European Transport Studies 3 (2026) 100089

Contents lists available at ScienceDirect

European Transport Studies

journal homepage: www.sciencedirect.com/journal/european-transport-studies

Transformation of public mobility spaces: Participatory strategies for accessibility and urban equity

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ARTICLE INFO

Keywords:
Accessibility
Mobility transformation
Inclusive planning
Urban equity
Governance
Design for All
Participatory planning

ABSTRACT

Accessibility is increasingly recognised within mobility transition discourse, yet it often remains insufficiently integrated into planning and governance structures. Based on the Austrian flagship project „Transformator:in", this paper investigates how accessibility emerges within public mobility space transformation processes. Drawing on a qualitative workshop involving representatives from seven Austrian pilot projects, the study identifies recurring structural challenges concerning fragmented knowledge, unclear responsibilities, normative tensions and low prioritisation. The findings demonstrate that accessibility is rarely absent entirely, but is frequently addressed reactively rather than systematically embedded within transformation processes. Building on Design for All, mobility inclusion and socio-technical transition perspectives, the paper argues that accessibility should be understood not as an isolated technical requirement, but as a structural quality criterion shaping inclusive mobility transformation processes.

1. Introduction

The transformation of public mobility spaces has become one of the defining challenges of contemporary urban and transport policy. Across Europe, mobility transition strategies increasingly combine environmental objectives with broader ambitions related to social inclusion, participation and quality of life (Bundesministerium für Klimaschutz, Umwelt, Energie, Mobilität, Innovation und Technologie 2021). Public space transformation is therefore no longer understood solely as a technical transport issue, but as a broader societal and governance-related process.

Within Austria, accessibility remains characterised by significant implementation gaps despite an expanding legal and normative framework. Existing planning structures frequently continue to reproduce exclusionary spatial conditions, while accessibility is often treated as a secondary or reactive issue. This contradiction became increasingly visible within the Austrian flagship project Transformator:in, which is co-funded by The Austrian Federal Ministry of Innovation, Mobility and Infrastructure and managed by the Austrian Research Promotion Agency (FFG).

The present paper investigates how accessibility appears within mobility transformation processes and analyses the structural conditions influencing its integration. Rather than evaluating isolated technical measures, the paper examines governance structures, planning routines, institutional responsibilities and implementation dynamics shaping accessibility outcomes. The paper argues that accessibility should not merely be understood as a technical compliance issue, but as a structural quality criterion revealing whether transformed mobility environments genuinely support inclusive participation in public space.

2. Accessibility and Inclusive Mobility in Transformation Processes

Accessibility research has evolved considerably over recent decades. While early approaches focused primarily on barrier-free infrastructure and technical standards, contemporary perspectives increasingly connect accessibility with usability, participation and spatial justice.

Universal Design and Design for All approaches argue that environments should be planned in ways that allow the widest possible range of users to participate independently without requiring later adaptation (Story et al., 1998). Accessibility therefore becomes a general quality principle rather than a specialised intervention for individual user groups. At the same time, mobility transition research increasingly frames transformation processes as socio-technical rather than purely

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https://doi.org/10.1016/j.ets.2026.100089
Received 31 July 2026; Received in revised form 25 September 2026; Accepted 28 September 2026
Available online 17 October 2026
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infrastructural change (Geels et al., 2012). In this light, accelerating urbanization and mounting environmental concerns drive a critical imperative to enhance public transit systems, ensuring they become fundamentally more accessible, efficient, and sustainable (Farooq et al., 2026). Public mobility spaces are not neutral infrastructures. Their design directly shapes participation opportunities, access to services and the ability to navigate everyday urban life. This perspective aligns with debates on mobility justice (Sheller, 2018) and the "right to the city" (Lefebvre, 1968). Together, these approaches suggest that accessibility cannot be separated from broader questions concerning democratic participation, spatial usability and social equity (Salman et al., 2026; Saif et al., 2019).

The relevance of accessibility in public mobility transformation is reflected in the scale of disability and activity limitations within the Austrian population. According to the Austrian Federal Ministry's report on the situation of persons with disabilities, based on the 2015 micro-census supplementary survey, 18.4% of the Austrian population, corresponding to approximately 1.3 million people, were living with a disability (Federal Ministry of Social Affairs, Health, Care and Consumer Protection (BMSGPK) 2023; Bundesministerium für Arbeit, Soziales und Konsumentenschutz, 2016). The survey also identified public transport among the areas in which people with disabilities reported disadvantages and difficulties.

More recent data from Statistics Austria indicate that in 2024 approximately 1.89 million people aged 15–89 living in private households experienced health-related limitations in everyday activities (Federal Ministry of Labour, Social Affairs, Health, Care and Consumer Protection (BMASGPK) 2026). This corresponds to 24.7% of the population in this age group. The current statistical framework uses the Global Activity Limitation Indicator (GALI) as a proxy measure for disability and focuses on health-related limitations in everyday activities.

The two data sources provide important evidence of the scale and continuing relevance of disability and activity limitations in Austria. However, differences in definitions, survey design and measurement methodology mean that the figures from 2015 and 2024 should not be interpreted as a directly comparable longitudinal series. Rather, they demonstrate that accessibility concerns affect a substantial part of the population and therefore represent a relevant structural dimension of public mobility planning.

Within Austria, accessibility is governed by a comprehensive matrix of statutory legislation, administrative regulations, and technical standards. Key pillars include the Austrian Federal Disability Equality Act (Bundesgesetz über die Gleichstellung von Menschen mit Behinderungen Bundes-Behindertengleichstellungsgesetz – BGStG, 2005), specialized public transport directives such as the Austrian Railway Construction and Operation Ordinance (Eisenbahnbau- und -betriebsverordnung EisbBBV, 2020) and the Motor Power Line Act (Kraftfahrliniengesetz (KflG), 2020), and specific national building standards, most notably the ÖNORM B 1600 series for barrier-free construction (Austrian Standards International, 2023). Furthermore, Austria's domestic framework is heavily shaped by international and EU commitments. This includes its ratification of the United Nations Convention on the Rights of Persons with Disabilities (United Nations, 2006) and its alignment wit European Union directives, specifically implemented through the Austrian Accessibility Act (Barrierefreiheitsgesetz BaFG, 2003) in accordance with the European Accessibility Act (Directive (EU), 2019/882).

Despite this robust regulatory framework, actual implementation frequently exhibits significant fragmentation. Resulting accessibility deficits are seldom attributable to technical limitations. Instead, they primarily arise from fractured governance mechanisms, poorly defined institutional mandates, conflicting planning agendas, and the isolation of accessibility considerations within conventional procedural silos.

Against the background of current academic consensus and statistical data highlighting the vast number of people affected by accessibility barriers, the Transformator:in project systematically addresses these challenges and illustrates how such barriers can emerge through planning processes, institutional responsibilities and governance structures. Accessibility should therefore be considered not only as a requirement for specific user groups, but as a structural quality criterion of public mobility environments.

3. Project context and pilot structure

Transformator:in is an Austrian flagship project focused on the integrated transformation of public mobility spaces. The project combines spatial redesign, governance innovation, participation processes, communication strategies and organisational learning. A central component of the project consists of seven pilot projects grouped into three thematic pilot clusters, each located in a specific town or city across Austria:

- Cluster 1: Multimodal mobility hubs.
- Cluster 2: Axes of active mobility.
- Cluster 3: Urban hotspots.

The pilot structure was intentionally designed to test transferable approaches under different spatial, institutional and socio-economic conditions. The project therefore combines local experimentation with broader transferability and governance learning objectives.

Table 1 systematically presents the seven Austrian pilot projects, categorised by their thematic clusters and regional locations across five federal states, while highlighting their main development focus and specific accessibility dimensions.

The cluster of multimodal mobility hubs includes the Austrian cities Langenlois, Deutschkreutz and St. Gallenkirch. These pilots focus on regional mobility systems, railway station environments and multimodal integration. The cluster of axes of active mobility includes

Table 1
Overview of Pilot Projects.

Cluster	City in Austria	Austrian State	Main Focus	Accessibility Dimension
Multimodal mobility hub	Langenlois	Lower Austria	Station forecourt redesign	Conflicts between greening and barrier-free circulation
Multimodal mobility hub	Deutschkreutz	Burgenland	Mobility concepts and village accessibility	Difficulty integrating affected groups systematically
Multimodal mobility hub	St. Gallenkirch	Vorarlberg	Touristic mobility node	Cognitive readability and inclusive space perception
Axe of active mobility	Josefstraße in St. Pölten	Lower Austria	Strategic transformation scenarios	Accessibility integrated into redesign concepts
Axe of active mobility	Schallmoos in Salzburg	Salzburg	Digital planning simulations	Design for All and visualisation tools
Urban hotspot	Innercity West in Graz	Styria	New tram corridor and redesign	Accessibility treated as late-stage requirement
Urban hotspot	Supergrätzl Favoriten in Vienna	Vienna	Neighbourhood transformation	Visual orientation and stakeholder walks

Josefstraße in St. Pölten and Schallmoos in Salzburg. These projects investigate active mobility corridors, climate-oriented redesign and participatory transformation strategies. The urban hotspot cluster includes Innenstadt West in Graz and the Supergrätzl project in Vienna-Favoriten. These pilots address dense urban environments characterised by complex stakeholder interests and competing public space demands. Across all pilot projects, participation, co-production, monitoring and iterative learning processes formed central components of the transformation approach.

4. Methodology

The study adopts a qualitative exploratory research design centred around a workshop on accessibility and inclusion conducted on 18 February 2026 with representatives from the Transformator:in pilot projects. The workshop was organised and led by the Austrian Association in Support of the Blind and Visually Imapired and followed a moderated two-part structure. The first phase focused on individual pilot experiences and project-specific accessibility situations. The second phase concentrated on comparative reflection and identification of recurring structural patterns across pilot contexts.

The workshop discussions were guided by core questions concerning the meaning of accessibility, the role of accessibility within transformation processes, institutional responsibilities, participation structures, implementation challenges and recurring structural patterns. The workshop format was intentionally chosen to capture experiential and implicit knowledge often not visible within standardised evaluations. Rather than quantitative assessment, the workshop focused on situated experiences, subjective observations and governance-related dynamics.

The broader project methodology additionally included stakeholder interviews, process documentation, tactical urbanism interventions, GIS-based spatial analysis, digital simulation tools, monitoring procedures and transfer-oriented learning mechanisms.

4.1. Findings: Structural Patterns and Challenges

The workshop discussions revealed that accessibility-related challenges were not isolated technical issues, but recurring structural dynamics appearing across heterogeneous pilot contexts. Four interconnected structural challenges emerged repeatedly:

Fragmented knowledge,

- Unclear responsibilities,
- Normative tensions,
- Low prioritisation.

Table 2 outlines the four interconnected structural challenges identified within the planning framework, detailling their specific observed patterns and subsequent strategic implications.

Accessibility was frequently introduced late within planning processes rather than integrated from the beginning as a core planning objective. Several participants described accessibility as dependent on individual initiative rather than systematically embedded governance structures.

Table 2
Four Interconnected Structural Challenges in Accessibility Planning.

Structural challenge	Observed pattern	Implications
Fragmented knowledge	Accessibility interpreted narrowly as technical compliance	Weak strategic integration
Unclear responsibilities	Accessibility dependent on individual initiative	Inconsistent implementation
Normative tensions	Conflicts between standards and creative planning	Reactive decision-making
Low prioritisation	Accessibility subordinated to competing objectives	Late integration into planning

The pilot discussions also revealed tensions between accessibility requirements and other planning objectives. In Langenlois, conflicts emerged between greening strategies and barrier-free movement because flowerbeds and design elements could simultaneously function as visual enhancement and spatial obstacles. In Supergrätzl Favoriten in Vienna, discussions focused on colour patterns, orientation systems and the risk of visual irritation for visually impaired persons. In St. Gallenkirch, workshop participants emphasised that accessibility should involve more than wheelchair accessibility alone. Discussions therefore included “cognitive readability” and sensory perception of space. In Graz, accessibility was described as something often treated as a “necessary evil” and implemented too late within planning procedures. Deutschkreutz demonstrated difficulties regarding participation and awareness-building in smaller municipalities. Despite participation formats and questionnaires, affected groups often remained insufficiently integrated because planning processes were perceived as overly abstract. The findings additionally revealed widespread uncertainty regarding the relationship between mandatory standards and creative planning practice. Several participants argued that rigid norms can reduce flexibility and discourage context-sensitive solutions, while insufficient standards simultaneously weaken implementation consistency.

These findings suggest that accessibility-related problems frequently emerge incrementally through fragmented governance structures, weak institutional anchoring and insufficient prioritisation rather than explicit rejection.

4.2. Recommendations for planning and governance

The workshop discussions produced several transferable recommendations for future mobility transformation projects, emphasizing the need to move from reactive compliance toward systematic, inclusive design frameworks.

First, accessibility should be established as a mandatory planning objective from the earliest conceptual stages onward rather than introduced retrospectively. In prevailing planning practices, inclusive design is routinely treated as a retrospective correction rather than a foundational requirement. When accessibility issues are first addressed at such a mature stage of project development, the layouts, structural dimensions, and financial budgets are often already locked in. Consequently, trying to retroactively force barrier-free compliance into a nearly finalized design creates severe normative tensions, triggers costly structural revisions, and ultimately leads to suboptimal compromises that fail to meet the actual needs of vulnerable users.

Second, Design for All should function as a guiding planning principle. Accessibility should not be treated as a specialised add-on for a niche demographic, but as a universal quality criterion that directly elevates the functionality of public space for all users. A design that simplifies navigation for a visually or cognitively impaired individual simultaneously improves the comfort of parents with strollers, travelers with heavy luggage, and an aging population. Shifting the vocabulary from "specialized requirements" to "universal infrastructure quality" helps remove the stigma surrounding inclusive design and allows planning institutions to prioritize these measures as public goods that enhance overall urban liveability.

Third, affected groups and disability organisations should be systematically integrated into co-creation and planning processes from the very beginning. The workshop participants repeatedly emphasised that guided walks, joint site inspections, and real-life spatial observations produce substantially more useful, actionable insights for planners than abstract consultation formats. By actively engaging self-advocacy groups as expert consultants throughout the entire design loop, project teams can identify hidden barriers in spatial perception and cognitive readability that standards alone might miss.

Fourth, accessibility governance requires clearer institutional

accountability structures and responsibilities should be explicitly defined within project frameworks. Currently, the successful execution of inclusive infrastructure is too often dependent on individual initiative and personal commitment. When these individuals leave, institutional memory is lost, leading to inconsistent implementation. To stabilize these processes, accessibility mandates must be formalized within project governance frameworks. This includes defining explicit roles, such as dedicated accessibility officers, and embedding transparent compliance milestones to ensure accountability across all executing departments.

Fifth, municipalities and planning institutions require stronger, formalized awareness-building and training structures. Workshop discussions highlighted a critical knowledge gap, particularly within smaller municipalities and local administrative bodies. While the political will to implement inclusive mobility often exists, decision-makers and local planners frequently lack practical training regarding modern accessibility requirements, universal design technologies, and evolving legal obligations. Establishing training curricula, regional peer-to-peer learning networks, and accessible technical toolkits is essential to bridge this gap and equip local actors with the competencies needed to manage public space transformations.

Finally, the workshop highlighted the importance of continuous monitoring and institutional learning beyond the project lifecycle. Mobility transformations should not end with the completion of a public space. Accessibility-related experiences, unforeseen challenges, and user feedback gathered during the planning and execution phase must be documented systematically. Transitioning toward learning-oriented governance structures requires creating centralized, open-access best-practice collections and process documentations. This systematic knowledge transfer ensures that subsequent project generations can replicate proven solutions, avoid repeating structural errors, and continuously refine regional planning standards.

4.3. Structures for Implementation and Accountability

To translate the recommendations into consistent practice, accessibility needs to be embedded within the formal governance and quality assurance structures of mobility transformation projects. Responsibility should not remain distributed implicitly among individual planners or project partners, but should be assigned explicitly at the beginning of each project.

The project owner or competent public authority should establish accessibility requirements during project initiation and incorporate them into the project brief, planning specifications and, where applicable, procurement requirements. Accessibility should subsequently be reviewed at defined stages of the project, including conceptual planning, detailed design, implementation and final evaluation. This creates a procedural mechanism through which accessibility becomes a condition to be considered before a project progresses to the next stage.

A clearly designated accessibility responsibility should also be established within the project organisation. Depending on the institutional structure, this responsibility may be assigned to the municipality, transport authority, project management organisation or another competent public body. A designated accessibility officer or equivalent function can coordinate accessibility requirements, maintain communication with disability organisations and monitor whether agreed accessibility criteria have been addressed.

The participation of persons with disabilities and their representative organisations should be integrated into these procedures at defined points rather than relying solely on voluntary consultation. Guided site inspections, joint design reviews and evaluation of implemented measures can provide structured opportunities to identify barriers that may not become apparent through technical standards alone. The results of these consultations should be documented and linked to the corresponding planning decisions.

Finally, accessibility should form part of project monitoring and quality assurance. Defined accessibility milestones, documented reviews and post-implementation user feedback can provide a practical basis for assessing whether accessibility objectives have been achieved. Lessons learned should subsequently be incorporated into institutional knowledge and made available for future projects. In this way, accessibility can become a recurring and accountable element of mobility governance rather than a requirement dependent on individual initiative.

5. Conclusions

The paper demonstrates that accessibility within mobility transformation processes is fundamentally a governance issue as much as a technical one. Accessibility-related challenges emerge not only through physical barriers, but through planning cultures, institutional fragmentation and implementation dynamics shaping how transformation processes are organised.

The analysis of the Transformator:in pilot structure revealed recurring structural patterns concerning fragmented knowledge, unclear responsibilities, normative tensions and low prioritisation. These patterns significantly influence whether accessibility becomes structurally integrated or remains reactive and selective. The workshop findings further demonstrate that accessibility is most successful where it is understood as an integral quality criterion rather than a later compliance requirement. The Design for All approach therefore provides an important conceptual framework for future mobility transformation processes.

The paper ultimately argues that accessibility should function as a structural quality criterion guiding transformation processes from the earliest conceptual stages onward. Municipalities, planning institutions and project consortia require more integrated governance approaches combining participation, monitoring, institutional learning and accessibility expertise. Accessibility is therefore not an additional planning task alongside transformation. It represents one of the central indicators of whether transformed public mobility environments genuinely support inclusive, equitable and usable public space.

The implementation of accessibility therefore requires not only appropriate standards, but also clearly assigned responsibilities, defined planning milestones and mechanisms for participation, monitoring and institutional learning. Embedding these elements within formal project governance structures can reduce the dependence on individual initiative and support the systematic integration of accessibility across future mobility transformation projects.

CRediT authorship contribution statement

Daniele Marano: Writing – original draft, Validation, Methodology, Conceptualization. **Irene Sudy:** Writing – review & editing, Validation, Supervision, Methodology, Investigation, Conceptualization. **Elmar Fürst:** Supervision.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

Parts of this research were funded within the project „Transformator: in", which is co-funded by The Austrian Federal Ministry of Innovation, Mobility and Infrastructure and managed by the Austrian Research Promotion Agency (FFG).

Data availability

The data that has been used is confidential.

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