NATIONAL DISASTER MANAGEMENT AUTHORITY
(NDMA) PAKISTAN

Seminar On

BUILD BACK BETTER

Sustainable Pathways for Post-Monsoon 2025 Rebuilding

5th November,2025

A National Commemoration Event
in HQ NDMA Islamabad, Pakistan

Infrastructure Advisory & Project Development Wing

Guest Speakers

Dr. Nasir Javed
Urban Development Specialist

Engr. Syed Jibran Hashmi
Energy Efficient Building Design Specialist

Dr. Muhammad Azmat
Water Resources Management & Climate Change Modelling Specialist

Dr. Irfan Ahmad Rana
Urban and Regional Planning Specialist

Mr. Sarfraz Lal Din
Resilience Building Initiatives Specialist

Dr. Usman Hassan
Construction Engineering Management Specialist

Build Back Better

Sustainable Pathways for Post-Monsoon 2025 Rebuilding

5th November,2025


NDMA-Infrastructure Advisory & Project Dev Wing
NATIONAL SEMINAR
Build Back Better:
Sustainable Pathways for Post-Monsoon 2025 Rebuilding
Organized By
National Disaster Management Authority (NDMA)
Infrastructure Advisory & Project Development Wing


National Disaster Management Authority
Infrastructure Advisory & Project Development Wing
National Seminar
Build Back Better
Sustainable Pathways for Post 2025

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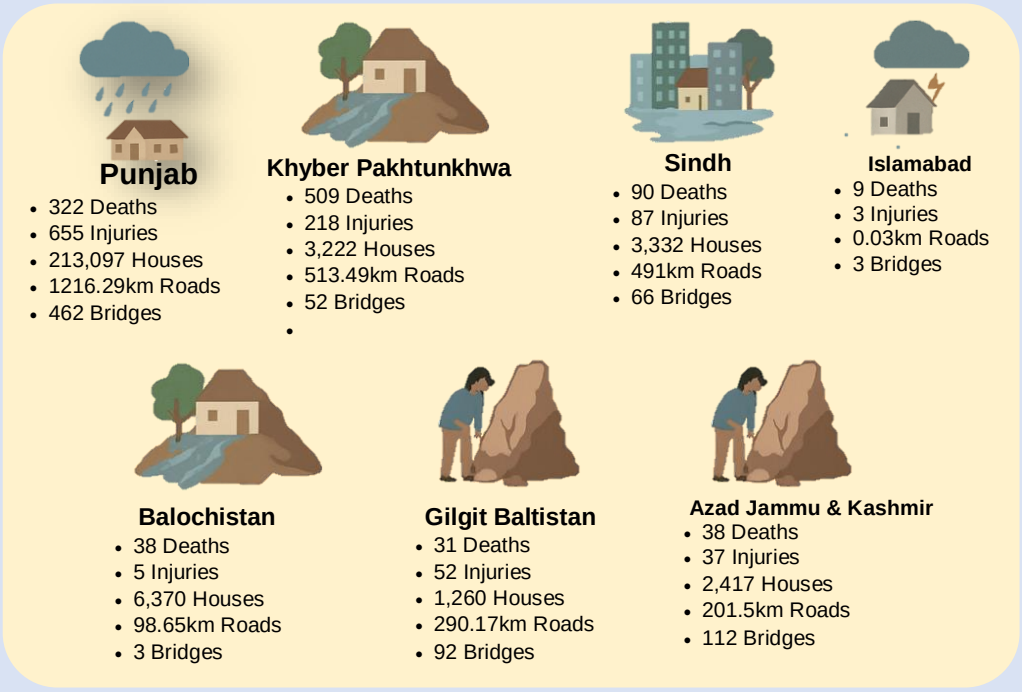
TABLE OF CONTENTS

1. Introduction: The 2025 Monsoon Experience

The 2025 monsoon season has been one of the most intense and dynamic in Pakistan's recent history, revealing both the country's growing climate vulnerability and its urgent need for resilient systems. Beginning in late June and extending through September, moist air currents from the Arabian Sea and Bay of Bengal produced widespread and prolonged rainfall episodes across the country. Overall precipitation during the season was 23% above the long-term average. The heavy rains, while vital for replenishing reservoirs and sustaining agriculture, brought with them devastating consequences. From 25 June to 30 September 2025, multiple high-intensity rainfall events triggered flash floods, landslides, lightning incidents, and riverine inundations, resulting in severe humanitarian and economic losses. Nationwide, 1,037 people lost their lives, 1,067 were injured, and over 229,763 houses were damaged or destroyed. The floods also caused the loss of 22,841 livestock and damaged nearly 2,811 kilometers of road infrastructure, isolating entire communities and disrupting livelihoods.

Regional Overview of Monsoon 2025 Impacts:



2. Rationale and Objectives of the Seminar

Monsoon 2025 revealed the growing complexity of climate-driven disasters in Pakistan where intense rainfall, glacial melt, and weak infrastructure combined to amplify risk. The widespread losses call for systemic resilience, data-driven urban planning, and adaptive reconstruction strategies under the national "Build Back Better" framework. The National Disaster Management Authority (NDMA), through its Infrastructure, Advisory & Project Development (IA&PD) Wing, organized this seminar on **"Building Back Better: Sustainable Pathways for Post-Monsoon 2025 Rebuilding"** in response to the extensive devastation caused by the 2025 monsoon floods. The season's heavy rains, flash floods, and glacial outbursts led to widespread infrastructure collapse. Thousands of homes, bridges, and road segments were damaged, exposing critical weaknesses in planning, construction, and disaster preparedness.

In this context, the seminar provided a platform for experts, government departments, academia, and development partners to reflect, re-evaluate, and reform post-flood reconstruction practices through an integrated resilience lens. The discussions were geared toward developing actionable, policy-relevant, and pragmatic strategies for rebuilding infrastructure that is safer, sustainable, and adaptable to future climate risks.

This seminar marked an important step toward transforming post-disaster recovery into an opportunity for resilient development, ensuring that Pakistan's reconstruction efforts not only restore what was lost but also prepare the nation for a safer and more sustainable future.

3. Seminar Proceedings and Structure

The National Disaster Management Authority (NDMA), through its Infrastructure, Advisory & Project Development (IA&PD) Wing, convened a one-day national seminar titled *"Building Back Better: Sustainable Pathways for Post-Monsoon 2025 Rebuilding"* on 5th November 2025 at the Auditorium of the NDMA Headquarters, Islamabad. The seminar was attended by over 300 participants, representing federal and provincial disaster management authorities, engineering departments, urban planners, academia, and humanitarian and development partners.

The event brought together leading experts, government representatives, academia, to deliberate on resilient, sustainable, and inclusive pathways for post-monsoon reconstruction and recovery.

3.1. Seminar Overview

The seminar was designed to translate the lessons from the 2025 monsoon experience into actionable strategies for infrastructure resilience. The proceedings emphasized evidence-based decision-making, policy alignment, and cross-sector coordination to ensure that reconstruction efforts contribute to long-term resilience rather than short-term restoration. The seminar followed a structured sequence of sessions to ensure focused discussion and knowledge sharing:

3.2. Opening Remarks by Lt Col. ® Saleem Raza, Executive Director, IA&PD:

The Executive Director, IA&PD Wing, NDMA, welcomed participants and expressed appreciation for their commitment to Pakistan's resilience and recovery agenda. In his address, he highlighted that the 2025 monsoon season once again underscored the scale and complexity of climate-induced disasters in the country, resulting in widespread flooding, infrastructure losses, and livelihood disruptions.

He emphasized that these challenges also present an opportunity to "rebuild smarter, greener, and stronger," framing recovery not as a return to pre-disaster conditions but as a strategic pathway toward sustainable and climate-resilient development.

The seminar, he noted, aimed to identify gaps in reconstruction mechanisms, explore innovative and inclusive rebuilding models, and develop policy-aligned recommendations that can inform national frameworks and NDMA's future strategies. Acknowledging the dedicated efforts of PDMAs, DDMAs, technical departments, and development and humanitarian partners, he underscored that post-flood recovery is a collective national responsibility. He called for open, evidence-based dialogue focused on feasible, actionable solutions that integrate resilience, sustainability, and inclusivity into every reconstruction decision. Concluding his remarks, he urged participants to reflect on a guiding question:

"How can we ensure that what we rebuild today will sustain tomorrow?"

3.3. Technical Session / Speakers Presentations

Dr. Muhammad Usman Hassan,
HOD Construction Management, SCEE, NUST

Topic: Building Back Transparently

Dr. Usman Hassan emphasized that transparency, accountability, and procedural efficiency are essential for credible post-disaster reconstruction. Highlighting the construction sector's global susceptibility to malpractice where up to 40% of funds can be lost through irregularities, he noted that both negligence and corruption compromise structural integrity, inflate costs, and undermine public trust. To ensure resilient and ethical recovery after the 2025 floods, he called for digital transparency, institutional integrity, and strong professional oversight at every project stage.

Key Issues and Systemic Gaps

- Irregularities in public works
- Poor transparency frameworks
- Fragmented procedures, and limited professional capacity
- Vulnerabilities exist across design, procurement, and construction stages
- Socio-cultural complacency
- Weak grievance systems, and reluctance to adopt digital tools

Recommendations

- Institutionalize digital governance and monitoring platforms (e.g., Constructify) across all reconstruction projects
- NDMA to audit and coordinate reconstruction procurement at federal and provincial levels
- Enforce professional accountability and prevent license misuse through PEC oversight
- Develop standard operating procedures (SOPs) for transparent bidding, progress reporting, and grievance redressal
- Integrate wastewater management and environmental safeguards into all infrastructure recovery projects
- Promote inclusive participation and PPP models to improve efficiency and ensure equitable recovery

Strategic Interventions

- Adoption of digital Governance and Transparency Tools such as Constructify
- Expansion of EPADS and PPRA e-procurement systems
- Establishment of review and grievance redressal committees and a whistle-blower mechanism
- Strict enforcement of PEC and PPRA rules—without ad-hoc relaxations even during emergencies.
- NDMA to assume a central oversight role for transparency, procurement audit, and compliance in disaster-related works
- Mandatory on-site presence of licensed engineers
- Penalization of license misuse and promotion of direct engagement between departments and registered engineers
- Embedding "Build Back Cleanliness" principles in reconstruction
- Designing systems for reuse and resource recovery (treated water for irrigation, sludge-to-fertilizer)
- Utilizing low-cost natural solutions such as constructed wetlands
- Mandating industrial pre-treatment and adopting a national O&M policy

Dr. Irfan Ahmad Rana,
Associate Professor, SCEE, NUST

Topic: Urban Infrastructure Planning for Post-Flood Reconstruction: Building Flood Resilience in Pakistan

Dr. Irfan emphasized that climate change has intensified extreme rainfall, flash floods, and cloudbursts across Pakistan, exposing the urgent need for adaptive and resilient urban infrastructure planning. The phenomenon of "unprecedented" rain is no longer exceptional but the new norm, as global projections warn of up to 7m sea-level rise under worst case scenarios. Urban areas dense, infrastructurally complex, and socioeconomically diverse bear the brunt of these disasters, demanding integrated planning frameworks that merge climate change adaptation (CCA), disaster risk reduction (DRR), and urban planning.

Urban Infrastructure Planning: Core Principles

Urban infrastructure planning involves assessing risks and vulnerabilities and devising adaptive, implementable strategies to mitigate and respond to climatic and disaster-related events. It embodies sustainable land use planning, ecosystem-based adaptation (EbA), nature-based solutions (NbS), and community resilience, aligned with the Sendai Framework, UNDRR, and SDG 11 (Sustainable Cities) & SDG 13 (Climate Action).

- Adaptive Infrastructure emphasizes flexibility, modularity, and scalability, enabling systems to adjust to environmental and social changes.
- Resilient Infrastructure prioritizes durability, redundancy, and rapid recovery designed to withstand and bounce back from disruptions.
- Investments in preparedness and resilience yield exponential savings each dollar spent pre-disaster saves $5–10 post-disaster. Therefore, cost-efficiency must not compromise structural durability.

- Case studies from Lahore reveal stark infrastructural inequalities within its city region, undermining equitable resilience.
- Resource allocation must avoid political or urban-centric bias to achieve national resilience.
- While the disaster management cycle traditionally phased as mitigation, response, recovery is now seen as continuous and overlapping, requiring adaptive governance.

- Resilience is multidimensional physical, social, economic, and institutional. Quantifying it demands a holistic lens integrating land use planning, hazard mapping, and infrastructure performance.
- Upgrading master plans, integrating multi-hazard assessments, and data-driven urban analytics (GIS, AI, statistical modeling) are critical steps.

- Green roofs, urban forests, and wetlands mitigate flood risks and enhance urban cooling but face barriers such as high costs and limited technical know-how.
- Recognizing green areas as "infrastructure" within development budgets can unlock funding and mainstream NbS within urban planning.

- In remote and resource-constrained regions like Gilgit-Baltistan and KPK, social capital mutual trust, community networks, and local cooperation has emerged as a vital recovery mechanism amid limited institutional outreach.
- Strengthening public participation ensures community ownership, trust, and project sustainability. The principle: "communities know best what they need."

Key Recommendations

- Integrate DRR, CCA, and urban planning within national and local frameworks.
- Update and enforce land use and zoning plans with robust data and hazard analytics.
- Promote adaptive and resilient infrastructure design through financing incentives.
- Institutionalize green infrastructure within budgetary and policy frameworks.
- Strengthen institutional coordination between NDMA & PDMA local bodies through trust-building and joint planning mechanisms.
- Empower community-based resilience networks to complement formal governance systems.

Mr Sarfraz Laal Din,
Country Director ACTED

Topic: Building Back Better in Practice: Lessons from the Field

Mr. Laal Din reported that market dysfunction, damaged local health services and broken supply chains frequently follow floods. A common administrative problem is loss of identity documents among displaced families, which prevents access to government or NGO assistance that requires official ID. He recommended temporary verification mechanisms during disasters.

Key Discussion Points

Evacuation Challenges and Costs: The speaker highlighted severe evacuation challenges during recent floods, noting that affected families often paid between PKR 10,000 and PKR 50,000 for a single boat trip to reach safer locations.

Critical Infrastructure Data and Preparedness: He emphasized the need for a live, localized inventory of critical infrastructure—such as roads, bridges, schools, health facilities, evacuation centers, and riverbanks—to enable district authorities and responders to prioritize interventions. This database should remain regularly updated and accessible during emergencies.

Local Solutions and Research Priorities: Mr. Laal Din advocated for collaborative research on practical, household-level storage technologies to protect seeds and grains, as well as on nature-based resilience solutions. He noted communities' continued reliance on century-old storage methods and stressed the importance of developing context-appropriate, modern alternatives.

Policy and Institutional Recommendations: He called for stricter enforcement of land-use plans and building regulations in hazard-prone areas, complemented by incentives and awareness

programs to support compliance. Furthermore, he underscored the need for financial and institutional mechanisms that effectively reach smallholders and low-income households, rather than benefiting only large or well-resourced landowners.

Recommendations

Adopt a holistic, people centered "Build Back Better" approach that integrates infrastructure repair with livelihood restoration, psychosocial support, education continuity and health services.

Strengthen enforcement of land-use plans and building regulations in hazard-prone areas, supported by incentives and community outreach to encourage compliance.

Institutionalize local evacuation centers at union-council/district level to ensure safe, organized and affordable evacuations.

evelop inclusive insurance and affordable microfinance schemes tailored to smallholders, livestock owners and low-income households to prevent exploitative debt cycles

Create and maintain a Critical Infrastructure Database of roads, bridges, schools, health units, evacuation points and riverbanks for preparedness and rapid response

Engr. Syed Jibran Hashmi,
Energy Efficiency and Sustainable Construction Expert

Topic: Energy Efficient Design and Sustainable Construction

Engr Syed Jibran Hashmi presented energy efficiency and sustainable construction at the seminar. He emphasized that sustainable design reduces long-term operating costs, conserves natural resources, benefits that are especially critical during post-disaster recovery and reconstruction.

Passive and Active Design Strategies: Engr Hashmi distinguished passive measures (no or little energy input) from active systems. He recommended displacement ventilation and repositioning HVACs to wall levels where suitable, explaining that such changes create airflow loops that remove body heat efficiently and can reduce conditioning energy by an estimated 30%.

Construction Quality, Contracting & Capacity: Implementation quality was underscored as decisive: even excellent designs fail without skilled contractors. He recommended performance-based contracting, capacity building for masons and local builders, and robust on-site quality assurance to translate design intent into real energy savings.

Barriers & Practical Considerations Practical constraints include upfront cost perceptions, limited finance, shortage of local materials and skills, and weak code enforcement. He recommended phased approaches temporary, low-cost interventions followed by planned, so low-income households can access upgrades.

Passive Methods: *30% Energy Saving

Construction Quality: * Skilled Workers

Barriers: * High Costs

Mainstream passive, climate-responsive design orientation, insulation, natural ventilation, shading and daylighting should be mandatory elements of reconstruction and retrofits

Priorities local, low-embodied-energy and flood-tolerant materials that are maintainable by local craftsmen and suited to Pakistan's diverse climates

Key Recommendations

Protect and elevate utilities and adopt flood-tolerant detailing place meters, switches and transformers above expected flood levels and use displacement ventilation where appropriate

Adopt performance-based contracting and invest in local capacity building for contractors, masons and technicians to ensure quality execution

Dr. Muhammad Azmat,
Water Resource Management and Climate Modelling Specialist

Topic: From Risk to Resilience-Investing in Climate Resilient Infrastructure & Adaptation Pathways

Dr. Azmat pointed out the Pakistan's growing vulnerability to diverse climate hazards and the limitations of current infrastructure and sectoral adaptation strategies. He emphasizes the need for comprehensive, deterministic risk assessment (using ECA and CLIMADA models), participatory and locally driven adaptation planning (MATA framework), and multi-pathway strategies tailored to specific hazards, sectors, and communities. Dr. Azmat proposed that by integrating precise hazard mapping, stakeholder collaboration, timely phasing of interventions, and rigorous benefit-cost analysis, the approach aims to guide cost-effective, scalable, and context-sensitive investments in climate resilient infrastructure and adaptation pathways

Frequent and intensifying climate hazards (floods, flash floods, cloudbursts, hailstorms)

Limited local capacity and knowledge for climate risk assessment

Insufficient transfer of climate modelling into actionable local adaptation strategies

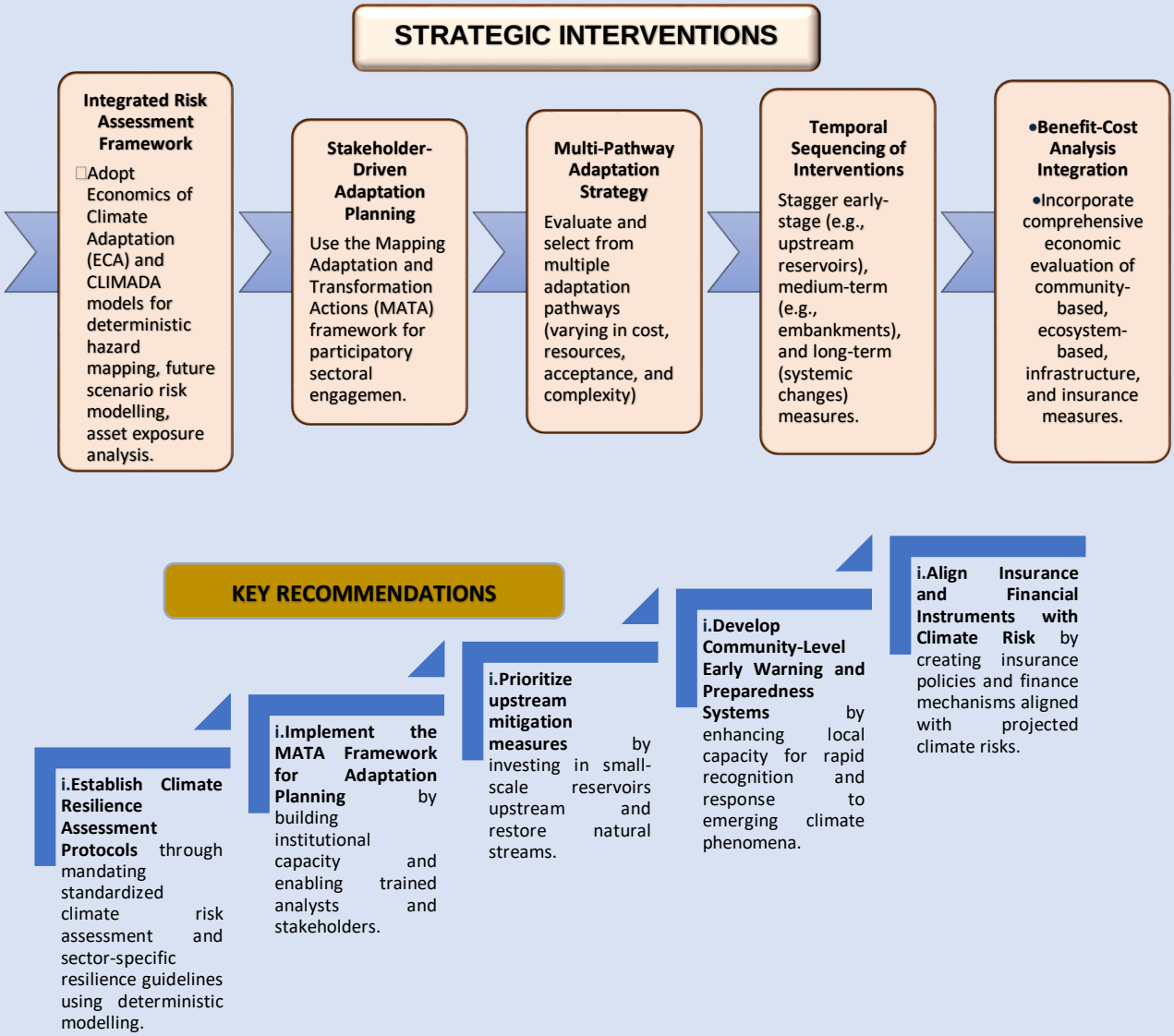
Key Issues and Gaps

Misalignment of investment (high spending for low protection benefit)

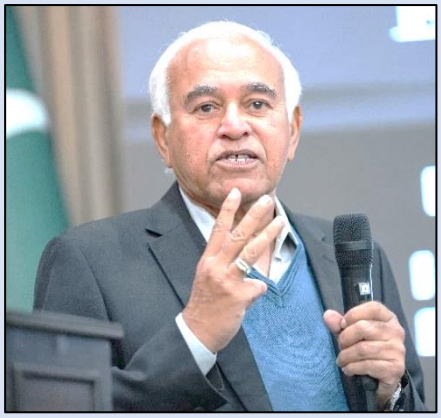
Lack of cost-effectiveness analysis in adaptation measures

Lack of cost-effectiveness analysis in adaptation measures

Insufficient transfer of climate modelling into actionable local adaptation strategies



Dr Nasir Javed,
Urban Planning Resilience Expert



Topic: Strategic Land Use Planning: The Bedrock of Flood-Resilient Pakistan

Dr. Nasir Javed underscores the urgency of moving from a reactive to a proactive approach in disaster management for Pakistan, emphasizing that land use planning is the most foundational and cost-effective line of defence against floods and climate-induced disasters. Using case studies and satellite imagery, it demonstrates that failures in implementation, rather than lack of planning, are responsible for recurring urban and peri-urban flood disasters. He advocates for institutional strengthening, regulatory enforcement, spatial policy coherence, and the integration of disaster risk reduction (DRR) and nature-based solutions into everyday development and urban planning processes.

Key Points

- The " disaster occurs much before the first rain drop". example is Land encroachment on Stormwater nullahs space in Chatta Bakhtawar. This happened in 2010 onwards, visible collapse in 2025
- We are not just having infrastructure damage and collapse during monsoons, but an institutional collapse and hence "Build Back Better" to include "Institutional rebuild as well, to ensure sustainable Infra and
- There is "Institutional Spaghetti", and this hinders any kind of accountability. For example Abbottabad Mansehra road, where TMA, WSSCA, CBA, NHA, and citizens have overlapping and intermingled

Key Issues and Gaps

1. Lack of effective land use plan implementation, not merely of plans
2. Disaster risk accumulates years before exposure; rainfall reveals pre-existing vulnerabilities
3. Weak institutional capacity and lack of coordination among NDMA, PDMA, and local govts.
4. Poor enforcement of regulations and zoning
5. Fragmented policy frameworks across national, provincial, and urban levels
6. Absence of digital cadastral and monitoring systems for enforcement
7. Insufficient integration of DRR into planning and development

Strategic Interventions

1. Advance the “Build Back Better” principle across planning and recovery
2. Place land-use planning as the first and most cost-effective defense
3. Strengthen roles and collaboration among stakeholders
4. Ensure policy coherence b/w spatial strategies, land-use acts, and urban master plans
5. Digitize land management enforcement through cadastral mapping
6. Promote nature-based solutions: reforestation, floodplain restoration, sustainable land mgt, and urban green infra.

KEY RECOMMENDATIONS

i. **Institutional Strengthening** by building resilient institutions with clear disaster management responsibilities focused on proactive spatial planning and early risk mitigation.

i. **Regulatory Enforcement** through strictly implementing zoning ordinances, update building codes, control encroachments, and use digital systems for monitoring compliance.

i. **Policy Coherence** by aligning national, provincial, and urban policies for consistent land use management enabling effective implementation.

i. **Invest in Nature-Based Solutions** by supporting reforestation, wetland restoration, sustainable land management, and urban green spaces as part of the overall resilience strategy.

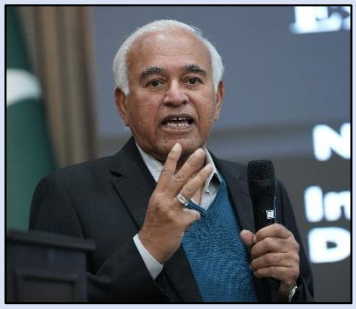
i. **Integrate DRR in Planning** through using DRR checklists and standards in all planning and development to proactively reduce disaster risk.

4. Interactive Discussion / Q&A Session

A. How can communities be educated and motivated to follow safe practices and avoid risky behavior that increases flood vulnerability?
B. What measures can be taken to ensure people comply with land-use plans and building control regulations in hazard-prone areas, especially when careless practices are common?
C. How can we encourage sustainable buildings and vertical growth in cities of Pakistan keeping in view the mind set and approach of people of Pakistan?





5. Recommendations

This section outlines key recommendations to enhance infrastructure resilience and prevent future failures

5.1. Residential Infrastructure

The widespread damage to residential structures during Monsoon 2025 revealed persistent weaknesses in building design, material quality, and construction practices across flood- and landslide-prone regions. To enhance resilience and minimize future monsoon-related housing losses, the following technical and structural measures are recommended for implementation at both community and policy levels.

Structural and Material Improvements

Cementitious and Bituminous Waterproofing: Application of cement-based waterproofing and bituminous coatings is essential to reduce water ingress into walls and foundations. These materials significantly enhance the durability of masonry structures under prolonged rainfall and high groundwater conditions.

Pre-Cast and Pre-Fabricated Construction: Promotion of pre-cast or pre-fabricated housing systems should be prioritized to enable faster, standardized, and flood-resilient construction. These methods minimize on-site curing and improve the structural integrity of dwellings during adverse weather.

Reinforced Load Distribution Systems: Introducing band beams and vertical columns in masonry construction can effectively distribute seismic and hydrological stresses. This measure is particularly beneficial in hilly terrain and flood-affected districts where unreinforced masonry structures are highly vulnerable.

Structural Crack Restoration: The use of epoxy injection techniques for repairing cracks can help restore structural continuity and prevent progressive damage in partially affected houses. This low-cost rehabilitation approach extends the life of existing housing stock.

Design and Elevation Measures

Pitched or Sloped Roofs: Adoption of sloped or pitched roofing systems is recommended to facilitate drainage and prevent rainwater accumulation. This design adaptation substantially reduces seepage and material degradation.

Sloped and Pitched Roofing Systems for Improved Rainwater Drainage

Reinforcement of Traditional Structures: Strengthening adobe and timber-based houses with additional reinforcement materials—such as wire mesh or bamboo framing—can enhance structural resistance against water stagnation and lateral loads.

Reinforcement of Traditional Housing Structures Using Timber and Masonry Techniques

Elevated Housing in Flood-Prone Areas: In low-lying floodplains, residential structures should be constructed on raised plinths or stilts to minimize direct exposure to inundation. Elevated housing reduces asset loss and displacement during recurrent flooding.

Elevated Housing on Stilts for Flood-Resilient Construction in Low-Lying Areas

Use of CGI Sheet Roofing: Lightweight corrugated galvanized iron (CGI) sheets offer a durable, cost-effective, and easily replaceable roofing solution suitable for rural and semi-urban areas. These roofs improve runoff efficiency and provide better resistance to storm-related impacts.

5.2. Communication Infrastructure

The Monsoon 2025 season caused extensive damage to Pakistan's communication infrastructure, including roads, bridges, and culverts, primarily due to slope failures, scouring, and inadequate drainage capacity. Strengthening these lifeline networks requires both engineering interventions and regular maintenance to ensure system resilience against future hydrometeorological events.

Slope Stabilization and Erosion Control: To prevent embankment failure and landslide-induced blockages, it is essential to adopt robust slope protection techniques:

Construction of Retaining Walls, Soil Nailing, and Ground Anchoring: These measures should be implemented along steep road corridors and embankments to stabilize loose soil layers and prevent slope slippages. Ground anchor walls are particularly effective in areas with weak strata or high rainfall.

Riprap Bracing and Shotcreting on Riverbanks and Slopes: The use of riprap stone pitching and concrete shotcreting should be expanded along river-adjacent roads and bridge approaches to resist erosion and enhance slope durability.

Ground Anchor Wall with Riprap and Shotcrete Slope Stabilization

Improvement of Stormwater Drainage Systems: Regular maintenance and de-silting of roadside and bridge drainage networks are necessary to prevent waterlogging, surface erosion, and structural degradation of transport corridors.

5.3. Hydraulic and Structural Capacity Enhancement

The hydraulic performance and structural integrity of bridges and culverts require systematic upgrades to withstand monsoon-induced discharges:

Construction of Adequately Designed Culverts and Aqueducts: All new culverts and aqueducts should be designed with sufficient hydraulic capacity to accommodate peak flood flows. Existing structures with inadequate discharge capacity must be retrofitted to avoid overtopping and road washouts.

Culverts and Aqueducts for Hydraulic Capacity Enhancement

Integrated Slope and Drainage Design for Roads: Road alignment in hilly and flood-prone areas should incorporate slope stabilization elements and engineered drainage systems to reduce surface runoff concentration and minimize structural stress during heavy rainfall.

Scour Protection at Bridge Piers and Abutments: Installation of concrete block armoring or gabion mattresses around bridge piers is recommended to prevent foundation scouring, undermining, and potential collapse during high-velocity flows

Scour Protection Using Concrete Block Armoring Around Bridge Piers

5.4. Governance and Policy

a. Strengthen Professional Competence and Supervision

- Ensure that all construction work is supervised by qualified engineers on-site rather than just on paper.
- Government departments and development partners should engage only certified engineers to guarantee safety, quality, and compliance.
- Provide capacity-building programs for engineers and construction professionals to improve practical skills and adherence to best practices.

b. Identify and Prioritize Weak Infrastructure

- Conduct comprehensive assessments to identify weak or vulnerable infrastructure, including roads, bridges, buildings, and riverbanks.
- Maintain a **Critical Infrastructure Database** to enable evidence-based planning, timely interventions, and effective allocation of resources during disasters.
- Focus on areas with poor planning, substandard materials, or outdated infrastructure, as highlighted in flood case studies.

c. Build Back Better

- Incorporate flood-resistant and resilient features in reconstruction projects to reduce vulnerability to future disasters.
- Apply post-flood “Build Back Better” strategies to ensure roads, bridges, and public infrastructure are stronger, modular, and adaptable.
- Enforce land-use plans, zoning, and building control regulations, especially in hazard-prone areas.

d. Promote Community Participation

- Engage local communities in reconstruction and early warning systems to ensure inclusive and equitable recovery.
- Support community-based initiatives and empower small/local construction firms to participate in rebuilding efforts.

e. Integrate Sustainability and Environmental Protection

- Include eco-friendly solutions like mechanized wastewater treatment, constructed wetlands, and proper sewage management to reduce flood risks and environmental harm.

- Ensure recovery projects contribute to long-term sustainability while enhancing national resilience.

f. Encourage Stakeholder Collaboration and Global Best Practices

- Build consensus among federal, provincial, and local authorities as well as private and development partners.
- Adapt global flood mitigation models and standards to Pakistan's context, promoting a science-based, internationally coherent approach.

g. Strengthen Policy and Institutional Framework

- Update disaster management policies, building codes, and urban planning regulations to incorporate lessons learned from the 2025 floods.
- Improve coordination among NDMA, PDMA, and local authorities for efficient planning, response, and recovery.

5.5. Strategic Interventions

a) Start immediate desilting of rivers and canals: Clearing silt helps water flow smoothly, reduces blockages, and lowers the chance of overflowing during heavy rains.

Lead: Irrigation Department

b) Carry out terracing and soil conservation in upstream areas: Terracing slows down runoff, controls erosion, and protects downstream regions from severe flooding.

Lead: Forestry Department

c) Strengthen and raise embankments in flood-prone stretches: Improved and well-maintained embankments help protect nearby settlements and farmland from river overflow.

Lead: Provincial Works / Irrigation Department

d) Regularly clean and upgrade urban drains, culverts, and stormwater channels: Proper drainage prevents rainwater accumulation and reduces flooding in urban areas.

Lead: Local Governments / Municipalities

e) Develop "Sponge City" projects in vulnerable towns: Use parks, green belts, and open ponds to absorb excess rainwater naturally and recharge groundwater.

Lead: Urban Planning / Environment Departments

f) Establish and maintain a Critical Infrastructure Database: Keep a live record of important assets like bridges, roads, schools, and riverbanks to guide emergency planning and reconstruction.

Lead: IT Ministry / Local Governments

g) Strictly enforce land-use plans and restrict new construction in high-risk flood zones: Discouraging settlement in hazard-prone areas reduces exposure and future losses.

Lead: Town Planning / Local Governments

h) **Update building codes to include flood-resilient foundations and elevated plinth levels**: Revised standards ensure that new and rebuilt structures are safer and longer-lasting.

Lead: Building Control Authorities / Provincial Building Departments

i) **Protect and raise essential utility components**: Electric meters, transformers, and pumps should be elevated or covered to prevent damage during floods.

Lead: Utility Companies / Local Governments

j) **Upgrade bridges and culverts with higher capacity and proper scour protection:** Improved designs prevent road closures and infrastructure collapse during heavy rains.

Lead: National Highway Authority / Provincial Works Departments

k) **Implement slope protection and erosion control in hilly and riverbank areas**: Retaining walls, vegetation, and soil nailing help reduce landslides and sediment flow into rivers.

Lead: NHA / Forestry / Local Works Departments

l) **Launch community awareness and flood safety programs**: Educating communities about safe evacuation routes and early warning systems saves lives.

Lead: Local Governments / Health & Education Departments

m) **Set up well-equipped local evacuation centres:** Shelters with basic supplies, sanitation, and emergency communication ensure safety during floods.

Lead: PDMA / Local Governments.

n) **Urban flood management through improved drainage practices and permeable pavement technologies**.

Lead: NHA / PHAs/PHEs/Local Government.

6. Closing Session

While closing the event, the Chairman NDMA emphasized that the failure of building infrastructure arises primarily from human choices such as poor site selection, the use of substandard materials, and unsustainable land-use practices in overpopulated and impoverished areas. These decisions, he noted, constitute a "self-defined recipe for failure."

He critically examined the concept of "Building Back Better," observing that the phrase itself is inherently flawed because "building back" implies returning to the same vulnerable locations and repeating past mistakes. Instead, he urged the adoption of a smarter approach building smartly which involves adapting to natural systems, relocating from high-risk areas when necessary, and allowing rivers and other natural forces to reclaim their natural courses.

The Chairman highlighted that resilience is multi-dimensional, extending beyond engineering and housing to include agricultural, social, and service infrastructures, as well as systems dependent on social adaptation, common sense, and adherence to the law. Reflecting on Pakistan's post-2022 flood recovery, he explained that the country faced a "default design compulsion": to construct a greater number of houses with moderate resilience rather than fewer with high resilience, owing to economic constraints and the magnitude of displacement.

He further emphasized that complete disaster-proofing is neither technically nor economically feasible; the practical goal should be to maximize resilience within realistic limits. Early warning systems, proactive anticipation, and strategic relocation were identified as critical measures for risk reduction.

With the 2026 monsoon season approaching, the Chairman urged experts and policymakers to develop timely, practical solutions and to educate the most vulnerable communities, who often remain least informed.

In conclusion, he remarked that while climate and nature are ultimately more powerful "forces that will inevitably prevail" humanity's responsibility lies in minimizing the impacts of disasters through sustained disaster risk reduction (DRR), smarter planning, and adaptive development strategies

Moments from the Seminar

IA&PD Team


National Disaster Management Authority
Infrastructure Advisory & Project Development Wing
National Seminar
Build Back Better
Sustainable Pathways for Post 2025
NDMA Islamabad, Pakistan
5th November 2025

Developed by
Infrastructure Advisory & Project Development Wing
National Disaster Management Authority, Islamabad
https://www.ndma.gov.pk/infra_advisory