

How meaningful is formal participation in environmental assessments? Examining the case of large-scale linear infrastructure projects in Germany.

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Abstract

Public participation informs and underpins the authorities' decision-making in the approval of large-scale energy and mobility infrastructure projects. Despite well-established knowledge on the prerequisites for meaningful engagement, participatory practices frequently remain limited to fulfilling minimum legal obligations.

This contribution examines which requirements for public participation in impact assessments are currently fulfilled and which aspects remain in need of improvement. The analysis focuses on the German approval processes for motorways, railways, and electricity transmission grids.

The analysis reveals that, although formal participation requirements remain limited in scope, they offer potential entry points for more meaningful engagement. Particularly, the dimensions of communication, mutual learning, and procedural innovation emerge as key areas for authorities to experiment with and advance participatory practices.

Keywords: environmental assessment; public participation; meaningful stakeholder engagement, large-scale infrastructure; energy and mobility transition

Glossary

MSE – Meaningful Stakeholder Engagement

EA – Environmental Assessment

E(I)A – Environmental (Impact) Assessment (project level)

SEA – Strategic Environmental Assessment

1. Research interest and relevance

Measures to accelerate the planning and approval processes for energy and mobility projects have become a heavily discussed topic in political debates worldwide (Enríquez-de-Salamanca, 2021; Fischer et al., 2023). In the German context, there is an urgent need to expand infrastructure to support climate goals and reduce greenhouse gas emissions. On top of that, the country's ageing infrastructure demands immediate attention and maintenance (Dullien et al., 2024; Schroeder, 2020). Policymakers are under increasing pressure to drive progress on both fronts simultaneously. The widely perceived lengthy timespans between the initiation and final approval of infrastructure projects have intensified public and political calls for faster approval processes and led to the implementation of new policies^{1,2}. However, accelerating these processes without consideration of trade-offs may harm the environment and democratic standards (Bond et al., 2014; Geißler and Jiricka-Pürner, 2023).

When discussing barriers to accelerated infrastructure development, one instrument frequently takes centre stage: environmental assessments (EA)³. Originating in the 1970s, EAs have since become the globally recognised standard for assessing potential impacts of infrastructure projects and guiding informed, environmentally conscious decision-making (Hanna and Arnold, 2022). However, five decades later, EAs are increasingly under pressure.

As Bond et al. (2024, p. 410) note, the instrument “is under threat in many jurisdictions” due to a growing perception that it has “failed to convince sceptics that it represents value for money.

1 Recommendation for a resolution and report by the Committee on Transport (15th Committee) on the Federal Government's draft bill - printed matter 20/6879 - Draft law to speed up approval procedures in the transport sector and to implement Directive (EU) 2021/1187 on streamlining measures to accelerate the realisation of the trans-European transport network (original language: German)

2 DIRECTIVE (EU) 2023/2413 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652

3 Environmental Assessments are a type of Impact Assessments

Despite the worldwide implementation and success, EAs are perceived as being „too expensive, take too long, get in the way of development, and are ineffective in helping protect the environment or to meet environmental objectives“ (Fischer et al., 2023, p. 181; Sinclair and Burdett, 2024). Despite the lack of empirical evidence, participation processes and appeals against permits are often cited as one of the main reasons for delays. Therefore, measures to accelerate approval processes often focus on weakening participation processes (Geißler and Jiricka-Pürner, 2023; Zschiesche and Grünberger, 2024).

Fischer et al. (2023, p. 181) define environmental assessments as a „(...) participatory ex-ante assessment framework for policies, programs, and projects (...)“, highlighting the central role of participation. The involvement of diverse actors – including the general public – enhances the quality of environmental assessments by contributing to well-informed decision-making (i.a. Sinclair and Diduck, 2017; Glucker et al., 2013; Morrison-Saunders et al., 2023; Suškevičs et al., 2023). Early and continuous participation is thus essential for democratic decision-making and plays a crucial role in ensuring transparency, legitimacy, and public acceptance (Doelle and Majekolagbe, 2023). Particularly, the legitimacy and societal acceptance of projects related to the energy and mobility transition(s) hinge on the meaningful engagement of stakeholders (Kamlage et al., 2018; Rehhausen et al., 2018). However, there seems to be a consensus that these transitions, and therefore the planning and approval of respective projects, need to be accelerated (Skjølsvold and Coenen, 2021).

Discussions about the adaptation and development of approval processes, both in academia and practice, are as old as the instrument itself (Bonnell, 2025). Sinclair et al. (2022) highlight the discrepancy between the theoretical goals of the instrument and the differing implementations in practice. They argue for a „next-generation impact assessment“ to close this gap. While public participation is increasingly subject to rationalisation and adaptations, next-generation impact assessments underscore the value of meaningful public participation (ibid). The normative concept of Meaningful Stakeholder Engagement (MSE) promotes participatory approaches centred on the needs of affected communities (Buhmann et al., 2024).

This contribution adds to the discussion on stakeholder participation and EA. It will be examined to what extent participation in the current formal approval system in Germany (organised by competent authorities) can meet the criteria of MSE. Informal forms of participation and the possibilities of stakeholders other than authorities to steer the participation process were not the object of the analysis. Furthermore, it reflects and discusses whether MSE is a valuable concept for analysing national EA systems.

The text is structured into four parts. First, characteristics of MSE in EA processes are outlined. Second, the German EA system is introduced as a case. An initial overview is presented, followed by a focused examination of approval procedures for large-scale linear infrastructure projects and associated participation mechanisms. Key debates surrounding the acceleration and streamlining of these procedures are also addressed. Third, a set of elements and requirements of MSE is applied to the German context. Finally, the findings and broader implications are drawn.

2. Method, data collection, and case

The methodology consists of two parts. First, a structured literature review (Bryman, 2012) on public participation and the acceleration of planning and approval processes. Second, a document analysis of legal documents using the case of Germany (Bowen, 2009). The categories of analysis are defined by elements and requirements of Meaningful Stakeholder Engagement (MSE), as proposed by Sinclair and Burdett (2024).

Case selection: The selected case is the legal framework for environmental assessments (EA) of large-scale infrastructure projects in Germany. Germany serves as a valid case regarding its dynamic discussion on the adaptation of approval processes and consequences for participation (Geißler and Jiricka-Pürner, 2023; Zschiesche and Grünberger, 2024). Moreover, the country's geographical position in Central Europe, as well as its size, offers the possibility to build on the experience of many large-scale and highly controversial infrastructure projects (Hellmuth and Jakobs, 2021).

This analysis focuses in particular on three types of linear infrastructure projects: railways, motorways, and electricity grids. They provide useful cases due to the scale of the projects, the public debate and disputes

surrounding them, as well as the environmental impacts (Gharehbaghi et al., 2022).

Literature review: The procedure for collecting relevant literature is based on highly cited publications and documents such as handbooks⁴. Based on these, the snowball method (backward citation tracking) was applied to gather documents in this field (Hirt et al., 2023). The seed element of the citation tracking (through Scopus and Google Scholar) built the most recent articles (published before April 2025). Finally, a keyword search of Scopus and Google Scholar was carried out to check whether further relevant documents weren't covered by previous steps (keywords used: "meaningful" AND "public participation" AND "environmental assessment" OR "impact assessment"). While the international literature was mainly collected via the Scopus database, documents on the German national context were also found via Google Scholar or via relevant institutions such as the German Federal Environmental Agency.

Analysis of participation in the EA: An existing framework (Sinclair and Burdett, 2024) was used to analyse participation in the context of impact assessment. This framework comprises ten distinct elements, organized into 31 requirements that form analytical categories (see Appendix 1). Based on these categories, laws were analysed and assessed. Four different categories were introduced to show the degree of fulfilment (see more in the results chapter). The attribution of the relevant parts of the documents to the categories is based on the descriptions of the categories and of the respective parts in the documents.

3.Participation in Environmental Assessments Discourse and challenges

Environmental assessments (EAs) serve as a bridge between the technical design of infrastructure projects and their real-world environmental and societal impacts. The inclusion of diverse stakeholders and their perspectives is essential, as assessment outcomes cannot be based solely on technical considerations (Ulibarri et al., 2019). Public participation in EA has been the subject of extensive scholarly discussion. Suškevičs et al. (2023) show that participation focuses mainly on formal arenas, whereas „(...) guaranteeing public/stakeholder impact in decision-making and timing of the participatory process are still among the most problematic issues in the EA context" (ibid, p. 13). Despite the existence of extensive legislation and numerous guideline documents, participation often remains at a consultative level, which may lack sufficient depth or significance to ensure a meaningful impact on final decisions.

While Suškevičs et al. (2023) focus on the European context, Buhmann et al. (2024, p. 3) highlight a „(...) growing frustration with (...) public participation in the decision-making processes of (...) projects and plans proposed or implemented by companies or governments" at a global level. The concept of Meaningful Stakeholder Engagement (MSE) has emerged in response to these challenges (Buhmann et al., 2024, p. 3). MSE emphasizes the inclusion of affected stakeholders and the consideration of their needs in planning, assessment, and approval processes. As such, it offers an analytical lens for examining existing legislation on EA.

Conceptualisations of (meaningful) public participation

The conceptualisation and current debates on MSE build upon and are closely linked to key contributions from earlier conceptual frameworks. In particular, two publications have been highly influential in shaping the discourse on public participation in (environmental) impact assessments. Glucker et al. (2013) expand upon O'Faircheallaigh's (2010) earlier framework by distinguishing three central rationales of participation: the instrumental (leads to legitimacy and resolving conflict), the substantive (contributes to a „better" outcome), and the normative rational (reflects democratic ideals and fosters empowerment).

MSE contributes to the ongoing discourse on participation in environmental assessments (EA). In this context, the essential elements of public participation identified by Sinclair and Burdett (2024) serve as a framework for analysis. Drawing on both practitioner and scholarly experience, as well as insights into assessment systems, the authors highlight „(...) meaningful public participation, starting early, continuing throughout (...)” as a key element,

⁴ Handbook of Environmental Impact Assessment (edited by K. Hanna 2020).

Handbook of Environmental Impact Assessment (edited by A. Fonseca 2022)

Handbook on Meaningful Stakeholder Engagement (edited by Buhmann et al. 2024)

Handbook of Public Participation in Impact Assessment (edited by Burdett and Sinclair 2024)

framing stakeholder engagement as a “(...) core feature of assessment deliberations.” Although the conception is rooted in the Canadian context, the authors emphasize its broader relevance, “(...) to inform assessment improvement efforts anywhere” (Sinclair et al., 2022, p. 4).

Sinclair and Burdett (2024) differentiate ten elements (see Table 1), which are further specified through 31 detailed requirements (see Appendix 1). Together, they provide a comprehensive set of analytical categories for the analysis. Table 1 shows that all elements cover the rationales mentioned above (Glucker et al., 2013) and therefore align with the existing literature on the requirements of public participation.

Table 1 - Central elements of MSE in combination with basic rationales of public participation, based on Glucker et al. 2013, Sinclair and Burdett 2024, and own attribution

Element-No.	Elements of MSE Sinclair and Burdett (2024)	Instrumental (What leads to legitimacy and resolving conflict?)	Substantive (does the element contribute to a “better” outcome?)	Normative (Does the element reflect democratic ideals and foster empowerment)
1	Adequate notice			✓
2	Access to information			✓
3	Participation assistance		✓	✓
4	Opportunity for public comment	✓	✓	
5	Access to public hearings			✓
6	Early and ongoing participation	✓	✓	
7	Deliberative forums	✓	✓	✓
8	Decision Impact	✓		✓
9	Learning oriented		✓	✓
10	Fair and open	✓		✓

The allocation of elements to the respective rationales was made deliberately, based on Glucker et al.’s (2013, p. 106 ff) description and guiding questions, presented in the first row of Table 1. The attribution was strict; e.g., the element „opportunity for public comment” alone does not necessarily lead to the achievement of the normative rationale. However, it can be seen that the normative rationale covers most of the essential elements, while the instrumental and substantive rationales could be attributed to only half of the elements. This aligns with the normative aspirations and the claim of MSE to be a concept centred on the needs of those affected by projects (Buhmann et al., 2024).

As the conceptualisation of Sinclair and Burdett (2024) is relatively recent, no publicly available scientific studies were identified that apply this approach to the analysis of a specific national EA systems. This study can therefore be regarded as an exploratory effort to assess the applicability and analytical utility of the framework in a national context.

4.Case: Approval, environmental assessments and participation for linear infrastructure in Germany

Overview of participation in the German EA system

Both contestations and implementations of international law shaped public participation in environmental assessments (EA) in Germany. One of the most influential policies is the Aarhus Convention. Ratified in 2007, it guarantees public participation, access to justice, and access to information⁶. Additionally, the implementation of EU law led to the obligatory standardised assessment of projects and plans (Schütte et al., 2023).

⁵ besides a Master’s thesis of one of A. John Sinclair’s students (Bayuelo Gonzalez (2025) on the national case of Colombia) at the University of Manitoba, Canada

⁶ <https://unece.org/environment-policy/public-participation/aarhus-convention/text>, last call May 2025

Initially, the global rise of „environmental movements“ led to increased public awareness of environmental values and fostered growing opposition to large-scale infrastructure projects (Odparlik and Köppel, 2013; Ohlhorst, 2018; Wende, 2018). Schütte et al. (2023) state that public participation and awareness of the impacts of projects in Germany developed particularly through highly confrontative cases. The Stuttgart 21 railway project is a notable example of civic resistance, public protest, and demands for more progressive participation processes (BMVI, 2014; Böhm, 2011). Such large-scale infrastructure projects have come to symbolise what Schütte et al. (2023, p. 23) describe as “non-functioning and ineffective participation processes” (own translation). In response to persistent conflicts and legitimacy deficits, participatory processes have been gradually expanded. One key reform introduced the possibility of early public participation⁷ – a process initiated before the formal application for approval. As a result, competent authorities are now required to actively promote preliminary public involvement in the planning phase (Ziekow, 2018).

A range of legal frameworks governs the depth and scope of public participation in EA in Germany. Among these, the Environmental Impact Assessment Act (UVPG) and the Administrative Procedure Act (VwVfG) constitute the core legal foundations for participatory processes within the EA system. Additionally, various sector-specific laws – depending on the type of project and the jurisdiction (i.e. federal state) – further define participation requirements and procedural steps (Köppel et al., 2004, p. 241; Ziekow, 2018).

Participation in linear energy and mobility infrastructures in Germany

The focus on linear infrastructure enables a cross-sectoral analysis across three distinct yet comparable domains: motorways, railways, and electricity grids. While these sectors differ in terms of responsible authorities, they are similar regarding their socio-environmental impacts, the public discourses they generate, and the regulatory framework of project approval (Biasotto et al., 2022; Gharehbaghi et al., 2022). Each project type plays a significant role in political debates surrounding the transition to sustainability and economic development. Moreover, they are of national and international relevance (European Parliament, 2024).

In the German context, linear infrastructure projects follow a comparable planning and approval logic. A specific project requiring formal planning approval (the so-called “Planfeststellung”) typically reflects a series of preliminary decisions made at various strategic planning levels. These processes range from demand assessments to corridor selection (see Table 2). EAs, such as strategic environmental assessments (SEA) and environmental impact assessments (EIA), are embedded in these steps. Consequently, the legally mandated participatory steps associated with EAs also apply throughout the entirety of the approval procedure.

Derived from the legal documents, four essential steps can be differentiated:

Table 2 - overview, evolution from strategy to project of railway, motorway and electricity grid projects (BMVI, 2014; Bundesnetzagentur, 2021)

Step	Instrument	Participation
The strategic level – necessity and demand – strategic plan	Grid development plan ⁸ , National plan of traffic routes ⁹	SEA – Mandatory through EIA law (UVPG)
Fixing of connections (starting and endpoint)	Demand plan ¹⁰	Law process
Planning of corridors and alternatives	Specific plan ¹¹	SEA, mandated by EIA law (UVPG)
Planning and permit – final project	Planning approval ¹²	EIA and approval process, mandated by EIA law and Administrative Procedure Act (UVPG & VwVfG)

7 German term: „frühzeitige Öffentlichkeitsbeteiligung“ (§25 VwVfG)

8 Netzentwicklungsplan

9 Bundesverkehrswegeplan

10 Bedarfsplan

11 Fachplan

12 Planfeststellung

Each of the steps listed in Table 2 applies chronologically to all three linear project types. Between the strategic level and the final project, there are several opportunities for participation (BMVI, 2014; BMWi, 2021). At the same time, considerable time lags often occur between the initial idea and final implementation.

Participating in every single step or keeping track of the entire process and the decisions made at each step is a difficult task, especially for non-experts. Participation thus becomes a complex and challenging exercise in itself (Fung, 2015). If concerns are not addressed at an early stage, conflicts or resistance could arise at a very late stage. Typically, by the time major decisions are made, the possibility of influencing the project is already low (Mathur et al., 2008). This highlights the importance of a transparent and comprehensive summary of the preliminary process, significant decisions, and opportunities to influence the projects at an early stage. It is evident that the earlier participation starts, the more concerns can be raised, addressed, and conflicts prevented. Accordingly, various guidance documents (BMVI, 2014; BMWi, 2021) and academic literature (i.e. Doelle and Majekolagbe, 2023) highlight the need for early and continuous participation.

However, this aspect is not broadly reflected in the law. During the approval process, formal participation is limited to the opportunity for stakeholders to submit comments and participate in a public hearing. Additional steps, such as preliminary public participation before the application for approval, are mentioned in law, but not mandatory (Ziekow, 2018).

Discourses on streamlining and simplification in Germany

Discussions about adapting and simplifying EAs are as old as the instrument itself (Faith-Ell, 2023; Noble, 2023). EAs are assumed to be too expensive, too long, and don't provide value for money. The debate is further fuelled by the urge to implement projects that boost the economy and facilitate the transition to renewable energy and mobility systems (Bond et al., 2014). Enríquez-de-Salamanca (2021) argues that discussions on streamlining are driven by a "(...) political trend that sees EIA as an obstacle to necessary investments". While various actors hold differing views on streamlining processes, it's commonly understood that acceleration is required (Skjølsvold and Coenen, 2021). The challenge, however, is to determine the acceptable trade-offs for achieving this speed.

In the German context, the primary reasons for accelerating approval processes are the urgency of the climate crisis (coal and nuclear phase-out, energy transition), the aging infrastructure, the need to become independent of Russian gas, and the desire to boost economic growth (Deutscher Bundestag, 2023).

In recent years, numerous measures have been implemented to accelerate processes, primarily through new EU Directives and Regulations (mainly for electricity grids and renewable energies) and national laws (also for mobility projects) (Zschesche and Grünberger, 2024; Geißler and Jiricka-Pürner, 2023).

Starting in 2018, several "acceleration" laws were implemented, unfolding impacts on the infrastructure sector, including rail, road, and the electricity grid. Measures include, for example, excluding certain project types from EIA, defining a special public interest for projects relevant to the energy and mobility transition, shortening timeframes, adapting public participation, changing material standards, modifying requirements for mitigation and compensation measures, or limiting opportunities for legal challenge and appeal. Further on, there is a tendency towards a stronger focus on the strategic level¹³. This tends to lead to simplification of assessments at the project level or even to no mandatory assessment at all (Geißler and Jiricka-Pürner, 2023; Zschesche and Grünberger, 2024). Two recent projects demonstrated radical measures to accelerate the assessment and approval process. The first was a project that began construction before the final approval had been issued. Simultaneously, a large number of human resources within the authority were mobilised (Tesla Giga Factory, see: Kühn, 2023). And second, a project that did not require an EIA at all because it was considered by law to be of high public importance (LNG terminal, see: Kment and Fimpel, 2022).

All in all, many measures tend to weaken the EA instrument and public participation. Furthermore, there is an increasing complexity in determining which assessment is applicable in a given case. Last but not least, for some types of projects, the opportunities for stakeholders to participate and raise concerns were weakened. The

¹³ Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652

ongoing and dynamic discourse, along with concrete measures to accelerate processes, shape the possibilities for public participation.

In Germany, adaptations to EA legislation that weaken participation structures often lack sufficient empirical evidence of their effects (Geißler and Jiricka-Pürner, 2023). To help address this gap, the following analysis evaluates if and how existing legal provisions incorporate the requirements for MSE.

5. Meaningful stakeholder engagement in the German environmental assessment system

The conceptualisation of a Meaningful Stakeholder Engagement (MSE) by Sinclair and Burdett (2024) was applied. The set consists of ten elements, further divided into 31 specific requirements. Each element comprises at least one requirement (see Appendix 1). For each requirement, corresponding statements in relevant German law were identified. Different categories were assigned based on how well each requirement was met. (1) Fulfilled, (2) partly fulfilled, (3) not required by law but the possibility exists, (4) or not part of the law and not within the competence of the authority.

Results

No element completely fulfils the means of the MSE concept (this would be the case if all requirements were fulfilled). Zooming in on the requirements, a heterogeneous picture emerges. Four requirements fully meet the criteria, while only one requirement cannot be met by the authorities and laws. The vast majority of the requirements are either partially met (11) or not met but possible (15).

The classifications for the different categories are discussed below chronologically from 1 (fulfilled) to 4 (not part of law and competency). Table 4 presents the category of partly fulfilled requirements, accompanied by an argumentation. This category is of particular interest because improvements could be addressed within the existing legal framework.

(1) Fulfilled

Fulfilled requirements relate to the communication about the process itself and the opportunity to raise concerns and receive feedback. As required by constitutional principles as well as the pillars of the Aarhus Convention and subsequently ratified into German law, the principles of natural justice and procedural fairness are followed. Those elements reflect fundamental principles of participation.

Table 3 - requirements identified as “fulfilled” (based on Sinclair and Burdett 2024)

Element	Requirement
Adequate notice	notice about assessment, where future information is located and where comments can be directed to
Decision impact	Input can impact and change the course of the decision at hand - no treated as advisory only
Learning oriented	Feedback to participants about how their input has, or has not, been used
Fair and open	Public participation processes follow principles of natural justice and procedural fairness

(2) Partly fulfilled

The requirements categorised as „partly fulfilled“ deal with: the access to and transparency of processes and decisions, the means and forms of communication, as well as different forms and depth of stakeholder engagement.

Table 4 - requirements identified as “partly fulfilled”, (based on Sinclair and Burdett, 2024 and the author)

Element	Requirement	Argumentation
Adequate notice	direct notice to affect individuals and organizations	This depends on the stakeholder, who can be notified indirectly through the EIA-portal and a newspaper. In general, the authority can achieve this requirement through various means of notice. (§73 VerwVfG)
Access to information	Easy access through a public registry or other means	By law, it must be officially accessible during the public consultation period. A digital EIA-Portal exists, but not all information is available at all times. Consists only of the documents necessary for the application – no internal documents of the authority on the process. (§20 UVPG)
Opp. for public comment	Open to all interested parties and individuals	Yes, generally speaking, everyone who wants can address issues (but not everyone has the same rights). Those affected and those who have raised official concerns can participate in the entire process. Others who didn't raise a concern are precluded at a later stage. (§18 & §19 UVPG)
	Allows for consideration of „need for“ and „alternatives to“	Yes – one part of the EIA-report (but often not negotiable because already preset). Questions on alternatives and „need for“ are part of preliminary strategic steps, before an EIA is started. The EIA report provides a more comprehensive conclusion of those preliminary steps. (§16 UVPG)
Access to public hearings/ADR	Transparency and timely written decision	Whether it is „timely“ is hard to assess. However, there must be a written decision at a transparently communicated time. (Literature and stakeholders often criticize that there is too little time) (§24 UVPG, §69 VwVfG)
Early and ongoing participation	Stakeholder involvement in many assessment choices	Depending on what is understood by „many“ and „assessment choices“, stakeholder involvement in EIA is formally limited to statements. At the same time, rail, road, and electricity offer different levels of strategic opportunities for participation. (Own attribution based on the author's knowledge)
Deliberative forums	Open dialogue in a non-judgmental environment	Depends on how „open dialogue“ is defined. Public debate opens space for a dialogue and discussion, but often in a very formal setting. Authorities can potentially work towards enhancing the openness. (Own attribution based on the author's knowledge)
	Establishing sustainability as a concept and a goal	This criterion itself is subject to extensive debate, so it would be necessary to clarify what is meant by sustainability first. To some extent, it can be argued that EIA law incorporates forms of sustainability with its goals and mitigation hierarchy. (§2 UVPG)

Fair and open	Transparent	The formally mandated participation process is transparent in that it is communicated publicly, allowing affected parties to participate and ensuring that a final decision is made publicly. All statements have to be commented. Other aspects, such as the planning process, are in the hands of the proponent; authorities cannot directly influence transparency in this regard. <i>(Principles of Constitution and Aarhus Convention)</i>
	Open to all interested parties and individuals	Yes, generally speaking, everyone who wants can address issues (but not everyone has the same rights. Later in the process, only those who filed a statement can formally take part. <i>(§18 UPVG)</i>

Table 4 illustrates the connection between the requirements and the relevant sections of the German law. This category indicates that many requirements allow authorities to meet them. Qualitative and normative wordings like “easy access”, “open dialogue”, or “timely” don’t offer explicit categories for evaluation.

(3) Not required by law, but the possibility exists

The results within this category (see Table 5) show opportunities to expand and innovate participation practices. These include the use of diverse communication channels such as phone, email, or social media; the provision of inclusive and informal spaces for deliberation; the involvement of the public in designing the participatory process itself; and the implementation of interactive formats that go beyond conventional tools like open houses or online submissions.

Table 5 - requirements identified as “Not required by law but the possibility exists”, (based on Sinclair and Burdett, 2024)

Element	Requirement
Adequate notice	use of phone, email or social media
Participant assistance	Need for assistance because of complex issues (focus on funding)
Opp. For public comment	Interactive modes of participation beyond open houses and website submissions
Access to public hearings/ADR	Frequent and creative use of the hearing process
	Inclusive, informal venues for deliberation
	Negotiation and mediation
Early and ongoing participation	Public engaged in the design of the participatory program to be followed
	Extension of participation to the follow-up stage
	Reasonable timelines established
Deliberative forums	Emphasis on knowledge integration
	Face-to-face decision-making
	Incorporate future methods such as visioning and scenario development
Learning oriented	Promotes learning “about” and “through” IA
	Fosters mutual learning among all participants
	Ensures lessons from past ass. as well as process experiences are considered in future ass. & ass reform

In addition to experimenting with participatory formats, another key set of requirements concerns the recognition and integration of diverse forms of knowledge, as well as the promotion of mutual learning throughout the assessment process.

(4) Not part of the law and not within the competence of the authority

One aspect could be identified as not being required by law and not within the authority's remit: „transparent, ongoing and timely exchange of information between all parties“. Much information, especially at the planning stage, is held by the proponent. It is the proponent's choice when the first information is made public. Authorities can work towards an exchange and provide means of communication, but they cannot mandate it. Furthermore, it is unclear what is meant by “all parties”. As soon as the proponent gets in contact with the authority and applies for permission, this requirement is within the competence of the authority.

Discussion

Most of the requirements fall into categories that are partly fulfilled or not mandated, but could be put forward by authorities. Referring to the above-mentioned rationales of public participation (Glucker et al., 2013), current legislation doesn't cover the instrumental and normative rationales. This shows that aspects of legitimacy and conflict resolution, as well as the fulfillment of democratic ideals and empowerment, fall short. The findings align with existing research, which suggests that formal participation processes tend to meet only the minimum requirements (Eckerd and Heidelberg, 2020; Fonseca and Fitzpatrick, 2024; Fung, 2015). It therefore reflects that the benefits of public participation, although intensively discussed in the literature, are still not sufficiently embedded in law.

Nevertheless, it was shown that participation is widely regarded as an essential component of environmental assessment (EA). Against this background, the results could also be seen in a more positive light. Despite the low number of fulfilled requirements, there are several opportunities to enhance participation. The analysis focused on the possibilities and competencies of the authorities responsible for the formal participation process. The allocation of resources (both staff and time) is crucial to design, organise, and sustain meaningful participation processes (see also Tryjanowski and Zschiesche 2020; Geißler and Jiricka-Pürner 2023). To establish participation processes that extend beyond statements and public hearings, authorities need to analyse and reflect on their current routines. Meaningful participation processes can be better informed by combining experience from successful initiatives and existing expertise with an understanding of current systems' strengths and weaknesses, gained through learning and experimentation.

Communication is a key factor contributing to unfulfilled requirements. One important aspect is to recognise different worldviews, knowledge, and stakeholders' needs. Guidelines of German authorities (BMW, 2021) already reflect these aspects to a certain extent. This points to an existing discourse and sensitivity regarding this topic. In summary, an EA practice that integrates participation as an essential part of successful approval processes must be willing to reflect on and modify existing routines. The results show that authorities need to act beyond the minimum legal requirements, for example, by experimenting with deliberative forms of stakeholder involvement. Furthermore, a focus on mutual learning reflects elements of experimental governance (Newig et al., 2019).

It was assessed whether the set of elements and requirements by Sinclair and Burdett (2024) offers a valuable tool to analyse the German EA system. Based on the knowledge of the logics of the EA system and the respective laws, all of the elements and requirements could be applied. With the help of the literature and own expertise, it was possible to draw primary conclusions. Those conclusions are in line with existing knowledge. Nevertheless, there is potential for improvement - e.g., it is not apparent how to assess and value normative elements such as “lengthy process”, “sustainability as a goal”, “easy access”, or “timely response”. Some aspects are formulated too generally and should be adjusted and complemented to fit the particular geographic context (for the German context, for example, with the elements of early participation or the various strategic steps). To increase the reliability and replicability of the results, a further refinement of the requirements is necessary. A preliminary consultation phase involving interviews or a Delphi method should be implemented to define the categories in more detail. Following the initial allocation, a second consultation phase with experts would facilitate further discussion and reflection on the results.

6. Conclusion

The objective of this contribution was twofold: first, to examine the German environmental assessment (EA) system for large-scale infrastructure projects in terms of its capacity to achieve meaningful participation processes. Second, to examine to what extent the framework developed by Sinclair and Burdett (2024) serves as a valuable analytical tool. The theoretical base for the analysis was the discussion of the discourse surrounding Meaningful Stakeholder Engagement (MSE) in EA in general. Further on, the main characteristics and challenges of the German context were outlined.

The analysis shows that there is potential for the development of environmental assessments that meaningfully engage stakeholders in Germany, although this potential is currently unrealised. At the same time, it is evident that most of the requirements are not fully met or mandated by law. To address this, the authorities would need to promote participatory processes that exceed minimum legal requirements.

Although the environmental impacts, approval procedures, and, consequently, participation processes of the three project types – motorways, railways, and electricity grids – are broadly comparable, different competent authorities can pursue distinct strategies and cultures of participation. The willingness and experience of authorities play a crucial role in implementing MSE, an aspect that warrants further investigation.

The elements and requirements of MSE by Sinclair and Burdett (2024) proved to be a useful analytical tool, as it incorporates the three main rationales of participation in environmental assessments (defined by Glucker et al., 2013) and consists of a comprehensive and detailed set of requirements. Some aspects were identified to develop the applicability of the concept further. For example, there is a need for an ongoing discussion about how to formulate and describe its elements and requirements. To ensure the replicability of attributions, it's important to clarify terms like "good," "timely," or "often," as they can be open to interpretation. This links closely the validation and discussion of the findings. Therefore, consecutive validation steps should follow the initial attribution.

Further research needs to consider additional policies that influence EAs. This also comprises guidelines and sub-statutory regulations. Further expert evaluation and practical insights are needed to effectively align policies with requirements. Furthermore, analysing different country contexts could help refine the set of requirements and foster transnational learning.

The "value for money" (Bond, 2014) of public participation must be communicated in a way that is tangible to a broad audience. Notably, early and continuous engagement is increasingly recognised not only as a democratic imperative but also as a key factor in achieving effective governance. It also serves as a medium- to long-term benefit for project proponents and authorities, as it can help prevent conflicts and gather valuable data about the project's impacts. This aspect becomes particularly significant in the context of current efforts to accelerate planning and approval procedures.

Remarks

The AI software: Grammarly AI, Chat GPT, and DeepL were used to refine writing style. No text was generated by AI.

Due to the limits on words, not all the arguments for the contributions (like Table 4) to the elements and requirements were mentioned in the text. The whole table of attributions can be submitted upon request.

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Appendix 1 - Meaningful Stakeholder Engagement (MSE), Elements and Requirements

Essential elements	Specific requirements
Adequate notice	direct notice to affect individuals and organizations
	use of phone, email or social media
	notice about assessment, where future information is located and where comments can be directed
Access to information	transparent, ongoing and timely exchange of information among all parties
	Easy access through a public registry or other means
Participant assistance	Need for assistance because of complex issues (focus on funding)

Opp. for public comment	Open to all interested parties and individuals
	Allows for consideration of "need for" and "alternatives to"
	Interactive modes of participation beyond open houses and website submissions
Access to public hearings/ ADR	Frequent and creative use of the hearing process
	Transparency and timely written decision
	Inclusive, informal venues for deliberation
	Negotiation and mediation
Early and on-going participation	Public engaged in the design of the participatory program to be followed
	Extension of participation to the follow-up stage
	Value judgments when choosing trade-offs
	Reasonable timelines established
	Stakeholder involvement in many assessment choices
Deliberative forums	Emphasis on knowledge integration
	Face-to-face decision-making
	Open dialogue in a non-judgmental environment
	Establishing sustainability as a concept and a goal
	Include forms of alternative dispute resolution
	Incorporate future methods such as visioning and scenario development
Decision impact	Input can impact and change the course of the decision at hand - not treated as advisory only
Learning oriented	Promotes learning "about" and "through" IA
	Fosters mutual learning among all participants
	Feedback to participants about how their input has, or has not, been used
	Ensures lessons from past ass. as well as process experiences are considered in future ass. & ass reform
Fair and open	Public participation processes follow principles of natural justice and procedural fairness
	Transparent
	Open to all interested parties and individuals

Source: Sinclair and Burdett, 2024, p. 31f.