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Disability Inclusion in Climate Change and Disaster Management

Are Persons with Disabilities Being Left Behind?

An International Human Rights and Climate Justice Perspective

Dr. Arvinder Singh, Panacea Disability Rights Activists, India | November 2026

Abstract

Climate change and disaster events threaten human security, livelihoods, infrastructure and sustainable development. Their effects, however, are not experienced equally. Persons with disabilities may face additional barriers before, during and after emergencies when warnings, evacuation routes, transportation, shelters, healthcare and recovery programmes are not accessible. These barriers are shaped by institutional design, social inequality and exclusion from decision-making rather than by impairment alone.

This paper examines disability inclusion in climate change adaptation and disaster risk reduction through an international human-rights perspective. It analyses the Convention on the Rights of Persons with Disabilities (CRPD), the Sendai Framework for Disaster Risk Reduction 2015–2030, the Sustainable Development Goals and selected national policy approaches in India, Japan, Australia, the United States and the United Kingdom. It also analyses selected findings from the UNDRR 2023 Global Survey on Persons with Disabilities and Disasters, which received 6,342 responses from 132 countries.

The study uses qualitative doctrinal and comparative policy analysis based on international instruments, government guidance, institutional reports and published research. It proposes a five-pillar Disability-Inclusive Climate Resilience Framework comprising accessible information, inclusive preparedness, accessible evacuation, inclusive emergency response and equal recovery. The paper argues that disability inclusion must be treated as a core requirement of climate resilience and disaster governance, supported by universal design, meaningful participation, adequate financing, disaggregated data and accountable institutions.

Keywords: Disability inclusion; climate change; disaster risk reduction; climate justice; human rights; CRPD; Sendai Framework; accessibility; emergency preparedness; institutional accountability.

1. Introduction

Climate change is intensifying risks associated with heat, heavy precipitation, drought, wildfire, sea-level rise and other hazards. Disaster impacts are mediated by exposure, vulnerability, preparedness and the capacity to respond and recover. Persons with disabilities can encounter additional barriers when public systems assume that everyone can receive warnings in the same way, use stairs, travel independently, understand complex instructions or access services without support.

A deaf person may not receive an audio-only warning; a blind person may not perceive a visual-only alert; a wheelchair user may be unable to use an inaccessible evacuation route; and a person who relies on assistive technology may lose access when power, connectivity or equipment is disrupted. People with intellectual or psychosocial disabilities may need information in understandable formats, predictable support and continuity of trusted services. These examples illustrate the interaction between a hazard and an environment that has not been designed inclusively.

The central concern is therefore not that disability automatically creates helplessness. Rather, inaccessible systems and unequal access to resources can turn a hazard into a disproportionate risk. A rights-based approach shifts attention from presumed individual vulnerability to the removal of physical, communication, institutional and attitudinal barriers.

The World Health Organization estimates that approximately 1.3 billion people, or 16 per cent of the global population, experience significant disability. This scale makes disability inclusion indispensable to climate adaptation and disaster-risk reduction [1].

2 Statement of the Research Problem

International instruments increasingly recognise the rights of persons with disabilities in situations of risk. Yet the practical availability of accessible warnings, evacuation support, shelters, healthcare and recovery services remains uneven. A policy may acknowledge disability inclusion without assigning clear responsibilities, funding, monitoring indicators or accessible complaint mechanisms.

The research problem is the gap between formal commitments and operational practice. It asks whether climate and disaster-management systems are designed, funded and evaluated in ways that protect the rights, safety, dignity and participation of persons with disabilities throughout the disaster-management cycle.

3 Research Objectives and Questions

- To examine the relationship between disability rights, climate change and disaster risk reduction.
- To identify physical, communication, institutional and socioeconomic barriers experienced by persons with disabilities during emergencies.
- To analyse relevant international legal and policy frameworks, including the CRPD and Sendai Framework.
- To compare selected national policy approaches without assigning unsupported country rankings.
- To examine selected evidence from the UNDRR 2023 Global Survey.
- To assess India's statutory and policy framework, particularly Section 8 of the RPwD Act, 2016.
- To propose a practical framework for disability-inclusive climate resilience and institutional accountability.

Research questions

- How do inaccessible environments and services shape disaster-related risks for persons with disabilities?
- To what extent do international and national frameworks translate disability rights into operational preparedness and response?
- Are warning systems, evacuation routes, shelters and recovery services accessible to people with diverse disabilities?
- What institutional arrangements can make participation, monitoring and accountability meaningful?

4 Literature and Conceptual Framework

The social and human-rights models of disability provide the conceptual starting point. They understand disability-related exclusion as arising substantially from the interaction between impairment and barriers in society. In disaster contexts, barriers may include inaccessible information, buildings, transport, procedures and services. The CRPD reinforces this approach through principles of dignity, autonomy, non-discrimination, accessibility and participation [2].

Disaster-risk research also emphasises that risk is shaped by hazard, exposure, vulnerability and capacity. Disability inclusion therefore belongs within mainstream risk governance rather than in a separate, after-the-fact relief programme. The Sendai Framework recognises persons with disabilities and their organisations as stakeholders whose knowledge and participation are important to disaster-risk reduction [3].

Climate justice adds an equity dimension. People who have contributed least to climate change may experience severe impacts because of poverty, insecure housing, unequal access to healthcare, discrimination or exclusion from decision-making. An intersectional analysis is necessary because disability interacts with gender, age, income, location, race, displacement and other social conditions.

The literature and policy frameworks point to four analytical principles used in this paper: (i) accessibility by design; (ii) participation of persons with disabilities and their representative organisations; (iii) continuity of essential support and services; and (iv) accountable implementation supported by evidence.

5 Research Methodology

The study adopts a qualitative, descriptive, doctrinal and comparative research design. It draws on international conventions, national legislation, government guidance, institutional reports and selected peer-reviewed research. The analysis is organised around the disaster-management cycle and the rights-based principles of equality, accessibility and participation.

5.1 Sources and method

- **Primary legal and policy sources:** CRPD, Sendai Framework, RPwD Act, 2016, disaster-management statutes and official government guidance.
- **Institutional evidence:** UNDRR Global Survey 2023, WHO publications, national emergency-management resources and UN reports.
- **Comparative approach:** India, Japan, Australia, United States and United Kingdom are examined through documented policy anchors and implementation questions.
- **Statistical treatment:** survey percentages are reproduced as reported by UNDRR and interpreted as responses to distinct survey questions.

5.2 Limitations

The paper relies primarily on secondary sources. It does not claim to represent all countries or all persons with disabilities. National policy documents are not equivalent to independent evidence of implementation. Country-specific implementation outcomes require further local audits, interviews and administrative data. The UNDRR survey is a substantial multi-country survey, but its respondents should not be treated as a probability sample of the entire global population.

6 International Legal and Policy Framework

6.1 Convention on the Rights of Persons with Disabilities

Article 11 of the CRPD requires States Parties to take necessary measures to ensure the protection and safety of persons with disabilities in situations of risk, including natural disasters, humanitarian emergencies and armed conflict [2]. Article 9 on accessibility, Article 5 on equality and non-discrimination, Article 6 on women with disabilities, Article 7 on children with disabilities and Article 32 on international cooperation are also relevant.

6.2 Sendai Framework for Disaster Risk Reduction 2015–2030

The Sendai Framework identifies four priorities: understanding disaster risk; strengthening disaster-risk governance; investing in resilience; and enhancing preparedness for effective response and to build back better [3]. Its inclusive approach recognises persons with disabilities as contributors and stakeholders in disaster-risk reduction.

6.3 Paris Agreement and climate policy

The Paris Agreement's preamble recognises the importance of respecting, promoting and considering human-rights obligations when taking climate action, including the rights of persons with disabilities [4]. This supports the integration of accessibility and equality into adaptation, resilience and climate-related public services.

6.4 Sustainable Development Goals

SDG	Relevance to disability-inclusive climate resilience
SDG 3 – Good Health and Well-being	Accessible emergency healthcare, medicines and rehabilitation.
SDG 5 – Gender Equality	Protection and participation of women and girls with disabilities.
SDG 10 – Reduced Inequalities	Equal access to protection, resources and decision-making.
SDG 11 – Sustainable Cities and Communities	Accessible, safe and resilient infrastructure and settlements.
SDG 13 – Climate Action	Inclusive adaptation, preparedness and resilience.

7. Disability and Disaster Vulnerability

Disaster vulnerability is not uniform across disability groups. A person's support requirements, the hazard, the built environment, available services and social networks all influence the outcome.

- 7.1 **Physical and mobility barriers:** Stairs, narrow exits, damaged pavements, inaccessible vehicles and shelters without accessible toilets can prevent or delay evacuation. Lifts may be unavailable during power failures. Accessible routes and evacuation procedures must be planned in advance.
- 7.2 **Information and communication barriers:** Audio-only, visual-only or text-only warning systems exclude people who cannot access that format. Accessible warnings should use multiple channels, including audio, visual, text, captioning, sign-language interpretation, screen-reader-compatible digital content and Easy Read formats.
- 7.3 **Continuity of healthcare and assistive technology:** Disasters can interrupt medicines, dialysis, oxygen, electricity-dependent equipment, rehabilitation, personal assistance and communication devices. Emergency plans should protect continuity of essential supports and provide safe replacement or repair pathways for damaged assistive products.
- 7.4 **Intellectual and psychosocial disabilities:** Complex instructions, unfamiliar environments and disrupted support networks may create additional barriers. Plain-language information, trusted support, predictable procedures, quiet spaces where feasible and continuity of mental-health services should be considered.
- 7.5 **Poverty, gender and location:** Poverty, insecure housing, rural isolation, gender inequality and age can compound disability-related barriers. Disaster planning should use an intersectional approach and avoid treating persons with disabilities as a homogeneous group.

8 Global Disability and Disaster-Risk Overview

The global scale of disability means that accessible disaster-risk reduction is a mainstream public-policy requirement. The conceptual overview below summarises the population estimate and the principal barrier pathways examined in this paper.

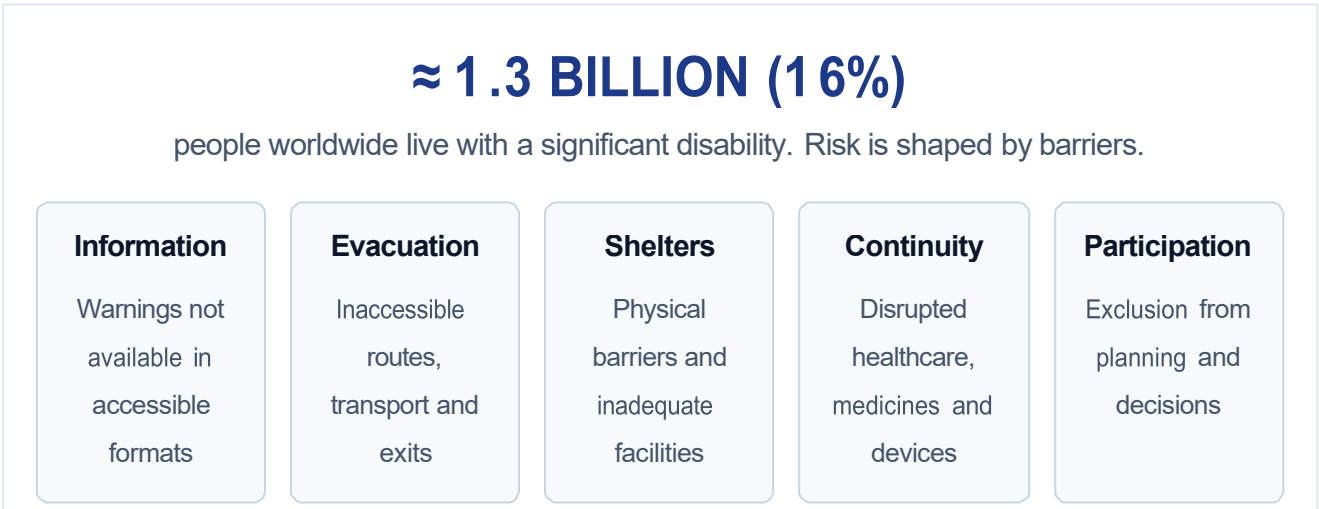

Figure 1. Global disability and disaster-risk conceptual overview. The 1.3 billion estimate is attributed to WHO; barrier categories are a conceptual synthesis.

9 International Case-Study Perspectives

9.1 Japan: Great East Japan Earthquake and tsunami, 2011

The 2011 earthquake and tsunami exposed serious evacuation and support challenges for people with disabilities and older people. A peer-reviewed study of affected areas reported an odds ratio of 2.32 for deaths among persons with disabilities in the study areas [10]. This is a geographically and methodologically bounded finding; it should not be generalised as a universal disaster mortality ratio. Japan's subsequent policy attention to lists of people requiring evacuation support and individual evacuation plans provides a relevant institutional case [11].

9.2 United States: emergency programme accessibility

The US Department of Justice explains that state and local emergency-management programmes must comply with the Americans with Disabilities Act. Its guidance addresses emergency alerts, evacuation and transportation, and equal access to emergency shelters [12]. This provides a legal and administrative reference for examining whether emergency services are accessible in practice.

9.3 Australia: co-designed emergency-management resources

Australia's Disability Inclusive Emergency Management (DIEM) initiative and toolkit were co-designed with people with disability and their support networks. The toolkit is intended to help governments, emergency planners and disability and community organisations assess preparedness and strengthen inclusive practice [13]. The model illustrates the value of co-design, although adoption and implementation should be evaluated separately.

9.4 Floods, heatwaves and wildfire emergencies

Floods may isolate communities, damage accessible routes and interrupt healthcare. Heatwaves can create additional risks for people who depend on electricity-powered equipment, temperature-sensitive medicines or regular personal assistance. Wildfires may require rapid evacuation and accessible warning systems. These hazards demonstrate why emergency planning must be multi-hazard and tailored to local conditions.

10. Comparative Five-Country Policy Assessment

The matrix compares documented policy anchors and mechanisms in five countries. It deliberately avoids numerical scores or claims that one country performs better overall. A policy instrument indicates a formal commitment or mechanism; it does not, by itself, prove consistent implementation.

Figure 2. Comparative five-country assessment matrix.

Country	Policy anchor / documented mechanism	Implementation question
India	RPwD Act 201 6, Section 8; NDMA Disability Inclusive Disaster Risk Reduction Guidelines (201 9).	Are duties reflected in district plans, accessible alerts, evacuation, shelter and reconstruction?
Japan	Disaster-management legislation and Cabinet Office guidance on evacuation support lists and individual evacuation plans.	Are individual plans co-produced, current, resourced and tested?
Australia	Disability Inclusive Emergency Management initiative and co-designed toolkit.	How consistently are toolkit principles adopted across jurisdictions and local organisations?
United States	Americans with Disabilities Act and federal emergency-planning guidance.	Do local alerts, transport, evacuation and shelter programmes provide equal access?
United Kingdom	Civil Contingencies Act 2004 and government emergency-preparedness guidance.	How are disability-specific needs integrated into local resilience planning and accessible communications?

The comparative analysis suggests that useful policy mechanisms exist across the selected jurisdictions, but the nature of those mechanisms differs. India has an explicit disability statute provision concerning disaster protection; Japan has an individual evacuation planning mechanism; Australia offers a co-designed emergency-management toolkit; the United States has ADA-based accessibility duties for emergency programmes; and the United Kingdom has a general civil-protection planning framework. The next research step is to assess implementation through local plans, accessibility audits, exercises, budgets and lived-experience evidence.

11. UNDRR 2023 Global Survey: Evidence of Participation and Preparedness Gaps

The UNDRR 2023 Global Survey on Persons with Disabilities and Disasters received 6,342 responses from 132 countries. It followed the 2013 survey and examined preparedness, access to risk information, awareness of disaster-risk reduction plans and participation in decision-making [5].

Selected findings indicate that 84% of respondents reported having no personal disaster-preparedness plan; 11% were aware of national-level DRR plans; 14% were aware of subnational plans; 8% reported that local DRR plans addressed the specific needs of persons with disabilities; 86% reported limited participation in community-level DRR decision-making and planning; 57% indicated willingness to participate; and 56% reported not being aware of or not having access to risk information in accessible formats.

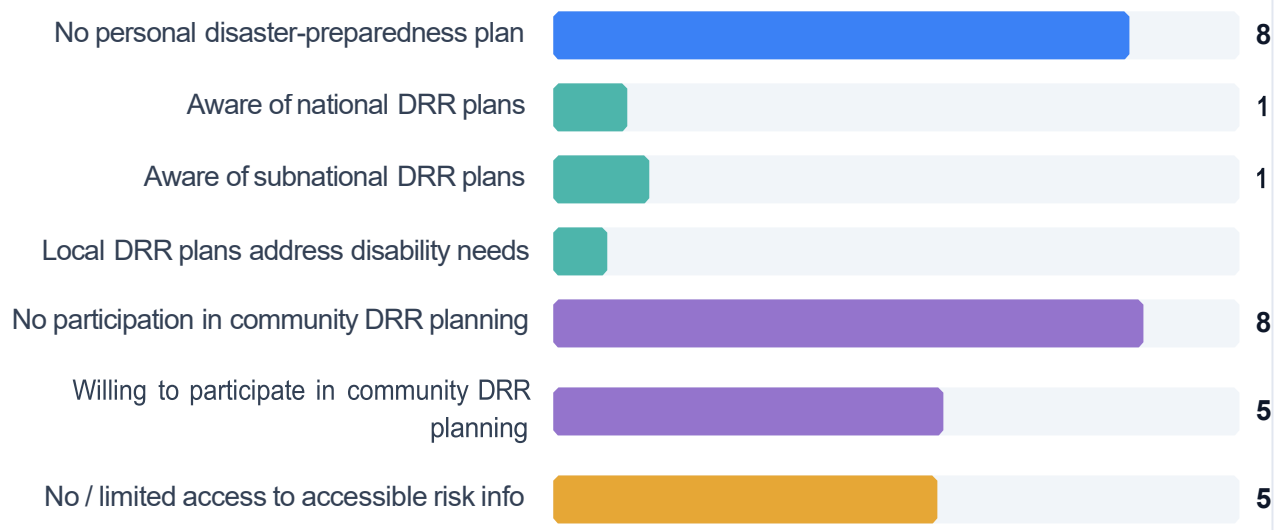

Figure 3. Selected UNDRR 2023 Global Survey findings (n = 6,342 from 132 countries). Each bar represents a separate survey question.

11.1 Implications

- The high share reporting no personal preparedness plan points to the need for accessible preparedness education and community support.
- Low awareness of national and subnational plans suggests that public plans need to be communicated in accessible, understandable formats.
- The 8% result highlights the need to test whether local plans explicitly address disability-related requirements.
- The participation gap, alongside the willingness to participate, supports a shift from consultation as an occasional exercise to sustained co-design and representation.
- The reported lack of accessible risk information makes multi-format warnings and accessible digital communication essential.

12. Disaster-Management Cycle: Disability Inclusion at Every Stage

Disability inclusion must be integrated throughout mitigation, preparedness, response and recovery.
It should not be confined to emergency relief.



Figure 4. Disability-inclusive disaster-management cycle. Accessibility and participation are cross-cutting requirements.

13. India: Legal and Institutional Framework

13.1 Rights of Persons with Disabilities Act, 2016

Section 8 of the RPwD Act, 2016 is directly relevant. It provides for equal protection and safety of persons with disabilities in situations of risk, humanitarian emergencies and natural disasters. It assigns responsibilities to the National and State Disaster Management Authorities to include persons with disabilities in disaster-management activities; requires District Disaster Management Authorities to maintain relevant information and communicate risk; and requires reconstruction authorities to consider accessibility in consultation with the State Commissioner for Persons with Disabilities [6].

13.2 Disaster Management Act, 2005 and NDMA guidance

The Disaster Management Act, 2005 establishes national, state and district disaster-management institutions. The National Disaster Management Authority's 2019 guidelines on Disability Inclusive Disaster Risk Reduction provide a policy resource for integrating disability inclusion into preparedness, response and recovery [7].

13.3 Implementation questions for India

- Do district disaster-management plans include disability-specific actions, assigned officers, budgets and timelines?
- Are warning messages available in sign language, captions, audio, accessible digital formats and plain language?
- Are evacuation routes, vehicles and designated shelters physically accessible?
- Are people with disabilities and their representative organisations included in local risk assessments and mock drills?
- Are essential medicines, assistive devices, rehabilitation and personal assistance considered in continuity plans?
- Are reconstruction projects assessed for accessibility and monitored after completion?

The statutory framework creates a basis for accountability, but its practical effectiveness must be tested through district-level records, plans, budgets, drills, shelter audits and accessible grievance mechanisms.

14. Intersectional Climate Vulnerability

Persons with disabilities are not a homogeneous group. Gender, age, income, rural or urban location, displacement, type of impairment and availability of support can shape disaster experiences. Women and girls with disabilities may face additional risks relating to privacy, sanitation, reproductive healthcare and gender-based violence in temporary shelters. Children with disabilities may require continuity of education, family support and accessible protection services. Older persons with disabilities may face combined mobility, health and communication barriers.

People living in poverty may have fewer resources to obtain accessible housing, transport, backup power, insurance or replacement assistive products. Rural communities may face longer distances to healthcare and fewer accessible transport options. These intersections require disaggregated analysis and policies designed around individual requirements rather than stereotypes.

15. Proposed Five-Pillar Disability-Inclusive Climate Resilience Framework

This paper proposes a five-pillar conceptual framework to connect rights, preparedness and institutional practice. The framework is a synthesis developed for this study; it is not presented as an existing UN framework or as an empirically validated model.

Figure 5. Proposed five-pillar Disability-Inclusive Climate Resilience Framework (Core Requirements & Indicators)

Pillar	Core requirements	Illustrative indicators
1. Accessible information	Multi-format alerts; accessible risk maps; captioning; sign language; Easy Read; screen-reader-compatible content.	Share of warning channels tested with diverse users; accessible-format availability.
2. Inclusive preparedness	Co-designed plans; community drills; individual plans where required; trained staff.	Plans reviewed with OPDs; drills include people with different disabilities.
3. Accessible evacuation	Accessible routes, vehicles, exits, assistance arrangements and shelter access.	Accessibility audit results; availability of accessible transport and evacuation support.
Pillar	**Core requirements**	**Illustrative indicators**
4. Inclusive response	Accessible shelters, sanitation, healthcare, medicines, assistive products and personal support.	Shelter accessibility; continuity of essential services; complaints resolved.
5. Equal recovery	Accessible reconstruction, housing, education, livelihoods, rehabilitation and social protection.	Reconstruction compliance; recovery assistance access; participation in recovery decisions.

Cross-cutting foundations apply to all pillars: human rights and non-discrimination; universal design and reasonable accommodation; meaningful participation ofpersons with disabilities and their organisations; and transparent institutional accountability.

16. Policy Implementation and Accountability Framework

Policy commitments require a traceable chain from legal obligation to implementation, monitoring and remedy. The proposed framework below is intended for national, state, district and local authorities.

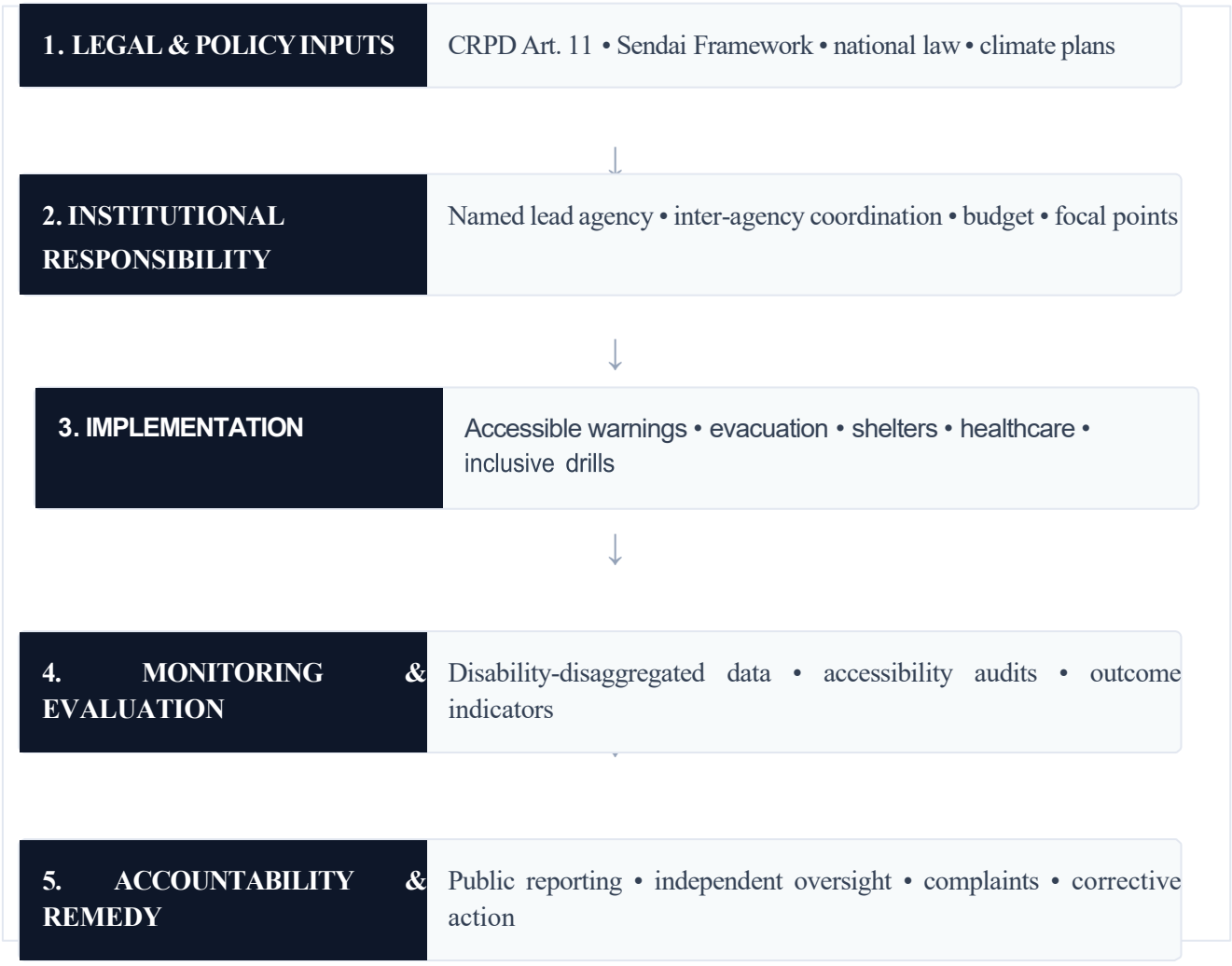

Figure 6. Proposed policy implementation and accountability framework. Feedback loop: findings, complaints and lived experience revise policy, budgets and practice.

17. Recommendations

- **Mainstream disability inclusion:** Every national and subnational climate adaptation and disaster-risk plan should identify disability-related risks, actions, responsible agencies, budgets and monitoring indicators.
- **Make early-warning systems accessible by design:** Use redundant communication channels: audio, visual, text, captioned video, sign-language interpretation, accessible mobile alerts and plain-language formats.
- **Audit and improve evacuation and shelter accessibility:** Assess routes, transport, exits, sanitation, sleeping areas, charging facilities, service-animal arrangements and access to personal assistance.
- **Co-design plans with persons with disabilities:** Involve diverse persons with disabilities and their representative organisations in risk assessment, plan design, exercises, evaluation and recovery.
- **Protect continuity of essential support:** Include medicines, assistive products, rehabilitation, personal assistance, backup power and accessible healthcare in emergency continuity plans.
- **Use ethical and useful disability-disaggregated data:** Collect only necessary data, protect privacy, obtain appropriate consent and use information to improve planning rather than to stigmatise or expose individuals.
- **Train emergency personnel:** Provide practical training in disability awareness, communication, safe evacuation, reasonable accommodation and protection from exploitation.
- **Adopt intersectional safeguards:** Address the distinct needs of women, children, older persons, people with intellectual or psychosocial disabilities, and people in rural or displaced settings.
- **Fund accessibility and reasonable accommodation:** Include accessibility costs in climate finance, infrastructure budgets, preparedness programmes and recovery funds.
- **Establish public accountability:** Publish progress against indicators, conduct independent audits, maintain accessible grievance mechanisms and require time-bound corrective action.

18. Findings and Discussion

- **A persistent policy-to-practice challenge.** International commitments are clear, but evidence from the UNDRR survey shows continuing gaps in preparedness, accessible risk information and participation.
- **Preparedness requires public support.** The finding that 84% of respondents reported no personal preparedness plan signals a need for accessible education and institutional support; it should not be interpreted as individual fault.
- **Local planning is a critical point of implementation.** Only 8% reported that local DRR plans addressed the specific needs of persons with disabilities, highlighting the importance of district and municipal planning.

- **Participation is both a rights requirement and a practical resource.** The contrast between 86% reporting limited participation and 57% willing to participate supports sustained, accessible participation mechanisms.
- **Accessibility must cover the whole cycle.** Information, evacuation, shelters, healthcare and recovery are interdependent; a failure at one stage can undermine the entire response.
- **Country mechanisms are diverse.** The five-country comparison identifies different policy tools, but none can be judged effective solely by the existence of a law, plan or toolkit.
- **Accountability needs measurable indicators.** Named responsibilities, budgets, public reporting, independent audits and accessible remedies are necessary to convert policy into practice.

19. Limitations and Future Research

This paper is based on secondary research and selected official sources. The five-country comparison is not a comprehensive legal survey and does not independently measure implementation. The UNDRR survey findings relate to its respondents and cannot be treated as

representative prevalence estimates for all persons with disabilities. The proposed five-pillar framework is conceptual and requires empirical validation.

Future research should include: (i) district-level audits of accessible warnings, evacuation routes and shelters; (ii) interviews and participatory research with persons with diverse disabilities; (iii) analysis of disaster-related mortality, injury and displacement data where ethically and methodologically appropriate; (iv) comparative evaluation of national and local plans; and (v) assessment of disability inclusion in climate adaptation finance and recovery programmes.

20. Conclusion

Climate change and disasters expose and deepen existing inequalities. Persons with disabilities may face additional risks when emergency systems are inaccessible, when essential support is interrupted and when decisions are made without their participation. These outcomes are not inevitable consequences of disability; they are shaped by the design and operation of institutions, infrastructure and services.

The CRPD, particularly Article 11, and the Sendai Framework provide a strong international basis for disability-inclusive disaster risk reduction. India's Section 8 of the RPwD Act, 2016 provides a domestic statutory foundation, while the policy approaches examined in Japan, Australia, the United States and the United Kingdom offer different mechanisms for further study. The UNDRR 2023 survey provides important respondent-based evidence of gaps in preparedness, accessible information and participation.
The proposed five-pillar Disability-Inclusive Climate Resilience Framework seeks to connect accessible information, inclusive preparedness, accessible evacuation, inclusive emergency response and equal recovery. Its implementation requires universal design, reasonable accommodation, meaningful participation, ethical data, adequate finance and transparent accountability.

Climate resilience cannot be considered complete if persons with disabilities are unable to receive warnings, evacuate safely, access shelters, obtain healthcare or participate in recovery. A resilient society is one in which every person can prepare, receive protection, contribute to decisions and rebuild with dignity. Disability inclusion is therefore not an optional addition to climate action; it is a condition of rights-based and effective disaster governance.

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Appendices

Appendix A: Suggested Implementation Indicators

Domain	Illustrative indicator	Possible evidence source
Accessible warnings	Warning channels tested for audio, visual, text, captioning and screen-reader access.	Warning-system audits; user testing.
Preparedness	Local plans co-designed with persons with disabilities and reviewed periodically.	Published plans; meeting records; drill reports.
Evacuation	Accessible transport and evacuation support available under hazard-specific plans.	Transport protocols; exercise evaluations.
Shelters	Designated shelters audited for access, toilets, communication and essential services.	Accessibility audits; inspection records.
Participation	OPDs and diverse persons with disabilities represented in planning and review.	Committee records; consultation reports.
Recovery	Reconstruction and recovery programmes assessed for accessibility.	Project audits; public procurement and completion records.
Accountability	Named focal points, budgets, reporting and accessible complaints mechanisms exist.	Budget documents; annual reports; grievance data.

Appendix B: Note on Visuals and Data

The visual components represented in this document are formatted textually and structurally for clarity. Figure 1 is a conceptual global overview. Figure 2 presents the paper's proposed five-pillar framework. Figure 3 is a descriptive policy matrix. Figure 4 plots selected UNDRR 2023 survey percentages. Figure 5 illustrates the disaster-management cycle. Figure 6 presents a proposed accountability chain.