

Concept Note

Infrastructure Damages Reporting and Verification Framework

Monsoon & Flash Floods 2026

1. Background and Rationale

Pakistan continues to face recurrent climate-induced disasters, including monsoon floods, flash floods, glacial lake outburst floods, landslides, avalanches, heatwaves, cyclones, forest fires and other extreme weather events. These hazards often cause widespread damage to public infrastructure, including roads, bridges, buildings, water supply schemes, protective works and other critical facilities.

During major events, damage information is received from district administrations, provincial departments, field teams and other sources. The current process is largely manual and fragmented, with variations in formats, limited geo-referenced evidence, duplication risks and time lags in verification and consolidation. The Monsoon 2025 experience further highlighted the need for rapid, standardized and evidence-based verification under challenging field conditions.

To address these gaps, the Infrastructure Advisory & Project Development Wing proposes an Infrastructure Damages Reporting and Verification Framework for Monsoon & Flash Floods 2026. The framework will transform fragmented reporting into a structured and traceable system for reliable decision support.

2. Purpose

The purpose of the framework is to establish a centralized mechanism for reporting, validating, verifying and consolidating infrastructure damage information during disaster events. It will enable NDMA, PDMAs, DDMA, provincial authorities and field teams to collect standardized data, validate reported damages, reduce duplication, strengthen transparency and generate timely dashboards and reports for decision-making process.

3. Objectives

- Standardize national procedures for infrastructure damage reporting and verification.
- Enable rapid digital collection of geo-tagged, time-stamped and evidence-based field reports.
- Reduce duplication through unique damage identification and digital tracking.

- Improve coordination, traceability and transparency across all reporting levels.
- Provide dashboards, summaries and automated reports for recovery planning and resource prioritization.

4. Proposed Framework

The proposed framework is built around a Centralized Infrastructure Damages Verification Portal. The portal will receive damage reports from multiple communication channels, standardize incoming information, enable validation by DDMA and PDMA levels, and provide consolidated dashboards and summaries at NDMA level.

The framework will include four core components: data collection through digital forms and evidence upload; data structuring through standardized formats and unique IDs; verification workflows through defined institutional roles; and dashboard/reporting tools for monitoring and decision support.

5. Institutional Arrangement

Early engagement of stakeholders will be essential for successful implementation. The framework will involve NDMA, PDMA, provincial authorities, district authorities, tehsil administrations and relevant technical departments. Joint Working Groups will be established to agree on verification protocols, finalize the damage grading matrix, define roles and support implementation of digital reporting and monitoring mechanisms.

6. Five-Stage Program Structure

Stage	Key Activities
1. Pre-Event Readiness	Framework approval, team training, digital forms and system setup.
2. Activation & Mobilization	District cell operations and field deployment.
3. Rapid Assessment	Initial assessment within 24-48 hours and entry of provisional damages.
4. Detailed Verification	Technical assessment within 3-7 days through a validation process.
5. Consolidation & Reporting	Multi-level consolidation, verified summaries and inputs for recovery planning.

7. Digital Portal Features

- Role-based access for district, PDMA and NDMA users.
- Geo-tagged and time-stamped reporting with photo and evidence upload.
- Unique ID generation and duplicate detection.
- Offline synchronization for low-connectivity areas.
- Automated report generation and national/provincial dashboards.

8. Expected Benefits

- Faster and more reliable reporting and verification of infrastructure damages.
- Improved accuracy through coordinates, evidence upload and duplication checks.
- Enhanced coordination among district, provincial and national institutions.
- Transparent, traceable and evidence-based damage records.
- Stronger central data command and risk-informed decision support.
- Better prioritization of recovery, rehabilitation and resource allocation.

9. Strategic Way Forward

The proposed framework provides a strategic shift from fragmented and manual reporting practices to a standardized, digital and evidence-based verification system. Its implementation will significantly strengthen NDMA's capacity to coordinate, validate and utilize infrastructure damage information in a timely, transparent and risk-informed manner. This will not only enhance decision-making during Monsoon & Flash Floods 2026, but also lay the foundation for a scalable and integrated digital disaster management system in the future.

NDMA Infrastructure Damage Verification Proforma

Location / Basic Info

Case ID			
Province:			
District/Tehsil/Sub-Tehsil:			
Union Council/Village:			
Moza/ Khasra No./ Landmark:			
GPS: (check one)	Auto Detect	Manual	
Latitude:			
Longitude:			
Date of Assessment:			
Assessment Member & Contact:			
Location Verified	Yes	No	

Incident Information

Date of Event				
Type of Event	Flood	Landslide	GLOF	Cloudburst
	Flash Flood	Earthquake	Other:	
Source of Information	Field visit	Local Authority	Community	Media
	Other:			

Infrastructure Category

Type of Infrastructure	Road	Bridge	Building	Water Supply
	Electricity	Telecom Tower	Other:	
Roads	Metalled		Unmetalled	
Bridges	Pedestrian		Mix use	
	Material make:			
Buildings	School	Hospital	Govt. Office	House
	Material make:			

Damage Assessment (For each affected infrastructure category)

Extent of Damage	Minor	Moderate	Severe	Destroyed
Status	Fully Functional	Partially Functional		Non Functional
Estimated Cost (PKR)				
Estimate Confidence Level	Low	Medium		High
Ownership	Private	Government		Community

Impact on Community

Population Affected	<100	100 - 500	500 - 1000	1000<
Critical Impact	Road Blocked	No Electricity	No Water	No Education Access
	No Health Access	Other:		

Response & Recovery Actions

Immediate Actions Taken	Relief Provided	Evacuation	Temporary Repair	None
	Details:			
Support Required	Machinery	Funds	Technical Team	Emergency Relief

Photographic Evidence

Number of Photos Attached	
Remarks	

Verified By: Name: Designation Signature _____ Date	Approved By: Name: Designation Signature _____ Date
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NDMA INFRASTRUCTURE DAMAGE VERIFICATION PROFORMA

این ڈی ایم اے انفراسٹرکچر ڈیمیکج ویریفیکیشن پروفارما

عمومی معلومات

ضلع/تحصیل / ذیلی تحصیل:	
یونین کونسل گاؤں:	
موزا / خسره نمبر / حوالہ مقام:	
عرض البلد:	
طول البلد:	
تشخیص کی تاریخ معائنہ:	
معا ننه ٹیم:	
نقصانات کا ابتدائی تخمینہ:	
سائٹ پر آنے والا شخص:	
معاوضہ ادا کیا گیا	

واقعہ کا جائزہ

واقعہ کی تاریخ	
آفت کی قسم	* کلاوڈ برسٹ
معلومات کا ماخذ	GLOF* * لینڈ سلائڈ * سیلاب
	سوشل میڈیا/ سیلف وزٹ

متاثرہ انفراسٹرکچر

سڑک	اہم مرکزی شاہراہ	ذیلی مرکزی شاہراہ
پل	آر سی سی	معلق پل
	دیگر:	پیدل چلنے والا
عمارت	پتھر	بلاک
	لکڑی	کچا گھر
		دیگر: پتھر اور CGI شیٹ
		آر سی سی
		اینٹ
		پانی کی فراہمی کے نظام
		بجلی کے نیٹ ورکس
		کمیونیکیشن / مواصلاتی ٹاورز
		دیگر (وضاحت)

نقصان کا جائزہ (ہر متاثرہ انفراسٹرکچر کیٹیگری کے لیے)

نقصان کی تفصیل	
تعمیراتی ساخت	صنعتی
ملکیت	تجارتی
نقصان کی حد	پرانیویٹ
	عمومی (حکومتی)
	معمولی
	(معمولی
	مرمت کی
	ضرورت)
	درمیانے درجے کا
	(بڑی مرمت کی ضرورت)
	شدید
	(دوبارہ تعمیر کی ضرورت)
	رہائشی
	رہائشی
	مرمت/ تعمیر نو کی تخمینی لاگت
	تصویری ثبوت: نقصان دکھانے والی تصاویر کو پروفورما کے ساتھ منسلک کریں
	تبصرے
	(اضافی مشاہدہ)

کمیونٹی پر اثرات

متاثرہ آبادی	
ضروری تک رسائی	تعلیم
	بجلی
	صحت
	نقل و حمل
	پانی کی فراہمی
	دیگر

ردعمل اور بحالی کے اقدامات

فوری کارروائی	انخلا
	موصول شدہ سامان
	عارضی مرمت
	تفصیل:
درپیش چیلنجز	رابطے کی رکاوٹیں
	وسائل کی پابندیاں
	لاجسٹک مسائل

توثیق شدہ:

منظور شدہ:

نام:
نامزدگی

نام:
نامزدگی

دستخط:
تاریخ:

دستخط:
تاریخ: