



Overview of Natural Disasters **2015** Impact, Response and Managing Risks

Provincial Disaster Management Authority, Government of Khyber Pakhtunkhwa



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List of Acronyms

CBDRM	Community Based Disaster Risk Management
DDMO	District Disaster Management Officer
DDMU	District Disaster Management Unit
DEOC	District Emergency Operations Centre
DNA	Damages and Needs Assessment
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
FATA	Federally Administered Tribal Areas
GLOF	Glacial Lake Outburst Flood
IDPs	Internally Displaced Persons
INGO	International Non-Government Organization
IP	Implementing Partner
KP	Khyber Pakhtunkhwa
NDMA	National Disaster Management Authority
NDMF	National Disaster Management Framework
NDMO	National Disaster Management Office
NGO	National Non-Government Organization
PaRRSA	Provincial Reconstruction & Rehabilitation Authority
PDMA	Provincial Disaster Management Authority
PDMC	Provincial Disaster Management Commission
PEOC	Provincial Emergency Operations Centre
PMD	Pakistan Meteorological Department
SOP	Standard Operating Procedure
TDPs	Temporarily Displaced Persons
UN	United Nation
UNISDR	United Nations International Standard for Disaster Reduction

Executive Summary

The year 2015 was significant in terms of repeated natural disasters which struck different parts of Khyber Pakhtunkhwa, affecting a large number of people and causing substantial damage to public and private infrastructure. The Mini-Cyclone on 26th April, Glacial Lake Outburst Floods (GLOF) and flash floods in July-August, a massive earthquake on 26th October followed by earthquakes in November and December, caused 232 deaths and inflicted grievous injuries to many people. Around 98,000 housing units were either fully or partially destroyed. The total estimates of reconstructing damaged public infrastructure i.e. roads, bridges, schools, hospitals, irrigation channels, public health schemes etc., are Rs.40.756 Billion. The total amount spent on cash compensation only during the year 2015 was Rs. 10.535 Billion while the amount spent on restoration of damaged public infrastructure was Rs.24.654 Billion. The frequency and intensity of these incidents reveals that the province will face the worst effects of climate change in the future. In addition, the province is confronting the existing challenges of terrorism and displacement.

These natural disasters are overstretching the limited resources of the province and severely affecting its development process. The province, in addition to these natural disasters, has faced the challenges of the influx of TDPs/IDPs from FATA region and accommodating and managing them in camps established in settled areas which resultantly, again creating a huge challenge. These factors have created huge pressure on each and every sector from public service delivery to health, education, livelihoods and governance. The resulting social and economic vulnerabilities, if combined with natural disasters, may lead to further turbulence and social unrest.

The experience of the year 2015 highlighted the underlying gaps in the capacities of both government departments and the public ability to effectively respond to disasters. The line formations of the vital government agencies like C&W, Irrigation, Education, Health were found not to be fully equipped with essential equipment and contingency funds to manage immediate response. District Disaster Management Units (DDMU) led by District Nazims/Deputy Commissioners need to be reorganized and strengthened. The impact from 2015 demands that all government and non-government agencies must ensure a high level of preparedness against natural disasters in future. Resource planning of the government and non-government agencies should essentially include the element of Disaster Risk Reduction (DRR). Moreover disaster mitigation strategies need to be adopted at all levels.

The development portfolios of all government departments require alignment with Disaster Risk Reduction strategies so as to minimize life and property losses. Government agencies need to fully equip their line formations at the district or regional levels with necessary equipment so as to enable them to offer efficient and effective response. Better coordination amongst all agencies involved in rescue and relief activities also need further improvement. In addition to this, the unorganized state of the community and lack of their capacities to cope with emergencies is also a burning issue which requires the proper attention of all concerned.



Chapter 1

Provincial Disaster Management Authority

1.1 Establishment of PDMA

To cater to the challenges and manage the disasters in more professional manner, the Provincial Disaster Management Commission (PDMC) and Provincial Disaster Management Authority (PDMA) were established. The Government of Khyber Pakhtunkhwa established PDMC and PDMA on 27 October 2008 to promote prompt disaster preparedness and management within the province.

1.2 Provincial Disaster Management Authority (PDMA)

“An institution at Provincial level, mandated to effectively set up a system to look after disasters and calamities whether natural, human induced or accidents.”

1.3 Functions of PDMA

The mandate of PDMA Khyber Pakhtunkhwa is Disaster Risk Management. PDMA formulates and implements policies of disaster risk management, mitigation, preparedness and hazard risk reduction. PDMA coordinates and communicates with all stakeholders (Federal Government, District Government, INGOs, IPs) before, during and after the disaster for preparedness and response. PDMA tries its best to provide relief to disaster affected communities of Khyber Pakhtunkhwa with the support of Provincial Government and, to some extent, through foreign donor`s assistance. PDMA helps in recovery and rehabilitation of affected communities, handles the crises of TDPs/IDPs and manages the camps established for the displaced population. PDMA also works on reconstruction and rehabilitation projects in the affected areas for the restoration of life in hazard stricken areas.

1.4 DRM Road Map of PDMA

To address these immense challenges, the Road Map for Disaster Risk Management 2014-2019 was prepared through discussions and consultations with concerned stakeholders including Federal Agencies, Provincial Departments, District Administrations, Academia, Military, Clusters, UN Agencies, Donors, various Civil Society Forums and vulnerable communities. The Road Map developed by PDMA, addresses the urgency of building resilience against natural and human-induced disasters in the province, identifies challenges and priority needs and strategically plans for the urgent needs in Disaster Risk Management.

The Road Map presents a vision for a safer and disaster resilient Khyber Pakhtunkhwa within the next five years. It is broadly focused on eight thematic components, which are consistent with the National Disaster Management Plan 2012-2022 and UNISDR's Hyogo Framework for Action 2005-2015. These eight components are:

1. Legislation, Policy, Institutional Mandates & Institutional Development;
2. Hazard, Vulnerability and Risk Assessments;
3. Public Awareness, Education and Training;
4. Community Resilience through Community Based Disaster Risk Management (CBDRM);
5. Mainstreaming Disaster Risk Reduction into Development Planning;
6. Early Warning System;
7. Preparedness and Response Planning;
8. Post Disaster Recovery planning



Chapter 2

Mini-Cyclone 26th April, 2015



Damages at Baila Niko Khan Peshawar

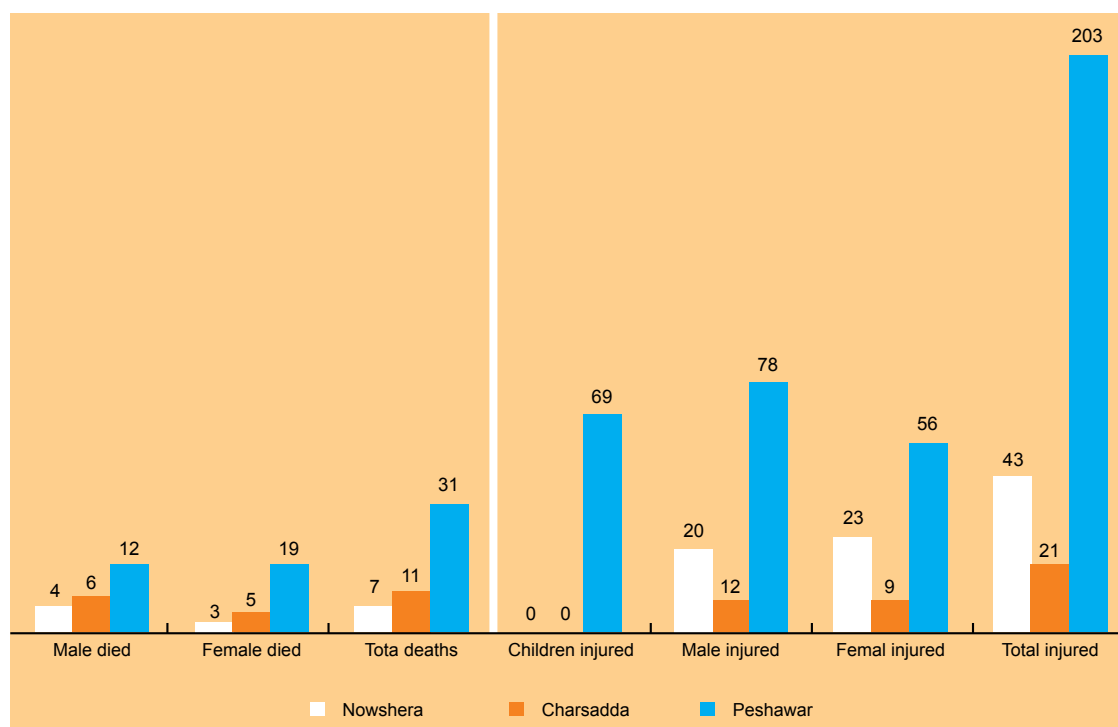
On the 26th of April 2015 at around 19:00 hrs, a severe storm struck Peshawar city and other areas of the Khyber Pakhtunkhwa Province. It caused the death of 49 people and injured 267. The Provincial Meteorological Department described the storm as a “mini cyclone”.

The deaths/injuries were caused mainly due to crumpled houses and other buildings. The severe weather disrupted power supply and suspended transport and air traffic. PDMA Khyber Pakhtunkhwa provided food, shelter and emergency medical services to the affectees.

According to an official statement of PMD, they could not issue any forecast for the cyclone-cum-thunderstorm, as it was a rare phenomenon in these areas. The PMD further elaborated that such uncertain cyclones cannot be predicted well before time. The torrential rains and hailstorm caused damages both to life, (as shown in Chart below) and public / private infrastructure:

2.1 Response by PDMA

PDMA immediately activated the “High Alert” at the Provincial Emergency Operations Centre (PEOC). The concerned District Administrations were informed through SMS. PEOC received calls and responded to the grievances of the public. The District Administrations were instructed to immediately convey their relief requirements. Concerned stakeholders including, PMD, Local Government Department, Irrigation Department, Divisional/District Administration, and DDMUs were taken on board and active coordination links were established to respond to the disaster. Additional staff members of PDMA/PaRRSA were deputed 24/7 at PEOC on a rotational basis to attend to the calls for gathering and recording information received from district administrations and the local communities. The contact numbers were also shown on news channels for speedy redressal of complaints and grievances of the affected population. Information regarding the situation was being exchanged between various stakeholders for quick and timely responses. Teams were deployed to visit the affected areas with direction to prepare comprehensive reports on damages and monitor the relief activities. PDMA collected consolidated data of damages caused to life and property, and shared this with the relevant district administrations for providing relief and compensation to the affectees after verification of details.



2.2 Establishment of Relief Camps

PDMA, with the assistance of humanitarian partners, established 06 relief camps in the severely affected areas of District Peshawar, Charsadda, and Nowshera. Survey teams conducted door-to-door assessments and distributed food vouchers/tokens among the affectees. Food and other essential items were also distributed.

Distribution of
Food Packages at
PDMA Relief Camp
Baila Niko Khan
Peshawar



Relief activities were initiated the next day i.e. April 27, 2015. PDMA constantly received grievances from general public regarding non-availability of relief goods and items. Therefore it was decided that PDMA should directly supervise the distribution of relief goods. Four monitoring teams were also dispatched to streamline and monitor the distribution process. Director General PDMA visited all the relief camps and supervised the relief activities himself.

Damages Need
Assessment activity
in affected area of
Peshawar



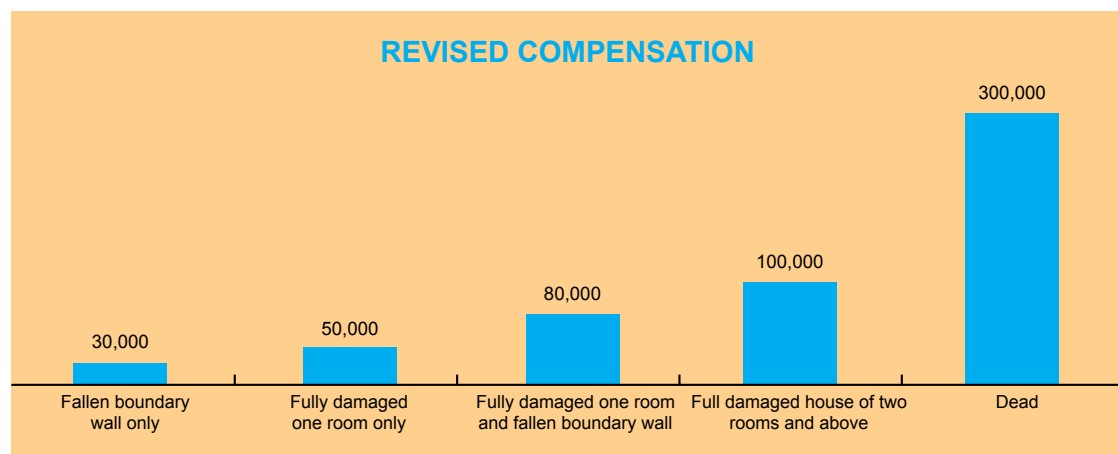
Humanitarian partners were also engaged by PDMA to extend services for distribution of food and non-food items. This was completed within three days. Another phase of distribution of goods was commenced under the supervision of PDMA staff and more distribution camps were established in other affected areas to provide relief items. PDMA teams monitored and supervised the assessment and verification of damages submitted by district administration.

2.3 Damages (Infrastructure) and Needs Assessment Survey

PDMA conducted a detailed Damages and Needs Assessment Survey. Volunteers from PDMA along with revenue staff took photographs during door-to-door surveys as evidence and confirmed the verification of damages.

2.4 Revised Compensation Policy

The compensation policy was revised by the competent authority and special compensation packages were announced. The chart shows the revised compensation rates for human and infrastructure damages:

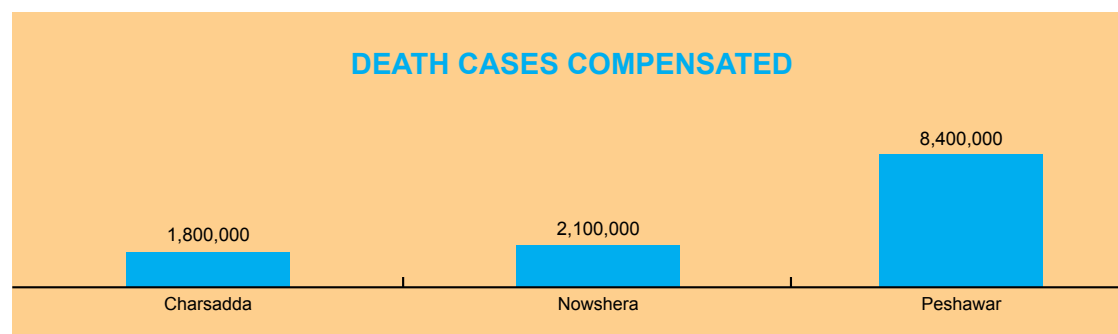


2.5 Additional Funds Released by PDMA to DDMUs

Additional funds amounting to Rs.36.500 million were released to the District Administrations of Peshawar, Charsadda and Nowshera. The breakup of which is given in the table below:

S.#	Name of District	Funds released (in Millions)
1.	Peshawar	Rs.25.500
2.	Nowshera	Rs.6.400
3.	Charsadda	Rs.4.600

Compensation progress in graph shown below:





Chapter 3

Flash floods and Glacial Lake Outburst Flood (GLOF) Incidents in District Chitral on 16th to 19th July, 2015



Flood hit road at Mastooj Chitral

Most of the population in Chitral lives in vulnerable areas surrounded by giant almost vertical mountains. The fragile nature of mountains are not able to withstand any minor natural hazard like rain, snow, earthquake, hail storm, river rise or high speed wind due to extensive deforestation.

On July 16, 2015 at around midnight to 01:00 hours, District Chitral was struck by an unusual and unprecedented torrential rain and series of GLOF incidents on the western side of the Chitral River. This phenomenon continued till 19th July, 2015. The heavy rains followed by thunderstorm and cloudbursts, triggered the GLOF events which caused massive destruction. The floods brought devastation in the form of house damages, human casualties, countless destruction of infrastructure comprising, bridges, irrigation channels, water supply schemes, valley roads in different areas of District Chitral. Standing crops and livestock were washed away by heavy floods and mudflow.



Flood hit village at
Boni Chitral

As per PMD the average maximum temperature was 40.8oC in Chitral. PDMA immediately circulated the weather forecast regarding rain and thunderstorm along with showers in isolated part of Malakand Division. The predication was also shared with all concerned for preparedness. The Irrigation Department Chitral also predicted High Level flood in Chitral River in addition to the identification of vulnerable spots for riverine flood. The 17-Division camp of Pak Army at Gaherait also played important role for dissemination of alerts for evacuation of the communities living in the river catchments and beds.

The rain/cloudburst followed by the GLOF event of July, 2015, caused the following damages.

1. Washing out of heads/diversions arrangements / head reaches and general filling-up of most of the civil channels / Government Channels with damages to hydraulic structures
2. Damaged buildup properties and agricultural land
3. Damaged roads and bridges
4. Damaged existing flood protection works
5. Damaged water supply schemes
6. Filling of the Nallas with tendency of spilling out from banks causing further damages in case of future floods.

3.1 Preparedness and Response

1. The PEOC at PDMA and DEOC in Deputy Commissioner Chitral Office were operational 24/7 for dissemination of alerts.
2. Effective preparedness and prompt response reduced the ratio of destruction as compared to the intensity of the calamity.
3. According to locals, the time space of the GLOF event was only 10 minutes in Broze Gol and other valleys due to the topography of Chitral. In the meantime, majority of the communities managed to move to safe places, indicating the level of awareness raised among the communities by PDMA, District Government and Pak Army.

3.2 Early Response of PDMA and DDMU

On receipt of the message alert from PDMA KP, the DDMU Chitral, by assessing the ground situation and the severity of situation, started the pre-disaster arrangements to minimize the impacts of the possible disaster, particularly in potentially vulnerable areas. For this purpose, messages were disseminated to major stakeholders including 17-Div of the Pak Army, PEOC-PDMA KP, line departments and others. For precautionary and preparatory measures, the 17-Division actively evacuated families from vulnerable sites to safe places which reduced the risk of heavy losses. Immediately after the event, officers from the District Administration visited the disaster-struck areas to assess the damages. During this period the PEOC at PDMA and DEOC at DDMU level with the support of Pak Army, remained fully functional and operational to collect and disseminate information and expedite the rescue and relief activities. Teams were dispatched for detail assessment of damages in the disaster struck areas.

Relief goods distribution in Mastooj Chitral



Relief goods distribution in Mastooj Chitral



Approximately 25,000 people were cut off from the rest of Chitral in Kalash Valley, 60,000 in Garam Chashma and 200,000 in Upper Chitral including at Booni, Mastuj, Mulkow, Torkow and Yarkhoon. PDMA quickly responded by functionalizing the damaged roads to affected areas.

To tackle the challenging issue of food shortages and distribution in vulnerable areas of District Chitral, PDMA provided sufficient financial assistance to the district administration for mobilizing contractors for deploying heavy machinery to clear and restore the damaged roads for the delivery of relief goods.

According to official data, 36 people lost their lives, 151 houses were fully damaged and 38 partially damaged. Moreover irrigational channels, water supply schemes, roads, link roads and valley roads along with protection wall and bridges, were also damaged. In light of damaged need assessment approximately Rs. 8,075.532 Million was needed for recovery and reconstruction.

3.3 Recovery Phase Funding Requirements (Flood Damages in Chitral)

S.#	Sectors	Sub Sector	Recovery	Reconstruction	Total PKR (in Million)
1.	Education		177,000,000		177.000
2.	Housing		129,920,000		129.920
3	Transport	Roads		3,036,000,000	3,036.000
		Bridges		1,253,260,000	1,253.260
4	Wash	Water Supply Schemes	331,760,000		331.760
5	Energy	Other Power Houses	300,000,000		300.000
		Reshun Power House		1,000,000,000	1,000.000
6	Agriculture	Agriculture	350,380,000		350.380
		Livestock	49,611,850		49.612
		Irrigation	1,447,600,000		1,447.600
Total			2,786,271,850	5,289,260,000	8,075.532
Percentage Share in Total Estimates			35%	65%	100%

Note: For detailed information please see **Chitral Floods 2015: Recovery Needs Assessment and Action Framework**. The resource can be downloaded from www.pdma.gov.pk



Chapter 4

Earthquake 26th October, 2015



Earthquake affected school at Brun Chitral

The recent 7.5 magnitude earthquake in Pakistan was one of several major earthquakes to strike this region. The earthquake occurred due to a reverse fault at 130 miles below the epicenter. Currently, the Indian plate is subsiding below the Eurasia plate, causing uplift in the nearby northern mountain ranges, significant thrust faulting and destabilization in the area.

The collision of the two continental plates caused the formation of the Himalayan Mountains as well as the Hindu Kush Mountains proximal to the recent earthquake. Fortunately, the intermediate depth of the earthquake (at 130 miles) allowed for diffusion before reaching the surface and limited damage as compared to a similar magnitude shallow depth earthquake.



Damaged house at Upper Dir

4.1 PDMA, Khyber Pakhtunkhwa Swift Response to the Earthquake

On occurrence of earthquake, Director General activated high alert at PEOC. All the concerned district administrations and District Disaster Management Units (DDMUs) were taken on board and effective coordination was established to respond to the situation. Pakistan Army played a vital role and contributed towards relief efforts. PDMA's Operation Center (PEOC) was fully functional and information was collected and disseminated to and from stakeholders for quick and timely response. Important contact numbers and relief deliveries were announced through PDMA and NDMA websites, television, radio and other media sources, for the information of general public. A major impediment in the relief operations and assessments was the remoteness of the area, rugged terrain, accessibility, scattered population and extreme weather.

District Administrations were immediately authorized to utilize the relief funds. In addition, PDMA sent shipments of relief items to affected districts on the first day. Teams were constituted to visit the vulnerable areas in districts for data collection and monitoring of relief activities. In order to provide relief and financial assistance to the affected population, PDMA facilitated the District Administrations to conduct a Disaster Needs Assessment (DNA). Committees were constituted to assess the damages in affected districts for financial compensation to the affectees for building their houses before the upcoming harsh winter season.

STATUS REPORT ON EARTHQUAKE COMPENSATION PROCESS AS OF DECEMBER 31, 2015

S.#	District	Life Losses				Total House Damaged	House Compensated
		Death		Grievously Injured			
		Reported	Compensated	Reported	Compensated		
1.	Shangla	49	49	181	181	12086	12086
2	Chitral	32	32	200	58	19299	18414
3	Swat	36	34	253	88	12159	12159
4	Dir Lower	26	24	248	49	18384	13925
5	Dir Upper	16	16	162	116	16352	13934
6	Tor Ghar	18	16	30	9	2516	563
7	Kohistan Upper	14	14	25	12	3192	207
8	Buner	8	8	19	19	3626	3594
9	Peshawar	9	8	165	25	187	113
10	Charsadda	5	5	8	8	110	110
11	Mardan	5	5	16	16	473	459
12	Nowshera	2	1	17	1	1331	279
13	Malakand	2	2	79	8	4887	4887
14	Swabi	3	3	6	6	597	597
15	Kohistan Lower	3	3	27	8	1486	0
16	Mansehra	2	2	15	2	31	0
17	Hangu	1	1	0	0	94	94
18	Tank	1	1	1	1	15	15

19	Abbottabad	0	0	2	0	425	22
20	Battagram	0	0	7	7	177	138
21	LakkiMarwat	0	0	0	0	16	0
22	Haripur	0	0	0	0	502	0
23	Kohat	0	0	21	0	8	0
24	Bannu	0	0	4	0	2	0
25	Karak	0	0	0	0	18	12
26	DI Khan	0	0	1	1	22	0
Total		232	224	1490	615	97995	81608

Relief goods provided to far-flung areas of Kohistan



4.2 Relief Activities by PDMA

PDMA dispatched relief goods comprising of food packages, tents, blankets and floor mats to the affected areas.

DETAILS OF RELIEF ITEMS DISPATCHED TO DISTRICTS BY PDMA

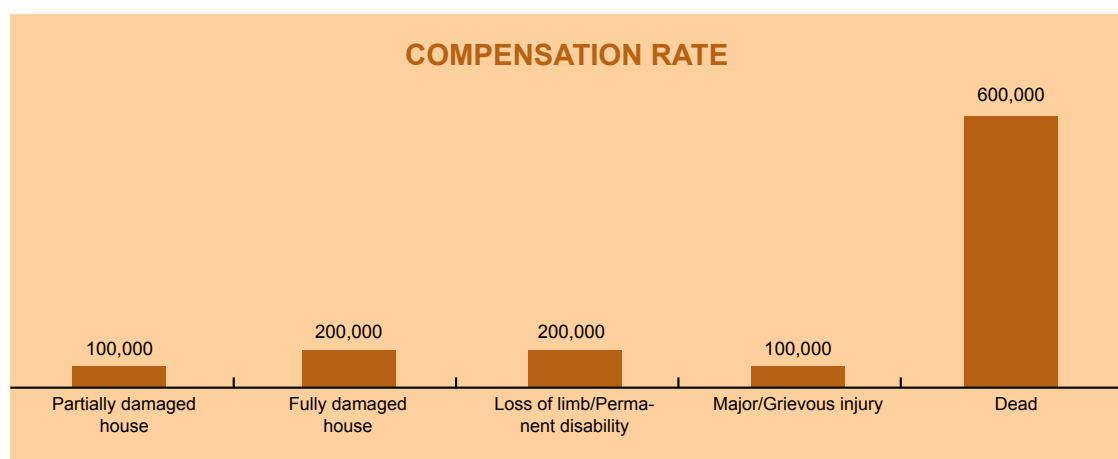
S.#	Name of District	Tents	Blanket	Floor Mats	Food Packages	Generators
1	Shangla	4027	5172	300	1560	0
2	Chitral	7700	4480	250	2370	9
3	Swat	2430	3300	2200	2100	0
4	Dir Lower	2460	3288	200	1650	0
5	Dir Upper	3400	4850	200	0	0
6	Tor Ghar	590	1710	200	0	0
7	Kohistan Upper	430	1100	0	450	0
8	Buner	1020	3200	200	300	0
9	Mardan	100	0	0	0	0
10	Malakand	500	1200	200	1200	0
11	Kohistan Lower	185	0	0	0	2
12	Battagram	200	100	0	0	0
13	Malakand Division	2240	2717	2000	980	0
Grand Total		25282	31117	5750	10610	11

4.3 Special Package for Earthquake Affectees

On 28th of October, 2015 Prime Minister of Pakistan announced a special package for recent earthquake affectees during a high level meeting at Governor House Peshawar.

Detail of the special package announced includes:

- All the compensation cases will be shared on 50:50 sharing basis (Federal & Provincial)
- All deaths/injured compensation to be given before 31st October, 2015
- Verification of compensation cases was entrusted to :
 - Representative of District Administration
 - Elected Representative
 - Representative of Pakistan Army



As per available figures of casualties and damages, the approximate total cash compensation was around 11,550.103 million. Cheques already issued to the following districts for compensations.

S.#	District	Amount (In Millions)
1.	Shangla	2,138.538
2	Swat	1,705.626
3	Buner	446.724
4	Dir Lower	1,730.185
5	Chitral	2,476.000
6	Swabi	68.368
7	Dir Upper	1,504.775
8	Mardan	141.293
9	Malakand	513.320
10	Hangu	29.736
11	Abbottabad	118.335
12	Torghar	97.100

13	Kohistan Lower	129.00
14	Kohat	12.718
15	Battagram	32.188
16	Nowehera	42.180
17	Kohistan Upper	49.278
18	Peshawar	135.000
19	Charsadda	56.000
20	Haripur	29.574
21	Bannu	14.980
22	Karak	18.670
23	Mansehra	13.408
24	Tank	18.357
25	Lakki Marwat	18.900
26	DIKhan	9.850
TOTAL		11,550.103



Through helicopter service, PDMA provided food packages to the earthquake affected areas

4.4 Helicopter Services for Victims

Two helicopters were provided by NDMA to expedite the relief efforts in remote hilly and inaccessible areas of Malakand Division. These helicopters were utilized for rescue purposes, shifting of injured, and transportation of food and other relief items. .

4.5 Consolidated Cost of 2015 Earthquake Recovery

Component	Cost in Million USD		Total Cost in Million USD
	Year-1	Year-2	
Rehabilitation of Physical Infrastructure			
Government Buildings			
i- Public Administration	7.23	10.85	18.08
ii- Health	3.62	5.43	9.05
iii- Education	63.07	94.61	157.68
Total	73.92	110.89	184.81
Water Supply & Sanitation	1.51	2.1	3.6
Roads and Bridges	9.31	13.96	23.27
Irrigation	0.183	1.2	2.03
Energy	4.48	6.72	11.2
Total	90.05	134.86	224.91
Housing Reconstruction	27.09	26.81	53.9
Reactivating and Strengthening of Local Economy			
On Farm Livelihoods	12.15	1.26	13.41
Non-Farm Livelihoods	9.28	2.14	11.42
Total	21.43	3.4	24.83
DRR and Environment Recovery			
DRR	3.15	2.95	6.1
Environment Recovery	2.89	4.12	7.02
Total	6.04	7.07	13.12
Reconstruction and Rehabilitation Management Mechanism	0.63	0.58	1.21
Grand Total	145.24	172.72	317.97

Note: For detailed information please see **2015 Earthquake Recovery Plan, Khyber Pakhtunkhwa**. The resource can be downloaded from www.pdma.gov.pk



Chapter 5

Lessons Learnt and Way Forward

5.1 Structural Measures

5.1.1 Glacial Lake Outburst Flood (GLOF) Study

The incidents of Glacial Lake Outburst Floods (GLOF) in Northern Areas, especially Chitral, have strongly indicated that this issue needs to be studied and necessary corrective actions are to be taken on a war footing. It is recommended that a core group of experts from the Engineering University Peshawar, Center of Excellence in Geology University of Peshawar, Irrigation Department, PMD and C&W Department, be formed and tasked to undertake a rapid assessment study of the existing state of all glaciers in the north, especially in the north-western part of the province, so as to avoid more incidents like Chitral in future. Forecasts for the average temperature rise in the upcoming monsoon seasons, and the likely effects on the behavior of glaciers, may provide clues of a strategy to minimize damage in hilly parts of the province.

5.1.2 Maintenance of Dykes and Embankments

It is a routine practice that Army formations, along with teams of Irrigation Department, undertake reconnaissance survey of dykes, embankments and other flood protection, and flood diversion structures along main rivers and nullahs during February till April or May each year, and suggest maintenance and repair works at specific locations. The implementation of repair and maintenance work is left either to the Irrigation Department or NHA/PKHA. During a short period of one or two months, these departments have been unable to assess and mobilize their resources, therefore leaving these works unattended and usually carried out only after monsoon damages. It is recommended that a reconnaissance survey is conducted at feasible of the year so that M&R funds of the relevant departments can be efficiently and effectively utilized.

5.1.3 Construction of Check Dams and Mini-Reservoirs

Construction of check dams has proved to be very effective in dissipating the energy of water thus decreasing the damages. This practice provides multiple flood protection effects both for the areas of origin or those from where the water passes. The culture of building check dams in the entire hilly terrain of the province needs to be enhanced to safeguard against floods. All communities in these areas also need to be made aware of this disaster mitigation measure so that they can build these on a self-help basis.

5.2 Institutional

5.2.1 Contingency Planning

Disaster and emergency management planning in all sectors and departments is of paramount importance. Such planning is currently either non-existent or carried out only as a formality. Each year, PDMA steers the process of contingency planning for districts, provincial and federal line agencies. However, these contingency plans are not usually made part of annual planning and resources are not allocated by the respective line agencies. This often creates resource gaps during response phase. District Administrations usually face a lukewarm response from the district line agencies during relief activities as these line agencies are unprepared, having not made resource allocations for their respective disaster contingency plans.

5.2.2 Early Warning System (EWS)

Early warning systems in the province need up gradation on priority basis. The existing Early Warning Systems (EWS) available in the province are either obsolete or inadequate to meet the challenges of climate change patterns and frequent disasters. The water gauge systems with Irrigation Department require replacement with modern hydrologic telemetric systems, and there is a dire need to install gauges on flash flood nullahs and hill torrents. The metrological installations in the province also need refurbishment. Weather observatories in the province do not cover the entire area of the province and need to be modernized and expanded. Weather radars are required to be installed urgently at appropriate locations in the province. Each vulnerable Union Council and village requires installation and maintenance of public siren systems with central command and control systems at the District level to ensure early warnings in case of threat of a disaster. The warden and siren posts of Civil Defense in each district have become dysfunctional due to poor maintenance. These need refurbishment and reactivation.

5.2.3 Emergency Response Coordination Mechanism

An effective coordination mechanism ensures well-timed, harmonized and precise action to urgently respond to an emergency or disaster, whether natural or human-made. PDMA Khyber Pukhtunkhwa has shown inventiveness in introducing many initiatives in the past years to build up the capacity of related stakeholders for ensuring better response in emergencies. Timely and efficient coordination helps all the relevant actors to achieve a more effective result. It is recommended that an effective coordination mechanism be established – both at the provincial and district levels – as a part of the disaster management plan to build capacity of related bodies from grass root level. The proposed coordination mechanism will also ensure integrated response for better utilization of the available resources.

5.2.4 Establishment of Divisional Disaster Management Units

Although Divisional Commissioners supervise relief and rehabilitation activities within the jurisdiction of their respective divisions, this tier is missing in the overarching framework of disaster management. A Divisional tier in disaster management can help coordinate relief activities more efficiently through sharing of capacities and resources. Legal requirements for introducing the divisional tier of disaster management through necessary amendments in NDM Act 2010 also need to be addressed.

5.2.5 District Disaster Management Units & Effective Role of PEOC

PEOC has been established in 2012 with the aim of playing a vital role between provincial government and all district administrations. Since its inception, the PEOC is performing its coordination and communication

role effectively in pre, post and during disaster situations. PEOC is fully equipped with latest IT equipment and also provides 24/7 service. The 24/7 service at PEOC has strengthened the early warning system and improved the disaster response capacities of stakeholders through a centralized command and control. PEOC has developed reporting standard operation procedures, data formats with age and gender disaggregation information, emergency call center and other initiatives. The need for capacity development at district level for observing SOPs and to report according to the approved formats for a better response mechanism has been identified. PEOC is also engaged in the development of an early warning system android app for the public, thus minimizing the impact of any future disasters.

5.2.6 Coordinated and Systematic Damage and Needs Assessment Mechanism

As a post disaster activity, Damages & Needs Assessment (DNA) must be undertaken on scientific grounds by technical teams including engineers, as the process entails huge financial implications for the government. The present mechanism of DNA by the revenue staff has a number of issues, resulting in a strong need for adoption of a new mechanism. Furthermore, crop damages are usually not compensated by the government. This is an injustice to farmers. A judicious and precise system for crop damage assessments and subsequent compensation grants needs to be developed and implemented.

5.2.7 Strengthening first responders capacity development

First responders serve multiple roles in disasters management. At present, local communities, district administration, police, military, civil defense volunteers, and rescue teams are the first responders for dealing with emergency situations. Based on experience, it is important that the data of Civil Defense volunteers be updated. These volunteers from local communities are the primary source of rescue and relief. Civil Defense volunteers need to be provided with further training in handling emergencies, rescue operations, and provision of essential relief in order to fill the existing void in human resource both at the district and community levels. PDMA has conducted community based disaster risk management (CBDRM) trainings in the past and now aims to continue the practice more effectively in future. Rescue 1122 is a specialized force to handle medical emergencies, traffic accidents, fire-fighting search and rescue operations. Currently Rescue 1122 is working in Peshawar and Mardan but it is recommended that the service be extended to other districts for improved response.

5.3 Implementation & Enforcement Related Recommendations

5.3.1 Observance of Building codes

Most of the deaths, injuries, and property losses in disasters have been in the remote hilly areas where building resilience to earthquake is at minimum. It is imperative to initiate a mass campaign for pursuance of building codes. In absence of a mechanism for implementation of building codes, losses of life and property will be a continued saga. It was observed that mostly all the buildings collapsed due to faulty structures, and could not withstand even the moderate speed winds. Houses in remote areas are constructed without proper town planning or plan approvals. Nevertheless, enforcing of building codes is a big challenge in rural areas, yet some sort of legislation, enforcement or extension of existing building codes to rural areas, can prevent future losses. PDMA has signed a Memorandum of Understanding with the Earthquake Engineering Centre, University of Engineering and Technology Peshawar for establishing a formal mechanism to enhance capacity development of institutions for earthquake resilient buildings.

5.3.2 Retrofitting of Existing Schools and Other Public Buildings

During disasters especially earthquakes, school children are the ultimate sufferers. Although, it was fortunate that the major earthquake on 26th October struck at 14:09 hrs i.e. just after the school had finished for the day, sparing thousands of young lives in 1460 destroyed schools of Malakand and Hazara Divisions. There is a dire need to retrofit the non-resilient public buildings – especially schools and colleges –to safeguard our future generation from potential catastrophes. Elementary and Secondary Education, Higher Education and other related government departments should immediately be required to produce strategies in this regard. Further, Independent Monitoring Units both in the Education and Health Departments can also be tasked to undertake a rapid structural assessment of educational institutions through hiring of appropriately qualified and credentialed consultants.

5.3.3 Town Planning and Municipal Facilities

During flash floods and windstorms, billboards and trees falling over roads and pathways damaged both life and property. Blocked drains and defective sewerage systems, both in the urban and rural areas, have resulted in flood-like situations in busy locations. In addition to this, the practice of throwing garbage into main nullahs and canals without periodic cleaning by the relevant municipal authorities has also caused spill-over of rain water which affected people and their dwelling units. All relevant agencies are required to undertake corrective measures so as to improve the sewerage system of cities and towns in the province. Public awareness campaigns on proper disposal of garbage are also required. Further, TMAs should enforce their building laws and regulations.

5.3.4 Removal of Encroachments

Encroachment in waterways and other public properties is also causing a huge problem during floods. People encroaching upon waterways and seasonal flow areas by building houses, shops and other structures, are often affected during flash floods from hill torrents. In addition to this, they also claim compensations of different types from the government. This causes double loss to public exchequer. Irrigation, Local Government and other relevant government agencies, should specifically identify and make all efforts for removal of encroachments to avoid further infrastructural and financial losses to the Government and law-abiding citizens.

Overview of
Natural
Disasters
2015

Impact, Response and Managing Risks

Provincial Disaster Management Authority, Government of Khyber Pakhtunkhwa

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