similar conditions.

The study builds on three pillars of data: first, 23 interviews with appointing authorities, members of the arenas and policy observers, second, participant observations of the advisory processes and third, official and policy documents as well as media reports and civil society statements about the respective process. Data has been interpreted following a theme-based version of qualitative content analysis, which is guided by the normative assessment framework fleshed out in the following section.

Assessment framework

Democratic participation

Based on democratic theory and empirical research with a focus on deliberation, representation and participation, *democratic participation* is conceptualized as a three-

body notion encompassing (a) the involvement of the affected, (b) fair and inclusive deliberation, (c) potential political impact (see Fung 2006; Krick 2014; Steiner 2012; Urbinati and Warren 2008; Warren 2002; Young 2000).

(a) Democratic participation is, first, reflected by an inclusive, balanced composition of a group that mirrors all those interests that are 'seriously' and 'constantly' affected by a policy issue (see Fung 2013, 247; see also Rowe and Frewer 2000; Warren 2002; Young 2000). What can count as broad involvement of the affected hinges on the policy issue and the mandate of the advisory arena. Arenas of policy advice and consultation are usually not able to involve all those affected *directly*. Instead, a selection needs to be drawn and, therefore, questions of representativeness pose themselves. Two modes of representation are particularly relevant for our context, i.e. descriptive and substantive representation (Pitkin 1967). Descriptive representation relies on the similarity between the selected and those they stand for. In political practice, this similarity often relates to basic demographic criteria such as age, sex or educational background. Substantive representation relies on accountability relationships between the selected and their constituency, which can be more or less direct and formalized (Krick 2020, 7; Urbinati and Warren 2008, 405).

A certain transparency of the advisory process can be seen a precondition of broad public involvement, because it minimizes information asymmetries between elites and of lay citizens and facilitates public scrutiny in particular. Yet, the effect of public gaze on the quality of deliberation is not uncontested (Chambers 2005; Elster 1998; Steiner 2012, 125ff.), and this study will discuss in what way the advisory process can be disclosed without disrupting decision-making.

(b) The democratic value of participation furthermore depends on fair and inclusive procedures of communication and decision-making. These are characterized by mutual respect and reason-based deliberations that give an equal voice to all, which is facilitated by inclusive, consensus-oriented decision-rules (Fung 2006; Krick 2017; Mansbridge et al. 2012; Young 2000). Voluntary commitment to finding a joint solution that is backed by as many as possible has often been described as conducive to the democratic quality of decision-making because it can balance power relations and add to cooperative behaviour (Ansell and Gash 2007, 557; Fung 2006, 67; Young 2000, 24). Yet, the norm of consensus has also been criticized in democratic theory for its authoritarian potential and for repudiating the fact of social diversity (Estlund and Landemore 2019, 12; Mouffe 1999, 756; Young 2000, 108, 125f.). As this study will underline, there is a huge difference between different conceptions and manifestations of consensus when it comes to their reconcilability with other important norms.

(c) As pointed out by democratic theory, those affected must have a chance to *influence* the political decision for participation to pass as democratic (Fung 2006, 66; Warren 2002, 693). This does not mean that every participatory practice must be guaranteed an immediate effect. In fact, whether impact is desirable in individual cases hinges on input qualities and the epistemic value of the respective deliberations (Fung 2006; Krick 2018; Lafont 2015). What is important is that participation is meaningful and

Table 1. The three bodies of democratic participation.

Analytical dimensions:	(a) Participation patterns	(b) Decision-making procedure	(c) Outcome
Quality criteria:	Involvement of the affected	Inclusive deliberations	Potential political impact
Indicators:	• Inclusion of all seriously and permanently affected viewpoints • Legitimate representation (accountability relations or descriptive similarity) • Transparent documentation, data access etc.	Fair, equal, respectful, integrative inclusive, reasoned, consensus-oriented decision-making	• Interaction, transmission and feedback between government and deliberating arena • Resonance of suggestions in the political realm (policy change, agenda-setting effects etc.)

serious, not 'pseudo-participation' that is set up as a token exercise or for manipulation purposes (Pateman 1970, 68f.; Young 2000, 24). This is indicated by an institutional embedding of arenas of policy advice and consultation into the policy cycle (Brown 2006, 213; Irvin and Stansbury 2004, 59; Krick 2020, p. 8) and their recommendations *resonating* in the political sphere (Hansen and Allansdottir 2011, 611; see also Fung 2006, 66; Rowe and Frewer 2000, 12, 14). In its most direct form, this relates to policy change but it also involves softer forms of impact such as agenda-setting or identity formation (Loeber, Griessler, and Versteeg 2011). Since the resonance of an advisory and consultation endeavour partly hinges on transmission and coordination between representative institutions and the advisory structure, this norm can come into conflict with the independence of the developed advice from political interference, and this study will discuss ways of dealing with this challenge (Table 1).

Reliable expertise

Based on debates within science (and technology) studies, social epistemology and deliberative democratic theory about the validity of expertise and knowledge more generally, and fleshing out Jasanoff's (2005, 2011) three-body-concept of expert knowledge, *reliable expertise* is understood to build on (a) the credibility and trustworthiness of the individual experts, (b) their relationships and the 'epistemic practices' of producing expertise and (c) the quality of the expertise itself.

(a) To generate sound policy expertise, a deliberative arena must include a plurality of independent, competent and experienced experts. Competence and experience of experts is indicated by a professional track record of proficiency and practice in the particular knowledge field (Fricker 1998, 163; Goldman 2001, 106). The role of the expert is of course not confined to academics, but can also be fulfilled by stakeholders, such as party politicians or interest group representatives with distinct sectoral expertise and experience (Krick 2015, 2018). Yet, full-time academics with a long-standing research focus on the issue in question are arguably amongst the most experienced, specialized and competent, and also usually amongst the most independent from private interests, financial concerns and political ties. On top of a track record of proficiency and experience, independence is usually seen as one of the crucial indicators of the trustworthiness of experts in studies on policy

advice and participation (Haas 2004, 576; Lentsch and Weingart 2011b, 15; Rowe and Frewer 2000, 14).

Since experts typically hold specialized knowledge and policy deliberations tend to cross fields of specialization, it is beneficial to involve a plurality of disciplinary and professional expert viewpoints. Such diversity expands the knowledge base favourably and enlarges thought (Fricker 1998, 173; Fung 2006; Holst and Molander 2017; Jasanoff 2005, 220; Mansbridge et al. 2012, 17). It 'teaches each the partiality of their own and reveals to them their own experience as perspectival' (Young 2000, 116). It also challenges the interpretive superiority of structurally privileged positions, reveals unstated assumptions and potentially opens up the 'echo chambers' that modern societies are increasing split up into.

(b) Epistemically valuable deliberations are indicated by open and fair dispute and confrontation, debate of all relevant expert voices, access to necessary scientific assessments and thorough problem analysis and justification of viewpoints (see Fricker 1998; Fung 2006; Goldman 2001; Jasanoff 2005; Lentsch and Weingart 2011a, 2011b; Mansbridge et al. 2012; Young 2000). What a relevant expert standpoint is, can of course become an issue of contestation (see below) and the round of experts should therefore be open to adjustment and to diversity, as argued above. Yet, diversity is not enough. Practices of debate, contestation and 'mutual criticism' (Manin 2005, 18) make the most of it. Open (yet fair) dispute motivates epistemically valuable processes of justification, 'by challenging opponents to give more robust arguments and reasons, unearthing new information and exposing inconsistencies' (Moore 2017, 54). While in consensus-oriented settings, joint commitment and reciprocal relationships can create an atmosphere that makes it difficult to speak up and utter a counter-argument, open confrontation needs to be legitimate and encouraged within the boundaries of mutual respect.

(c) The knowledge asymmetry between experts and non-experts makes it notoriously difficult to assess the epistemic quality of expertise directly – and to know who the relevant experts are (Goldman 2001; Holst and Molander 2017). On top of this 'expert-layperson dilemma' (Goldman 2001, 89ff.), the outcome of policy deliberation and advice endeavours is usually not a list of factual, verifiable statements that disclose underlying judgments and beliefs, but a package of problem descriptions, appraisements and suggestions for possible courses of action. The suggestion is therefore not to assess the 'truth-degree' of policy advice, but to apply alternative epistemic validity standards that are of importance for this particular kind of advisory knowledge. The first set of standards can be summarized as political relevance and applicability of policy suggestions from the viewpoint of policy-makers who are the recipients of the advice. Applicability pertains to how implementable, enforceable and consolidated the policy recommendations are. 'Consensual closure' can be read as an indicator of consolidated, widely verified knowledge (Goldman 2001, 93, 97; Haas 2004, 23; Jasanoff and Wynne 1998, 19; Lentsch and Weingart 2011b, 367). The second set of standards pertains to the accuracy, rigour and soundness of the epistemic practice from the perspective of other experts in the field (Fricker 1998; Lentsch and Weingart 2011b, 368). Indicators are e.g. that the analysis addresses the original problem, relies on technically accurate calculations, is thorough and peer-approved.

Table 2. The three bodies of reliable expertise.

Analytical dimensions:	(a) Participation patterns	(b) Process of deliberation	(c) Outcome
Quality criteria:	Plurality of experienced, competent, independent experts	Rational debate of all relevant expert standpoints	Problem-solving capacity of the advice
Indicators:	• Plurality of professional and disciplinary backgrounds • Track record of experience, competence and practice in the field • Affiliation with politically independent, not-for profit organizations	• Open dispute and confrontation of all voices • Commitment to thorough problem analysis and justification of viewpoints • Serious dealing with experts' opinions • Access to and use of necessary scientific, technical assessments	• Policy-makers' perspective: Politically relevant, applicable, consolidated, implementable, enforceable euggestions • Scientific perspective: Suggestions address the problem, rely on technically accurate calculations, on peer-approved, thorough analysis and adequate methods

To be sure, policy-makers may not be neutral assessors of the problem-solving qualities of policy-related expertise, but neither are academic experts. To deal with the expert-layperson dilemma, it is important to combine a range of 'epistemic proxies' that are suited for the context and applied as transparently as possible (see Haas 2004 for a more thorough debate) (Table 2).

The case studies in the next two sections follow the above developed assessment framework systematically, describing each standard individually for each case.

The climate protection dialogue

The climate protection dialogue ('Klimaschutzdialog', official title: 'Dialogprozess zum Klimaschutzplan 2050 2017' [dialogue on the climate action plan 2050]) was a multi-layered advisory and consultation structure that operated between June 2015 and March 2016. It included lay citizens, interest groups, municipalities and the German constituent states ('Länder') in four separate, parallel participation strands and brought them together within a so-called 'delegate committee' at a later stage in the process. The mandate of the dialogue was to specify the intermediate climate protection goals for the period after 2020 in order to reach the internationally agreed maximum global warming goal, by detailing the next concrete mitigation steps and measures and initiate a transparent monitoring process (see BMUB 2015).

The Federal Ministry for the environment, nature conservation, building and nuclear safety (BMUB) assigned two consortia of contractors (led by consultancy firms with public deliberations and mediation experience) the 'project management'. This involved organizing and facilitating the dialogues, drafting results and public communication. The official participants were assisted by boundary institutions at the science-policy-nexus assigned to provide 'scientific support' on the issue of climate change and climate protection policies. The process was constantly evaluated: The government asked an advocacy think tank with strong corporate ties (Bertelsman foundation) and a research-based consultancy for evaluations (Prognos 2017), and a third one was conducted for Greenpeace by a Professor of political science (Rucht 2016).

Democratic participation in the climate protection dialogue

(a) Involvement of the affected

Access to the citizens' fora of the dialogue was based on a combination of very broad, random invitation and self-selection.[6] Access to the three separate so-called 'professional'-fora (municipalities, Länder, interest groups) was based on the targeted invitation by the ministry, while additional interested parties were welcome to join. Although the 'committee of delegates' was not meant as a superordinate decision-making body, it had some coordination tasks and assembled 25 delegates chosen by lot or vote from the four strands of participation.

The climate protection and low carbon issue is particularly cross-cutting and touches upon all kinds of ethical, environmental and economic issues and thus administrative levels. In line with this, all state levels were included, although the federal level only through observers who did not take part in the decision-making. Concerned public interests were represented by environmental and consumer groups, advocacy think tanks and charities, and 'lay', non-organized citizens were included in addition. Economic interests were represented by all kinds of professional, business and trade organizations and some trade unions. In numerical terms, private business and professional associations were overrepresented in comparison to 'civil society' or public interest groups. Since the dialogue was in principle open to any group that showed an interest, the imbalance may partly be explained by the lack of resources of public interest groups to engage in such a costly process. According to interviewees, lay citizens partly filled this gap and advocated issues like organic farming or animal welfare that were not represented by organized groups in the dialogue (interviews O, P). Given that the issues of climate change will affect future generations more than the present, one could argue that the younger generation was underrepresented amongst the 'ordinary citizens' and there was no specific pressure group representing their interests. Finally, political parties were absent from the process.

Representatives of Länder and municipality administrations as well as the bulk of the present interest groups stood in clear accountability relationships with their constituencies. This standards of representation did not apply to the non-organized citizens who were neither directly nor indirectly authorized to speak for an affected group and could not be held to account. This group did not fulfil standards of descriptive representation in terms of certain basic demographic features either. Because commitment essentially had to be voluntary and despite increased efforts to target younger strata of the population, highly educated, older men were clearly overrepresented (BMUB 2016, 6).

The consultation procedure was relatively transparent in terms of data access during the process and thus allowed meaningful, informed participation and public scrutiny. The three evaluations of the process were available online and documentation on the 'website www.klimaschutzplan2050.de' during the process was relatively broad, but there was no unprocessed raw data and complete documentation of the deliberations, that would have been provided, for instance, by video recordings of the sessions.

(b) Fair and inclusive deliberations

The quality of deliberation differed between the four fora: In the municipal forum and the citizens' dialogues, the debate has been described as respectful and consensus-oriented and positions were much less hardened than in the interest group and the delegate forum. In these latter two forums, decision-making was described as confrontational, polarized and even personally undermining by the participants (interviews O, P). Two relatively clear-cut and irreconcilable camps were opposing each other, the business interests on the one hand (and in particular the powerful industry and trade associations BDI and DIHK[7]), which were against binding and far-reaching climate protection measures, and the rest of the participants on the other hand, with environmental groups and lay citizens at the far end. The facilitators managed to keep the atmosphere civilized and debate remained formally reason-based overall. Yet, there was little room for mutual learning or concessions, several groups felt undermined and some even personally offended. Commitment to reaching consensus was minimal. Particularly the interest groups did not want to see their positions absorbed into a consolidated, joint group decision, but insisted on marking their individual opinions on every single of the final report's almost 100 suggestions. As a result of feeling marginalized, particularly the large business associations increasingly withdrew from the debate and instead strengthened informal lobbying efforts vis-à-vis the federal government, particularly the federal ministry of economic affairs and energy (Bundestag (BT) Printed paper 18/11380; interviews O, S). The result of the process was a list of suggestions that specified in every case which forums supported the idea to what extent (majority, consensus etc.). Footnotes added more details about the exact positioning of participants.

(c) Political impact of the advice

The dialogue was initiated and observed by the environmental department BMUB. During the dialogue's deliberations, at least two meetings were held (but poorly attended) with other, affected ministries to inform them about the proceedings. The degree of conflict resolution and coordination represented by the dialogue's results was overall not extensive. Only about half of the suggestions, and often the more vague ones, were more or less supported by all included parties, while many were only backed by a majority within some of the forums, but usually failed to commit the business interests.

The dialogue's results were officially channelled into the political process by being handed over to the minister of the environment in March 2016. On the grounds of the suggested measures, BMUB then drafted a relatively ambitious bill in April 2016 that entailed several of the dialogue's suggestions. Amongst them were also rather concrete and far-reaching suggestions that had not been supported consensually in the dialogue, but by majority only (such as the suggestion to reduce meat consumption in the shorter run). Later versions of the bill were watered down and did no longer entail the most original, concrete and ambitious goals (such as the reduction of meat consumption or the end of coal mining).[8] This was due to interventions by the departments of economic affairs, of transport and of agriculture and the chancellery during the inter-departmental coordination process, as well as lobbying efforts by business interest groups which called the list of mitigation measures 'gruesome' and 'a horror catalogue' and evoked the de-industrialization of the German economy (Wirtschaftsrat 2016).

No feedback was provided by the government ex post on how the recommendations were dealt with in the policy process, despite repeated assurances by the government to do so (BT Printer paper 18/9678, 3; BMUB 2015, 5). For many participants of the dialogue, this lack of feedback and the substantial watering down of the recommendations during interdepartmental coordination reflected a lack of political commitment to the dialogue on the side of the government and produced considerable frustration across the camps (interviews N, Q, S; Prognos 2017, 37ff.).

Reliability of the climate protection dialogue's expertise

(a) Plurality of experienced, competent and independent experts

The round of official participants was not particularly experienced or knowledgeable regarding climate protection. The professional participants mainly stood for the perspectives of their constituencies and were not designated experts on climate change. Judging from their organizational affiliation, none of these professional participants fulfilled the criterion of political and financial independence.

Yet, scientific support was provided by Wuppertal Institut (WI) and Öko-Institut (ÖI), which were themselves supported on individual issues by further institutes. These institutions are applied research centres with extensive policy advice experience in the field of environmental, climate protection and energy policy. Their employees conduct research and many of them have academic track records, but, judging from these institutions' websites, publication in independent, international, peer-reviewed outlets is less prioritized. Öko-Institut is known to lean towards the political left, and Wuppertal Institut has a focus on public education, dissemination and communication (Interviews C, D, F).[9]

(b) Rational debate of all relevant expert standpoints

The quality of the epistemic practice was limited by several factors. While open dispute was encouraged by the organizers, and not restricted by a norm of compulsory harmony, some of the participants withdrew more and more from the debate. Since openly interest-based arguments were not legitimate during the process, the arguing-style was on the surface rational and reason-based but clearly interest-motivated and often characterized by hidden agendas, according to participants (interviews M, O, S). Participants also described the debate as not building on a systematic assessment of a plurality of relevant research on the affected topics. If at all, reference to research in the debate was made selectively to substantiate certain political positions. The information and studies that ÖI fed into the process were not referred to or built on but largely ignored and, by many participants, they were considered too complex and numerous (Prognos 2017, 46, interview P). The majority of participants felt they did not have the time to process the complex and technical matters, sufficiently discuss the problem and reflect on the manifold consequences before decisions had to be made (interviews O, P; Prognos 2017; Rucht 2016, 20). There was clearly a knowledge hierarchy between the citizens group and the professional participants, and the former's relative lack of expertise and

preparation frustrated more intense, informed debates and choices on the issue according to a majority of participants from all camps (Prognos 2017, 64). A considerable part of the citizens were also described as making bizarre and absurd, as well as radical suggestions (interviews L, O, P, S). Some participants perceived this as refreshing and cutting across the well-rehearsed disputes between politically experienced players, while for others this weakened the credibility of these agents and raised doubts about the idea of direct citizen participation altogether (interviews O, P, S).

The scholarliness of the scientific support('s methods) was not openly questioned by the group (interview P) and most participants considered their contribution useful and neutral. Yet, some business groups made it clear that they considered ÖI a biased choice, and WI was partly criticized for interfering too much and for not being transparent enough about the process of generating climate protection recommendations on the grounds of the dialogue. Although WI made an effort to disclose the criteria for sorting out suggestions as well as drafts of the 'consolidated' measures that participants voted on (WI 2016, 7; interviews P, R), this led to a very high complexity in a variety of different documents. Besides, the criteria for sorting out suggestions were not unambiguous and they were expressed in a Public Relations lingo that may not have been equally comprehensible for everybody.

(c) Problem-solving capacity of the advice

The consultations were policy-relevant in that they were sought after by the government, dealt with a timely and pressing issue, produced an outcome that clearly addressed the government and answered to the original mandate. Yet, the way the task was defined made it difficult to agree on much more than the lowest common denominator. The mandate was essentially about distributing costs of mitigating climate change. Not only was it a zero-sum game that is bound to produce losers, it also presupposed a quite substantial systems change.

As partly described above, the influence of the dialogue on the government's climate action plan was further reduced by the divides within the government, the lack of involvement of political parties during the deliberations, the relatively low conflict resolution between the involved interests and viewpoints and the vagueness of those suggestions that all could agree on (interview P, R). This vagueness but also the lack of time, made it difficult to seriously estimate monetary consequences, let alone solve distribution issues.

From the perspective of environmental engineering and climate science experts, the problem-solving potential of the results was limited by several factors, although the recommendations did address the problem and were overall reasonable. Suggestions that were 'scientific nonsense' or not related to climate protection and global warming had already been sorted out during the dialogue process by the scientific support providers and each measure was accompanied by a scientific assessment that clearly states assumptions, data sources and limits (Interview R). Yet, the developed measures could not build on thorough calculations and technically accurate analyses. This partly had to do with their vague character and the many uncertainties that follow from this, with the limited expertise on the part of the participants and with the restricted timeframe the scientific support providers had for writing assessments ex post, which they themselves considered not apt to their own scientific standards (interview P).

The final storage committee

The final storage committee ('Endlagerkommission', official title: 'Kommission zur Lager-ung hochradioaktiver Abfallstoffe' [committee on the storage of highly radioactive waste]) operated between April 2014 and July 2016. It was necessitated by the site selec-tion law ('Standortauswahlgesetz') and managed by the German Bundestag's adminis-tration. It assembled 34 members from the realms of civil society and business, research, political parties and Länder governments. The federal government took part as permanent observer. Committee decision-making was supplemented by hearings of external experts and by a variety of public participation formats.

The consultancy Demos was commissioned to develop a participatory approach and implemented it together with further consultancies (E-fekt, Prognos AG, Zebralog). The participatory formats were evaluated by two institutions of applied research with a specialization in participatory procedures, i.e. Dialogik gemeinnützige GmbH and Euro-pean Institute for Public Participation (EIIP) (Final storage committee 2016b).

The committee's mandate was to develop a legitimate procedure for finding the safest possible final repository of highly radioactive waste, by way of deciding on criteria for the selection of a final repository, developing formats for public participation within the site selection process and evaluating the committee's own statutory basis.

This committee had several predecessors. Yet, all the preceding inquiry and advisory committees had not been able to settle the pronounced conflicts over the issue that go back to the late 1970s, when policy-makers largely neglected environmental concerns and decided authoritatively on Gorleben as the German site for final waste storage. Since then, nuclear waste-producing energy firms have invested billions into exploring this site while its suitability has been heavily questioned particularly by environmental and anti-nuclear groups and the Green party. The committee was to assume a 'white map' ('weiße Landkarte') to neither exclude Gorleben from the beginning nor focus on it as a site.

Democratic participation in the final storage committee

(a) Involvement of the affected

Out of the committee's 34 members, which had been jointly chosen by the two chambers of parliament, two took turns in chairing the committee, eight represented political parties with seats in Bundestag in proportion to their factions' size, eight represented gov-ernments of the larger and most likely affected German Länder, eight represented research ('Wissenschaft') and eight societal interests. Only the latter 16 members had formal voting rights, according to the rules of procedure. The distinction of different member types goes back to the committee's statutory basis, the site selection law, which further determines that the last group (societal interests) consists of two represen-tatives each from environmental associations, religious communities, industry and trade unions. The double-headed chair was made up of a Social Democrat and a Christian Democrat, i.e. members of the two largest parties, who did not hold an office or parlia-mentary mandate during the phase of committee consultation.

On the final storage issue, the interests of those doing business and those working in the electricity sector, as well as of those living in close vicinity of the site stand out in the short run. In the medium and long run, public concerns of environmental protection and public health as well as the moral or ethical problem of burdening descendants with highly toxic waste for an unmanageable period of ca. 1 million years come to the fore.

Both labour and business interests and those constituent states that are most likely sites of the final repository were represented and so were environmental groups. Representatives from all political parties with seats in Bundestag spanned the political and societal spectrum and its views on the issue. Why the churches were given two seats is not immediately apparent, since they are neither particular affected by the issue of final waste storage, nor do they have a particular authority to speak on ethical behalves in a secular state where less and less people are closely affiliated with the Christian churches. Overall, in the face of the encompassing ramifications for all realms of society for a virtually unlimited time span and the high stakes related to the issues the committee had to deal with, the 'general public' and future generations were underrepresented amongst the formal members of the committee.

Apart from those in the role of 'researchers', the majority of committee members stood in close accountability relationships with the interests they were to advocate. Most were directly authorized by and accountable to their constituency, such as the trade unions, the political party and Länder government representatives, one of the church representatives and one environmental group (Bund für Umwelt und Naturschutz Deutschland (BUND), Friends of the earth Germany), while for a minority the accountability relationship was less close.[10]

Through a range of public participation channels, further agents were allowed to enter the advisory process. The committee set up various deliberative face-to-face formats that were managed by consultancies: a 'citizen dialogue' that targeted the general public, three regional workshops with delegates from potentially affected regions, three workshops with young adults and participation practitioners, a conference for the attentive and professional public and a public conference on the draft committee report. Access to the face-to-face workshops and conferences was generally open and supported by targeted recruitment. Usually, the consultancies in charge of the public participation processes sent invitations to a list of potentially interested groups while access was not exclusive to those invited. When adopting standards of descriptive representation that emphasise the similarity between a deliberative forum and the population in terms of demographic criteria, the selection was slightly distorted at the expense of the less well-to do, younger people and women (Final Storage Committee 2016b). It was mainly not the 'ordinary' citizen that took part through these public involvement channels, but organized interests in the field. From a perspective of substantial representation, one can therefore say that affected perspectives were generally involved, although public interest groups could have been stronger. The process was criticized for not being able to involve the fundamentally critical anti-nuclear movement to a greater extent (Final Storage Committee 2016a, 417ff., 2016b; interview B). These groups had been offered a seat in the final storage committee, which they refused, but representatives of the movement did take part in the public conference mentioned above. The committee furthermore included their viewpoints by way of a detailed document analysis of the groups' online statements. The views of the anti-nuclear movement were also partly advocated by the state of Lower Saxony and by the party 'Die Linke'.

In addition to these public face-to-face fora, the committee could be addressed via mail and two different online tools were set up. The mail option and a general online debate forum did not produce serious debates or outcomes. Since the committee considered its online debate forum a failure, it was shut down (Final storage committee 2016a, 417ff.)[11] and replaced by another, actively used online forum that focused on debating the draft report.

The committee opted for an extensive level of transparency and openness of its work compared to common practice in Germany (and beyond). Apart from the usual committee materials, such as agendas, membership lists, rules of procedures or expert opinions provided online (www.bundestag.de/endlagerkommission), unprocessed documentation of the negotiations allowed direct insight into the process. Videos of all plenary sessions and audio recordings of all working group sessions, verbatim records of all sessions as well as the used and generated materials were online available and it was possible to visit the committee sessions as external observer subject to prior registry with the committee's administration. Yet, the website was all but user-friendly, which obscured the disclosed data again slightly.

(b) Fair and inclusive deliberations

Fair and inclusive deliberation was fostered and achieved to a considerable extent within the final storage committee. Judging from participant observation, video and minutes' analyses of selected sessions as well as interviews with committee members and guests (interviews A, B, C, D, E, F, G, H, I), the debates were generally characterized by mutual respect, joint consensual commitment and rational arguing styles. Speakers were usually not interrupted or otherwise discriminated. Yet, only very few participants adjusted their original positions during deliberations and one can assume that the arguing style covered an underlying bargaining rationality. Reaching consensus was the declared aim of the joint decision-making process, codified both in the statutory basis of the committee, the site selection law (§ 3 par. 5) and the committee's rules of procedure (§ 3). In the law, a fall-back-option of voting with a 2/3 threshold was added.

Deliberation in the different, auxiliary public participation fora was overwhelmingly described as fair and respectful by participants in evaluations, only the lack of time for intense debates was sometimes criticized (Final Storage Committee 2016b). Deliberations were consensus-oriented, and the consultancies that managed and mediated the processes produced detailed records of the achieved results. The results were merged into synoptic tables that gave an overview of all the policy recommendations put forward by public fora, the source of the individual recommendations and the degree of consensus they reached. These tables were used by the final storage committee, which leaned on these results when discussing proposals. Thus, although multiple voices were involved through a range of channels, and there was no umbrella forum to pool this input, the synoptic tables served as an efficient aggregation mechanism.

(c) Political impact of the advice

The committee and the participatory formats were coupled through a range of transmission mechanisms. In every face-to-face, participatory format, at least two committee members were to act as 'ambassadors' or bridges, i.e. provide insights into the

committee's work during the participation endeavour and channel results back into the committee. The participatory input was dealt with in the committee on the grounds of systematic assessment. On the grounds of the synoptic tables, mentioned above, clusters of topics and key issues were identified that were recurring in different participatory formats, supported by many and/or matters of particular public concern. The committee gave a detailed account of how it dealt with the participatory input. In its report, it describes the procedure of gathering and assessing the input as well as its positions vis-à-vis key issues comprehensively, while also acknowledging limitations of incorporating multiple voices (Final Storage Committee 2016a, 425–442). The transfer of the committee's suggestions into legislation was transparent, particularly for the members of parliament (MPs) among the committee members who were directly involved in the legislative process and commented on it in public statements. The publicly available records of the parliamentary debates also reveal to a large extent how the suggestions were implemented and which formulations fell prey to further political struggles.

The committee's report was officially transmitted into the policy-making process when it was handed over to the Bundestag's president on 05.07.2016. On the grounds of a draft by the Federal Cabinet it was then dealt with as a cross-fractional legislative initiative, backed by the christian-democratic union 'CDU/CSU', the social democrats 'SPD', and the green party 'Bündnis 90/die Grünen' in the environmental standing committee, which also included committee members.

The debates of the committee and its associated participatory public fora clearly resonated in the political debate, especially public and parliamentary debates, and the report developed direct policy impact. Bundestag unilaterally took formal note of the committee's report. According to several political fractions in Bundestag, the committee's decisions on a procedure and criteria for site selection were incorporated one by one into the revised site selection law (BT Printed paper 18/11647, 15; 18/11648, BT Plenary protocol 18/179, 181). The changes that were made vis-à-vis the report of the committee were minimal and they mainly responded to an additional interest group hearing before the responsible parliamentary standing committee.[12] The law was adopted in cross-party agreement and extended governmental majorities by far (only the party 'Die Linke' voted against). 'Rarely is there so much agreement in this house as today', a conservative MP stated (BT Plenary protocol 18/179, 181).[13]

That the report developed such impact very likely had to do with the close and constant coordination with political parties during deliberation and the high degree of agreement that was finally reached by the committee. Despite the deep divides, a compromise concerning the key conflict was found in the end that conciliates the camps to a certain degree: In the final report, Gorleben is neither excluded as a possible site, nor is it given priority and the outcome is supported as a package by all but one of the committee's members with voting rights.

What the committee called 'broad consensus', 'agreement' or 'overwhelming majority' (Final Storage Committee 2016a, 27, 30) needs to be looked at in more detail, however, because by no means did every participant vote explicitly and positively for every part of the report. Several decision rules were applied that facilitate this sweeping consensus: Voting and participation rights were nuanced. While the annexed participation fora only developed non-binding input to the committee's deliberations, only the 8 'researchers' and the 8 interest representatives in the committee officially held voting rights. Yet,

the committee interpreted this as applying only to the last reading of voting rounds, and this effectively rescinded the rules again. On its way towards a joint report, the committee voted on all the contentious issues with a 2/3 quorum, often in three readings. On all parts of the report, dissenting opinions were allowed (and made use of). The final report as a whole was then adopted by an act of public recognition that leaves room for individual, tacit disagreement. Such a procedure by which a point of view becomes adopted by an organization is sometimes called 'nostrification' (Lentsch and Weingart 2011b, 367). At this final stage, a 'consensus-minus-one rule' was further effectively used: one of the members with voting rights withheld his approval of the report in the end and still, the committee speaks of agreement and consensus. It is not a minor issue that it was the representative of Germany's largest environmental association BUND who withheld his approval in the end (Final Storage Committee 2016a, 497).

Reliabilty of the final storage committee's expertise

(a) Plurality of experienced, competent, independent experts

When looking at the committee members' track-records of competence and experience, one can speak of an overall relatively high proficiency and pronounced experience related to the policy problems that the committee focused on. Those 'on the scientific bench' (in commission parlance) amongst the members reflected a plurality of different academic viewpoints on the issue. Yet, only a small majority of them held a PhD and a majority did neither have a pronounced scientific track record of scholarly publications and research projects, nor were they affiliated with independent research institutions.

Although these members' experience and expertise in questions of nuclear waste storage was generally acknowledged as sufficient, their independence was challenged again and again by members and observers. All interviewees agreed that these agents in the role of researchers were selected more for political than for academic reasons. Many of the members had been involved in consultations and deliberations on this policy issue for decades, and were aware of the different arguments, standpoints and studies. All of them knew how policy-making works, and although they reflected both sides of the Gorleben divide in a balanced way, they were still believed able to build compromises.

The committee further invited domestic and international scientists, lawyers as well as experts from public agencies and state departments to a range of expert hearings on issues such as public appraisal of large infrastructure projects or the retrievability of nuclear waste. In addition, the committee consulted about 100 reports on a broad range of mainly technical, but also legal and political issues by external experts from state agencies, state-funded companies, independent research networks, centres and universities and a handful of private engineering companies.

(b) Rational debates of all relevant expert viewpoints

The committee members were generally committed to thorough problem analysis and justification of their viewpoints and they had sufficient access to all kinds of input from a

range of experts in the field. Several indicators imply that the committee overall seriously dealt with, assessed and incorporated scientific opinions (see also interviews H, I). For instance, in direct succession to the individual hearing reports of each ca. 15 min., committee members would ask for clarifications and make few critical remarks; after all presentations had been held, the committee members entered into debate with the invited experts and critically scrutinized their information and/or asked for further explanations or transfer to different settings. The report of a preceding committee, 'Arbeitskreis Auswahlverfahren Endlagerstandorte' (AK END), which had consisted of social and natural scientists (but not of stakeholders) and whose very scholarly recommendations were not implemented at the time, was built on heavily in the debate. The Gorleben-issue was a notable exception; on this issue, positions were solid and scientific studies were selectively received (interviews I, J).

Open dispute and expressing reservations was legitimate and often encouraged by the chair persons who explicitly asked the committee members to voice concerns and even personally addressed individuals they considered to have an air of discontent. Conflicts were not openly supressed, but, if strong disaccord prevailed, the chairperson(s) usually postponed the debate or transferred the development of a solution to a subgroup. Yet, there were two major taboos, one of which was addressed finally – the site of Gorleben –, while the other, the financing question, was transferred to another arena, the 'Nuclear phase-out financing commission' ('Kommission Überprüfung der Finanzierung des Kernenergieaustiegs').

Participants of the public input fora were sent information materials to prepare beforehand and all participatory events were accompanied by presentations and lectures that provided further input. In how far this reflected the academic state of the art on the issue and was balanced and comprehensive, or even taken up by the participants, can however not be judged on the grounds of the available material.

(c) Problem-solving capacity of the advice

The committee expanded its original mandate and additionally reflected on societal responsibility in the face of risks, on the history of nuclear power use and on how to deal with societal conflicts. Yet, the group did not make attempts to decide on the site itself but stuck to its already quite contentious task of developing a procedure for site selection. It specified in detail the criteria for site selection to be applied as well as the bureaucratic and participatory structure that would accompany and manage this procedure and thus found hands-on, concrete answers. It agreed to a large extent on policy-relevant, sought after, useful and enforceable issues.

Although there were dissenting voices on individual issues, the committee integrated a large range of societal and political groups and perspectives, when considering the deep divides on key questions. The result spanned political spectrums and ideologies and bridged the gap between Gorleben opponents and Gorleben supporters and it included the Green party, originally the advocate of the anti-nuclear movement. That all affected governmental departments had also been part of the process further facilitated legislation on the grounds of the report.

From the perspective of geologists, nuclear physicists and waste storage experts, the recommendations speak to the original problem and find a reasonable solution that complies

with scientific standards. The committee agreed on that type of storage and those geological criteria that are scientifically most widely accepted (interviews H, I). While the report does not entail 'scientific nonsense', it may in parts not be precise enough from a scientific perspective and some changes have been made at the very last stage to accommodate political considerations without considering the effects on other parts of the recommendations. In few places, the report is therefore now slightly inconsistent and entails some conditions that are not entirely convincingly argued for. Yet, overall, the revision of the law echoed the highly accredited, scholarly suggestions by the 15 year older, preceding expert committee 'AK END' and was widely acknowledged in essence.[14]

How to deal with the epistemic-democratic challenge

This concluding section returns to the leading questions and provides, first, a summary of the two cases' scores on the epistemic and democratic dimension. Second, it develops storylines that illustrate the cases' internal dynamics and help explain the divergent outcomes. Third, it discusses the central normative tensions that the cases dealt with and points at favourable design conditions.

The cases' scores on the normative dimensions

Generally speaking, the final storage committee reached the double goal of integrating affected viewpoints and generating reliable expertise to a large extent, while the climate protection dialogue had more shortcomings (see Table 3 for a systematic overview of the scores).

Table 3. The climate protection dialogue and the final storage committee.

	Climate protection dialogue		Final storage committee	
Democratic participation				
(a) Formal inclusion of those permanently and seriously affected	Broad inclusion in four parallel strands Access to processed, edited, summarising documentation	~ +	Broad inclusion in two successive layers Extensive access to unprocessed, original material and documentation, videos and verbatim records of sessions	+
(b) Fair, inclusive and integrative deliberations	Confrontational and undermining in some forums, including the delegate committee	~ −	Deliberative, fair and equal	+
(c) Resonance of advice in political sphere	Lack of government feedback Limited transmission channels Some policy influence	~ −	Thorough government feedback Functioning transmission channels Pronounced policy influence	+
Reliable expertise				
(a) Plurality of experienced, competent, independent advisors	Limited level of competence and independence amongst participants External scientific support	+/−	Medium level of competence amongst participants High-level external input from a plurality of independent researchers	~ +
(b) Rational debate of all relevant expert standpoints	Lack of thorough analysis and development of consistent solutions	−	Thorough debate and analysis of problem and solutions	+
(c) Problem-solving capacity of the advice	Politically relevant Hardly implementable, and consolidated, incalculable costs In parts inconsistent, but no 'scientific nonsense' entailed	+/−	Politically relevant Implementable, feasible and consolidated, funding issues solved Very rarely inconsistent, but generally reflecting scientific state of the art	+

(+) indicates that the standard has been met by the arena, (~ +) that it has largely been met, (−) that it has not been met, (~ −) that is has largely not been met and (+/−) stands for a medium score.

The cases' storylines

In both cases, pronounced inclusion and transparency were likely to clash with conflict resolution, policy impact as well as thorough expert analysis. Yet, an interplay of favourable factors allowed the final storage committee to accommodate these demands to a considerable extent. It brought together a variety of contributors in divergent but complementary roles on several levels of participation with different kinds and degrees of authority and this contributed to a beneficial division of labour within the same institutional space: The public provided non-binding input within an open, upstream, auxiliary structure and the committee dealt with it seriously. A mixture of politically experienced, but still overall issue-competent committee members was accompanied by very scholarly external advisors without decision rights. Voting rights were differentiated according to member type, and this de-politicized and defused conflicts to some extent and minimized the final decision-making round. The 'political members' were symbolically relegated to second place by being stripped off voting rights while they in fact participated to the same extent in compromise-building and provided for broad parliamentary backing. The federal government did not interfere directly, but acted as permanent observer, served as transmission belt between committee and political realm and prepared the realization of the proposals. Thus, the endeavour was thoroughly embedded into the policy process, but not to an extent, it seems, that undermined the independence and reliability of the expertise. The variegated roles and authorities of different actor groups were accompanied by collective decision rules that further facilitated the pooling of many voices to a relatively unified choir so that the result could be described as 'consensus' or 'sweeping agreement' even if the drop-out of two important environmental players, BUND and the anti-nuclear movement, remains a flaw.

The final storage committee furthermore invested a lot of time and other resources to engage in serious and fair deliberations and integrate divergent viewpoints as much as possible. It extended its schedule to accommodate the need for more thorough analysis, with the result that during the last year of the deliberations being a committee member became a fulltime job for most. The skilful mediation of the negotiation by the two chair persons certainly helped maintaining a cooperative atmosphere and reaching relatively broad agreement, which was then more or less fully implemented into law. It also helped that the committee was able to outsource a particularly contested issue to a specialized commission.

The degree of consensus the committee reached is remarkable given the extensive degree of transparency of the committee's work, which could easily have frustrated thorough debate and serious concessions, but in fact was one of the cornerstones of its authority. The committee reached the high normative scores although the issue of nuclear waste storage is in fact one of the most divisive issues in German post-war politics, with a decade-long history, fierce conflicts and a thorough erosion of trust between two divided camps. An important reason for this was the relatively narrow framing of the mandate: The task was mainly preparatory and procedural, since the committee had to agree on site selection *criteria* and on a *procedure* for public involvement in the process. While the importance of this first step towards conflict resolution should not be underestimated against the background of contestation, this framing made the task manageable in spite of the deep divides. The history of contestation and the

corresponding analysis may also have prepared this first substantive step made by the final storage committee. It is no coincidence that the committee's results and those of its predecessor (AKEnd) resemble each other closely, the main difference being that the final storage committee was set up in a broad, inclusive way and worked as a negotiating platform. It is also likely that the history of conflict may have brought about a more attentive attitude and careful design of the final storage committee and its participatory fora.

Overall, the final storage case shows that ambitious, complex and multi-layered democratic innovations can indeed successfully reconcile modern society's simultaneous need for reliable expertise and democratic participation, and that the institutional complexity provides many opportunities. Yet, the study also underlines how challenging and costly such an endeavour is. The substantial resources of time, commitment and money that are needed for a successful process likely limit reproducibility to the most pressing or the most contested policy issues.

When looking at the climate protection dialogue, some key differences become apparent. The broadness and relative novelty of the climate change issue could have been assets because broadness makes for a certain flexibility and allows for substitution, concessions and package deals and because agendas and political divides tend to be less rigid in less established policy fields. Yet, the framing of the mandate made it difficult to achieve substantial conflict resolution. The dialogue's focus on greenhouse gas savings calls for the distribution of high costs, presupposes fundamental societal changes and concerns many powerful, vested interests. Had the dialogue been asked to develop *criteria* for decisions on climate protection and a *procedure for public participation* in the policy-field (as in the final storage case), the chances for unity and scope would likely have been higher.

While the dialogue's split into two camps resembled the composition of the final storage committee, the divides were not bridged in the climate protection dialogue. Especially in its more mixed forums, deliberation was confrontational, and the considerable public attention during the dialogue is likely to have added to a hardening of stakeholders' positions. The representatives of industry stood out as particularly powerful players who did not commit to finding a joint solution but de facto exited the negotiations prematurely to influence the government directly. The lack of expertise among participants frustrated many members and likely reinforced a general lack of respect. The scientific service providers could not sufficiently compensate for this because suggestions were so vague and inconsistent and time so scarce that serious calculations of low carbon effects and costs were impossible. Apart from the lobbying efforts that the business representatives made, there was little interplay with the political realm during the deliberation and this proved problematic. The dialogue lacked coordination and transmisson channels and neither included coalition parties, nor the affected government departments, which overall reduced its influence.

If some of the key design parameters had resembled the final storage committee more closely, it is conceivable that the outcome of the climate protection dialogue could have been more consensual and influential. This pertains in particular to the scope of the mandate, the time, resources and commitment devoted to deliberation, as well as the general structure of the arena that did not make use of conflict-minimising institutional

devices, such as a distribution of labour and levels of authority or consensus-facilitating decision rules.

Key conflicts and institutional designs that strike a balance

This final section turns to three key tensions that arenas of policy advice and consultation have to grapple with and that the conducted study has added insight into. In focus are the contested status of consensus, the ambiguous effects of transparency on deliberations and the relationship of expert independence and political embedding. These aspects will be discussed one after the other, always first attending to the tensions' causes and cures as suggested in research and then drawing on examples from the case studies that in part challenge the theoretical assumptions.

The study sheds light on the contested status and multi-variant nature of consensus in collective decision-making processes. Both the case studies and debates in democratic theory underline that there are many different shadings of the consensus notion. In political theory and practice, 'consensus' sometimes relates to a political arena's stopping rule, sometimes to the goal of a decision-making process and sometimes to its outcome (see Estlund and Landemore 2019, 12). There is also variation as to the scope of agreement that the notion signifies: Consensus sometimes stands for common ground, shared values, supermajorities or tacit consent, but it can also denote unanimous approval or universal consensus and come close to the idea of truth. Since many normative concerns associated with consensus relate to more ideal or stricter notions, analytical distinctions are not insignificant. The following distinctions are decisive for our focus on the reconciliation of epistemic and democratic demands: A *consensus-orientation* can generally be seen as conducive to the democratic quality of collective decision-making, because it disciplines and commits the group, promotes collective identity formation, renders competitive behaviour illegitimate and fosters cooperation, inclusion and compromise (Fung 2006, 67; Young 2000, 24). A commitment to consensus needs to be distinguished clearly from *compulsory consensus*, i.e. the preset and forced outcome of a decision process, which likely conflicts with both epistemic and democratic qualities of deliberation. As pointed out by difference and agonist theorists such as Young (2000, 108, 125) and Mouffe (1999, 756), an overemphasized consensus or even compulsory harmony has exclusionary effects since it privileges dominant groups and minority views. It can disrupt the 'epistemic engine' that deliberation represents (Estlund and Landemore 2019, 4), since it undermines thorough problem analysis, abets agreement on the smallest common denominator and marginalizes opposing views. A strict consensus norm repudiates the legitimacy of conflict and pluralism as constituent elements of democratic societies and disregards the fact that 'reasonable people can disagree' (Rosen 2001, 70f.) even after long and rational debates (Mansbridge et al. 2010, 69; Lövbrand, Pielke, and Beck 2011, 485; Young 2000, 125ff.).

Even a good deliberation process occasionally only leads to majority decisions and the 'structuring of disagreement' (Mansbridge et al. 2010, 68). Yet, this does not change the fact that consensus is the *superior outcome* from both an equality and a knowledge perspective. Under the conditions that the deliberative process avoided coercion, was fair, inclusive and encouraged open contestation, 'reasoned consensus' (Lövbrand, Pielke, and Beck 2011, 485) is the most desired end point that closes down contestation and

makes for collective decisions. Such consensual closure 'retains an epistemic appeal as a 'marker' of truth, signaling that no one knows or can construct a better idea' (Estlund and Landemore 2019, 13). It represents peer-approved, consolidated and thus reliable expertise, and, especially in political contexts that aim at coordination, a widely backed decision enjoys high political authority and is conducive to policy change.

The study of the final storage committee points to a range of conflict-minimising design conditions that help to uphold a consensus orientation and facilitate consensual closure without forcing unity on participants: To deal with its multi-level structure and the large variety of involved agents, the final storage committee offered variegated input channels and roles to different kinds of participants, hence maintaining a high level of inclusion, without attributing the same degree of authority or even veto rights to every individual. On top of a mandate that left several of the more painful decisions to later stages of the conflict resolution process, agreement was maximized by institutional devices such as a codified consensus orientation in combination with a supermajoritarian fallback option, the possibility to cast dissenting votes, a 'nostrification procedure' and a 'consensus-minus-one' logic. Of course, such institutions do not necessarily bring about complete agreement, positive sums or decisions to the delight of all. What can be reached are pacifying compromises that the individual participant is able to let stand as the position of the collective.

The study further highlights the ambiguous effects of transparency, which conflicts with the norms of inclusion and high-quality deliberation in particular. The doctrine of transparency has arguably attained 'quasi-religious significance' (Hood 2006, 3) in contemporary debates about legitimacy and good governance. Yet, to make the most of it, an active and attentive citizenry is presupposed that is constantly in the role of principal and thus responsible for controlling policy-makers. Such 'responsibilization' can overstrain the capacities of citizens and distort the round of those involved to the advantage of the better-to-do strata of society and organized interests. What is more, there is a widely acknowledged danger in democratic theory that public gaze can lead to 'demagoguery, misinformation, inflammatory rhetoric and flattery, put in the service of a predetermined agenda' (Chambers 2005, 256; see also Lafont 2015, 46). Under public gaze, stakeholders in particular tend to communicate with their constituencies and follow a 'logic of membership' that hardens their positions and impedes concessions (Gornitzka and Krick 2018; Fischer 2009; Steiner 2012). Scholars have suggested to deal with this tension by conceding insight ex post (Krick and Holst 2019; Dryzek 2009, 1385) or by 'leaving the door ajar', so that the attentive public and researchers can follow the process (Landwehr 2010, 105). Democratic theory has also pointed to a 'civilizing force of hypocrisy' (Elster 1998, 111) that can prompt participants of public negotiations to argue for their positions with reference to common interests, but one can surely ask to what extent and for how long underlying power games are covered up by this effect.

The case studies underline that even very high standards of transparency do not have to clash with competing norms and they point to a range of favourable (and principally reproducible) conditions. The final storage committee is a particularly interesting case, because the whole deliberation process was extensively disclosed. At the same time, the committee achieved a considerable degree of closure and conflict resolution and this seems to contradict the argument that consensus-oriented negotiations need to be held behind closed doors to give stakeholders leeway. Public attention may have

had the above-described civilizing effect, but other factors also played a role: Many issues were resolved by and large on the working level, which was similarly open to public scrutiny, but in effect less closely watched. One could also argue that there was relatively little to hide from public view, because the deliberation process was extensive, inclusive and conflict-solving and stakeholders were allowed to openly register their dissent. Besides, there was so much 'raw material' accessible online, that some conflicts may have been shielded by the sheer amount of information. It seems as if, slightly paradoxically, an 'information overload' obscured rather than unveiled the collective decision-making process. This *obscuring effect of transparency* was also observable in the citizen participation fora of both cases, where attempts by the service providers at disclosing the decision process and providing extensive background material led to complaints by participants about the confusing mass of available information. This observation indicates that the effect of extensive transparency can be a detrimental loss of orientation, rather than a boost of democratic self-determination (see also Etzioni 2010; O'Neill 2006).

The study also speaks to the sensitive balance between the independence of an advisory arena and its embedding into the policy process and points at ways of dealing with it. On the one hand, research with a focus on science and expertise has often emphasized how important the autonomy of expert bodies is for their credibility (Curtin 2007; Lentsch and Weingart 2011a, 2011b). And, to be sure, a certain distance between experts and the recipient of advice is important to avoid political 'orchestration' of the advisory process (Boswell 2008, 475; Krick 2015, 492; Lentsch and Weingart 2011a, 15). On the other hand, detached expert advisory institutions tend to suffer from accountability deficits, especially if they develop *de facto authority* (Busuioc 2009; Curtin 2007). An independent, detached expert body will also be less informed about the advisory needs of the government and the situation in the policy field and have more limited access to the expert knowledge of civil servants. For these reasons, there seems to be a negative relationship between the independence of an advisory institution and its chances of influence policy-making, which partly hinges on a closer link-up (Haas 2004, 574ff.; Hendricks 2016, 50; Krick and Holst 2019, 125).

The relationship between representative institutions and advisory and consultation bodies has recently been discussed under the heading of institutional 'coupling' in deliberative democracy (Curato and Böker 2016; Hendricks 2016; Mansbridge et al. 2012; Setälä 2017). The balance between independence and political embedding is not easy to get right, and the key lies in mechanisms of *loose* coupling that ensure feedback, responsiveness and accountability, but do not subordinate or assimilate the subordinate body (Mansbridge et al. 2012). Decisive parameters seem to be the point in time and the extent of involving policy-makers into the process. It has been suggested, for instance, to involve political representatives in limited numbers and marginally influential roles (Rowe and Frewer 2000, 14) and to establish reporting requirements that obligate the advisory arena to keep the sponsor informed, without the latter being able to interfere (Rowe and Frewer 2000, 15). Several scholars have suggested to favour ex post or ex ante over 'ongoing control' (Busuioc 2009, 606; see also Dryzek 2009; Krick and Holst 2019). Examples are mandatory responses to the received advice that policy-makers are required to deliver (Brown 2006, 213; Lentsch and Weingart 2011b, 371; Setälä 2017, 855) or scrutiny fora where the resonance and implementation of the advice can be monitored and those responsible be held to account (Lentsch and Weingart 2011a, 371; Setälä 2017, 856).

Many of the transmission and coupling devices established in the final storage case echo these ideas: Government representatives participated in the role of non-interfering observers who delivered information only when asked. A small number of MPs was involved in the role of brokers between parliament and committee. As 'ambassadors' they provided a bridge between the public fora and the committee by taking part on both levels. Detailed synoptic tables gave an account of the participatory fora's suggestions and the way the committee dealt with them. The comprehensive disclosure of the process can be seen as another channel of transmission. The parliamentary procedure and the hearing process accounted for the resonance of the advice. In the climate protection case, by contrast, the government had committed to providing a response to the received suggestions, but did not deliver on this promise. This experience suggests to consider a *formalization* of ex post scrutiny, justification and accountability, by setting up symbolic contracts or including an obligation in the rules of procedure of an advisory arena. An upsurge of formalized justification channels might in the long run constitute a social norm of account-giving, as it is (informally) established in the cases of Norwegian ad hoc committees and Danish consensus conferences, where the government adheres to common practice and public expectations and habitually provides a response to the received public input.

Notes

1. *Expertise* relates to the specialized knowledge claims of experts, i.e. those who are considered particularly knowledgeable, trained or competent regarding a certain issue (Krick 2018). *Participation* relates to the variety of voluntary actions by actors outside the system of government who aim at influencing policy-making (Brady, Verba, and Schlozman 1995, 271). Neither all claims to expertise, nor every participatory act can per se be considered particularly valuable from a perspective of epistemic quality and democratic legitimacy. In the section entitled 'assessment framework', these notions are therefore qualified according to a range of standards of worth, and the concepts of 'reliable expertise' and 'democratic participation' are developed.
2. The final storage committee was officially called 'Kommission zur Lagerung hochradioaktiver Abfallstoffe', in short 'Endlagerkommission' [i.e. committee on the storage of highly radioactive waste]; the climate protection dialogue (in German 'Klimaschutzdialog') had the official title 'Dialogprozess zum Klimaschutzplan 2050' [i.e. dialogue on the climate protection plan 2050].
3. Studies on minipublics (usually understood as randomly selected public participation fora; see Brown 2009, 251; Steiner 2012, 33) and participatory governance more generally often build on democratic theory (see e.g. Chambers 2009; Fung 2006; Mansbridge et al. 2012; Setälä 2017), while studies on expert bodies and policy advice are usually conducted within public administration research and science studies (see e.g. Jasanoff 2005; Lentsch and Weingart 2011a, 2011b; Veit, Hustedt, and Bach 2017).
4. There were many further institutional and organizational differences, but since their description is an aim of the study, this will not be elaborated on at this point.
5. While it is certainly also possible to learn from less ambitious or even bad examples, the here-applied 'best-practice' approach has the benefit of avoiding to apply standards to the cases that are external or marginal to them. Besides, it is likely that institutional solutions are easier to identify when processes run relatively smoothly and the number of insufficiencies is lower, as expected in the selected cases.
6. Out of the 75.000 citizens that were addressed via phone calls, 472 decided to take part in the 'five citizens dialogue days', which were complemented by open accessed online

consultations, for which an additional 419 registered and provided more than 625 comments on the 77 developed policy measures.

7. BDI stands for 'Bundesverband der Deutschen Industrie' (Federation of German industry), DIHK for 'Deutscher Industrie- und Handelskammertag' (Association of German chambers of industry and commerce).

8. The drafting of the climate action plan went through different stages and many concessions were made during the process. For instance, the emission reduction goals for the different economic sectors (buildings, energy, agriculture, industry, transport etc.) temporarily fell prey to business interests, but then found their way back into the final version. This had to do with the upcoming climate negotiations in Marrakesh (mid-November 2016) where the climate action plan was to be presented. This created pressure to agree on more concrete sector-specific goals if the government was to keep face on the international level. The minister of the environment made use of this bargaining chip by publicly blaming the other ministries of lack of commitment and calling on the chancellor to intervene.

9. The tasks of the scientific support were to accompany the deliberations by providing advice and data, sorting out and drafting recommendations as well as assessing them ex post in terms of the climate protection contribution, the expected costs and economic benefits.

10. For instance, one of the church representatives had no publicly visible organizational affiliation with the churches, the delegates of the energy producers 'Eon' and 'RWE' represented the management of two private companies and one of the environmental groups ('Deutsche Umweltstiftung') was not a membership organization, but a foundation with no direct ties to a constituency, although it has convincingly advocated environmental issues in German society for some time.

11. In the first online forum, civil servants checked every entry before publication. This was strongly criticized by participants and then stopped. Yet, this led to trolls taking over the forum in a destructive way and the debate forum was closed by the public administration.

12. The changes related to the administrative structure responsible for the site selection and details of the future public participation in the search for a final storage site. To give a concrete example, the bill did no longer limit the search to a site for *highly* radioactive waste, but cut this adjective (https://www.bundestag.de/dokumente/textarchiv/2017/kw12-de-atommuell-standortauswahl/496742).

13. In September 2020, Gorleben was effectively excluded from the process of site selection. Based on the criteria that had been developed by the final storage committee, over 90 possible regions that qualified for a final repository in Germany were listed by the state-owned company responsible for the site selection process ('Bundesgesellschaft für Endlagerung'), and Gorleben was not among them.

14. See e.g. statement by Prof. Reichert, BT expert hearing, 08.03.2017 (https://www.bundestag.de/dokumente/textarchiv/2017/kw10-pa-umwelt/494306).

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