National Disaster Risk Reduction Strategy 2025 – 2030 Pakistan

National Disaster Management Authority, Pakistan

May 2025

National Disaster Risk Reduction Strategy 2025 – 2030, Pakistan

National Disaster Management Authority,
Government of Pakistan,
Islamabad, Pakistan
www.ndma.gov.pk

This National DRR Strategy 2025 -2030, Pakistan has been prepared under the patronage of
Lt. General Inam Haider Malik, HI(M), *Chairman NDMA*

under the guidance and supervision of
Mr. Muhammad Idrees Mahsud, *Member (DRR), NDMA*
Mr. Muhammad Razi, *Director (Policy), NDMA*

and drafted by
Mr. Zohaib Jamal Khan Durrani, *Manager (Policy), NDMA*

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Executive Summary

Pakistan has long been vulnerable to a range of natural and human-induced disasters, including earthquakes, floods, droughts, and climate-related emerging hazards such as glacial lake outburst floods (GLOFs), heatwaves, forest fires and shifting monsoon patterns. These disasters disrupt lives, undermine economic stability, and set back development progress. The National Disaster Risk Reduction Strategy (NDRRS) 2025-2030 provides a comprehensive framework to mitigate these risks, enhance preparedness, and foster resilience through proactive planning, inclusive governance, and technological innovation.

Drawing lessons from past disasters and aligning with global frameworks such as the Sendai Framework for Disaster Risk Reduction (SFDRR), the Paris Agreement, and the Sustainable Development Goals (SDGs), this strategy underscores Pakistan's commitment to reducing vulnerabilities and promoting sustainable development.

At its core, the strategy envisions a disaster-resilient Pakistan where communities and institutions thrive in safety and sustainability. To achieve this, the NDRRS 2025-2030 is built around seven strategic goals:

1. **Enhancing Risk Understanding and Reduction** – Strengthening multi-hazard risk assessments, improving data integration, and fostering public awareness to enable informed decision-making.

2. **Strengthening Disaster Governance** – Defining roles, enhancing institutional capacities, and promoting decentralized governance for more effective disaster risk management.

3. **Investing in Resilience** – Prioritizing infrastructure retrofitting, ecosystem-based disaster risk reduction, and risk-sensitive urban planning to minimize vulnerabilities.

4. **Modernizing Preparedness and Response** – Leveraging advanced early warning systems, anticipatory action mechanisms, and community-based disaster preparedness initiatives.

5. **Promoting Inclusive and Sustainable DRR** – Embedding gender equity, climate adaptation, and community participation into disaster risk reduction efforts.

6. **Leveraging Technology and Innovation** – Utilizing digital solutions such as AI, blockchain, and Internet of Things (IoT) for real-time monitoring, secure data management, and efficient resource allocation.

7. **Ensuring Sustainable Financing** – Establishing financial resilience through mechanisms like parametric insurance, microinsurance for vulnerable communities, and public-private partnerships.
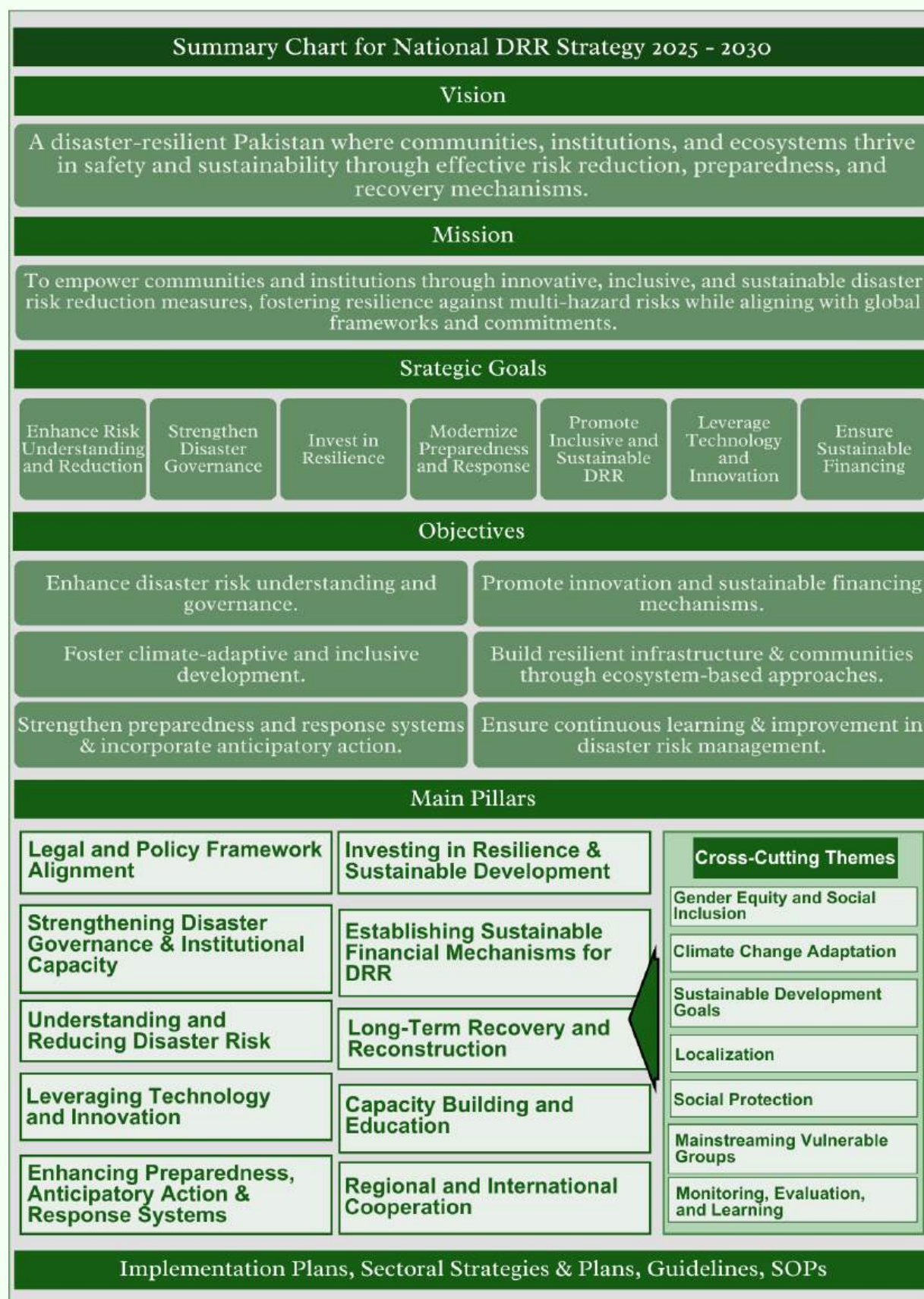
A core element of the strategy is its emphasis on robust governance. By strengthening institutions such as the National Disaster Management Authority (NDMA), Provincial Disaster Management Authorities (PDMAs), and District Disaster Management Authorities (DDMAs), the strategy fosters a more coordinated and decentralized approach to disaster management. Building institutional capacities and enhancing community resilience through various coordinated measures remain the main focus of this strategy document. Public-private partnerships and cross-sector collaboration further ensure that financial and technical resources are effectively mobilized.

The strategy also highlights the importance of modernizing preparedness and response systems. Advanced early warning systems, anticipatory action mechanisms, and community-based training will be scaled up to ensure a swift and coordinated response to disasters. Additionally, embedding social inclusion within DRR initiatives will ensure that vulnerable populations, including women, children, persons with disabilities, and marginalized communities, are adequately protected and engaged in resilience-building efforts.

Technology and innovation play a pivotal role in the strategy's implementation. The use of real-time monitoring systems, AI-driven predictive analytics, and mobile-based public awareness applications will enhance Pakistan's ability to anticipate and mitigate disaster risks. Sustainable financial mechanisms, including sectoral climate financing strategies and performance-based allocations, will ensure long-term funding for DRR initiatives.

A strong Monitoring, Evaluation, and Learning (MEL) framework underpins the strategy, ensuring adaptability, real-time data tracking, and evidence-based policy refinement. Periodic assessments and learning mechanisms will guide the continuous improvement of DRR interventions, making the strategy a living document that evolves with emerging risks and opportunities.

The National Disaster Risk Reduction Strategy 2025-2030 represents a decisive step toward transforming Pakistan's resilience landscape. Its success hinges on collective action by government agencies, development partners, private sector stakeholders, civil society, and communities. By transforming challenges into opportunities, this strategy paves the way for a safer, more resilient, and sustainable future for Pakistan.

Summary Chart for National DRR Strategy 2025 - 2030

Vision

A disaster-resilient Pakistan where communities, institutions, and ecosystems thrive in safety and sustainability through effective risk reduction, preparedness, and recovery mechanisms.

Mission

To empower communities and institutions through innovative, inclusive, and sustainable disaster risk reduction measures, fostering resilience against multi-hazard risks while aligning with global frameworks and commitments.

Srategic Goals

Enhance Risk Understanding and Reduction	Strengthen Disaster Governance	Invest in Resilience	Modernize Preparedness and Response	Promote Inclusive and Sustainable DRR	Leverage Technology and Innovation	Ensure Sustainable Financing

Objectives

Enhance disaster risk understanding and governance.	Promote innovation and sustainable financing mechanisms.
Foster climate-adaptive and inclusive development.	Build resilient infrastructure & communities through ecosystem-based approaches.
Strengthen preparedness and response systems & incorporate anticipatory action.	Ensure continuous learning & improvement in disaster risk management.

Main Pillars

		Cross-Cutting Themes
Legal and Policy Framework Alignment	Investing in Resilience & Sustainable Development	Gender Equity and Social Inclusion
Strengthening Disaster Governance & Institutional Capacity	Establishing Sustainable Financial Mechanisms for DRR	Climate Change Adaptation
Understanding and Reducing Disaster Risk	Long-Term Recovery and Reconstruction	Sustainable Development Goals
Leveraging Technology and Innovation	Capacity Building and Education	Localization
Enhancing Preparedness, Anticipatory Action & Response Systems	Regional and International Cooperation	Social Protection
		Mainstreaming Vulnerable Groups
		Monitoring, Evaluation, and Learning

Implementation Plans, Sectoral Strategies & Plans, Guidelines, SOPs

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Abbreviations / Acronyms

AI	Artificial Intelligence
CBOs	Community-Based Organizations
CSR	Corporate Social Responsibility
DDMAs	District Disaster Management Authorities
DRR	Disaster Risk Reduction
Eco-DRR	Ecosystem-Based Disaster Risk Reduction
EWS	Early Warning Systems
GCF	Green Climate Fund
GIS	Geographic Information Systems
GLOFs	Glacial Lake Outburst Floods
ICIMOD	International Centre for Integrated Mountain Development
IoT	Internet of Things
M&E	Monitoring and Evaluation
MEL	Monitoring, Evaluation, and Learning
NDMA	National Disaster Management Authority
NDRRP	National DRR Policy 2013
NDRRS	National DRR Strategy 2025 - 2030
NGOs	Non-Governmental Organizations
PDMAs	Provincial Disaster Management Authorities
PPPs	Public-Private Partnerships
SAARC	South Asian Association for Regional Cooperation
SCO	Shanghai Cooperation Organization
SDGs	Sustainable Development Goals
SFDRR	Sendai Framework for DRR
SMEs	Small and Medium Enterprises
UNDRR	United Nations Office for Disaster Risk Reduction

Foreword

Pakistan stands at a critical juncture in its journey toward building a disaster-resilient nation. Over the years, our country has faced a series of natural and human-induced disasters - earthquakes, floods, droughts, and more – that have tested the resilience of our communities and institutions. Each event has imparted profound lessons, reinforcing the urgency to adopt a proactive and comprehensive approach to disaster risk reduction.

The **National Disaster Risk Reduction Strategy (NDRRS) 2025-2030** represents a transformative step forward for Pakistan in addressing these challenges. Anchored in global frameworks such as the Sendai Framework for Disaster Risk Reduction, the Paris Agreement, and the Sustainable Development Goals (SDGs), while furthering the national DRR agenda set through National DRR Policy 2013 this strategy reflects Pakistan's unwavering commitment to safeguarding lives, livelihoods, and development gains. It provides a roadmap to address the country's diverse vulnerabilities—from glacial lake outburst floods in the north to urban flooding and climate-induced disasters—while equipping institutions and communities to respond effectively to emerging threats such as pandemics and extreme weather events.

The strategy prioritizes multi-hazard risk understanding, robust disaster governance, sustainable financial mechanisms, and inclusive resilience-building. It also emphasizes the integration of advanced technologies such as Geographic Information Systems (GIS), Remote Sensing (RS), Artificial Intelligence & Machine Learning (AI/ML) to enhance disaster preparedness, response, and recovery. Strengthening collaboration among the private sector, academia, and international organizations remains a key pillar of this approach. Most importantly, the strategy places people at the heart of DRR efforts, ensuring gender equity, community participation, and climate adaptation are central to its implementation.

While the vision of a disaster-resilient Pakistan is ambitious, it is also achievable. However, its success depends on collective action and shared responsibility. This strategy calls upon all stakeholders to unite in a spirit of collaboration and solidarity. Together, we can transform Pakistan into a nation that not only withstands disasters but proactively mitigates their risks and fosters long-term resilience.

I extend my deepest gratitude to all those who contributed to the development of this strategy, particularly the dedicated team at NDMA, as well as our partners and stakeholders. Let this strategy serve as our guiding beacon, empowering us to transform vulnerability into resilience and challenges into opportunities.

Lt. Gen. Inam Haider Malik
Chairman, NDMA
Islamabad, Pakistan
March 2025

1. Introduction

1.1. Background

Pakistan is one of the most disaster-prone countries in the world, facing both natural and human-induced hazards. Its geographical diversity includes earthquake-prone mountainous regions, flood-prone river basins, arid zones susceptible to droughts and coastal areas susceptible to cyclones and tsunamis. Climate change has further exacerbated the cycle of hydro-meteorological hazards, such as increased unpredictability witnessed for the annual monsoon season, increased intensity of heatwaves in the region, rise in number of glacier lake out-burst flooding (GLOF) events in the northern parts, and escalating sea intrusion along country's coastal belt. The climate change shocks coupled with socio-economic challenges, and rapid urbanization, increase the severity of impacts from disasters, impacting lives, livelihoods, and negatively impacting the socio-economic development of the country.

1.2. Existing National Disaster Risk Management Landscape

Since its inception through National Disaster Management Ordinance in 2006 (later promulgated by the Parliament as the National Disaster Management Act 2010), NDMA has strived to work towards the goal of resilient Pakistan based on proactive disaster risk management approach. The National Disaster Risk Management Framework drafted in 2007, laid down the key contours of disaster risk management and reduction in the country. Based on the Framework, National Disaster Risk Reduction Policy 2013 and a ten-year National Disaster Management Plan 2012 – 22 were drafted to guide and roll-out key DRM / DRR interventions in Pakistan. Over the period, overall DRM policy landscape has been strengthened through various subject-specific policies, guidelines and plans issued by the NDMA, including National Disaster Response Plan, Annual Monsoon Contingency Plans, National Policy Guidelines on Vulnerable Groups, Pakistan School Safety Framework, Multi-Sector Initial Rapid Assessment (MIRA) Guidelines, and MHVRA Implementation Guidelines and Policy.

NDMA, recognizing the inadequacy of a response-led, reactive disaster management approach, has transitioned from hitherto reactive approach to now technology driven proactive DRM approach in Pakistan. This shift is crucial for tackling the frequent and intensifying climate-induced disasters, which threaten Pakistan's social and economic development. A key aspect of this transformation is the establishment of the National Emergencies Operations Center (NEOC), which operates as a data and knowledge hub, enabled by artificial intelligence (AI) and predictive modeling. The NEOC provides real-time monitoring and disaster mitigation capabilities, enabling NDMA to anticipate emerging threats, well in-advance, and coordinate timely evacuations and response efforts.

The National Common Operating Picture (NCOP) platform, developed and operationalized by NEOC, integrates an array of datasets including multi-layered socio-economic, risk, vulnerability, and exposure data to support impact-based forecasting and risk assessments. This data-driven approach has proven effective in issuing timely early warnings, thus minimizing losses and enhancing disaster response capabilities in the country. Supporting the NCOP, NDMA has employed a set of technology-led practices such as electronic-Multi Hazards Vulnerability and Risk Assessment (e-MHVRAs) down to UC level of the whole country, introducing a series of seasonal simulation exercises as part of the annual activity calendar, integrating anticipatory action into existing disaster preparedness and response mechanisms, and conceptualizing infrastructural resilience. To support its yearly planning, NDMA is now developing its National Disaster Management Plan (NDMP) on an annual basis. Annual NDMP will serve as the key implementation document for the National DRR Strategy.

Further, as part of its proactive approach, the scope of National Institute of Disaster Management (NIDM) under NDMA has been re-envisioned and expanded to operate as a national think tank of disaster risk management. NIDM is working on creating linkages between local and international academic institutions to foster conducive and collaborative research environment on key DRR and CC issues. NIDM is also designing and implementing capacity building interventions for government officials, partner organizations and communities.

1.3. Alignment with Global & National Frameworks and Policies

The National DRR Strategy 2025 - 2030 aligns with key international and national commitments and frameworks, emphasizing a collaborative and integrated approach to disaster management:

- **National DRR Policy 2013:** This strategy drives its basic contours of the resilience building from the National DRR Policy, which serves as the key guiding document on DRR for the country.

- **National Climate Change Policy 2021:** The NCCP 2012 (updated in 2021) provides a comprehensive framework to mainstream climate change across vulnerable sectors and steer Pakistan towards climate compatible development.

- **National Adaptation Plan 2023:** The country's principal climate adaptation plan serves as the basis for strategy's vision for enhancing climate resilience interlinked with disaster risk reduction and disaster mitigation.

- **Resilient Recovery, Rehabilitation, and Reconstruction Framework Pakistan (4RF) 2022:** DRM is identified as a cross-cutting theme in Government of Pakistan's framework document guiding the recovery, rehabilitation and reconstruction of the country in the aftermaths of Floods 2022.

- **Sendai Framework for Disaster Risk Reduction (2015-2030):** The strategy reflects the priorities of the Sendai Framework, including understanding disaster risk, strengthening governance, and investing in resilience.

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- **Sustainable Development Goals (SDGs) 2015:** The strategy aligns with SDGs, particularly Goal 11 (Sustainable Cities and Communities) and Goal 13 (Climate Action), ensuring that DRR contributes to sustainable development.

- **Paris Agreement on Climate Change 2015:** Recognizing the interplay between climate change and disaster risks, the strategy incorporates adaptation and mitigation measures to enhance resilience.

This alignment ensures that Pakistan meets its international commitments while addressing national priorities, fostering partnerships, and leveraging global support for funding, expertise, and innovation.

Figure 1: Aligning National DRR Strategy with SFDRR

1.4. Gaps in the National DRR Policy

The National DRR Policy marked a significant step toward institutionalizing disaster management in Pakistan. However, several gaps hindered its full implementation:

- **Insufficient Risk Understanding:** Lack of comprehensive multi-hazard risk assessments and data integration.

- **Weak Integration with Development Planning:** Minimal incorporation of DRR into sectoral and local development plans.

- **Sustainable Financing Mechanisms:** Absence of dedicated funding streams for DRR initiatives.

- **Limited Institutional Capacity:** Inadequate resources, technical expertise, and coordination mechanisms among NDMA, PDMAs, and DDMAs.

- **Public Awareness and Engagement:** Limited outreach to communities and stakeholders regarding disaster preparedness.

1.5. Rationale for a National DRR Strategy

The urgency for a comprehensive Disaster Risk Reduction (DRR) strategy arises from the persistent climate change threats and disasters being faced by the country. Pakistan's experience with catastrophic events, such as the 2005 Kashmir earthquake, mega floods in 2010 and 2022, and recurrent droughts and heatwaves, underscores the need for prevention, preparedness, and resilience-building. Since the issuance of the National DRR Policy in 2013 and adoption of SFDRR in 2015, advancements in available technologies and DRR practices warrant revisiting national policies, priorities and implementation frameworks. Hence, this strategy aims to bridge this gap and support in advancing the implementation of DRR Policy vis-à-vis Sendai Framework.

This strategy aims to integrate lessons learned from past disasters with emerging risks, aiming to minimize vulnerabilities and protect communities through proactive, evidence-based approaches. The strategy also addresses the gaps in the existing policy landscape by leveraging modern technologies, fostering multi-sectoral coordination, and emphasizing inclusivity and sustainability. This strategy will serve as the guiding document for the development of annual NDMPs.

2. Vision, Mission, and Strategic Goals

2.1. Vision

A disaster-resilient Pakistan where communities, institutions, and ecosystems thrive in safety and sustainability through effective risk reduction, preparedness, and recovery mechanisms.

2.2. Mission

To empower communities and institutions through innovative, inclusive, and sustainable disaster risk reduction measures, fostering resilience against multi-hazard risks while aligning with global frameworks and commitments.

2.3. Strategic Goals

The following strategic goals provide a comprehensive framework to guide Pakistan's efforts in disaster risk reduction and resilience-building, ensuring alignment with national and global priorities:

1. **Enhance Risk Understanding and Reduction:** Strengthen multi-hazard risk assessments, data integration, and public awareness to build a foundation for evidence-based decision-making.
2. **Strengthen Disaster Governance:** Improve institutional coordination, capacity building, and policy coherence to enable effective disaster management.
3. **Invest in Resilience:** Promote resilient infrastructure, ecosystem-based solutions, and financial preparedness mechanisms to reduce vulnerabilities.
4. **Modernize Preparedness and Response:** Advance early warning systems, anticipatory actions, and response capacities to minimize disaster impacts.
5. **Promote Inclusive and Sustainable DRR:** Embed equity, climate adaptation, and community engagement into DRR strategies to ensure no one is left behind.
6. **Leverage Technology and Innovation:** Utilize cutting-edge tools, methodologies, and digital solutions to enhance disaster management effectiveness.
7. **Ensure Sustainable Financing:** Develop robust financial mechanisms, including insurance and innovative funding, to support long-term DRR initiatives.

## 2.4. Objectives of the National DRR Strategy

The primary objectives of the National DRR strategy are:

1. Enhance disaster risk understanding and governance.
2. Foster climate-adaptive and inclusive development.
3. Strengthen preparedness and response systems & incorporate anticipatory action.
4. Promote innovation and sustainable financing mechanisms.
5. Build resilient infrastructure & communities through ecosystem-based approaches.
6. Ensure continuous learning & improvement in disaster risk management.

Vision	Mission
A disaster-resilient Pakistan where communities, institutions, and ecosystems thrive in safety and sustainability through effective risk reduction, preparedness, and recovery mechanisms.	To empower communities and institutions through innovative, inclusive, and sustainable disaster risk reduction measures, fostering resilience against multi-hazard risks while aligning with global frameworks and commitments.
Strategic Goals	**Objectives**
1. Enhance Risk Understanding and Reduction 2. Strengthen Disaster Governance 3. Invest in Resilience 4. Modernize Preparedness and Response 5. Promote Inclusive and Sustainable DRR 6. Leverage Technology and Innovation 7. Ensure Sustainable Financing	1. Enhance disaster risk understanding and governance. 2. Foster climate-adaptive and inclusive development. 3. Strengthen preparedness and response systems & incorporate anticipatory action. 4. Promote innovation and sustainable financing mechanisms. 5. Build resilient infrastructure & communities through ecosystem-based approaches. 6. Ensure continuous learning & improvement in disaster risk management.

Figure 2: Main Pillars of National DRR Strategy 2025 - 2030
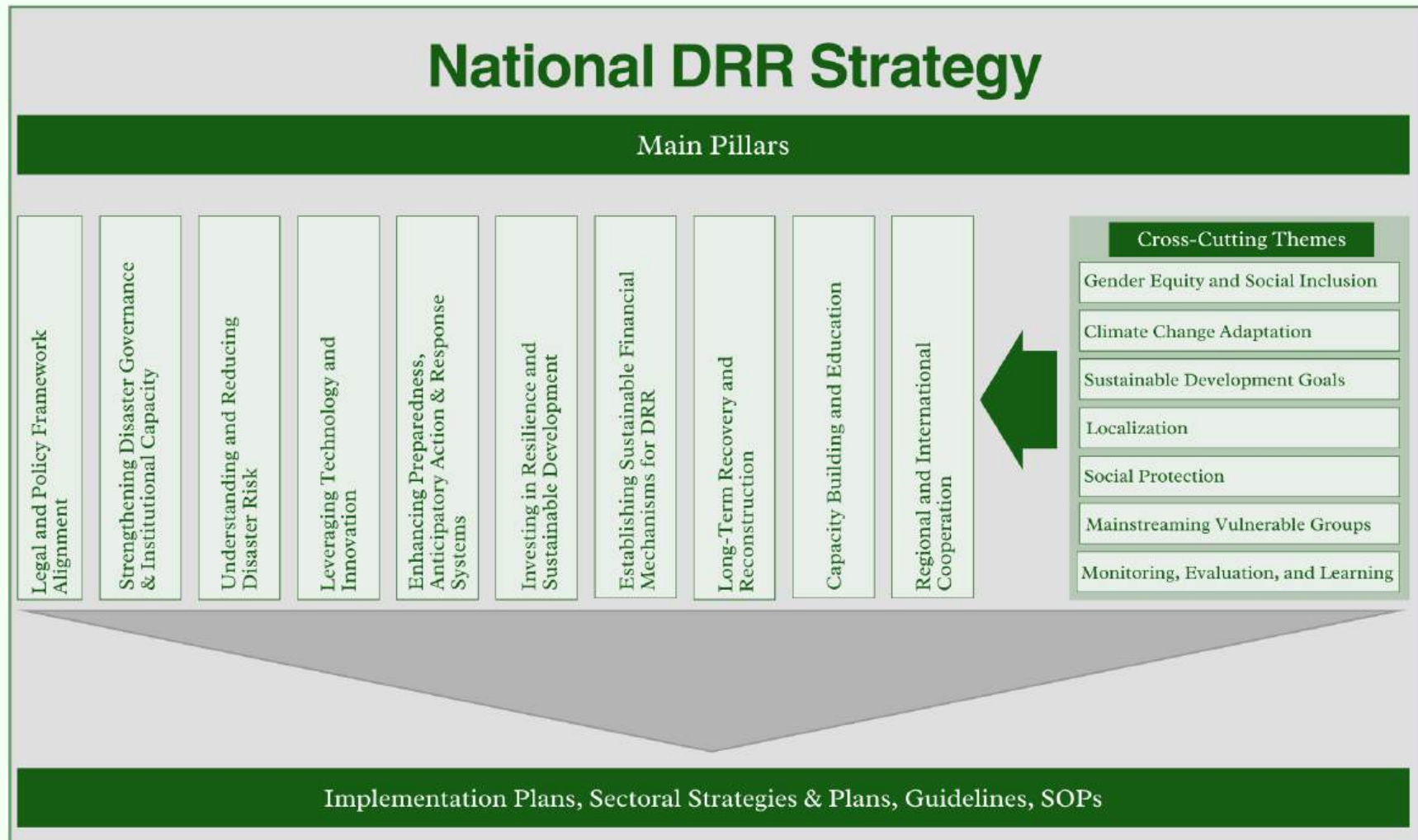
3. Legal and Policy Framework Alignment

The establishment of a robust legal and policy framework is critical to ensuring effective disaster risk reduction in the country. This section focuses on reviewing existing legal and policy frameworks, introducing necessary regulatory reforms, and ensuring policy coherence with international commitments. By conducting gap analyses, engaging legal experts, and aligning with frameworks such as the SFDRR, Pakistan can enhance the relevance and effectiveness of its disaster-related laws. Regulatory reforms, including risk-sensitive land use and building codes and their enforcement, alongside ensuring inter-agency coordination, will further strengthen DRR implementation. Regular policy reviews and clear alignment with global frameworks will ensure that DRR strategies remain responsive and coordinated at national and lower levels, while contributing to global goals and commitments.

3.1. Review of Existing Legal Framework

The legal framework governing DRR in Pakistan must be responsive to evolving risks and vulnerabilities. This sub-section focuses on assessing existing laws and regulations, identifying gaps, and instituting reforms to enhance compliance and accountability. By benchmarking against international standards and addressing specific vulnerabilities, the country can ensure a legal foundation that supports effective disaster management.

Sr.	Action	Timeline	Expected Outcome
3.1.1	Conduct a gap analysis of existing laws, policies, and regulations related to DRR.	Short-term	Identification of gaps and areas for legal reforms.
3.1.2	Engage legal experts and stakeholders in reviewing frameworks and recommending reforms.	Short-term	Comprehensive review of DRR-related legal frameworks.
3.1.3	Benchmark Pakistan's legal & policy frameworks against international standards, such as the SFDRR and global best practices.	Short-term	Enhanced alignment with global DRR standards.
3.1.4	Publish findings and recommendations in a report to provide a roadmap for legal reforms.	Short-term	Clear roadmap for legal and regulatory reforms in DRR.
3.1.5	Establish / revive the parliamentarian caucus on disaster risk reduction and ensure regular	Short-term	Enhanced understanding and garner support for regulatory reforms
3.1.6	Develop and enforce regulations mandating risk-sensitive land use and building codes.	Medium-term	Improved resilience through updated land use and construction standards.

Sr.	Action	Timeline	Expected Outcome
3.1.7	Integrate DRR requirements into sectoral policies, such as health, education, and infrastructure.	Medium-term	Enhanced sectoral resilience through integrated DRR measures.
3.1.8	Establish emergency procurement frameworks emphasizing transparency and accountability.	Medium-term	Greater transparency and accountability in disaster-related procurement.
3.1.9	Ensure compliance with DRR-related regulations through introduction of appropriate measures including offering incentives and imposing penalties.	Medium-term	Increased adherence to DRR regulations.
3.1.10	Provide technical assistance to local authorities for implementing regulatory reforms.	Medium-term	Strengthened local capacity for DRR implementation.

3.2. Ensuring Policy Coherence

Ensuring policy coherence across sectors and aligning with international commitments is vital for integrated DRR efforts. This sub-section outlines the need for regular policy reviews, the creation of inter-agency coordination mechanisms, and the development of new policies where gaps exist. Aligning national strategies with global frameworks enhances Pakistan's ability to access international support and ensures effective stakeholder collaboration.

Sr.	Action	Timeline	Expected Outcome
3.2.1	Map national DRR policies against global frameworks such as the SFDRR and Paris Agreement.	Short-term	Alignment of national policies with international frameworks.
3.2.2	Promote dialogue among policymakers, practitioners, and communities to ensure alignment.	Short-term	Increased collaboration and shared understanding among stakeholders.
3.2.3	Develop mechanisms to align DRR objectives with sectoral policies, including climate change adaptation plans.	Medium-term	Integrated approach to DRR and climate adaptation challenges.
3.2.4	Establish inter-agency coordination mechanisms to unify policy objectives and responsibilities.	Medium-term	Improved collaboration among agencies for unified DRR objectives.

3.2.5	Conduct regular reviews of policies and plans to update financing and implementation arrangements and adapt to emerging risks and challenges.	Medium-term	Updated policies reflecting current risks and financing requirements.
3.2.6	Publish policy briefs highlighting alignment with international commitments with actionable recommendations for implementation.	Medium-term	Greater clarity and actionable steps for aligning national policies with global commitments.
3.2.7	Mainstream DRR into sectoral policies and governance structures to ensure sustainable development.	Medium-term	Inclusive and sustainable governance frameworks incorporating DRR.
3.2.8	Develop and implement a policy framework to increase public financial allocations for disaster risk reduction across federal and provincial budgets.	Medium-term	Increased and sustained public financial support for DRR initiative

4. Strengthening Disaster Governance & Institutional Capacity

Disaster governance serves as a cornerstone for effective disaster risk reduction (DRR), ensuring that efforts are inclusive, well-coordinated, and responsive to the dynamic challenges posed by natural and human-induced hazards. Strengthened governance and institutional capacity across national, provincial, and local levels are imperative for fostering resilience, facilitating collaboration, and delivering timely, effective responses. By enhancing coordination, building capacity, empowering local administration, and engaging diverse stakeholders, a robust governance system can be developed, which can address the complexities of climate change and other emerging risks. This section outlines a comprehensive approach to achieving these objectives through targeted actions.

4.1. Institutional Coordination and Responsibilities

Effective disaster governance requires clear roles and responsibilities among institutions, including the NDMA, provincial and district disaster management authorities. Streamlined operations and reduced redundancies depend on robust inter-agency coordination and clearly defined mandates.

Sr.	Action	Timeline	Expected Outcome
4.1.1	Establish inter-agency task forces and joint planning committees to enhance cohesion and joint decision-making.	Short-term	Improved inter-agency coordination in DRR planning.
4.1.2	Support in full operationalization of Disaster Management Coordination Forum (DMCF) for federal–provincial coordination.	Short-term	Strengthened federal-provincial coordination in disaster management.
4.1.3	Promote vertical and horizontal communication channels to ensure effective information flow between national, provincial, and district authorities.	Short-term	Strengthened communication for coordinated disaster response.
4.1.4	Conduct annual coordination reviews to assess gaps and refine operational frameworks.	Medium-term	Regular identification and resolution of coordination gaps.
4.1.5	Develop Standard Operating Procedures (SOPs) that delineate specific roles during preparedness, response, and recovery phases.	Medium-term	Clear delineation of roles and responsibilities in DRR efforts.
4.1.6	Enhance coordination and cooperation among entities responsible for resilience, climate change, and development to enable risk-informed planning and implementation.	Medium-term	Unified efforts across resilience, climate, and development sectors.

4.2. Enhancing Capacities of NDMA, PDMAs, and DDMAs

Building the technical, operational, and human resource capacities of disaster management authorities is essential for effective risk management. By equipping institutions with modern tools, training, and resources, Pakistan can improve its ability to mitigate risks and respond to emergencies efficiently.

Sr.	Action	Timeline	Expected Outcome
4.2.1	Organize regular training programs focusing on technical skills, leadership development, and cross-sectoral coordination.	Medium-term	Enhanced technical and leadership capabilities in disaster governance.
4.2.2	Ensure the availability of adequate funding and resources for staffing, equipment, and logistics.	Medium-term	Improved operational capacity for disaster response and management.
4.2.3	Deploy advanced technologies, such as Geographic Information Systems (GIS) and Early Warning Systems (EWS), to enhance operational efficiency.	Medium-term	Increased efficiency in disaster risk detection and response.
4.2.4	Create a National DRR Platform, as a dedicated knowledge-sharing forum, for sharing best practices and lessons learned among disaster management professionals.	Medium-term	Improved knowledge sharing and capacity building in DRR.
4.2.5	Strengthen the capacities of DDMAs to coordinate with community-level organizations to improve disaster response efficiency and risk reduction.	Medium-term	Enhanced local-level disaster management efficiency.
4.2.6	Develop the capacity of provincial and district authorities/departments to directly access relevant global and national funds.	Medium-term	Increased access to multiple funding sources for implementing DRR initiatives.
4.2.7	Set up local-level disaster command centers equipped with real-time data-sharing capabilities.	Medium-term	Enhance preparedness and response capabilities.

4.3. Decentralized Governance and Local Empowerment

NDMA Act 2010 establishes the three-tiered disaster management system in the country, enshrined in the decentralized nature of the disaster management in the country and

empowers district authorities as key implementing entities supported by provincial authorities. Decentralization ensures that decision-making authority and resources are closer to the communities most affected by disasters. Local empowerment fosters resilience and enables swift responses, through capacity building, financial allocations, and tailored DRR initiatives. Hence, this strategy aims to further strengthen district and local administrations to effectively deal with disaster situations, on-ground.

Sr.	Action	Timeline	Expected Outcome
4.3.1	Facilitate community participation in DRR planning to ensure grassroots-level ownership and alignment with local needs.	Short-term	Improved community ownership and alignment in DRR efforts.
4.3.2	Devolve resources and decision-making powers to local governments for region-specific DRR planning and implementation.	Medium-term	Empowered local governments for tailored DRR planning.
4.3.3	Strengthen district-level disaster management authorities and provide them with required training and resources.	Medium-term	Increased disaster response capacity at the district level.
4.3.4	Encourage financial allocations at the district level to allow for rapid response during emergencies and implementation of DRR interventions.	Medium-term	Increased financial capacity for district-level DRR actions.
4.3.5	Institutionalize recovery management frameworks to address delays in relief at the district level.	Medium-term	Timely and effective disaster relief and recovery mechanisms.
4.3.6	Develop the capacity of district and local authorities in disaster risk assessment and DRM planning.	Medium-term	Increased risk awareness and effective planning.
4.3.7	Establish mechanisms for continuous monitoring and evaluation of local DRR plans and programs.	Medium-term	Enhanced accountability and adaptability of local DRR initiatives.
4.3.8	Provide financial incentives for local governments that successfully integrate DRR into development planning.	Medium-term	Proactive disaster management at the grassroots level.

4.4. Inclusive Stakeholder Engagement

An inclusive disaster management ecosystem involves diverse stakeholders, including civil society, private sector, academic institutions, and vulnerable communities. Engagement with various stakeholders ensures that diverse perspectives and resources contribute to effective DRR strategies.

Sr.	Action	Timeline	Expected Outcome
4.4.1	Institutionalize regular multi-stakeholder forums to foster collaboration and build trust.	Short-term	Enhanced collaboration and trust among DRR stakeholders.
4.4.2	Develop partnerships with NGOs and community-based organizations (CBOs) to leverage their local knowledge and networks.	Medium-term	Improved DRR outreach and effectiveness through partnerships.
4.4.3	Promote private sector engagement through Corporate Social Responsibility (CSR) initiatives and public-private partnerships.	Medium-term	Increased private sector involvement in DRR initiatives.
4.4.4	Ensure the inclusion of women, youth, persons with disabilities, and marginalized groups in all stages of disaster management, from planning to recovery.	Medium-term	Inclusive disaster management processes at all stages.
4.4.5	Strengthen mechanisms to access and leverage international funding for disaster-related projects by engaging international development partners and stakeholders.	Medium-term	Improved access to international funding for DRR projects.
4.4.6	Facilitate stakeholder capacity building to enable meaningful participation in DRR decision-making processes.	Medium-term	Enhanced stakeholder contributions to disaster management strategies.
4.4.7	Pilot community-driven DRR programs in high-risk areas and scale them up based on effectiveness.	Medium-term	Promote grassroots resilience and scalability.
4.4.8	Develop a policy to formalize the role of academic and research institutions in disaster risk assessment and planning.	Medium-term	Leverage scientific expertise to enhance evidence-based decision-making.

5. Understanding and Reducing Disaster Risk

Understanding disaster risk is foundational to effective disaster risk reduction (DRR). Accurate and comprehensive knowledge of hazards, vulnerabilities, and exposure enables evidence-based decision-making, targeted interventions, and proactive risk mitigation strategies. This section emphasizes the importance of comprehensive multi-hazard risk assessments, data integration, centralized information systems, and robust communication mechanisms to empower stakeholders and communities to mitigate risks and enhance resilience. By strengthening risk understanding and communication mechanisms, this strategy aims to empower stakeholders to anticipate, prepare for, and respond to disasters more effectively while fostering resilience at every level of society.

5.1. Multi-Hazard Risk Assessments and Data Integration

Accurate risk assessments considering both natural and human-induced hazards are critical for planning and implementing DRR measures. Comprehensive multi-hazard assessments provide a detailed understanding of vulnerabilities and exposures, enabling stakeholders to prioritize resources and actions. Incorporating advanced technologies, such as Geographic Information Systems (GIS), remote sensing, and AI-driven modeling, ensures a scientific and data-driven approach. Additionally, integrating community knowledge ensures that local contexts and vulnerabilities are considered, creating a holistic and inclusive risk assessment process.

Sr.	Action	Timeline	Expected Outcome
5.1.1	Ensure completion of e-MHVRAs of all districts.	Short-term	District risk profiles are readily available to support disaster planning and response.
5.1.2	Publish annual risk assessment reports to inform policy decisions and raise public awareness.	Short-term	Improved transparency and informed decision-making for DRR efforts.
5.1.3	Expand climate & disaster risk assessments by integrating indigenous knowledge and experiences.	Short-term	Enhanced understanding of local climate risks and adaptation needs.
5.1.4	Conduct nationwide multi-hazard risk assessments, focusing on high-risk areas and vulnerable populations.	Medium-term	Comprehensive identification of multi-hazard risks across Pakistan.
5.1.5	Utilize advanced technologies such as GIS, remote sensing, and AI-driven modeling to map vulnerabilities and exposures.	Medium-term	Improved accuracy in identifying vulnerabilities and exposures.

5.1.6	Develop district-level and community-specific risk profiles to ensure tailored interventions.	Medium-term	Customized interventions to address local disaster risks.
5.1.7	Establish partnerships with academic and research institutions to ensure risk assessments are grounded in scientific evidence.	Medium-term	Strengthened scientific foundation for risk assessments.

5.2. Centralized Disaster Risk Information System - National Common Operating Picture

The National Common Operating Picture (NCOP) is a centralized system developed by NDMA's NEOC to enhance hazard visualization, monitoring, early-warning dissemination, and decision-making for disaster management interventions. The NCOP integrates automated international and national hazard information and infrastructure data, providing a comprehensive and real-time view of risks. By leveraging its functionalities, the NCOP ensures timely alerts through a Multi-Hazard Early Warning System (MHEWS) and facilitates coordination among disaster management stakeholders. This system can further be enhanced to access real-time hazard information and support data-driven decision-making, strengthen inter-agency coordination through a centralized and integrated platform and facilitate the dissemination of timely early warnings to at-risk communities.

Sr.	Action	Timeline	Expected Outcome
5.2.1	Fully operationalize and regularly update the NCOP to reflect advancements in hazard visualization and monitoring technologies.	Short-term	Enhanced disaster risk monitoring and visualization through an updated system.
5.2.2	Develop multi-threshold hazard triggers for issuance of early warnings and activation for appropriate anticipatory action.	Short-term	Shift towards impact-based forecasting for various hazards integrated with timely EWs.
5.2.3	Integrate the Multi-Hazard Early Warning System (MHEWS) into the NCOP for streamlined hazard detection and communication.	Medium-term	Effective dissemination of early warnings to at-risk populations.
5.2.4	Ensure interoperability between NCOP and other local, national, and international disaster management databases.	Medium-term	Improved data sharing and coordination across governance levels.

Sr.	Action	Timeline	Expected Outcome
5.2.5	Expand the system to include community-specific data layers and localized risk profiles.	Medium-term	Tailored risk information to enhance community-level preparedness and response.
5.2.6	Conduct training programs for disaster management professionals to effectively utilize NCOP functionalities.	Medium-term	Increased capacity for leveraging NCOP in disaster response and mitigation.
5.2.7	Strengthen data privacy and security measures for NCOP to ensure ethical and responsible data usage.	Medium-term	Enhanced trust and reliability in the system's data management.
5.2.8	Develop protocols for real-time hazard monitoring and automated alerts through NCOP for timely responses.	Short-term	Faster and more efficient response mechanisms for emerging hazards.
5.2.9	Evaluate and update NCOP to include new hazard categories and predictive analytics capabilities.	Long-term	Increased robustness and adaptability of the system to emerging risks.

5.3. Public Awareness Campaigns and Risk Communication

Public awareness is essential in building community resilience. Effective communication empowers individuals and communities to take informed actions before, during, and after disasters. Multi-channel campaigns, including digital media, educational programs, and community outreach, play a critical role in disseminating vital information. Developing age-appropriate materials ensures that disaster preparedness knowledge is instilled at a young age. Incorporating local languages into campaigns enhances accessibility, ensuring inclusivity and widespread impact.

Sr.	Action	Timeline	Expected Outcome
5.3.1	Launch multi-channel awareness campaigns using digital media, community outreach, and educational programs.	Short-term	Increased public awareness and preparedness for disasters.
5.3.2	Develop age-appropriate disaster preparedness materials for schools and youth organizations.	Medium-term	Improved disaster literacy among students and young individuals.
5.3.3	Partner with NGOs and community-based organizations to amplify outreach efforts.	Medium-term	Expanded outreach for disaster awareness initiatives.
5.3.4	Conduct awareness drives in local languages to ensure accessibility for all communities.	Medium-term	Increased inclusivity in disaster awareness campaigns.

5.3.5	Incorporate disaster preparedness topics into national education curricula to promote long-term awareness.	Medium-term	Institutionalized disaster preparedness education at all levels.
5.3.6	Monitor and evaluate campaign effectiveness to refine strategies and maximize impact.	Medium-term	Improved effectiveness of public awareness campaigns.

5.4. Role of Media in Risk Communication

The media plays a key role in disseminating disaster-related information and building public trust. It acts as a bridge between authorities and communities, ensuring that accurate, timely, and actionable information reaches those at risk. NDMA's existing initiatives include increased media interaction, active social media presence and dedicated disaster alert app have resulted in improved risk communication, however there remains a need to systematically engage media individuals well-versed in disseminating disaster information and reporting, sensitively. Training programs for journalists can enhance the quality of disaster reporting, focusing on accuracy, sensitivity, and the avoidance of misinformation. Partnerships with media organizations, including social media platforms, broaden the reach of awareness campaigns. A centralized media toolkit provides consistency and reliability in messaging. Proactively monitoring media coverage during disasters helps address misinformation and maintain public trust.

Sr.	Action	Timeline	Expected Outcome
5.4.1	Organize training programs for journalists on disaster risk communication, focusing on accuracy and sensitivity.	Short-term	Improved quality of disaster reporting.
5.4.2	Monitor media coverage during disasters to address misinformation and maintain public trust.	Short-term	Reduced misinformation and increased public confidence.
5.4.3	Develop partnerships with media organizations to disseminate early warnings and preparedness messages.	Medium-term	Broader reach of disaster-related information through media.
5.4.4	Create a centralized media toolkit with guidelines, data, and templates for effective disaster coverage.	Medium-term	Consistent and accurate disaster communication tools.
5.4.5	Engage social media influencers to expand the reach of risk communication campaigns.	Medium-term	Increased public engagement in disaster awareness.

5.5. Role of Climate Change in Risk Amplification

Climate change significantly intensifies disaster risks, exacerbating the frequency and intensity of hazards. In the recent past, Pakistan has witnessed rising temperatures, changing precipitation patterns, and increasing extreme weather events, which require a proactive and integrated approach to risk management. Though the country's vulnerability to the impacts of climate change is well known, however conducting comprehensive climate vulnerability assessments will be critical in identifying the most vulnerable regions and sectors. By integrating climate adaptation measures into DRR strategies, Pakistan can build resilience against climate-driven hazards. Collaborations with meteorological agencies and climate experts enhance predictive modeling and preparedness for future risks. Public awareness initiatives are essential to highlight the links between climate change and disaster risks, fostering a culture of climate-resilient planning and action.

Sr.	Action	Timeline	Expected Outcome
5.5.1	Raise public awareness about the links between climate change and disaster risks.	Short-term	Increased public understanding of climate-related risks.
5.5.2	Conduct climate vulnerability assessments to identify regions and sectors most at risk.	Medium-term	Identification of climate-vulnerable areas and sectors.
5.5.3	Integrate climate adaptation measures into national and local DRR strategies and vice versa.	Medium-term	Improved resilience through climate-adapted DRR planning.
5.5.4	Focus on addressing climate-driven hazards such as glacial lake outburst floods (GLOFs) and heatwaves.	Medium-term	Reduced risks from climate-induced hazards.
5.5.5	Collaborate with meteorological agencies and experts to enhance predictive modeling.	Medium-term	Enhanced accuracy of climate-related disaster predictions.
5.5.6	Develop climate-resilient planning frameworks to reduce exposure to climate-driven hazards.	Medium-term	Reduced vulnerability to climate-induced disasters.

6. Leveraging Technology and Innovation

Technology and innovation are transformative drivers in disaster risk reduction. The National Emergencies Operations Center (NEOC) at NDMA is at the forefront utilizing advanced technologies and modern tools for weather forecasting, impact assessment and designing any potential response operations in the country. By further studying the areas for utilizing advanced tools and fostering strategic partnerships, Pakistan can significantly improve its disaster management capabilities, enhance decision-making processes through decision support systems, and ensure more effective communication and coordination during crises. This section explores the potential of geospatial tools, AI, remote sensing, mobile applications, IoT, and public-private collaborations to revolutionize DRR efforts and create more resilient systems to manage disaster risks.

6.1. Use of GIS, AI, and Remote Sensing in DRR

Technological advancements in the recent past have provided new tools for the DRM managers to benefit in policymaking through enhanced accuracy in risk assessments, forecasting capabilities, and access to real-time information. Geospatial tools, artificial intelligence (AI), and remote sensing have increasingly become critical for risk assessment, disaster monitoring, and decision support, and their use in should be integrated in existing systems.

Sr.	Action	Timeline	Expected Outcome
6.1.1	Encourage data-sharing between all government stakeholders and develop a secure mechanism to facilitate such data-sharing.	Short - term	Increased access to a multitude of data for government stakeholders.
6.1.2	Deploy Geographic Information Systems (GIS) for hazard mapping, vulnerability assessments, and resource allocation.	Medium- term	Improved hazard identification and resource planning.
6.1.3	Use AI algorithms to analyze patterns and predict disaster impacts, improving preparedness and response.	Medium- term	Enhanced disaster prediction accuracy.
6.1.4	Incorporate satellite-based remote sensing for real-time monitoring of hazards like floods, landslides, and forest fires.	Medium- term	Improved real-time hazard monitoring capabilities.
6.1.5	Integrate machine learning techniques to improve forecasting models and risk mapping accuracy.	Medium- term	More precise disaster forecasting and risk mapping.
6.1.6	Train disaster management professionals on using these technologies to enhance operational efficiency.	Medium- term	Increased technological capacity among DRR professionals.

| 6.1.7 | Establish partnerships with academic and research institutions to develop innovative applications of GIS, AI, and remote sensing in DRR. | Medium-term | Increased collaboration for innovation in disaster management. |
| 6.1.8 | Regularly update GIS databases with real-time information to ensure their reliability for decision-making. | Medium-term | Reliable and up-to-date GIS data for decision-making. |

6.2. Mobile Applications and Digital Platforms for DRR

The access to and use of mobile phones has considerably increased in the country, with tele-density projected to be 80%, the highest in the South Asia region, as per Pakistan Telecommunications Authority (PTA). Further, it is estimated that more than 65% mobile sets being used are smart phones. With such high penetration rates among the country's population, mobile applications and online mobile-accessible digital platforms provide an unprecedented level of access to reach out, communicate and share early warnings to the public. User-friendly mobile apps and digital platforms are revolutionizing the methods of information dissemination and stakeholder coordination.

Sr.	Action	Timeline	Expected Outcome
6.2.1	Develop mobile applications that provide real-time alerts, emergency contact details, and preparedness tips for communities.	Short-term	Increased public access to real-time disaster information.
6.2.2	Create digital platforms for inter-agency coordination, allowing seamless information exchange during disasters.	Medium-term	Improved coordination among agencies during disasters.
6.2.3	Use gamification in apps to engage youth and increase disaster awareness and preparedness.	Medium-term	Enhanced youth engagement in disaster preparedness.
6.2.4	Ensure accessibility for marginalized groups by providing multilingual and easy-to-use interfaces.	Medium-term	Inclusive disaster preparedness tools for marginalized groups.
6.2.5	Partner with tech companies to ensure platform scalability and maintenance.	Medium-term	Sustained scalability and effectiveness of digital platforms.
6.2.6	Design data visualization tools within platforms to present risk and respond to information effectively.	Medium-term	Improved communication of disaster risk and response data.
6.2.7	Incorporate features like community feedback mechanisms to ensure inclusivity in platform design and updates.	Medium-term	Platforms are designed based on community needs and feedback.

6.3. IoT for Disaster Management

The Internet of Things (IoT) has the potential to transform disaster management by enabling real-time data collection, monitoring, and decision-making. By deploying IoT sensors in high-risk areas, governments and disaster management agencies can proactively monitor environmental conditions, predict hazards, and issue timely alerts. Furthermore, IoT-enabled networks can improve the safety of critical infrastructure such as dams, bridges, and power grids by identifying vulnerabilities in real-time. Integration with emerging technologies, such as drones and augmented reality, can enhance post-disaster assessments, while blockchain can add transparency to relief distribution processes. To fully realize these benefits, it is essential to collaborate with private sector innovators, train local authorities, and invest in scalable, context-specific IoT solutions tailored to Pakistan's unique challenges.

Sr.	Action	Timeline	Expected Outcome
6.3.1	Create an IoT disaster resilience strategy outlining a roadmap for IoT integration in DRR at national and local levels.	Short-term	Clear roadmap for IoT deployment in disaster management.
6.3.2	Deploy IoT sensors in high-risk areas for real-time data collection and early warning.	Medium-term	Enhanced real-time data collection and early warning systems.
6.3.3	Integrate IoT with early warning systems to automate alerts based on sensor data.	Medium-term	Faster and more accurate disaster alerts.
6.3.4	Collaborate with private sector innovators to develop scalable IoT solutions tailored to Pakistan's needs.	Medium-term	Scalable and context-specific IoT solutions for DRR.
6.3.5	Explore other emerging technologies, such as drones and augmented reality, for post-disaster assessments and training simulations.	Medium-term	Improved post-disaster assessments and training capabilities.
6.3.6	Establish IoT-enabled networks for monitoring critical infrastructure, including dams, bridges, and power grids.	Medium-term	Improved safety and monitoring of critical infrastructure.
6.3.7	Train local authorities on maintaining and utilizing IoT systems for disaster risk reduction.	Medium-term	Enhanced capacity of local authorities in using IoT for DRR.
6.3.8	Invest in blockchain technology for improving transparency and accountability in relief distribution and recovery operations.	Medium-term	Transparent and accountable disaster relief processes.

6.3.9	Develop IoT-powered community-based alert systems to engage local populations in risk monitoring and early warnings.	Medium-term	Increased community engagement and early warning dissemination.
6.3.10	Establish partnerships with international IoT research institutes to adopt global best practices.	Medium-term	Improved technological expertise and implementation of best practices.
6.3.11	Employ IoT for effective predictive maintenance of infrastructure to enhance structural resilience in the pre-disaster phase.	Medium-term	Improved monitoring and resilience of critical infrastructure through predictive analytics.

6.4. Public-Private Partnerships in Innovation

Public-private partnerships (PPPs) are essential for fostering innovation in disaster risk reduction (DRR). The private sector, with its expertise in technology development, infrastructure, and service delivery, can play a transformative role in advancing DRR technologies. By creating a conducive environment, government can encourage private sector investment in DRR innovations. Innovation hubs and collaborative research initiatives between universities, think tanks, and private firms can drive the development of cutting-edge solutions tailored to local needs. Engaging the private sector during emergencies, through a database of resources and capabilities, can accelerate response efforts. Additionally, integrating DRR technologies into corporate social responsibility (CSR) programs ensures sustained support for disaster resilience.

Sr.	Action	Timeline	Expected Outcome
6.4.1	Establish innovation hubs where private sector and government stakeholders collaborate on DRR technologies.	Medium-term	Increased collaboration on innovative DRR solutions.
6.4.2	Introduce incentives, such as tax breaks or grants, to encourage private investment in DRR innovation.	Medium-term	Increased private sector involvement in DRR innovations.
6.4.3	Facilitate knowledge exchange through conferences, hackathons, and innovation challenges.	Medium-term	Accelerated innovation and idea-sharing in DRR technologies.
6.4.4	Develop a database of private sector capabilities and resources that can be mobilized during emergencies.	Medium-term	Readily available private sector resources for emergency response.
6.4.5	Partner with startups and tech industry to pilot and scale up promising DRR & CCA technologies.	Medium-term	Adoption and scaling of new DRR technologies.

6.4.6	Promote collaborative research initiatives between universities, think tanks, and private firms to explore cutting-edge DRR solutions.	Medium-term	Development of cutting-edge DRR technologies through collaboration.
6.4.7	Advocate for integrating DRR technologies into corporate social responsibility (CSR) initiatives.	Medium-term	Increased investment in DRR through CSR initiatives.
6.4.8	Develop performance-based metrics for PPPs to measure the impact of private sector innovations on disaster resilience.	Medium-term	Increased accountability and effectiveness of PPP contributions.
6.4.9	Host annual national and regional DRR innovation expos to showcase and promote private sector contributions.	Medium-term	Increased visibility and promotion of DRR innovations.
6.4.10	Devise funding mechanisms for the development of critical infrastructure through public-private partnerships, repaid over time through tolls and taxes, ensuring long-term viability.	Medium-term	Sustainable financing for critical infrastructure development and maintenance.
6.4.11	Develop public-private partnerships to enhance the capability of retrofitting infrastructure proactively.	Medium-term	Increased investment and efficiency in retrofitting disaster-prone infrastructure.

7. Enhancing Preparedness, Anticipatory Action, and Response Systems

Effective preparedness and response systems are crucial for mitigating the devastating impacts of disasters. By strengthening these systems, communities can better anticipate, respond to, and recover from such events. This section highlights key strategies for enhancing early warning systems, implementing proactive anticipatory actions, improving emergency response capacities, and empowering communities with the knowledge and resources needed for disaster preparedness and resilience.

7.1. Modernizing Early Warning Systems

The ability to detect, forecast, and communicate potential hazards accurately is critical for reducing disaster risks. Modern technologies, such as satellite-based monitoring and AI-powered forecasting, can significantly enhance early warning systems' accuracy and reach. These systems must be integrated with real-time data collection tools and tailored to local contexts to ensure timely and effective communication with at-risk communities.

Sr.	Action	Timeline	Expected Outcome
7.1.1	Deploy advanced technologies, such as satellite-based monitoring and AI-powered forecasting, to improve hazard detection.	Medium-term	Enhanced accuracy in hazard detection and forecasting.
7.1.2	Establish a centralized early warning communication system to ensure timely dissemination of alerts to communities.	Medium-term	Timely and effective communication of early warnings.
7.1.3	Develop mobile applications that provide real-time updates on disaster risks and preparedness measures.	Short-term	Increased accessibility to disaster risk information.
7.1.4	Collaborate with telecom providers to send SMS alerts to populations in high-risk areas.	Short-term	Broader and faster dissemination of warnings to at-risk communities.
7.1.5	Conduct regular tests and simulations to evaluate the effectiveness of early warning systems.	Medium-term	Improved reliability and effectiveness of warning systems.
7.1.6	Integrate IoT-enabled sensors and GIS mapping into early warning systems for real-time data collection and analysis.	Medium-term	Enhanced real-time data collection and analysis capabilities.
7.1.7	Partner with international meteorological agencies to enhance forecasting accuracy for cross-border hazards.	Medium-term	Improved forecasting for transboundary disaster risks.

7.1.8	Create community-level notification systems using local channels, such as radio and community leaders, to reach remote populations.	Medium-term	Increased accessibility of warnings for remote and marginalized groups.
7.1.9	Promote meteorological agencies and other stakeholders to transition towards impact-based forecasting.	Medium-term	Enhanced understanding of approaching disaster risk for timely actions.

7.2. Institutionalizing Anticipatory Action Mechanisms

Anticipatory action entails proactive measures taken before a disaster strike, based on credible forecasts and risk assessments. These mechanisms can save lives and reduce economic losses by enabling timely interventions. Institutionalizing anticipatory actions in national policies and frameworks ensures a structured approach to disaster preparedness.

Sr.	Action	Timeline	Expected Outcome
7.2.1	Integrate anticipatory actions into national disaster management policies and frameworks.	Medium-term	Alignment of anticipatory measures with disaster management policies.
7.2.2	Establish contingency plans that outline specific pre-disaster actions for different hazard scenarios.	Medium-term	Clear and actionable pre-disaster plans for various hazards and scenarios.
7.2.3	Develop a national strategy for roll-out of anticipatory action and its implementation plan.	Short-term	Systematic and structured implementation of anticipatory actions.
7.2.4	Develop predictive analytics tools to support anticipatory decision-making based on real-time data and hazard forecasts.	Medium-term	Development of universal triggers for various hazards.
7.2.5	Secure funding for anticipatory actions through innovative financing mechanisms, such as forecast-based financing.	Medium-term	Sustainable financing for proactive disaster risk reduction measures.
7.2.6	Design and roll out a comprehensive capacity building program to train and support government officials, CSOs and professionals to understand and implement anticipatory action interventions.	Short-term	Increased awareness on anticipatory action among various stakeholder groups
7.2.7	Develop and implement a policy on pre-positioning relief supplies in strategic locations to ensure rapid deployment during emergencies.	Medium-term	Faster response and reduced impact during emergencies.

7.2.8	Enhance preparedness through training of community volunteers to implement anticipatory measures, such as evacuation drills and infrastructure reinforcement.	Short-term	Improved community readiness and proactive measures.
7.2.9	Encourage development of sector-specific anticipatory action interventions such as education, health, shelter, etc.	Short-term	Focused interventions supporting anticipatory action across sectors
7.2.10	Promote community-based hazard monitoring initiatives to strengthen localized anticipatory actions.	Medium-term	Empowered communities capable of monitoring and addressing local risks.

7.3. Strengthening Emergency Response Capabilities

Effective disaster response depends on well-equipped and skilled emergency responders who can act swiftly and efficiently during crises. Strengthening these capabilities requires investment in investing in modern equipment, training programs, and coordination mechanisms to ensure a unified and effective response to disasters.

Sr.	Action	Timeline	Expected Outcome
7.3.1	Provide advanced training programs for first responders, focusing on search-and-rescue operations, medical care & trauma-informed care, and logistics.	Short-term	Enhanced skills and capabilities of first responders.
7.3.2	Establish a national database of emergency response assets, including equipment and personnel, to facilitate resource allocation.	Medium-term	Efficient resource allocation during emergencies.
7.3.3	Invest in modern equipment, such as drones and amphibious vehicles, to improve operational capabilities.	Medium-term	Improved operational capacity for disaster response.
7.3.4	Develop mutual aid agreements between provinces to share resources during large-scale disasters.	Medium-term	Strengthened inter-provincial resource sharing for disaster response.
7.3.5	Conduct post-disaster response reviews / assessments following major responses to identify strengths and areas for improvement.	Medium-term	Continuous improvement in emergency response capabilities.
7.3.6	Establish specialized rapid response teams with expertise in various disaster scenarios, such as urban search-and-rescue or chemical spills.	Medium-term	Increased efficiency and effectiveness in handling specific disaster scenarios.

7.3.7	Enhance inter-agency coordination through joint response drills and simulations.	Medium-term	Improved collaboration and readiness among response agencies.
7.3.8	Standardize emergency response protocols across federal, provincial, and district levels to ensure seamless collaboration.	Medium-term	Synergized and effective emergency response efforts.
7.3.9	Operationalize Mobile Emergency Operations Center (MEOC) for deployment during emergency situations.	Medium-term	To streamline interagency / inter-provincial coordination during disaster response.
7.3.10	Employ the latest technological tools, including AI & GIS, for inventory monitoring, supply chain management, prepositioning stocks in disaster-prone areas, and utilizing drones for real-time damage assessment.	Medium-term	Enhance logistics planning and deployment capabilities to support timely response efforts.
7.3.11	Develop contingency transportation plans, including alternative routes and multi-modal transport (road, air, water) for relief distribution.	Short-term	Increased preparedness to deal with emergency situations during disasters.

7.4. Community-Based Preparedness and Training

Empowering communities is critical for building resilience and reducing dependency on external aid during disasters. Community-based preparedness initiatives focus on equipping individuals and groups with the knowledge, tools, and resources needed to respond effectively to disasters.

Sr.	Action	Timeline	Expected Outcome
7.4.1	Develop tailored training programs for communities in high-risk areas, focusing on risk identification and mitigation strategies.	Short-term	Improved community preparedness and risk mitigation.
7.4.2	Establish community disaster response teams equipped with basic tools and resources.	Medium-term	Strengthened community response capacity.
7.4.3	Promote the development of local-level disaster preparedness plans through participatory processes.	Medium-term	Community-driven and locally relevant disaster plans.
7.4.4	Conduct public awareness campaigns on disaster preparedness, targeting schools, workplaces, and households.	Short-term	Increased public awareness and readiness for disasters.

7.4.5	Facilitate regular mock drills and exercises to test community readiness and response capabilities.	Short-term	Enhanced community resilience through regular preparedness exercises.
7.4.6	Collaborate with NGOs and community-based organizations to extend training and preparedness outreach to marginalized groups.	Medium-term	Broader inclusiveness in disaster preparedness initiatives.
7.4.7	Create multilingual and culturally relevant educational materials to ensure inclusiveness in community preparedness efforts.	Medium-term	Accessible and inclusive disaster education for diverse communities.
7.4.8	Recognize and reward proactive community initiatives that contribute to enhanced preparedness and resilience.	Medium-term	Incentivized community participation and innovation in DRR.
7.4.9	Launch targeted educational programs and community outreach initiatives to raise awareness about infrastructure resilience and protection measures.	Short-term	Increased public engagement and understanding of infrastructure protection.
7.4.10	Form community-based committees to focus on local infrastructure protection and disaster resilience, including training residents on identifying vulnerabilities and taking proactive measures.	Short-term	Strengthened community participation in disaster preparedness and local infrastructure protection.

8. Investing in Resilience and Sustainable Development

Strengthening Pakistan's resilience against disasters requires embedding risk reduction measures into infrastructure, ecosystems, and urban planning. There is a need for a comprehensive approach to fostering long-term resilience, ensuring that development initiatives are environmentally sustainable, socially inclusive, and capable of withstanding the impacts of natural and human-induced hazards. This section highlights the significance of developing hazard-resilient infrastructure, utilizing ecosystems for disaster risk reduction (Eco-DRR), enhancing urban resilience, and actively engaging the private sector in driving these initiatives forward.

8.1. Resilient Infrastructure Development and Retrofitting

Building and upgrading infrastructure to withstand disasters significantly contribute towards enhanced resilience. Incorporating resilience measures ensures that key facilities and systems remain operational during disasters, safeguarding lives and livelihoods.

Sr.	Action	Timeline	Expected Outcome
8.1.1	Establish a database of critical infrastructure and ensure regular safety audit of these assets.	Short-term	Critical infrastructure is resilient to remain operational during disasters.
8.1.2	Update and enforce hazard-resistant building codes across all provinces.	Medium-term	Improved structural resilience to disasters.
8.1.3	Prioritize retrofitting critical public facilities, such as schools, hospitals, and emergency response centers, to ensure safety during disasters.	Medium-term	Enhanced safety and functionality of critical infrastructure.
8.1.4	Conduct regular risk assessments for existing infrastructure to identify vulnerabilities and plan retrofitting.	Medium-term	Systematic identification and mitigation of infrastructure risks.
8.1.5	Integrate resilience measures into the planning and design of new infrastructure projects, including roads, bridges, and utility systems.	Medium-term	Resilient and future-proof infrastructure development.
8.1.6	Include accessibility features in retrofitting plans to ensure inclusiveness for persons with disabilities and the elderly.	Medium-term	Inclusive infrastructure that caters to diverse needs.

8.1.7	Promote sustainable construction materials and practices that reduce environmental impacts while enhancing resilience.	Medium-term	Environmentally sustainable and resilient construction practices.
8.1.8	Implement nature-based solutions (e.g., green roofs, bioswales) to complement retrofitting and construction efforts in urban areas.	Medium-term	Reduced urban heat island effects and improved urban resilience.
8.1.9	Establish backup power systems for critical infrastructure such as hospitals, water treatment plants, and emergency centers.	Short-term	Reduced operational disruptions during disasters through reliable backup power solutions.
8.1.10	Devise a certification process to evaluate infrastructure projects based on their resilience to natural disasters.	Short-term	Improved accountability and quality control in infrastructure development.
8.1.11	Implement zoning laws and urban planning strategies that prevent the placement of critical infrastructure in high-risk areas.	Medium-term	Reduced exposure of essential infrastructure to disaster-prone locations.
8.1.12	Implement quick retrofitting measures for highly vulnerable infrastructure.	Short-term	Immediate risk reduction for infrastructure at high risk of disaster-related damage.
8.1.13	Create a dedicated fund to support long-term retrofitting of older infrastructure that is not currently disaster-resilient, focusing on high-risk regions.	Medium-term	Strengthened disaster resilience of aging infrastructure through sustained investments.

8.2. Ecosystem-Based Disaster Risk Reduction (Eco-DRR)

Harnessing natural ecosystems to mitigate disaster risks provides cost-effective and sustainable solutions. Eco-DRR enhances the ability of communities to withstand hazards while maintaining environmental integrity.

Sr.	Action	Timeline	Expected Outcome
8.2.1	Promote the restoration and conservation of natural barriers, such as mangroves, forests, and wetlands, to enhance disaster protection.	Medium-term	Enhanced natural defenses against disasters.

8.2.2	Integrate Eco-DRR principles into national and provincial development plans, ensuring alignment with environmental conservation goals.	Medium-term	Systematic integration of Eco-DRR into development plans.
8.2.3	Launch community-based Eco-DRR programs that engage local populations in ecosystem management and disaster mitigation.	Medium-term	Increased community engagement in Eco-DRR initiatives.
8.2.4	Conduct research and pilot projects on innovative Eco-DRR solutions, such as agroforestry and green infrastructure.	Medium-term	Development of innovative ecosystem-based solutions.
8.2.5	Collaborate with environmental NGOs and international partners to scale up Eco-DRR initiatives.	Medium-term	Broader implementation of Eco-DRR projects.
8.2.6	Establish a national framework for evaluating the effectiveness of Eco-DRR projects.	Medium-term	Systematic evaluation and scaling of effective Eco-DRR strategies.
8.2.7	Develop a biodiversity monitoring system to assess the impact of Eco-DRR projects on local ecosystems.	Medium-term	Data-driven decisions for Eco-DRR scaling and improvement.
8.2.8	Strengthen partnerships with universities and research institutions to advance knowledge on ecosystem-based solutions.	Medium-term	Enhanced research and innovation in Eco-DRR practices.
8.2.9	Incorporate ecosystem-based infrastructure approaches that simultaneously protect the environment and enhance resilience.	Medium-term	Increased environmental sustainability and disaster resilience through nature-based solutions.
8.2.10	Expand urban green spaces to reduce the heat island effect and improve urban climate resilience.	Medium-term	Enhanced urban cooling, reduced heat-related health risks, and increased ecological benefits.
8.2.11	Restore riparian zones to reduce flooding damage to infrastructure.	Medium-term	Minimized flood risks and improved natural flood control through ecosystem restoration.

8.3. Urban Resilience and Risk-Sensitive Planning

The rapid pace of urbanization in Pakistan demands robust resilience measures to address the heightened risks in urban settings. This sub-section focuses on zoning

regulations, sustainable urban development, and smart city technologies to reduce urban vulnerabilities and climate change impacts.

Sr.	Action	Timeline	Expected Outcome
8.3.1	Launch a national awareness campaign on resilient urban living targeting urban residents, builders, and local authorities.	Short-term	Increased public engagement and awareness of urban resilience measures.
8.3.2	Develop and implement risk-sensitive zoning and land-use plans that minimize exposure to hazards.	Medium-term	Reduced urban exposure to hazards through informed planning.
8.3.3	Promote sustainable urban drainage systems to mitigate flood risks in densely populated areas.	Medium-term	Decreased urban flood risks through improved drainage systems.
8.3.4	Mainstream urban resilience in city-specific DRR strategies and monitor implementation.	Medium-term	Effective and coordinated urban resilience initiatives.
8.3.5	Incentivize investments in green urban infrastructure, such as parks and permeable pavements, to enhance climate adaptation.	Medium-term	Increased adoption of green urban infrastructure.
8.3.6	Conduct capacity-building workshops for urban planners, architects, and engineers on integrating resilience into urban design.	Medium-term	Improved technical capacity for resilient urban development.
8.3.7	Implement urban heat island mitigation strategies, such as reflective roofing and increased vegetation cover.	Medium-term	Reduced urban heat impacts through targeted mitigation efforts.
8.3.8	Introduce smart city technologies to improve disaster monitoring and emergency response in urban areas.	Medium-term	Enhanced urban disaster preparedness and response capabilities.

8.4. Private Sector Engagement in Resilience Investments

The private sector's involvement is essential to mobilize resources, foster innovations, and scale up resilience projects. Public-private partnerships (PPPs) and corporate initiatives can significantly contribute to disaster risk reduction and sustainable development, while sharing the financial burden.

Sr.	Action	Timeline	Expected Outcome
8.4.1	Collaborate with microfinance institutions to offer resilience-focused loans and insurance products to small and medium enterprises (SMEs).	Short-term	Enhanced SME capacity to recover from disasters.

8.4.2	Foster public-private partnerships (PPPs) to mobilize funding for large-scale DRR projects.	Medium-term	Increased resources for large-scale DRR initiatives.
8.4.3	Encourage Corporate Social Responsibility (CSR) initiatives focused on building community resilience.	Medium-term	Enhanced private sector involvement in community resilience.
8.4.4	Develop policy frameworks that provide incentives for private investments in resilient infrastructure and sustainable technologies.	Medium-term	Increased private investment in resilience and sustainability.
8.4.5	Collaborate with financial institutions to create disaster risk insurance products for businesses and industries.	Medium-term	Increased financial protection for businesses against disasters.
8.4.6	Support development organizations and private sector to host annual resilience investment forums to facilitate dialogue between government, private sector, and international partners.	Medium-term	Strengthened collaboration and resource mobilization for resilience.
8.4.7	Promote private sector investments in renewable energy and decentralized power systems to enhance disaster resilience.	Medium-term	Increased adoption of resilient and sustainable energy systems.
8.4.8	Establish innovation grants for startups focused on resilience-building technologies and services.	Medium-term	Encouraged innovation in resilience-focused technologies.
8.4.9	Encourage linkages between local organizations and international partners to bring in / implement new technologies in resilient construction practices.	Medium-term	Keep abreast of international technologies and advance practices.
8.4.10	Encourage private sector entities to adopt Environmental, Social and Governance (ESG)-based framework to assess and monitor their business practices and performances.	Medium-term	Resilience and sustainability to become core of business operations.

9. Establishing Sustainable Financial Mechanisms for DRR

Sustainable financial mechanisms are essential for ensuring the effective implementation and long-term maintenance of disaster risk reduction initiatives. Pakistan's focus on ex-post Disaster Risk Financing instruments (reallocating funds from other budget items, access to domestic / international credit etc.) has been a major headwind that overshadowed creation of enabling environment for sustainable risk financing solutions in the country. By resorting to ex-ante risk financing instruments (i.e. budgetary cover, fiscal insurance, insurance of public assets including critical infrastructure, private sector insurance for life, assets/business, disaster safety nets for housing/food security/crops and parametric insurance etc.) can steer the country towards achieving the goal of disaster resilient Pakistan. In order to build the architecture of sustainable financial mechanism, reforms in the spheres of legislature, governance, and implementation require strong commitment and priority action by the stakeholders. Consequently, this section focuses on developing national-level financing mechanisms, introducing innovative financial instruments like parametric insurance, promoting disaster risk insurance for households and small businesses, and enhancing financial allocations to improve disaster preparedness, response, and recovery.

9.1. National Disaster Risk Financing Mechanism

Disaster Risk Financing encompasses a variety of tools and mechanisms aimed at managing and transferring financial risks associated with natural disasters. These options can support Pakistan to prepare for, respond to, and recover from disasters more effectively. There is a need to devise a comprehensive financing strategy for the country to meet its increasing financial needs from exacerbating disaster risks.

Sr.	Action	Timeline	Expected Outcome
9.1.1	Develop a National Disaster Risk Financing Policy / Strategy and implementation plan to support complete spectrum of disaster risk management interventions.	Medium-term	Comprehensive financial strategy to cater to financial needs to implement DRM intervention.
9.1.2	Secure funding from national & provincial budgets, international donors, development banks, and private sector partners.	Medium-term	Increased financial resources for DRR initiatives.
9.1.3	Establish transparent governance structures for fund management and allocation, including public reporting mechanisms, in collaboration with the Ministry of Finance.	Medium-term	Improved accountability and trust in DRR funding.

9.1.4	Link financing with performance metrics to ensure accountability and impact.	Medium-term	Enhanced effectiveness of DRR funding through performance-based allocation.
9.1.5	Promote sectoral climate financing strategies to enable ministries and organizations to access diverse funding windows.	Medium-term	Greater access to funding for climate-related DRR activities.
9.1.6	Integrate risk reduction investments into national and provincial budgetary processes to ensure sustainability.	Medium-term	Sustainable financial integration of DRR into national budgets.
9.1.7	Conduct a feasibility study for issuance of catastrophe bonds in Pakistan, in consultation with M/o EA, M/o Finance and other stakeholders and initiate a pilot catastrophe bond to raise funds for post-disaster recovery.	Medium-term	Access to new financial instruments to support disaster recovery efforts.
9.1.8	Increase the funding base for the National Disaster Risk Management Fund by pooling resources from various sources and simplify processes to ensure smooth access to funds for government entities.	Medium-term	Increased productivity of NDRMF to finance DRR interventions.
9.1.9	Enact legislation to create an enabling framework for accessing international climate and disaster risk financing, ensuring alignment with global financial mechanisms and donor requirements.	Medium-term	Increased accessibility to international funding sources, streamlined engagement with global financial institutions, and enhanced financial sustainability for DRR initiatives.

9.2. Innovative Financial Instruments

Innovative financial instruments, such as parametric insurance and risk transfer tools, provide rapid financial relief in the aftermath of disasters, minimizing recovery delays. These instruments offer a predictable and efficient way to finance disaster responses while incentivizing risk reduction initiatives. Through partnerships with insurance providers, global experts, and policymakers, Pakistan may conduct comprehensive feasibility assessment to identify the most suitable financial model for Pakistan and develop tailored financial solutions to meet its unique risk profile.

Sr.	Action	Timeline	Expected Outcome
9.2.1	Raise awareness among policymakers and communities about the benefits and application of such instruments.	Short-term	Greater understanding and adoption of innovative insurance tools.
9.2.2	Introduce parametric insurance products that trigger payouts based on predefined thresholds, such as rainfall or wind speed.	Medium-term	Faster and predictable financial support during disasters.
9.2.3	Collaborate with insurance companies to design affordable products tailored to Pakistan's risk landscape.	Medium-term	Increased accessibility of disaster insurance products.
9.2.4	Conduct pilot programs in high-risk regions to evaluate feasibility and scalability.	Medium-term	Practical insights for scaling up parametric insurance.
9.2.5	Develop advanced risk models to determine premium rates and payout conditions.	Medium-term	Improved accuracy and fairness in insurance product design.
9.2.6	Engage international partners to share expertise in designing and implementing these instruments.	Medium-term	Enhanced implementation through global best practices.
9.2.7	Use predictive analytics to forecast financial needs based on disaster scenarios and integrate these into national budgets.	Medium-term	Data-driven financial preparedness for disasters.

9.3. Disaster Risk Insurance for Households and Small Businesses

Insurance coverage for households and small businesses plays a pivotal role in reducing vulnerabilities and ensuring swift recovery. The existing social protection programs of the government can be utilized to increase overall insurance coverage. These schemes provide financial security for the most affected groups, reducing their dependency on external aid and additional burden on national exchequer. Introducing affordable and accessible microinsurance products can be transformative in building resilience at the grassroots level. To achieve this, public awareness campaigns may be launched to educate communities, encourage behavioral change, and enhance engagement in disaster risk insurance initiatives.

Sr.	Action	Timeline	Expected Outcome
9.3.1	Launch microinsurance products for low-income households and small enterprises.	Short-term	Financial protection for vulnerable groups against disasters.
9.3.2	Create partnerships between various government entities to avoid	Short-term	Use existing government setups and incorporate

Sr.	Action	Timeline	Expected Outcome
	duplications, share delivery mechanisms and support in enhancing insurance coverage.		DRR into social protection programs.
9.3.3	Launch public awareness campaigns about the importance and benefits of DRR insurance products.	Short-term	Increased public understanding and trust in disaster insurance solutions.
9.3.4	Partner with microfinance institutions to integrate insurance into financial services.	Medium-term	Increased availability of disaster insurance at the grassroots level.
9.3.5	Offer government-backed subsidies to reduce premium costs for vulnerable populations.	Medium-term	Improved the affordability of disaster insurance for at-risk groups.
9.3.6	Conduct outreach programs to improve understanding and uptake of disaster insurance schemes.	Medium-term	Increased enrollment in disaster insurance programs.
9.3.7	Monitor and evaluate the impact of insurance schemes on recovery outcomes to inform future refinements.	Medium-term	Data-driven improvements to insurance schemes.
9.3.8	Collaborate with community organizations to promote awareness and simplify the insurance enrollment process.	Medium-term	Greater community engagement in disaster insurance initiatives.

9.4. Strengthening Local Emergency Funds

Strengthening disaster resilience at the grassroots level requires increased financial allocations to district and local governments. Such decentralization ensures that resources are available for region-specific disaster risk reduction (DRR) initiatives and response efforts. By empowering local authorities with greater financial autonomy, disaster preparedness, response, and recovery measures can be timelier and more effective. Enhanced financial resources at the local level also foster community ownership and participation in DRR activities.

Sr.	Action	Timeline	Expected Outcome
9.4.1	Establish dedicated DRR fund allocations within district and municipal budgets to ensure resource availability during emergencies.	Short-term	Timely and consistent funding for localized disaster response and preparedness.
9.4.2	Advocate for increased budgetary allocations for DRR initiatives at the district and local levels through policy reforms.	Medium-term	Enhanced financial capacity of district and local governments for DRR implementation.

9.4.3	Develop a funding mechanism that links financial allocations to local risk profiles and vulnerability assessments.	Medium-term	More equitable distribution of DRR funds based on localized needs.
9.4.4	Provide technical training to local authorities on budget planning and efficient fund utilization for DRR initiatives.	Medium-term	Improved capacity of local governments in financial planning and management for DRR.
9.4.5	Introduce performance-based incentives for local governments to prioritize and implement DRR projects effectively.	Medium-term	Increased accountability and motivation for achieving DRR outcomes at the local level.
9.4.6	Foster public-private partnerships to complement local funding with additional financial and technical resources.	Medium-term	Expanded resource pool for district administrations / local governments.

10. Long-Term Recovery and Reconstruction

Effective recovery and reconstruction are key to rebuilding communities sustainably and enhancing resilience. These efforts must address not only the immediate physical impacts of disasters but also the long-term social and economic consequences. This section emphasizes comprehensive strategies that address the physical, social, and economic impacts of disasters. It outlines the development of holistic post-disaster recovery frameworks, the promotion of resilient livelihood models, the adoption of climate-smart reconstruction approaches, and the integration of inclusive recovery planning to ensure that all affected groups are supported, and no one is left behind in the rebuilding process.

10.1. Holistic Post-Disaster Recovery Strategies

Holistic recovery strategies aim to address the multifaceted impacts of disasters, encompassing physical infrastructure, social cohesion, and economic well-being. Recovery efforts must be coordinated across sectors and levels of governance to maximize efficiency and effectiveness. Incorporating mental health and psychosocial support ensures the well-being of affected populations, while strong governance mechanisms enhance transparency and accountability in recovery operations. Emphasizing the "Build Back Better" principle ensures that recovery initiatives are not only restorative but also contribute to future resilience.

Sr.	Action	Timeline	Expected Outcome
10.1.1	Train recovery professionals in international best practices for post-disaster recovery and resilience-building.	Short-term	Enhanced technical capacity for effective recovery implementation.
10.1.2	Develop integrated recovery frameworks that prioritize housing, livelihoods, and social cohesion.	Medium-term	Comprehensive recovery frameworks addressing key priorities.
10.1.3	Capacitate DDMAs to coordinate multi-sectoral recovery efforts.	Medium-term	Improved coordination and effectiveness in recovery efforts.
10.1.4	Incorporate mental health and psychosocial support services into recovery programs.	Medium-term	Enhanced support for mental health and well-being of affected populations.
10.1.5	Facilitate public-private partnerships (PPPs) to mobilize resources for large-scale recovery projects.	Medium-term	Increased resource availability for recovery initiatives.
10.1.6	Monitor recovery progress using clear indicators and benchmarks, ensuring transparency and accountability.	Medium-term	Transparent and measurable recovery progress.

10.1.7	Align recovery strategies with the principles of "Build Back Better" to enhance future resilience.	Medium-term	Strengthened resilience through better recovery practices.
10.1.8	Strengthen governance of recovery efforts at the subnational level to ensure effective and transparent delivery.	Medium-term	Improved accountability and efficiency in subnational recovery processes.
10.1.9	Ensure integration of risk reduction measures into recovery investments, considering evolving hazard landscapes.	Medium-term	Reduced risks through risk-informed recovery investments.
10.1.10	Establish centralized platforms to coordinate resource mobilization and allocation for recovery.	Medium-term	Streamlined and equitable resource allocation.

10.2.   Resilient Livelihood Models for Recovery

Livelihood recovery plays a pivotal role in stabilizing disaster-affected communities and reducing their dependency on external aid. Resilient livelihood models focus on providing opportunities that are not only sustainable but also aligned with local market needs and environmental conditions. Public works programs, climate-smart agricultural practices, and access to microloans are critical components of this approach. Additionally, digital platforms and innovative financial products can create new economic opportunities for disaster-affected populations, enabling them to rebuild their lives with dignity and self-sufficiency.

Sr.	Action	Timeline	Expected Outcome
10.2.1	Promote skill-building programs for disaster-affected populations, tailored to local market needs.	Medium-term	Enhanced employability and economic resilience of affected populations.
10.2.2	Provide microloans and grants to revive small and medium enterprises (SMEs) impacted by disasters.	Medium-term	Economic recovery and support for SMEs.
10.2.3	Develop public works programs that create jobs while rebuilding critical infrastructure and facilities.	Medium-term	Employment generation and infrastructure recovery.
10.2.4	Support climate-smart agriculture, aquaculture, and other sustainable livelihood practices.	Medium-term	Improved agricultural resilience and sustainable livelihoods.
10.2.5	Facilitate market access for goods and services produced by disaster-affected communities through trade fairs and digital platforms.	Medium-term	Economic empowerment of disaster-affected communities.

10.2.6	Encourage community-level entrepreneurship through targeted training and access to small business support services.	Medium-term	Strengthened community-level economic activities.
10.2.7	Collaborate with financial institutions to design innovative livelihood recovery programs for vulnerable groups.	Medium-term	Increased financial inclusion for vulnerable groups.
10.2.8	Partner with cooperatives to scale up sustainable income-generating activities for women.	Medium-term	Improved economic empowerment and inclusion of women.
10.2.9	Integrate digital tools and platform to provide economic opportunities from disaster-affected regions.	Medium-term	Increased economic opportunities through digital platforms.

10.3. Resilient & Sustainable Reconstruction Approaches

Reconstruction offers an opportunity to integrate climate resilience into the rebuilding process, ensuring that communities are better equipped to face future hazards. Climate-smart reconstruction emphasizes the use of sustainable materials, renewable energy, and risk-informed planning. Incorporating advanced risk assessments and environmental impact studies helps create infrastructure that is not only resilient but also environmentally sustainable. Collaboration with experts and the adoption of green technologies ensure that reconstruction efforts align with global sustainability goals while addressing the specific risks faced by disaster-prone regions.

Sr.	Action	Timeline	Expected Outcome
10.3.1	Adopt and enforce green building standards for all reconstruction projects, emphasizing hazard-resilient designs.	Medium-term	Environmentally sustainable and hazard-resilient reconstruction.
10.3.2	Use renewable energy technologies, such as solar panels and wind turbines, to power rebuilt infrastructure.	Medium-term	Reduced carbon footprint and increased energy resilience.
10.3.3	Develop and implement sustainable land use guidelines in reconstruction areas.	Medium-term	Sustainable land use practices in reconstructed areas.
10.3.4	Integrate risk assessments, including floodplain and seismic studies, into reconstruction planning processes.	Medium-term	Risk-informed and safer reconstruction projects.

10.3.5	Partner with environmental experts and organizations to ensure ecological restoration in disaster-affected regions.	Medium-term	Ecological restoration of affected areas.
10.3.6	Expand research and pilot projects to test innovative climate-resilient construction techniques.	Medium-term	Development of advanced climate-resilient construction methods.
10.3.7	Streamline environmental impact assessments into the reconstruction approval process.	Medium-term	Environmentally sound reconstruction practices.
10.3.8	Incorporate community feedback into climate-smart reconstruction designs.	Medium-term	Increased acceptability and functionality of reconstructed facilities.

10.4.   Inclusive Recovery Planning

Inclusive recovery planning ensures that no one is left behind in the aftermath of a disaster. Special attention must be given to marginalized groups, including women, children, elderly, and persons with disabilities, to ensure their unique needs are addressed. Engaging communities in the planning and implementation of recovery initiatives fosters a sense of ownership and trust. Transparent grievance redressal mechanisms and equitable distribution of resources promote fairness and accountability in recovery processes. Additionally, documenting the best practices and lessons learned can guide future recovery efforts and enhance resilience across all levels of society.

Sr.	Action	Timeline	Expected Outcome
10.4.1	Engage affected communities in recovery planning through participatory and inclusive processes.	Medium-term	Increased community ownership of recovery initiatives.
10.4.2	Design recovery programs that prioritize the needs of vulnerable groups, including women, children, elderly, and persons with disabilities.	Medium-term	Inclusive recovery initiatives that address diverse needs.
10.4.3	Establish grievance redressal mechanisms to address complaints, concerns, and ensure accountability.	Medium-term	Transparent and fair recovery processes.
10.4.4	Use latest technology Monitor the distribution of recovery benefits to ensure equity and transparency.	Medium-term	Equitable and accountable distribution of recovery resources.
10.4.5	Document best practices in inclusive recovery planning and implementation for replication in future disasters.	Medium-term	Improved future recovery efforts through documented learning.

10.4.6	Create platforms for marginalized communities to contribute to decision-making in recovery planning.	Medium-term	Empowered marginalized communities in recovery planning.
10.4.7	Facilitate capacity-building initiatives to empower vulnerable groups to actively participate in recovery efforts.	Medium-term	Strengthened capacity of vulnerable groups in recovery processes.
10.4.8	Develop gender-sensitive recovery indicators to monitor and evaluate inclusivity in recovery outcomes.	Medium-term	Enhanced inclusivity and transparency in recovery monitoring.

11.   Capacity Building and Education

Capacity-building programs and the integration of education and knowledge into disaster preparedness and resilience have proven transformative in strengthening a culture of preparedness. This section focuses on developing skilled human resources, enhancing community capacity, and strengthening institutional knowledge to support long-term disaster risk reduction (DRR) efforts. It emphasizes integrating DRR into school curricula, offering specialized training programs for disaster management professionals, establishing local resilience hubs for community learning, and providing continuous professional development to ensure that disaster management personnel remain prepared for evolving risks and challenges.

11.1.   DRR Education in Schools and Universities

Integrating disaster risk reduction into the education system ensures that future generations grow up with a strong awareness of disaster risks and preparedness measures. By incorporating DRR into school and university mainstream and supplementary curricula, students can develop the knowledge and skills needed to contribute to disaster resilience. Advanced academic programs, such as degree courses and research opportunities, can create a skilled workforce capable of addressing complex DRR challenges, integrating local and ingenious knowledge and practices for enhancing resilience and mitigation. Additionally, interactive educational tools and simulations can make learning engaging and impactful.

Sr.	Action	Timeline	Expected Outcome
11.1.1	Support federal and provincial stakeholders to ensure implementation of Pakistan School Safety Framework (PSSF) across the country.	Medium-term	Standardized school safety measures implemented nationwide.
11.1.2	Incorporate DRR / DM topics into national school curricula, focusing on age-appropriate learning at all education levels.	Medium-term	Enhanced disaster awareness and preparedness among students.
11.1.3	Develop interactive educational materials, such as games, simulations, and activity-based modules.	Medium-term	Increased engagement and understanding of DRR concepts.
11.1.4	Establish partnerships with universities to offer specialized DRR courses, diplomas, and degree programs.	Medium-term	Expanded academic opportunities in DRR education and knowledge sharing.
11.1.5	Promote DRR research and innovation through grants and academic collaborations.	Medium-term	Increased research output and innovative /indigenous DRR solutions.

11.1.6	Organize disaster preparedness societies, drills and awareness campaigns in schools and universities.	Short-term	Improved readiness and awareness among educational institutions and response volunteering.
11.1.7	Align DRR education initiatives with ongoing capacity-building measures.	Medium-term	Cohesive integration of DRR into education and training efforts.
11.1.8	Include DRR as a core module in district-level local development planning and programming.	Medium-term	Strengthened local governance through DRR education.
11.1.9	Collaborate with EdTech platforms for online DRR learning modules.	Medium-term	Increased accessibility to DRR education.
11.1.10	Encourage training and drills on first aid, fire safety, and use of emergency kits in educational institutes.	Short-term	Increase preparedness of teachers and students to respond during emergency situations.

11.2.   Specialized Training for Disaster Management Professionals

Disaster management professionals play a critical role in planning, response, and recovery operations. Specialized training programs are necessary to equip them with advanced technical knowledge, leadership skills, and global best practices. Topics such as early warning systems, climate adaptation, and multi-hazard risk assessments should be prioritized. Partnerships with international organizations can further enrich training content and enhance local capacity.

Sr.	Action	Timeline	Expected Outcome
11.2.1	Establish a Disaster Management Center of Excellence (DM CoE) to provide training, research and knowledge sharing opportunities.	Medium-term	Increased collaboration with academia and provincial counterparts to enhance disaster management capabilities and expert pool.
11.2.2	Develop custom training modules for personnel across NDMA, PDMAs, DDMAs, and other relevant agencies.	Medium-term	Tailored training programs addressing specific organizational needs.
11.2.3	Focus on advanced topics, including multi-hazard risk assessments, early warning systems, and climate adaptation strategies.	Medium-term	Enhanced technical expertise in advanced DRR areas.
11.2.4	Provide leadership development programs to strengthen decision-making and inter-agency coordination capabilities.	Medium-term	Improved leadership and collaboration in disaster management.

11.2.5	Collaborate with international training organizations to incorporate global best practices into local training curricula.	Medium-term	Improved training quality through international best practices.
11.2.6	Conduct regular evaluations of training effectiveness and adapt programs based on feedback and emerging needs.	Medium-term	Continuous improvement in training effectiveness.
11.2.7	Train community volunteers to support anticipatory measures and post-disaster management.	Short-term	Increased community engagement and capacity in disaster management.
11.2.8	Introduce certification programs for DRR professionals to ensure continuous learning through Centre of Excellence in Disaster Management.	Medium-term	Formalized professional development and recognition in DRR.
11.2.9	Establish a mentorship program pairing junior professionals with experts.	Medium-term	Improved knowledge transfer within DRR agencies.
11.2.10	Partner with regional training centers for cross-border knowledge sharing.	Medium-term	Strengthened regional collaboration on DRR.

11.3.   Establishing Local Resilience Hubs and Training Centers

Localized resilience hubs serve as vital centers for knowledge dissemination, community capacity building, and emergency preparedness. These hubs enable communities to take proactive measures by equipping them with tools, resources, and training tailored to their specific risks. Partnering with NGOs, community-based organizations (CBOs), and private sector entities can maximize the outreach and effectiveness of these centers.

Sr.	Action	Timeline	Expected Outcome
11.3.1	Set up training centers / knowledge hubs in disaster-prone districts and partner with NGOs and CBOs to co-manage hubs, equipped with essential resources and facilities.	Medium-term	Improved access to DRR training at the local level.
11.3.2	Conduct community-led workshops on risk identification, preparedness measures, and response strategies.	Short-term	Increased community awareness and preparedness through workshops.
11.3.3	Facilitate peer-to-peer learning and knowledge exchange among local communities.	Medium-term	Enhanced knowledge sharing and collaboration among communities.

11.3.4	Tailor region-specific training programs to address local risks and vulnerabilities.	Medium-term	Locally relevant DRR training programs.
11.3.5	Encourage volunteerism in communities through targeted interventions.	Medium-term	Enhance community resilience and preparedness.
11.3.6	Develop local knowledge hubs as part of regional resilience strategies through DRR Societies in Universities.	Medium-term	Strengthened regional disaster resilience through local hubs.
11.3.7	Enhance local-level preparedness by including emergency procurement training and tools.	Medium-term	Improved logistical and procurement capacity at the local level.
11.3.8	Integrate hubs with early warning systems for real-time data sharing.	Medium-term	Increased efficiency in local disaster responses.
11.3.9	Pilot mobile resilience hubs for underserved communities.	Medium-term	Extended DRR access to remote areas.

11.4. Continuous Professional Development and Upskilling

Disaster risks and challenges evolve over time, necessitating ongoing professional development for those involved in disaster management. Continuous learning initiatives, such as certification programs, conferences, and online training, ensure that personnel stay updated on emerging technologies, global trends, and innovative methodologies. Providing incentives such as scholarships can further encourage participation in advanced training.

Sr.	Action	Timeline	Expected Outcome
11.4.1	Introduce certification programs for DRR professionals, focusing on emerging technologies and global trends.	Medium-term	Up-to-date professional expertise in DRR.
11.4.2	Host annual DRR conferences and seminars to foster networking and knowledge exchange.	Medium-term	Increased collaboration and innovation in DRR practices.
11.4.3	Monitor global developments in DRR and incorporate new methodologies and tools into training programs.	Medium-term	Updated training curricula reflecting global advancements.
11.4.4	Develop online learning platforms offering flexible, self-paced training modules.	Medium-term	Increased accessibility to DRR training through digital platforms.
11.4.5	Provide scholarships and incentivize professionals pursuing advanced DRR training and qualifications.	Medium-term	Increased participation in advanced DRR education and training.

11.4.6	Promote private sector participation in DRR-related skill-building initiatives.	Medium-term	Strengthened private sector involvement in DRR capacity building.
11.4.7	Establish regular workshops to strengthen community-based disaster management strategies with a cascading approach.	Medium-term	Improved grassroots disaster management through community-focused workshops.
11.4.8	Establish a national DRR repository to document best practices, case studies and local knowledge.	Medium-term	Centralized access to global and local DRR knowledge hubs.
11.4.9	Facilitate cross-sectoral workshops for public, private, and community stakeholders.	Medium-term	Enhanced collaboration across DRR sectors.

12.   Regional and International Cooperation

Effective disaster risk reduction (DRR) requires collaboration that extends beyond national borders. By partnering with regional and international stakeholders, Pakistan can tap into shared resources, expertise, and funding to address cross-border risks and enhance resilience. This section focuses on strengthening cooperation with regional forums and institutions, aligning with global DRR initiatives to access international support and innovation, and fostering knowledge sharing and capacity building through international partnerships. These efforts will enable Pakistan to improve disaster preparedness and response while contributing to global resilience-building initiatives.

12.1.   Collaboration with Regional Forums and Institutions

As a member of the Asia-Pacific and South Asia regions and various regional forums such as ECO, SCO, SAARC, and ICIMOD, Pakistan has access to collaborative opportunities for addressing shared disaster risks. Strengthening these regional partnerships can enhance the country's capacity to manage transboundary hazards and implement joint initiatives for DRR

Sr.	Action	Timeline	Expected Outcome
12.1.1	Enhance coordination with regional forums to address shared risks, such as earthquakes, floods, locust infestations, and pandemics.	Medium-term	Improved regional collaboration for shared disaster risks.
12.1.2	Organize and participate in international / regional training programs and joint simulation exercises to improve preparedness and response capabilities.	Medium-term	Enhance interoperability amongst global and regional partners and strengthen regional disaster preparedness and response skills.
12.1.3	Develop joint action plans with neighboring countries to manage transboundary hazards effectively.	Medium-term	Coordinated transboundary disaster management plans.
12.1.4	Facilitate cross-border data sharing and early warning systems to enhance regional disaster preparedness.	Medium-term	Enhanced regional early warning and disaster risk data sharing.
12.1.5	Advocate for regional funding mechanisms to support collaborative DRR projects.	Medium-term	Increased financial resources for regional DRR initiatives.
12.1.6	Develop planning and budgetary tools to align regional DRR efforts with national risk information databases.	Medium-term	Harmonized regional and national DRR planning and budgeting.

12.1.7	Streamline Humanitarian Logistics and Pre-Coordinated Assistance at regional level	Medium-term	Rapid deployment mechanisms and regional stockpiling to ensure swift and effective disaster response.
12.1.8	Exchange of bilateral visits and conduct of joint training with regional organizations involved in the field of Disaster Management.	Short-term	Enhance regional collaboration and mutual learning through knowledge exchange.

12.2. Integration with Global DRR Initiatives

Aligning Pakistan's DRR efforts with global frameworks and initiatives, such as the Sendai Framework for Disaster Risk Reduction and the Paris Agreement, ensures that the country can access international funding, technical expertise, and innovative practices. Global alignment also enhances Pakistan's contribution to and benefit from international resilience-building efforts.

Sr.	Action	Timeline	Expected Outcome
12.2.1	Ensure Pakistan's DRR strategy is fully aligned with the Sendai Framework for Disaster Risk Reduction.	Short-term	Full alignment with international DRR frameworks.
12.2.2	Engage with global organizations, such as the United Nations Office for Disaster Risk Reduction (UNDRR), for technical and financial support.	Medium-term	Enhanced technical and financial support for DRR.
12.2.3	Participate in international DRR conferences and forums to share best practices and learn from global experiences.	Medium-term	Improved DRR strategies through international knowledge exchange.
12.2.4	Leverage global climate funds, such as the Green Climate Fund (GCF), to support resilience-building initiatives.	Medium-term	Increased funding for climate-resilient DRR initiatives.
12.2.5	Strengthen ties with bilateral and multilateral donors to secure funding for DRR projects.	Medium-term	Greater financial support from international donors.
12.2.6	Formalize strategies to access international funding windows for climate and disaster-related projects.	Medium-term	Streamlined access to global DRR funding opportunities.
12.2.7	Promote Pakistan's DRR achievements and needs through global platforms to attract more international collaboration.	Medium-term	Increased global recognition and partnerships for DRR.

12.3. Knowledge Sharing and Capacity Building

Sharing knowledge and fostering capacity building through partnerships with regional and international stakeholders play a critical role in improving Pakistan's DRR outcomes. Collaborative initiatives can help build local expertise, introduce innovative solutions, and strengthen the country's overall disaster resilience.

Sr.	Action	Timeline	Expected Outcome
12.3.1	Establish a national knowledge-sharing platform to document and disseminate lessons learned from disasters.	Medium-term	Centralized repository for disaster knowledge and insights.
12.3.2	Partner with international academic and research institutions to conduct joint studies and develop innovative DRR solutions.	Medium-term	Advanced DRR solutions through global academic collaboration.
12.3.3	Organize workshops and training programs featuring international experts to build local capacity.	Medium-term	Enhanced local DRR capabilities through international expertise.
12.3.4	Encourage participation in global certification programs to enhance the skills of DRR professionals.	Medium-term	Improved technical expertise of DRR professionals.
12.3.5	Promote the exchange of experiences and expertise through regional networks and partnerships.	Medium-term	Strengthened regional DRR networks and collaboration.
12.3.6	Facilitate access to global DRR data systems and ensure the integration of international best practices into national strategies.	Medium-term	Improved national DRR strategies through international best practices.
12.3.7	Develop regional centers of excellence for DRR research and innovation in collaboration with international institutions.	Medium-term	Enhanced regional and national DRR research and innovation capacity.

13. Cross-Cutting Themes in DRR

Addressing cross-cutting themes in disaster risk reduction ensures that strategies are inclusive, sustainable, and aligned with broader development goals. This section emphasizes the importance of integrating gender equity, climate change adaptation, and alignment with the Sustainable Development Goals (SDGs) into DRR efforts. By adopting gender-sensitive approaches, incorporating climate adaptation measures, and aligning with SDGs, Pakistan can enhance the inclusivity and sustainability of its DRR initiatives. These actions will contribute to the protection and empowerment of vulnerable groups, reduce climate-related risks, and ensure that resilience-building is closely tied to the broader development agenda.

13.1. Gender Equity and Social Inclusion

Disasters affect different segments of the population in unique ways, and gender is a crucial cross-cutting theme in disaster risk reduction. Women, men, and gender minorities experience distinct vulnerabilities due to existing social, economic, and cultural inequalities. Women and girls often face greater risks due to their roles as primary caregivers, limited access to resources, and increased exposure to gender-based violence during crises. Integrating gender equity and social inclusion into DRR ensures that disaster preparedness, response, and recovery efforts are tailored to the needs of all societal groups, fostering resilience and empowerment. By embedding gender-sensitive approaches, DRR strategies can promote equal participation in decision-making, equitable resource distribution, and inclusive policies that protect and uplift vulnerable populations. This sub-section focuses on key actions to mainstream gender considerations into DRR policies, strengthen the role of marginalized groups in disaster governance, and promote inclusive response mechanisms that leave no one behind.

Sr.	Action	Timeline	Expected Outcome
13.1.1	Conduct gender analysis to identify the specific needs and vulnerabilities of women, men, and transgenders during disasters.	Short-term	Identification of gender-specific needs and vulnerabilities.
13.1.2	Conduct gender audits of existing DRR policies and programs to identify gaps and opportunities for improvement.	Short-term	Identification of gender-related gaps in DRR policies.
13.1.3	Ensure equal representation of women and marginalized groups in DRR decision-making processes.	Medium-term	Increased inclusivity in DRR decision-making.
13.1.4	Develop gender-sensitive indicators to monitor the effectiveness of DRR programs.	Medium-term	Improved evaluation of DRR program inclusivity.

13.1.5	Provide training for disaster management professionals on addressing gender and social inclusion in disaster management.	Medium-term	Enhanced understanding and capacity for inclusive disaster management practices.
13.1.6	Create women-led community groups to promote grassroots-level resilience initiatives.	Medium-term	Empowered women driving local resilience initiatives.
13.1.7	Mandate the inclusion of marginalized groups, including persons with disabilities and elderly populations, in all DRR planning processes.	Medium-term	Increased participation of marginalized groups in DRR planning.
13.1.8	Develop accessible information and resources tailored to the needs of vulnerable communities.	Medium-term	Improved accessibility to DRR information for vulnerable groups.
13.1.9	Promote gender-disaggregated data collection to identify and address specific vulnerabilities faced by women.	Medium-term	Improved identification and mitigation of gender-specific vulnerabilities.
13.1.10	Create childcare-friendly evacuation centers and ensure access to reproductive health services during disasters.	Medium-term	Enhanced safety and well-being of women and children in disasters.

13.2. Climate Change Adaptation

Pakistan is continuously ranked among most climate vulnerable countries in the world. Country is already facing the intense impacts of climate change, in the form of increasing frequency and severity of disasters, and exacerbating vulnerabilities across communities, particularly in agriculture, water resources, urban development, and coastal management. Without proactive adaptation strategies, Pakistan faces heightened economic, social, and environmental risks, threatening long-term development gains. Therefore, integrating climate adaptation into disaster risk reduction (DRR) is essential for building long-term resilience. Climate adaptation measures help reduce the impact of climate-driven hazards by ensuring that infrastructure, policies, and local practices are informed by climate risk assessments. This sub-section focuses on developing climate risk assessments, mainstreaming adaptation into national policies, securing financial and technical resources, and ensuring community-level engagement in climate adaptation.

Sr.	Action	Timeline	Expected Outcome
13.2.1	Conduct climate vulnerability assessments to identify regions and sectors at risk.	Short-term	Comprehensive identification of climate-vulnerable hotspots.
13.2.2	Incorporate climate risk assessments into national and local DRR plans.	Medium-term	Risk-informed DRR plans aligned with climate vulnerabilities.
13.2.3	Integrate climate adaptation strategies into national, provincial, and local development plans.	Medium-term	Systematic integration of climate adaptation in development.
13.2.4	Invest in infrastructure designed to withstand extreme weather events.	Medium-term	Improved resilience of critical infrastructure to climate risks.
13.2.5	Strengthen collaboration with climate-focused organizations / international partners to access technical and financial support.	Medium-term	Enhanced technical and financial capacity for climate adaptation.
13.2.6	Monitor and evaluate the integration of climate adaptation in DRR initiatives.	Medium-term	Continuous improvement in climate-adaptive DRR strategies.
13.2.7	Facilitate community-level programs focused on addressing climate-driven vulnerabilities, such as glacial lake outburst floods (GLOFs).	Medium-term	Empowered communities to address climate-driven risks.
13.2.8	Expand partnerships with international agencies to secure funding for climate adaptation projects.	Medium-term	Increased funding for climate-resilient DRR initiatives.
13.2.9	Develop urban planning frameworks that consider climate-induced risks, such as heatwaves and urban flooding.	Medium-term	Reduced urban vulnerabilities to climate-induced hazards.
13.2.10	Promote climate-resilient agricultural practices to reduce vulnerabilities in rural areas.	Medium-term	Increased agricultural resilience to climate impacts.
13.2.11	Promote education and awareness campaigns about climate resilience targeting vulnerable populations, including farmers and fishers.	Medium-term	Enhanced climate resilience awareness among vulnerable groups.

13.2.12	Strengthen partnerships with meteorological agencies, research organization & think tanks to enhance climate modelling & forecasting capabilities and preparedness.	Medium-term	Improved forecasting and planning for climate risks.

13.3. Integration with Sustainable Development Goals (SDGs)

Disaster Risk Reduction (DRR) and sustainable development are inherently linked, as disasters can reverse decades of progress in poverty alleviation, infrastructure development, education, health, and environmental sustainability. Without effective DRR strategies, economic losses, displacement, and destruction of critical infrastructure can hinder Pakistan's ability to meet its Sustainable Development Goals (SDGs). The Sendai Framework for Disaster Risk Reduction emphasizes the need for DRR to be embedded within national and local development planning. Many SDGs, such as Goal 1 (No Poverty), Goal 11 (Sustainable Cities and Communities), Goal 13 (Climate Action), and Goal 15 (Life on Land), directly align with DRR objectives. This sub-section focuses on aligning DRR initiatives with SDGs, strengthening multi-sectoral collaboration, developing measurable indicators to track progress, advocating for risk-sensitive development policies, and ensuring that local and national planning frameworks incorporate disaster resilience.

Sr.	Action	Timeline	Expected Outcome
13.3.1	Map DRR programs against relevant SDG targets to ensure alignment.	Medium-term	DRR initiatives aligned with sustainable development objectives.
13.3.2	Promote multi-sectoral collaborations to integrate DRR into development planning.	Medium-term	Strengthened integration of DRR in development efforts.
13.3.3	Develop metrics to measure the impact of DRR initiatives on poverty alleviation, health, and environmental sustainability.	Medium-term	Quantifiable insights into DRR's contribution to SDGs.
13.3.4	Advocate for sustainable development policies that incorporate disaster risk considerations.	Medium-term	Increased adoption of risk-informed development policies.
13.3.5	Publish annual progress reports highlighting contributions to the SDGs through DRR activities.	Medium-term	Transparent reporting of DRR's impact on SDG progress.
13.3.6	Mainstream DRR into district-level development plans to ensure local alignment with SDG objectives.	Medium-term	Enhanced local development planning aligned with SDGs.

| 13.3.7 | Integrate DRR principles into national and provincial budgeting processes to ensure risk-sensitive investments. | Medium-term | Increased financial commitment to DRR within development budgets. |
| 13.3.8 | Strengthen partnerships with the private sector to support DRR initiatives through Corporate Social Responsibility (CSR) programs aligned with SDGs. | Medium-term | Enhanced private sector participation in resilience-building initiatives. |

13.4.   Localization in Disaster Risk Reduction

Decentralizing DRR strengthens local governments, empowers grassroots organizations, and ensures that at-risk communities play an active role in shaping disaster management strategies. Local actors, including district administration, DDMAs, municipal governments, community-based organizations (CBOs), local leaders, and civil society groups, are best positioned to identify risks, mobilize resources, and implement solutions that reflect the realities of their environments. This sub-section focuses on strengthening community participation, enhancing local government capacity, fostering partnerships between public and private stakeholders, and promoting localized DRR solutions. By supporting community-led risk assessments, participatory planning, and financial and technical capacity-building initiatives, Pakistan can ensure that DRR is more effective, sustainable, and inclusive. By integrating localized DRR approaches into national frameworks, Pakistan can build disaster-resilient communities that are better prepared for, and more capable of, responding to disasters.

Sr.	Action	Timeline	Expected Outcome
13.4.1	Facilitate community-led risk assessments and preparedness planning.	Short-term	Improved community ownership of DRR processes.
13.4.2	Promote decentralized decision-making by strengthening the capacity of local governments and community organizations.	Medium-term	Empowered local governments and communities in DRR.
13.4.3	Develop frameworks for participatory disaster risk assessments and planning at the community level.	Medium-term	Inclusive and localized DRR planning processes.
13.4.4	Support the establishment of localized disaster management committees and local action plans.	Medium-term	Strengthened community capacity for disaster management.
13.4.5	Facilitate partnerships between local governments, NGOs, and private actors to enhance localized DRR efforts.	Medium-term	Improved collaboration for localized DRR initiatives.

13.4.6	Provide technical and financial resources to enable local actors to implement DRR initiatives effectively.	Medium-term	Enhanced implementation capacity at the local level.
13.4.7	Recognize and reward innovative community-driven DRR solutions.	Medium-term	Encouragement and scaling of effective grassroots DRR innovations.
13.4.8	Encourage community-based monitoring systems to identify and address local risks proactively.	Medium-term	Strengthened local capacity for risk identification and mitigation.
13.4.9	Organize capacity-building workshops for local leaders to strengthen grassroots DRR initiatives.	Medium-term	Empowered local leadership for disaster management.
13.4.10	Supporting community-managed resources, such as seed banks for post-disaster agriculture or micro insurance schemes tailored to low-income households.	Medium-term	Enhanced community resilience through collective empowerment approach.
13.4.11	Establish and train local teams in disaster logistics, establish decentralized stockpiles, and integrate private sector partnerships for rapid response.	Short-term	Empower communities in dealing with localized emergency situations.

13.5. Integrating Social Protection in Disaster Risk Reduction

Social protection systems play a critical role in enhancing resilience, reducing vulnerabilities, and providing safety nets before, during, and after disasters. Disasters often disproportionately affect marginalized and vulnerable populations, including low-income families, women-headed households, the elderly, and persons with disabilities. Without adequate social protection mechanisms, these groups are more likely to experience long-term socio-economic setbacks, exacerbating poverty and inequality. Integrating disaster risk reduction (DRR) into social protection systems ensures that affected populations receive timely, predictable, and targeted support during emergencies. Strengthening social protection frameworks promote proactive risk reduction, as well-designed safety nets can help households invest in risk reduction measures, access essential services, and recover more efficiently from disasters. This sub-section focuses on establishing shock-responsive social protection systems, integrating disaster risk considerations into existing programs, expanding financial safety nets, and fostering international partnerships for technical and financial support.

Sr.	Action	Timeline	Expected Outcome
13.5.1	Establish shock-responsive social protection systems that provide timely support to affected populations.	Medium-term	Improved financial and social resilience during disasters.
13.5.2	Integrate disaster risk considerations into existing social protection schemes, such as cash transfers and food security programs.	Medium-term	Strengthened social protection mechanisms with DRR integration.
13.5.3	Develop insurance products and financial safety nets to protect vulnerable households from disaster-related losses.	Medium-term	Increased financial security for vulnerable households.
13.5.4	Partner with international organizations to access funding and technical expertise for enhancing social protection mechanisms.	Medium-term	Enhanced resources and capacity for social protection in DRR.
13.5.5	Monitor and evaluate the impact of social protection measures on disaster resilience to refine strategies.	Medium-term	Data-driven improvements in social protection strategies.
13.5.6	Develop targeted cash transfer programs that provide immediate relief to vulnerable households after disasters.	Medium-term	Faster recovery support for disaster-affected families.
13.5.7	Ensure that social protection schemes are gender-responsive and account for the specific needs of women, children, and persons with disabilities.	Medium-term	More inclusive and equitable disaster response measures.
13.5.8	Implement digital payment systems to facilitate timely and transparent distribution of financial support during disasters.	Medium-term	Enhanced efficiency and accountability in disaster-related financial assistance.
13.5.9	Establish linkages between DRR and long-term social protection planning to address chronic vulnerabilities.	Medium-term	Strengthened resilience through integrated long-term planning.
13.5.10	Develop contingency plans to scale up social protection interventions in response to large-scale disasters.	Medium-term	Strengthened preparedness for disaster-related social protection responses.

13.6. Mainstreaming Vulnerable Groups in Disaster Risk Reduction

By incorporating diverse perspectives and addressing specific vulnerabilities, DRR efforts become more effective, equitable, and sustainable in the face of evolving climate challenges and strengthen community resilience. Disasters do not affect all populations equally. Marginalized and vulnerable groups, including persons with disabilities, the elderly, women-headed households, children, and indigenous communities, often face greater risks and barriers to recovery due to limited access to resources, information, and decision-making processes. Social, economic, and physical vulnerabilities can significantly impact their ability to prepare for, respond to, and recover from disasters. An inclusive DRR approach ensures that vulnerable groups are not only protected but also actively engaged in shaping disaster risk reduction strategies. Their participation in planning, decision-making, and response efforts help create more equitable, effective, and sustainable disaster management policies. This sub-section highlights key actions to enhance the inclusivity of DRR efforts by ensuring that vulnerable groups are identified, their needs are addressed, and they are actively involved in disaster planning, response, and recovery.

Sr.	Action	Timeline	Expected Outcome
13.6.1	Identify and address the specific vulnerabilities of persons with disabilities, elderly populations, and other marginalized groups.	Medium-term	Improved inclusivity in DRR initiatives for marginalized groups.
13.6.2	Develop inclusive DRR policies that mandate the participation of vulnerable groups in planning and decision-making.	Medium-term	Empowerment of marginalized communities in DRR processes.
13.6.3	Provide accessible information and resources tailored to the needs of marginalized populations.	Medium-term	Increased accessibility of DRR information for all communities.
13.6.4	Partner with NGOs and advocacy groups to amplify the voices of marginalized communities.	Medium-term	Enhanced representation of marginalized groups in DRR efforts.
13.6.5	Monitor and evaluate the inclusion of marginalized groups in DRR efforts.	Medium-term	Continuous improvement in inclusivity within DRR initiatives.
13.6.6	Establish accessible communication systems for early warnings tailored to the needs of persons with disabilities.	Medium-term	More effective communication for vulnerable populations.
13.6.7	Facilitate training programs that empower marginalized groups to take active roles in local disaster management committees.	Medium-term	Increased participation of marginalized groups in DRR leadership.

13.6.8	Implement culturally sensitive approaches to ensure indigenous populations are included in DRR initiatives.	Medium-term	Preservation and integration of indigenous knowledge in DRR.

13.7.   Monitoring, Evaluation, and Learning (MEL)

Effective monitoring, evaluation, and learning (MEL) systems are essential for assessing progress, refining strategies, and ensuring accountability in disaster risk reduction initiatives. A comprehensive M&E framework tracks the implementation progress, support decision-making, allow for mid-course corrections, and evaluate the effectiveness and impact of DRR strategies. A well-structured Monitoring, Evaluation, and Learning (MEL) system is crucial for ensuring that disaster risk reduction (DRR) initiatives are effective, transparent, on-track, and continuously improving. An effective MEL system supports decision-making at all levels, from national policy planning to local disaster management interventions. It helps in resource optimization, promotes accountability, and enhances stakeholder engagement. This sub-section outlines key actions to enhance MEL capacity in DRR, including baseline assessments, real-time data tracking, partnerships with academic institutions, scenario-based learning, and knowledge-sharing initiatives.

Sr.	Action	Timeline	Expected Outcome
13.7.1	Conduct baseline assessments, develop standardized indicators and establish protocols for measuring DRR progress across sectors and levels of governance.	Short-term	Clear benchmarks and reliable metrics for DRR progress evaluation & assessments.
13.7.2	Assign dedicated M&E teams within NDMA, PDMAs, and DDMAs to oversee implementation and reporting.	Short-term	Strengthened monitoring and evaluation capacity at all levels.
13.7.3	Integrate M&E frameworks with planning and budgetary tools to link risk information databases for effective tracking.	Medium-term	Improved alignment of M&E frameworks with resource planning.
13.7.4	Create a centralized repository for documenting lessons learned from past disasters and DRR initiatives.	Short-term	Consolidated and accessible lessons for continuous improvement.
13.7.5	Partner with academic and research institutions to evaluate the effectiveness of DRR strategies.	Medium-term	Evidence-based improvements to DRR initiatives.
13.7.6	Organize periodic workshops/ seminars to disseminate lessons and insights among DRR practitioners and policymakers.	Medium-term	Knowledge sharing to refine DRR practices and strategies.

13.7.7	Use scenario-based simulations to test and improve response strategies considering new information.	Medium-term	Enhanced preparedness and adaptability through tested strategies.
13.7.8	Leverage international platforms to exchange knowledge on global best practices and innovative MEL approaches.	Medium-term	Access to global expertise and innovative solutions.
13.7.9	Implement digital dashboards to visualize progress, gaps, and priorities in real time.	Medium-term	Improved tracking and decision-making through real-time data.
13.7.10	Incorporate disaster and climate risk considerations into tracking tools to better align development projects with resilience goals.	Medium-term	Increased alignment of development efforts with resilience objectives.
13.7.11	Publish review reports to foster transparency and accountability.	Medium-term	Increased stakeholder confidence in DRR activities.
13.7.12	Develop actionable recommendations based on review findings to refine future strategies.	Medium-term	Improved strategies informed by practical insights.

14.   Implementation and Way Forward

A clear and actionable implementation plan ensures the effective execution of the DRR strategy. The implementation of the National Strategy through annual National Disaster Management Plans will provide a clear and actionable plan to ensure effective execution. The roadmap provides a phased approach with a timeline, which is essential for successful execution. A focus on resource mobilization and securing funding from diverse sources is critical for the sustainability of DRR initiatives. Periodic reviews, including independent evaluations and stakeholder feedback, will keep the strategy adaptive and responsive to emerging needs. Coordination with broader humanitarian and development planning ensures that DRR is integrated into all sectors for maximizing resilience.

14.1.   Implementation Plan

A detailed annual implementation plans shall be developed, outlining specific milestones for each component of the strategy. Clear responsibilities will be assigned to stakeholders to ensure accountability and effective execution. To monitor progress and address any delays, comprehensive monitoring mechanisms should be established. Actions will be prioritized based on multi-hazard risk assessments and resource availability, ensuring an efficient allocation of resources to high-priority areas. The plan will be annually drafted / updated to reflect evolving priorities and conditions, with contingency plans incorporated to manage potential delays or emergencies during implementation. By leveraging risk assessments, the sequencing of actions will be guided by evidence-based insights, ensuring a risk-informed approach to the DRR strategy.

14.2.   Roles and Responsibilities of Key Stakeholders

The engagement of diverse stakeholders is central to the success of the DRR strategy. A stakeholder matrix will be developed under the annual NDMPs to clearly outline responsibilities across government agencies, the private sector, and civil society organizations. Stakeholder consultations will be hosted to build consensus on roles and expectations, ensuring strong buy-in and shared understanding. To enable effective participation, training and resources will be provided to stakeholders. Coordination forums will facilitate information sharing and collaboration, while success stories will be documented and disseminated to encourage broader engagement. Coordination between national, provincial, and district authorities will be strengthened to promote unified efforts, and mechanisms will be created to ensure regular engagement of local communities in implementation reviews and planning processes.

14.3.   Resource Mobilization and Funding

Adequate and sustainable funding is critical for implementing DRR initiatives. Efforts will be made to secure funding from diverse sources, including government budgets, international donors, and private sector investments. Innovative financing solutions, such

as disaster bonds and insurance schemes, are encouraged to be developed to create new funding streams. Transparent financial reporting systems will be established to build donor confidence and foster continued support. Advocacy for increased budgetary allocations to DRR across all government levels will also be prioritized. Partnerships with financial institutions will help develop microinsurance and credit solutions for vulnerable populations, while retroactive financing mechanisms will be introduced to recoup costs incurred during disasters. The impact of funding on DRR outcomes will be regularly monitored to ensure accountability and optimize investments.

14.4.   Periodic Reviews and Strategy Updates

Periodic reviews should be conducted to assess the progress of the DRR strategy and identify areas for improvement. Annual reviews of the implementation status of annual NDMPs will help pinpoint gaps and provide objective assessments. Stakeholder feedback will be incorporated into strategy updates, ensuring inclusivity and relevance. Findings from these reviews will be published for public transparency, increasing stakeholder confidence in the process. Review outcomes will also inform future planning and resource allocation, ensuring a data-driven approach. The periodic reviews will align with national and international frameworks, such as the Sendai Framework, to maintain consistency with global standards.

14.5.   Coordination with Humanitarian and Development Planning

To maximize the impact of DRR initiatives, alignment with national development and humanitarian response plans will be ensured. Joint action plans will be developed in collaboration with development partners to address shared objectives. Cross-sectoral collaborations will integrate DRR into health, education, and infrastructure projects, fostering a comprehensive approach to risk reduction. DRR will also be established as a core component of post-disaster recovery frameworks, enhancing their focus on resilience. The impact of integrated planning on community resilience will be monitored, with findings used to inform future improvements. Additionally, DRR considerations will be mainstreamed into sector-specific policies for housing, transportation, and agriculture, enabling risk-informed development across key sectors.

This integrated and structured approach to implementation will ensure that Pakistan's DRR strategy is both actionable and adaptable, fostering resilience at all levels of society.

Annex A: Glossary of Terms

Adaptation Measures

Actions taken to adjust to actual or expected climate impacts, reducing harm or exploiting beneficial opportunities.

Adaptive Capacity

The ability of a system, community, or society to adjust to potential damage, take advantage of opportunities, or respond to consequences.

Anticipatory Action

Pre-disaster measures and activities aimed at mitigating impacts by preparing resources, plans, and communities ahead of expected hazards.

Capacity Building

Efforts aimed at enhancing the abilities of individuals, institutions, and systems to manage disaster risks effectively.

Climate-Smart Reconstruction

Rebuilding infrastructure and systems in a way that incorporates sustainability, climate resilience, and low-carbon solutions.

Community-Based Disaster Risk Management (CBDRM)

A participatory approach to disaster management that engages local communities in identifying risks, planning, and implementing solutions.

Disaster Risk Financing

Mechanisms and instruments that provide financial resources to support disaster response, recovery, and risk reduction.

Disaster Risk Management (DRM)

The systematic process of using administrative decisions, organization, operational skills, and capacities to implement strategies and policies to reduce disaster impacts.

Early Warning Systems (EWS)

Technologies and protocols designed to detect and communicate impending disasters to minimize loss of life and property.

Eco-DRR (Ecosystem-Based Disaster Risk Reduction)

Sustainable management, conservation, and restoration of ecosystems to reduce disaster risks and adapt to climate change.

Forecast-Based Financing (FbF)

A funding mechanism that allocates resources for anticipatory actions based on meteorological forecasts or early warnings.

GIS (Geographic Information System)

A digital tool used for mapping, analyzing, and visualizing spatial and geographic data related to disaster risks.

Hazard Mapping

The process of identifying and mapping areas at risk of natural or man-made hazards.

Impact-based Forecasting

Impact-based forecasting is a structured approach for combining hazard, exposure, and vulnerability data to identify risk and support decision-making, with the ultimate objective of encouraging early action that reduces damages and loss of life from natural hazards.

Inclusivity in DRR

Ensuring that all groups, including women, youth, persons with disabilities, and marginalized communities, participate in and benefit from disaster risk reduction initiatives.

Integrated Risk Management

An approach that combines disaster risk reduction, climate change adaptation, and sustainable development into a cohesive framework.

IoT (Internet of Things)

A system of interconnected devices and sensors that collect and exchange data, often used in monitoring and early warning for disasters.

Knowledge Sharing Platform

A digital or physical system for disseminating lessons, experiences, and best practices in disaster risk reduction.

Mitigation

Efforts to reduce or prevent the impacts of disasters by decreasing their likelihood or limiting their effects.

Parametric Insurance

A type of insurance that pays out a fixed amount based on predefined triggers (e.g., rainfall levels), rather than assessed damages.

Preparedness

Measures taken in advance to ensure an effective response to disasters, including planning, resource allocation, and capacity development.

Resilience

The capacity of individuals, communities, and systems to anticipate, withstand, and recover from disasters.

Response Capacity

The ability of individuals, communities, and institutions to respond promptly and effectively to disasters.

Risk Assessment

The systematic process of identifying, analyzing, and evaluating the likelihood and consequences of hazardous events.

Risk-Informed Development

A development approach that integrates risk considerations to ensure resilience against disasters.

Sendai Framework for Disaster Risk Reduction (SFDRR)

An international framework that provides guidance to reduce disaster risks and build resilience, was adopted during Third UN World Conference on DRR held in Sendai, Japan in 2015.

Stakeholder Engagement

The process of involving individuals, groups, or organizations that may affect or be affected by disaster risk reduction efforts.

Sustainable Development Goals (SDGs)

A collection of 17 global goals established by the United Nations to address global challenges, including poverty, inequality, and climate change.

Transboundary Hazards

Disasters or risks that affect multiple countries requiring regional or international cooperation for effective management.

Universal Design Principles

Design approaches that ensure infrastructure, products, and services are accessible to all people, regardless of their age or abilities.

Vulnerability Assessment

The process of identifying and evaluating weaknesses that make individuals, communities, or systems susceptible to disasters.

Vulnerability Index

A quantitative tool that measures the susceptibility of communities or systems to disaster impacts.

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