

Gender Responsive, Socially Inclusive, and Climate-resilient Infrastructure

A Practitioner's User Guide on incorporating Gender

GCA Learning from Practice



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This series of *GCA Learning from Practice* notes provides a practical reference to support the design and implementation of climate adaptation analyses. Drawing on the experience and lessons from GCA programs, each note focuses on a specific methodological component, offering guidance on key concepts, minimum standards, and recommended practices to strengthen the quality, consistency, and usability of analytical outputs.

Intended for practitioners, analysts, and decision-makers, the notes aim to balance scientific rigor with operational relevance. By translating experience into clear methodological benchmarks and actionable guidance, the series supports credible analyses and enables more informed planning, investment, and adaptation decisions.

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Abbreviations

CCGAP	Climate Change and Gender Action Plan
CReLIC	Climate Resilient Local Infrastructure Centre
DPP	Development Project Proforma / Proposal
DRR	Disaster Risk Reduction
ECNEC	Executive Committee of the National Economic Council
ERD	External Resources Division
GAP / GAPs	Gender Action Plan(s)
GBM	Ganges-Brahmaputra-Meghna river system
GBV	Gender-based Violence
GEDSI	Gender Equality, Disability and Social Inclusion
GESAP	Gender Equality Strategy and Action Plan
GHG	Greenhouse Gas
GRMs	Grievance Redress Mechanisms
GVA	Gender Vulnerability Assessment
LDC	Least Developed Country
LGED	Local Government Engineering Department
M&E	Monitoring and Evaluation
MEL	Monitoring, Evaluation and Learning
MIC	Middle-Income Country
MoEFCC	Ministry of Environment, Forest and Climate Change

MoFi	Ministry of Finance
MoWCA	Ministry of Women and Children Affairs
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
O&M	Operation and Maintenance
PPA	Public Procurement Act
PPP / PPPs	Public-Private Partnership(s)
PPR	Public Procurement Rules
PwDs	Persons with Disabilities
SADDD	Sex-, Age-, and Disability-Disaggregated Data
SEAH	Sexual Exploitation, Abuse, and Harassment
SIA	Social Impact Assessment
TORs	Terms of Reference
WMA / WMAs	Water Management Association(s)

Preface

As climate change increases the frequency and severity of climate-related hazards, it intensifies existing gender and inclusion vulnerabilities and introduces new risks. Traditional methods tend to address physical climate risks and gender objectives independently. However, climate hazards do not exist in isolation; they interact with and exacerbate social inequalities. Effective resilient infrastructure must therefore integrate gender and climate considerations rather than treating them as separate issues. Adopting an intersectional approach that links gender, climate, and infrastructure is essential. Gender-responsive, socially inclusive, climate-resilient infrastructure focuses on these intersections, ensuring social resilience alongside physical durability.

Bangladesh is highly exposed to climate risks because of its low-lying deltaic geography and the concentration of large river flows during the monsoon season. Over 80 percent of annual river flows pass through the country's flat terrain within four monsoon months (June to September), creating recurring conditions of excess water during the monsoon and shortages during the dry season. Rising temperatures, increasingly variable rainfall, and warming coastal waters are intensifying these pressures, contributing to more frequent extreme events such as floods, sudden heavy rainfall, and related hazards, reinforcing the country's high climate vulnerability.

Climate change does not affect all population groups equally. While floods, droughts, and cyclones threaten all Bangladeshis, their impacts fall disproportionately on those who face pre-existing vulnerabilities, whether due to gender, disability, age, ethnicity, or economic marginalization. Vulnerable groups already face structural barriers, such as limited mobility and restricted access to economic resources. The interaction of climate hazards with social and gender vulnerabilities creates compounded risks that did not exist before; understanding these differential vulnerabilities is essential for designing infrastructure that truly serves all.

Infrastructure plays a fundamental role in Bangladesh's economic development and societal well-being. It is crucial that all infrastructure be climate resilient to ensure the country's development in the coming decades. The lifecycle of public infrastructure governance in Bangladesh proceeds through four sequential phases: Needs Identification, Planning Infrastructure, Delivering Infrastructure, and Managing Infrastructure. Each phase involves distinct governance processes, key stakeholders, and policy instruments that together determine how infrastructure is conceived, approved, constructed, and maintained. Understanding this lifecycle is essential for identifying intervention points where gender, inclusion, and climate resilience considerations can be most effectively integrated.

Purpose and Audience

This guide serves as a concise, practical reference guide for policymakers and infrastructure practitioners seeking to integrate gender, climate and social inclusion considerations in climate adaptation projects across various sectors, including transport, energy, and social infrastructure. It is designed for government officials, project developers, financiers, consultants, and other stakeholders involved in planning and implementing infrastructure in Bangladesh. The content is practice-oriented, featuring real-world examples and actionable checklists that can be readily applied across diverse contexts and sectors. The guide demonstrates how resilient infrastructure is strengthened when it responds simultaneously to climate risks and to Gender Equality Disability and Social Inclusion (GEDSI) dimensions of access, safety, livelihoods, and governance, and it offers recommendations to support this.

Methodology

This guide has been developed through comprehensive review of existing resources and best practices, in consultation with academic experts, infrastructure users and practitioners with direct experience implementing climate-resilient infrastructure projects. It reflects lessons learned from real projects, offering practical insights into both successful approaches and common challenges.

A background literature review identified global and Bangladesh-specific best practices, frameworks, and gaps related to GEDSI integration in climate-resilient infrastructure. The review also identified

infrastructure types and vulnerability contexts, and provided an analysis of adaptive responses and their institutional uptake. In addition, extensive fieldwork was undertaken in Bangladesh across 10 locations, including 17 Focus Group Discussions with over 320 participants, and 75 Key Informant Interviews (KIIs) across all stakeholder groups. Institutional-level KIIs at both asset and national levels were also undertaken. This generated strong evidence to inform this guide on how climate hazards impact people differently across gender, age, ability, and other social factors, resulting in distinct vulnerabilities and infrastructure needs across different groups.

How to Use This Guide

The guide identifies critical entry points for embedding gender and social inclusion as core dimensions of climate-resilient infrastructure across all phases of Bangladesh's infrastructure lifecycle. By presenting clear actions and practical tips for the implementation of GEDSI interventions across the lifecycle, the guide enables policymakers and practitioners to integrate these interventions into existing processes rather than creating parallel workflows. This is essential for mainstreaming GEDSI considerations into climate-resilient infrastructure practices, moving from isolated pilot projects to systematic implementation at scale.

Policymakers and other key stakeholders should use the knowledge and actions outlined in this guide to develop infrastructure that adequately serves all members of Bangladeshi society, while withstanding climate variability and adapting to future changes.

1. The Need For Gender-Responsive And Socially Inclusive Resilient Infrastructure

As Bangladesh transitions from a Least Developed Country (LDC) to a middle-income country (MIC), it must simultaneously address multiple development imperatives. To highlight this need, this section examines the intersections between climate risks, gender equality, and social inclusion concerns in infrastructure development. This provides justification and introduction for the comprehensive interventions to integrate Gender Equality, Disability and Social Inclusion (GEDSI) principles with climate resilience throughout the infrastructure lifecycle in Section 3.

1.1 Climate Risks In Bangladesh

Geographic and hydrological context

Bangladesh occupies the largest delta on Earth, with over 50 percent of its landmass located within 10 metres of the mean sea level. The country is traversed by numerous rivers that constitute the tributaries and distributaries of three of the world's largest river systems: the Ganges, the Brahmaputra, and the Meghna. The combined catchment of the Ganges-Brahmaputra-Meghna (GBM) river system spans 1.75 million square kilometres. Yet Bangladesh – comprising only 7 percent of this combined catchment area – receives over 92 percent of the 1,160 billion cubic metres of annual flow volume.

This hydrological reality creates Bangladesh's fundamental climate challenge: over 80 percent of annual river flows pass through the country's flat terrain within four monsoon months (June to September). The acute temporal and spatial distribution of water results in too much water during the monsoon and too little during the dry season – both conditions triggering climate-driven hazards, including floods, flash floods, waterlogging, and drought.

The country exhibits a tropical monsoon climate with an annual average temperature of around 25°C and an annual average rainfall of around 2,500mm. However, significant spatial variation exists: the central western region experiences the highest temperatures, while the north-eastern region receives the highest annual rainfall. This geographic variability in climate parameters, combined with the overwhelming regional distribution of transboundary flows and flat topography, presents a very high climate vulnerability.

Observed climate trends and future projections

Model projections and climatic trend analyses indicate that Bangladesh will face severe climate-induced vulnerabilities in the coming decades. Key observed trends include:

- **Temperature increases:** Significant rises in annual and seasonal temperatures across the country, with night-time temperatures increasing faster than daytime maximum temperatures. The daytime temperature range has been declining, resulting in extremely mild winters and the near-disappearance of distinct post-monsoon autumn seasons.
- **Rainfall pattern changes:** While average annual rainfall has not changed significantly between 1960 and 2020, the monsoon structure has been shifting towards longer periods of sharper rainfall episodes, sometimes including non-rainy periods within the monsoon. This lack of predictability has the potential to impact current agricultural practices.
- **Sea surface temperature rise:** The Bay of Bengal has experienced steadily rising sea surface temperatures over five to six decades. This has significantly increased the likelihood of exceeding the 26.7°C threshold for cyclone formation, resulting in more frequent cyclonic disturbances during monsoon months.
- **Extreme event frequency:** Climate change-induced ocean, land, and air energy exchange has resulted in greater moisture availability, causing more frequent cloud outburst events and sudden floods. The frequency of extreme rainfall episodes (over 100mm in 24 hours) has increased across the GBM catchment, triggering landslides in hilly terrains.

Regional distribution of climate hazards

Bangladesh's diverse geographic regions face distinct climate stresses. The National Adaptation Plan (NAP) identifies the following climate stress areas and their associated hazards:

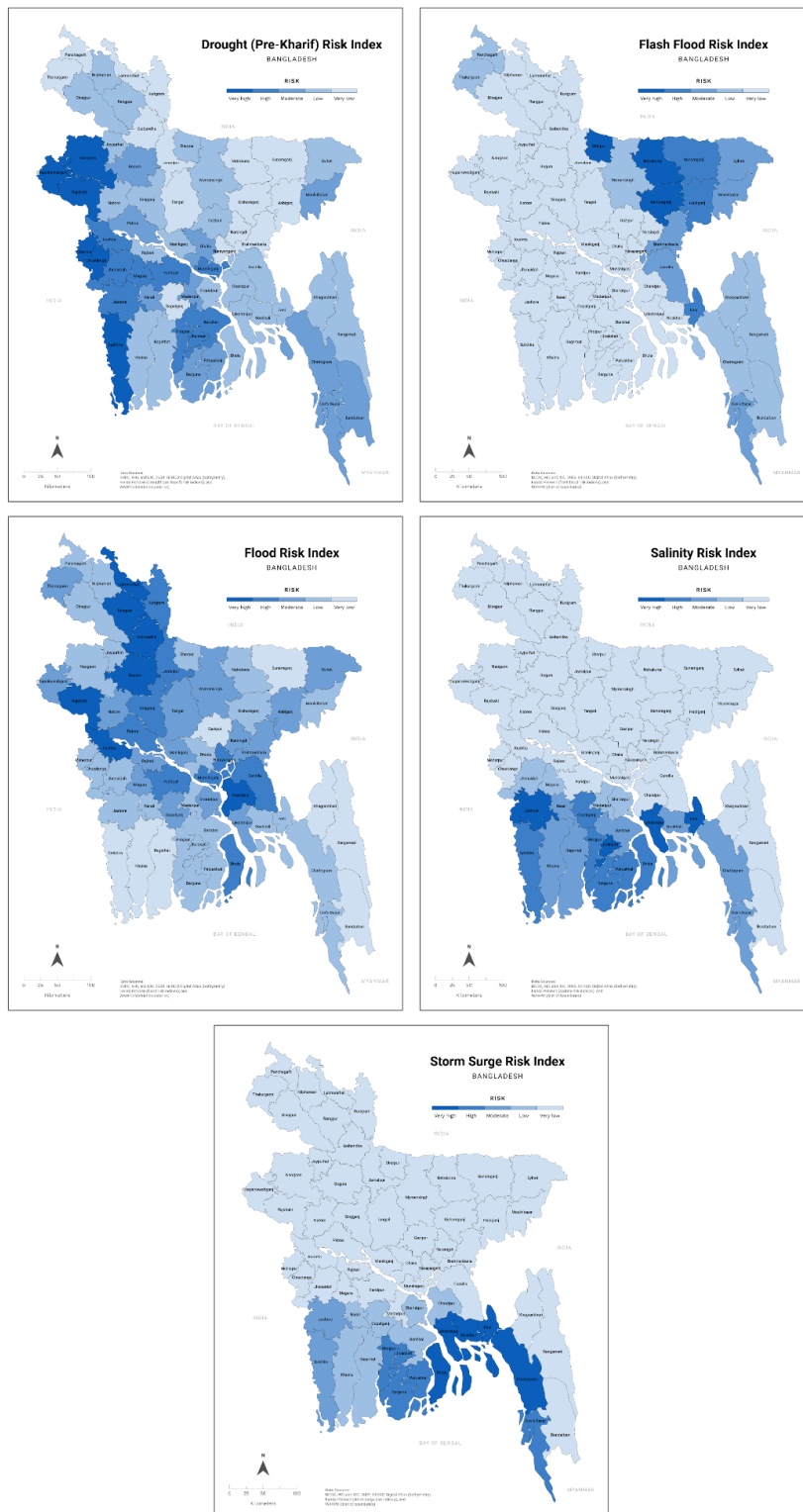


Figure 1: Drought, flash flood, flood, salinity and storm surge severity in Bangladesh due to climate change. (Source: ADB, 2022¹)

¹ Asian Development Bank (2021) Bangladesh Climate and Disaster Risk Atlas: Exposures, Vulnerabilities, and Risks — Volume II. Manila: Asian Development Bank. ISBN: 978-92-9269-280-3. [Link](#).

Importance of infrastructure for economic and societal well-being

Infrastructure plays a fundamental role in Bangladesh's economic development and societal well-being. It is crucial that all infrastructure be climate resilient to ensure the country's development in the coming decades. The country's landscape exhibits distinct infrastructure typologies that serve multiple functions:

- **Connectivity infrastructure:** Road and railway networks enable mobility, market access, and service delivery. Ensuring connectivity is critical for women and marginalized groups to participate in the economy, as cultural and religious values reduce their transportation alternatives. The recent expansion of service sectors stems directly from improved connectivity and communication infrastructure.
- **Energy infrastructure:** Electricity production, transmission and distribution networks power economic activities, healthcare facilities, and domestic services. Over 1.4 million small irrigation pumps depend on energy infrastructure for dry-season agriculture.
- **Water supply infrastructure:** Ponds, tube wells, and water treatment facilities – particularly along coastal areas – provide potable water for rural populations. Urban areas rely on piped water supply systems.
- **Social infrastructure:** Educational centres, healthcare facilities, and marketplaces in growth centres support human capital development and economic exchange.
- **Protective infrastructure:** Embankments in floodplains and polders in coastal areas offer protection services against floods and cyclonic storm surges. These structures are essential for safeguarding agricultural production and human settlements.
- **DRR infrastructure:** Multi-purpose cyclone and flood shelters provide space for educational and administrative purposes during normal times, converting to relocation centres upon receipt of hazard warnings.

The role of transport infrastructure for food security and the economy in Bangladesh

Bangladesh relies heavily on food imports, making its port infrastructure and connectivity with the capital and the rest of the country crucial. International and riverine ports and food storage silos are only part of the transport infrastructure supporting food logistics systems. These systems enable value chains in agri-food systems that are critical for food security and the economy. As floods and cyclones intensify, resilient transport networks serve as lifelines for many areas of Bangladesh, maintaining food security despite frequent climate-related hazards.

Resilient transport is also critical to the economy and the livelihoods of millions of people. In August 2024, extensive flooding impacted the Dhaka-Chattogram highway and rail lines. This disaster halted freight transfers to and from the Chattogram port, Bangladesh's largest seaport that handles approximately 90% of the country's trade. After three days of disruption, the Bangladesh Garment Manufacturers and Exporters Association estimated that supply chains would be affected for at least two months due to delays in the import of raw materials².

Climate-induced hazards and infrastructure impacts

Climate change accentuates known hazards, including floods, droughts, and cyclonic storm surges. These intensified hazards adversely affect infrastructure functionality and service delivery.

Flood impacts

- Disrupted road and railway communication
- Urban waterlogging disrupts city functioning
- Inundated hinterlands if high floods overtop flood control and drainage infrastructure
- Educational institutions become inaccessible or are purposefully converted into temporary shelters

² Suman and Chagma (2024, August 25). Floods cripple key transport highway for third day. The Daily Star. [Link](#).

	<ul style="list-style-type: none"> • Deteriorated water quality leading to rapid spread of water-borne diseases, for instance, when tubewells get inundated.
Cyclone and storm surge impacts	<ul style="list-style-type: none"> • Limited safe water supply due to power outages and contamination of surface and groundwater sources in coastal municipalities. • Storm surges damage roads, rail tracks, and embankments in coastal areas. • High winds damage transmission and distribution network equipment. • Bangladesh's electricity grid experiences an average 20% reduction in national supply during landfalling tropical cyclones, with coastal zones experiencing drops up to 38%.
Salinity and erosion impacts	<ul style="list-style-type: none"> • Salinity shortens infrastructure lifespan by accelerating corrosion of concrete structures and steel reinforcements. • Road surfaces develop cracks and potholes, requiring frequent repairs. • Infrastructure failures due to erosion along coastal polders and riverbanks disrupt services.
Heat stress and droughts	<ul style="list-style-type: none"> • Critical for food security, dry-season crops (such as Boro paddy) cannot sustain themselves due to increasing evapotranspirative losses, leading to much intensified irrigation needs. • Heat stress affects human health. Particularly, women's participation in the economy is affected by heat stress exacerbated by the urban heat island effect, given their greater sensitivity. • Railway tracks are subject to expansion, deformation, and occasional bending, which trigger derailments, operational delays, and losses.
Sea level rise	<ul style="list-style-type: none"> • As surge heights increase, coastal polders often experience premature overtopping during celestial effects. • Surges bring in saline water, salinizing agricultural lands and affecting productivity. • Coastal protective polders operations become increasingly difficult • Change in habitats and biodiversity, and loss of livelihoods;

Table 1: Key impacts of climate hazards on infrastructure

The imperative for climate-resilient infrastructure

Climate resilient infrastructure refers to infrastructure that can either withstand exacerbated hazard risks under climate change influence or continue providing services despite being affected by climate change. The case for investment in resilient infrastructure is compelling:

- **Provision of essential services:** Infrastructure provides public services, many of them essential for societies and economies to flourish. Ensuring they are resilient provides a solid base for development despite climate risks.
- **Protection services:** Flood control infrastructure must be designed to deliver protection during hazards, considering the increase in floods and cyclonic surges due to climate change. Resilient embankments and polders are needed to ensure croplands and critical areas remain free from inundation. Multi-purpose cyclone and flood shelters save lives during hazards.
- **Connectivity maintenance:** Roads require strengthening with adequate refurbishment, crest height enhancement, and improved drainage capacities to enable access to services, including healthcare and education, during climate events.
- **Value chain support:** Recent expansions in aquaculture and dairy farming depend on backward and forward linkage infrastructure. Cool chains, road networks, electricity infrastructure, and collection networks require climate-proofing to ensure business continuity.

- **Healthcare resilience:** Healthcare centres need a resilient design. Cool chains for stored medicines and hybrid electric services must be ensured for sustainable energy and quality-controlled medical products. Healthcare centers must ensure continuity and safe access during and after climate disasters.

1.2 Gender and Inclusion Considerations in Resilient Infrastructure

Existing gender and social vulnerabilities are reinforced by climate hazards. As women’s role in the economy increases, they expect more services from infrastructure. Infrastructure not only needs to be more resilient, it should also be built so that services are suitable to women, children, elders, persons with disabilities (PwDs), and ethnic and other marginal groups. Each of these groups faces different vulnerabilities requiring consideration in the overall infrastructure provision, operation, and maintenance.

Mainstreaming GEDSI entails ensuring that excluded groups and the processes of exclusion are acknowledged, understood, and addressed so that all can participate and progress equally and fairly in society. These vulnerabilities should be regularly reassessed in relation to current and future climate risks and considered in the infrastructure lifecycle.

Why infrastructure is not gender-neutral

Infrastructure provides the basis for social development and economic growth. For infrastructure to support everyone in society, it requires combining supply-side issues of technical design specifications with demand-side dimensions: who uses infrastructure, for what purposes, how it is financed, and the impacts on individuals, households, and communities.

The infrastructure lifecycle defines the public services provision and economic opportunities generated by infrastructure development, which are often markedly different for men and women. This occurs because men and women have different social roles and responsibilities, leading to different use of infrastructure. Although the traditional prevalence of male staff in infrastructure provision and operation is changing, there are still widespread gender disparities. The following table presents women’s employment in key infrastructure-related ministries and agencies as of 2023, highlighting both the current representation and gender-relevant budget allocation:

Ministry/Department/Agency	% of female employees	Gender Relevance of the in Ministry/Department/Agency Expenditure (2022-23, revised budget) ³
Ministry of Water Resources	12.2	34.4
Bangladesh Water Development Board	12.1	Data not available
Water Resources Planning Organization	9.7	Data not available
Ministry of Housing and Public Works	11.7	12.6
Ministry of Information and Broadcasting	15.9	65.0
Road Transport and Highway Division	4.7	50.4
Energy and Mineral Resources Division	18.6	10.9
Bangladesh Railway	4.1	61.4
Ministry of Civil Aviation and Tourism	11.4	0.3
Power Division	11.2	51.6
Local Government Division	12.7	47
Local Government Engineering Department	9.2	Data not available
Department of Public Health Engineering	17.8	Data not available

Table 2: Women’s employment and gender budget in the offices of infrastructure-related custodian agencies/departments/ministries in Bangladesh

Source: Finance Division, 2023. Gender Budget Report, 2023-24. Ministry of Finance, Government of Bangladesh

³ The percentages represent the gender relevance of the expenditures according to 16 gender sensitivity criteria defined by the Ministry of Finance. More information is available in “Chapter II. Methodology, Scope and Limitations of Gender Budget Report” of the [Gender Budget Report 2023-24](#).

Key gender disparities in infrastructure access and use

- **Water and sanitation:** Of Bangladesh's population of 171 million, 70 million people (40 percent) lack access to safe water, and 118 million people (69 percent) lack access to safe toilet facilities⁴, affecting women in particular and potentially exacerbated by climate hazards.
- **Clean energy:** Only 28 percent of the population has access to clean fuels and technologies for cooking^{5,6}.
- **Transport:** Walking remains the largest modality of transportation for women (45 percent), while for men it is public bus (37 percent)⁷. Only 25 percent of working women use public buses; approximately 45 percent walk an average of 5 km to save money and avoid harassment⁸.
- **Movement constraints:** PwDs face major deterrents, including a lack of elevators and ramps in buildings, unfavorable surface conditions, and a lack of ramps in buses. Escorting family members travel an additional 46 km per week, paying 7-20 percent of their monthly income for alternative transport⁹.

Key gender differences in infrastructure use

- **Time use patterns:** Women dedicate significantly more time to unpaid household work. For women, the top three unpaid activities annually are food preparation (equivalent to 151 working days), childcare (equivalent to 52.5 working days), and cleaning (equivalent to 29.6 working days), highlighting the importance for women of markets, children playgrounds and access to water near their homes
- **Mobility patterns:** Women take multiple trips on urban transport, combining work and household chores. A lack of integrated multimodal transport makes it costly to work far from home.
- **Safety requirements:** Women commonly face harassment when walking and using public transportation; infrastructure design must incorporate adequate lighting, visibility, and safe spaces to alleviate this risk.

The case of energy poverty and gender dimensions

Electricity access in Bangladesh has transformed dramatically: from around 15 percent of the population 30 years ago to 99 percent today¹⁰. However, progress on clean cooking fuels has lagged far behind, with significant gender implications:

- **Time poverty:** Women spend more than 5 hours per day on cooking and fuel collection, creating time constraints that prevent them from earning income or pursuing education¹¹.
- **Economic exclusion:** Women make up only 10 percent of Bangladesh's energy workforce, far below the 32 percent global average¹².
- **Sustainability gaps:** Most development programs fail to create lasting change because they don't train women to become local energy entrepreneurs and suppliers who can sustain solutions long-term¹³.

⁴ Water.org (undated). Bangladesh's water and sanitation crisis. [Link](#).

⁵ Ritchie, Hannah (2025). Access to clean cooking fuels in Bangladesh lags far behind its Asian neighbors, Our World in Data. [Link](#).

⁶ WHO (no date). Defining clean fuels and technologies [Link](#)

⁷ Nasrin, S., 2016. Work travel condition by gender-analysis for Dhaka city. MOJ Civil Eng, 1(3), 83-91. [Link](#).

⁸ Nasrin, S and Chowdhury, S., 2024, Transportation Research Interdisciplinary Perspectives, Volume 23, January 2024, 100991. [Link](#).

⁹ Bhuiya, M.M.R, Hasan, M.M.U., and Jones, S., 2021, Accessibility of movement challenged persons and challenges faced by their escorting family members – A Case Study of Dhaka, Bangladesh, Journal of Transport and Health, Volume 24, March 2022, 101323. [Link](#).

¹⁰ Acisu, Tuna (2025). Share of population in Bangladesh with access to basic electricity. Our World in Data. [Link](#)

¹¹ UN Women, 2024. Bangladesh time-use survey 2021. [Link](#)

¹² United Nations, 2023. Bangladesh's energy transition journey so far. [Link](#)

¹³ ITA, 2023. Bangladesh renewable energy sector opportunities, International Trade Administration (ITA), [Link](#)

Larger social and political processes guide many gender inequalities in Bangladesh. While these cultural processes evolve slowly towards GEDSI, gender-responsive, socially inclusive, and resilient infrastructure can provide concrete progress towards equality, inclusiveness, and safety.

Gendered transport patterns and economic opportunities

Gender inequalities are particularly clear in mobility opportunities. Some transport sector constraints for women include:

- More women than men have no mode of transport available besides walking
- More women than men are dependent on public transport
- Women are less likely than men to have access to motorized transport modes
- Women are less likely than men to use bicycles or other intermediate transport modes

This limits women to jobs closer to home, reducing women's earning potential.

Differential climate vulnerabilities across population groups

Climate change does not affect all population groups equally. While floods, droughts, and cyclones threaten all Bangladeshis, their impacts fall disproportionately on those who face pre-existing vulnerabilities, whether due to gender, disability, age, ethnicity, or economic marginalization. Understanding these differential vulnerabilities is essential for designing infrastructure that truly serves all.

- **Vulnerabilities of women and girls:** Women and girls often bear disproportionate burdens due to their socially assigned roles as primary caregivers and household resource managers. During floods, droughts, and extreme weather events, women's responsibilities for water collection, food preparation, and care for children and the elderly increase substantially, whereas their access to early-warning information and evacuation resources may be limited. Cultural norms often constrain women's mobility, making it more difficult to reach emergency shelters or access relief services.
- **Vulnerabilities of persons with disabilities:** Persons with disabilities face heightened risks during climate-related emergencies due to physical, sensory, or cognitive barriers that impede evacuation and access to shelters. Early warning systems frequently fail to account for those with hearing or visual impairments: sirens are meaningless to deaf individuals, while written warnings may be inaccessible to those with visual impairments. Emergency shelters often lack accessible facilities: ramps, accessible toilets, and spaces that accommodate wheelchairs or mobility aids. During evacuations, PwDs may be unable to move quickly and safely, particularly when roads are not designed to accommodate them.
- **Vulnerabilities of older persons:** The elderly may have reduced mobility that slows evacuation, chronic health conditions exacerbated by extreme temperatures or disrupted access to medications, and limited social networks to assist during crises. Heatwaves pose particular risks to older persons, who are more susceptible to heat stroke and dehydration. Those living alone may lack the physical strength to prepare for or recover from disasters, and may be overlooked in community response efforts.
- **Vulnerabilities of ethnic and religious minorities:** Ethnic minorities, indigenous communities, and economically marginalized groups often inhabit areas more exposed to climate hazards (floodplains, coastal zones, char lands, or degraded forests), possess fewer resources to adapt or recover from climate shocks, and rely heavily on climate-vulnerable natural resources (i.e., indigenous agricultural practices). These communities may face language barriers in accessing early warning information, discrimination in relief distribution, and exclusion from decision-making processes about infrastructure investments that affect them. Indigenous knowledge about local climate patterns and coping strategies, while valuable, is often overlooked in formal planning processes.

The following examples highlight the impact of floods and cyclones on women and girls, illustrating specific vulnerabilities and their implications for infrastructure.

Flood-related gender vulnerabilities:

- **Limited mobility and autonomy:** Social expectations, religious practices, and family controls restrict women's movements. Absence of accompanying male family members, care responsibilities, and fear of harassment restrict women's evacuation, which can prove deadly during emergencies.
- **Caregiving intensification:** As floods contaminate water sources and increase disease risk, women's caregiving duties intensify. They spend more hours securing clean water, caring for sick family members, and maintaining household sanitation with limited resources.
- **Reproductive health risks:** Women suffer increased risks of sexual and reproductive health problems during emergencies. During the 1998 floods, there was an increase in perineal rashes and urinary tract infections because women could not wash and dry menstrual cloths privately.
- **Privacy challenges:** Women's privacy is completely challenged during floods. They often go outside by raft for excretion in open water, often in the middle of the night. The situation becomes worse for pregnant women, children, PwDs, and the elderly.
- **Physical security risks:** Disruption of electricity poses an additional risk of sexual harassment for women and girls, particularly those with disabilities. The lack of electricity and overcrowded shelters heighten gender-based violence (GBV) risks.
- **Nutrition disparities:** During food shortages following floods, women often eat last and least, prioritizing male family members and children, leading to increased malnutrition during recovery periods.

Cyclone-related gender vulnerabilities:

- **Disproportionate mortality:** More women than men died in Bangladeshi cyclone strikes, including Cyclone Sidr in 2007 and Cyclone Gorky in 1991; 90 percent of fatalities in 1991 Gorky were women^{14,15}.
- **Clothing restricting evacuation:** Women and girls' clothes might restrict movement, making it harder to escape approaching water surges.
- **Lack of survival skills:** Traditional cultural beliefs mean girls are usually not taught how to swim, climb trees, or run; all life-saving skills considered 'boy' activities.
- **Warning access gaps:** Men are more likely to receive disaster warnings at their place of work, whereas women at home lack access to this critical information.
- **Shelter inadequacy:** Women, girls, and vulnerable populations face severe discomfort and insecurity in shelters due to overcrowding, lack of gender segregation, inadequate lighting, and insufficient latrine facilities.

Vulnerabilities are further compounded for individuals facing intersecting exclusions. For example, an elderly woman might face both increased responsibility for water collection and cooking during floods or droughts, and limited mobility during evacuation or when fetching water from greater distances. Ethnic minorities with disabilities might be dependent on climate-vulnerable sources of income while facing physical barriers to evacuate and access shelters.

¹⁴ Chowdhury, A. M. R., Bhuyia, A. U., Choudhury, A. Y., & Sen, R. (1993). The Bangladesh Cyclone of 1991: Why So Many People Died. *Disasters*, 17(4), 291–304.

¹⁵ Alam, K., & Rahman, M. H. (2014). Women in natural disasters: A case study from southern coastal region of Bangladesh. *International Journal of Disaster Risk Reduction*, 8, 68–82.

Gender and infrastructure in the Haor Basin

The Haor regions flood during the monsoon but remain dry and productive outside of the rainy season. Small, cluster settlements located on elevated mounds (*haati*) provide refuge during the annual seasonal inundation. However, communities in these regions are highly vulnerable to flash floods and erosion caused by high-intensity waves. As infrastructure faces critical climate challenges in these regions, the burden of survival falls disproportionately on women when transport and power networks are submerged.

Key gender & infrastructure vulnerabilities:

- **Maternal health & mobility crisis:** Lack of accessible water transport restricts mobility for women, the elderly, and PwDs, delaying access to health facilities and turning manageable maternal health situations into life-threatening emergencies.
- **The post-harvest burden:** As the primary managers of post-harvest processing and livestock, women face significant burdens when they lack dry land to store harvest or shelter cattle. This forces distress sales of livestock and personal assets (often the woman's only capital) and results in the loss of essential cooking fuel (straw), exacerbating household food insecurity.
- **WASH and energy poverty:** Even outside of flood events, access to clean water and sanitation is low. During inundation, the inability to secure dry cooking fuel and the collapse of sanitation infrastructure disproportionately impact women's health and daily labor hours.
- **Economic isolation:** While women engage in traditional stitching and small-scale production, the lack of resilient communication networks impedes market linkages, trapping them in a cycle of poverty in which they must rely on high-interest loans to survive the flood season.

1.3 Policy and Regulatory Context in Bangladesh: Climate Change, Gender and Social Inclusion, and Infrastructure

Bangladesh has established a robust planning architecture towards mitigation and adaptation anchored by the NAP 2023–2050, the updated Nationally Determined Contribution (NDC 3.0), and the Bangladesh Delta Plan 2100. Despite the absence of a single, binding national climate change act, these plans constitute the de facto climate policy. These frameworks identify infrastructure not merely as physical assets, but as the primary engine for adaptation, prioritizing everything from coastal polders to productive irrigation networks.

Gender and social inclusion are present in infrastructure policies, but remain peripheral. The Ministry of Planning has introduced mechanisms to screen projects for gender equity, yet these often function as administrative checkpoints rather than core design principles. Consequently, while infrastructure is implicitly serving climate-vulnerable groups and communities, it lacks explicit targeting of the needs of women, the elderly, ethnic minorities, or PwDs.

Despite the advanced plans, the absence of an overarching climate framework leads to misalignment in the development of resilient infrastructure. For instance, while the National Water Policy (1999) mandates construction above historical flood levels, key frameworks like the National Land Transport Policy and National Energy Policy (2004) remain silent on climate-proofing. Equally important, gender and social inclusion should become a technical requirement enforced through proper inclusion and accessibility audits. Furthermore, intersectionality, including its relation with climate vulnerabilities, should become a cross-sectional lens across the infrastructure lifecycle to ensure gender-responsive, socially inclusive, and climate-resilient infrastructure.

Among this policy and regulatory context, the following key documents and policy frameworks govern how gender, inclusion, and climate considerations are currently integrated throughout the infrastructure lifecycle:

- **Development Project Proforma (DPP) Manual:** The central instrument for project appraisal and approval, containing mandatory environmental, climate, and gender screening requirements
- **NAP 2023-2050:** Presents national intent for investments on climate action, with significant infrastructure-related project ideas emphasizing protective infrastructure, roads, and multi-purpose shelters
- **Climate Change and Gender Action Plan (ccGAP):** Developed by the Ministry of Women and Children Affairs (MoWCA), with support from Bangladesh Climate Change Trust and UN Women; integrates both climate adaptation and gender sensitivity.
- **Public Procurement Act (PPA) and Public Procurement Rules (PPR):** Governs all public procurement processes; recent revisions enable smaller contract packages to facilitate women-owned enterprise participation
- **Bangladesh Climate Fiscal Framework:** Identifies infrastructure as one of six core pillars for climate finance, with established climate budget tracking and reporting mechanisms
- **Participatory Water Management Guidelines:** Establishes community-based governance models, including Water Management Associations (WMAs) with provisions for women's membership

Current gaps and challenges

While policy frameworks exist, real integration of gender and wider GEDSI concerns in infrastructure projects is seldom observed. Key challenges include:

- **Capacity limitations:** Lack of understanding and institutional capacities are highlighted as major predicaments responsible for the weak integration of GEDSI issues with climate change adaptation approaches.
- **Cost perception barriers:** There is a general belief that GEDSI integration might cause cost escalation that could overwhelm economic analysis and discourage decision-making.
- **Inadequate consultation processes:** The initiation phase often does not follow legal provisions for stakeholder consultation. Joint meetings with local elites substitute for proper consultations that include the voices of marginalized groups.
- **Weak translation mechanisms:** While custodian organizations have gender focal points and procure gender expert support during design, internal processes of translating recommendations into action remain weak.



Practical tip!

To strengthen governance for gender-responsive, socially inclusive, and climate-resilient infrastructure, implementing agencies should:

- Move beyond compliance-only approaches to use gender and climate screenings as strategic design tools.
 - Require project directors to demonstrate how gender and climate considerations have informed design choices – not simply confirm form completion.
- Introduce clearer guidance, quality standards, and review mechanisms to ensure that gender-responsive, socially inclusive, and climate-resilient considerations shape project concepts from the outset.

1.4 The Infrastructure Lifecycle in Bangladesh

The lifecycle of public infrastructure governance in Bangladesh proceeds through four sequential phases: Needs Identification, Planning Infrastructure, Delivering Infrastructure, and Managing Infrastructure. Each phase involves distinct governance processes, key stakeholders, and policy instruments that together determine how infrastructure is conceived, approved, constructed, and maintained. Understanding this lifecycle is essential for identifying intervention points where gender, inclusion, and climate resilience considerations can be most effectively integrated.

The Government of Bangladesh has established formal procedures governing infrastructure development, centred on the DPP as the principal instrument for project appraisal, approval, and

financing. While larger projects proceed through national-level review and approval processes, including the Executive Committee of the National Economic Council (ECNEC), smaller infrastructure – particularly that managed by the Local Government Engineering Department (LGED) – follows more streamlined procedures that can enable greater agility in integrating gender and climate considerations.

Distinguishing large and small infrastructure projects

The infrastructure lifecycle operates differently depending on project scale. Understanding these distinctions is important for identifying appropriate entry points for gender, inclusion, and climate integration.

Dimension	Large Infrastructure	Small Infrastructure
Approval Authority	ECNEC review and Prime Minister endorsement	Ministry-level or local authority approval
Lead Agencies	Line ministries: Bangladesh Water Development Board, Roads and Highways Division, Power Division	LGED, local government institutions, Union Parishads
Financing	International development partners, multilateral banks, national budget	National budget allocations, local government funds, community contributions
GEDSI Integration	Often driven by donor requirements; formal GAPs typically required	Greater flexibility for institutional innovation (e.g., LGED GESAP, LCS model)
Community Engagement	Formal consultation requirements; potential for tokenistic participation	More direct community involvement; opportunity for meaningful local leadership

Table 3: Comparison of large and small infrastructure governance

LGED: Bangladesh's pioneer in institutionalizing climate and gender in local infrastructure

LGED oversees smaller, high-volume portfolios, enabling it to be more agile in integrating climate and gender considerations into its internal governance. Consequently, LGED has transitioned from merely complying with gender and climate standards on individual projects to establishing institutional systems that require these considerations across all LGED projects.

Key LGED innovations include:

- **Gender Marker Toolkit:** A scoring system that structurally links a project's gender rating to specific budget lines, design modifications, and monitoring indicators.
- **Gender and Development Forum:** A permanent body to monitor and discuss gender targets.
- **Labour Contracting Society (LCS) model:** Directly hires groups of impoverished women for routine works.
- **Climate Resilient Local Infrastructure Centre (CReLIC):** Sets climate standards, manages climate knowledge, and supports technical audits; maintains a digital library of lessons learned.
- **Gender Equality Strategy and Action Plan (GESAP):** Institutionalizes commitment to gender inclusion through nine targets covering policy adoption, institutional arrangements, data collection, infrastructure development, employment, training, participation, empowerment, and financing.

Towards gender-responsive and socially inclusive resilient infrastructure

As climate change increases the frequency and severity of climate-related hazards, it intensifies existing gender and inclusion vulnerabilities and introduces new risks. Traditional methods tend to address physical climate risks (such as reinforcing embankments) and gender objectives (like employment quotas) independently. However, climate hazards do not exist in isolation; they interact with and exacerbate social inequalities. Effective resilient infrastructure must therefore integrate gender and climate considerations rather than treating them as separate issues. Adopting an intersectional approach that links gender, climate, and infrastructure is essential. Gender-responsive, socially inclusive, resilient infrastructure focuses on these intersections, ensuring social resilience alongside physical durability.

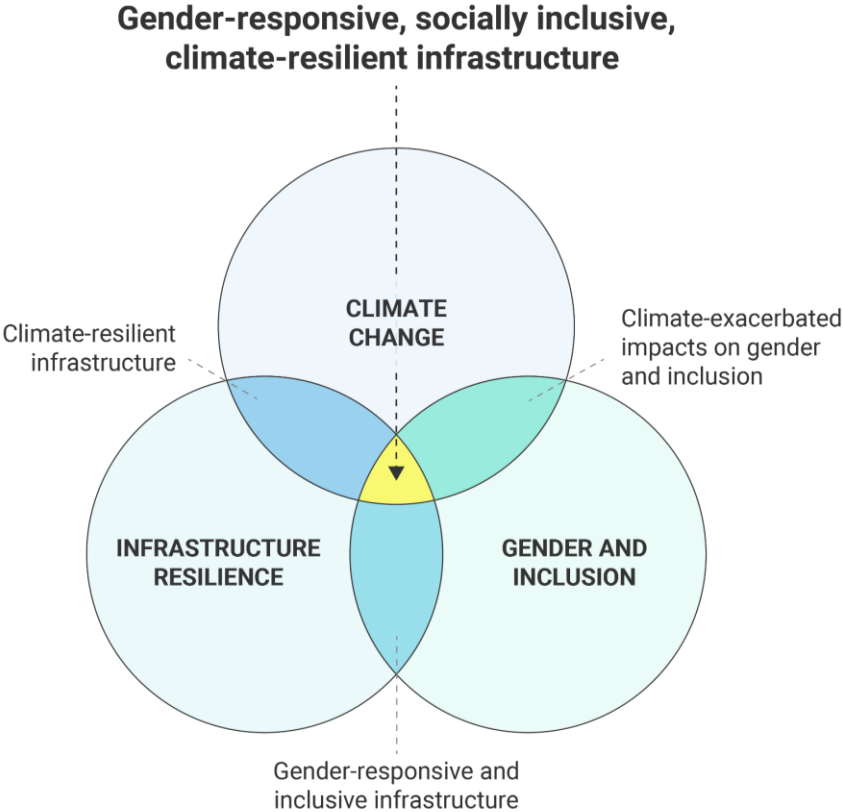


Figure 2. The gender-climate-infrastructure nexus

Vulnerable groups such as women, the elderly, PwDs, and ethnic minorities already face structural barriers, such as limited mobility, unequal caregiving duties, and restricted access to economic resources. The interaction of climate hazards with social and gender vulnerabilities creates compounded risks that did not exist before. For example, an elderly person walking to a market may already face mobility issues (existing vulnerability). When extreme heat (climate hazard) occurs, it interacts with her age and health to exacerbate these mobility issues, creating a life-threatening risk of heat stroke, something less likely for a younger pedestrian. A standard climate or inclusive-road project might only focus on surface paving and lighting for safety, but an integrated approach considers these compounding intersections, incorporating shading, resting stations, and potable water points.

Operationalizing gender responsiveness, social inclusion, and climate resilience in the infrastructure lifecycle.

Providing gender-responsive, socially inclusive, and resilient infrastructure requires prioritizing overarching actions across all infrastructure lifecycle phases and implementing concrete interventions in each phase.

Enablers to consider at every stage of the infrastructure lifecycle:

- **Continuous Data Integration:** Collect and utilize Sex, Age, and Disability Disaggregated Data (SADDD) and intersectional analysis to inform decision-making at every stage, from initial feasibility studies through to post-completion monitoring, and link it back as a continuous feedback loop to build upon the lessons of previous infrastructure projects.
- **Sustained Participation:** Maintain inclusive participatory processes that engage women, elders, PwDs, and ethnic minorities during initial consultations and as active contributors throughout design, implementation, and long-term Operation and Maintenance (O&M).
- **Consider the Gender-Climate-Infrastructure Nexus:** Continuously evaluate the interaction between climate, gender, and social vulnerabilities throughout the infrastructure lifecycle, monitoring how climate impacts may reinforce existing or create new gendered risks as the infrastructure is planned, built, and utilized.
- **Ensure Inclusive Employment:** Promote the employment and inclusion of women across the full value chain, from planning and construction to maintenance and management.

Additionally, embedding GEDSI and climate resilience into the infrastructure lifecycle requires intervening in the key elements of each infrastructure phase. Figure 3 presents interventions to consider the climate-exacerbated gender and inclusion vulnerabilities into the infrastructure lifecycle. The following section provides detailed guidance on implementing these interventions.

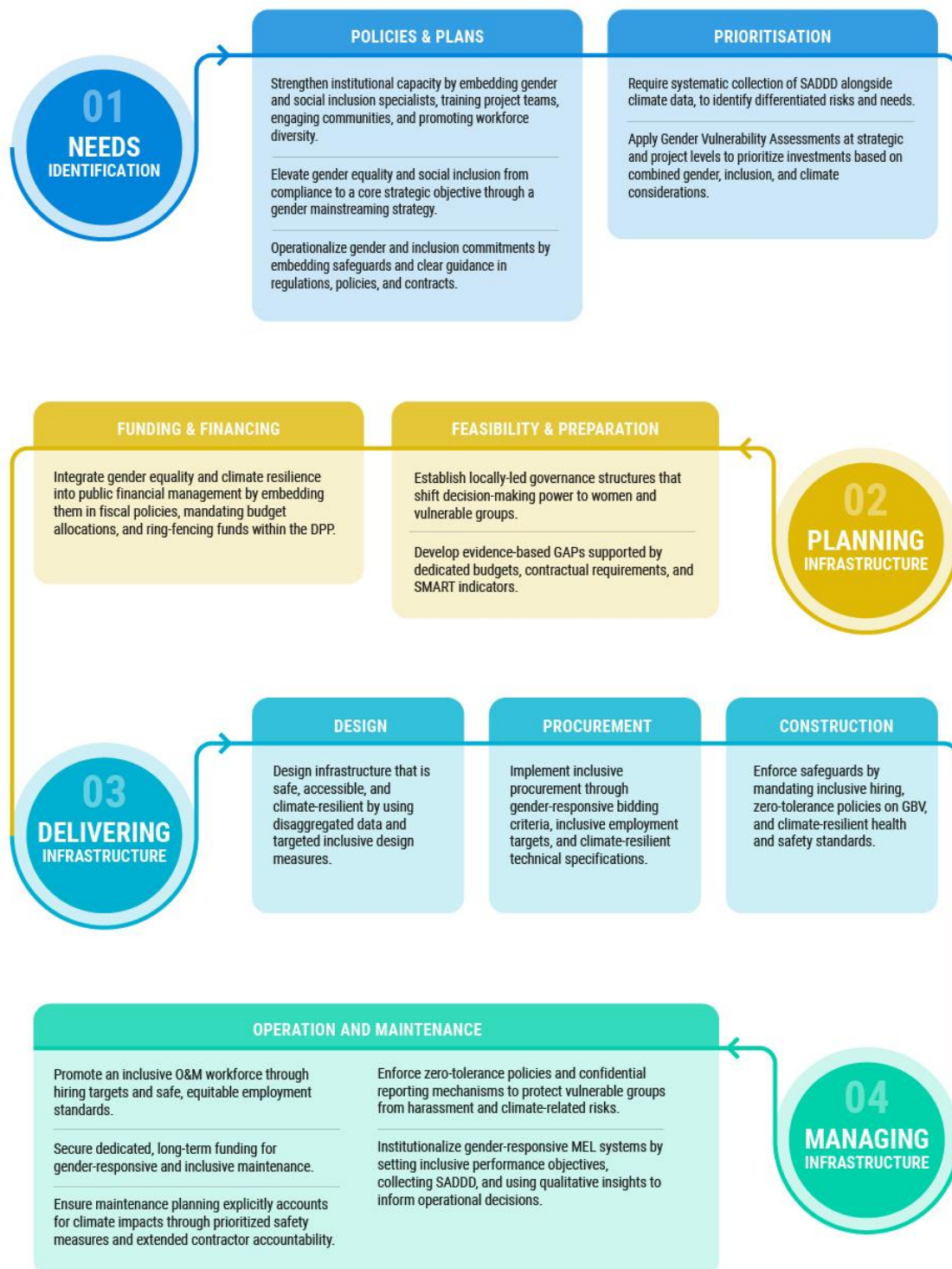
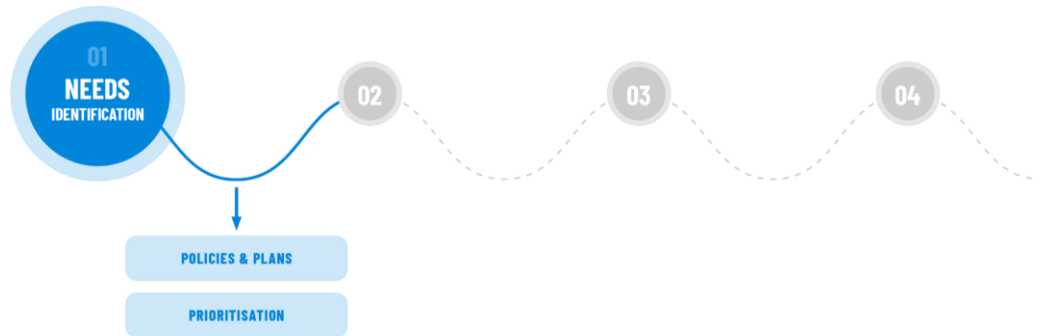


Figure 3: Interventions for gender-responsive, socially inclusive and climate-resilient infrastructure.

2. Implementing Gender-Responsive, Socially Inclusive And Climate-Resilient Infrastructure Across The Lifecycle

2.1 Needs identification



Summary of Actions:

Policies and Plans

- Strengthen institutional capacity by embedding gender and social inclusion specialists, training project teams, engaging communities, and promoting workforce diversity.
- Elevate gender equality and social inclusion from compliance to a core strategic objective through a gender mainstreaming strategy.
- Operationalize gender and inclusion commitments by embedding safeguards and clear guidance in regulations, policies, and contracts.

Prioritization

- Require systematic collection of SADD, alongside climate data, to identify differentiated risks and needs.
- Apply Gender Vulnerability Assessments at strategic and project levels to prioritize investments based on combined gender, inclusion, and climate considerations.

The lifecycle of public infrastructure governance starts with the Needs Identification phase. This is where development aspirations are voiced, and challenges are formally recognized and translated into actionable project concepts. A requirement for strict alignment between agency-level initiatives and national strategic goals governs this phase.

Initial steps to identify an infrastructure project

1. A ministry, division, or agency sponsors the project after identifying or hearing from the community representatives of a development opportunity or infrastructure gap.
2. Develop initial Project Concept Paper (PCP)
 - a. Must align with the high-level national framework (Five-Year Plan and Perspective Plan)
 - b. Must align with thematic strategies such as NAP and the ccGAP
3. After internal review and approval within the sponsoring agency, commit resources for a complete feasibility study.

Key Stakeholders

In this phase, the following stakeholders play key roles:

- **Ministry of Women and Children Affairs (MoWCA):** responsible for formulating policies and action plans to ensure women's advancement. Also coordinates gender-responsive budgeting across ministries and provides strategic guidance to infrastructure projects.
- **Ministry of Environment, Forest and Climate Change (MoEFCC):** in charge of developing adaptation plans and management of climate trust funds. Leads on climate policy, including supporting gender-responsive implementation in infrastructure projects through the ccGAP.
- **Line ministries and infrastructure implementing agencies such as LGED (infrastructure sponsoring institutions):** identify infrastructure needs in their sectors and propose project concepts. While developing the project concepts, they must identify target groups and potential benefits using sex-disaggregated data. Internal review, particularly by the Women in Development focal points within line ministries, should ensure the PCP is gender-sensitive.
- **Planning Commission:** screens projects to ensure they integrate environment, gender, poverty, and risks as per the stipulated formats, comply with climate resilience and other standards before budget approval.
- **Local communities:** use local committees and other communication channels to identify and raise awareness of their needs to the authorities.

The initial PCP screening should account for the distinct needs of vulnerable groups and the impact of climate risks on them, and adequately assess these risks. To achieve this, project preparation processes should embed clear, early-stage requirements for gender analysis that ensure only infrastructure projects aligned with national gender and climate priorities progress into feasibility studies.

Climate and gender considerations within the PCP should be aligned with national frameworks to ensure justification. This can be done in the following ways:

- **Climate fiscal justification:** Infrastructure is one of the six core pillars for climate finance in the national climate budget report, which can justify prioritizing climate-resilient project concepts.
- **Gender-normative framework:** The ccGAP identifies gender-integration needs, stating explicitly that climate impacts are not gender-neutral.
- **Operational Screening:** The PCP requires a preliminary assessment of environmental and climate impacts, as well as social and gender considerations, briefly documenting these factors before the project advances.

Integrating climate, gender, and inclusion in the Needs Identification phase

To strengthen infrastructure needs identification in Bangladesh, planning processes should systematically integrate SADD and apply an intersectional lens to ensure that climate-resilient infrastructure (CRI) reflects the realities of all population groups. This is important to ensure that infrastructure governance internalizes the voices that are generally not heard and suggestions that are hardly noticed. Agencies should prioritize the collection, use, and regular updating of granular data that captures the needs of women, the elderly, PwDs, and groups facing multiple forms of marginalization. Embedding these evidence requirements in early-stage assessments will help ensure that strategic planning moves beyond aggregate indicators and explicitly incorporates the perspectives of ethnic and religious minority women and other underserved groups. By doing so, national and local planners can design CRI investments that equitably address diverse vulnerabilities and avoid unintentionally privileging the dominant demographic.

Considering the different needs and capacities of vulnerable groups in infrastructure planning, and their specific vulnerabilities to climate change

Effective gender-responsive, socially inclusive, climate-resilient infrastructure requires a systematic shift away from 'one-size-fits-all' planning toward intersectional, climate-informed analysis.

Early in the project lifecycle, rigorous, three-part diagnostics must be mandatory: gender analysis, inclusive Social Impact Assessment (SIA), and climate risk analysis. Identifying and considering these three dimensions requires several considerations:

- **Data must prioritize individual-level over household-level aggregation:** Household averages obscure internal disparities. Mapping individual asset ownership, resource control, and economic losses is essential to revealing the actual vulnerability of women and the elderly within a family unit. Diagnostics must also recognize time poverty as a structural constraint and identify the burden of unpaid care work to inform interventions that facilitate economic participation. On the climate dimension, the diagnostics must include how climate change aggravates existing gender and inclusion vulnerabilities or raises new ones.
- **Validate through targeted participatory audits:** Specialized tools, such as safety and accessibility audits, can identify physical barriers and hotspots for Sexual Exploitation, Abuse, and Harassment (SEAH). Participants must understand climate trends and their future impacts. Consultations must ensure safety and enable women to be informed and feel safe voicing their opinions. Institutionalized mechanisms must enable marginalized groups to serve as decision-makers in setting priorities rather than merely as feedback providers.
- **Recognize community capacities and knowledge:** Infrastructure planning should leverage indigenous knowledge to build resilience, acknowledging that women are often the primary managers of household resources and are indispensable first responders in disaster management. Agencies should reflect this capacity internally by improving employment practices to recruit and promote women, ensuring institutional capacity aligns with community needs.
- **Translate findings into project Gender Action Plans (GAPs) and a legally binding gender mainstreaming strategy:** Prioritize community benefit and climate vulnerability for site selection over purely technical metrics. Designs must adhere to universal accessibility standards for all user groups, e.g., pregnant women, older persons, and PwDs. Contractual documents must formally embed social safeguards and Grievance Redress Mechanisms (GRMs) sensitive to specific vulnerabilities, ensuring that negative impacts, such as relocation or loss of livelihood, are met with culturally appropriate compensation.
- **As capacity for gender, inclusion, and resilience matures, consider advanced international practices:** Deeper intersectional analysis moves beyond basic disaggregation to analyze how overlapping factors (such as ethnicity, caste, sexual orientation, and disability) create unique, compounded experiences of discrimination. Additionally, infrastructure projects can aim to address the root causes of inequality by designing projects not just to accommodate current constraints, but to actively dismantle the structural discrimination that restricts women's control over resources and heightens their exposure to climate risk.

Gender mainstreaming strategy vs GAPs

- Gender Mainstreaming Strategy: Define the **institutional** gender targets to ensure human resources, finances, and operational protocols are fit for purpose
- GAPs: Work at the **project level** to establish gender-related indicators and a monitoring system, a budget, and concrete actions.

Gender mainstreaming strategies connect national gender goals with each institution's specific context, needs, and protocols, providing a framework that links project-specific GAPs and ensures continuity and ongoing improvement.

Policies & Plans

1 Strengthen institutional capacity by embedding gender and social inclusion specialists, training project teams, engaging communities, and promoting workforce diversity.

Awareness and institutional capacity are needed to ensure that gender, inclusion, and climate considerations are mainstreamed into infrastructure development practices. Despite being promoted by government frameworks such as the ccGAP, there is a need to strengthen institutional capacity to integrate gender, inclusion, and climate concerns in the implementation infrastructure. Building awareness and capacity should happen at all levels.



Figure 4. Entry points for strengthening institutional capacity at all levels

This structural integration shifts gender, inclusion, and climate from ad hoc considerations to core governance functions across the organization and embeds shared operational standards throughout the project lifecycle. Furthermore, gender, inclusion, and climate should be integrated into a vision that goes beyond additive considerations to account for their intersections. Coupled with transparent communication regarding social safeguards, this ensures that the physical infrastructure network is supported by a human network capable of enforcing safety and accessibility standards for climate-vulnerable populations.

Institutionalizing workforce diversity

Ensuring long-term awareness and capacity for gender-responsive, socially inclusive, and resilient infrastructure will require generating data to amplify women’s voices in high-level planning processes and expanding vocational training to encourage women’s entry into technical and managerial roles.

Executing agencies can institutionalize workforce diversity by:

- Actively recruiting women across divisions as engineers, social scientists, and community mobilizers.
- Integrating gender-responsive, social inclusion, and climate-resilience planning modules into the permanent curricula of government training institutes.
- Creating peer learning systems that enable executing bodies to share technical experiences and develop solutions, thereby building a community of practice around resilient, inclusive infrastructure.

2 Elevate gender equality and social inclusion from compliance to a core strategic objective through a gender mainstreaming strategy.

As climate impacts intensify, the gender and inclusion mainstreaming strategy must anticipate how climate hazards will exacerbate gender and inclusion vulnerabilities. Ensuring sustainable gender and inclusion requires the formal institutionalization of these commitments across key government agencies.

This can be achieved by developing comprehensive gender and inclusion mainstreaming strategies and by establishing well-resourced, dedicated gender focal structures. These structures would facilitate cross-project learning, review development proposals, and advocate for gender and inclusion considerations. They would also provide a platform to address the multifaceted challenges of gender and inclusion, with particular attention to the intersection of climate impacts and social inequalities. A good example of gender mainstreaming can be seen in LGED's GESAP text box.

The nine targets of LGED's Gender Equality Strategy and Action Plan (GESAP)

LGED's GESAP formally institutionalizes a commitment to gender inclusion through a framework comprised of nine targets¹⁶:


- 1. Policy adoption:** Formulating GAPs and implementing guidelines for each sector, unit, and project.
- 2. Institutional arrangement:** Establishing the LGED Gender Forum to review and guide GAP implementation across all sectors, units, and projects.
- 3. Data/information collection, monitoring, and evaluation (M&E):** Collecting sex-disaggregated data guided by gender indicators.
- 4. Infrastructure development:** Building women-friendly infrastructure.
- 5. Employment and working conditions:** Training women to acquire necessary skills, increasing the ratio of women in all units and levels, and improving their working environment.
- 6. Training:** Assessing gender sensitivity training needs and providing training for women in additional work areas.
- 7. Participation:** Ensuring women's participation at all levels.
- 8. Empowerment:** Ensuring women's active and effective representation in decision-making bodies and processes within LGED and organizations it assists.
- 9. Financing:** Allocating a gender-responsive budget for the implementation and institutionalization of the LGED strategy.

The GESAP is an excellent tool to use in conjunction with climate-related interventions, as shown in its relation to cyclone shelters in the Case Study: 'Cyclone Shelters and Institutionalizing Gender Inclusion in Local Government Engineering Department.' Learn more about this case study in the complementary Case Study Booklet.

¹⁶ ADB (2017) People's Republic of Bangladesh: Institutionalizing Gender Equality Practices in Local Government Engineering Department (LGED). Technical Assistance Concept Note Project 51319-001.

An effective gender and inclusion strategy with climate considerations should include the following elements:

- **Mandatory foundational gender, inclusion, and climate analysis during the preparation phase:** This must go beyond surface-level demographics to establish a systematic sex-disaggregated baseline, enabling the accurate monitoring of outcomes rather than just outputs. Analysis must interrogate specific barriers, including limited skills, limited access to credit, and cultural constraints, for each infrastructure sector. The specific ways in which climate change affects gender and inclusion in each infrastructure sector should also be considered. For instance, in the transportation sector, diagnostics should identify complex travel patterns such as ‘trip chaining’ (combining domestic chores with economic travel) and how increased heat and rain could affect them to inform designs that serve needs beyond standard commuter routes. Similarly, in other infrastructure sectors, the specific ways in which each identified group engages with that infrastructure and how they are affected by climate change should be considered.
- **Inclusive social and environmental impact assessment:** Supplementing the gender, inclusion, and climate analysis, a social and environmental impact assessment that moves beyond conventional household-level analysis to identify differential impacts on women, ethnic minorities, and PwDs is important to consider the conditions in the project area and any relevant climate trends affecting them.
- **Inclusive participatory tools:** To translate diagnostics into reality, agencies must deploy specific participatory tools. Consultation mechanisms must be formalized through public consultation committees that enforce quotas for women’s representation. To ensure these forums are empowering rather than tokenistic, consultations should be held separately for women and men, scheduled at times that accommodate care burdens, and led by female facilitators.
- **Alignment with the DPP and safeguards:** The strategy must be financially and legally binding. This involves aligning budgeting with gender, inclusion, and climate considerations within the DPP and incorporating gender and non-discrimination safeguards into procurement guidelines to ensure enforcement, such as equal wage provisions and safe facility requirements.
- **Use of innovative, technology-driven tools:** digital tools such as GPS mapping and mobile applications can be used to crowdsource data on lived experiences. This enables real-time identification of security hotspots and accessibility barriers that static surveys may miss. In some sectors, collecting granular data could improve efficiency and prioritization and enhance efforts to address intersectionality. Developing advanced analytical models enabled by increased data could yield more focused insights into gender implications of different climate hazards (e.g., how flood patterns specifically alter women's privacy needs vs. men's economic access), ensuring that climate resilience strategies are not generic but highly targeted.

	Practical tip!
	When developing the gender mainstreaming strategy, involving partners (such as MOWCA on gender and inclusion, and MoEFCC on resilience) can help to address policy gaps and ensure alignment with national obligations under the Constitution and international commitments such as the UN’s Convention on the Elimination of All Forms of Discrimination against Women.

3 Operationalize gender and inclusion commitments by embedding safeguards and clear guidance in regulations, policies, and contracts.

To operationalize the gender and inclusion mainstreaming strategy, safeguarding measures, regulations, and institutional guidance for gender and social inclusion must be developed. This guidance will be essential in ensuring that gender-responsive, socially inclusive, and climate-resilient infrastructure is not merely a policy intent but is legally enforceable.

The safeguards must be incorporated across institutional regulations, sectoral guidances and other government documents as appropriate. They must be enforceable contractually and consistent across GAPs, TORs, and other procurement documentation. Examples of safeguards include:

- **Core labor standards:** Explicitly mandating equal pay for equal work, non-discriminatory hiring, and zero-tolerance policies for harassment in construction contracts.
- **Resilience standards:** Ensuring that infrastructure is designed to resist current and future climate risks across its lifecycle and to support its users in being protected from them.
- **Site-specific mandates:** Requiring contractors to provide on-site social infrastructure identified as necessary during the needs assessment, such as separate toilets and daycare facilities.
- **Financial ring-fencing:** Ensuring that the project budget earmarks specific funds for these design features and social mitigation measures, preventing them from being 'value-engineered' out during construction.

Institutionalizing these safeguards in an enforceable and coherent way may require additional diligence measures to identify gender, social, or climate risks specific to particular sectors, institutions or types of projects. Examples include safeguards that specifically address women's loss of livelihoods and assets when displacement is needed, and gender-responsive measures such as joint registration of land titles (husband and wife) to protect women's asset ownership during land acquisition.

Prioritization

4 Require systematic collection of sex-, age-, disability-disaggregated data (SADDD), alongside climate data, to identify differentiated risks and needs.

To ensure infrastructure investments comply with national frameworks, rigorous SADDD collection is a mandatory prerequisite at the project level. Additionally, analysis of gender and inclusion data should be complemented by analysis of relevant climate data. Climate risk maps and other assessments will inform how gender and inclusion vulnerabilities are affected by climate hazards. It can then be assessed whether the infrastructure increases resilience or contributes to environmental impacts, and how these might protect different vulnerable groups or not. These elements are collected and integrated directly into the DPP. To enforce this, TORs for design consultants should explicitly require the collection of baseline sex-disaggregated and climate data. This ensures that the responsibility for data generation is legally binding from the onset of the design phase.

Impact of limited SADDD on the visibility of gendered climate impacts

Climate change exacerbates existing inequalities, which can be overlooked without detailed data. For instance, a lack of inclusive data can undermine recognition of women's specific climate vulnerabilities, as seen in the following examples:

- Slow-onset climate events, such as salinity intrusion and drought, reduce water availability and force women to travel longer distances to obtain potable water, thereby exacerbating time poverty and reducing their capacity for economic activity.
- In rapid-onset events such as floods and cyclones, vulnerable populations with limited access to early warning information (often women and children confined to the domestic sphere) or with limited mobility (the elderly and PwDs) face disproportionate mortality risks.

Without SADDD to identify these specific climate vulnerabilities, infrastructure can be technically robust but socially fragile. The use of this data should be incorporated into comprehensive frameworks for operationalizing intersectionality and its relationship to climate change in infrastructure decision-making.

Climate risk maps or assessments, even at the national level, can help integrate climate risk with gender and inclusion vulnerabilities, ensuring that the differential impacts of climate on women and marginalized groups within the infrastructure's catchment area are considered. Data collection must evolve from simple headcounts to a comprehensive SADDD framework that explicitly disaggregates by sex, age,

disability, and intersectional factors such as ethnicity and socioeconomic status. Assessments should analyze the overlaps between climate, gender, and inclusion vulnerabilities in context-specific settings. Crucially, data must capture infrastructure use patterns. For example, collecting statistics on trip purpose, travel modes, and time use, and integrating climate assessments with them, is vital to designing rural roads and urban transport that respond to women's specific mobility needs (e.g., trip chaining for care duties) while ensuring their protection from climate risks.

To address persistent data gaps, the collection and utilization of SADD and local climate modelling must be elevated to a core responsibility of senior management, supported by specific budget lines for gender-related and climate-related data activities. This includes strengthening internal monitoring systems to close institutional gaps in tracking progress against national gender strategies.

To effectively monitor gender targets within organizations, it is essential to collect SADD on staff and contractors across the infrastructure lifecycle. This involves collecting baseline information on project personnel and transport workers to identify gaps in gender representation. While monitoring informal labor in construction presents challenges, establishing internal systems is vital to address institutional barriers that hinder the achievement of national goals for gender employment and empowerment.

The Hijra Community: Identity, vulnerability, and climate risks¹⁷

The term Hijra refers to a subculture of male-bodied, feminine-identified people in South Asia¹⁸. They have been recognized by the Government of Bangladesh as a 'third gender' since 2013. While the community is diverse (encompassing transgender women, intersex individuals, and eunuchs), they share a collective identity often organized around a guru-chela (mentor-disciple) family system. Despite legal recognition, they remain one of the most marginalized populations in the region.

The Hijra face systemic exclusion that makes them extremely vulnerable.

- **Social & Economic Exclusion:** Widespread stigma often leads to rejection by biological families and exclusion from formal education and employment. Consequently, many rely on precarious livelihoods.
- **Housing & Security:** Denied rental opportunities, many live in informal settlements or slum areas with poor infrastructure. They face high risks of GBV and harassment in public spaces.

Climate change can exacerbate their existing marginalization:

- **Exclusion from Disaster Shelters:** During cyclones or floods, public shelters typically operate on a gender-binary system (men's and women's sections). Hijra individuals often face harassment or are denied entry to women's areas, forcing them to remain in unsafe homes or face violence in shelters.
- **Relief Discrimination:** Post-disaster relief is often distributed to 'household heads' recognized within a traditional family structure, frequently rendering Hijra communities invisible to aid mechanisms and social safety nets.

¹⁷ Sources:

- Hossain, A. (2017). The paradox of recognition: hijra, third gender and sexual rights in Bangladesh. *Culture, Health & Sexuality*, 19(12), 1418–1431. [Link](#)
- Akter, S., & Saha, S. (2024). Impact of legal recognition on the lives of the third gender: A study in Khulna district of Bangladesh. *Heliyon*, 10(7), e28671. [Link](#)
- Irfan, S. D., Reza, M., Morshed Khan, M. N., Hassan, R., & Islam Khan, S. (2026). 'The benefits do not reach us': analyzing the discrepancies between the state recognition of hijra and their reality in Dhaka, Bangladesh. *Critical Public Health*, 36(1). [Link](#)

¹⁸ Hossain, A. (2017). The paradox of recognition: hijra, third gender and sexual rights in Bangladesh. *Culture, Health & Sexuality*, 19(12), 1418–1431. [Link](#)

In the longer term, improvements should focus on developing data systems capable of analyzing how multiple layers of discrimination (e.g., an elderly widow from an ethnic minority group) compound and relate to multiple climate hazards, moving beyond the standard approach of assessing specific vulnerabilities in isolation rather than their interrelations. This would also enable moving beyond baseline demographics to conduct rigorous research that models how specific climate hazards (e.g., flash floods vs. salinity) affect genders differently in terms of asset loss and health outcomes. This evidence base would help design highly targeted adaptation actions.

5 Apply Gender Vulnerability Assessments at strategic and project levels to prioritize investments based on combined gender, inclusion, and climate considerations.

Gender vulnerability assessments (GVAs) should be considered at two levels. At a macro level, a GVA provides a strategic basis for identifying needs to inform policy, budget allocation, and long-term infrastructure planning. At the project level, the GVA focuses on operationalizing safety and inclusion through site-specific tools and operational audits to ensure that the proposed infrastructure mitigates local risks and meets the needs of the target community. At both levels, it's essential to consider how climate change exacerbates gender and inclusion vulnerabilities. This will ensure the infrastructure is prioritized based on the integrated gender, inclusion, and climate needs of vulnerable groups.

A comprehensive macro-level GVA should:

- Be led by technical experts and incorporated early into key diagnostic stages, such as situation analysis, problem tree, and theory of change, to establish the main rationale for the proposed infrastructure strategy.
- Ensure infrastructure investments align with national development priorities.
- Incorporate the SADD collected before and consider its interrelation with climate risks to address the needs of particularly vulnerable groups.
- Consider how different vulnerability sources interact to help understand the impact of climate change through an intersectional lens.
- Systematically examine gender roles and power dynamics, considering societal and climate vulnerabilities.
- Map the gendered division of labor and explicitly highlight the burden of unpaid care work. This helps distinguish between practical gender needs (such as water and health) and strategic gender interests aimed at transforming unequal power relations.
- Acknowledge that climate change impacts are not gender neutral.
- Go beyond physical exposure to identify root causes of vulnerability (such as limited decision-making power, lack of access to credit, or insecure land tenure) that drive differentiated impacts on women's mental health and economic recovery.
- Inform due diligence on institutional vulnerabilities, identifying specific risks exacerbated by the infrastructure development itself, such as displacement/resettlements due to land expropriation, and increased transmission health issues caused by the influx of temporary workers.
- Be operationalized through an inclusive SIA. Location and design must explicitly address physical safety to prevent GBV and SEAH, alongside climate and technical considerations.

At the project level, the GVA should:

- Be a mandatory step in the feasibility study or DPP phase. To ensure compliance, the TOR for design consultants must explicitly require the collection of baseline SADD and climate data, as well as the execution of this vulnerability assessment, incorporating the nexus with climate projections. This will make gender-responsive, socially inclusive, and climate-resilient design a contractual deliverable rather than an optional add-on.
- Be verified at the site level through specialized participatory audits, particularly accessibility audits and safety audits conducted during evening hours, to identify physical barriers and safety perceptions, with particular attention to SEAH.
- Employ gender-sensitive data collection methods.
- Thoroughly address institutional challenges related to data collection.

- Include temporal and spatial assessments for infrastructure involving public spaces (train and bus stations, parks, streets, etc.), such as recording counts of gender and age at 15-minute intervals during the day and night, to accurately map when and where women are underrepresented in the project area, as well as the different impacts of weather through the day.
- Account for local climate risks both in terms of their direct impact and in their potential to reinforce gender and inclusion vulnerabilities.
- Ensure the infrastructure supports the dignity and sanitation needs of all users, for example, by including safe, private, and accessible menstrual hygiene management facilities for girls and women.

2.2 Planning Infrastructure



Summary of Actions:

Feasibility & Preparation

- Establish locally led governance structures that shift decision-making power to women and vulnerable groups.
- Develop evidence-based GAPs supported by dedicated budgets, contractual requirements, and SMART indicators.

Funding & Financing

- Integrate gender equality and climate resilience into public financial management by embedding them in fiscal policies, mandating budget allocations, and ring-fencing funds within the DPP.

In the lifecycle of infrastructure governance, the Planning phase is the pivotal juncture where policy intent becomes actionable investment. This phase culminates in the formulation and approval of the DPP, which serves as the central instrument for project appraisal, administrative approval, and financing across the Government of Bangladesh.

Steps to formulate and approve a DPP:

1. Internal approval through various levels of the project idea generated during the Needs Identification until it reaches the national line Ministry.
 - a. The technical wing of the relevant ministry consolidates all relevant information, including the feasibility study and other complementary studies, into the DPP.
 - b. The sponsoring institution must consider the opinions from field administration and relevant stakeholders during project formulation. Priority should be given to regions behind in development targets to reduce regional disparity.
 - c. Potential economic, technical, environmental, climate, and other risks must be identified and mitigation measures included. Impacts on the environment, climate change, gender,

- disaster risks, and others should be analyzed, including conducting a disaster impact assessment using the digital risk information platform.
2. The relevant Sector Division of the Planning Commission appraises the DDP and discusses it in inter-ministerial meetings.
 3. Ministry of Finance (MoFi) determines the financing strategy, which may involve blending national sources, bilateral development funds, or borrowing from international or specific funds.
 - a. When seeking foreign aid, the ministry sends a preliminary project proposal (PDPP) to the Planning Commission and External Resources Division (ERD). Once the Planning Commission gives policy approval, ERD negotiates with donors.
 4. Larger projects receive an additional review by the ECNEC, chaired by the Prime Minister, for final discussion and approval.

Explaining the Development Project Proforma/Proposal (DPP)¹⁹

The DPP is the standard format used in Bangladesh to submit investment project proposals for approval by the competent government authority. It serves as the basic document providing all information required by the Planning Commission to evaluate a project's desirability with respect to national needs, costs, and benefits. The DPP is divided into two sections: Part A provides a project summary, and Part B offers detailed project information, including background, feasibility studies, and financial analyses.

The DPP format integrates climate change, disaster, and environmental issues into the project design process. The following elements within the DPP are specifically flagged for their focus on climate, gender, and social inclusion:

1. Climate Change and Environmental Elements

- **Clause 23.2 & 23.3 (Impact Assessment):** These sections require a description of the project's effect on environmental sustainability (land, water, biodiversity) and its impact on climate change adaptation and mitigation.
- **Clause 29 (Climate Change and Disasters):** This element requires proponents to identify risks during implementation and operation, specifically those related to disasters and hazardous aspects, and suggest corresponding mitigation or safety measures.
- **Resilient Design Specifications (Item 21):** The DPP requires an attachment of major component designs, which must include climate and disaster-resilient structural and architectural aspects.
- **CDE Assessment Framework:** For projects costing over BDT 10 crore, a rigorous integrated analytical tool is recommended to assess climate change-related risks.

2. Gender and Social Inclusion Elements

- **Item 14.7 (Sex-Disaggregated Data):** Project proponents must provide sex-disaggregated data for the target population and explicitly identify the constraints faced by women.
- **Clause 23.4 (Vulnerable Group Needs):** This section requires an analysis of project impacts on gender, women, children, and PwDs, ensuring that the needs of excluded groups are addressed.
- **Item 14.8 & Clause 23.6 (Poverty Situation):** The DPP flags the project's effect on poverty reduction and productive employment opportunities specifically for disadvantaged and excluded groups.

¹⁹ Sources:

- General Economics Division (GED), Ministry of Planning, Government of Bangladesh. (2014). Development Project Proforma/Proposal (DPP) Manual. Part 1: Main Guideline
- General Economics Division (GED), Ministry of Planning, Government of Bangladesh. (2014). Development Project Proforma/Proposal (DPP) Manual. Part 2: Appendixes

- **Clause 28 (Resettlement and Rehabilitation):** Projects involving land acquisition must outline a plan for compensation and livelihood restoration, specifically describing how project-induced changes affect the lives and incomes of the community.
- **Gender Analysis:** The manual mandates that a systematic Gender Analysis be conducted during the feasibility stage to identify barriers facing women in the project area.

3. Monitoring and Compliance (The Indicator Framework)

- **Appendix 30 (Indicator Framework):** This framework provides a set of compliance and safeguard indicators aimed at ensuring the project is pro-poor, environmentally friendly, and climate-resilient.

Key Stakeholders

In this phase, the following stakeholders play key roles:

- **Ministry of Planning:** responsible for medium and long-term plans and allocating resources; screens the DPP for approval.
- **MoFi:** determines a financing strategy for the approved infrastructure projects. If required, the ERD of MoFi will negotiate with international financial institutions to agree on financing terms and conditions.
- **Line ministries and Infrastructure Sponsoring Institutions :** conduct the feasibility and other complementary studies needed to develop the DPP.
- **ECNEC or Planning Minister:** gives final approval to larger infrastructure projects.

The feasibility study rigorously validates the project's viability by integrating financial, economic, environmental, and social analyses. The findings of this study inform the preparation of the DPP, which must strictly adhere to the formats prescribed by the DPP Manual.

Climate resilience and gender equity are embedded within the DPP, particularly in section 25, for all public investment projects:

- **Environmental and Climate Screening:** This mandatory form compels the project proponent to classify the project's environmental risk (e.g., Red, Amber, Green). Crucially, it identifies key climate vulnerabilities and accounts for GHG emissions, ensuring climate risks are flagged before approval.
- **Social and Gender Screening:** This framework explicitly governs the inclusion of social safeguards. It requires agencies to declare whether the project necessitates sex-disaggregated data, identifies 'gender-specific impacts', and incorporates 'gender-specific indicators' into the Result-Based Monitoring (RBM) framework.
- **Economic Appraisal:** Beyond screening, the DPP Manual (Part 1) mandates that the economic analysis identify and quantify all project costs and benefits. This provides a fiscal governance mechanism to account for environmental and social externalities, theoretically enabling the monetization of resilience and inclusion benefits.

To strengthen governance for large infrastructure projects, implementing agencies should move beyond a compliance-only approach to gender and climate requirements and instead use them as strategic design tools. Project directors and consultants should be required to demonstrate how gender and climate screenings have informed design choices, risk assessments, and community engagement processes – not simply confirm that forms have been completed. Introducing clearer guidance, quality standards, and review mechanisms can ensure that gender-responsive, socially inclusive, and climate-resilient considerations shape project concepts from the outset. While donor requirements may already drive this in externally funded projects, institutionalizing a strategic, design-oriented approach within national systems will support the development of long-term, gender-transformative, inclusive, and resilient infrastructure.

LGED: Bangladesh's pioneer in institutionalizing climate and gender in local infrastructure

LGED oversees smaller, high-volume portfolios, enabling it to be more agile in integrating climate and gender considerations into its internal governance. Consequently, LGED has transitioned from merely complying with gender and climate standards on individual projects to establishing institutional systems that require these considerations across all LGED projects.

For example, it supplements the standard DPP requirements with specialized tools such as the Gender Marker Toolkit. Unlike generic checklists, this scoring system structurally links a project's gender rating to specific budget lines, design modifications, and monitoring indicators. Additionally, LGED has a permanent Gender and Development Forum to monitor and discuss gender targets, and has a labor contracting society model to hire groups of impoverished women directly for routine works. These initiatives are aligned under LGED's Gender Equality Strategy and Action Plan.

LGED has established the CReLIC to set climate standards, manage climate knowledge, and support technical audits and reviews. It maintains a digital library of lessons learned, ensuring institutional climate knowledge across LGED projects. CReLIC has mapped climate hazards for various infrastructure types and developed guidelines for climate-resilient infrastructure. Additionally, it has created rapid climate risk assessment methods, including the Rapid Climate Impact Assessment Calculator Tool, which uses climate data from multiple government sources to provide quick evaluations for routine infrastructure projects, where a full climate impact assessment may not be necessary.

Integrating climate, gender, and inclusion in the Planning Infrastructure phase

To ensure that infrastructure is planned based on a strong technical design and social reality, it is crucial to include gender, inclusion, and climate perspectives in planning and decision-making forums. In this way, the infrastructure will address the real needs of all of society. Infrastructure planning should go beyond focusing on the productive use of infrastructure (transport to markets) to incorporate the needs of everyone (access to water points, schools, and health centers) as well as the climate dimension (droughts extend the distance to water points, heat makes walking long distances challenging, and floods block access).

Feasibility & Preparation

1 Establish locally led governance structures that shift decision-making power to women and vulnerable groups.

A strong, locally-led governance mechanism will ensure effective implementation of gender and climate provisions on the ground, including the incorporation of local communities' perspectives and contexts. This formal communication channel, guaranteeing that local voices are heard throughout the project lifecycle, complements SADD and climate vulnerability maps with local perspectives. Additionally, this two-way communication channel should be used to raise awareness of future climate risks that the community should prepare for, even if they are not yet evident at the local level.



Practical tip!

The following local mechanisms can serve to reach and organize key community actors as locally-led governance mechanisms:

- Communities contacted during the Needs Identification phase
- Local volunteer groups or committees are already established
- Local NGOs and microfinance institutions
- Context-specific communication and outreach strategies

Elements for the success of locally-led governance mechanisms as an anchor for public involvement:

- Establish roles and responsibilities in decision-making to go beyond consultation
- Establish quotas or minimum requirements to ensure inclusion of the diversity of socially excluded and climate-vulnerable groups in the community.
- Mandate comprehensive consultation with these groups through formal procedures
- Allocate resources to ensure vulnerable persons can effectively assume leadership positions.

Beyond serving as participatory communication mechanisms between the community and the project team, local governance mechanisms play a crucial role in preventing exclusion and ensuring that local needs are addressed. They should:

- When resettlement is unavoidable, ensure that new locations account for climate risks and that women have access to equitable financial compensation and property rights.
- Oversee the fair distribution of resources and prevent dominant factions within communities from seizing them to avoid elite capture.
- Support performance monitoring mechanisms in collecting SADD and climate indicators throughout the project to track progress toward equitable and climate outcomes in their community.

Shifting power to local women to enhance climate resilience

Enhancing the skills of locally elected female representatives, such as female ward commissioners, creates opportunities to boost both inclusivity and climate resilience. Educating women in local communities, especially those in leadership roles, on climate risks offers a gender-specific outlook on resilience efforts. Since women often serve as primary caregivers for children, elders, and vulnerable groups, they incorporate these concerns into their perspectives. Engaging women directly in local decision-making, like infrastructure planning or participating in road maintenance and safety committees, helps ensure that the needs of the vulnerable populations they serve are addressed.

2 Develop evidence-based GAPs supported by dedicated budgets, contractual requirements, and SMART indicators.

The GAP should be grounded in evidence by building upon the climate-reinforced gender and inclusion needs identified in previous section and translating them into concrete actions, goals, and indicators to address them in the project area. It should:

- Go beyond basic demographics to assess the gendered division of labor and control over resources.
- Evaluate how specific climate hazards (e.g., heat, flooding) disproportionately affect women to ensure infrastructure addresses their needs and remains accessible during disasters.
- Utilize SADD to monitor progress in addressing distinct needs rather than just counting beneficiaries.

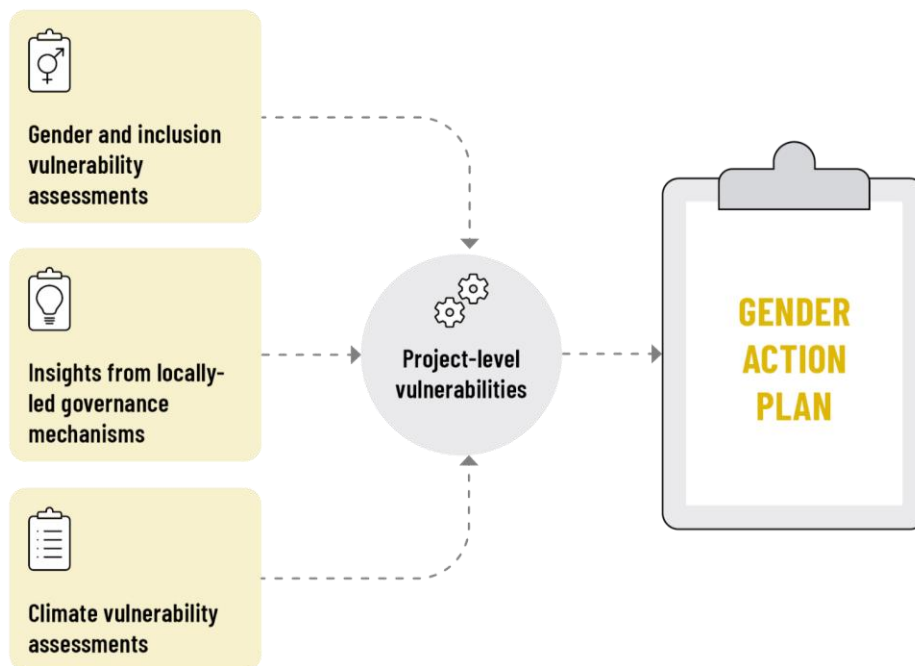


Figure 5 Inputs to a comprehensive and climate-informed Gender Action Plan

The GAP should also include gender and inclusion considerations during the construction process:

- **Explicitly plan for gender-specific risks during construction.** Frequent risks for female construction workers include:
 - Gender-blind employment and procurement processes
 - Lack of separate facilities at construction sites
 - Increased risk of GBV or exploitation arising from labor influx
 - Limited female community mobilization workers or engineers leading to a lack of implementation capacity for gender measures.
- **Improve women's employment and safety in infrastructure construction by:**
 - Including realistic, quantitative employment targets
 - Explicitly addressing time poverty and unpaid care work by mandating childcare support at construction sites.
 - Indicating gender-responsive and socially inclusive physical design features to be included, such as separate toilets, breastfeeding corners, well-lit waiting areas, and reserved commercial spaces for female vendors.

To ensure implementation, the GAP should have financial and legal backing and a monitoring mechanism to track its progress. It should:

- **Be financially and legally secured:**
 - GAP and budget development should be coordinated to ensure specific budget lines are allocated for GAP implementation.
 - Senior staff should be appointed as gender focal points within the executing agency to ensure implementation.
 - GAP requirements must be translated into legal obligations within contracts and bidding documents to make gender targets and GBV codes of conduct legally enforceable.
 - Regarding displacement, the GAP should align and support the social safeguards established to protect women's assets.
- **Integrate gender indicators directly into the project's design and monitoring framework (DMF)** to ensure they are achieved. Gender indicators should:

- Be SMART (Specific, Measurable, Achievable, Relevant, Time-bound)
- Measure the quality of benefits and decision-making power for vulnerable groups, rather than only participation.
- Be verified by the contract management team during construction (e.g., ensuring separate toilets are functional) and during operations (e.g., verifying that safety buttons function).
- **Incorporate M&E systems that include GRMs.** To ensure safety, third-party operators can be employed to facilitate honest feedback from women workers who might otherwise fear retaliation when reporting issues like sexual harassment.

Example of Gender Action Plan (GAP) structure²⁰

The specific format and templates for GAPs may vary by organization. In some organizations the GAP starts with the overall gender objectives/goals, means of verification, or other initial background introduction. If the project comprises several components, the gender-related outputs and actions may be grouped by component.

Regardless, at the core, GAPs typically include a table that covers each project component or output and specifies gender-related activities, targets/indicators, timeline, responsibilities, and costs. The general structure is usually as follows:

Activity	Indicator/Target	Timeline	Responsible organization	Cost
Outcome 1: Decreased risk of loss of assets and lives from extreme weather events				
Design and building of homesteads: Selection of beneficiaries, including vulnerable women and provide support of construct/re-construct house.	Baseline: 0 Target: 50% vulnerable women beneficiaries Indicator: 50% vulnerable women beneficiaries selected	Start within 6 months of the project's commencement	Implementing Entity and Project Management Unit	11.4 USD million
Homestead tree planting. Selection of beneficiaries, including vulnerable women, and provide support for tree plantation	Baseline: 0 Target: 50% vulnerable women beneficiaries Indicator: 50% vulnerable women beneficiaries selected	Start within 9 months of the project's commencement	Implementing Entity and Project Management Unit	0.8 USD million
Outcome 2: Increased livelihood resilience to sea-level rise, storm surges, and salinity				
Construction of slatted houses for goat/sheep rearing: Selection of vulnerable women and provide support for the construction of slatted	Baseline: 0 Target: 50% vulnerable women beneficiaries Indicator: 50% vulnerable women beneficiaries selected	Start within 9 months of the project's commencement	Implementing Entity and Project Management Unit	1.4 USD million

²⁰ Extract adapted from GCF project FP206: Resilient Homestead and Livelihood support to the vulnerable coastal people of Bangladesh. Gender Action Plan. July, 2023.

houses for goat/sheep rearing				
...				

Funding & Financing

3 Integrate gender equality and climate resilience into public financial management by embedding them in fiscal policies, mandating budget allocations, and ring-fencing funds within the DPP.

Ensuring funds are available requires prioritizing gender, inclusion, and resilience to avoid cuts when resources are limited. Integrating gender and climate analyses into financial planning is essential to highlight the needs and risks, as well as the long-term financial benefits of gender mainstreaming and climate adaptation. This requires a more strategic inclusion of gender, inclusion, and climate assessments in the DPP to ensure its long-term benefits (including financial) are clearly reflected and considered in the overall financial assessment of the projects.

Infrastructure projects funded by international donors already allocate funds to implement the project's gender and resilience requirements. For the government to prioritize gender and resilience requirements equally, budgeting must move beyond ad hoc project funding to a more systematic approach. Actions include:

- Key ministries (e.g., Agriculture, Disaster Management) should integrate gender analysis into fiscal policy to ensure spending on gender equality, social inclusion, and climate resilience is protected during fiscal constraints.
- Fiscal discipline must extend to the local level; municipality and city corporation budgets should be subject to the same screening as national budgets.
- Clear gender, inclusion, and climate strategic goals could be established. For example, mandating a minimum percentage (e.g., 5%) of the overall budget for gender-related programs.
- Economic assessments must evolve; when calculating value for money, financial models should include the economic benefits of closing gender gaps, such as women's time savings and increased safety, as well as the avoided losses from investing in infrastructure resilience.
- Gender and inclusion budgets should be tagged to ensure transparency and monitor public spending, as is done for climate budgets.

Tracking climate funds in Bangladesh²¹

Bangladesh has developed a Climate Finance Tracking System aligned with the Bangladesh Climate Change Strategy and Action Plan (BCCSAP). This system has been integrated into its Integrated Budget and Accounting System since FY 2018-19. Following the Climate Public Fiscal Tracking Methodology, it identifies climate finance amounts for 25 Ministries/Divisions and follows several steps to align each budget line with the BCCSAP themes and programs. Furthermore, each line is scored based on its climate relevance. For complex projects or programs, up to three climate-relevance criteria may be considered, each weighted according to established rules.

Despite the BCCSAP covering many climate-relevant areas, gender-responsive and socially inclusive resilient infrastructure is fragmented across several of its themes and programs. These climate-relevance

²¹ Finance Division, Ministry of Finance. Climate Financing for Sustainable Development, Budget Report 2025-26. 2025; BCCSAP-2009 and Climate Public Finance Tracking in Bangladesh, 2018 (Approach and Methodology).

criteria should be periodically reviewed and updated to ensure that the gender, inclusion, and climate vulnerabilities included align with the latest research. The latest climate-relevance criteria table (from 2018) includes gender, inclusion, and resilience explicitly in the following items:

- **Program 0110: Livelihood protection of vulnerable socio-economic groups** (including women)
- **Theme 02: Comprehensive disaster management** (although with a strong focus on warning systems rather than resilient infrastructure)
- **Theme 03: Infrastructure** (although with a strong focus on infrastructure to manage floods, cyclones, and storm surges, rather than on embedding resilience in all infrastructure)
- **Theme 06: Capacity building and institutional strengthening**

While there has been substantial progress in aligning and tracking climate finance in Bangladesh, it should be further integrated with other development goals to ensure it functions as a strategic cross-cutting dimension rather than an isolated theme.

Even after assigning a budget to gender, inclusion, and climate, there is a risk of it being cut during the project implementation if resources are limited. Some mechanisms to ensure the budget is available at the national level include:

- **Using the Medium-Term Budgetary Framework**, which enables planning of budgets for the current year and the two following years, to earmark funding for climate or women-specific benefits during the initial design phase. This would improve funding availability in the following years.
- **Tracking the gender-related budget** using the MoFi's Recurrent, Capital, Gender, and Poverty (RCGP) model, which applies gender-impact-based percentages to budget items to show the share of spending that benefits women.
- **Implementing gender budget tagging systems** to track specific budgetary flows for gender priorities would further improve transparency. Synchronizing this framework with the climate budget marker could enable analysis of how expenditures address gender-differentiated climate vulnerabilities.



Practical tip!

Two key actions to strengthen governance for gender-responsive and socially inclusive budgets include:

- Recruiting sociologists and community workers within infrastructure agencies.
- Ensuring women's representation in financial decision-making bodies through participatory budgeting processes.

Integrating gender, inclusion, and climate into project budgets

At the project level, the DPP serves as the binding financial instrument.

- Officials must apply the DPP format to link financing modes directly to gender-disaggregated targets that result from integrated gender-climate assessments.
- The GAP must be fully costed and financially backed within the central project budget to prevent it from being cut.
- Funds must be explicitly allocated for gender-climate vulnerability analysis, gender-sensitive stakeholder consultations, and the hiring of gender and climate specialists.
- Dedicated infrastructure budget lines must address personal and climate risk to safety, such as lighting, shadows, police patrols, safe toilets, access to drinking water, and waiting rooms with a comfortable climate.

Ensuring funding for operation and maintenance

Budgets must identify consistent funding sources for operations and maintenance during the Planning phase (e.g., user fees, central grants, or advertising revenue) to prevent degradation. While multiple schemes could be used, depending on the infrastructure sector, it's essential to ensure affordability for women and other vulnerable groups. One approach is through tariffs and subsidies based on sex-disaggregated willingness-to-pay studies, potentially subsidizing initial connection charges for female-headed households.



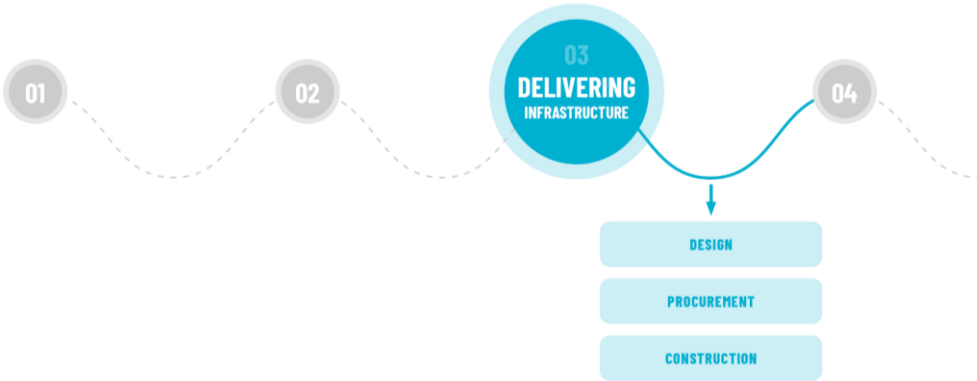
Practical Tip!

For some types of infrastructure, future avoided losses from enhanced resilience could be leveraged to fund operations and maintenance, for instance, by negotiating lower insurance premiums or channeling some disaster-related funds into building resilience. Some resilience value captured models could be used to secure funding for the operation and maintenance of resilience infrastructure. For instance, a tax increase in the protected area could fund maintenance of flood-protection infrastructure, resulting in lower overall costs for beneficiaries.

Finally, to ensure that gender budget allocations translate into tangible outcomes rather than administrative overhead, the government could institutionalize a gender-climate design note as a mandatory quality assurance annex to the DPP. This annex would allow the Planning Commission to verify that gender commitments are not just theoretical, but are financially ring-fenced and technically integrated into the project design before approval. This concise document acts as a compliance filter by summarizing:

1. The key gender-climate risks identified
2. The specific design modifications adopted to mitigate them
3. The budget lines related to these mitigation actions or design changes
4. The monitoring indicators
5. The safeguard commitments that have been established.

2.3 Delivering Infrastructure



Summary of Actions:

- Design**
 - Design infrastructure that is safe, accessible, and climate-resilient by using disaggregated data and targeted inclusive design measures.
- Procurement**
 - Implement inclusive procurement through gender-responsive bidding criteria, inclusive employment targets, and climate-resilient technical specifications.
- Construction**
 - Enforce safeguards by mandating inclusive hiring, zero-tolerance policies on gender-based violence, and climate-resilient health and safety standards.

The Delivering Infrastructure phase encompasses design, procurement, and construction, where the commitments made in the Planning Infrastructure phase are transformed into concrete activities and specifications, and tested against on-the-ground realities.

Upon approval, the sponsoring agency (line ministries or implementing agencies) initiates the procurement process based on the specifications detailed in the DPP and following the PPA and PPR guidelines. Gender, inclusion, and climate are integrated in this process to the extent that the previous assessments and policy goals are translated into contractual obligations and enforced in their implementation.

The sponsoring agency should revise the bidding documents to ensure that the gender and climate safeguards identified in the DPP become non-negotiable contractual deliverables, given the absence of standardized required mechanisms. While LGED has already institutionalized procedures to operationalize at least gender-responsive considerations, more centralized government agencies are still slowly evolving to incorporate these types of procedures.

Key Stakeholders:

In this phase, the following stakeholders play key roles:

- **Implementation Monitoring and Evaluation Division:** responsible for monitoring the execution of projects and evaluating the project impact. However, their capacity to track qualitative gender and climate outcomes is often limited to mere financial expenditure.
- **MoFi:** controls the budgetary allocations, including the gender and climate budget tracking.
- **Line ministries and implementing agencies (infrastructure sponsoring institutions):** the technical divisions of these agencies are responsible for the detailed design, procurement, and construction supervision of the infrastructure.
- **Local government institutions:** supervise small-scale construction and maintenance, and are expected to represent or include the local community's voice.
- **Private sector consultants, contractors, and suppliers:** provide technical expertise and implement the detailed technical design, procurement, and construction of the work.
- **Local communities,** including non-government agencies, community-based organizations, and local volunteer groups, might provide input through participatory processes, supervise local infrastructure implementation, and be employed in the construction.

Integrating climate, gender, and inclusion in the Delivering Infrastructure phase

The Delivering Infrastructure phase traditionally presents a dual challenge: the exclusion of vulnerable groups (women, PwD and minorities) from economic opportunities and the heightened risk of GBV. Climate hazards have added a new dimension in terms of risks to be considered, particularly in infrastructure design and during construction. Historically, the construction sector in Bangladesh has failed to provide adequate job opportunities for women, reinforcing economic dependence on men. Furthermore, infrastructure delivery often lacks universal design features, resulting in facilities that are physically inaccessible to PwDs and seniors from the moment of handover.

Climate resilience in this phase is inextricably linked to physical safety and social protection. The migration of male laborers into rural areas for large-scale climate adaptation projects can lead to a spike in SEAH against local women and girls if robust safeguards are not implemented. Furthermore, regarding the physical asset itself, fast-onset climate events expose critical design flaws. For example, if cyclone shelters are delivered without sex-segregated spaces, private sanitation facilities, or adequate lighting, they can become sites of danger for women and girls rather than a sanctuary. A facility that creates safety risks for women during a climate emergency cannot be considered resilient, regardless of its structural integrity. Finally, more intense climate phenomena, such as heatwaves or increased rainfall, cause increased stress during mobility and outdoor work that can exacerbate health risks for the most vulnerable construction workers and users.

Design

1 Design infrastructure that is safe, accessible, and climate-resilient by using disaggregated data and targeted inclusive design measures.

To ensure that infrastructure investments deliver transformative results, their design must be based on data and evidence gathered in earlier phases.

- Engineers should utilize the SADDD from the Needs Identification phase to select locations and features, avoiding reliance on broad community models.
- Address the specific climate and environmental risks impacting women, children, and marginalized groups identified while developing the DPP.
- During the design and preparation stages, verify that identified needs are met through self-assessment and community-based tools such as the Gender Marker Toolkit (see text box), gender indicators from the GAP, and suitable design reviews like participatory walking audits, accessibility checklists, or social audits.

The LGED Gender Marker Toolkit

Developed in 2021 as part of the National Resilience Programme, the LGED Gender Marker Toolkit is a structured self-assessment methodology for evaluating and tracking the gender responsiveness of infrastructure projects in Bangladesh. This toolkit contributes to the objectives of the National Resilience Programme of achieving resilience for all through risk-informed, disability-inclusive, and gender-responsive infrastructure systems, shifting from purely technical parameters to a user-centric approach to resilience.

The toolkit assesses projects across a 100-point scoring system divided into four stages of the project life cycle:

1. Impact, Needs, and Design Assessment: Early-stage analysis to meet the constraints of all users.
2. Implementation and Construction: Ensuring affirmative action in procurement and safe working environments.
3. Maintenance, Operation, and Rehabilitation: Sustaining benefits and creating leadership roles for women in asset management.
4. M&E: Using participatory processes to document results and lessons learned.

In this way, the toolkit reinforces LGED's existing Gender Equality Strategy and serves as a learning and development tool. It helps identify inclusion gaps in practice and encourages the collection of SADDD. It considers intersectionality by explicitly accounting for the needs of adolescent girls, the elderly, and persons with disabilities, ensuring that gender is an integral part of all stages of infrastructure engineering.

Detailed gender-responsive, socially inclusive and climate resilient design interventions for each infrastructure sector can be found in Annexes B, C, D. However, some key interrelated themes that should be considered from a governance perspective across infrastructure sectors include ensuring that the infrastructure is:

1. Safe and secure for everyone
2. Always accessible, particularly for those with limited mobility during extreme events
3. Adequate for women and girls, the elderly, and other vulnerable groups

Safe and secure infrastructure for everyone

Infrastructure should be safe and secure, but what does this mean?


- Safety measures that protect from unintentional harm
- Security guards against intentional threats

Gender-responsive, socially inclusive, and climate-resilient infrastructure should:

- Be secure against intentional social risks (SEAH/GBV, theft)
- Be safe against the unintentional risks of gender-blind design (accidents due to poor accessibility, lack of safe waiting areas during transit delays, or disaster evacuations)
- Be safe against climate risks (flooding, heat waves)

Designing safe and secure infrastructure should consider the gendered impacts of social and climate risks, including:

Addressing social risks:	<ul style="list-style-type: none"> • SEAH/GBV: Design infrastructure explicitly addressing the security and practical needs of women and marginalized groups, such as incorporating SEAH/GBV prevention measures in design (adequate lighting, separate accessible sanitation facilities, clear visible sightlines, safe access) • Technological surveillance: Equipment such as CCTV cameras and panic buttons could deter violence and provide a reporting mechanism for harassment. • Safe access: Ensure safe access to infrastructure users through specific measures depending on the infrastructure. For example, ramps, raised intersections, and low speed limits – particularly in areas prone to chaotic traffic flows – reduce accident risks for children and the elderly.
Addressing gendered impacts of climate risks:	<ul style="list-style-type: none"> • Salinity and water scarcity: Designs must prioritize accessible, saline-free water sources at the household level, such as rainwater harvesting and managed aquifer recharge, to directly mitigate women's 'time poverty' and reproductive health risks. • Flood and cyclone resilience: Public buildings and multi-purpose shelters must feature gender-segregated toilets elevated above flood levels and separate private rooms for women. Additionally, shelters must allocate safe zones for livestock, as women often refuse evacuation if they cannot secure these critical livelihood assets. • Erosion-prone zones: Housing should utilize resilient materials (e.g., ferro-cement) and portable features where possible to allow assets to be saved during erosion events. • Flash-flood regions: Road designs in flash-flood regions should employ concrete blocks and widened shoulders to withstand submersion and facilitate female employment in tree plantation. • Disaster evacuation: Evacuation routes must be designed to accommodate specific constraints (e.g., lack of swimming skills, traditional clothing) during disasters.



Practical tip!

Nature-based and blue-green solutions - such as vegetated and bio-engineered slopes, restored urban waterways and wetlands for drainage and cooling, and green corridors integrated with stormwater systems - can be combined with grey infrastructure through hybrid approaches. These measures enhance slope stability and reduce heat stress, an impact that disproportionately affects children and pregnant women.

Always accessible infrastructure for everyone, particularly for those with limited mobility due to disability and those facing social discrimination

To ensure that everyone can use the infrastructure, it should be accessible. Achieving this includes:

General considerations for accessibility:

- Pathways should be universally accessible both in the infrastructure and in their access routes.
- Tactile guiding and auditory signals should complement visual signaling to maintain navigability for PwDs even during adverse weather events.
- Routes should be safe for vulnerable users, including ensuring protection of non-motorized transport (protected lanes on major roads, low speed limit on minor roads, safe crossing design, etc.).
- Efforts should be made to remove physical barriers for the elderly, pregnant women, and those traveling with children or in traditional clothing (low-floor buses with level boarding, uninterrupted, wide sidewalks without significant gradients, etc.)

Climate-specific considerations for accessibility:

- Increased heat or rainfall requires designing safe waiting areas to ensure women and children have a safe refuge during transit delays and emergencies.
- Roads should remain accessible despite adverse climate events, particularly those connecting with emergency shelters. This might include ensuring that road materials and elevations account for the impact of climate change on flooding.

Practical tip!



Complying with universal accessibility and mobility standards during the design phase is generally feasible at 1% of total cost, whereas retrofitting older buildings to be universally accessible may not be feasible due to technical, preservation, and resource constraints.

Source: World Health Organisation (WHO) & World Bank (WB). (2011) World Disability Report. Malta. Available at [\[Link\]](#)

Adequate infrastructure for women

Despite representing half of the population, infrastructure often overlooks women's needs. Some general considerations to ensure infrastructure is adequate for women include (see Annexes B, C, and D for detailed design interventions):

- Ensure women's privacy (separate rooms, partitions, and sanitation facilities to ensure women's dignity and safety).
- Encourage women to overcome social barriers to market access and income generation activities (reserving specific commercial and market spaces for women, ideally with separate facilities to create a culturally acceptable environment for female trade).
- Consider women's responsibilities (consider that women might be taking care of children or elders while using the infrastructure and providing suitable spaces).
- Provide facilities for women (include gender-responsive WASH facilities featuring menstrual hygiene management provisions).
- Adequate lighting, ideally solar powered due to potential power cuts, as darkness severely restricts women's access to facilities.

- Anticipate the impact of climate-reinforced gendered vulnerabilities (ensure infrastructure remains suitable to address women’s needs despite the impacts of climate change).
- Address women’s deterrents to evacuation (ensure emergency shelters are safe and accessible for women, suitable for taking care of children, and include safe storage areas for livestock, poultry, or documents that might represent the bulk of women’s wealth).

Procurement

2 Implement inclusive procurement through gender-responsive bidding criteria, inclusive employment targets, and climate-resilient technical specifications.

Gender, inclusion, and resilience can be embedded in this phase through procurement processes, in particular in bidding documents and product specifications.

Procurement Processes

To target procurement processes towards being gender-responsive, socially inclusive, and climate-resilient, the government could:

- Evaluate higher bids demonstrating gender inclusivity and climate resilience
 - Shift from ‘lowest price’ to ‘value for money’ explicitly weighting bids higher for gender, inclusion, and resilience elements.
 - Evaluate contractors on their ability to deliver infrastructure that addresses specific climate vulnerabilities during disasters (building accessible evacuation routes, flood-resistant WASH facilities).
 - Use gender-related qualification criteria to assess bidders’ internal policies on harassment and equality.
- Include gender considerations throughout the procurement process
 - Specify enforceable employment quotas (e.g., 30%) for women across all project levels – from technical and decision-making roles to construction labor.
 - Institutionalize women’s participation in tender evaluation committees to ensure diverse perspectives in financial gatekeeping.
 - Develop, maintain, and use institutional databases and networks on qualified women entrepreneurs, contractors, and labor contracting societies to invite them to participate in bidding processes.
- Design procurement processes targeting marginalized groups
 - Break large tenders into smaller contract packages to lower entry barriers for women-owned enterprises.
 - Prioritize sourcing from women and marginalized groups’ businesses.
 - Enforce international supplier diversity standards requiring contractors to integrate women-owned SMEs into their supply chains.

Promoting inclusive physical and social resilience through Labor Contracting Societies (LCS)

Labor Contracting Societies (LCS) are community-based groups employed as a direct alternative to private contractors for the construction and maintenance of small-scale infrastructure, such as rural roads, embankments, and markets. This model promotes socially inclusive infrastructure governance in Bangladesh by directly shifting economic benefits to the most marginalized.

LCS promotes inclusion in at least three concrete ways:

- **Targeting the Most Vulnerable:** LCS groups specifically recruit destitute rural women, indigenous groups, and the landless, providing them with a primary role in the development of their own communities.
- **Decent Work and Financial Inclusion:** Participants are guaranteed equal wages for work of equal value, and the model mandates the opening of bank accounts and compulsory savings schemes to build long-term financial security.
- **Breaking Gender Stereotypes:** By employing women in technical and "blue-collar" roles, such as making concrete blocks, managing roadside tree plantations, or maintaining earthen roads, the LCS model challenges traditional gender norms and enhances women's public professional identity.

LCS groups play a vital role in community resilience by providing labor during "lean periods" (e.g., September to November) when other agricultural work is scarce. Additionally, local groups have the local context and knowledge to target routine maintenance more effectively, ensuring that critical assets address the community's needs during and after disasters.

The LCS model provides a dual benefit: it promotes locally relevant resilient infrastructure while simultaneously strengthening the socio-economic resilience of the poor.



Practical tip!

Targeted training in the following areas would enhance women's and vulnerable groups' participation in infrastructure procurement processes:

- Tendering and negotiation skills for women entrepreneurs in infrastructure.
- Skills in using climate-resilient construction techniques and materials to become technical experts in climate-resilient infrastructure.

Bidding Documents

Design bidding documents that integrate gender, inclusion, and resilience through:

- Utilizing explicit language in Requests for Proposals (RFPs) to encourage bids from women-owned businesses and socially excluded groups, thereby dismantling barriers of perceived ineligibility.
- Incorporating legal enforceability and gender-responsive requirements in standard bidding documents and contractor agreements, such as equal wages for work of equal value, adherence to core labor standards, and prohibition of child labor.
- Integrating social safeguarding requirements in tender documents, requiring contractors to provide gender-segregated sanitation, on-site creches, and safe temporary housing, particularly to support workers facing climate-induced displacement.
- Transitioning from standard 1-year defect liability periods to 3–5 year maintenance contracts in the tender process to ensure the long-term climate resilience of the infrastructure and more sustained employment opportunities in maintenance roles.

Product Specifications

Product specifications must evolve from general guidelines to ones that consider climate-reinforced intersectional vulnerabilities. Building on the Needs Identification phase, all procured items should be designed with consideration for gender, inclusion, and climate risks. For instance, specifying lightweight

doors and accessible latrines in cyclone shelters helps prevent women and persons with disabilities from being trapped or marginalized during flooding. This involves including privacy and hygiene features in the TOR to maintain infrastructure usability and dignity under climate stress. It also requires setting clear technical standards for safety and mobility, such as lower handlebars, wider gangways, and CCTV in public transport. See annexes B, C, and D for technical specifications to be considered depending on the infrastructure type.

Construction

3 Enforce safeguards by mandating inclusive hiring, zero-tolerance policies on gender-based violence, and climate-resilient health and safety standards.

During construction, the gender, inclusion, and climate considerations incorporated through the GAP and the procurement processes (contracts, bidding documents, TORs) must be implemented and enforced. The key considerations fall into the following categories:

- **Enforcing employment safeguards:** through wage parity, core labor standards, and prohibition of child labor. Including these safeguards in PPP contracts to ensure the private partner follows gender-responsive principles.
- **Promoting women's employment and professional growth:** through on-the-job training for higher-skilled roles, prioritizing contracting women either through labor contracting societies or directly, and enforcing gender quotas at all levels.
- **Having gender-responsive facilities:** such as WASH facilities featuring menstrual hygiene management provisions and on-site childcare facilities,
- **Monitoring progress and ensuring compliance:** through gender focal points or community organizers conducting regular site visits and tracking SADDD in the workplace, safety incidents, and compliance with the GAP.
- **Creating community oversight committees:** evidence suggests that involving women in project implementation committees to supervise construction quality leads to higher quality, less corruption, and infrastructure that better meets community needs.
- **Ensuring health and safety:** through taking measures to prevent GBV and offer protection from climate hazards during construction.

Ensuring health and safety is especially crucial during construction. Therefore, its three components are further disaggregated:

1. Health and safety
2. Preventing GBV
3. Protection from climate hazards

Health and Safety

To protect diverse bodies from physical hazards and climate extremes, health and safety measures must cover all employees regardless of gender or ability. Actions to achieve this include:

- Provision of personal protective equipment that fits women and PwDs.
- Implementing protocols to protect from climate extremes and environmental hazards.
- Providing safe, accessible housing for temporary construction workers, particularly if living situations near construction sites are exposed to climate hazards.
- Providing gender-responsive facilities and creches on construction sites.
- Ensure basic workplace safety measures.

Preventing GBV

Addressing GBV and SEAH in climate-sensitive infrastructure projects requires multi-level interventions:

1. Contractual safeguards:
 - a. **Zero-tolerance policies:** Require contractors and subcontractors to enforce policies prohibiting sexual harassment, exploitation, abuse, and violence.
 - b. **Codes of conduct and reporting:** Include legally binding codes of conduct and clear reporting and response mechanisms.
 - c. **SEAH/GBV training:** Mandate sensitisation training for all workers and management as a contract deliverable, with specific guidance on climate-related displacement and project risks.
 - d. **Enforceable penalties:** Include clauses allowing suspension or termination for non-compliance with GBV obligations or gender-related employment targets.

2. Construction-phase safeguards:
 - a. **Labor influx management:** Implement plans to mitigate risks from predominantly male labor arrivals, protecting local women and girls in communities affected by climate-related disruptions.
 - b. **Anti-trafficking measures:** Prevent construction sites and camps from being used for trafficking or sexual exploitation, particularly where climate-induced displacement increases vulnerability.
 - c. **Grievance mechanisms:** Establish confidential, accessible complaint systems (e.g., focal points, suggestion boxes) that prevent retaliation and accommodate illiterate workers, taking into account climate-related barriers to access (e.g., mobility disruptions from flooding or storms).



Practical tip!

Monitoring compliance with equal wage payments and core labor standards during post-disaster reconstruction works requires special attention. Climate distress forces vulnerable groups to seek reconstruction work to offset climate-sensitive economic activities (such as agriculture) that could be affected. Additionally, climate-induced displacement might break existing safety networks across women and other vulnerable groups. All these situations put vulnerable groups at even greater risk of exploitation.

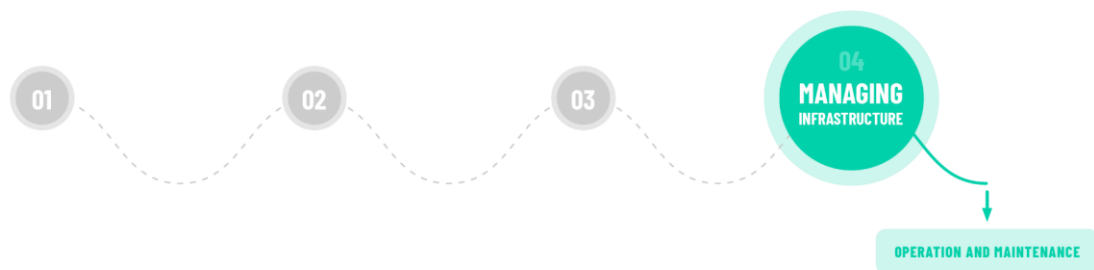
Protection from climate hazards and climate-triggered events during construction

Some climate-related considerations should be integrated with the gender and safety ones to ensure infrastructure construction withstands climate stressors while supporting vulnerable workforces.

- Consider that climate stressors disproportionately affect women and vulnerable groups
 - Ensure that the gender-responsive sanitation facilities are prepared to work under climate stressors (heatwaves or waterlogging) to avoid women's absenteeism.
 - Extreme weather events like heat stress exacerbate the physical burden on pregnant women and nursing mothers, so resting and feeding areas for them should be climate-proofed.

- Use climate-resilient construction methods
 - Use climate-resilient materials like reinforced concrete blocks instead of bitumen for roads in flash-flood zones. This keeps infrastructure accessible for women during floods, reducing isolation.
 - Plan construction (like earthworks) outside flash flood and monsoon seasons to prevent incomplete infrastructure that can fail during disasters.
 - Implement protocols to protect from climate hazards such as heat stress by avoiding peak hours and ensuring potable water availability.
- Using construction work to supplement climate-sensitive jobs
 - Targeting women for construction and maintenance jobs (e.g., through labour contracting societies) can provide an alternative livelihood when climate change destroys agriculture-based income.
 - On-the-job training for women in non-traditional construction roles (e.g., concrete block making) builds long-term resilience through diversifying women's skills beyond climate-sensitive alternatives.

2.4 Managing Infrastructure



Summary of Actions:

Operation and Maintenance

- Promote an inclusive O&M workforce through hiring targets and safe, equitable employment standards.
- Secure dedicated, long-term funding for gender-responsive and inclusive maintenance.
- Ensure maintenance planning explicitly accounts for climate impacts through targeted funding, prioritized safety measures, and extended contractor accountability.
- Enforce zero-tolerance policies and confidential reporting mechanisms to protect vulnerable groups from harassment and climate-related risks.
- Institutionalize gender-responsive monitoring, evaluation, and learning (MEL) systems by setting inclusive performance objectives, collecting SADD, and using qualitative insights to inform operational decisions.

A combination of centralized technical oversight and decentralized community management guides O&M in Bangladesh.

Infrastructure projects have an O&M Plan included in the infrastructure's DPP, identifying the responsible entity and the source of post-project financing (typically the revenue budget or user fees). This plan would identify which of the central agencies, such as LGED or the technical arms of line ministries, would set the technical standards for O&M. Two examples of this type of guidelines are LGED's 'Guidelines for Operation and Maintenance' and the 'Guidelines for Implementation of Rural Roads and Culvert Maintenance Program'.

Infrastructure operational oversight depends on the type of infrastructure:

- Infrastructure under the Ministry of Local Government, Rural Development & Co-operatives is typically managed at the local level. Local governments are responsible for financial and administrative tasks, including the allocation of maintenance budgets.
- Central government departments such as the Roads and Highways Department and the Bangladesh Water Development Board, have separate budgeting process. In this case the ministry headquarters, and different levels of local offices follow a mixture of bottom-up and top-down budgeting approach.

Community-based organizations, such as various volunteer committees, also play a vital role in managing local infrastructure and highlighting needs for the local government to address. For routine maintenance, labour contracting societies enable direct contracts with women and vulnerable populations, while local contractors often undertake larger construction projects.

Key Stakeholders:

In this phase, the following stakeholders play key roles:

- **Ministry of Finance, Line ministries:** Ensure that O&M funds keep infrastructure operational and inclusive.
- **Local governments and local offices of implementing agencies:** act as the financial and administrative gatekeepers for maintenance with actions such as allocating revenue budgets for maintenance, supervising labour contracting societies, and ensuring maintenance schemes are inclusive.
- **Local workforce (labor contracting societies and other local contractors):** directly contracted for maintenance tasks; as such, they are critical for ensuring gender, inclusion, and resilience designs are implemented, operated, and maintained as required.
- **Technical and oversight agencies:** several central government bodies set the standards and provide technical supervision to infrastructure O&M. Among them, LGED stands out for its role in supervising all local infrastructure; however, depending on the type of infrastructure, different technical departments of the line ministries are relevant.
- **Communities:** the community-level governance bodies are the key mechanism for women and other vulnerable populations to ensure that local social and climate vulnerabilities are prioritized in infrastructure over time. Multiple committees are common in Bangladesh and provide avenues for women's participation in infrastructure. Some of them include:
 - **Infrastructure management committees:** responsible for the day-to-day operation of assets like community clinics and rural roads. LGED mandates that women constitute 50% of the representation, but it is also crucial to ensure they hold decision-making power.
 - **Disaster management committees:** critical for last-mile EWS and managing resilience-related infrastructure. They also participate in emergency repairs and ensure that maintenance prioritizes the safety of vulnerable groups during disasters.

Integrating climate, gender, and inclusion in the Managing Infrastructure phase

Ensuring women's employment in O&M roles and maintaining infrastructure that is suitable for women, children, the elderly, PwDs and other vulnerable groups, is essential to keep infrastructure gender-responsive, socially inclusive, and resilient during operations. Furthermore, infrastructure O&M can be leveraged as motors for gender-responsive, inclusive and resilient development. Security must be ensured

so that children and women can use public infrastructure safely, and maintenance should prioritize local social and climate vulnerabilities to ensure accessibility for PwDs and seniors.

Effective infrastructure O&M are vital to protecting assets amid climate stresses. Rural road networks should remain functional during floods and cyclones, allowing people to reach shelters and critical services such as hospitals and schools. Maintenance programs must also account for increased degradation from climate hazards to both infrastructure and the services it provides. Because climate impacts on infrastructure are gendered, affecting different groups' benefits and use, maintenance should prioritize safety repairs and ensure infrastructure remains welcoming and helpful for vulnerable groups.

Operation and Maintenance

1 Promote an inclusive O&M workforce through hiring targets and safe, equitable employment standards.

The key to prioritizing gender, inclusion, and climate in O&M is to embed these practices through diverse, targeted staffing. When local women have leadership roles in infrastructure O&M decision-making, gender and climate vulnerabilities will be prioritized. This requires actions to both hire women and ensure inclusive employment practices.

<p>Hiring women, PwDs and other minority groups</p>	<p>Actions to ensure gender awareness and capacity through the O&M staff:</p> <ul style="list-style-type: none"> • Succession plans ensure local women, PwDs, and minority groups keep leadership positions, including building capacities as needed, post-project, to avoid elite capture or male dominance of infrastructure management. • Reserve maintenance jobs for impoverished women and local minority groups through mechanisms such as Labour Contracting Societies (LCS). • Beyond project-level, including gender and climate specialists in key infrastructure governance positions to ensure awareness and capacity for gender, inclusion, and climate hazards remain
<p>Inclusive employment practices</p>	<p>Actions to ensure safe and fair working conditions for women and other vulnerable groups:</p> <ul style="list-style-type: none"> • Formalize women’s supervisory roles in maintenance contracts and manuals. • Use performance-based contracts for village maintenance groups to undertake community-based rural road maintenance (such as routine earthworks and repairs, but could be more advanced if capacity is available). This type of contract can be flexible thanks to the output-based payment system, enabling women to combine this work with other household and farm responsibilities. • Enforce core work standards (strict wage parity, providing fitted protection equipment, ensuring safety in the workplace, and so on) for both hired staff and private operators. • Include provisions for paid maternity leave, sick leave, and insurance for female maintenance workers and transport operators in employment contracts. • Mandate separate, safe, and hygienic toilets and resting areas for female workers at terminals, depots, work sites, and field sites.

Practical tip!



Quotas can be used to ensure women are present throughout infrastructure O&M.

- **O&M Committees:** local committees (management committees or water management cooperative associations, etc.) provide community perspectives on infrastructure O&M. Women should hold decision-making roles (not just token memberships) in these committees to ensure that maintenance budgets prioritize assets critical to women.
- **Maintenance works:** hiring women and marginalized groups for routine maintenance such as road or earthworks repair or vegetation management offers alternative, climate-resilient income sources for the most vulnerable. Safety net programs such as Bangladesh's Employment Generation Program for the Poorest or Labor Contracting Societies (LCS) are practical ways to implement this.
- **Higher-skilled operational roles:** concrete targets for hiring women into higher-skilled operational roles such as bus drivers, station supervisors, or ticket collectors enable alignment of capacity-building and training programs with gender and inclusion goals by providing clear benefits and a pathway towards better economic opportunities.

2 Secure dedicated, long-term funding for gender-responsive and inclusive maintenance.

Gender-responsive and socially inclusive maintenance involves engaging women and focusing on infrastructure aspects important to vulnerable groups. The earlier section on inclusive employment supports this by empowering local women and other minority groups with decision-making authority over infrastructure O&M.

Budgeting for this type of maintenance is equally important. Without dedicated funds, safety features such as lighting and separate toilets tend to deteriorate, making environments unsafe for women and girls. To prevent this, allocate specific revenue streams like user fees, advertising income, or central government grants exclusively for maintenance and ensure their collection.

3 Ensure maintenance planning explicitly accounts for climate impacts through targeted funding, prioritized safety measures, and extended contractor accountability.

Climate infrastructure risks typically focus on maintaining operation during extreme weather events. However, climate hazards also directly affect infrastructure, necessitating updates to maintenance procedures to address these impacts. Moreover, climate impacts can vary among different social groups. For instance, O&M protocols should account for the fact that droughts can disproportionately affect women in WASH operations, while higher rainfall can reduce ramp accessibility for people with limited mobility.

To ensure infrastructure longevity and continued access for vulnerable groups, government agencies must institutionalize gender-responsive, inclusive, climate-resilient maintenance practices. This includes the following:

- Allocating sufficient funds specifically to account for climate-responsive maintenance, which should consider:
 - Climate-accelerated degradation, such as salinity corrosion and erosion.
 - Gender-specific needs arising from climate impacts, such as increased maintenance for sanitation facilities in waterlogged areas.
- Maintenance protocols must prioritize the repair of safety features related to women's and personal safety (street lighting, lockable gender-segregated toilets) and to climate hazards (protections from rainfall, heat, and flooding).

- Shifting from standard one-year defect liability periods to 3–5 year maintenance contracts, to ensure more sustained employment opportunities and to hold contractors accountable for long-term climate resilience.
- Enforcing strict schedules for cleaning climate-adaptive features like bioswales and stormwater drains to prevent urban flooding.
- Ensuring public buildings and shelters remain disaster-ready, maintaining functional, separate WASH facilities, and training staff to assist vulnerable groups during emergencies.

4 Enforce zero-tolerance policies and confidential reporting mechanisms to protect vulnerable groups from harassment and climate-related risks.

For women and other vulnerable groups to feel comfortable using the infrastructure, everyone’s safety from GBV and climate hazards should be maintained during infrastructure O&M. Key actions to achieve this include:

- Zero-tolerance policies regarding SEAH/GBV, particularly for all infrastructure supervisors, operators, contractors, and maintenance workers. This requires monitoring data on harassment and includes strict punitive measures, such as revoking driving licenses and route permits, for operators found guilty of harassment.
- Proactive monitoring of threats to prevent human trafficking, sexual exploitation, or climate risks. This could be supported by technological surveillance (CCTV, GPS, heat/rain/flooding sensors) linked to rapid-response teams to address safety incidents.
- Confidential GRMs, such as suggestion boxes or digital apps, are helpful for users to report failures or safety violations without fear of retaliation
- Continuously measure women’s perception of safety through anonymous surveys and participatory audits that consider GBV and climate risks.
- Ensure protections against climate hazards in infrastructure are prioritized during maintenance

5 Institutionalize gender-responsive monitoring, evaluation, and learning (MEL) systems by setting inclusive performance objectives, collecting SADD, and using qualitative insights to inform operational decisions.

To ensure infrastructure delivers sustained value, government agencies must institutionalize MEL systems that go beyond technical durability to assess social functionality and include qualitative and quantitative, gender-disaggregated indicators. Furthermore, the insights from these indicators should serve to improve future projects.

Governance of a gender-responsive and socially inclusive MEL framework requires:

1. Establish gender, inclusion, and resilience performance goals from the onset: Create a gender-specific M&E plan at the start of the project that highlights impacts and benefits for different social groups. This approach ensures monitoring goes beyond technical performance (e.g., "Is the pump working?") to include social utility questions (e.g., "Can pregnant women access the pump during a flood?").
2. Define key performance indicators: Use a logical framework approach to establish clear, objectively verifiable indicators that assess quantity, quality, and time related to gender, inclusion, and resilience performance goals.
3. Incorporate insights into future project guidelines: Lessons from the M&E of the projects should be consolidated and used to revise guidelines, manuals and training materials.

4. Ensure inclusive staffing: Continuously monitor the composition and functionality of O&M committees to ensure they remain inclusive (e.g., 50% women) and are not subject to elite capture.

Role of qualitative indicators in M&E

Beyond quantitative indicators, qualitative information is crucial for assessing whether gender, inclusion, and resilience are being institutionalized in infrastructure O&M.

Methodologies for collecting qualitative SADD should go beyond simply verifying that inclusive features (such as ramps and women-only market sections) remain accessible and are not disabled by climate impacts, such as waterlogging. They should also assess whether the management structure itself is capable of maintaining gender-responsive practices despite climate-related stressors.

Some methodologies to collect qualitative SADD are:

- Continuous feedback mechanisms: phone calls, suggestion boxes, social media, online community engagement
- Participatory safety, gender, and accessibility audits of operations, budgets, and services
- Satisfaction surveys: anonymous phone surveys, online surveys, and in-person user satisfaction surveys.



Practical tip!

Collecting SADD is crucial for M&E. The following elements should be monitored:

- Composition of infrastructure users and employees
- Duration and frequency of service disruptions
- Damage and economic losses at the individual level (rather than at the household level)
- Accidents, injuries, and health issues linked to infrastructure failures (e.g., waterborne diseases, respiratory infections)
- Satisfaction feedback on the conditions of WASH facilities
- Effectiveness of EWS, specifically focused on women, to determine if communities received, understood, and were able to act on disaster early warnings
- Infrastructure usage and satisfaction of both users and employees.

Turning SADD into strategic insights and practical lessons

The SADD collected as part of the MEL system should be analyzed to evaluate performance, identify critical points and trends, and consolidate lessons.

Practical actions for this include:

- Establishing gender labs for data analysis with the capacity to analyze safety audits, service usage information, real-time data from CCTV, and other SADD collected to identify insights to inform operational decisions, particularly focused on addressing women's and vulnerable groups' impediments.

- Tracking key performance indicators disaggregated by sex, age, and disability to identify and rectify hotspots caused by maintenance neglect.
- Systematically documenting and sharing best practices and lessons learned regarding gender-related aspects.
- Monitoring compliance with service-level benchmarks for critical facilities such as gender-segregated toilets, nursing corners, waiting areas, and climate protections, among others.
- Monitoring service reliability based on women’s usage patterns (not just peak usage times) to adjust maintenance schedules.

3. Beyond Gender-Responsive, Socially Inclusive And Resilient Infrastructure

3.1 Building Capacity to Implement Gender-Responsive, Socially Inclusive, Resilient Infrastructure.

Mainstreaming gender-responsive, socially inclusive, resilient infrastructure requires awareness and capacity on these issues across society, beyond those directly involved in the infrastructure projects. Three key entry points to embed awareness and capacity are identified in the table below.

Decentralizing gender, inclusion, and climate capacity	<p>Capacity building should be decentralized from Dhaka to local authorities to ensure effective operationalization and long-term monitoring of gender, inclusion, and climate mandates. This approach addresses cultural norms that limit women’s leadership and restrict their access to safety during climate crises. Suggested entry points:</p> <ul style="list-style-type: none"> • Government needs to focus on training Upazila- and Union-level officials to incorporate gender and climate risks directly into local planning processes. This includes specialized training on executing GAPs for local staff. • Training programs must empower local planners to involve underrepresented groups, such as women, in urban governance and disaster risk management. • When possible, gender, inclusion, or climate specialists could be appointed or trained within strategic positions to guide and supervise technical teams working in rural areas.
Ensuring basic awareness of gender, inclusion, and climate for all staff	<p>To embed gender, inclusion, and resilience effectively, government agencies must implement mandatory capacity-building initiatives for all staff, from project directors to field contractors. Key topics should include:</p> <ul style="list-style-type: none"> • Women’s time poverty and climate vulnerability • Training on SADDD data collection and analysis • Safeguards to prevent SEAH/GBV within the workforce and community. <p>Some positions might benefit from targeted training, for example:</p> <ul style="list-style-type: none"> • Field staff building capacity on participatory approaches to ensure the voices and indigenous knowledge of underrepresented groups are acknowledged. • Budget-related officials learning about the importance and economic benefits potentially delivered by gender-responsive, inclusive, and resilient interventions to ensure funds are allocated to these actions. • Transport operators and infrastructure staff taking training on women’s specific safety concerns in rural areas to promote preventive measures.

Upskilling local women and vulnerable groups

In the medium term, gender and inclusion initiatives should strengthen the capacity of vulnerable groups to transition from unskilled labor to technical and leadership roles. Providing opportunities for women and vulnerable groups to acquire non-traditional technical skills supports this transition and helps the government bolster the local workforce. Training programs could focus on:

- Equipping the local workforce to repair critical infrastructure and adopt green technologies.
- Support local women to operate and maintain sustainable infrastructure such as solar panels and solar pumps, ensuring basic off-grid services in remote or climate-affected areas.
- Include leadership and management training, such as budgeting and governance, to empower women to assume roles as presidents or secretaries and to manage local resources responsibly while preventing elite capture.
- Develop survival skills training, such as swimming and first aid, throughout communities to build resilience among women and vulnerable groups, transforming them from victims into proactive agents of disaster resilience.

3.2 Infrastructure as a Catalyst of Inclusion and Climate Resilience

Infrastructure investments are more than physical assets; they are catalysts for social and economic development. The benefits of gender-responsive, socially inclusive, resilient infrastructure extend beyond the facility to the surrounding areas and communities. For example:

- Safe, accessible transport increases women’s economic participation
- Climate-resilient schools with adequate sanitation ensure educational continuity
- Functional hospitals safeguard public health during emergencies.

Realizing this potential requires moving from treating gender, inclusion, and resilience as mere compliance checkboxes to recognizing them as strategic development imperatives. Although embedding gender, inclusion, and resilience throughout the infrastructure lifecycle advances their strategic role significantly, some interventions beyond infrastructure itself are helpful to ensure that infrastructure triggers inclusion and resilience in society.

Mainstreaming inclusive employment in infrastructure

Ensuring that the staffing of infrastructure and related organizations (government staff, contractors, etc.) is inclusive, is a strong mechanism for the government to mainstream gender and inclusion. However, transforming how these organizations hire, retain, and maintain a diverse workforce is not merely an administrative task; it is a strategic measure. To fully leverage infrastructure as a catalyst for change, agencies must operationalize the following internal reforms:

- **Institutionalize governance and representation:** Inclusion must be structurally embedded, moving beyond ad-hoc initiatives. Agencies should establish permanent mechanisms for discussion, such as LGED Gender Forums, to oversee equity strategies and review DPPs. Crucially, senior gender anchors must be appointed within executing agencies to ensure gender mainstreaming persists beyond specific project cycles. To enable evidence-based planning, organizations must collect and analyze the SADDD of their own workforce. This data is essential to track the participation of women and PwDs against the backdrop of climate-induced displacement, which often renders these groups invisible in formal statistics.
- **Ensure economic resilience through targeted inclusion:** To counter occupational segregation, agencies should implement reserved employment quotas for women, particularly in non-traditional technical roles. Reserving specific positions is vital to remedying prevailing discrimination and to providing economic security in climate-vulnerable areas. This should be supported by community skills mapping to identify local talent for technical roles, challenging the assumption that women lack the skills for the construction, operation, and maintenance of

climate-proof infrastructure. Furthermore, gender-responsive budgeting must be applied to organizational overheads, ensuring that funds are allocated to the recruitment, training, and retention of female staff, as well as to project delivery.

- **Cultivate safety and a sense of belonging in infrastructure organizations:** A resilient workforce requires a safe and welcoming environment. Agencies must enforce zero-tolerance policies regarding SEAH/GBV, supported by internal review and resolving committees (IRRC) to provide confidential grievance redress. Physical infrastructure at worksites must also adapt; mandating gender-responsive facilities, including separate toilets, running water, and childcare corners, is non-negotiable. Extreme heat and flooding events make the lack of these facilities a severe health risk, directly forcing women out of the workforce. Finally, fostering a culture of 'belonging' requires engaging male champions to advocate for equity and creating safe spaces where all personnel feel seen, valued, and respected.
- **Leverage diversity for climate innovation:** Diverse teams build better infrastructure. International evidence confirms that promoting women to leadership and decision-making roles is associated with improved natural resource management and disaster preparedness. By adopting an intersectional analysis that identifies overlapping vulnerabilities (e.g., disability and ethnicity), and targeting women for higher-skilled technical roles (e.g., engineers, surveyors), the government ensures that the perspectives of those most affected by climate change shape the design of resilient national infrastructure.

Using inclusive infrastructure maintenance to build up social resilience

Since infrastructure is ubiquitous, it is more efficient for local vulnerable groups to identify and prioritize their infrastructure needs. Having local communities, particularly impoverished and vulnerable groups, conduct infrastructure maintenance can build social resilience while improving infrastructure quality.

Local communities can be engaged in infrastructure maintenance as a way to provide alternative income sources and social resilience. Some notable interventions include:

- **Labor Contracting Societies (LCS):** These organized groups of landless, poor individuals, often women, establish contracts directly with government agencies for small-scale infrastructure projects, effectively bypassing intermediaries to ensure fair wages and employment security.
- **Bangladesh's Employment Generation Program for the Poorest (EGPP):** The EGPP is designed to provide 80 days of seasonal employment, often in simple maintenance activities, to unemployed, poor individuals to reduce poverty and enhance disaster resilience.
- **Financial inclusion via maintenance:** Facilitate mandatory savings schemes where a portion of women's maintenance wages is deposited into individual or joint bank accounts to build financial resilience.

Key considerations to leverage infrastructure O&M for gender-responsive, inclusive, resilient development include:

- Protect informal livelihoods by providing reserved spaces for women vendors in infrastructure spaces, such as bus terminals or markets.
- Provide technical training to women for skilled O&M roles (plumbing, water infrastructure repair, concrete block making, etc.), ensuring that essential climate-resilient services (such as tube wells or drainage) can be repaired locally. On-the-job technical training for women's maintenance groups could help achieve this.
- Explicitly involve local women's groups and civil society organizations in maintenance partnership models, such as community stewardship or PPPs, to foster community ownership and prioritize the needs of local vulnerable groups against climate risks.
- Employ inclusive green maintenance jobs, such as roadside tree plantation and care, to simultaneously build social and climate resilience by hiring women to stabilize slopes against erosion and landslides.
- Track the number and percentage of women employed in O&M roles over time, particularly after climate shocks.

Strengthening the role of vulnerable groups in the economy through gender-responsive, socially inclusive, resilient infrastructure.

Infrastructure is an engine for economic growth. Beyond the direct contributions to the economy discussed in previous sections (such as inclusive employment and procurement in the infrastructure sector), gender-responsive, socially inclusive, and resilient infrastructure can enable inclusive, climate-proofed economic growth that improves the livelihoods of vulnerable groups in the communities surrounding the infrastructure. This requires awareness of the role of infrastructure and key considerations to ensure that the economic opportunities of vulnerable groups can be realized. Infrastructure can contribute to a resilient livelihood in vulnerable groups by conducting the following three functions:

- **Enhancing the economic participation and market access of vulnerable groups:** Ensuring infrastructure promotes equitable economic growth requires providing safe, all-weather transportation options for women. This facilitates women's access to workplaces and allows women farmers and entrepreneurs to reach markets to sell their products. Recommendations vary by context; overall, rural transportation systems must be resilient to climate hazards to prevent isolation during seasonal floods and other events, while urban pedestrian pathways should be unobstructed and remain functional during monsoon waterlogging so that women and other vulnerable groups can access their workplaces. Additionally, safety is paramount in all situations; well-lit roads and secure public transportation are a minimum requirement that should be complemented by other crime-prevention techniques, including urban design, legal provisions and enforcement, and awareness campaigns.
- **Reducing time poverty to enable economic activity:** Infrastructure choices significantly influence how much time women save. Implementing household-level water supply and renewable energy solutions (such as solar home systems) greatly reduces the time and effort spent on fetching water and fuel, tasks usually carried out by women, thus allowing more scope for income-generating activities. Additionally, integrating social infrastructure like childcare facilities into urban planning and workplace setups can help women escape the double burden of unpaid care work. This shift encourages a transition from informal, home-based labor to formal employment, which is especially useful during climate-related disruptions to family support. Community childcare centers can also generate employment opportunities, enabling women to focus more on income-generating pursuits.
- **Providing public services particularly relevant to vulnerable groups:** To make sure infrastructure acts as a foundation for fair economic growth, it should also provide essential public services to vulnerable groups. Installing solar street lights and secure, separate toilets in markets and bus terminals not only offers convenience but also supports economic activity by extending safe working hours for women and reducing the risk of GBV. Promoting women's leadership through participatory governance in infrastructure ensures investments focus on key economic assets for the poor, such as strengthening embankments that protect women-managed vegetable stalls. Additionally, infrastructure that explicitly protects movable assets, such as livestock, jewelry, and inventory, by incorporating secure storage within shelters, helps prevent losses. This is especially vital for women and vulnerable households, who often keep their primary savings in such assets and are at risk of falling deeper into poverty.

Gender-responsive infrastructure as an economic enabler: the Akhaura-Laksam Double Track Project

The Akhaura-Laksam Double Track Project demonstrates that gender-responsive transport infrastructure is a critical catalyst for inclusive economic growth. By upgrading 11 stations with elderly-, women-, children-, and disability-friendly features, the project actively dismantled safety and accessibility barriers that historically restricted women's mobility to their immediate localities. This enhanced connectivity empowers women and vulnerable groups to travel farther and more safely, thereby unlocking access to wider markets, education, and employment opportunities that were previously out of reach. Furthermore, the project leveraged its resettlement phase to drive economic resilience, implementing livelihood improvement programs that provided skills training and seed grants specifically to female-headed and vulnerable households affected by land acquisition, ensuring they were not just compensated but economically uplifted.

Learn more about this case study '*Inclusion in Railway Infrastructure: The Akhaura-Laksam Double Track Project*' in the complementary Case Study Booklet.



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