BEYOND PHYSICAL ACCESSIBILITY

Disability-Inclusive Infrastructure in India
A Human-Rights, Legal and Evidence-Based Assessment with an Accountability Framework

Dr. Arvinder Singh
Researcher

Abstract

Infrastructure determines whether people can reach essential services, participate in public life and exercise their rights. Yet infrastructure development is often assessed through construction outputs and service capacity without consistently examining whether persons with disabilities can independently access and use the resulting facilities. This paper examines disability care and inclusive infrastructure in India through a human-rights, legal and evidence-based lens.

The study combines doctrinal legal analysis and a review of academic literature with secondary analysis of official Indian disability statistics and government-reported accessibility programme outputs. The National Statistical Office's NSS 76th Round survey (July–December 2018), published as Report No. 583, estimated disability prevalence at 2.2 per cent. Among persons with disabilities who had accessed a public building during the preceding 365 days, 63.9 per cent reported difficulty; among those who had used public transport, 67.1 per cent reported difficulty. Government reporting on the Accessible India Campaign records 1,671 State/UT government buildings audited and financial assistance for retrofitting 1,314 buildings; separate CPWD reporting records retrofitting of 1,100 central government buildings. These administrative outputs demonstrate programme activity but do not, by themselves, establish nationwide compliance or user-level accessibility.

The paper proposes a CPWD-informed, eight-dimension audit protocol covering approach routes, entrances, internal circulation, facilities, information and communication, service accessibility, emergency preparedness, and maintenance. It also proposes a National Disability-Inclusive Infrastructure Accountability Framework (NDIIAF) linking audits to budgets, institutional responsibility, independent verification, disability participation and public disclosure. No original field audit results are claimed. The proposed protocol requires pilot testing and validation.

The paper argues that accessibility must be treated as a continuous public-governance obligation and a core measure of inclusive development, rather than as an additional architectural feature.

Index Terms **–** Disability rights; inclusive infrastructure; accessibility audit; universal design; CPWD; RPwD Act 2016; disability care; public accountability; reasonable accommodation; India.

1. INTRODUCTION

1.1 Background

Public infrastructure mediates access to healthcare, education, employment, transport, public administration and community life. Roads, public buildings, hospitals, universities, transport terminals, parks and digital platforms are not merely physical or technical assets; they are gateways through which people exercise social and economic rights. Their effectiveness must therefore be assessed not only by their existence or construction quality, but also by who can reach, navigate and use them.

For persons with disabilities, inaccessible environments may convert nominally available facilities into practically unavailable services. A hospital may have specialist staff and equipment but remain difficult to use if the entrance, registration desk, diagnostic facilities, toilets or communication systems are inaccessible. A college may offer admission but fail to provide accessible routes to

classrooms, laboratories, libraries, hostels or examination facilities. A government office may deliver essential services while its layout or digital interface excludes some members of the public.

The social model of disability directs attention to the interaction between impairment and social, institutional and environmental barriers. Oliver (1990) challenged explanations that locate disability-related disadvantage solely within the individual. Applied to infrastructure, this approach shifts the analytical question from whether a person can adapt to a building to whether the building and its services have been designed and managed to accommodate human diversity.

1.2 Disability care as an infrastructure question

Healthcare, rehabilitation, assistive technology and personal support are important components of disability care. They are not substitutes for accessible environments, reasonable accommodation, inclusive communication and equal access to public services. A person may possess a disability certificate or assistive device yet remain unable to reach a hospital, use a public toilet, obtain information at a transport terminal or complete an online application.

Disability care is therefore understood in this paper as a connected system involving health and rehabilitation services, accessible physical environments, information and communication, mobility, institutional support and independent participation.

1.3 Research problem

India has enacted the Rights of Persons with Disabilities Act, 2016 (RPwD Act), adopted accessibility standards and implemented the Accessible India Campaign (Sugamya Bharat Abhiyan). However, legal recognition and programme outputs do not automatically demonstrate that people with disabilities can use public facilities independently. A ramp may be too steep or obstructed; a lift may be non-functional; an accessible toilet may be locked; signage may not support people with visual or intellectual disabilities; and a digital portal may be incompatible with assistive technology.

The research problem is thus the gap between accessibility as a legal and policy commitment and accessibility as an everyday, verifiable experience. The study asks how this gap can be examined through official data, legal analysis, systematic audits and institutional accountability.

1.4 Aim and contribution

The paper aims to assess the legal and policy framework for disability-inclusive infrastructure in India, analyse available official evidence concerning access barriers and government accessibility initiatives, and develop a practical audit and accountability model. Its contribution is primarily analytical and methodological; the paper does not claim to have conducted original field audits.

1.5 Research questions

How do Indian disability rights laws and accessibility standards govern public infrastructure?

What do official national data and government programme reports reveal about access barriers and implementation outputs?

How should a CPWD-informed audit examine physical access, communication, service usability and maintenance?

How can accessibility audit findings be connected to institutional responsibility, budgets and corrective action?

What role should persons with disabilities and public transparency mechanisms play in monitoring accessibility?

2. CONCEPTUAL AND THEORETICAL FRAMEWORK

2.1 Social model and human-rights model

The social model explains how social organisation, built environments and institutional practices produce disabling barriers (Oliver, 1990). The human-rights approach complements this analysis by

treating persons with disabilities as rights-holders and public authorities as duty-bearers. The UN Convention on the Rights of Persons with Disabilities (CRPD) places accessibility within the framework of equality, autonomy and participation.

2.2 Accessibility, universal design and reasonable accommodation

Accessibility is a general and anticipatory obligation concerning the physical environment, transportation, information and communication, and facilities and services open or provided to the public. Universal design seeks to make environments, products and services usable by all people to the greatest extent possible without specialised adaptation (Steinfeld & Maisel, 2012). Reasonable accommodation addresses necessary and appropriate adjustments in individual cases. These concepts are complementary: universal design improves the general environment, while reasonable accommodation responds to particular requirements that remain.

2.3 Functional accessibility

This paper distinguishes three levels: (i) availability—the facility exists; (ii) formal compliance—the relevant feature meets the applicable standard; and (iii) functional usability—the person can complete the relevant journey or service task safely and with dignity. A building may satisfy one isolated design criterion yet fail at the level of functional accessibility. Audit design must therefore assess continuity from the public approach to the service point.

Concept	Meaning in this paper	Implication for assessment
Universal design	Inclusive design from the outset	Review planning and design decisions.
Accessibility	Access to physical, transport, information and public-service environments	Assess the full route and communication.
Reasonable accommodation	Individual adjustments where required	Review how requests are identified and met.
Functional usability	Ability to complete a relevant task in practice	Include user-based verification.
Accountability	Responsibility to document and correct barriers	Review audit, budget and action records.

3. REVIEW OF LITERATURE

3.1 Disability and the built environment

Oliver's (1990) account of the politics of disablement provides a theoretical basis for analysing exclusion as a consequence of social arrangements rather than solely individual impairment. Imrie (1996) extends the discussion to urban planning and the built environment, demonstrating why spatial design and planning decisions are central to participation. These works support the present study's focus on public buildings, pedestrian routes and transport systems as sites where equality is either enabled or restricted.

3.2 Universal design and inclusive environments

Steinfeld and Maisel (2012) describe universal design as an approach to creating inclusive environments that accommodate human diversity. Its relevance lies in shifting accessibility upstream into planning and design, rather than relying on retrofitting after exclusion has already occurred. Universal design is not a substitute for specific technical standards or reasonable accommodation; it is a planning principle that should inform both.

3.3 Human-rights standards

Article 9 of the CRPD requires States Parties to take appropriate measures to ensure access to the physical environment, transportation, information and communications, and facilities and services

open or provided to the public. General Comment No. 2 (Committee on the Rights of Persons with Disabilities, 2014) explains accessibility as a precondition for independent living and participation and distinguishes general accessibility from individual reasonable accommodation.

3.4 Indian empirical research

Varma et al. (2017) examined public infrastructure and transportation accessibility in Ahmedabad. Garg et al. (2024) reported an accessibility audit of a healthcare institution in India, highlighting the value of examining hospital environments through a rights-based framework.

Garg et al. (2024) reported an accessibility audit of a healthcare institution in India, highlighting the relevance of examining hospital environments through the rights framework. Kadir and Jamaludin (2012), in a study of public buildings in Putrajaya, found that user satisfaction and perceptions varied across impairment groups, supporting the need to include people with disabilities in access audits.

More recent national research uses the NSS 76th Round dataset. Hridya et al. (2025) analysed a nationwide dataset of 102,977 persons with disabilities to examine transit use and barriers. Their work identifies differences in transit use associated with gender, employment loss, caregiver needs and regional characteristics. A 2025 secondary analysis in BMJ Open also examined disability prevalence and access to support and rehabilitation services using NSS 2018 data. Such studies demonstrate the value of nationally representative data while also showing that access barriers are multidimensional.

3.5 Literature synthesis

Recent Indian transport research further cautions against treating persons with disabilities as a homogeneous group. A 2026 study of 155 persons with disabilities in Varanasi and Kozhikode found that the relative importance of barriers and enablers differed across locomotor, visual, intellectual and multiple-disability groups. Its findings support a disability-responsive approach that combines universal design with targeted information, service and administrative measures (Hridya et al., 2026a). A separate 2026 empirical study of 42 transit interfaces across 21 nodes on a 10.2-kilometre corridor in Udupi reported substantial gaps between technical accessibility and users' perceptions, including very low observed availability of ramps and information systems (Kinjawadekar et al., 2026b). These studies strengthen the case for assessing both physical features and the actual service journey. Their local samples should not be generalised to all Indian cities.

The newer evidence also sharpens the paper's central distinction: universal design is necessary but may not be sufficient where disability-specific communication, navigation, staff assistance, affordability or administrative barriers remain. Accordingly, the proposed audit protocol treats built-environment compliance, service usability and user experience as related but separately reportable dimensions.

Literature stream	**Established contribution**	**Remaining question for this paper**
Social model and disability rights	Explains structural and institutional exclusion	How are barriers recorded and assigned for correction?
Urban planning and built environment	Connects design to access and participation	Does the full route to the service remain accessible?
Universal design	Supports inclusion at the planning stage	How can design principles be operationalised in audits?
Small-scale access audits	Shows value of structured site inspection	How can audits be comparable but sector-sensitive?
National survey analysis	Documents population-level barriers	How can survey evidence be linked to building-level audits?

Participatory methods	Recognises lived experience and user perspectives	How can user participation be institutionalised?

3.6 Literature gap

The literature does not support a claim that accessibility audits or user-centred research are absent in India. Rather, it reveals a need for stronger integration between (a) national survey evidence, (b) building-level technical audits, (c) service-journey assessment, and (d) verifiable corrective action. The proposed contribution is to connect these strands in one practical research protocol and governance model.

4. RESEARCH GAP, OBJECTIVES AND SCOPE

4.1 Research gaps

Policy-to-practice gap: Legal and technical standards need to be compared with conditions documented at individual institutions.

Fragmented assessment: A feature-by-feature checklist may overlook route continuity and access to the actual service.

User participation: Technical measurements should be complemented by evidence from people with different disabilities.

Cross-sector comparability: Hospitals, colleges, offices and transport facilities need common core indicators plus sector-specific modules.

Corrective-action accountability: Audit findings should be linked to budgets, responsible authorities, deadlines and follow-up verification.

Operational maintenance: A feature that is present but unusable or obstructed should not be counted as effective accessibility.

Data transparency: Existing institutional records can be used to assess whether deficiencies are acknowledged and addressed.

4.2 Objectives

Examine the constitutional, statutory and policy framework governing disability-inclusive infrastructure.

Analyse official statistical evidence concerning disability prevalence and reported access difficulties.

Review empirical literature on public-building, healthcare and transport accessibility.

Develop a CPWD-informed audit protocol aligned with applicable current standards.

Propose methods for user participation, documentary verification and corrective-action monitoring.

Develop policy recommendations for strengthening institutional accountability.

4.3 Scope and delimitations

The paper focuses on public infrastructure and services in India, with particular attention to public buildings, healthcare, higher education, transport and digital public services. It uses national survey estimates and government-reported programme outputs. It does not claim a representative physical audit of Indian buildings. The proposed field protocol may be piloted in selected institutions in Rajasthan or other states, but such fieldwork is outside the evidence presented here.

5. INDIAN LEGAL AND POLICY FRAMEWORK

5.1 Constitutional foundations

Article 14 guarantees equality before the law and equal protection of the laws. Article 21 protects life and personal liberty and has been interpreted by the Supreme Court to encompass dignity. Articles 38 and 41 articulate social-welfare objectives, including social justice and public assistance in cases of disablement, subject to the constitutional qualifications. Article 15 does not expressly list

disability in clause (1); disability-specific non-discrimination protections are addressed in the RPwD Act.

5.2 Rights of Persons with Disabilities Act, 2016

The RPwD Act, 2016 (Act 49 of 2016), gives effect to India's CRPD obligations and provides the principal domestic statutory framework. Section 3 addresses equality and non-discrimination. Section 16 concerns duties of educational institutions. Section 25 addresses healthcare measures. Sections 40–46 are particularly relevant to accessibility: Section 40 concerns accessibility standards; Section 41 transport; Section 42 information and communication technology; Section 44 observance of accessibility norms in building permissions and completion/occupation processes; Section 45 existing infrastructure; and Section 46 accessibility by service providers. Section 48 provides for social audits of schemes and programmes concerning persons with disabilities.

The operation of Sections 44–46 must be read with the applicable rules, notifications, standards and any legally permitted extensions. The paper does not assume that every CPWD handbook recommendation is independently binding law.

5.3 International framework

Article 9 of the CRPD requires accessibility measures concerning the physical environment, transportation, information and communication, and facilities and services open or provided to the public. Article 19 recognises the right to live independently and be included in the community. The Committee's General Comment No. 2 (2014) explains the role of accessibility as a precondition for equal participation.

5.4 Indian technical and programme framework

The Harmonised Guidelines and Standards for Universal Accessibility in India, 2021, issued by the Ministry of Housing and Urban Affairs, provide an important technical reference for the built environment. CPWD's Handbook on Barrier Free and Accessibility (2014) is a useful design and retrofit reference, but it predates the 2021 Harmonised Guidelines and should not be treated as the sole or current controlling standard. Auditors should identify the current applicable provision for each building and sector.

The Accessible India Campaign was launched on 3 December 2015 and focused on the built environment, transport and information and communication technology. The Department of Empowerment of Persons with Disabilities records that the campaign's objectives have been absorbed into the Creation of Barrier-Free Environment Scheme under SIPDA. The Department's website lists updated Creation of Barrier-Free Environment Scheme guidelines dated 5 October 2026 and a built-environment empanelled auditor list dated 16 February 2026. The actual scheme document and current auditor list should be consulted when implementing a field audit.

5.5 Judicial context

Jeeja Ghosh v. Union of India (2016) 7 SCC 761 emphasised dignity and equal treatment of persons with disabilities. Rajive Raturi v. Union of India (2018) 2 SCC 413 is an important Supreme Court decision concerning accessibility obligations. Vikash Kumar v. Union Public Service Commission (2021) 5 SCC 370 clarified the importance of reasonable accommodation in achieving substantive equality. The final journal version should cite the full judgments and verify the precise propositions attributed to each decision.

6. EVIDENCE FROM OFFICIAL STATISTICS AND GOVERNMENT REPORTING

6.1 National Statistical Office: NSS 76th Round

The National Statistical Office's Survey of Persons with Disabilities was conducted during July–December 2018 as part of the NSS 76th Round. Report No. 583 records a central sample covering 8,992 first-stage units, 118,152 households and 576,569 enumerated persons, including 106,894

persons with disabilities. The survey considered the specified disabilities under the RPwD Act, 2016 (MoSPI/NSO, 2019).

NSS 76th Round indicator	Official estimate	Interpretation
Disability prevalence, all India	2.2%	Sample-survey estimate, not a Census count.
Rural prevalence	2.3%	Higher than the reported urban estimate.
Urban prevalence	2.0%	NSS estimate for urban areas.
Male prevalence	2.4%	Higher than female prevalence in this survey.
Female prevalence	1.9%	NSS estimate for females.
Literate among persons with disabilities aged 7+	52.2%	Education-related indicator.
Secondary level and above, age 15+	19.3%	Highest educational level reported.

The NSS estimates should not be conflated with Census 2011. Census 2011 enumerated 2.68 crore persons with disabilities, representing 2.21 per cent of the population under the Census definition and classification then used. The NSS 2018 survey used a different survey design and disability identification framework. The two sources are complementary but not directly interchangeable.

6.2 Reported difficulty in accessing public buildings and transport

A particularly relevant NSS finding concerns the experience of people who had used public facilities. In the preceding 365 days, 43.6 per cent of persons with disabilities had accessed a public building, and 63.9 per cent of those who accessed a public building reported difficulty. In the same period, 58.1 per cent had used public transport, and 67.1 per cent of those users reported difficulty accessing or using it (MoSPI/NSO, 2019, Statement 31).

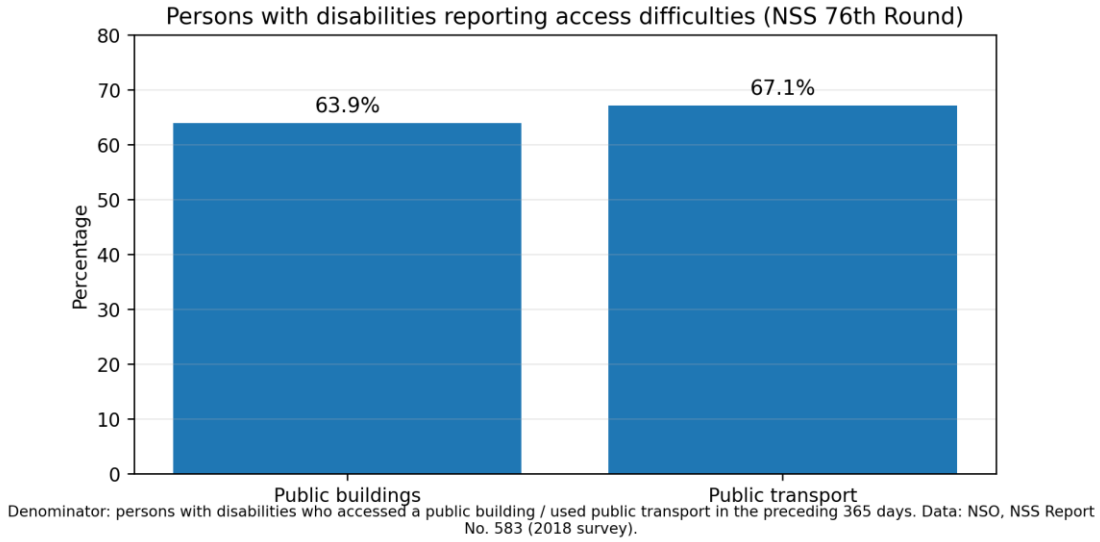

Figure 1. Reported difficulty in accessing public buildings and public transport among users with disabilities. Source: MoSPI/NSO, NSS Report No. 583 (2019), Statement 31.

Access measure	Used/accessed in preceding 365 days	Reported difficulty among users
Public buildings	43.6%	63.9%
Public transport	58.1%	67.1%

Denominator caution: the 63.9 per cent and 67.1 per cent figures are conditional on having accessed a public building or used public transport during the reference period. They are not percentages of all persons with disabilities. This distinction is essential for accurate interpretation.

6.3 What kinds of barriers did the survey identify?

The NSS survey instrument recorded difficulties including steps or stairs and the non-availability of ramps, grooved tiles or lifts; difficulty opening doors; lack of seating in waiting areas or at service points; absence of special toilet seats; and lack of directional signs, instructions or public announcement systems. These categories show that the access problem is not confined to ramps. It includes circulation, seating, sanitation and information.

6.4 Government-reported Accessible India Campaign outputs

A Press Information Bureau account dated 2 December 2024 reported the following campaign outputs: 1,671 government-building accessibility audits; ₹562 crore released for retrofitting 1,314 buildings; accessibility features incorporated in 1,748 government buildings, comprising 648 State/UT buildings and 1,100 central government buildings retrofitted by CPWD. It also reported 709 railway stations as fully accessible and 4,068 as partially accessible; 8,695 buses (5.96 per cent of the reported fleet of 145,747) as fully accessible and 42,348 (29.05 per cent) as partially accessible; 95 Central Government websites and 676 State/UT websites made accessible, of which 476 were live (PIB, 2024a).

Programme indicator reported in Dec. 2024	**Government-reported figure**	**Caution in interpretation**
State/UT government buildings audited	1,671	Audit output; not proof that every audited building was compliant.
Buildings for which retrofitting assistance released	1,314	Financial assistance does not itself establish completed work.
Government buildings with accessibility features	1,748	Reported campaign output; does not equal independent certification.
Central buildings retrofitted by CPWD	1,100	Includes 211 MoHUA buildings and 889 buildings of other Ministries/departments maintained by CPWD, per PIB reply.
Railway stations fully accessible	709	Government-reported classification.
Railway stations partially accessible	4,068	Partial accessibility must not be described as full accessibility.
Buses fully accessible	8,695 (5.96%)	Denominator reported: 145,747 buses.
Buses partially accessible	42,348 (29.05%)	Partial modification is distinct from full accessibility.
State/UT government websites made accessible	676; 476 live	“Made accessible” and “live” are distinct reporting statuses.

A separate Lok Sabha reply dated 10 December 2024 stated that audits had been conducted for 1,671 State/UT government-owned public buildings; financial assistance had been provided for 1,314; and CPWD had retrofitted 211 MoHUA-owned buildings and 889 buildings of other

Ministries/departments maintained by CPWD. It also reported that DEPwD had empanelled 59 access auditors/auditing firms at that time (PIB, 2024b).

6.5 Interpretation and limitations of programme data

The campaign figures demonstrate administrative activity and investment, but they should not be treated as a national building-compliance rate. The available figures do not provide a denominator of all public buildings in India, a common independent post-retrofit usability measure, or a consistent breakdown of unresolved deficiencies. “Audited”, “funds released”, “retrofitted”, “partially accessible” and “fully accessible” describe different stages or classifications and should not be combined into a single progress percentage.

The December 2024 figures are dated government-reported outputs. The Department's website contains later administrative material, including the 2026 barrier-free scheme guidelines and auditor lists; this paper does not assume that the 2024 output figures have remained unchanged through 2026.

6.6 Why the evidence matters

The NSS evidence establishes that substantial proportions of persons with disabilities who used public buildings or transport reported difficulties. The government programme figures show that audits, retrofitting assistance and accessibility interventions have taken place. Taken together, these sources justify a stronger evaluation framework: one that measures not only the number of audits or retrofits but also whether people can use the resulting infrastructure and services.

7. RESEARCH METHODOLOGY

7.1 Design

This manuscript is a doctrinal and policy analysis supported by secondary analysis of official statistics and government programme reporting. It also develops a proposed empirical protocol for future building-level audits. It is not presented as a completed mixed-method field study because no primary site inspections or interviews were conducted for this manuscript.

7.2 Sources and analytical method

The documentary review prioritised primary legal and government materials, including the RPwD Act and Rules, the CRPD, the Harmonised Guidelines and Standards for Universal Accessibility in India (2021), CPWD guidance, NSO/MoSPI survey reports and dated government programme disclosures. Peer-reviewed literature was identified through topic-based searches using combinations of terms relating to disability, accessibility audits, public buildings, healthcare, transport, universal design and India. Studies were retained where their subject, setting, methods or findings directly informed the paper’s research questions. Recent studies published in 2024–2026 were added where relevant. This is a focused narrative and documentary review, not a registered systematic review or meta-analysis; no claim of exhaustive database coverage is made.

The analysis used three complementary steps: (1) legal mapping of duties and applicable standards; (2) descriptive interpretation of official survey and administrative indicators, retaining their original reference periods and denominators; and (3) thematic synthesis of empirical literature to identify recurring barriers and methodological implications for the proposed audit framework. Administrative outputs were not treated as outcome measures unless the source itself established a user-level outcome.

Evidence stream	Source used	Analytical use
Population and access statistics	MoSPI/NSO, NSS Report No. 583 (2019)	Prevalence and reported access difficulties.
Government programme outputs	PIB releases, 2 and 10 December 2024	Audits, retrofitting support, CPWD works and

		transport/digital outputs.
Legal framework	RPwD Act, 2016; CRPD; relevant rules and standards	Legal duties and policy context.
Technical guidance	Harmonised Guidelines 2021; CPWD Handbook 2014	Audit dimensions and technical verification.
Academic literature	Peer-reviewed articles and foundational books	Theoretical framing and research gaps.

7.3 Proposed field sample

For a future pilot, a purposive sample of 20 institutions may be considered: five government hospitals, five government colleges/universities, five administrative buildings and five public transport facilities. This is a proposed sample allocation only. It is not a completed sample and cannot support national generalisation. A later study should justify site selection, geographical coverage, building age, service importance and accessibility of the audit process.

7.4 Data collection instruments

Structured audit checklist mapped to the current applicable standards and clauses.

Physical measurements using suitable instruments, with calibration and measurement method recorded.

Photographic documentation, subject to permission and privacy safeguards.

Review of building plans, audit reports, completion records, maintenance registers and corrective-action documents.

Accessible interviews or task-based walkthroughs with persons with different disabilities.

Interviews with building managers, engineers, service staff and relevant public officials.

7.5 Data analysis

Quantitative audit data should be reported by indicator and dimension, not only through a composite score. Qualitative evidence should be coded thematically. Documentary claims should be triangulated with physical observations and user experience. Where data are unavailable, the report should state “not available in records reviewed” rather than infer that no action occurred.

7.6 Ethics and quality assurance

Participation should be voluntary and based on informed consent. Interview formats and site walkthroughs should be accessible. Personal data and photographs should be protected. Persons with disabilities should be involved as participants and, where feasible, co-auditors. A pilot checklist, inter-rater review and independent verification of a sample of measurements can improve reliability.

8. CPWD-INFORMED ACCESSIBILITY AUDIT PROTOCOL

8.1 Status of CPWD guidance

CPWD's Handbook on Barrier Free and Accessibility was published in January 2014. It is a useful technical and retrofit reference, including discussion of access routes, ramps, dropped kerbs, staircases, handrails, corridors, doors, toilets, signage, reception counters and lifts. Because it predates the Harmonised Guidelines and Standards for Universal Accessibility in India, 2021, it should be used as supporting technical material rather than the sole current standard. The applicable 2021 and sector-specific provisions should govern the audit where relevant.

8.2 Audit principles

The audit should assess accessibility, safety, route continuity, functional usability, dignity, reasonable accommodation and maintenance. It should not be limited to the presence of a ramp or lift. Each observation should identify the applicable standard, the method of verification, the observed condition and the impact on users.

8.3 Core audit dimensions

Dimension	Illustrative checks
External approach	Continuous accessible route, footpaths, crossings, parking and connection to transport.
Entrance	Accessible entrance, ramp/level access, threshold, door operation, handrails and landing.
Internal circulation	Corridors, lifts, stairs, turning space and access to essential floors.
Facilities	Accessible toilets, reception, counters, waiting areas, seating and drinking water.
Information and communication	Legible signage, tactile/Braille information where required, audio/visual information and accessible formats.
Service access	Ability to complete registration, consultation, learning, administrative or ticketing tasks.
Emergency preparedness	Accessible alarms, evacuation information, routes and staff procedures.
Maintenance and governance	Operational condition, inspections, complaints, repairs and corrective-action records.

8.4 Technical verification

Relevant measurements may include ramp gradient and width, landing dimensions, door clear opening, corridor width, lift cabin and control features, toilet manoeuvring space, parking layout and tactile-path continuity. Exact values must be taken from the applicable clause of the Harmonised Guidelines 2021, current building regulations and sector-specific standards. The auditor should record the standard title, version, clause and date. A generic dimension from an older handbook should not override a current applicable standard.

8.5 Service-journey testing

The audit should identify the principal public service provided by the building and test whether a person with a disability can complete the relevant journey. In a hospital, this may include approach, entry, registration, waiting, consultation, diagnostics, pharmacy and discharge. In a college, it may include admission, classrooms, library, laboratories, toilets, examinations and hostel access. In a transport facility, it may include approach, ticketing, passenger information, boarding, interchange and exit.

8.6 User-based verification

Persons with locomotor, visual, hearing, intellectual and multiple disabilities should be invited to participate where appropriate. Their task-based observations can reveal barriers that a technical checklist may miss. Participation should be planned to avoid fatigue, inaccessible research procedures or undue risk. The audit should record the type of task tested and the accommodation used.

8.7 Scoring: use cautiously

For research comparison, an audit team may use a simple indicator scale: 0 = absent; 1 = present but unusable/seriously deficient; 2 = partly compliant; 3 = substantially compliant; 4 = compliant with the applicable requirement. Not-applicable items should be excluded from the denominator with reasons documented. The score can be calculated as points obtained divided by maximum applicable points, multiplied by 100.

This is a proposed research scoring method, not an official CPWD, DEPwD or Government of India rating. The categories require pilot validation. A composite score must never conceal critical barriers: an inaccessible route to an essential service or a serious emergency-evacuation defect should be separately flagged regardless of the overall score.

8.8 Audit report and follow-up

Identify institution, site, building function, audit date, team and scope.

List applicable standards and exact clauses.

Record dimension-wise observations, measurements and evidence.

Separate non-compliance, usability barriers and maintenance failures.

Identify critical deficiencies and the affected service journey.

Recommend corrective action, responsible authority, budget estimate and target date.

Conduct follow-up verification and record whether the barrier was actually removed.

9. ANALYSIS AND DISCUSSION

9.1 The data reveal a persistent usability concern

The NSS finding that 63.9 per cent of persons with disabilities who accessed public buildings reported difficulty is significant because it concerns actual users, not merely a checklist of installed features. The corresponding figure for public transport users was 67.1 per cent. These figures should not be interpreted as the proportion of all persons with disabilities, but they show that reported difficulty was common among those who had used these facilities.

9.2 Administrative outputs and user outcomes are different measures

Government reporting records audits, financial assistance and retrofitting activity. These are important inputs and outputs. Yet they do not directly establish whether a building is independently usable after work is completed. A stronger performance system should connect each audit to a published action plan, completed work, post-work verification and user feedback.

9.3 Accessibility is multisensory and service-based

The NSS categories include stairs and missing ramps or lifts, but also doors, seating, toilets, signs and public announcements. This supports an integrated approach that recognises mobility, sensory and communication barriers. The audit must also examine whether services themselves are accessible; physical entry is only one stage of access.

9.4 Maintenance and institutional responsibility

A building's accessibility can deteriorate if lifts fail, ramps become obstructed, tactile routes are damaged or accessible toilets are repurposed. Maintenance should therefore be treated as an ongoing accessibility obligation. Institutional records should identify who is responsible for inspection, repair, complaints and follow-up.

9.5 Need for disaggregated evidence

National averages can obscure differences by disability type, gender, age, rural/urban residence and socioeconomic position. Future audits should record barriers in a way that supports appropriate disaggregation while protecting privacy. Universal design should be combined with disability-specific adjustments and reasonable accommodation.

9.6 Research implication

The evidence supports a move from counting facilities or audit events towards measuring the quality and continuity of access. A national or state-level monitoring system should report not only how many buildings were audited, but also the number of critical deficiencies, the proportion corrected, the time taken to resolve them and the results of post-correction user verification.

10. POLICY RECOMMENDATIONS

Integrate accessibility at project inception. Accessibility requirements should be mapped at site selection, concept design, detailed design, procurement, construction, completion and operation. Retrofitting should not be the default substitute for inclusive planning.

Use current and sector-specific standards. Auditors should apply the current Harmonised Guidelines and relevant notified sector standards. CPWD's 2014 handbook can inform design and retrofit analysis but should not be treated as the sole current standard.

Institutionalise periodic audits. Prioritise public-centric buildings and essential services. Audit frequency should reflect risk, building use, complaints, renovations and changes in standards.

Require post-retrofit verification. A work order or expenditure certificate is not enough. Verify physical functionality and user access after corrective work.

Create accessibility-linked budgets. Public projects should identify capital and recurring costs for access, communication, maintenance, assistive systems and emergency preparedness.

Assign accountable officers. Each institution should identify the officer or unit responsible for accessibility records, maintenance, complaint handling and corrective action.

Include persons with disabilities. Involve organisations and individuals with diverse disabilities in design review, audits and monitoring, with accessible participation and appropriate compensation where feasible.

Publish accessible audit summaries. Disclose audit date, scope, findings, action plan, completion status and follow-up results in accessible formats, subject to privacy and lawful disclosure.

Improve digital accessibility. Assess websites, applications, online forms, documents and appointment/payment systems against applicable Indian government and technical accessibility standards.

Strengthen emergency inclusion. Ensure that alerts, evacuation routes, assistance procedures and staff training account for diverse disabilities.

11. PROPOSED NATIONAL DISABILITY-INCLUSIVE INFRASTRUCTURE ACCOUNTABILITY FRAMEWORK (NDIIAF)

11.1 Purpose and status

The framework's proposed contribution is not the invention of accessibility audits, which already exist in Indian policy and practice. Its contribution is the explicit linkage of six elements that are often reported separately: the applicable legal/technical requirement; the observed barrier and affected service journey; the responsible institution; the committed budget and deadline; independent post-correction verification; and accessible public disclosure with participation by persons with disabilities. The model is therefore an accountability architecture for closing the loop between audit findings and demonstrable user-level improvement.

This paper proposes the National Disability-Inclusive Infrastructure Accountability Framework (NDIIAF) as a policy model. It is not an existing government programme. The framework connects legal standards, accessibility audits, financial planning, institutional responsibility, independent verification, disability participation and public disclosure.

11.2 Core components

Component	Proposed mechanism
Standards mapping	Identify the applicable Act, rules, notified standards and building/sector requirements.
Audit and evidence	Conduct structured inspection, measurement, documentary review and user verification.
Budget and procurement	Identify accessibility costs in project estimates, tenders and maintenance budgets.
Responsibility	Assign an institutional officer or unit for each deficiency and corrective action.
Independent verification	Check that completed works have removed the identified barrier.
Participation	Include persons with disabilities and representative organisations in monitoring.
Disclosure	Publish accessible summaries of findings, action plans and follow-up status.

11.3 Proposed accountability cycle

The framework follows a straightforward cycle: (1) identify the building and applicable standard; (2) conduct an accessibility audit; (3) document and prioritise deficiencies; (4) assign responsibility and budget; (5) complete corrective work; (6) independently verify usability; and (7) disclose results and schedule reassessment. This cycle is deliberately presented in prose rather than multiple decorative diagrams so that the emphasis remains on verifiable responsibilities.

11.4 Performance indicators

Indicator	Suggested measure
Audit coverage	Number of priority public buildings audited, with a defined denominator.
Critical deficiencies	Number and type of critical barriers identified.
Corrective-action completion	Share of deficiencies verified as corrected within target time.
Functional accessibility	User-based success in completing defined service journeys.
Maintenance	Frequency of inspections and time to restore failed features.
Participation	Representation and involvement of persons with disabilities in audits.
Transparency	Availability of accessible audit summaries and action-taken reports.

11.5 Role of the Right to Information Act, 2005

The RTI Act can support documentary accountability by enabling access to existing records held by public authorities, subject to the Act and its exemptions. Relevant records may include audit reports, approved plans, budget documents, work orders, maintenance registers, completion records and action-taken reports. RTI applications should seek identifiable existing records. The Act does not generally require a public authority to create new information, conduct a fresh audit or answer hypothetical questions.

11.6 Implementation considerations

Implementation requires coordination among public works departments, local bodies, sector departments, building approval authorities and service providers. It also requires trained auditors, financial resources, accessible reporting and independent follow-up. The framework should be piloted in a defined group of institutions and refined on the basis of audit reliability, user feedback and administrative feasibility.

12. CONCLUSION

This paper has examined disability-inclusive infrastructure as a matter of rights, public service delivery and institutional accountability. Official NSS evidence shows that among persons with disabilities who had accessed public buildings or used public transport during the preceding year, substantial proportions reported difficulty. Government programme reporting also records meaningful activity in building audits, retrofitting assistance, CPWD works, transport and digital accessibility. These two evidence streams measure different things: one records user-reported difficulties, while the other records administrative outputs.

The central policy challenge is to connect the two. An audit should not end with a checklist or a score. It should identify the relevant legal and technical requirement, document the barrier, assign responsibility, provide a budget and deadline, verify the completed work and test whether people with disabilities can use the service. The proposed CPWD-informed protocol and NDIIAF model offer a structured basis for such work, while recognising that current Harmonised Guidelines and sector-specific standards must take precedence over outdated technical references.

Accessibility should be treated as a continuing public-governance obligation across planning, construction, operation and maintenance. The success of infrastructure should be measured not only by what is built, but by whether persons with disabilities can reach, use and benefit from it on an equal basis.

13. LIMITATIONS AND FUTURE RESEARCH

13.1 Limitations

The recently published Indian transport studies reviewed here use specific city-level samples and methods. They provide valuable contextual evidence but do not establish a nationally representative estimate of accessibility conditions. Their findings are used to inform the analytical framework, not to infer nationwide prevalence.

The NSS data used are from the 2018 survey period; they should not be presented as current 2026 prevalence or access conditions.

Government programme figures cited are dated December 2024 and represent administrative reporting, not independent outcome evaluation.

No original field audit or interview data were collected for this manuscript.

The proposed pilot sample is illustrative and is not nationally representative.

The proposed audit scoring method requires pilot testing, inter-rater reliability checks and validation.

Technical standards vary by building type and may change; each audit must identify the current applicable clause.

13.2 Future research

Conduct participatory audits of government hospitals and colleges in Rajasthan and other states.

Compare audit findings with institutional documents obtained through RTI applications.

Study the full patient journey in public healthcare facilities.

Examine gender, age, rural/urban and disability-type differences in access.

Develop and validate sector-specific indicators and a transparent accessibility index.

Conduct longitudinal follow-up to determine whether accessibility improvements remain functional.

REFERENCES

A. Official statistics and government documents

1. Ministry of Statistics and Programme Implementation, National Statistical Office. (2019). Persons with disabilities in India: NSS 76th Round (July–December 2018), Report No. 583 (76/26/1). Government of India. https://www.mospi.gov.in/sites/default/files/NSS7626d/Report_583_Final.pdf
2. Press Information Bureau, Government of India. (2019, November 23). NSS Report No. 583: Persons with Disabilities in India. Ministry of Statistics and Programme Implementation. https://www.pib.gov.in/newsite/PrintRelease.aspx?lang=2&reg=3&relid=194923
3. Press Information Bureau, Government of India. (2024, December 2). Sugamya Bharat Abhiyan: 9 years of driving inclusivity and accessibility. Ministry of Social Justice and Empowerment. https://www.pib.gov.in/Pressreleaseshare.aspx?PRID=2079826&lang=2&reg=48
4. Press Information Bureau, Government of India. (2024, December 10). Parliament question: Accessibility of public buildings. Ministry of Social Justice and Empowerment. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2082716&lang=2&reg=48
5. Department of Empowerment of Persons with Disabilities. (2026). Creation of Barrier-Free Environment Scheme under SIPDA: Guidelines dated 5 October 2026 and built-environment empanelled auditor list dated 16 February 2026. Government of India. https://depwd.gov.in/en/creation-of-barrier-free-environment/
6. Ministry of Housing and Urban Affairs. (2021). Harmonised guidelines and standards for universal accessibility in India, 2021. Government of India. https://depwd.gov.in/en/document/harmonised-guidelines-standards-for-universal-accessibility-in-india-2021/
7. Central Public Works Department. (2014). Handbook on barrier free and accessibility. Government of India. https://cpwd.gov.in/Publication/HandbookonBarrier.pdf
8. Government of India. (2005). The Right to Information Act, 2005.
9. Government of India. (2016). The Rights of Persons with Disabilities Act, 2016 (Act No. 49 of 2016). India Code. https://www.indiacode.nic.in/handle/123456789/2155?locale=en
10. Government of India. (2017). The Rights of Persons with Disabilities Rules, 2017.
11. International instruments and reports Committee on the Rights of Persons with Disabilities. (2014). General comment No. 2 (2014), Article 9: Accessibility (CRPD/C/GC/2). United Nations.
12. United Nations. (2006). Convention on the Rights of Persons with Disabilities.
13. World Health Organization. (2001). International classification of functioning, disability and health (ICF). World Health Organization.
14. World Health Organization & World Bank. (2011). World report on disability. World Health Organization. https://www.who.int/publications/i/item/9789241564182

B. Academic books and journal articles

15. Garg, R., Talwar, Y., Garg, N., & Bhandari, D. (2024). Accessibility audit of a health care institute in India: Are people with disabilities being provided their rights? Medical Journal Armed Forces India, 80(3), 353–358. https://doi.org/10.1016/j.mjafi.2022.10.011
16. Hridya, G. M., Pani, A., Varghese, V., Tripathi, G., & Unnikrishnan, A. (2025). People with disabilities and transit use: Findings from nationwide data in India. Transportation Research Part D: Transport and Environment, 139, 104558. https://doi.org/10.1016/j.trd.2024.104558
17. Imrie, R. (1996). Disability and the city: International perspectives. Paul Chapman Publishing.

18. Kadir, S. A., & Jamaludin, M. (2012). Users' satisfaction and perception on accessibility of public buildings in Putrajaya: Access audit study. Procedia - Social and Behavioral Sciences, 50, 429–441. https://doi.org/10.1016/j.sbspro.2012.08.047
19. Oliver, M. (1990). The politics of disablement. Macmillan Education.
20. Shakespeare, T. (2014). Disability rights and wrongs revisited (2nd ed.). Routledge.
21. Steinfeld, E., & Maisel, J. L. (2012). Universal design: Creating inclusive environments. John Wiley & Sons.
22. Varma, T., Tripathi, H., Prabhakar, K., & Parab, H. (2017). Evaluation of public infrastructures and transportation accessibility for people with disabilities in Ahmedabad City. Indian Journal of Physiotherapy and Occupational Therapy, 11(2), 12–17. https://doi.org/10.5958/0973-5674.2017.00028.4
23. Bose, A., Mehrotra, A., Upadhyay, A., & Sharma, S. (2025). Social audit as a pathway for reasonable accommodation: A review on access to the built environment for persons with disabilities in the wake of the RPwD Act 2016 in India. Jindal Global Law Review. https://doi.org/10.1007/s41020-025-00276-0
24. Hridya, G. M., Pani, A., Varghese, V., & Unnikrishnan, A. (2026a). Disability-specific transport disadvantage in Indian cities: Barriers and enablers beyond universal design. Journal of Urban Mobility, 9, 100210. https://doi.org/10.1016/j.urbmob.2026.100210
25. Kinjawadekar, A., Rama Devi, N., & Patil, S. (2026b). Built environment performance and user perception of urban transit interface: A mixed-methods empirical assessment of bus corridor in Udupi, India. Future Transportation, 6(3), 118. https://doi.org/10.3390/futuretransp6030118

C. Judicial decisions

26. Jeeja Ghosh & Another v. Union of India & Others, (2016) 7 SCC 761.
27. Rajive Raturi v. Union of India, (2018) 2 SCC 413.
28. Vikash Kumar v. Union Public Service Commission, (2021) 5 SCC 370.

APPENDIX: SAMPLE ACCESSIBILITY AUDIT RECORD

Field	Information to record
Institution and location	Name, address, building type and public function.
Audit details	Date, audit team, permissions and scope.
Applicable standards	Title, edition, relevant clause and date checked.
Observation	Specific condition and location within the premises.
Measurement	Instrument, method, result and unit.
User verification	Task tested, disability-related access perspective and findings.
Evidence	Photograph, drawing, document or interview reference.
Classification	Compliant / partly compliant / non-compliant / not applicable.
Criticality	Safety or essential-service impact.
Corrective action	Action, responsible authority, estimated budget and deadline.
Follow-up	Verification date and whether the barrier was resolved.

DATA INTEGRITY STATEMENT

All numerical claims in this manuscript are attributed to identified official survey or government programme sources. The NSS figures refer to the 2018 survey period; campaign output figures refer to government reporting published in December 2024. The proposed 20-institution sample and scoring approach are research proposals, not completed fieldwork. No institutional accessibility score, audit result or interview finding has been invented. Before journal submission, the author should verify current standards, full bibliographic metadata, legal citations and any subsequent government updates.

AUTHOR'S SUBMISSION NOTE

This manuscript is an evidence-based doctrinal and policy analysis with a proposed audit framework. It should be submitted to a journal that accepts legal-policy or conceptual research supported by secondary data. Before submission, the author should adapt the manuscript to the selected journal's scope, word limit, reference style and declaration requirements, and personally verify every citation and legal proposition against the original source.

Copyright & License:

© Authors retain the copyright of this article. This work is published under the Creative Commons Attribution 4.0 International License (CC BY 4.0), permitting unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.