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Public Spending on Disaster Risk Management in Pakistan:

Trends, Issues and Implications

June 2010
Islamabad

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by

Institute of Social and Policy Sciences
(I-SAPS)

Scope & Methodology of the Study

- The study covers the period from 1998-99 to 2007-08.
- Multiple sources of data including conventional literature on disaster risk management, evaluations and assessments of the government of Pakistan, UNDP and other donor agencies.
- Budget books of the federal, provincial and district governments covering said period
- expenditure data of government organizations including ERRA, Economic Affairs Division, and Finance Department of Charsadda district.
- The analytical design to capture the budgetary allocations and spending at each of the three tiers
- The analysis of spending data is broadly divided into two broad categories:
  - preparedness (pre-disaster activities aimed at mitigation and contingency planning), and
  - response (post-disaster activities including relief, recovery and reconstruction).

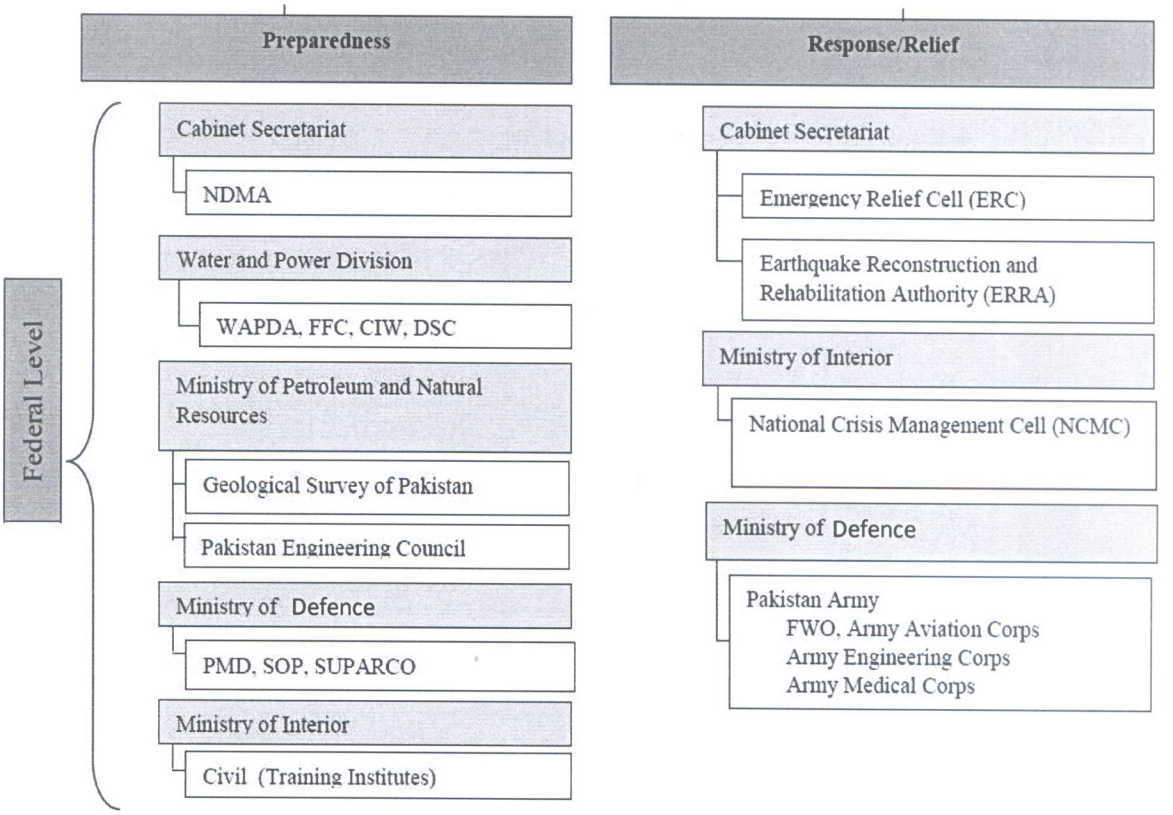
Objectives of Study

- Pattern of public spending on DRM in Pakistan.
- Gaps and issues in budgetary priorities and their implications.
- Analysis of disaster-related expenditure of the federal government, all provincial governments and AJK over the past decade.
- A case study of Charsadda district.
- Government expenditure on preparedness and response.
- Explore ways in which public spending on DRM could be made more effective.

Limitations of the Study

- Does not present a historical analysis of public spending on DRM because no previous data was available.
- Does not segregate the expenditure for all phases of DM
- Does not provide a national picture, as it covers case study of only one district.
- DRM expenditure of FATA and Gilgit-Baltistan is accounted for dealing with the federal government due to non-availability of segregated data for these two areas.

Institutional Arrangement of Budget Allocation for DRM



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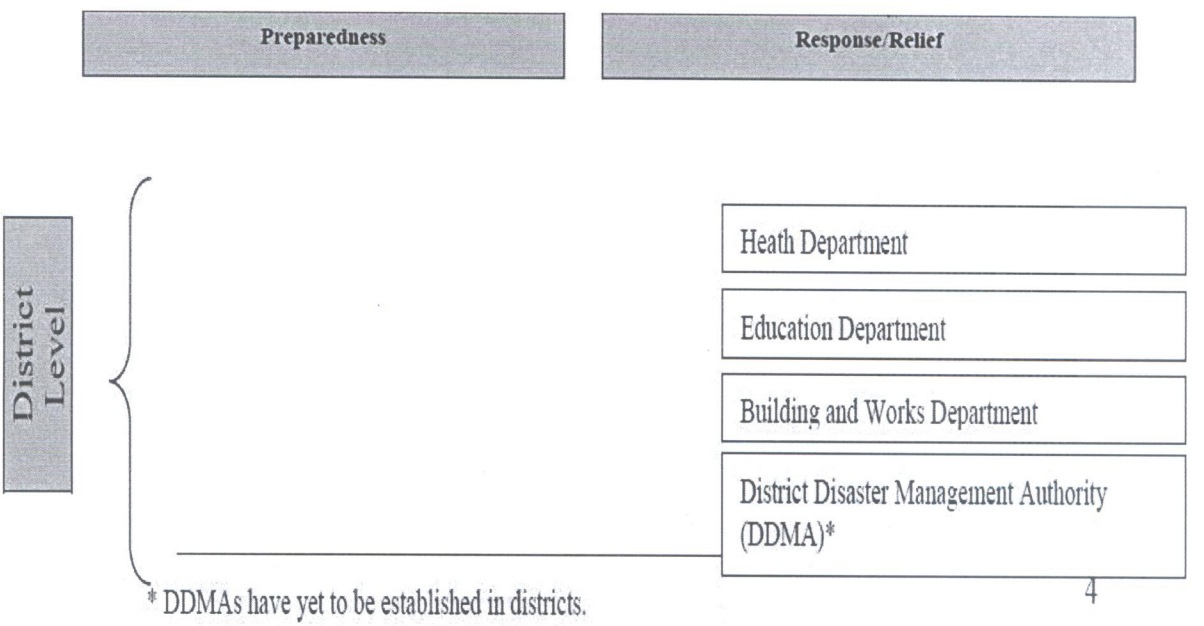

* DDMAs have yet to be established in districts.

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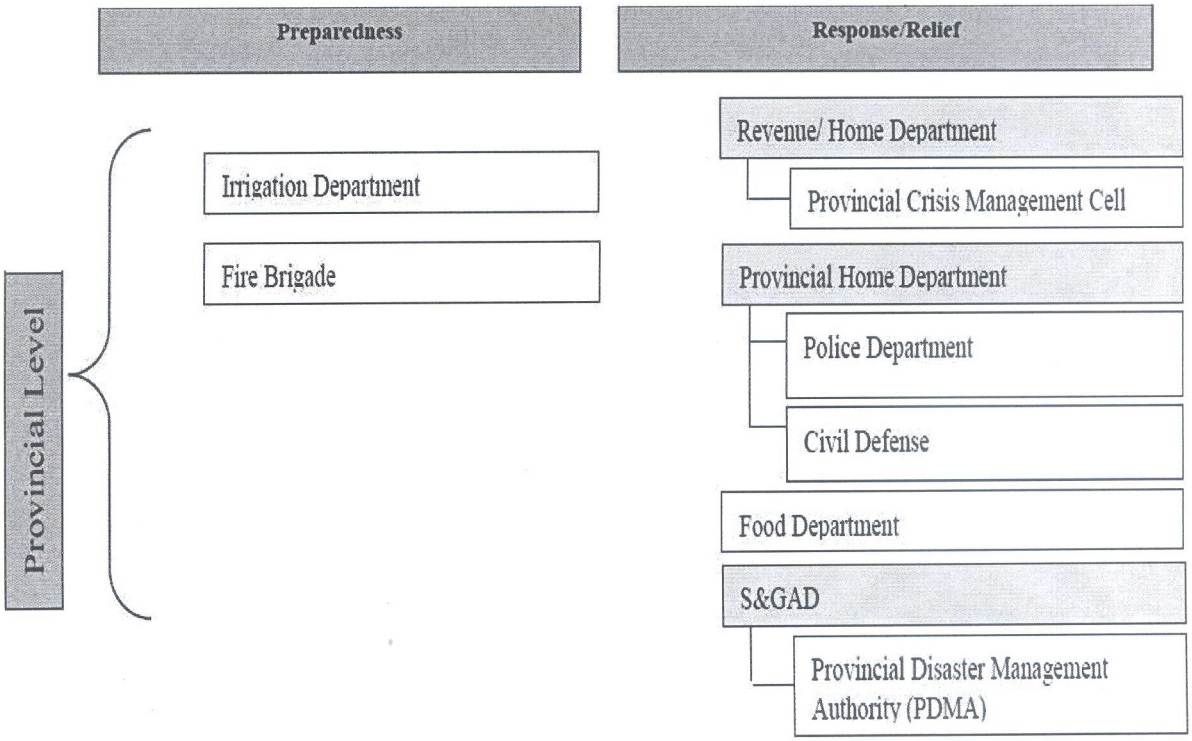


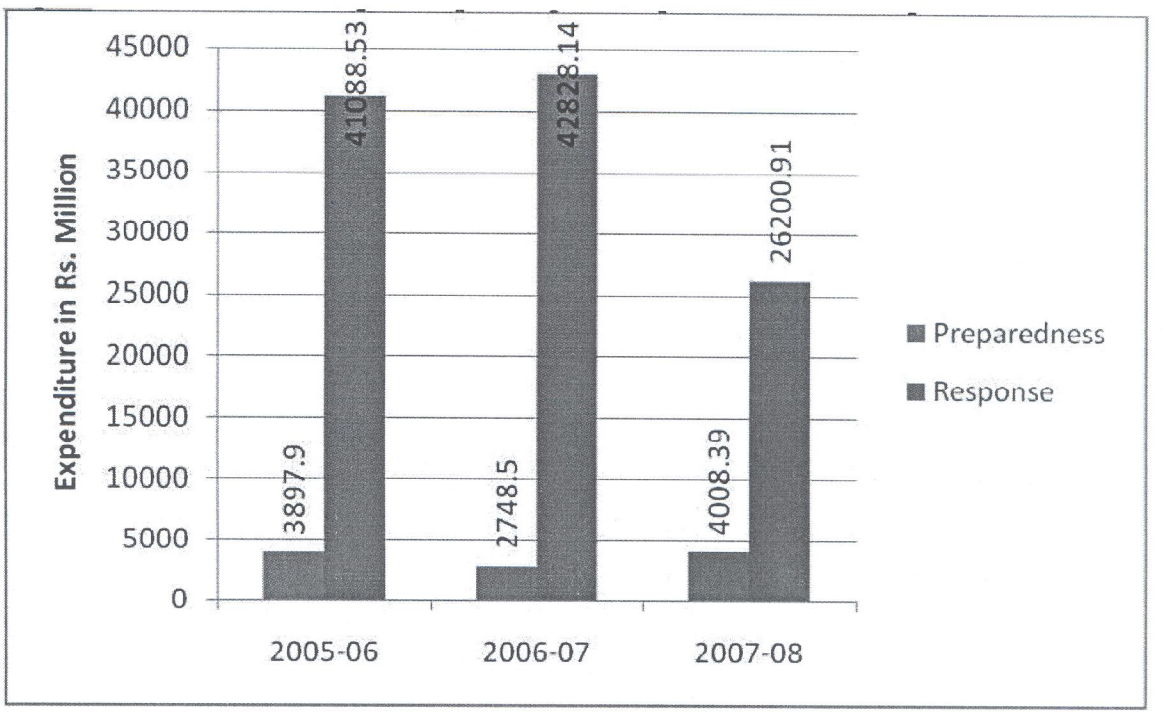
Analysis of Public Spending on DRM of Federal Government (Rs million)

Year	Total	Current		Development		Current-Development Expenditure Ratio
		Expenditure	Change over previous year (%)	Expenditure	Change over previous year (%)	
1998-99	1132.04	357.04		775.00		1:2.2
1999-00	2607.89	1,855.39	419.65	752.50	-2.90	2.5:1
2000-01	4326.58	3,151.58	69.86	1,175.00	56.15	2.9:1
2001-02	11896.81	1,706.09	-45.87	10,190.72	767.30	6:1
2002-03	7949.78	1,768.78	3.67	6,181.00	-39.35	1:3.5
2003-04	3122.24	1,772.31	0.20	1,349.93	-78.16	1.3:1
2004-05	3702.37	2,476.87	39.75	1,225.50	-9.22	2:1
2005-06	44986.43	3,443.57	39.03	41,542.86	3289.88	1:12
2006-07	45576.64	2,740.18	-20.43	42,836.47	3.11	1:15.6
2007-08	30209.3	7,328.17	167.43	22,881.13	-46.58	1:3
Total	**155,510.08**	**26,599.98**	-	**128,910.1**	-	**1:5**

Expenditure of Federal Government on Preparedness and Response (Rs. Million)

Year	Total	Preparedness		Response		Preparedness-Response Ratio
		Expenditure	Change over previous year (%)	Expenditure	Change over previous year (%)	
1998-99	1132.04	791.73	-	340.31	-	2.3:1
1999-00	2607.89	771.92	-2.50	1835.97	439.50	1:2.4
2000-01	4326.58	1194.85	54.79	3131.73	70.58	1:2.6
2001-02	11896.81	210.67	-82.37	11686.14	273.15	1:55.5
2002-03	7949.78	203.18	-3.56	7746.6	-33.71	1:38
2003-04	3122.24	875.43	330.86	2246.81	-71.00	1:2.6
2004-05	3702.37	1254.96	43.35	2447.41	8.93	1:2
2005-06	44986.43	3897.9	210.60	41088.53	1578.86	1:10.5
2006-07	45576.64	2748.5	-29.49	42828.14	4.23	1:15.6
2007-08	30209.3	4008.39	45.84	26200.91	-38.82	1:6.5
Total	**155,510.08**	**15,957.53**		**139,552.55**	-	**1:9**

Post-earthquake Spending on Preparedness and Response



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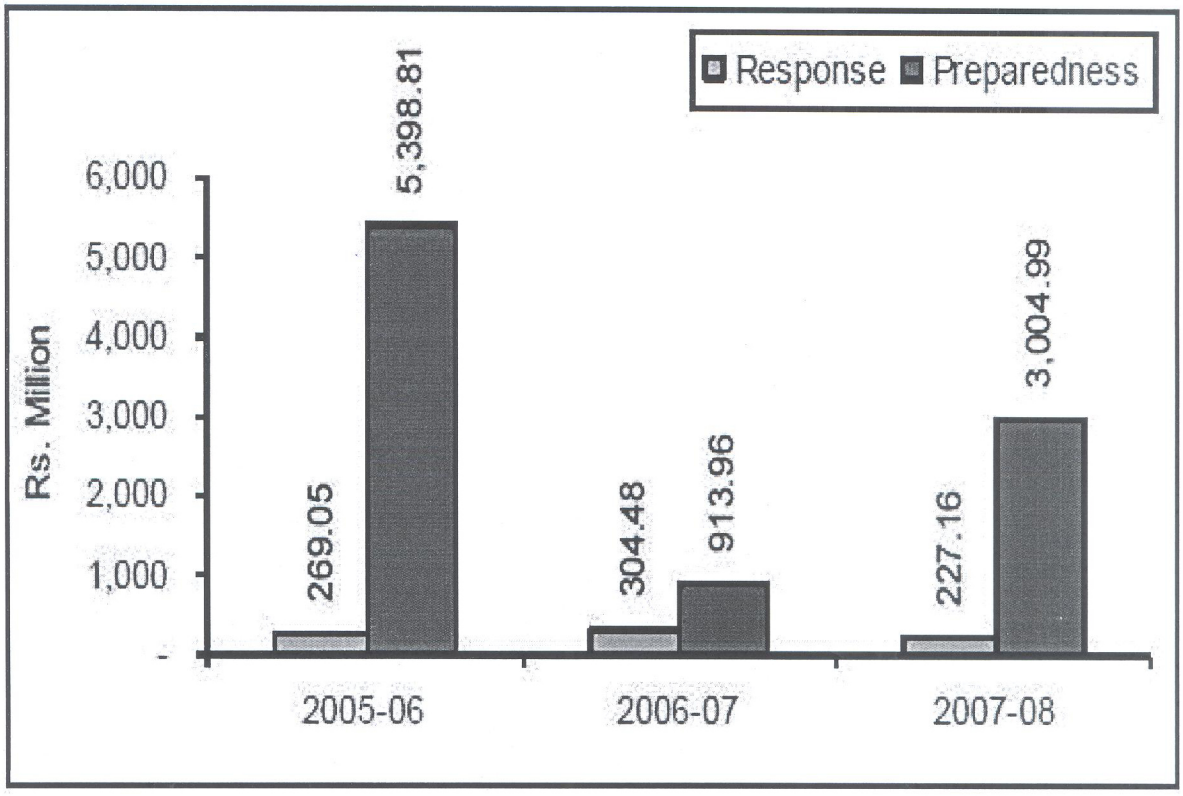
Expenditure on Disaster Preparedness and Response (Rs Million)

Punjab

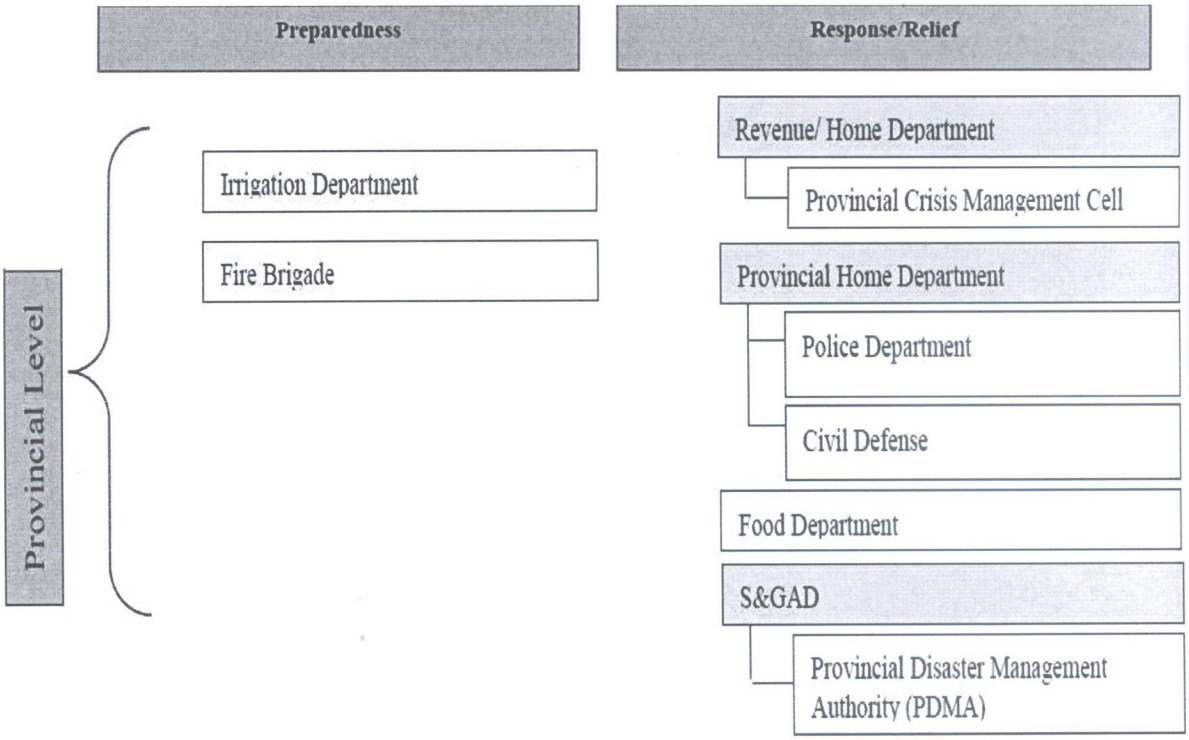
Year	Total	Response		Preparedness		Response-Preparedness
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	505.74	65.14		440.60		1:7
1999-00	382.50	209.63	221.82	172.87	-60.76	1:1
2000-01	1,783.41	170.14	-18.84	1,613.27	833.21	1:9
2001-02	1,425.08	122.78	-27.84	1,302.30	-19.28	1:11
2002-03	1,490.90	22.75	-81.47	1,468.15	12.74	1:65
2003-04	4,258.64	52.28	129.81	4,206.35	186.51	1:80
2004-05	3,578.97	544.58	941.58	3,034.39	-27.86	1:6
2005-06	5,667.86	269.05	-50.59	5,398.81	77.92	1:20
2006-07	1,218.43	304.48	13.17	913.96	-83.07	1:3
2007-08	3,232.15	227.16	-25.39	3,004.99	228.79	1:13
Total	**23,543.68**	**1,987.98**	-	**21,555.70**	-	**1:11**

Post-earthquake Spending on Preparedness and Response

Punjab



Institutional Arrangement of Budget Allocation for DRM



Analysis of Public Spending on DRM of Federal Government (Rs million)

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2002-03	7949.78	1,768.78	3.67	6,181.00	-39.35	1:3.5
2003-04	3122.24	1,772.31	0.20	1,349.93	-78.16	1.3:1
2004-05	3702.37	2,476.87	39.75	1,225.50	-9.22	2:1
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Total	**155,510.08**	**26,599.98**	-	**128,910.1**	-	**1:5**

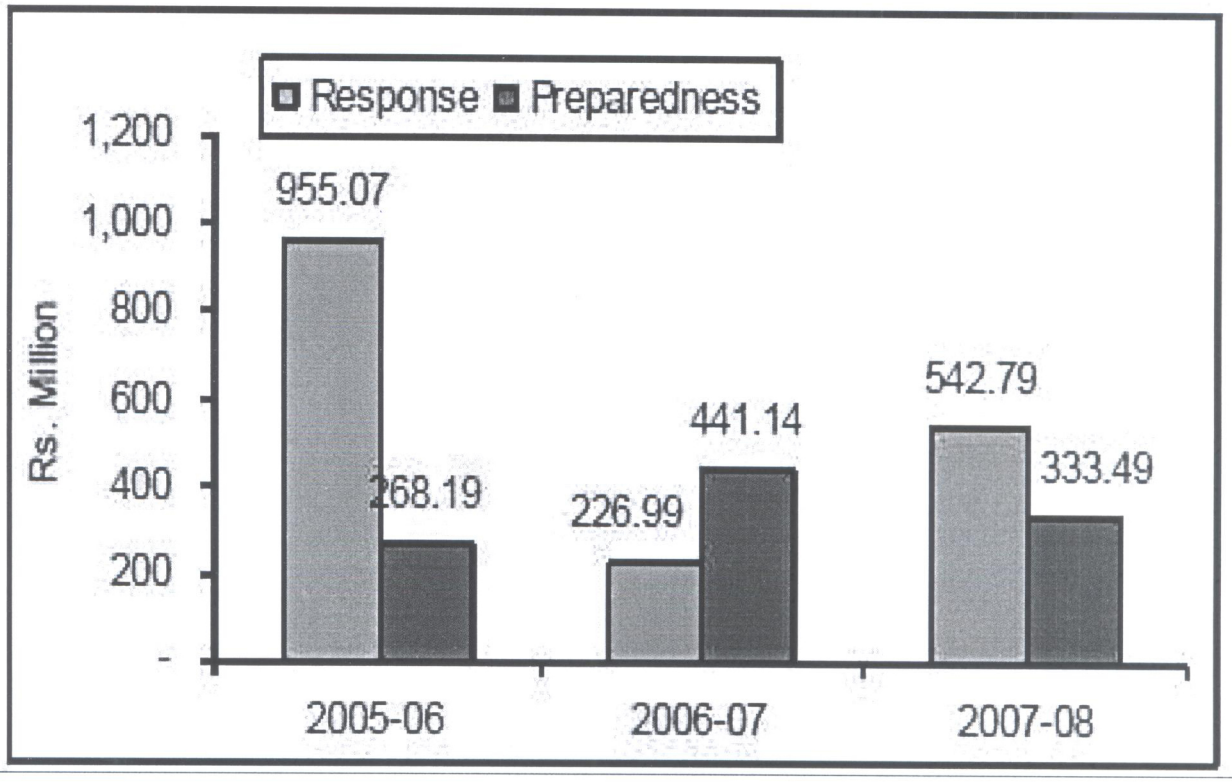
Spending on Disaster Preparedness and Response (Rs Million)

Sindh

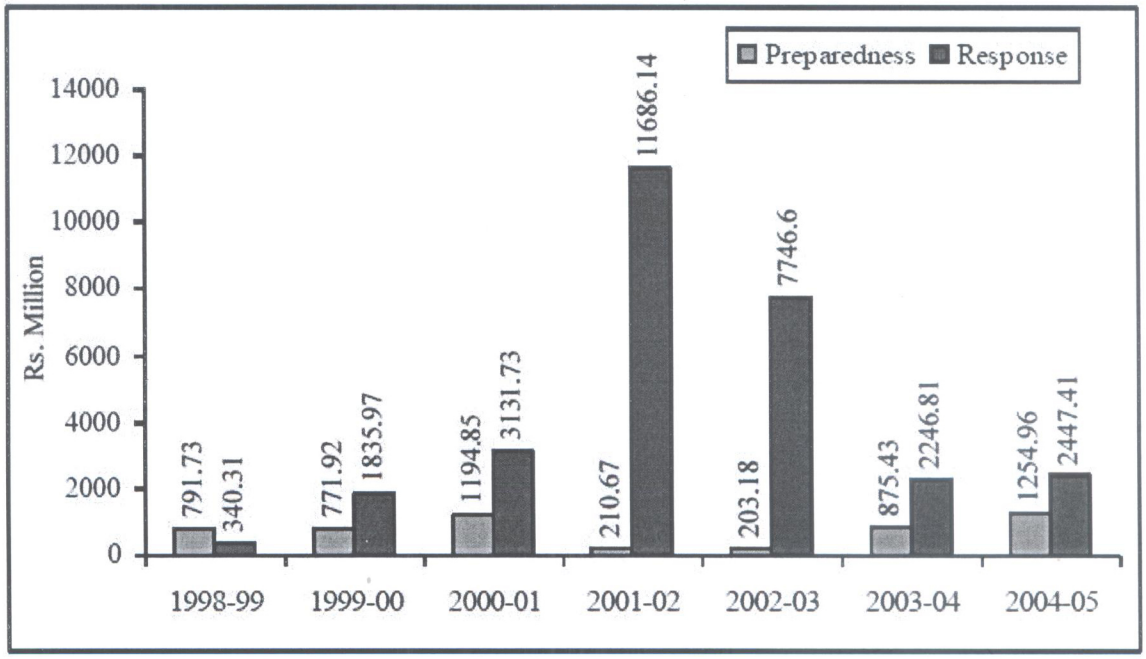
Year	Total	Response		Preparedness		Response-Preparedness
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	396.69	19.77	-	376.92	-	1:19
1999-00	293.74	64.28	225.17	229.46	-39.12	1:4
2000-01	467.55	452.24	603.56	15.31	-93.33	30:1
2001-02	43.72	15.60	-96.55	28.12	83.71	1:2
2002-03	406.34	402.37	2479.36	3.97	-85.89	101:1
2003-04	459.09	431.99	7.36	27.10	582.99	16:1
2004-05	1296.92	1,144.23	164.87	152.69	463.34	7:1
2005-06	1223.26	955.07	-16.53	268.19	75.64	4:1
2006-07	668.12	226.99	-76.23	441.14	64.49	1:2
2007-08	876.28	542.79	139.13	333.49	-24.40	2:1
Total	**6,131.71**	**4,255.32**		**1,876.39**		**2:1**

Post-earthquake Spending on Preparedness and Response

Sindh



Pre-earthquake Spending on Preparedness and Response



Analysis of Public Spending on DRM at Provincial Level (Rs million)

Punjab

Year	Total	Current		Development		Current-Development Ratio
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	505.74	98.66		407.083		1:4
1999-00	382.50	245.29	148.63	137.213	-66.29	2:1
2000-01	1783.41	597.61	143.63	1185.798	764.20	1:2
2001-02	1425.08	1,095.28	83.28	329.804	-72.19	3:1
2002-03	1490.90	742.06	-32.25	748.84	127.06	1:1
2003-04	4258.64	794.88	7.12	3463.753	362.55	1:4
2004-05	3578.97	540.60	-31.99	3038.369	-12.28	1:6
2005-06	5667.86	1,104.13	104.24	4,563.73	50.20	1:4
2006-07	1218.43	327.77	-70.31	890.67	-80.48	1:3
2007-08	3232.15	1,182.82	260.87	2,049.33	130.09	1:2
Total	**23543.68**	**6,729.10**	-	**16,814.58**	-	**1:3**

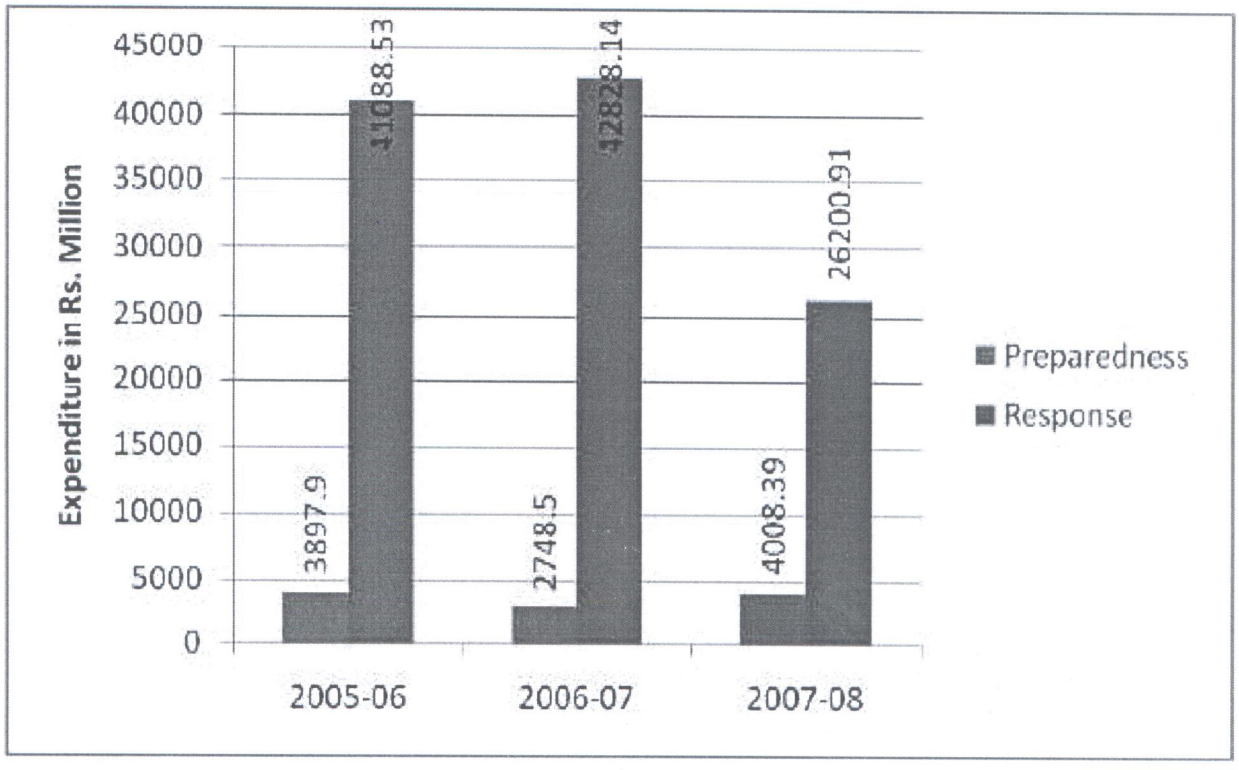
Spending on Disaster Preparedness and Response (Rs Million)

Khyber Pakhtunkhwa

Year	Total	Preparedness		Response		Preparedness-Response Ratio
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	572.81	139.75		433.06		1:3.1
1999-00	437.63	127.86	-8.50	309.77	-28.47	1:2.4
2000-01	436.68	121.27	-5.16	315.41	1.82	1:2.6
2001-02	305.69	81.81	-32.54	223.88	-29.02	1:2.7
2002-03	1,225.20	56.12	-31.41	1,169.08	422.20	1:20.8
2003-04	920.15	30.81	-45.10	889.34	-23.93	1:28.9
2004-05	809.51	119.98	289.45	689.53	-22.47	1:5.7
2005-06	13,758.72	108.66	-9.43	13,650.06	1879.61	1:125.6
2006-07	2,412.15	89.60	-17.54	2,322.55	-82.99	1:25.9
2007-08	1,688.67	31.35	-65.01	1,657.32	-28.64	1:52.9
Total	**22,607.89**	**907.21**	-	**21,700.69**	-	**1:24**

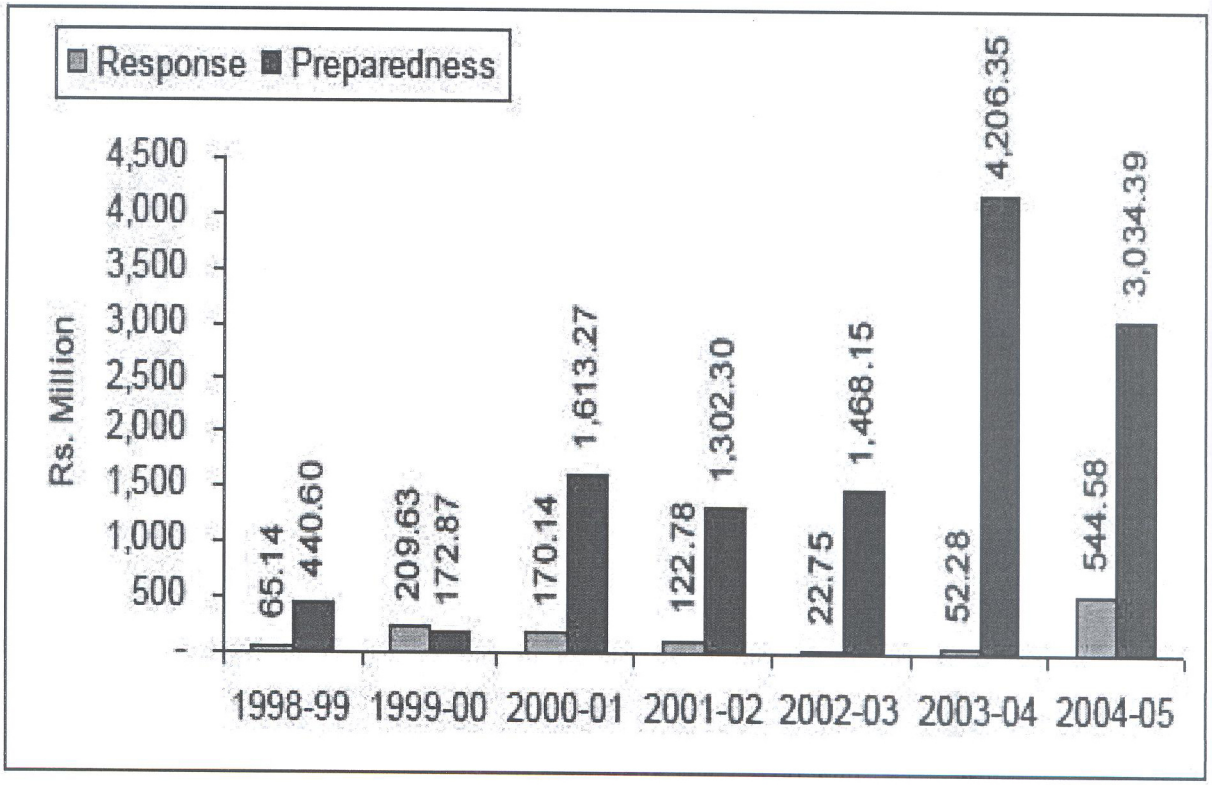
Post-earthquake Spending on Preparedness and Response

Khyber Pakhtunkhwa



Pre-earthquake Spending on Preparedness and Response

Punjab



Analysis of Public Spending on DRM at Provincial Level (Rs Million)

Sindh

Year	Total	Current		Development		Current-Development Ratio
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	396.69	16.23		380.46		1:23
1999-00	293.74	19.09	17.66	274.64	-27.81	1:12
2000-01	467.55	467.55	2348.87	-*	-100.00	
2001-02	43.72	30.72	-93.43	13.00		2:1
2002-03	406.34	406.34	1222.64	-*	-100.00	
2003-04	459.09	217.18	-46.55	241.91		1:1
2004-05	1296.92	543.41	150.21	753.51	211.48	1:1
2005-06	1223.26	844.66	55.44	378.60	-49.75	2:1
2006-07	668.12	227.82	-73.03	440.31	16.30	1:2
2007-08	876.28	550.99	141.86	325.29	-26.12	2:1
Total	**6,131.71**	**3,323.99**		**2,807.72**		**1.2:1**

*Data not available

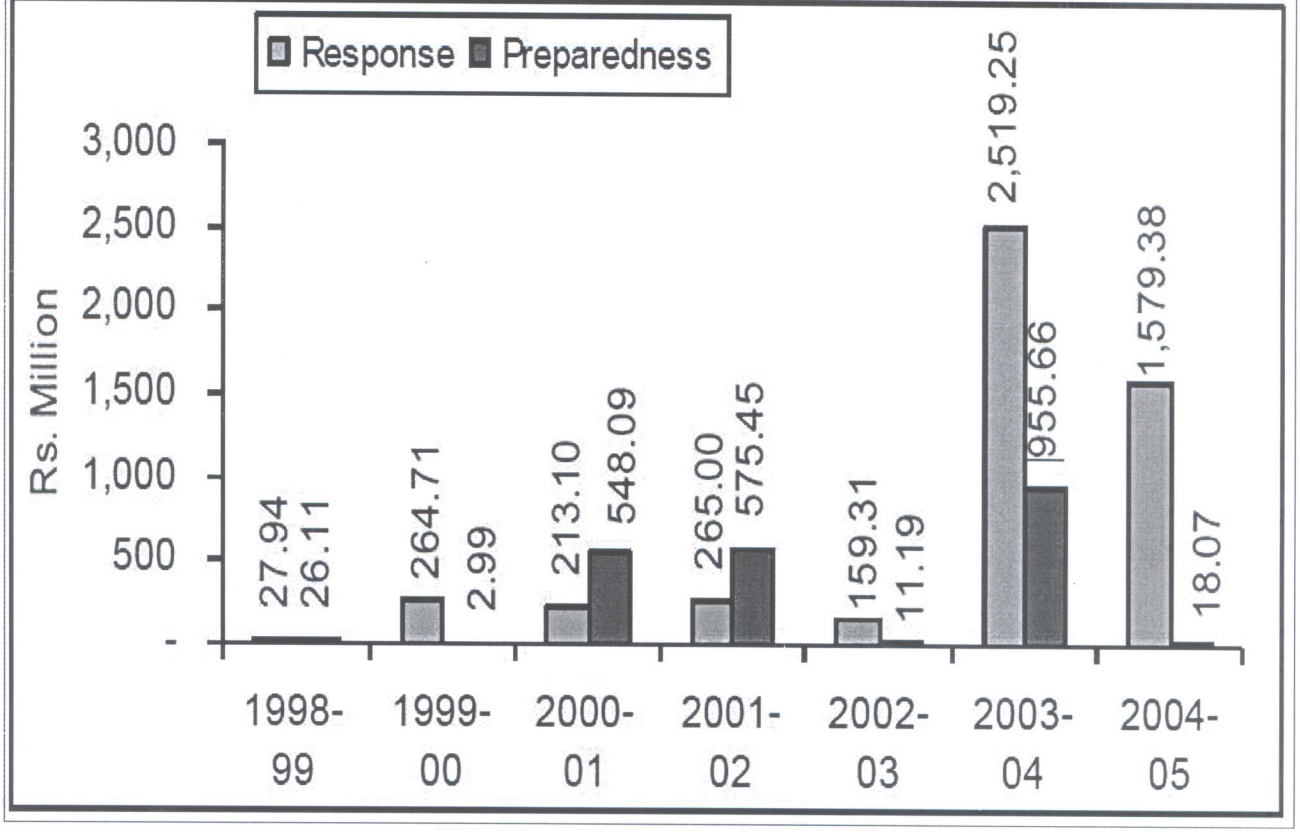
Analysis of Public Spending on DRM at Provincial Level (Rs Million)

Balochistan

Year	Total	Current		Development		Current-Development Ratio
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	54.05	8.17		45.89		1:6
1999-00	267.70	267.70	3177.76	0.00	-100.00	1:0
2000-01	761.18	66.34	-75.22	694.84	694	1:10
2001-02	840.45	18.44	-72.20	822.01	18.30	1:45
2002-03	170.49	26.19	41.98	144.31	-82.44	1:6
2003-04	3474.91	30.39	16.06	3444.52	2286.97	1:113
2004-05	1597.45	83.07	173.32	1514.38	-56.04	1:18
2005-06	613.93	44.02	-47.01	569.91	-62.37	1:13
2006-07	124.75	27.94	-36.52	96.81	-83.01	1:3
2007-08	299.78	56.23	101.22	243.55	151.58	1:4
Total	**8,204.69**	**628.50**		**7,576.19**		**1:12**

Pre-earthquake Expenditure on Preparedness and Response

Balochistan



Pre-earthquake Spending on Preparedness and Response

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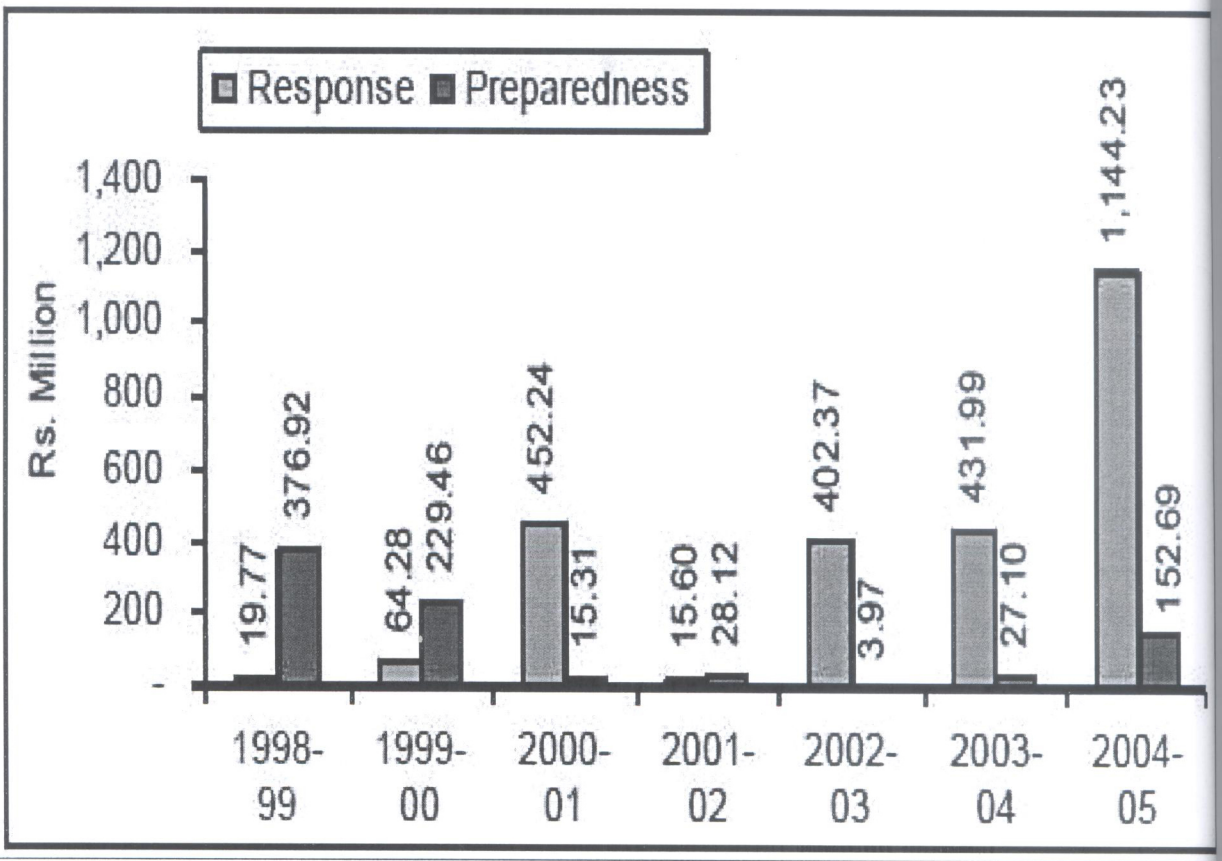


Analysis of Public Spending on DRM (Rs Million)

Khyber Pakhtunkhwa

Year	Total	Current		Development		Current-Development Ratio
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	572.81	494.82		77.99		6.3:1
1999-00	437.63	427.21	-13.66	10.42	-86.64	40.9:1
2000-01	436.68	402.81	-5.71	33.87	225.10	11.9:1
2001-02	305.69	288.51	-28.37	17.17	-49.29	16.8:1
2002-03	1,225.20	233.35	-19.12	991.85	5675.28	1:4.3
2003-04	920.15	168.63	-27.74	751.52	-24.23	1:4.5
2004-05	809.51	346.06	105.22	463.45	-38.33	1:1.3
2005-06	13,758.72	12,620.85	3546.99	1,137.88	145.52	11.1: 1
2006-07	2,412.15	1,246.55	-90.12	1,165.60	2.44	1.1:1
2007-08	1,688.67	613.65	-50.77	1,075.01	-7.77	1:1.8
Total	**22,607.9**	**16,883.14**	-	**5,724.76**	-	**2.9:1**

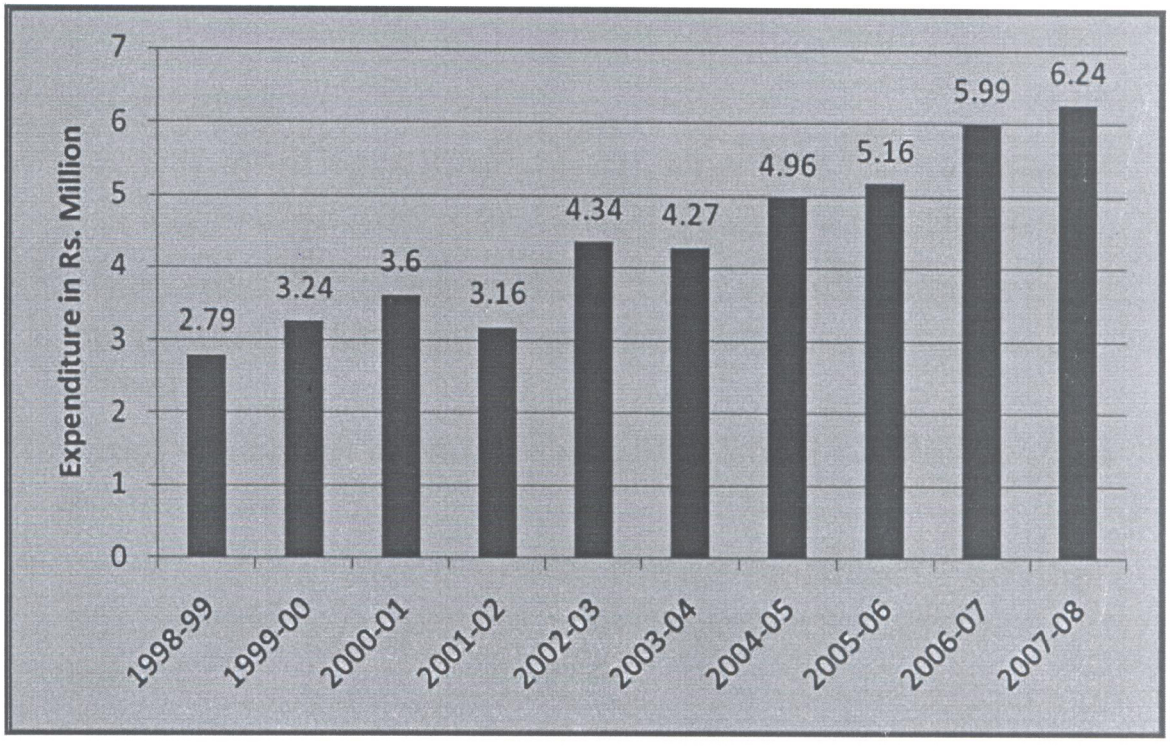
Analysis of Public Spending on DRM at District Level (Rs)

Charsadda

Year	Category	Head	Expenditure
2008-09	Salary	Fire Brigade In-charge	148,200
		3 Drivers	304,668
		6 Helpers	616,032
	Sub-total salary		1,068,900
	Non-salary	POL Charges	1,200,000
		Repair of transport	300,000
		Others	150,000
	Sub-total non-salary		1,650,000
		Total	**2,718,900**

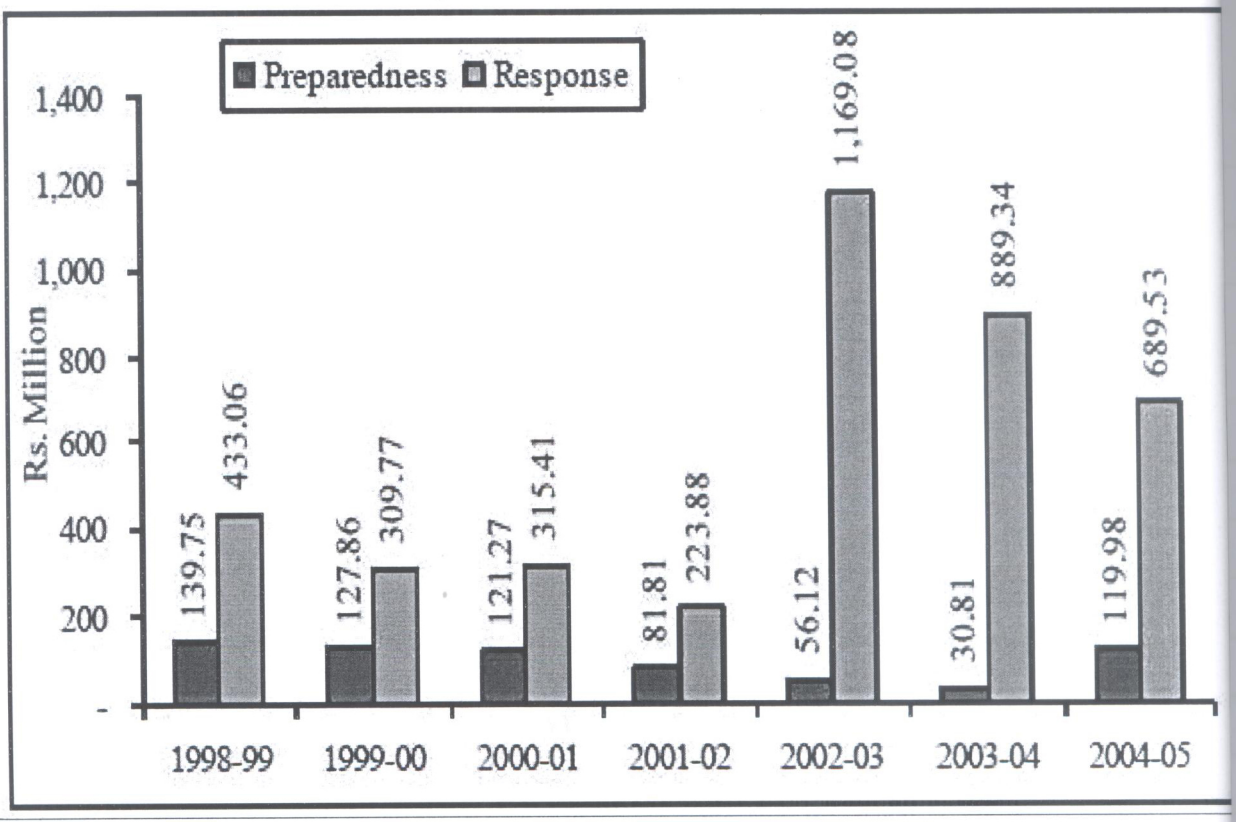
Source: Finance Department, Charsadda

Analysis of Public Spending on DRM in **FATA**
(Current Expenditure on Civil Defence)



Pre-earthquake Spending on Preparedness and Response

Khyber Pakhtunkhwa



Allocations and Spending of Police Department (Rs. Million)

Khyber Pakhtunkhwa

Year	Allocations	Spending	% increase
2006-07	4.53	5.02	14
2007-08	5.14	6.61	32
2008-09	6.56	10.43	58

Summary & Conclusions

Federal level:

- Distribution of funds between preparedness and response remains inadequate at Federal level (10:90)
- The cost of DRM is rising due to occurrence of major disasters
- Costs of development projects exceeded the cost of current exp by five times, however, disaster preparedness remains grossly ignored
- No separate budget line available in key Organizations for spending on relief and other DRM activities
- Most of the expenditure incurred by ERRA & Cabinet Division on response.
- Largest spending on earthquake (Rs.97.46 billion) followed by drought (Rs.26.44 billion) and floods (Rs.9.75 billion)

Summary & Conclusions

District Level

- District-level spending statistics on DRM activities are not separated and maintained by district authorities.
- Charsadda district govt spendings were more on flood protection projects and that too were response oriented.
- Tangi – a tehsil of the Charsadda – had no fire brigade department.
- Charsadda district is one of the 12 districts of Khyber Pakhtunkhwa where no Civil Defence department exists

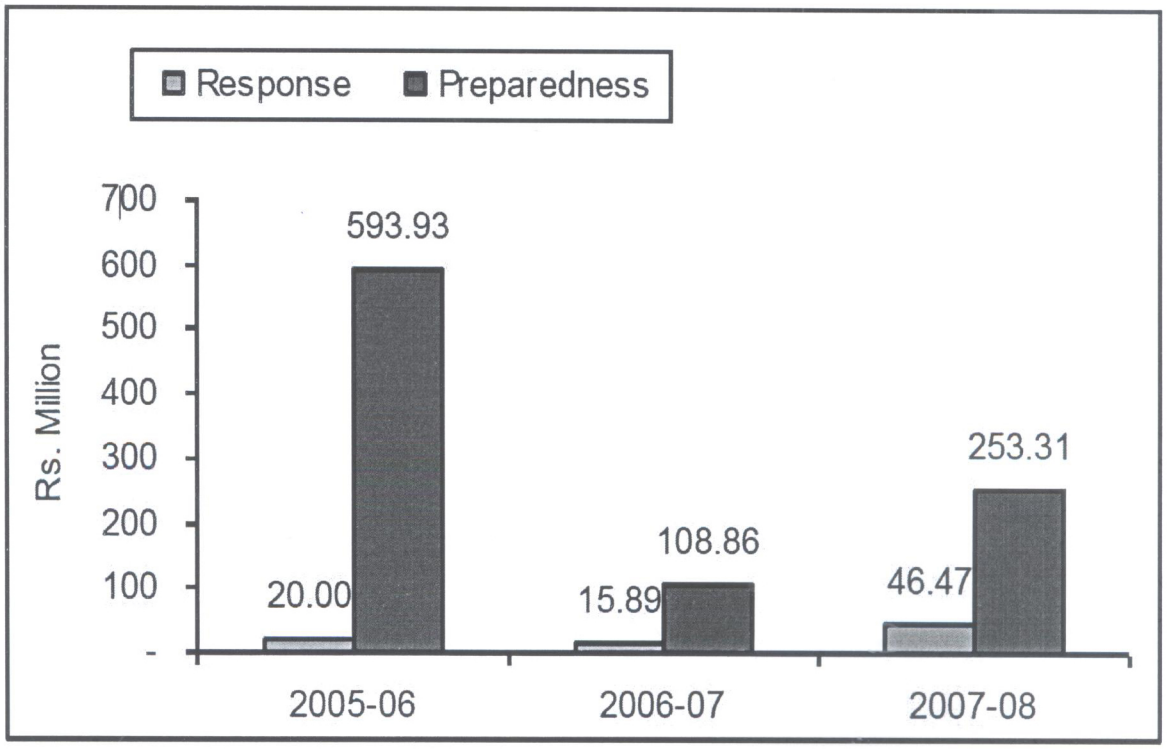
Expenditure on Disaster Preparedness and Response (Rs. Million)

Balochistan

Year	Total	Response		Preparedness		Response-Preparedness
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	54.05	27.94		26.11		1:1
1999-00	267.70	264.71	847.32	2.99	-88.53	88:1
2000-01	761.18	213.10	-19.50	548.09	18206.86	1:3
2001-02	840.45	265.00	24.36	575.45	4.99	1:2
2002-03	170.49	159.31	-39.88	11.19	-98.06	14:1
2003-04	3474.91	2519.25	1481.40	955.66	8443.02	3:1
2004-05	1597.45	1579.38	-37.31	18.07	-98.11	87:1
2005-06	613.93	20.00	-98.73	593.93	3187.60	1:30
2006-07	124.75	15.89	-20.55	108.86	-81.67	1:7
2007-08	299.78	46.47	192.44	253.31	132.69	1:5
Total	**8,204.69**	**5,111.04**	-	**3,093.65**	-	**2:1**

Post-earthquake Expenditure on Preparedness and Response

Balochistan



Summary & Conclusions

Provincial level

- Imbalance between spending on preparedness and response is even higher at the provincial level
- Reactive approach to disaster management dominates the budgetary decisions of the provincial government
- In case of Punjab the pre-earthquake period spending on preparedness was ten times higher than that on response. While for the post-earthquake period, spending on preparedness was more than 12 times that on response.
- In KP most of preparedness work focus only floods, drought and fire protection, besides huge spending on compensation to bomb blasts victims.
- Political will for making Civil Defence effective does not appear strong from the perspective of resource allocation.
- AJK regional conflict in the form of Kashmir dispute stands out as a major factor in AJK"s DRM expenditure.

Overall Summary

- Considerable resource allocation on DRM with significant variation of expenditure pattern.
- None of the pattern conforms to the new institutional and legal framework for the following reasons:
  - Most of the chunk goes to response leaving preparedness grossly neglected.
  - Exp remain concentrated on a few types of disasters rather than focusing on all types.

Allocations for Peshawar Flood Division (Rs. Million)

Charsadda

Year	Provincial ADP Allocation	Federal PSDP	Total
1998-99	10.10	0	10.10
1999-00	4.70	0	4.70
2000-01	25.65	0	25.65
2001-02	10.36	4.15	14.51
2002-03	1.46	5.18	6.64
2003-04	19.66	2.14	21.80
2004-05	3.54	36.79	40.33
2005-06	11.00	42.78	53.78
2006-07	50.87	43.36	94.23
2007-08	52.39	57.85	110.24
Total	**189.73**	**192.25**	**381.98**

Analysis of Public Spending on DRM at State Level (Rs Million)

(AJK)

Year	Grants Refugees
1998-99	77.00
1999-00	77.00
2000-01	80.00
2001-02	85.00
2002-03	105.00
2003-04	115.00
2004-05	122.00
2005-06	130.00
2006-07	138.00
2007-08	145.00
Total	**1,074.00**

Recommendations

- There is need to align the allocation and expenditure of resources in line with the new DRM policies and structures adopted in the post EQ and post Flood scenario.

- NDMA being the key agency responsible for disaster preparedness and response, requires huge resources (separate budget line) which must be utilized to build DRR capacities and response.

- Need to rationalize budgetary allocations according to hazard- and disaster-specific preparedness and response needs.

Thank You

Public Spending on Disaster Risk Management in Pakistan:

Trends, Issues and Implications

June 2010
Islamabad

Public Spending on Disaster Risk Management in Pakistan: Trends, Issues and Implications

This study has been produced for National Disaster Management Authority (NDMA) by Institute of Social and Policy Sciences (I-SAPS) with the support of United Nations Development Program (UNDP).

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Acronyms

ADB	Asian Development Bank
AJK	Azad Jammu and Kashmir
BCC	Budget Call Circular
CIW	Commission for Indus Waters
DDMA	District Disaster Management Authority
DERA	Drought Emergency Relief Assistance
DFID	Department for International Development
DRM	Disaster Risk Management
DSC	Dams Safety Council
EAD	Economic Affairs Division
ERC	Emergency Relief Cell
ERRA	Earthquake Reconstruction and Rehabilitation Authority
FATA	Federally Administered Tribal Areas
FFC	Federal Flood Commission
FWO	Frontier Works Organization
IDA	International Donors Agency
I-SAPS	Institute of Social and Policy Sciences
LGO	Local Government Ordinance
OGDC	Oil and Gas Development Company
NCMC	National Crisis Management Cell
NDMA	National Disaster Management Authority
NDMC	National Disaster Management Commission
NDMO	National Disaster Management Ordinance

NVM	National Volunteers Movement
KP	Khyber Pakhtunkhwa
PDMA	Provincial Disaster Management Authority
PERA	Provincial Earthquake Rehabilitation Authority
PID	Provincial Irrigation Department
PMD	Pakistan Meteorological Department
PSDP	Public Sector Development Program
PSO	Pakistan State Oil
PTCL	Pakistan Telecommunication Limited
SOP	Survey of Pakistan
UNDP	United Nations Development Program
UNHCR	United Nations High Commission for Refugees
WAPDA	Water and Power Development Authority
WB	World Bank

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Chapter 1

Introduction

1.1 Background and Rationale

This study examines the pattern of public spending[1] on disaster risk management (DRM) in Pakistan, identifies gaps and issues in budgetary priorities, and discusses their implications. Specifically, it analyzes disaster-related expenditure of the federal government, all provincial governments and Azad Jammu and Kashmir (AJK) over the past decade (i.e. 1998-99 to 2007-08).[2] In order to collect some evidence about issues in DRM expenditure of the district governments, a case study of Charsadda district has been included in the analysis. Methodologically, the study shows government's expenditure on 'preparedness' and 'response' separately - the two broadly-defined phases of DRM which represent the pre- and post-disaster efforts, respectively. The main objective of the study is to explore ways in which public spending could be made more effective for making Pakistan safer from all kinds of disasters.

The need for this study has emerged from a number of interrelated developments. First, major disaster events of floods, drought and earthquakes in the recent past have increased the realization, both at national and international levels, that Pakistan is a high risk country. Floods, droughts, cyclones and earthquakes continue to threaten human life in Pakistan. In recent years, the deadliest disaster was the October 2005 earthquake, which hit the northern parts of Pakistan and affected 3.2 to 3.5 million people (Government of Pakistan 2005; Department for International Development [DFID] 2005). Almost all sectors were severely affected including housing, transport, agriculture, education and livestock. Three years after this shock, another severe earthquake hit Balochistan resulting in numerous deaths and damage to life and property. Apart from natural disasters, Pakistan is also highly prone to human-induced disasters such as fire, civil unrest, internal displacement of communities, transport accidents, collapse of buildings, to name a few.

In view of the persistent vulnerability to disasters and huge losses suffered in the past, realization has been growing steadily for strengthening the legal and institutional arrangements for DRM. The financial costs of risks and disasters have seriously hampered the development process in the country by diverting resources from productive sectors to DRM. Pakistan needs to find cost-effective ways for coping with risks and disasters. This need can better be addressed through informed budgetary decisions for effective implementation of disaster risk management policies based on scientific evidence drawn from existing patterns of spending.

[1] The term 'public spending' refers to all on-budget expenditure irrespective of the source —national income, foreign grants and loans. It does not cover off-budget expenditure on DRM such as that spent by non-governmental organizations (NGOs), donor agencies or other private organizations or individuals.

[2] During the study period, expenditure of the Federally Administered Tribal Areas (FATA) and the Federally Administered Northern Areas (FANA) and now Gilgit-Baltistan was accounted for in the federal budget for States and Frontiers. No segregated expenditure data is available for these two areas.

Secondly, a paradigm shift has been taking place since 2005 which represents a departure from the traditional relief-driven to a holistic DRM approach with emphasis on preparedness as well as on response (relief, recovery, reconstruction and rehabilitation). The traditional approach was inspired, largely, by a narrow perception of risk in the country which was focused on the annually recurring floods. Now it is well understood that Pakistan is exposed to a variety of natural and man-made disasters and therefore, attention has to be given to all hazards, all phases, all impacts, and all stakeholders related to DRM. While considerable evidence is available on the recent changes in legal and institutional framework for disaster risk management (see, for example, International Strategy for Disaster Reduction [ISDR] 2005, United Nations Development Program [UNDP] 2007), no systematic analysis has been done to ascertain whether the resources set aside by the federal, provincial and district governments are adequate to support the implementation of this approach. This research gap is leading to many speculations about the patterns of resource allocation and spending. Although it is well known that the expenditure on disaster risk management had multiplied in the aftermath of the October 2005 earthquake, concerns prevail about 'reactive' spending (i.e. more spending on response rather than on preparedness), high recurrent costs, missing budget lines, lack of transparency, etc. Only piecemeal information is available on these issues, which does not portray the overall picture.

This context necessitates a careful analysis of public spending on DRM at all tiers of governance – a task that this study attempts to do. For this purpose, National Disaster Management Authority (NDMA) and United Nations Development Program (UNDP) contracted Institute of Social and Policy Sciences (I-SAPS) which has proven credentials in budget tracking and analysis in various sectors. Research, analysis and drafting for this report were undertaken by a core research team of the Institute.

1.2 Disaster Risk Management Infrastructure in Pakistan

Pakistan's DRM structure operates at three tiers i.e. federal, provincial and district. At the federal level, National Disaster Management Commission (NDMC) has been established under the Chairmanship of the Prime Minister as the highest policymaking body for disaster risk management. NDMA is the executive arm of the NDMC and is the new focal agency for disaster management which performs its functions directly under the Prime Minister of Pakistan. The NDMA was established after the October 2005 earthquake to coordinate and manage the DRM. It also led to the formulation of a "National Disaster Risk Management Framework" in Pakistan. Subsequently, notifications for the establishment of Provincial Disaster Management Commissions (PDMCs), Provincial Disaster Management Authorities (PDMAs) and District Disaster Management Authorities (DDMAs) were issued respectively at provincial and district levels in 2007. Similar arrangements have been made in Azad Jammu and Kashmir (AJK) and Gilgit-Baltistan.[3]

The National Disaster Risk Management Framework recognizes the need for involvement and coordination of all key ministries and divisions. At the federal level, the Division, Water & Power Division, Food, Agriculture and Livestock

[3] A detailed analysis of the legal and institutional arrangements for DRM is out of the scope of this study. For a comprehensive review, see ISDR 2005.

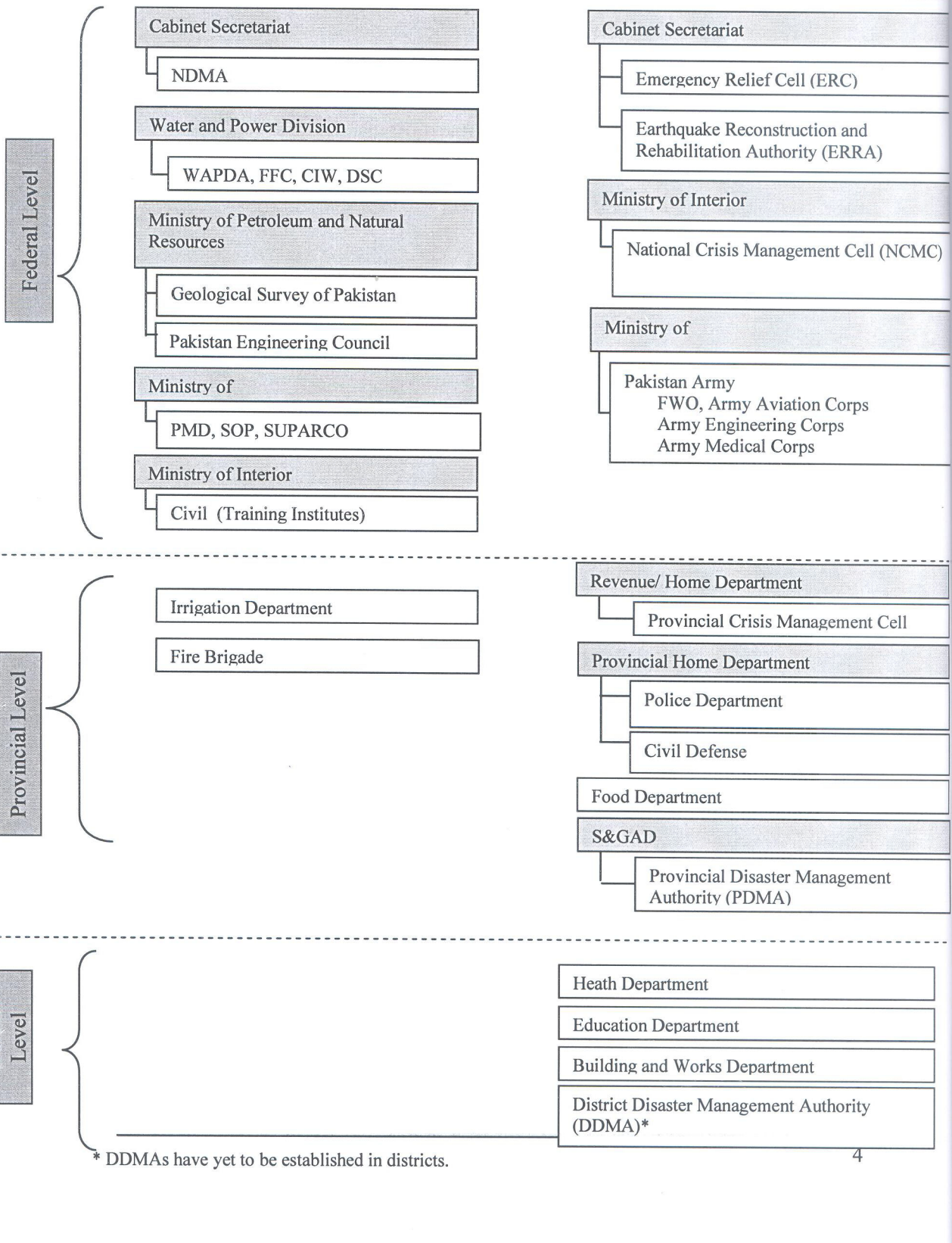
Division, Health Division, Communication Division, Petroleum & Natural Resources Division and Cabinet Division have important responsibilities for mitigation and preparedness. Pakistan Meteorological Department (PMD), Survey of Pakistan (SOP), Flood Forecasting Division, and Pakistan Space and Upper Atmosphere Research Commission (SUPARCO) are working under the Division. Water & Power Division includes Water & Power Development Authority (WAPDA), Federal Flood Commission (FFC), Commission for Indus Water (CIW) and Dams Safety Council (DSC). Geological Survey of Pakistan and Pakistan Engineering Council are operating under Petroleum & Natural Resources Division. The response apparatus largely lies with the Interior Division and Division at the federal level. For this purpose, National Crisis Management Cell (NCMC) and Civil Department are functioning under the Interior Division, while Pakistan Army with Frontier Works Organization (FWO), Army Aviation Corps, Army Engineering Corps and Army Medical Corps are operating under Division. In the existing legal and institutional arrangements, all these departments/organizations are required to work through NDMA to allow a one-window operation in the event of a disaster. Since the promulgation of National Disaster Management Ordinance 2007, NDMA has assumed the role of national focal point for all disaster management activities, including coordination of relief activities.

Box 1.1

Institutional Arrangements of Budget Allocation for Disaster Risk Management

The institutional arrangement of budget allocation for DRM is considerably complex, as it involves flows of funds from multiple sources including the federal, provincial and district government. The arrangement shown in Figure 1.1 is a stylized presentation of budget allocation for DRM-related institutions. The list of DRM institutions indicated in Figure 1.1 should not be confused with administrative hierarchy because in some cases, an organization tasked to perform DRM related activities might be drawing its budget from a higher authority other than the one under which it falls administratively. For example, NDMA works directly under the Prime Minister's Secretariat, but it draws its budget from the Cabinet Division. Similarly, Civil Defense departments draw their current budget from Home Department, but Civil Defense Training Schools are funded by the federal government. Figure 1.1 is not intended to capture the complexity of budget allocation for DRM fully, but to give an idea about where the DRM organizations charge their expenditure from. Some organizations draw their budget from a higher authority (e.g. NDMA and NDMC from Cabinet Division; WAPDA, FFC, CIW and DSC from Ministry of Water and Power) whereas others receive their budget directly from the government concerned (e.g. Building and Works Department from District Government).

Figure 1.1: Institutional Arrangement of Budget Allocation for Disaster Risk Management



* DDMAs have yet to be established in districts.

At the provincial level, Planning & Development Department and Irrigation Department are mandated to perform mitigation and preparedness roles. Recently, PDMAs have also been established in Federally Administered Tribal Areas (FATA), AJK, Gilgit-Baltistan, Balochistan, Punjab, Khyber Pakhtunkhwa and Sindh. In addition, two provincial departments, i.e. Crisis Management Cell and Police Department work under the Home Departments for disaster response with regard to terrorism, conflict and crisis situations. In addition, Health Department, Food Department, Works and Services Department, and Agriculture and Livestock Department also have important relief and rehabilitation responsibilities.

At the district level, Civil Department is required to take lead in response to disasters. The Local Government Ordinance (LGO) 2001 also enshrines some disaster management responsibilities. The District Nazim and District Police Officer have been tasked with important responsibilities of relief and response to disaster. In the new institutional set up for DRM, DDMAs have been notified under the National Disaster Management Ordinance. However, these Authorities are not yet functional as no funds have been allocated for their operational costs so far.

Given the three-tier institutional structure described above, the federal, provincial and district governments formulate their own budgets for disaster risk management activities. The process begins in parallel with the budget-making cycle of the federal government. At the federal level, the Ministry of Finance issues Budget Call Circular to the concerned divisions and departments, requesting the submission of expenditure details and proposals for new current and development expenditures. Budget estimates are prepared keeping in view the past expenditures, current trends and future development plans. After consultations and a review process, the final budget proposals are submitted to the federal cabinet, which is then presented to the Parliament for approval. Somewhat similar process takes place at the provincial and district levels.

1.3 Objectives of the Study

The primary objective of the study is to identify those issues which need to be addressed on priority basis for making public spending on DRM more effective to keep Pakistan safer from all kinds of disasters. Specifically, the study aims:

1.3.1 To analyze the patterns of public spending on DRM in general, and on 'preparedness' (mitigation inclusive) and 'response' (relief, recovery, reconstruction and rehabilitation inclusive) activities in particular at the federal, provincial and district levels;

1.3.2 To identify major issues and misplaced budgetary priorities that constrain the effectiveness of resource allocation and spending; and

1.3.3 To propose strategic reforms in public spending which can effectively support the newly revamped DRM system of Pakistan.

1.4 Scope and Methodology

The study covers the period from 1998-99 to 2007-08. During this period, Pakistan embraced numerous floods, one severe drought and two deadliest earthquakes. The ten-year data provides a trend analysis of resource allocations and spending on these

disasters. In addition, this period covers the response of three governments to disasters, as political leadership changed twice during this period. The limitations of data availability prior to this period were also partly taken into account for choosing this period.

Multiple sources of data have been used in the study including conventional literature on disaster risk management, evaluations and assessments of the government of Pakistan, UNDP and other donor agencies. Budget books of the federal, provincial and district governments covering the period from 1998-99 to 2007-2008 are the major source of data. In addition, expenditure data were collected directly from a number of government organizations including ERRA, Economic Affairs Division, and Finance Department of Charsadda district.

The analytical design of the study has been chosen in a manner so as to capture the budgetary allocations and spending at each of the three tiers: federal, provincial and district. However, considering the voluminous inputs required for covering the budgets of all district governments, it was decided to prepare case study of one district (Charsadda). Nevertheless, there might be significant differences in the budgetary needs and priorities of district governments due to different nature of disaster and varying extent of the vulnerability of each region but still the case study provides revealing insights into DRM spending at the local level.

The analysis of spending data is broadly divided into 'preparedness' and 'response' activities. This categorization is based on the understanding that greater expenditure on preparedness, compared with response, enables a country to deal with disasters more effectively, and minimizes human and economic losses. As it has been pointed out earlier, the DRM system of Pakistan takes into account all the phases: mitigation, preparedness, response, relief, reconstruction and rehabilitation. From one point of view, analysis of budget for each of these categories is problematic for two reasons: First, it makes the analysis very complex and difficult for the reader to comprehend the overall pattern. Secondly, the classification of government budget does not neatly fall into all these overlapping categories. For the purpose of budgetary analysis, a simple approach is taken to place these phases into two broad categories: (1) preparedness (pre-disaster activities aimed at mitigation and contingency planning), and (2) response (post-disaster activities including relief, recovery and reconstruction) according to the spending on response and preparedness discerned through project scope, objectives and proposed activities.

Box 1.2

Preparedness versus Response

Disaster preparedness refers to preparing for disaster before it occurs. For the purpose of this study, it includes risk-reduction measures to avert the disaster through minimizing the susceptibility of human beings and the society to catastrophic disasters. This contributes to reducing damage and loss to individuals and society in case of a calamity. The efficient preparedness and mitigation programs make it easy to cope with any disaster, while any weakness in the preparedness and mitigation system may lead to severe losses from catastrophes.

In post-disaster circumstances, relief activities that are largely dependent upon the preparedness and mitigation programs play a key role in bringing people out of sufferings. For the purpose of this study, response refers to all those critical activities that are necessary for saving lives and property of the disaster survivors. In broader terms, response is bifurcated in short-terms relief activities and long-term recovery activities. The short term activities include rescue, evacuation, medical aid, provision of food, water, shelter, clothing etc. The long-term recovery activities include restoration of livelihoods, reconstruction of housing and infrastructure and other services e.g. health, education, etc.

The division of public spending into these two categories has been done with extreme caution. For example, the spending for Drought Emergency Relief Assistance (DERA-I) is included in response, while the expenditure on Drought Emergency Response Assistance (DERA-II) is included in preparedness. The key distinguishing factors of both DERA projects are their project scope, objectives and activities. In addition to breakdown of overall budget into preparedness and response activities, the study also presents an analysis of spending on disaster response and preparedness according to the administrative divisions. In this case, the inclusion of a particular division as response or preparedness division is based on the *predominant* role it plays in relation to DRM. Despite all caution, however, it was not possible to avoid some overlapping between these two categories.

The remainder of the study has been organized as follows: The second chapter presents key findings of the analysis in four sections. The first section discusses DRM expenditure of the federal government. The second section focuses on the provincial tier and looks at disaster-related expenditure of Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan. The third section presents a case study of DRM expenditure at the district level whereas the fourth section focuses on federally administered areas and self-governing territories including the state of AJK. In each section, the chapter identifies overall trends in spending, identifies main issues, and considers their implications for DRM. Most important tables have been given in the chapter, whereas the remaining ones are attached in Annex I. A reader interested in the breakdown of overall trends and spending by divisions, agencies and programs can find useful data in the annexed tables.

1.5 Limitations of the Study

The study has some limitations. First, it does not present a historical analysis of public spending on disaster risk management in Pakistan; it covers the most recent decade for which data on public expenditure were available. Secondly, the study

does not segregate the expenditure for all phases of the disaster risk management; instead, it places the expenditure in two broad categories, namely 'preparedness' and 'response'. Thirdly, the analysis does not provide a national picture, as it focuses on the budgets of federal and all provincial and area governments; it does not cover DRM expenditure of the district governments except for a case study of Charsadda district. Moreover, DRM expenditure of FATA and Gilgit-Baltistan is accounted for in the analysis dealing with the federal government. This limitation is due to unavailability of segregated data for these two areas.

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Chapter 2

Public Spending on Disaster Risk Management

This chapter presents an analysis of public spending on disaster risk management (DRM) in Pakistan over the past decade, i.e. 1998-99 to 2007-08. The analysis has been divided into four sections. The first section concentrates on DRM expenditure of the federal government. The second section focuses on the provincial tier and analyzes DRM expenditure of Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan. The third section presents a case study of Charsadda district. The fourth section looks at disaster-related expenditure of federally administered areas and self-governing territories including the state of Azad Jammu and Kashmir.

Section 2.1: Federal Level

The role of the federal government is the most important one in Pakistan's DRM system, according to the existing institutional arrangements (see Figure 1.1, chapter 1). The federal government leads the disaster management planning, policy formulation and coordination in the country. Each year, the government earmarks substantial budget for public sector organizations tasked to perform disaster-related duties at the federal level. Apart from regular budget lines for day-to-day operations and maintenance of existing organizations, considerable proportions of funds are contingent upon occurrence of disasters. In most cases, such funds are spent directly in the affected areas through concerned federal agencies or are passed on to the provincial or district governments as grants.

During the past decade (i.e. 1998-99 to 2007-08), the federal government spent about Rs.155.51 billion (approximately USD 1.85 billion at current prices) on DRM, according to the budget books. A breakdown of this spending reveals a number of illuminating trends which bear significant implications for DRM at all tiers of governance.

Box 2.1
Discrepancy in Aggregate DRM Spending of Federal Government

A peer review of an earlier draft of this study observed that this figure appeared low in face of the huge funds raised for the 2005 earthquake and spent by ERRA. In order to verify this observation, I-SAPS triangulated the spending data on ERRA from three sources: (1) federal budget books, (2) consolidated spending data compiled by ERRA, and (3) Economic Affairs Division. It was revealed that no single figure on ERRA spending is available. The budget books show that ERRA spent a total of Rs.124.13 billion up to June 30, 2008 (Table 10 and 12, Annex I). In contrast, the "consolidated expenditure to date" worked out by Financial Information Management System of ERRA puts this figure at Rs.68.64 billion. The data of Economic Affairs Division only includes disbursement flows from international donors and countries (Table 22, Annex I), which does not match the figures of disbursement flows available with ERRA. Given that ERRA is a key relief and reconstruction agency in the country, disagreement of key government data sources on its spending is a major issue in its own right, as it raises questions about the capacity of financial management system to track spending on DRM in Pakistan.

First, the federal government's spending on disaster management appears modest during the pre-earthquake period (i.e. 1998-99 to 2004-05). The years of 2001-02

and 2002-03 were exceptions as the expenditure increased suddenly in response to severe drought which affected all provinces. Subsequently, the spending levels fell immediately to previous levels. The post-earthquake period (i.e. 2005-06 to 2007-08) represents a new trend marked by high levels of spending in each year (Table 2.1). However, this trend is largely due to the occurrence of major disaster events which called for spending of huge amounts of money on relief and recovery.

Secondly, a considerable proportion of the federal budget is spent on salary and non-salary costs of existing DRM infrastructure each year. In total, a little more than 26.6 billion rupees were spent to meet the current costs of government organizations involved in disaster preparedness and response functions during the past decade (Table 2.1). Out of the total current spending, about 99 percent was spent on non-salary heads (e.g. relief packages, operational costs, miscellaneous, etc.) and only 1 percent on salary head (Table 2, Annex I). This proportion, however, is misleading because federal divisions and relief agencies including ERRA and NDMA are allocated only single line non-salary budget. There is no separate budget line for staff salaries of ERRA and NDMA, (Tables 10, 12 and 14, Annex I). Therefore, money spent on salaries and benefits cannot be separated in the budget books from the spending on provision of relief and other DRM activities (although the Authorities maintain head-wise expenditure internally).

Table 2.1: Expenditure of Federal Government on DRM (Rs. Million)

Year	Total	Current		Development		Current-Development Expenditure Ratio
		Expenditure	Change over previous year (%)	Expenditure	Change over previous year (%)	
1998-99	1132.04	357.04		775.00		1:2.2
1999-00	2607.89	1,855.39	419.65	752.50	-2.90	2.5:1
2000-01	4326.58	3,151.58	69.86	1,175.00	56.15	2.9:1
2001-02	11896.81	1,706.09	-45.87	10,190.72	767.30	6:1
2002-03	7949.78	1,768.78	3.67	6,181.00	-39.35	1:3.5
2003-04	3122.24	1,772.31	0.20	1,349.93	-78.16	1.3:1
2004-05	3702.37	2,476.87	39.75	1,225.50	-9.22	2:1
2005-06	44986.43	3,443.57	39.03	41,542.86	3289.88	1:12
2006-07	45576.64	2,740.18	-20.43	42,836.47	3.11	1:15.6
2007-08	30209.3	7,328.17	167.43	22,881.13	-46.58	1:3
Total	**155,510.08**	**26,599.98**	-	**128,910.1**	-	**1:5**

Source: I-SAPS' calculations from federal budget books, 1998-2008

Thirdly, the spending on development projects has been higher for most of the years in the recent years. Overall, the costs of development projects exceeded the recurrent costs by five times during the past decade (Table 2.1). At the outset, this ratio tends to create a perception that a lot of money is going into development projects which will enhance preparedness capacities within the DRM system. However, if we break down the development budget into preparedness and response activities, it becomes

clear that most of the development budget (83-94 percent) is being spent on the latter, especially since 2005-06 (Table 5, Annex I). This means that funds being spent on disaster reduction measures, awareness-raising are fewer. Thus, disaster preparedness is grossly ignored in both current as well as development budgets.

Fourthly, the distribution of federal government's spending between preparedness and response is inadequate, as it is overwhelmingly skewed towards the latter. Now it is widely understood that countries which spend more on disaster preparedness are in a better position to mitigate the risks and respond to disasters effectively. This understanding does not appear to be an accepted guiding principle in the budgetary decisions of the federal government. Budgetary data suggest that the government acts in any meaningful degree only after the occurrence of major disasters. This is evident from the fact that out of 155.5 billion rupees spent on DRM during the past decade, only 15.96 billion (10 percent) rupees were spent on disaster preparedness, as compared to a little more than 139.55 billion rupees (90 percent) on response. Overall, the spending on disaster response has been nine times higher than preparedness between 1998-99 and 2007-08 (Table 2.1).

This pattern of spending does not conform to the newly revamped policy and institutional arrangements for DRM in Pakistan which recognize that disaster preparedness has to be given a high priority for mitigation of risks and effective response to disasters in the country – a recognition that represents a departure from the traditional dominant perception of disaster associated with floods response in the country. However, there is no corresponding departure from the traditional spending pattern; it continues to be reactive and response-oriented.

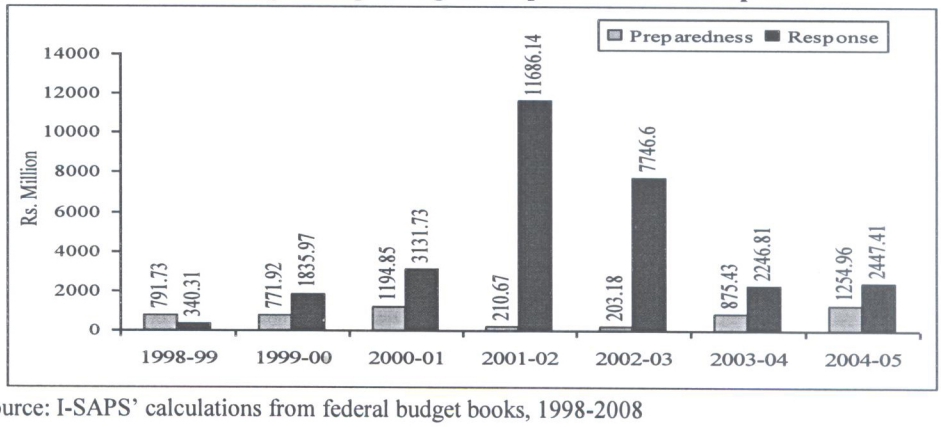
Table 2.2: Expenditure of Federal Government on Preparedness and Response (Rs. Million)

Year	Total	Preparedness		Response		Preparedness-Response Ratio
		Expenditure	Change over previous year (%)	Expenditure	Change over previous year (%)	
1998-99	1132.04	791.73	-	340.31	-	2.3:1
1999-00	2607.89	771.92	-2.50	1835.97	439.50	1:2.4
2000-01	4326.58	1194.85	54.79	3131.73	70.58	1:2.6
2001-02	11896.81	210.67	-82.37	11686.14	273.15	1:55.5
2002-03	7949.78	203.18	-3.56	7746.6	-33.71	1:38
2003-04	3122.24	875.43	330.86	2246.81	-71.00	1:2.6
2004-05	3702.37	1254.96	43.35	2447.41	8.93	1:2
2005-06	44986.43	3897.9	210.60	41088.53	1578.86	1:10.5
2006-07	45576.64	2748.5	-29.49	42828.14	4.23	1:15.6
2007-08	30209.3	4008.39	45.84	26200.91	-38.82	1:6.5
Total	**155,510.08**	**15,957.53**		**139,552.55**	-	**1:9**

Source: I-SAPS' calculations from federal budget books, 1998-2008

Given that the ratio of spending on disaster preparedness and response entails serious implications for DRM, it deserves a deeper analysis. If we look at the ratio in the pre- and post-disaster periods, it becomes clear that situation has worsened in the latter period. In the pre-earthquake period, spending on response was two to three times higher than that on preparedness except for the drought-affected years of 2001-02 and 2002-03 (Figure 2.1 and Table 2.2).

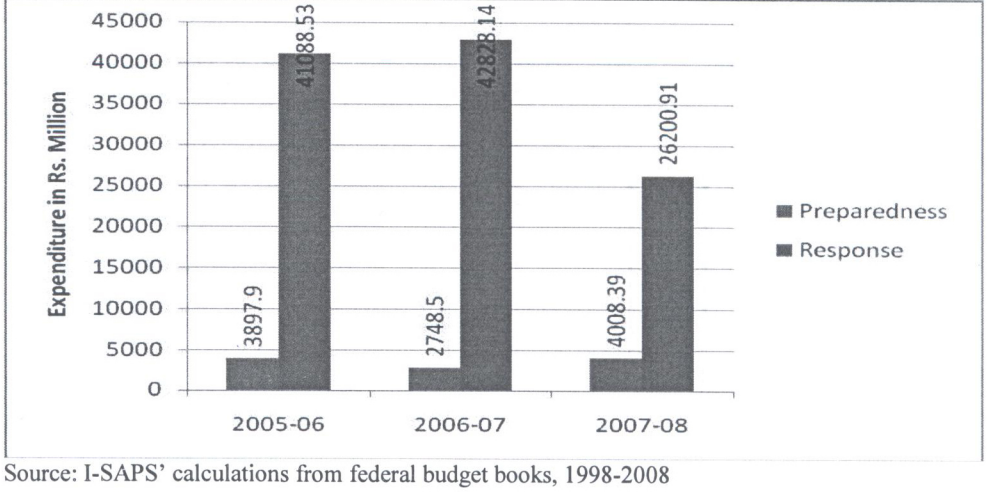
Figure 2.1: Pre-earthquake Spending on Preparedness and Response



Source: I-SAPS' calculations from federal budget books, 1998-2008

In the post-earthquake period, spending on response has increased by six to ten times that on preparedness (Figure 2.2 and Table 2.2). If the newly revamped DRM system is to be made effective, the allocation of funds has to be readjusted with more focus on preparedness.

Figure 2.2: Post-earthquake Spending on Preparedness and Response



Source: I-SAPS' calculations from federal budget books, 1998-2008

The disaster-related public sector organizations operating at the federal level work under different administrative divisions. The budget books record allocations and spending of these divisions on DRM. During the study period, the Prime Minister's Secretariat spent the largest amounts of funds on DRM (Rs. 78.16 billion), followed by the Cabinet Division (Rs.24.08 billion) (see Tables 6-11, Annex I). These figures largely represent the ERRA spending. The Finance Division, WAPDA Division and Interior Division also spent substantial amounts on disaster relief, remission of

floods loans, Civil Defence training, establishment of warning systems and flood protection (Tables 13-19, Annex I).

A deeper look at the spending of divisions reveals important findings. The Cabinet Division, for example, was formerly tasked with emergency response responsibilities. Therefore, its entire disaster-related budget was spent on response activities. A shift in its role has taken place since 2006-07 due to operationalization of NDMA. However, it is important to note that the allocation for NDMA has decreased by 40 percent in 2008-09. Given that it is the key agency responsible for disaster preparedness, it requires increase in funding which must be utilized to build disaster risk reduction capacities. Similarly, the data reveal that the salary cost of Civil Defence Training Schools is roughly twice the non-salary costs (Table 15, Annex I). This means that most of the current budget is being spent on maintaining the existing staff, whereas little is left for operational costs associated with disaster risk reduction activities.

In terms of severity of impact, floods, drought and earthquake are considered the most important types of disasters which Pakistan has endured in the past. On earthquakes, the federal government spent a total of 97.46 billion rupees during 1998-99 to 2007-08. Like the overall spending pattern, 96.95 billion rupees (99.47 percent) have gone to response activities (Table 21, Annex 1). In addition, the federal government spent a total of 26.44 billion rupees on drought-related DRM activities during the past decade. Out of this amount, 24.60 billion rupees (93.03 percent) were spent on response activities (Table 20, Annex 1). This amount was largely spent through two phases of DERA in drought-hit areas of the four provinces, FATA and AJK. As far as floods are concerned, the federal government spent a total of 9.75 billion rupees for this purpose during the past decade. This amount does not seem quite high because the provincial governments spend substantial funds from their own budgets for this purpose.

Section 2.2: Provincial Level

The bulk of DRM infrastructure in Pakistan is controlled and operated at the federal tier. Therefore, the federal government remains the major source of public spending on disaster preparedness and response in the country. However, the provincial governments also spend significant proportions of their budgets (which may include grants by the federal government) through concerned provincial departments (see Figure 2.1, chapter 1). In this respect, it is important to note the variations in the nature and severity of impacts of hazards and disasters to which a province is exposed. Balochistan and Sindh, for example, are vulnerable to intermittent droughts to a greater degree than Punjab, which is more prone to annually recurring floods (ISDR 2005). The extent to which the budgetary allocations and spending of provincial governments are distributed in line with such variations remains to be ascertained as no systematic study on this topic has been undertaken so far in Pakistan. Moreover, little evidence is available on adequacy of provincial governments' spending on disaster preparedness and response.

This section analyzes DRM spending of the provincial governments over the past decade (1998-99 to 2007-08). In addition to analysis of overall trends, spending on different types of disaster to which each province is exposed is also covered.

2.2.1 Punjab

The province of Punjab is highly prone to a range of natural disasters particularly floods and droughts. It is also exposed to human-induced hazards such as fire, civil unrest, terrorism, sectarian violence, etc. These disasters affect a large number of people and destroy the agricultural crops and livestock. Jehlum, Gujrat, Sialkot, Sargodha, Khushab, Jhang, Muzaffargarh and Multan are particularly susceptible to floods. The 1992 flood affected 7,435 villages in the Punjab (Government of Punjab 2008).. About 435 people died in the flood, and 39,126 cattle were perished. The flood affected about half a million people, more than 5 million acres of land, 3 million acres of crops, 200,000 *Kacha*-area mud houses, and about 100,000 houses in other areas (Manan 2008). The drought poses a serious threat to the people and economy of the province. During the drought spells between 1998 and 2000, 18,691 villages were affected, 1,162 people were killed, and over 10 million people were severely affected. Moreover, 21 percent economy of the Punjab was affected by these droughts (Government of Punjab 2008). Presently, the province is severely hit by activities of terrorism.

The provincial government of Punjab spent a total amount of Rs. 23.5 billion on DRM during 1998-99 to 2007-08. During the past decade, the provincial government spent about Rs. 16.8 billion on development schemes, as compared to Rs. 6.7 billion on salary and non-salary heads. Overall, the development expenditure is three times higher than the current expenditure (Table 2.3). Within the current budget, a high proportion (78 percent) was spent on non-salary and 22 percent on salary during 1998-99 to 2007-08 (Table 25, Annex I). A breakdown of expenditure into the categories of preparedness and response reveals the following trends:

Table 2.3: DRM Expenditure in the Punjab (Rs Million)

Year	Total	Current		Development		Current-Development Ratio
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	505.74	98.66		407.083		1:4
1999-00	382.50	245.29	148.63	137.213	-66.29	2:1
2000-01	1783.41	597.61	143.63	1185.798	764.20	1:2
2001-02	1425.08	1,095.28	83.28	329.804	-72.19	3:1
2002-03	1490.90	742.06	-32.25	748.84	127.06	1:1
2003-04	4258.64	794.88	7.12	3463.753	362.55	1:4
2004-05	3578.97	540.60	-31.99	3038.369	-12.28	1:6
2005-06	5667.86	1,104.13	104.24	4,563.73	50.20	1:4
2006-07	1218.43	327.77	-70.31	890.67	-80.48	1:3
2007-08	3232.15	1,182.82	260.87	2,049.33	130.09	1:2
Total	**23543.68**	**6,729.10**	-	**16,814.58**	-	**1:3**

Source: I-SAPS' calculations from Punjab budgets 1998-2008

First, the Punjab government's spending on DRM is strikingly different from the federal government. Out of Rs. 23.5 billion spent on DRM during the past decade, the Punjab government spent Rs. 21.5 billion (92 percent) on preparedness. This

exceptional pattern is due to huge expenditure incurred on developing infrastructure and capacities for dealing with floods. The government is mainly focusing on flood control and drainage whereas other important types of disaster-related services receive little attention. For example, Civil accounts for only 1 percent of the total spending on preparedness during 1998-99 to 2007-08. The pattern of high spending on preparedness is visible in all years except for the year 1999-2000 in which the expenditure on response was slightly higher than preparedness. (Table 2.4)

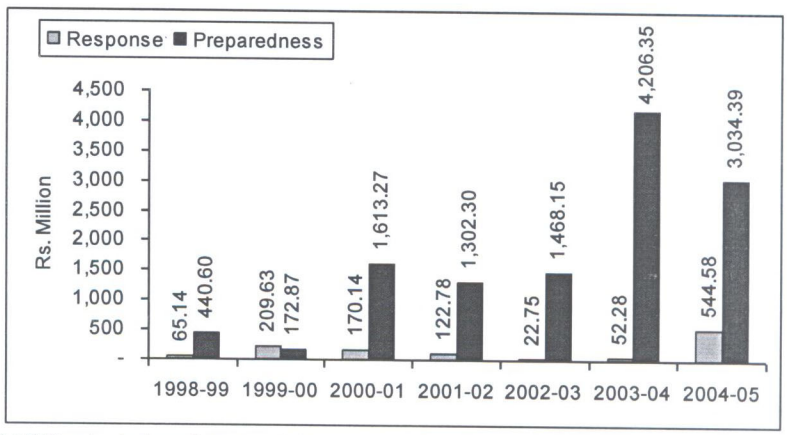
Table 2.4: Expenditure on Disaster Preparedness and Response in the Punjab (Rs Million)

Year	Total	Response		Preparedness		Response-Preparedness
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	505.74	65.14		440.60		1:7
1999-00	382.50	209.63	221.82	172.87	-60.76	1:1
2000-01	1,783.41	170.14	-18.84	1,613.27	833.21	1:9
2001-02	1,425.08	122.78	-27.84	1,302.30	-19.28	1:11
2002-03	1,490.90	22.75	-81.47	1,468.15	12.74	1:65
2003-04	4,258.64	52.28	129.81	4,206.35	186.51	1:80
2004-05	3,578.97	544.58	941.58	3,034.39	-27.86	1:6
2005-06	5,667.86	269.05	-50.59	5,398.81	77.92	1:20
2006-07	1,218.43	304.48	13.17	913.96	-83.07	1:3
2007-08	3,232.15	227.16	-25.39	3,004.99	228.79	1:13
Total	**23,543.68**	**1,987.98**	-	**21,555.70**	-	**1:11**

Source: I-SAPS' calculations from Punjab budgets 1998-2008

Secondly, there are huge variations in the spending on preparedness during the period under review and no consistent pattern of expenditure is observed (Table 2.4). During the past decade, spending on preparedness increased substantially, particularly in 2004-05 and 2007-08. Overall, the spending pattern conforms to the political commitments made in the post-earthquake period which accord a high priority to disaster preparedness.

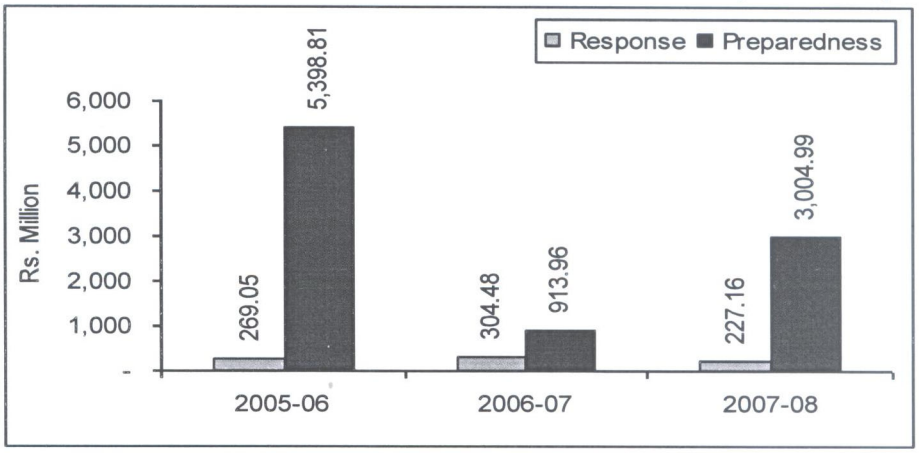
Figure 2.3: Pre-earthquake Spending on Preparedness and Response in Punjab



Source: I-SAPS' calculations from Punjab budgets 1998-2008

Thirdly, in the pre-earthquake period, spending on preparedness was 10 times higher than that on response. During 2001-2004, the spending on preparedness was 11 to 80 times higher than that on response (Figure 2.3 and Table 2.4). In the post-earthquake period, spending on preparedness was about 12 times that on response (Figure 2.4 and Table 2.4).

Figure 2.4: Post-earthquake Spending on Preparedness and Response in Punjab



Source: I-SAPS' calculations from Punjab budgets 1998-2008

Fourthly, although this pattern is exceptional in terms of proportional spending on preparedness and response, it is narrowly focused. That is to say, the Punjab government does not focus on all types of disasters. The analysis of expenditure of provincial government on DRM shows that targeted programs which were designed for disaster risk reduction mostly focused only on flood control and drainage. During 1998-2007, 99 percent of the total development budget was spent for "Flood Control and Drainage" projects. The provincial government allocated Rs. 25 billion for flood protection during 1998-2007 and spent a total of Rs. 21 billion (85 percent of the allocated budget. The analysis indicates that expenditure is low for some important DRM services. For example, expenditure on District Fire Fighting and Rescue Establishment was Rs. 52.05 million (34 percent) against the allocation of Rs. 155.05 million during 1998-2007. Overall, expenditure on preparedness is high in the Punjab but there is a need to move away from the predominant focus on flood prevention to concentrate on other types of disasters as well.

2.2.2 Sindh

The province of Sindh is highly prone to droughts and cyclones. Moreover, owing to poor flood management, its eastern border receives devastating flash floods. The province is also vulnerable to sea intrusion, earthquakes, epidemics, etc. The districts of Karachi, Badin, Tharparkar, Thatta, Dadu, Kamber and Shahdad Kot are particularly susceptible to different types of disaster. The worst drought hit Sindh and Balochistan in 1998-2002, which severely affected 2,200,000 people and reduced economic growth of the country to 2.6 percent. It forced thousands of people to migrate and killed a large number of cattle. High floods occurred in 1942, 1956, 1957, 1958, 1973, 1975, 1976, 1979, 1992, 1994, 1995, 2003, 2005 and 2007. In 2003, the monsoon rain caused a loss of Rs. 45 billion, damaging 411,000 acres of crop and 18,500 kilometers of road infrastructure. The worst flash floods hit eastern and lower Sindh and adjoining regions of Balochistan in 2007. It affected

150,000 people in Sindh. The flash floods left 150,000 people homeless and resulted in 242 deaths.

The provincial government of Sindh spent a total amount of Rs. 6.1 billion on DRM during 1998-99 to 2007-08. The development expenditure is lower than current expenditure. During the past decade, the provincial government spent about Rs. 2.8 billion on DRM development schemes, as compared to the spending of Rs. 3.2 billion on salary and non-salary heads. Overall, the ratio between current and development budget is 1.2:1 (Table 2.5). However, within the current budget, a high proportion (96 percent) was spent on non-salary heads and only 4 percent on salary heads during 1998-99 to 2007-08 (Table 29, Annex I). This pattern of spending on development heads (e.g. awareness raising, purchase of technical equipment, trainings and drills, etc.) means more spending on disaster preparedness.

Table 2.5: DRM Expenditure in Sindh (Rs Million)

Year	Total	Current		Development		Current-Development Ratio
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	396.69	16.23		380.46		1:23
1999-00	293.74	19.09	17.66	274.64	-27.81	1:12
2000-01	467.55	467.55	2348.87	-*	-100.00	
2001-02	43.72	30.72	-93.43	13.00		2:1
2002-03	406.34	406.34	1222.64	-*	-100.00	
2003-04	459.09	217.18	-46.55	241.91		1:1
2004-05	1296.92	543.41	150.21	753.51	211.48	1:1
2005-06	1223.26	844.66	55.44	378.60	-49.75	2:1
2006-07	668.12	227.82	-73.03	440.31	16.30	1:2
2007-08	876.28	550.99	141.86	325.29	-26.12	2:1
Total	**6,131.71**	**3,323.99**		**2,807.72**		**1.2:1**
*Data not available						

Source: I-SAPS' calculations from Sindh budget books 1998-2008

A breakdown of the total spending on disaster preparedness and response activities reveals significant findings. Out of Rs. 6.1 billion spent on DRM during the past decade, Rs. 4.2 billion (69 percent) were spent on response activities. Overall, spending on response activities was twice the spending on preparedness. This means that the provincial government of Sindh spends little funds on building DRM infrastructure and capacities. The traditional reactive approach to disaster management dominates the budgetary decisions of the provincial government. The pattern of high spending on response is visible in all years, except for the year 2006-07 in which the expenditure on disaster preparedness was twice the spending on disaster response (Table 2.6)

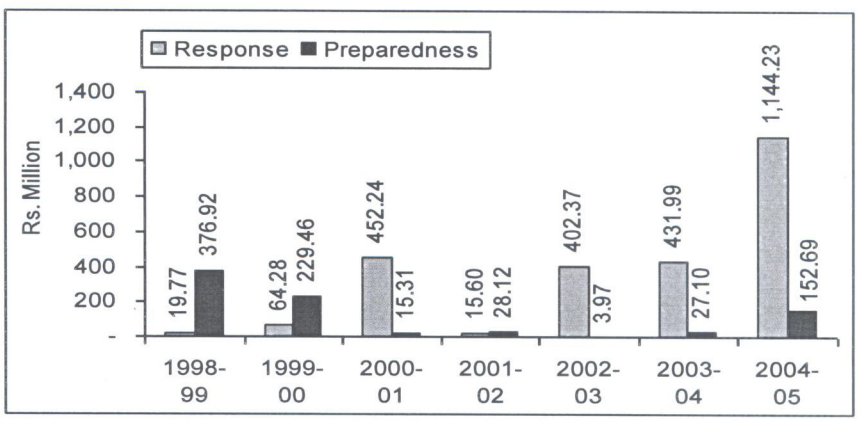
Table 2.6: Spending on Disaster Preparedness and Response during 1998-2007 (Rs Million)

Year	Total	Response		Preparedness		Response-Preparedness
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	396.69	19.77	-	376.92	-	1:19
1999-00	293.74	64.28	225.17	229.46	-39.12	1:4
2000-01	467.55	452.24	603.56	15.31	-93.33	30:1
2001-02	43.72	15.60	-96.55	28.12	83.71	1:2
2002-03	406.34	402.37	2479.36	3.97	-85.89	101:1
2003-04	459.09	431.99	7.36	27.10	582.99	16:1
2004-05	1296.92	1,144.23	164.87	152.69	463.34	7:1
2005-06	1223.26	955.07	-16.53	268.19	75.64	4:1
2006-07	668.12	226.99	-76.23	441.14	64.49	1:2
2007-08	876.28	542.79	139.13	333.49	-24.40	2:1
Total	**6,131.71**	**4,255.32**		**1,876.39**		**2:1**

Source: I-SAPS' calculations from Sindh budget books 1998-2008

Secondly, during the period under review, there were huge variations in the spending on response due to varying frequency and severity of impact of disasters. In contrast, variance was low in expenditure on preparedness. In most years during the past decade, preparedness expenditure decreased over the past year (Table 2.6). This pattern does not conform to the political commitments made in the post-earthquake period, which accords a high priority to disaster preparedness.

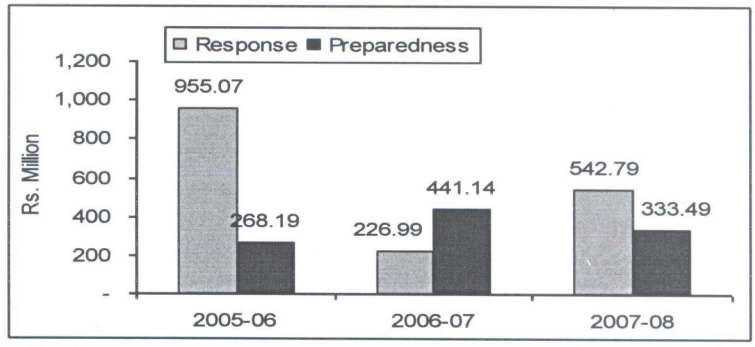
Figure 2.5: Pre-earthquake Spending on Preparedness and Response



Source: I-SAPS' calculations from Sindh budget books 1998-2008

Thirdly, in the pre-earthquake period, spending on response was 3 times higher than that on preparedness. During 2004-05, the spending on response was 7 times higher than that on preparedness (Figure 2.5, Table 2.6). In the post-earthquake period, overall spending on response was twice the spending on preparedness (Figure 2.6, Table 2.6). The pattern of spending on preparedness during 2006-07 corresponds to the claims of a paradigm shift in DRM in Pakistan. However, again in 2007-08, the spending on response was 2 times higher than that on preparedness.

Figure 2.6: Post-earthquake Spending on Preparedness and Response



Source: I-SAPS' calculations from Sindh budget books 1998-2008

An important development in the post-earthquake period is the establishment of Provincial Disaster Management Authority (PDMA) in Sindh. To contribute to effective and comprehensive DRM and to make Sindh a disaster resilient province, a Provincial Disaster Management Plan has been prepared by PDMA with the assistance of National Disaster Management Authority (NDMA).

Statistics on spending by different provincial departments are not readily available. However, the budget books have recorded expenditure of the provincial government on disaster preparedness and response, which was spent through targeted programs that are classified as multi-sectoral development projects, local government development projects and special programs. An analysis of these programs shows that the projects, which were designed to enhance disaster risk reduction capabilities were quite a few over the entire period from 1998-99 to 2007-08.

The most notable among those projects are: Flood Control & Drainage (Rs.482.05 million), Second Flood Protection Sector Project (Rs.314.78 million), Flood Control & Drainage (Normal Emergent Flood Program (Rs.223.62 million), Flood Control & Drainage Normal Emergent Flood Program (Rs.238.02 million), Block Allocation Rehabilitation of Irrigation & Drainage Work on Cyclone Affected Areas (Rs.30.33 million), Purchase of Fire Brigade Machines/Vehicles and Improvement Stations (Rs.10 million), DERA Relief Assistance Program (Rs.802.17 million), Construction of Delay Action Dam in Upper Sindh (Rs.295.96 million), Rain/Flood Damages (Rs.10 million), Rehabilitation and Propagation of Drought Affected Coastal Mangroves of Thatta (Rs.37 million), Procurement of Fire Fighting and Solid Waste Machinery TMA in Sindh (Rs.200 million), Rehabilitation of Educational Institutes (Schools) affected by the earthquake (Rs. 108.65 million), Establishment of District Public safety measures (Purchase of cars) (Rs. 15 million), School damaged by flood cyclone (Rs. 30 million), and Water supply scheme for drought affected areas (Rs. 10.13 million). This shows that Rs. 2 billion have been spent on preparedness projects as compared to Rs. 1 billion on response projects.

As far as spending by type of disaster is concerned, the provincial government of Sindh allocated Rs. 690.44 million on flood protection during 1998-2007. However, the expenditure was Rs.707.17 billion, 2 percent higher than allocation. On the droughts, the expenditure was Rs. 607.71 million. On fire fighting, Rs. 218.99 million were spent during the past decade.

2.2.3 Khyber Pakhtunkhwa

The province of Khyber Pakhtunkhwa is highly vulnerable to a range of hazards and has frequently experienced disasters caused by earthquakes, floods, landslides, droughts and civil conflict, etc. Two major earthquakes - first in 1971 and second in 2005 – seriously affected human life in the province. Another major calamity was the 1998 drought which lasted for several years and severely affected the population, especially in southern districts of D. I. Khan, Tank, Bannu and Lakki. Similarly, 2007 flood was a major disaster for populations of Nowshehra and Charsadda districts. Presently, the province is worst hit by activities of terrorism and sectarianism.

The provincial government of the Khyber Pakhtunkhwa spent a total of Rs. 22.6 billion on DRM during 1998-99 to 2007-08. The pattern of provincial spending appears different from that of the federal government in many respects. First, the current budget is far greater than the development budget which means that most of the provincial budget related to disaster is spent for maintaining the salary and non-salary costs of existing DRM infrastructure. During the past decade, the provincial government spent about Rs.16.9 billion on salary and non-salary heads, as compared to the meager spending of Rs.5.7 billion on development heads. Overall, current spending is more than twice the development spending (Table 2.7).

Table 2.7: DRM Expenditure in Khyber Pakhtunkhwa during 1998-2007 (Rs Million)

Year	Total	Current		Development		Current-Development Ratio
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	572.81	494.82		77.99		6.3:1
1999-00	437.63	427.21	-13.66	10.42	-86.64	40.9:1
2000-01	436.68	402.81	-5.71	33.87	225.10	11.9:1
2001-02	305.69	288.51	-28.37	17.17	-49.29	16.8:1
2002-03	1,225.20	233.35	-19.12	991.85	5675.28	1:4.3
2003-04	920.15	168.63	-27.74	751.52	-24.23	1:4.5
2004-05	809.51	346.06	105.22	463.45	-38.33	1:1.3
2005-06	13,758.72	12,620.85	3546.99	1,137.88	145.52	11.1: 1
2006-07	2,412.15	1,246.55	-90.12	1,165.60	2.44	1.1:1
2007-08	1,688.67	613.65	-50.77	1,075.01	-7.77	1:1.8
Total	**22,607.9**	**16,883.14**	-	**5,724.76**	-	**2.9:1**

Source: I-SAPS' calculations from Khyber Pakhtunkhwa budget books 1998-2008

From the meager development budget, a high proportion (96 percent) was spent on disaster response during 1998-99 to 2007-08 (Table 34, Annex I). Floor protection, drought emergency relief assistance, rehabilitation and reconstruction for earthquake affectees were the major response activities during this period (Tables 35, 36 and 37,

Annex I). This pattern has serious implications for DRM, as less spending on development heads (e.g. awareness raising, purchase of technical equipment, trainings and drills, etc.) means less spending on disaster preparedness.

A breakdown of the total spending on disaster preparedness and response activities reveals three important findings. First, the imbalance between spending on preparedness and response is higher at the provincial level, as compared to the federal level. Out of Rs. 22.6 billion spent on DRM during the past decade, Rs.21.7 billion (96 percent) were spent on response activities. Overall, spending on response activities was a little more than 24 times the spending on preparedness. This means that the provincial government of Khyber Pakhtunkhwa spends little funds on building DRM infrastructure and capacities. The traditional reactive approach to disaster management dominates the budgetary decisions of the provincial government.

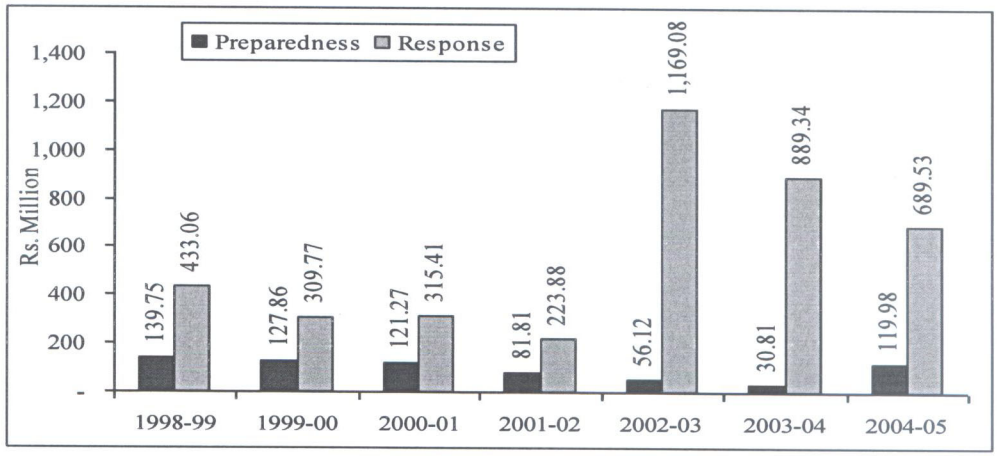
Table 2.8: Spending on Disaster Preparedness and Response during 1998-2008 (Rs Million)

Year	Total	Preparedness		Response		Preparedness-Response Ratio
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	572.81	139.75		433.06		1:3.1
1999-00	437.63	127.86	-8.50	309.77	-28.47	1:2.4
2000-01	436.68	121.27	-5.16	315.41	1.82	1:2.6
2001-02	305.69	81.81	-32.54	223.88	-29.02	1:2.7
2002-03	1,225.20	56.12	-31.41	1,169.08	422.20	1:20.8
2003-04	920.15	30.81	-45.10	889.34	-23.93	1:28.9
2004-05	809.51	119.98	289.45	689.53	-22.47	1:5.7
2005-06	13,758.72	108.66	-9.43	13,650.06	1879.61	1:125.6
2006-07	2,412.15	89.60	-17.54	2,322.55	-82.99	1:25.9
2007-08	1,688.67	31.35	-65.01	1,657.32	-28.64	1:52.9
Total	**22,607.89**	**907.21**	-	**21,700.69**	-	**1:24**

Source: I-SAPS' calculations from Khyber Pakhtunkhwa budget books 1998-2008

Secondly, there were huge variations in the spending on preparedness during the period under review. While variations in spending on response take place according to the frequency and severity of impact of disasters in a given year, changes in great proportions in spending on preparedness are not expected generally because it is not contingent upon a disaster event. This is not the case in Khyber Pakhtunkhwa. Out of the past ten years, eight years witnessed substantial reductions in spending on preparedness activities; the spending increased only in 2004-05. This pattern does not conform to the political commitments made in the post-earthquake period which accord a high priority to disaster preparedness.

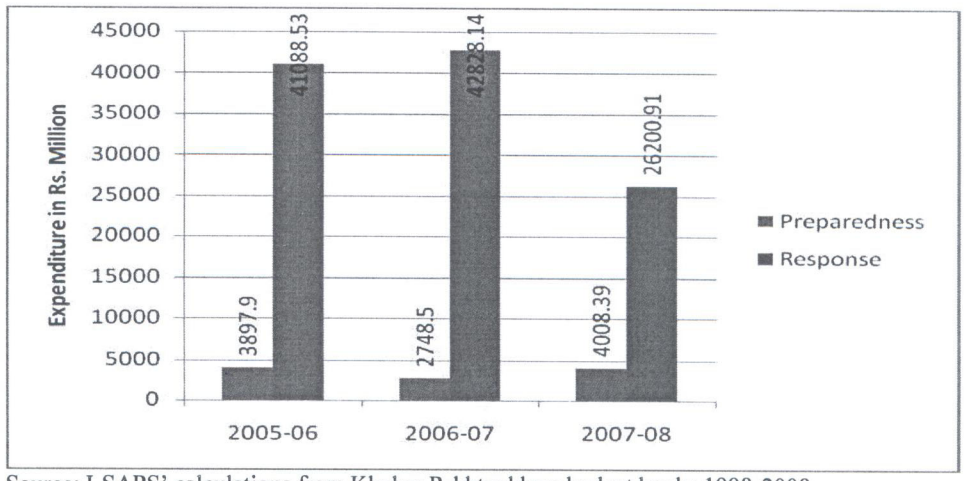
Figure 2.7: Pre-earthquake Spending on Preparedness and Response



Source: I-SAPS' calculations from Khyber Pakhtunkhwa budget books 1998-2008

Thirdly, the sectoral distribution of spending has worsened in the post-earthquake period. In the pre-earthquake period, spending on response was two to five times higher than that on preparedness except for the flood-affected years of 2002-03 and 2003-04 (Figure 2.7, Table 2.8). In the post-earthquake period, spending on response has always been higher, i.e. about 8 times of that on preparedness (Figure 2.8, Table 2.8). This pattern of spending does not correspond to the claims of a paradigm shift in DRM in Pakistan.

Figure 2.8: Post-earthquake Spending on Preparedness and Response



Source: I-SAPS' calculations from Khyber Pakhtunkhwa budget books 1998-2008

An important development in the post-earthquake period is the establishment of Provincial Disaster Management Authority (PDMA) in Khyber Pakhtunkhwa. In 2009-10, the provincial government has allocated Rs. 39.321 million for PDMA which is currently at the nascent stage of operationalization. Details about expenditure of the allocated resources will be available next year.

Statistics on spending by different provincial departments are not readily available. However, the budget books have recorded expenditure of the provincial government

on disaster preparedness and response which was spent through targeted programs which are classified as multi-sectoral development projects, local government development projects and special programs. An analysis of these programs shows that the projects which were designed to enhance disaster risk reduction capabilities were quite a few over the past decade. The most notable among those are the provincial Disaster Management Program 2005-09 (Rs. 6.02 million), provision of fire brigade in selected districts through local governments 2003-06 (Rs.177.5 million) and DERA II 2005-09 (Rs.334 million) (see Tables 36 and 37, Annex I). The largest amount was spent on flood protection projects (Rs. 852.7 million) (Table 38, Annex I). Thus, most of the preparedness work in the province has focused on only three types of disasters, namely floods, drought and fire protection. This approach shows that the narrow perception of disaster has not changed significantly at the policy level because meager resources are being earmarked for preparedness to cope with other kinds of disasters.

As far as earthquake is concerned, five districts of Hazara Division (Haripur, Abbotabad, Mansehra, Battagram & Kohistan) and Shangla District of Malakand Division were severely affected in 2005. Many people died (estimated about 18000 in Khyber Pakhtunkhwa) and about 0.3 million houses were damaged. The provincial government spent a total of Rs. 516 million (in addition to spending by the federal government) on reconstruction and rehabilitation projects for earthquake affected areas. This figure does not appear to be very high, probably because the federal government spent huge funds directly in the affected areas.

For the protection against floods, the provincial government spent a total of Rs. 688.48 million during 1998-2007. Most development budget was spent for continuation of existing flood protection works and rehabilitation and improvement of existing works (Table 38, Annex I).

In addition to natural disasters, the province has been adversely affected by the deterioration of law and order situation. As a result, a huge amount of compensation is being paid to the victims of the bomb blasts and other saboteur activities, directly by the home and police department. Home Department pays compensation to general public and police. Table 2.9 shows that in every year since 2006-07, the expenditure of provincial police department has been exceeding the allocations. In 2008-09, the expenditure was 58 percent higher than the allocated amount. This is largely attributable to high liabilities of compensation for the victims of bomb blasts and suicide attacks and procurement of anti terrorist weaponry and gadgets.

Table 2.9: Allocations and Spending of Khyber Pakhtunkhwa Police Department (Rs. Million)

Year	Allocations	Spending	% increase
2006-07	4.53	5.02	14
2007-08	5.14	6.61	32
2008-09	6.56	10.43	58

Source: I-SAPS' calculations from Khyber Pakhtunkhwa budget books 1998-2007

2.2.5 Balochistan

Balochistan is highly vulnerable to droughts, floods, cyclones, landslides, mudslides, and earthquakes. It is also prone to human induced hazards such as civil unrest, terrorism and sectarian violence (Table 39, Annex I). These disasters affect a large number of people and destroy the agricultural crops and livestock. Quetta, Gwadar, Khuzdar, Kech, Jhal Magsi, Noshki, Nasirabad, and Lasbela are particularly susceptible to different types of disasters. In 2007, cyclone named 'Yemyin 3b' hit Balochistan and caused economic loss of Rs. 24 billion to Balochistan. The heavy monsoon rains in the area left an estimated 250,000 homeless in the Ketch district alone. The cyclone inundated 40 villages, according to Balochistan Disaster Management Plan. On August 3, 2008, flash flood in District Bolan and Jhal Magsi resulted in ten deaths and damaged five hundred houses. Moreover, an earthquake of magnitude 6.5 hit parts of Balochistan in 2008. It destroyed thousands of houses and left people shelterless in extremely cold weather. It killed more than 300 people and displaced 70,000 individuals.

The provincial government of Balochistan spent a total amount of Rs. 8.20 billion on DRM during 1998-99 to 2007-08. The pattern of provincial spending appears somewhat similar to that of the federal government in the sense that the development budget is greater than the current budget. During the past ten years, the provincial government spent about Rs. 7.6 billion on DRM development schemes, as compared to expenditure of Rs. 628.50 million on salary and non-salary heads. Overall, the ratio between current and development budget is 1:12 respectively (Table 2.10). However, within the current budget, a high proportion (77 percent) was spent on salary heads and only 23 percent was spent on non-salary heads during 1998-99 to 2008-09 (Table 40, Annex I).

Table 2.10: Overall DRM Expenditure during 1998-2007 (Rs Million)

Year	Total	Current		Development		Current-Development Ratio
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	54.05	8.17		45.89		1:6
1999-00	267.70	267.70	3177.76	0.00	-100.00	1:0
2000-01	761.18	66.34	-75.22	694.84	694	1:10
2001-02	840.45	18.44	-72.20	822.01	18.30	1:45
2002-03	170.49	26.19	41.98	144.31	-82.44	1:6
2003-04	3474.91	30.39	16.06	3444.52	2286.97	1:113
2004-05	1597.45	83.07	173.32	1514.38	-56.04	1:18
2005-06	613.93	44.02	-47.01	569.91	-62.37	1:13
2006-07	124.75	27.94	-36.52	96.81	-83.01	1:3
2007-08	299.78	56.23	101.22	243.55	151.58	1:4
Total	**8,204.69**	**628.50**		**7,576.19**		**1:12**

Source: I-SAPS' calculations from Balochistan budget books 1998-2007

A breakdown of total spending on disaster preparedness and response activities reveals significant findings. Out of Rs. 8.20 billion spent on DRM during the past decade, Rs.5.1 billion (62 percent) were spent on response activities. Overall, spending on response activities was twice the spending on preparedness. This is

attributed to huge spending on response activities in 1999-2000, 2002-03, and 2004-05. This means that the provincial government of Balochistan spends more funds on building DRM infrastructure and capacities (Table 2.11)

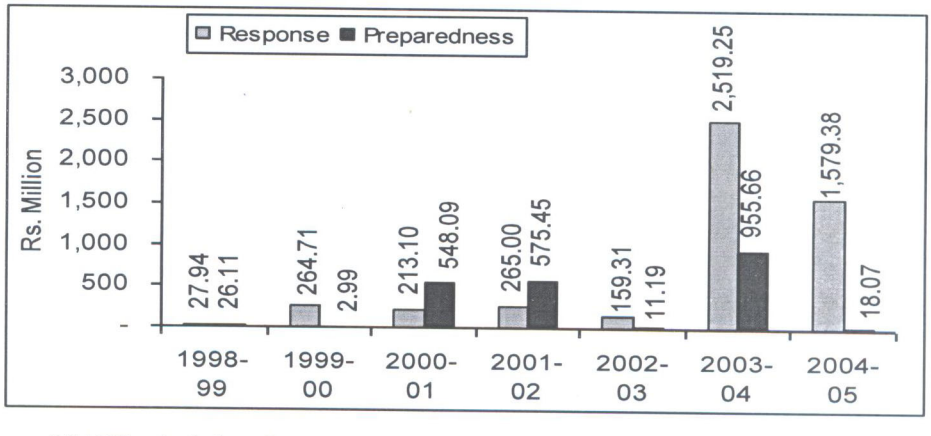
Table 2.11: Expenditure on Disaster Preparedness and Response during 1998-2007 (Rs. Million)

Year	Total	Response		Preparedness		Response-Preparedness
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	54.05	27.94		26.11		1:1
1999-00	267.70	264.71	847.32	2.99	-88.53	88:1
2000-01	761.18	213.10	-19.50	548.09	18206.86	1:3
2001-02	840.45	265.00	24.36	575.45	4.99	1:2
2002-03	170.49	159.31	-39.88	11.19	-98.06	14:1
2003-04	3474.91	2519.25	1481.40	955.66	8443.02	3:1
2004-05	1597.45	1579.38	-37.31	18.07	-98.11	87:1
2005-06	613.93	20.00	-98.73	593.93	3187.60	1:30
2006-07	124.75	15.89	-20.55	108.86	-81.67	1:7
2007-08	299.78	46.47	192.44	253.31	132.69	1:5
Total	**8,204.69**	**5,111.04**	-	**3,093.65**	-	**2:1**

Source: I-SAPS' calculations from Balochistan budget books 1998-2008

Secondly, during the period under review, there were huge variations in the spending on response in line with the frequency and severity of impact of disasters. Changes in spending on preparedness are not expected in great proportions generally because it is not contingent upon a disaster event. During all years in the past decade, substantial increase in spending on response activities is witnessed, particularly in 1999-2000, 2002-03, and 2004-05. This pattern does not conform to the new DRM structure in Pakistan which accords a high priority to disaster preparedness.

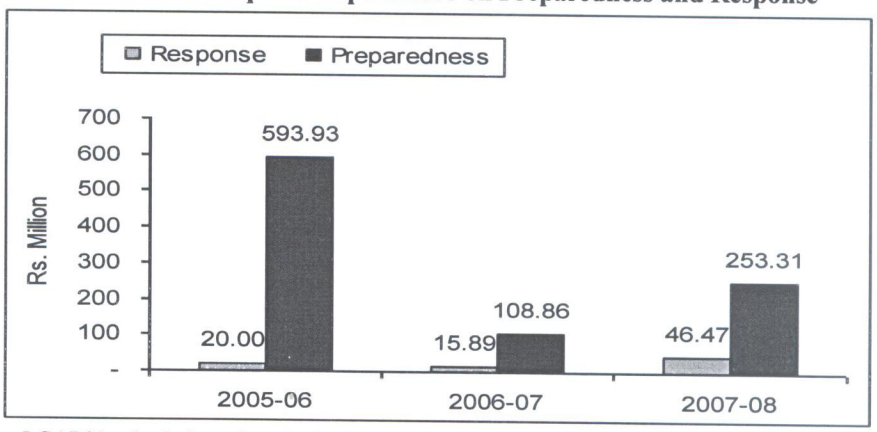
Figure 2.9: Pre-earthquake Expenditure on Preparedness and Response



Source: I-SAPS' calculations from Balochistan budget books 1998-2008

Thirdly, in the pre-earthquake period, spending on response was twice the spending on preparedness. During 2004-05, the spending on response was 87 times higher than that on preparedness (Figure 2.9, Table 2.11). In the post-earthquake period, the same pattern continued as overall spending on response has been higher about 2 times that on response (Figure 2.10, Table 2.11).

Figure 2.10: Post-earthquake Expenditure on Preparedness and Response



Source: I-SAPS' calculations from Balochistan budget books 1998-2008

An important development in the post-earthquake period is the establishment of Provincial Disaster Management Authority (PDMA) in Balochistan. To contribute to effective and comprehensive DRM and to make Balochistan a disaster resilient province, a Provincial Disaster Management Plan has been prepared by PDMA with the assistance of National Disaster Management Authority.

An analysis of targeted DRM programs shows that the projects, which were designed to enhance disaster risk reduction capabilities were quite a few over the entire decade. The most notable among those are two response projects, Natural Disaster Package (Rs. 2.62 billion) and Drought Emergency Relief Assistance (Rs. 1.96 billion) and two preparedness projects, Water Resources through Delay Action Dam (Rs. 2.412 billion) and Flood Control/Protection (Rs. 578.18 million). Thus, most of the preparedness work in the province has focused on only one type of disaster namely floods, a pattern that is also found in the Punjab. This approach shows that the narrow perception of disaster has not changed significantly at the policy level because meager resources are being earmarked for preparedness to cope with other kinds of disasters.

Section 2.3: District Level -The Case of Charsadda District

Given the three-tier DRM system of Pakistan, public spending on disaster preparedness and response in a district comes from three sources: (1) direct spending of the federal government through concerned organizations (e.g. ERRA, ERC) and specialized agencies, (2) spending of provincial governments which may include federal grants, and (3) spending of the district government which may include grants from both the provincial and federal governments. However, it is difficult to track the DRM spending from all these sources in a district due to poor data management practices. Generally, district-level spending statistics on DRM activities are not available. This problem was the main limiting factor in analysis of public spending in Charsadda district due to which an overall pattern of spending could not be

worked out. Only data about floods control and fire brigade were readily available which are explained below.

In Khyber Pakhtunkhwa, Charsadda district is particularly known for its vulnerability to floods. The allocation of funds for mitigation of risks associated with floods and response activities is made for the entire Peshawar Floods Division, which includes Charsadda, some parts of Peshawar and Nowshera. Out of total budgetary allocations for the Division, the funds spent on floods control in Charsadda district cannot be separated due to division-wise spending. However, the research team learnt during data collection process that most of the funds earmarked for Peshawar Floods Division went to Charsadda district because it is more vulnerable to floods than parts of Peshawar and Nowshera which are included in the Division.

During the period covered in the study, the Irrigation Department of Khyber Pakhtunkhwa received a total of Rs. 381.98 million for Peshawar Flood Division from the provincial Annual Development Program (ADP) and Federal Public Sector Development Program (PSDP). The PSDP funding started in 2001-02 in response to the major flood event of 2001. The 2003 flood triggered a huge increase in PSDP allocations which increased from 2.14 million rupees in 2003-04 to 36.79 million rupees in 2004-05. Further increase in allocations during the next three years exceeded the ADP allocations. It is important to note that the allocations from both ADP and PSDP fell to previous low levels after two to three years following the major flood event (Table 2.12).

Table 2.12: Allocations for Peshawar Flood Division during 1998-2007 (Rs. Million)

Year	Provincial ADP Allocation	Federal PSDP	Total
1998-99	10.10	0	10.10
1999-00	4.70	0	4.70
2000-01	25.65	0	25.65
2001-02	10.36	4.15	14.51
2002-03	1.46	5.18	6.64
2003-04	19.66	2.14	21.80
2004-05	3.54	36.79	40.33
2005-06	11.00	42.78	53.78
2006-07	50.87	43.36	94.23
2007-08	52.39	57.85	110.24
Total	**189.73**	**192.25**	**381.98**

Source: I-SAPS' calculations from provincial ADP and federal PSDP

This pattern indicates that spending on floods control has remained largely response-oriented in Charsadda district and more specifically, in Peshawar Flood Division. The government needs to abandon this pattern, especially in high-risk districts such as Charsadda. More money has to be spent on preparedness activities to mitigate the financial and human losses occurring due to floods in the district.

Fire brigade is a crucial public service for firefighting which requires immediate response. The urgency associated with fire fighting necessitates that fire brigade has to be accessible at a short notice to vulnerable populations and areas. This is not the case in Charsadda district, however. Tangi – a tehsil of Charsadda district – has no fire brigade department at all. This means that a fire incident can play havoc with the lives of people in this tehsil because the only fire brigade department located in Charsadda tehsil cannot respond quickly in Tangi tehsil. The missing facility of fire brigade is an glaring example of neglected DRM system at the district level. There is a need to provide such missing DRM arrangements at the local level in order to translate the political commitments made in the post-earthquake period into a reality.

The issue of missing fire brigade service aside, allocations for the existing fire brigade in Charsadda tehsil do not appear to be driven by rationality and common sense. The data on current budget of the department reveals that the department spent a little more than Rs.2.7 million in 2008-09. Out of this amount, about 40 percent was spent on salaries of permanent staff. Out of the non-salary amount, Rs.1.2 million was spent on POL charges only. This amount appears to be very high as 27 cases of fire were reported and attended by the only one functional vehicle under TMA Charsadda during 2008-09 (Table 2.13). This amount is higher than the entire salary budget. The data do not indicate any spending in non-salary component on preparedness activities such as awareness about fire safety.

Table 2.13: Current Expenditure on Fire Brigade in Tehsil Charsadda (Rs)

Year	Category	Head	Expenditure
2008-09	Salary	Fire Brigade In-charge	148,200
		3 Drivers	304,668
		6 Helpers	616,032
	Sub-total salary		1,068,900
	Non-salary	POL Charges	1,200,000
		Repair of transport	300,000
		Others	150,000
	Sub-total non-salary		1,650,000
		Total	**2,718,900**

Source: Finance Department, Charsadda

At the district level, District Disaster Management Authority (DDMA) has to be established which is mandated to play an important role for DRM. The Authority has not yet been established in the district and therefore, no budgetary allocations have been made.

The importance of district-level DRM system can hardly be overemphasized, as it serves as the frontline for disaster preparedness and response. In case of an emergency, it is the local government which is expected to respond immediately even before a response from the federal or provincial governments. However, little

attention has been paid to rationalize the spending in districts, as they continue to remain on the receiving end of the federal and provincial governments' grants. There is a need to examine and address the spending needs of districts for building their preparedness and mitigation capacities and strengthening of the local DRM systems to respond to disaster events effectively.

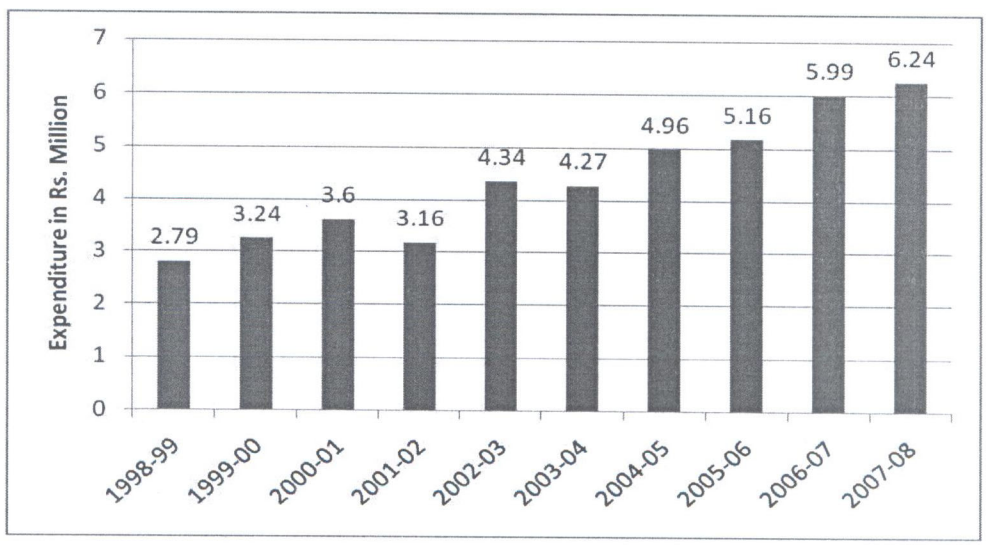
Section 2.4: Federally Administered Areas and Self-Governing Territories

In addition to the four provinces, the Federally Administered Tribal Area (FATA) is also prone to various kinds of disasters. Similarly, the self-governing territory of Gilgit-Baltistan (formerly Northern Areas) has also incurred huge losses due to natural disasters in the past. The independent and self-governing state of AJK is also highly susceptible to disasters. Therefore, analysis of DRM expenditure of FATA, Gilgit-Baltistan and AJK was within the scope of this study. However, limitations of data did not allow a fuller analysis for FATA and Gilgit-Baltistan because their expenditure is reported in the federal budget for States and Frontiers. For a larger part, it is not possible to segregate their DRM expenditure from the federal budget documents. AJK has its own budget but it does not provide a detailed breakdown of DRM expenditure. Therefore, this section relies on limited budgetary information available for FATA and AJK.

2.4.1 FATA

As noted earlier, a detailed breakdown of DRM expenditure in FATA is not readily available except for Civil Defence . The data compiled by I-SAPS indicates that the current expenditure on Civil Defence has increased considerably in FATA from Rs.2.79 million in 1998-99 to Rs.6.24 million in 2007-08 (Figure 2.11). However, the pattern of spending has remained unchanged over the past decade. That is to say, the largest proportion of total Civil Defence expenditure goes to salaries (Table 43, Annex I). Non-salary budget for operational services is meager and seems insufficient to keep Civil Defence fully functional and responsive.

Figure 2.11 Current Expenditure on Civil Defence in FATA



2.4.2 AJK

AJK is highly vulnerable to natural disasters like earthquakes, landslides, avalanches, etc (Table 44, Annex 1). Moreover, it also experiences disasters due to cross-border firing, terrorism, wild fire, etc. During the 1990s, 1448 people lost their lives and 4,000 people were wounded in firing and shelling incidents from across the border. AJK was worst affected on October 8, 2005 due to the high-magnitude earthquake which had caused destruction in Khyber Pakhtunkhwa and northern areas of Pakistan and some parts of federal capital territory. As a result of the earthquake, about 3.5 million people were affected and around 200,000 housing units were destroyed. The earthquake immensely damaged the transport, agriculture, education and livestock sectors causing a loss of US$ 5.2 billion. The earthquake increased the probability of movement of glaciers and avalanches in AJK which is already highly susceptible to landslides in extreme north.

The AJK government greatly relies on grants from the federal government and international aid for dealing with disasters. The fiscal space for allocating resources for preparedness and response from its own sources is limited. Major proportion of its disaster-related expenditure goes to rehabilitation of refugees from the occupied Kashmir and other areas. During the study period i.e. 1998-99 to 2007-08, the AJK government spent a total amount of Rs.1.08 billion for rehabilitation of refugees. Out of this amount, Rs.1.07 billion was disbursed as grants for refugees. As table 2.14 shows, the volume of grants for refugees has been increasing steadily since 1998-99.

Table 2.14: Grants for Refugees 1998-2008 (Rs Million)

Year	Grants Refugees
1998-99	77.00
1999-00	77.00
2000-01	80.00
2001-02	85.00
2002-03	105.00
2003-04	115.00
2004-05	122.00
2005-06	130.00
2006-07	138.00
2007-08	145.00
Total	**1,074.00**

Source: I-SAPS' calculations from AJK budget books 1998-2008

Jammu and Kashmir Refugees Rehabilitation Organization (JKRRO) is responsible for settlement and rehabilitation of refugees. The current expenditure of this organization has been increasing steadily and exceeded Rs.1 million per year in 2007-08 (Table 45, Annex I). The refugee expenditure indicates that regional

conflict in the form of Kashmir dispute stands out as a major factor in AJK's DRM expenditure.

To summarize, the analysis in this chapter has shown that considerable resources have been spent on DRM during the past decade by the federal and provincial governments. Overall, there are significant variations in the way the governments spend resources, but none of them conforms to the new institutional and legal framework for DRM mainly for two reasons: (1) Most of the expenditure on DRM has gone to response activities while preparedness remains grossly neglected, and (2) the expenditure remains concentrated on a few types of disasters rather than focusing on all types. There is a need to align the allocation and expenditure of resources in line with the new DRM policies and structures adopted in the post-earthquake period in Pakistan.

Chapter 3

Summary and Conclusions

This study has examined the pattern of public spending on disaster risk management (DRM) in Pakistan. Specifically, it has analyzed disaster-related expenditure of the federal government and all provincial governments over the past decade (i.e. 1998-99 to 2007-08). In order to collect some evidence about issues in DRM expenditure of the district governments, a case study of Charsadda district has been included. Moreover, DRM expenditure of Federally Administered Tribal Areas (FATA), Gilgit-Baltistan and Azad Jammu and Kashmir (AJK) has also been discussed, though a fuller analysis for these three territories was not possible due to unavailability of a breakdown of budget data. Methodologically, the study has shown government's expenditure on 'preparedness' and 'response' separately - the two broadly-defined phases of DRM which represent the pre- and post-disaster efforts, respectively. The main objective of the study is to explore ways in which public spending could be made more effective for making Pakistan safer from all kinds of disasters. Key findings and conclusions drawn from the analysis are presented below.

3.1 During the past decade (i.e. 1998-2007), the federal government spent about Rs.155.51 billion (approximately USD 1.85 billion) on DRM, according to the federal budget books. A key feature of the federal spending is that the distribution of funds between preparedness and response remains inadequate, as it is overwhelmingly skewed towards the latter. Out of total amount, only Rs. 15.96 billion (10 percent) was spent on disaster preparedness, as compared to a little more than Rs. 139.55 billion (90 percent) on response. Overall, the spending on disaster response has been nine times higher than preparedness between 1998-99 and 2007-08.[4] This pattern of spending does not conform to the newly revamped DRM system of the country which recognizes the need for greater spending on disaster mitigation and risk reduction. While a paradigm shift is taking place from the traditional relief-oriented to a holistic DRM approach, there is no corresponding departure from the traditional spending pattern; it continues to be reactive and response-oriented. If the existing DRM system has to be strengthened, more funds need to be allocated for disaster preparedness.

3.2 The cost of DRM is rising in Pakistan. Between 1998-99 and 2004-05, the highest expenditure of the federal government for DRM was in the vicinity of Rs. 12 billion. The annual expenditure has been considerably higher than Rs. 30 billion in every year since 2005-06 and exceeded Rs. 40 billion in two years after the 2005 earthquake. Similar rise is evident in the expenditure of all provincial governments. While there is no denying that part of this rise is due to occurrence of major disasters during the last five years, low spending

[4] From one point of view, expenditure on response activities during this period was bound to be on the higher side due to occurrence of disasters of unprecedented scale such as drought in Balochistan and Sindh, earthquake in 2005, cyclone in 2007, etc. However, it is important to note that expenditure on preparedness has not exceeded the expenditure on response in any year during the study period even when there was no major disaster event.

on preparedness is equally important reason due to scale of losses remains huge calling for greater expenditure every year.

3.3 At the federal level, public spending on development projects has been higher for most of the years in the recent past. Overall, the costs of development projects exceeded the recurrent costs by five times during the past decade. However, out of total development budget, most of the spending (83-94 percent) is going to disaster response; little funds are being spent on disaster reduction measures, awareness-raising, drills and trainings, etc. Disaster preparedness remains grossly ignored in both current as well as development budgets.

3.4 The federal government is spending considerable resources on provincial Civil Defence Training Schools (current expenditure of Civil Defence departments is charged from the provincial budgets). During the study period, an amount of Rs.222.43 million was spent on the Training Schools. However, a major proportion of this amount was spent on salaries. An important implication is that the proportion of budget left for training-related activities (teaching aids, outreach, improvement in training materials, etc.) is much lower than the personnel costs. There is a need to increase allocations for training-related activities of Civil Defence Training Schools in order to make the role of Training Schools more effective in DRM.

3.5 Key federal organizations including ERRA, NDMA and NVM are allocated only single line non-salary budget; there is no separate budget line for staff salaries. Therefore, money spent on salaries and benefits cannot be separated in the budget books from the spending on provision of relief and other DRM activities (although the Authorities maintain head-wise expenditure internally).

3.6 During the period under study, the Prime Minister's Secretariat spent the largest amounts of funds on DRM (Rs.78.16 billion), followed by the Cabinet Division (Rs.24.08 billion). These figures largely represent the ERRA spending. However, it is important to note that spending of NDMA has decreased by 40 percent in 2008-09. Given that it is the key agency responsible for disaster preparedness, it requires huge resources which must be utilized to build disaster risk reduction capacities.

3.7 By type of disaster, the federal government spent the largest amount of funds on earthquake (Rs.97.46 billion) followed by drought (Rs.26.44 billion) and floods (Rs.9.75 billion) during the past decade. The largest proportion of budget is being spent on these three types of disasters whereas the DRM approach requires adequate resources for all kinds of disasters and hazards. There is a need to rationalize budgetary allocations according to hazard- and disaster-specific preparedness and response needs.

3.7 The imbalance between spending on preparedness and response is higher at the provincial level, as compared to the federal level. Out of Rs. 22.6 billion spent on DRM during the past decade, Rs.21.7 billion (96 percent) were spent on response activities. Overall, spending on response activities was a

little more than 24 times the spending on preparedness. This means that the provincial government of Khyber Pakhtunkhwa spends little funds on building DRM infrastructure and capacities. The traditional reactive approach to disaster management dominates the budgetary decisions of the provincial government. In the pre-earthquake period, spending on response was two to five times higher than that on preparedness except for the flood-affected years of 2002-03 and 2003-04. In the post-earthquake period, spending on response has always been higher, i.e. about 8 times of that on preparedness. This pattern of spending does not correspond to the claims of a paradigm shift in DRM in Pakistan.

3.8 The provincial government of Punjab spent a total of Rs. 23.5 billion on DRM during 1998-99 to 2007-08. The pattern of provincial spending appears similar to that of the federal government in the sense that its development budget is far greater than current budget. During the past decade, the provincial government spent about Rs.16.8 billion on DRM development schemes, as compared to the meager spending of Rs. 6.7 billion on salary and non-salary heads. Overall, development spending is more than almost thrice the current spending. Even within the meager current budget, a high proportion (78 percent) was spent on non-salary costs during 1998-99 to 2007-08. Within the development budget, 99 percent amount was spent on disaster preparedness during 1998-99 to 2007-08. This indicates that provincial government of Punjab is spending more amount for building capacities and infrastructure for disaster risk reduction and effective management. However, the focus is very narrow because the spending is largely for flood control only.

3.9 In Punjab, out of Rs. 23.5 billion spent on DRM during the past decade, only Rs. 2 billion were spent on response activities and Rs. 21.5 billion were spent on preparedness activities. Overall, spending on preparedness activities was a little more than 11 times the spending on response. In the pre-earthquake period, spending on preparedness was ten times higher than that on response. In the post-earthquake period, spending on preparedness was more than 12 times that on response.

3.10 Despite that the importance of Civil Defence for DRM is well recognized, political will for making this department effective does not appear strong if looked from the perspective of resource allocation. This is evident from the fact that Civil in the Punjab received merely 1 percent of the total spending on preparedness during 1998-99 to 2007-08. During the study period, the provincial government spent a total of Rs. 263.44 million for the department under current budget. Out of this amount, Rs. 213.11 million (81 percent) was spent on salary. By implication, major chunk of budgeted resources is spent on employees-related expenses and little money is spent for disaster risk reduction activities such as awareness or drills, etc.

3.11 The provincial government of Sindh spent a total of Rs. 6.1 billion on DRM during 1998-99 to 2007-08. The development expenditure is lower than current expenditure. During the past decade, the provincial government spent about Rs. 2.8 billion on DRM development schemes, as compared to the

spending of Rs. 3.2 billion on salary and non-salary heads. Overall, the ratio between current and development budget is 1.2:1. However, within the current budget, a high proportion (96 percent) was spent on non-salary heads and only 4 percent on salary heads during 1998-99 to 2007-08. This pattern of spending on development heads (e.g. awareness raising, purchase of technical equipment, trainings and drills, etc.) means more spending on disaster preparedness.

3.12 The Sindh government spent Rs. 4.2 billion (69 percent) on response activities out of total Rs. 6.1 billion spent on DRM during the past decade. Overall, spending on response activities was twice the spending on preparedness. This means that the provincial government of Sindh spends little funds on building DRM infrastructure and capacities. The traditional reactive approach to disaster management dominates the budgetary decisions of the provincial government. The pattern of high spending on response is visible in all years, except for the year 2006-07 in which the expenditure on disaster preparedness was twice the spending on disaster response.

3.13 The provincial government of Khyber Pakhtunkhwa spent a total of Rs. 22.6 billion on DRM during 1998-99 to 2007-08. The current budget is far greater than the development budget which means that most of the provincial budget related to disaster is spent for maintaining the salary and non-salary costs of existing DRM infrastructure. During the past decade, the provincial government spent about Rs.16.9 billion on salary and non-salary heads, as compared to the meager spending of Rs.5.7 billion on development heads. Overall, current spending is more than twice the development spending.

3.14 In Khyber Pakhtunkhwa, another key issue is that most of the preparedness work in the province has focused on only three types of disasters, namely floods, drought and fire protection. In recent years, a huge amount of compensation is being paid to the victims of the bomb blasts and other saboteur activities, directly by the home and police department.

3.15 The provincial government of Balochistan spent a total of Rs. 8.20 billion on DRM during 1998-99 to 2007-08. The pattern of provincial spending appears similar to that of the federal government in the sense that its development budget is far greater than current budget. During the past decade, the provincial government spent about Rs.7.6 billion on DRM development schemes, as compared to the meager spending of Rs. 628.50 million on salary and non-salary heads. Overall, development spending is 12 times more than the current spending. Even within the meager current budget, a high proportion (77 percent) was spent on salary costs during 1998-99 to 2007-08.

3.16 In Khyber Pakhtunkhwa, out of Rs. 8.20 billion spent on DRM during the past decade, only Rs.5.1 billion were spent on response activities and Rs.3.0 billion on preparedness activities. Overall, spending on response activities was more than two times the spending on preparedness. By implication, this pattern favors the status quo and allows little fiscal space for building capacities and infrastructure for disaster risk reduction and effective management. In the pre-earthquake period, spending on response was two

times higher than that of preparedness. In the post-earthquake period, spending on preparedness was more than 12 times of that on response. The huge spending on preparedness in 2005-06 and 2006-07 indicates that in Balochistan the budgetary decisions of the provincial government are dominated by the proactive approach to disaster management, which corresponds to the claims of paradigm shift in DRM in Pakistan.

3.17 At the district level, it was found that there are serious issues in disaster data management practices which make it difficult to track DRM spending. Generally, district-level spending statistics on DRM activities are not separated and maintained by district authorities.

3.18 The case study of Charsadda district revealed important insights. Being a flood-prone district, a high proportion of DRM spending in Charsadda district is consumed by floods protection projects. During the period covered in the study, the Irrigation Department of Khyber Pakhtunkhwa received a total of Rs.405.44 million for Peshawar Flood Division from the provincial Annual Development Program (ADP) and Public Sector Development Program (PSDP); most of this funding was spent in Charsadda district. Spending on floods control remains largely response-oriented in Charsadda district and more specifically, in Peshawar Flood Division

3.19 The department of fire brigade is critical for DRM at the district level. In Charsadda district, the data on current budget of the fire brigade department reveals that the department spent a little more than Rs. 2.7 million in 2008-09. Out of this amount, about 40 percent was spent on salaries of permanent staff. Out of the non-salary amount, Rs.1.2 million was spent on POL charges only. This amount appears to be very high as 27 cases of fire were reported and attended by the only one functional vehicle under TMA Charsadda during 2008-09. This amount is higher than the entire salary budget. The analysis further found that Tangi – a tehsil of the district – had no fire brigade department at all. The missing facility of fire brigade is a glaring example of neglected DRM system at the district level. Moreover, Charsadda district is one of the 12 districts of Khyber Pakhtunkhwa where no Civil Defence department exists.

3.20 The current expenditure on civil has increased considerably in FATA from Rs.2.79 million in 1998-99 to Rs.6.24 million in 2007-08. However, the pattern of spending has remained unchanged over the past decade. That is to say, the largest proportion of total civil expenditure goes to salaries. Non-salary budget for operational services is meager and seems insufficient to keep civil fully functional and responsive.

3.21 In AJK regional conflict in the form of Kashmir dispute stands out as a major factor in AJK's DRM expenditure. Major proportion of its disaster-related expenditure goes to rehabilitation of refugees from the occupied Kashmir and other areas. During the study period i.e. 1998-99 to 2007-08, the AJK government spent a total amount of Rs.1.08 billion for rehabilitation of refugees. Out of this amount, Rs.1.07 billion was disbursed as grants for

refugees. The volume of grants for refugees has been increasing steadily since 1998-99.

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Annex 1

DRM Expenditure of Federal Government

Table 1: Current Expenditure of Federal Government on Preparedness and Response (Rs. Million)

Year	Total	Preparedness		Response		Percentage of Total	
		Expenditure	Change (%)	Expenditure	Change (%)	Preparedness	Response
1998-99	357.04	16.73		340.31	-	5	95
1999-00	1855.39	19.42	16.08	1835.97	439.50	1	99
2000-01	3151.58	19.85	2.21	3131.73	70.58	1	99
2001-02	1706.09	19.95	0.50	1686.14	-46.16	1	99
2002-03	1768.78	23.18	16.19	1745.6	3.53	1	99
2003-04	1772.31	25.5	10.01	1746.81	0.07	1	99
2004-05	2476.87	29.46	15.53	2447.41	40.11	1	99
2005-06	3443.57	73.49	149.46	3370.08	37.70	2	98
2006-07	2740.18	94.3	28.32	2645.88	-21.49	3	97
2007-08	7328.17	176.76	87.44	7151.41	170.28	2	98
2008-09	5049.45	124.5	-29.57	4924.95	-31.13	2	98
Total	31649.43	623.14		31026.29		2	98

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 2: Salary and Non-Salary Expenditure of Federal Government (Rs. Million)

Year	Total	Salary		Non-salary		Percentage of Total	
		Expenditure	Change (%)	Expenditure	Change (%)	Salary	Non-salary
1998-99	357.04	14.69		342.35		4	96
1999-00	1855.4	16.04	9.19	1839.36	437.27	1	99
2000-01	3151.58	15	-6.48	3136.58	70.53	1	99
2001-02	1706.09	15.77	5.13	1690.32	-46.11	1	99
2002-03	1768.78	18.13	14.97	1750.65	3.57	1	99
2003-04	1772.31	20.03	10.48	1752.28	0.09	1	99
2004-05	2476.88	23.52	17.42	2453.36	40.01	1	99
2005-06	3443.56	24.91	5.91	3418.65	39.35	1	99
2006-07	2740.18	29.12	16.90	2711.06	-20.70	1	99
2007-08	7328.18	32.55	11.78	7295.63	169.11	1	99
2008-09	5049.45	35.06	7.71	5014.39	-31.27	1	99
Total	31649.45	244.82		31404.63		1	99

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 3: DRM-Related Salary and Non-Salary Expenditure on Preparedness

Year	Total	Salary		Non-salary		Percentage	
		Expenditure	Change (%)	Expenditure	Change (%)	Salary	N sa
1998-99	16.73	14.18		2.55		85	
1999-00	19.43	15.47	9.10	3.96	55.29	80	
2000-01	19.85	14.42	-6.79	5.43	37.12	73	
2001-02	19.95	15.19	5.34	4.76	-12.34	76	
2002-03	23.18	17.43	14.75	5.75	20.80	75	
2003-04	25.5	19.32	10.84	6.18	7.48	76	
2004-05	29.47	22.72	17.60	6.75	9.22	77	
2005-06	73.49	24.02	5.72	49.47	632.89	33	
2006-07	94.3	28.1	16.99	66.2	33.82	30	
2007-08	176.76	31.42	11.81	145.34	119.55	18	
2008-09	124.5	33.56	6.81	90.94	-37.43	27	
Total	623.16	235.83		387.33		38	

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 4: Federal Government's Salary and Non-Salary Expenditure on Response (Rs. Million)

Year	Total	Salary		Non-salary		Percentage	
		Expenditure	Change (%)	Expenditure	Change (%)	Salary	N sa
1998-99	340.31	0.51		339.8		0.15	9
1999-00	1835.97	0.57	11.76	1835.4	440.14	0.03	9
2000-01	3131.73	0.58	1.75	3131.15	70.60	0.02	9
2001-02	1686.14	0.58	0.00	1685.56	-46.17	0.03	9
2002-03	1745.6	0.7	20.69	1744.9	3.52	0.04	9
2003-04	1746.81	0.71	1.43	1746.1	0.07	0.04	9
2004-05	2447.41	0.8	12.68	2446.61	40.12	0.03	9
2005-06	3370.07	0.89	11.25	3369.18	37.71	0.03	9
2006-07	2645.88	1.02	14.61	2644.86	-21.50	0.04	9
2007-08	7151.42	1.13	10.78	7150.29	170.35	0.02	9
2008-09	4924.95	1.5	32.74	4923.45	-31.14	0.03	9
Total	31026.29	8.99		31017.3		0.03	9

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 5: Development Expenditure of Federal Government (Rs. Million)

Year	Total	Preparedness Projects		Response Projects		Percentage of Total	
		Expenditure	Change (%)	Expenditure	Change (%)	Preparedness	Response
1998-99	775	775		0		100	0
1999-00	752.5	752.5	-2.9	0		100	0
2000-01	1175	1175	56.15	0		100	0
2001-02	10190.72	190.72	-83.77	10000		2	98
2002-03	6181	180	-5.62	6001	-39.99	3	97
2003-04	1349.93	849.93	372.18	500	-91.67	63	37
2004-05	1225.5	1225.5	44.19	0	-100	100	0
2005-06	41542.86	3824.41	212.07	37718.45		9	91
2006-07	42836.47	2654.2	-30.6	40182.27	6.53	6	94
2007-08	22881.13	3831.63	44.36	19049.5	-52.59	17	83
2008-09	29572.12	2797.71	-26.98	26774.4	40.55	9	91
Total	158482.22	18256.6		140225.62		12	88

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 6: Expenditure of the Cabinet Division during 1998-2008 (Rs Million)

Year	Total	Current		Development		Percentage of Total	
		Expenditure	Change (%)	Expenditure	Change (%)	Current	Development
1998-99	282.31	282.31	0	0	0	100	0
1999-00	577.97	577.97	104.73	0	0	100	0
2000-01	525.73	525.73	-9.04	0	0	100	0
2001-02	28.14	28.14	-94.65	0	0	100	0
2002-03	87.6	87.6	211.28	0	0	100	0
2003-04	88.81	88.81	1.38	0	0	100	0
2004-05	389.1	389.1	338.14	0	0	100	0
2005-06	1028.18	970.08	149.31	58.1	0	94	6
2006-07	302.73	302.73	-68.79	0	-100	100	0
2007-08	20769.83	1,769.83	484.63	19000.0	0.0	9	91
Total	**24,080.39**	**5022.29**	-	**19058.11**		**20.85**	**79.15**

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 7: Current Expenditure of Cabinet Division (Rs. Million)

Year	Total	Breakdown of Current Expenditure			
		Preparedness	Percentage	Response	Percentage
1998-99	282.31	0	0	282.31	100
1999-00	577.97	0	0	577.97	100
2000-01	525.73	0	0	525.73	100
2001-02	28.14	0	0	28.14	100
2002-03	87.6	0	0	87.6	100
2003-04	88.81	0	0	88.81	100
2004-05	389.1	0	0	389.1	100
2005-06	970.08	0	0	970.08	100
2006-07	302.73	7	2	295.73	98
2007-08	1769.83	134.92	8	1634.91	92
2008-09	2604.95	80	3	2524.95	97
Total	7627.25	221.92	3	7405.33	97

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 8: Current Expenditure of Cabinet Division (Rs. Million)

Current Expenditure Cabinet Division	1998-99	1999-2000	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	Total
Relief Goods Dispatch Organization	0.57	0.94	0.83	0.72	0.80	0.80	0.89	1.04	1.16	1.27	2.30	11.32
Salary	0.51	0.57	0.58	0.58	0.70	0.71	0.80	0.89	1.02	1.13	1.50	8.99
Non-Salary	0.05	0.37	0.25	0.14	0.10	0.09	0.09	0.15	0.14	0.14	0.80	2.32
Emergency Relief and Repatriation/Natural Calamities and Other Disasters	281.75	577.02	524.90	27.42	86.80	88.01	388.21	969.04	294.57	1468.65	2339.50	7045.87
Salary												0
Non-Salary	281.75	577.02	524.90	27.42	86.80	88.01	388.21	969.04	294.57	1468.65	2339.50	7045.87
Earth quake Re-construction & Rehabilitation Authority (ERRA)							0	The project was under Prime Minister's Secretariat		165	183.15	
Salary							0	0	0			0
Non-Salary										165	183.15	348.15
National Volunteers Movement							0	The project was under Prime Minister's Secretariat		34.92	20	

Salary							0	0	0	0		0
Non-Salary										34.92	20	54.92
National Disaster Management Authority							0	0	7	100	60	167
Salary							0	0	0			0
Non-Salary									7	100	60	167
Total Cabinet Division	282.31	577.97	525.73	28.14	87.60	88.81	389.10	970.08	302.73	1769.83	2604.95	7627.25
Salary	0.51	0.57	0.58	0.58	0.70	0.71	0.80	0.89	1.02	1.13	1.50	8.99
Non-Salary	281.80	577.40	525.15	27.56	86.90	88.10	388.30	969.18	301.71	1768.70	2603.45	7618.25

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 9: Development Expenditure of Cabinet Division (Rs. Million)

Year	Total	Change (%)	Preparedness Projects		Response Projects	
			Expenditure	Percentage	Expenditure	Percentage
2005-06	58.1		58.1	100	0	0
2006-07	0	-100	0	0	0	0
2007-08	19000		0	0	19000	100
2008-09	26718.814	40.63	0	0	26718.814	100
Total	45776.914		58.1		45718.814	

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 10: Expenditure on Development Projects of Cabinet Division (Rs. million)

Project	2005-06	2006-07	2007-08	2008-09
Improvement of central security system Communication equipment	3.1	0	-	-
Construction of heliport Islamabad (Phase-II) Emergency Relief Cell	55	0	-	-
Earthquake Re-construction & Rehabilitation Authority (ERRA)	The project was under Prime Minister's Secretariat		19000	26718.814

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 11: DRM-related Expenditure of Prime Minister's Secretariat during 1998-2008 (Rs Million)

Year	Total	Current		Development		Percentage of Total	
		Expenditure	Change (%)	Expenditure	Change (%)	Current	Development
1998-99				-	-		
1999-00				-	-		
2000-01				-	-		
2001-02				-	-		
2002-03				-	-		
2003-04				-	-		
2004-05				-	-		
2005-06	37958.45	240.00		37718.45	-	1	99
2006-07	40200.15	200.15	-16.604	40,000.00	6.049	0	100
2007-08				-	-		
Total	**78158.6**	**440.15**		**77718.45**		1	99

Source: I-SAPS' calculations from Federal Budget books 1998-2008

Table 12: Current Expenditure of Prime Minister's Secretariat (Rs. Million)

Projects	2005-06	2006-07
Earthquake Re-construction & Rehabilitation Authority (ERRA)	200.00	150.15
Salary	-	-
Non-Salary	200.00	150.15
National Volunteers Movement	40.00	50.00
Salary	-	-
Non-Salary	40.00	50.00

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 13: DRM-related Expenditure of Finance Division during 1998-2008 (Rs Million)

Year	Total	Current		Development		Percentag	
		Expenditure	Change (%)	Expenditure	Change (%)	Current	Devel
1998-99	58.00	58.00				100	
1999-00	1,258.00	1,258.00	2068.97			100	
2000-01	2,606.00	2,606.00	107.15			100	
2001-02	1,658.00	1,658.00	-36.38			100	
2002-03	1,658.00	1,658.00	0.00			100	
2003-04	1,658.00	1,658.00	0.00			100	
2004-05	2,091.38	2,058.31	24.14	33.07		98	
2005-06	2,231.00	2,200.00	6.88	31.00	-6.26	99	
2006-07	2,205.00	2,200.00	0.00	5.00	-83.87	100	
2007-08	5,574.26	5,516.50	150.75	57.76	1055.28	99	
2008-09	2,477.04	2,400.00	-56.49	77.04	33.37	97	
Total	**23,474.69**	**23,270.81**		**203.88**		99	

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 14: Current Expenditure of Finance Division (Rs. Million)

Finance Division	1998-99	1999-2000	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	Total
Lump provision for relief, etc.		1,200	2,548	1,600	1,600	1,600	2,000	2,200	2,200	5,516.5	2,400	22,864
Salary							-	-				-
Non-Salary	-	1,200	2,548	1,600	1,600	1,600	2,000	2,200	2,200	5,516.5	2,400	22,864
Grant of HBFC for remission of flood loans	58	58	58	58	58	58	58.31	-				406.3
Salary			-	-			-	-	-			-
Non-Salary	58	58	58	58	58	58	58.31	-	-			406.3

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 15: Current Expenditure of Interior Division (Rs. Million)

Interior Division	1998-99	1999-2000	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
National Institute of Fire technology Islamabad (check details of the non-salary budget with NIFTEC)	3.43	3.80	4.41	4.52	5.20	5.29	5.97	7.03	7.73	8.51
Salary	2.63	2.84	3.17	3.25	3.74	3.74	4.09	4.00	4.89	5.50
Non-Salary	0.80	0.96	1.24	1.27	1.46	1.55	1.87	3.03	2.84	3.01
Civil Training School AJ&K		1.11	1.45	1.25	1.59	1.69	1.90	2.23	2.51	2.85
Salary		0.75	0.75	0.80	0.92	0.96	1.28	1.49	1.81	1.87
Non-Salary		0.36	0.70	0.45	0.67	0.73	0.62	0.74	0.70	0.98
Bomb Disposal Unit Lahore	2.57	2.74	2.62	2.76	3.15	3.41	3.88	4.03	4.40	5.14
Salary	2.28	2.26	2.06	2.25	2.60	2.80	3.03	3.08	3.51	4.05
Non-Salary	0.29	0.48	0.56	0.51	0.55	0.61	0.85	0.96	0.89	1.09
Civil Academy Lahore	2.63	3.15	2.75	2.76	3.30	3.72	4.28	5.05	5.53	6.17
Salary	2.29	2.65	2.12	2.25	2.54	2.91	3.29	3.91	4.34	4.75
Non-Salary	0.34	0.50	0.63	0.51	0.76	0.81	0.99	1.13	1.19	1.42
Civil Training School Lahore	1.83	2.02	1.83	1.75	2.01	2.76	2.81	3.17	3.64	4.35
Salary	1.59	1.67	1.30	1.35	1.55	2.22	2.32	2.42	2.865	3.51
Non-Salary	0.24	0.35	0.53	0.40	0.45	0.54	0.49	0.76	0.78	0.85

Civil Training School Peshawar	2.02	2.17	2.39	2.42	2.79	2.96	3.60	4.14	4.41	5.01
Salary	1.75	1.69	1.85	1.88	2.16	2.25	2.94	3.00	3.23	3.70
Non-Salary	0.27	0.48	0.53	0.54	0.63	0.71	0.66	1.13	1.18	1.31
Civil Training School Karachi	2.47	2.51	2.40	2.61	2.93	2.99	3.63	4.36	5.25	5.63
Salary	2.20	2.12	1.90	2.08	2.39	2.50	3.00	3.49	4.40	4.65
Non-Salary	0.26	0.39	0.50	0.53	0.53	0.50	0.63	0.88	0.85	0.98
Civil Training School Quetta	1.81	1.92	2.01	1.88	2.21	2.68	3.39	3.49	3.82	4.19
Salary	1.44	1.49	1.27	1.33	1.52	1.95	2.76	2.63	3.06	3.40
Non-Salary	0.37	0.43	0.74	0.55	0.68	0.73	0.63	0.86	0.77	0.79
Total Interior Division	3.42	3.80	4.41	4.52	5.20	5.29	5.97	7.03	7.73	8.51
Salary	2.63	2.84	3.17	3.25	3.74	3.74	4.09	4.00	4.89	5.50
Non-Salary	0.80	0.96	1.24	1.27	1.46	1.55	1.87	3.03	2.84	3.01

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 16: Development Expenditure of Interior Division (Rs. Million)

Year	Total	Break-down of Development Expenditure			
		Preparedness	Percentage	Response	Percentage
2003-04	20	20	100	0	0
2004-05	60	60	100	0	0
2005-06	66.56	66.56	100	0	0
2006-07	137.1	132.32	97	4.78	3
2007-08	127.18	123.68	97	3.5	3
2008-09	108.71	107.35	99	1.36	1
Total	519.55	509.91	98	9.64	2

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 17: Expenditure of Interior Division on Development Projects (Rs. Million)

Division	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Establishment of National Center for drought/environment monitoring and early warning at Islamabad	20	60	40.57	26.14	0	-
Up-gradation & strengthening of Seismological network of PMD (Phase-I) (Basic Component of Tsunami early warning system			25.99	105.22	40.87	4.66
Establishment of tropical cyclone warning center Karachi					41.81	102.69
Reconstruction of Office building for CWO at Gari Dopatta				0.84	3.20	0.36
Reconstruction of Office building at Met. Observatory Balakot				1.58	0.30	1.00
Reconstruction of Office building for PBO at Muzaffarabad				2.36	0	-
National Centre for drought/environment				0.48	-	-
National Centre for drought/environment monitoring and early warning in Pakistan				0.48	0	-
Establishment of Atmospheric data receiving and processing center					41	-

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 18: Development Expenditure of Science and Technology Research (Rs. Million)

Year	Total	Break-down of Development Expenditure			
		Preparedness	Percentage	Response	Percentage
2001-02	40.72	40.72	100	0	0
2002-03	25.00	25	100	0	0
2003-04	50.93	50.93	100	0	0
2004-05	0.00	0	0	0	0
2005-06	0.00	0	0	0	0
2006-07	54.11	12.11	22	42	78
2007-08	52.59	6.59	13	46	87
2008-09	59.23	5	8	54.23	92
Total	282.58	140.35	50	142.23	50
Source: I-SAPS' calculations from federal budget books 1998-2008					

Table 19: Development Expenditure of Water and Power (Rs. Million)

Water and Power Division	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
ADB Second Flood Protection Sector Project	465.00	375.00	1,140.00	-	-	275.00	-	-	-	-	-
Normal Emergent flood program	300.00	300.00	-	100.00	75.00	350.00	-	-	-	-	-
ADB Flood sector program	-	-	-	-	-	-	-	-	-	-	-
Ground water Recharge of Pishin, Quetta, Mastung & Mangocher Valleys	-	50.00	20.00	20.00	50.00	100.00	38.00	145.00	142.90	-	-
Flood Management of Murri Bugti hill torrent	10.00	27.50	15.00	30.00	30.00	54.00	15.00	-	-	-	-
Nusrat Loop Band	-	50.00	-	-	-	-	-	-	-	-	-
Drought relief program (Federal financed)	-	-	-	10,000.00	6,001.00	500.00	-	-	-	-	-
Normal/Emergent Flood Program Punjab	-	-	-	-	-	-	106.88	171.00	401.00	402.05	382.50
Normal/Emergent Flood Program Sindh	-	-	-	-	-	-	77.50	124.00	276.68	474.30	263.50
Normal/Emergent Flood Program KHYBER PAKHTUNKHWA	-	-	-	-	-	-	27.50	44.00	98.18	168.30	93.50
Normal/Emergent Flood Program Balochistan	-	-	-	-	-	-	20.00	32.00	71.40	122.40	68.00
Normal/Emergent Flood Program FATA	-	-	-	-	-	-	7.50	12.00	26.78	35.81	25.50
Normal/Emergent Flood Program AJ&K	-	-	-	-	-	-	2.50	4.00	8.93	15.30	15.30
Normal/Emergent Flood Program Northern Areas	-	-	-	-	-	-	2.50	4.00	8.93	15.30	8.50
Normal/Emergent Flood Program FFC	-	-	-	-	-	-	25.00	40.00	-	-	-

Second Flood protection sector project (ADB) Federal Unit	-	-	-	-	-	-	5.00	1.01	1.00	-	-
Second Flood protection sector project (ADB) Punjab	-	-	-	-	-	-	140.25	164.00	-	-	-
Second Flood protection sector project (ADB) Sindh	-	-	-	-	-	-	103.75	142.00	12.00	-	-
Second Flood protection sector project (ADB) KHYBER PAKHTUNKHWA	-	-	-	-	-	-	38.00	59.00	17.50	-	-
Second Flood protection sector project (ADB) Balochistan	-	-	-	-	-	-	23.00	28.51	-	-	-
Second Flood protection sector project (ADB) Federal Cell- Studies	-	-	-	-	-	-	4.80	-	-	-	-
Second Flood protection sector project (ADB) FFC	-	-	-	-	-	-	-	2.00	-	-	-
Second Flood protection sector project (ADB) Federal Cell - Consultancy services	-	-	-	-	-	-	121.98	65.00	27.00	-	-
Second Flood protection sector project (ADB) Federal Cell – NGOs	-	-	-	-	-	-	4.00	-	-	-	-
Second Flood protection sector project (ADB) Bathymetric Survey	-	-	-	-	-	-	6.44	-	-	-	-
HF Radio communication system	-	-	-	-	-	-	4.50	7.00	-	-	-
Extension of Metacorobust telecommunication system	-	-	-	-	-	-	33.00	54.00	26.50	-	-
Survey Equipment for various survey work under the project	-	-	-	-	-	-	4.50	-	-	-	-
Procurement of 10 CM Radar for Sialkot	-	-	-	-	-	-	43.07	-	-	-	-
Procurement of 10 CM Radar for Lahore	-	-	-	-	-	-	16.93	-	-	-	-

Procurement of 10 CM Radar for Mangla	-	-	-	-	-	-	60.78	123.38	1.00	-	-
Islamabad Capital Territory	-	-	-	-	-	-	5.63	9.00	-	-	-
Priority of flood work in the province and Federal line agencies to be carried out as decided by steering committee	-	-	-	-	-	-	175.00	280.00	-	-	-
Priority of flood work in the province and Federal line agencies to be carried out as decided by Minister	-	-	-	-	-	-	50.00	80.00	105.00	152.74	100.00
Study on water escape below Kotri Barrage Study I,II & III	-	-	-	-	-	-	-	441.00	-	-	-
Nullah Lai Project	-	-	-	-	-	-	-	106.60	245.00	-	-
Staff Training of FFC, WAPDA and related organizations	-	-	-	-	-	-	-	8.00	-	-	-

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 20: Expenditure on Droughts during 1998-2008 (Rs. Million)

Year	Preparedness	Response				Total
	Federal Government	Federal Government	Provincial Governments	Private Organizations	Bilateral Assistance	
1998-99	-	0.00	-	-	-	0.00
1999-00	50.00	0.00	-	-	-	50.00
2000-01	20.00	3500.00	266.00	45.50	696.17	4527.67
2001-02	60.72	10000.00	-	-	-	10060.72
2002-03	75.00	6001.00	-	-	-	6076.00
2003-04	170.93	500.00	-	-	-	670.93
2004-05	98.00	0.00	-	-	-	98.00
2005-06	185.57	1553.24	-	-	-	1738.81
2006-07	169.52	1047.11	-	-	-	1216.63
2007-08	6.59	1995.76	-	-	-	2002.35
Total	**836.33**	**24597.11**	**266.00**	**45.50**	**696.17**	**26,441.11**

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 21: Expenditure on Earthquakes during 1998-2008 (Rs. Million)

Year	Preparedness	Response	Total
1998-99	-	-	0
1999-00	-	-	0
2000-01	-	-	0
2001-02	-	-	0
2002-03	-	-	0
2003-04	-	-	0
2004-05	-	-	0
2005-06	200.00	37718.45	37918.45
2006-07	150.15	40182.27	40332.42
2007-08	165.00	19049.50	19214.50
Total	**515.15**	**96950.22**	**97,465.37**

Source: I-SAPS' calculations from federal budget books 1998-2008

Table 22: Disbursement Flows from Different Countries and Organizations 2005-2008 (Rs. Million)

Countries/Organizations	Disbursement Flows		
	01.07.2005 to 30.06.2006	01.07.2006 to 30.06.2007	01.07.2007 to 30.06.2008
ADB	65.00	0.76	2.20
Afghanistan	0.50		
Algeria	1.00		
Austria	0.67		
Azerbaijan	1.50		
Bhutan	0.10		
Brunei	0.59		
China	30.43		
Cyprus	0.05		
Germany		14.59	0.21
IDA		0.24	2.35
Indonesia	1.00		
Jordan	1.00		
Korea	0.50		
Malaysia	1.00		
Mauritius	0.03		
Morocco	1.50		
Oman	5.00		
Pak-Turk Foundation	4.00		
Thailand	0.50		
Turkey	150.00		
U.K.		34.45	
USA		21.33	
ADB	120.18	28.46	423.66
France		32.21	22.37
IBRD	15.25		12.86
IDA	540.69	177.64	123.23
IDB		51.43	
IDB(ST)			200.00
IFAD		24.08	2.08
Japan	96.09		
Saudi Arabia			79.73
Grand Total	**1,036.57**	**385.19**	**868.67**

Source: Economic Affairs Division, Government of Pakistan

Table 23: Miscellaneous Expenditure of Federal Government on Disaster Preparedness and Response (Rs. Million)

FY	Preparedness	Response	Total
1998-99	-	-	0
1999-00	-	-	0
2000-01	-	-	0
2001-02	-	-	0
2002-03	111	1600.00	1711
2003-04	114	1600.00	1714
2004-05	419	2000.00	2419
2005-06	1003.57	2200.00	3203.57
2006-07	333.03	2200.00	2533.03
2007-08	1511.75	5516.50	7028.25
2008-09	2386.31	2400.00	4786.31
Total	5878.31	17516.50	23394.81

Source: I-SAPS' calculations from federal budget books 1998-2008

Annex II

DRM Expenditure of Punjab

Table 24. Losses Caused by Natural Disasters in Punjab in Recent Past

Hazard Type	Year	Lives Lost	Villages Affected	People Affected
Floods	2001	47	4	202,397
	1998	250	161	2,085,585
	1997	196	5891	1,272,499
	1996	435	3767	4,121,010
	1992	234	7435	2,881,300
	1988		4035	
Virus Attack	2004		702	
	2003		144	
	2002		122	
Drought	2004		313	
	2003		31	
	2002		3493	
	2001		3449	

Source: Government of Punjab, Disaster Risk Management Plan Punjab, November 2008

Table 25: Salary and Non-Salary Expenditure on DRM during 1998-2008 (Rs Million)

Year	Total	Salary		Non-salary		salary-non-salary
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	98.66	32.396		66.26		1:2
1999-00	145.29	33.612	3.75%	111.68	68.54%	1:3
2000-01	592.45	174.739	419.87%	417.71	274.03%	1:2
2001-02	1095.28	194.483	11.30%	900.79	115.65%	1:5
2002-03	735.65	198.457	2.04%	537.20	-40.36%	1:3
2003-04	794.88	210.673	6.16%	584.21	8.75%	1:3
2004-05	540.60	17.3819	-91.75%	523.22	-10.44%	1:30
2005-06	1104.13	236.85	1262.61%	867.29	65.76%	1:4
2006-07	327.77	50.43	-78.71%	277.34	-68.02%	1:5
2007-08	1182.82	328.827	552.05%	853.99	207.92%	1:3
Total	**6,617.53**	**1,477.85**		**5,139.68**		**1:4**

Source: I-SAPS' calculations from provincial budget books 1998-2008

Table 26: Post Earthquake 2005 – Expenditure on Reponses and Preparedness (Rs Million)

Year	Total	Response		Preparedness	
		Expenditure	Change (%)	Expenditure	Change (%)
1998-99	505.741	65.14		440.60	
1999-00	382.503	209.63	221.82%	172.87	-60.76%
2000-01	1783.41	170.14	-18.84%	1,613.27	833.21%
2001-02	1425.079	122.78	-27.84%	1,302.30	-19.28%
2002-03	1490.904	22.75	-81.47%	1,468.15	12.74%
2003-04	4258.6359	52.28	129.81%	4,206.35	186.51%
2004-05	3578.9682	544.58	941.58%	3,034.39	-27.86%
Total	**13,425.24**	**1,187.30**		**12,237.94**	

Source: I-SAPS' calculations from provincial budget books 1998-2008

Table 27: Post Earthquake 2005 – Expenditure on Reponses and Preparedness (Rs Million)

Year	Total	Response		Preparedness	
		Expenditure	Change (%)	Expenditure	Change (%)
2005-06	5,667.864	269.05		5,398.81	
2006-07	1,218.432	304.48	13.17%	913.96	-83.07%
2007-08	3,232.146	227.16	-25.39%	3,004.99	228.79%
Total	**10,118.44**	**800.68**		**9,317.76**	

Source: I-SAPS' calculations from provincial budget books 1998-2008

Annex III

DRM Expenditure of Sindh

Table 28: Disaster Susceptibility of Districts

No	District	Hazard
1.	Karachi	Earthquake, Tsunami, Cyclone, Flood, Drought,
2.	Badin	Cyclone, Drought, Floods, Tsunami
3.	Tharparkar	Drought
4.	Thatta	Cyclone, Drought, Floods, Tsunami
5.	Dadu	Drought, Flood
6.	Kamber & Shahdad Kot	Floods, Flash Floods, Drought,
7.	Naushero Feroze	Floods
8.	Sanghar	Locust, Flood, Drought,
9.	Umerkot	Drought
Source: NDMA		

Table 29: Salary and Non-Salary Expenditure on DRM during 1998-2008 (Rs Million)

Year	Total	Salary		Non-salary		salary-non-salary
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	16.23	13.06		3.17		4:1
1999-00	19.09	14.89	14.04%	4.20	32.56%	4:1
2000-01	467.55	17.08	14.70%	450.47	10615.62%	1:26
2001-02	30.72	6.75	-60.49%	23.97	-94.68%	1:4
2002-03	406.34	10.52	55.92%	395.81	1551.02%	1:38
2003-04	217.18	10.62	0.90%	206.57	-47.81%	1:19
2004-05	543.41	15.31	44.19%	528.10	155.66%	1:35
2005-06	844.66	16.38	6.99%	828.28	56.84%	1:51
2006-07	227.82	11.49	-29.82%	216.32	-73.88%	1:19
2007-08	550.99	16.71	45.35%	534.29	146.99%	1:32
Total	**3,323.99**	**132.79**		**3,191.20**		**1:24**

Source: I-SAPS' calculations from provincial budget books 1998-2008

Table 30: Post Earthquake 2005 – Expenditure on Reponses and Preparedness (Rs Million)

Year	Total	Response		Preparedness	
		Expenditure	Change (%)	Expenditure	Change (%)
1998-99	396.68915	19.77		376.92	
1999-00	293.73553	64.28	225.17%	229.46	-39.12%
2000-01	467.55139	452.24	603.56%	15.31	-93.33%
2001-02	43.7195	15.60	-96.55%	28.12	83.71%
2002-03	406.3355	402.37	2479.36%	3.97	-85.89%
2003-04	459.0921	431.99	7.36%	27.10	582.99%
2004-05	1296.9174	1,144.23	164.87%	152.69	463.34%
Total	**3,364.04**	**2,530.47**		**833.57**	

Source: I-SAPS' calculations from provincial budget books 1998-2008

Table 31: Post Earthquake 2005 – Expenditure on Reponses and Preparedness (Rs Million)

Year	Total	Response		Preparedness	
		Expenditure	Change (%)	Expenditure	Change (%)
2005-06	1223.262	955.07	#REF!	268.19	#REF!
2006-07	668.12354	226.99	-76.23%	441.14	64.49%
2007-08	876.279	542.79	139.13%	333.49	-24.40%
Total	**2,767.66**	**1,724.85**		**1,042.82**	

Source: I-SAPS' calculations from provincial budget books 1998-2008

Annex IV

DRM Expenditure of Khyber Pakhtunkhwah

Table 32. Current Expenditure on Civil Defence (Rs. Million)

Year	Allocation			Spending		
	Salary	Non-Salary	Total	Salary	Non-Salary	Total
1998-1999	5.80	2.70	8.50	5.14	3.36	8.50
1999-2000	5.81	2.69	8.50	5.96	2.54	8.50
2000-01	6.76	1.74	8.50	6.28	1.09	7.37
2001-02	6.78	1.80	8.58	7.32	1.71	9.03
2002-03	8.51	2.85	11.36	8.87	1.82	10.69
2003-04	8.91	1.65	10.56	10.01	0.74	10.75
2004-05	11.46	0.80	12.26	9.98	1.57	11.56
2005-06	11.42	1.57	13.00	13.67	0.95	14.63
2006-07	14.36	6.87	21.23	15.16	8.40	23.56
2007-08	16.01	4.05	20.06	16.83	2.81	19.64

Source: I-SAPS' calculations from provincial budget books 1998-2008

Table 33. Current Expenditure of Khyber Pakhtunkhwa on Disaster Response (Rs. Million)

Year	Allocations			Spending		
	Salary	Non-Salary	Total	Salary	Non-Salary	Total
1998-1999	15.78	17.04	32.82	11.35	21.48	32.82
1999-2000	12.46	20.43	32.89	8.52	24.36	32.89
2000-01	10.76	22.24	33.00	7.35	20.98	28.32
2001-02	6.80	13.20	20.00	5.23	9.77	15.00
2002-03	6.87	3.13	10.00	5.34	13.21	18.55
2003-04	7.26	12.74	20.00	5.45	12.54	18.00
2004-05	6.35	13.65	20.00	4.40	185.19	189.58
2005-06	4.35	55.65	60.00	2.50	12,462.38	12,464.88
2006-07	6.39	93.61	100.00	2.12	782.98	785.09
2007-08	3.23	130.70	133.94	4.18	240.45	244.63

Source: I-SAPS' calculations from provincial budget books 1998-2008

Table 34: Development Expenditure of Khyber Pakhtunkhwa during 1998-2008 (Rs. million)

Year	Development Expenditure		
	Response	Preparedness	Total
1998-1999	77.99	-	77.99
1999-2000	10.42	-	10.42
2000-01	33.77	0.10	33.87
2001-02	17.17	-	17.17
2002-03	991.85	-	991.85
2003-04	742.37	9.15	751.52
2004-05	368.46	94.99	463.45
2005-06	1,050.55	87.32	1,137.88
2006-07	1110.73	27.15	1665.60
2007-08	1665.60	-	1075.01
2008-09	1040.01	35.00	702.45
Total	6173.5	253.71	6427.21

Source: I-SAPS' calculations from provincial budget books 1998-2008

Table 35: Expenditure on Multi-Sectoral Development Projects during 1998-2008 (Rs. Million)

Disaster Preparedness and Response Projects	2005-06	2006-07	2007-08	2008-09
KHYBER PAKHTUNKHWA Emergency Rehabilitation Project (World Bank)			0.00	
Refugee Affected Areas Rehabilitation Program				0.10
Reconstruction & Rehabilitation of Earthquake affected Govt. facilities District Swat (Fed Govt. = Rs.611.425 m KHYBER PAKHTUNKHWA= Rs.611.425 m) (capital)				295.00
Reconstruction & Rehabilitation of Earthquake affected Govt. facilities District Swat (Fed Govt. = Rs.611.425 m KHYBER PAKHTUNKHWA= Rs.611.425 m)			216.00	5.00
KHYBER PAKHTUNKHWA Disaster Management Program	0.01	1.01		5.00
Total	0.01	1.01	216.00	305.10

Source: I-SAPS' calculations from provincial budget books 1998-2008

Table 36: Expenditure of Khyber Pakhtunkhwa on Development Projects of Local Government during 1998-2008 (Rs. Million)

Project	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Procurement of land and construction of Garage for fire brigade for Matta Swat						
Community infrastructure Project-II (CIP-II)			76.99	55		
Provision of Fire Brigade Vehicle by the District Govt. Tank		0.10				
Provision of Fire Brigade Malakand		0.10	3			
Provision of Fire Brigade System to TMA Lakki Marwat		0.10	3			
Provision of Fire Brigade to District Karak				3.4		
Provision of Fire Brigade to Town-II Swari, Buner			3	2.863		
Total	0.00	0.30	85.99	61.263	0	-

Source: I-SAPS' calculations from provincial budget books 1998-2008

Table 37: Expenditure on Special Programs during 1998-2008 (Rs. Million)

Program	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	20
Establishment of Provincial Implementation Unit for Drought emergency Relief Assistance (DERA) Program		8.85	9.00	26.05	26.14		
Drought Emergency Relief Assistance (DERA) (ADB/WB)	698.23	531.37	91.00	625.16	150.00		
Drought Emergency Relief Assistance-II (DERA-II) (ADB/WB) (Revised Estimates)				28.00			
Reconstruction & rehabilitation Earthquake affected District						100.00	
Drought Emergency Relief Assistance (DERA-II)				28.00		103.00	2
Provincial Implementation Unit for Emergency Relief Assistance						26.80	
Total	698.23	540.22	100.00	707.21	176.14	229.80	2

Source: I-SAPS' calculations from provincial budget books 1998-2008

Table 38: Expenditure of Khyber Pakhtunkhwa Government on Flood Sector Projects during 1998-2008 (Rs. Million)

Projects	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Flood Sector Protection Project-II	13.26	0.10	1.77		5.00	5.00				
Land Compensation for Flood Management of Kalpani Nallah, Mardan			0.10							
River Survey hydraulic study and preparation of PC-Is for Flood Protection Schemes in KHYBER PAKHTUNKHWA.				2.56	3.25					
Flood Protection Programme in KHYBER PAKHTUNKHWA (Federal Grant) (Revised Estimates)	32.34									
Construction of Flood protection works in KHYBER PAKHTUNKHWA		5.32				5.00	5.64	20.00	40.44	50.00
Restoration of Existing flood protection works in KHYBER PAKHTUNKHWA								0.01		
Repair Flood Protection works from A.T. works to Amandara						1.00	4.00			
Construction of Flood Protection Works in KHYBER PAKHTUNKHWA Phase-II										
Flood protection Bund Nakami Miangan Podlay Brawal Distt: Dir Upper (Revised Estimate)							0.34			

Rehabilitation & Improvement of Existing Flood Protection Works in the KHYBER PAKHTUNKHWA									18.01	
Construction of new flood protection works in various flood prone districts in the KHYBER PAKHTUNKHWA									30.00	11.50
Construction /Restoration of important flood protection works and irrigation infrastructure in the KHYBER PAKHTUNKHWA on the demand of public representatives.										89.70
Construction of two 2 Nos. flood protection works in FR Bannu District Bannu										55.00
Construction of flood protection works on Kurram river district Bannu & Kabul river district Peshawar										30.00
Construction of Flood Protection Works in the KHYBER PAKHTUNKHWA Phase-II										50.00
Land acquisition for Flood Sector protection Project-II								10.00	0.00	0.01
2nd Flood Protection Project (Federal Grant) (Revised Estimates)							25.66	76.00		

Emergency Restoration of Damages Spurs & Flood protection works during flood season 2005 (Revised Estimates)								97.48		
Total	45.60	5.42	1.87	2.56	8.25	11.00	35.63	203.49	88.45	286.21

Source: I-SAPS' calculations from provincial budget books 1998-2008

Annex V

DRM Expenditure of Balochistan

Table 39: Hazard Prone Districts of Balochistan

No	District	Hazard
1.	Quetta	Earthquake, Drought
2.	Gwadar	Earthquake, Tsunami, Cyclone
3.	Khuzdar	Drought, Flash Flood
4.	Kech	Cyclone, Flood
5.	Jhal Magsi	Flood
6.	Noshki	Cyclone, Drought
7.	Nasirabad	Flood
8.	Lasbela	Tsunami, Cyclone, Drought, Flash flood
9.	Ziarat	Earthquake
10.	Bolan	Flood
11.	Chaghi	Drought
12.	Kharan	Drought
13.	Mastung	Earthquake, Drought
Source: NDMA		

Table 40: Salary and Non-Salary Expenditure on DRM during 1998-2008 (Rs Million)

Year	Total	Salary		Non-salary		salary-non-salary
		Expenditure	Change (%)	Expenditure	Change (%)	
1998-99	3.17	2.43		0.73		3:1
1999-00	2.99	2.38	-2.17	0.61	-16.43	4:1
2000-01	3.25	2.54	6.66	0.71	15.28	4:1
2001-02	3.44	2.86	12.59	0.59	-17.20	5:1
2002-03	3.99	3.18	11.37	0.80	37.08	4:1
2003-04	8.19	4.86	52.74	3.33	314.90	1:1
2004-05	5.87	4.13	-15.02	1.73	-47.95	2:1
2005-06	6.02	4.70	13.60	1.32	-23.56	4:1
2006-07	12.06	9.97	112.24	2.09	57.85	5:1
2007-08	9.77	8.07	-18.9	1.69	-19.04	5:1
Total	**58.74**	**45.13**		**13.61**		**3:1**

Source: I-SAPS' calculations from provincial budget books 1998-2008

Table 41: Post Earthquake 2005 – Expenditure on Reponses and Preparedness (Rs Million)

Year	Total	Response		Preparedness	
		Expenditure	Change (%)	Expenditure	Change (%)
1998-99	54.05	27.94		26.11	
1999-00	267.70	264.71	847.32	2.99	-88.53
2000-01	761.18	213.10	-19.50	548.09	18206.86
2001-02	840.45	265.00	24.36	575.45	4.99
2002-03	170.49	159.31	-39.88	11.19	-98.06
2003-04	3474.91	2,519.25	1481.40	955.66	8443.02
2004-05	1597.45	1,579.38	-37.31	18.07	-98.11
Total	**7,166.24**	**5,028.68**		**2,137.55**	

Source: I-SAPS' calculations from provincial budget books 1998-2008

Table 42: Post-Earthquake 2005 Expenditure on Reponses and Preparedness (Rs Million)

Year	Total	Response		Preparedness	
		Expenditure	Change (%)	Expenditure	Change (%)
2005-06	613.93	20.00		593.93	
2006-07	124.75	15.89	-20.55	108.86	-81.67
2007-08	299.78	46.47	192.44	253.31	132.69
Total	**1,038.46**	**82.36**		**956.10**	

Source: I-SAPS' calculations from provincial budget books 1998-2008

Annex VI

DRM Expenditure of FATA

Table 43: Civil Defence Expenditure in FATA

	1998-99	1999-2000	2000-01	2001-02	2002-03	2004-05	2004-05	2005-06	2006-07	2007-08	2008-09*
Salary	2.27	2.29	3.08	2.64	3.79	4.28	4.27	4.39	5.31	5.63	6.30
Non-Salary	0.52	0.95	0.52	0.52	0.54	0.73	0.69	0.78	0.68	0.61	0.63
Total	2.79	3.24	3.60	3.16	4.34	5.00	4.96	5.16	5.99	6.24	6.93

* The figures for 2008-09 indicate budgetary allocations.

Source: I-SAPS' calculations from federal budget books 1998-2008

Annex VII

DRM Expenditure of AJK

Table 44: Types of Disasters in AJK

No	District	Hazard
1.	Bagh	Earthquake, Landslide, Flash Flood
2.	Bhimber	Landslide, Flash Flood
3.	Neelum	Earthquake, Landslide
4.	Muzaffarabad	Earthquake, Landslide

Source: NDMA

Table 45. Current Expenditure of Jammu & Kashmir Refugees Rehabilitation Organization 1998-2008 (Rs Million)

Year	Jammu and Kashmir Refugees Rehabilitation Organization		Total
	Salary	Non-Salary	
1998-99	0.33	0.13	0.45
1999-00	0.35	0.15	0.50
2000-01	0.48	0.12	0.60
2001-02	0.51	0.17	0.67
2002-03	0.52	0.17	0.69
2003-04	0.61	0.05	0.65
2004-05	0.61	0.05	0.65
2005-06	0.61	0.03	0.65
2006-07	0.81	0.03	0.84
2007-08	1.00	0.04	1.04
Total	**5.81**	**0.93**	**6.74**

Source: I-SAPS' calculations from AJK budget books, 1998-2007

Glossary

Current Budget	Also called 'recurrent budget' or 'revenue budget'. It presents day-to-day non-development salary and non-salary expenditures.
Development Budget	Budget for development schemes like new infrastructure, installation of machinery, roads, etc.
Disaster	An event that occurs naturally, by human activities, or as fusion of both, and causes death, loss and destruction to environment and society
Disaster risk management	Management of disasters at all stages, i.e. mitigating and preparing for disaster before it occurs, and providing effective response after it occurs.
Mitigation	Enduring risk-reduction measures that reduce the susceptibility of human beings and society to catastrophic disasters in the long-term.
Preparedness	Pre-disaster efforts to cope with a disaster and include mitigation, infrastructure building, awareness, early warning systems, etc.
Relief	Provision of relief after a disaster occurs or hits any areas, e.g. provision of food, shelter, medical aid, etc.
Response	Post-disaster activities of relief, recovery, reconstruction and rehabilitation.
Risk	Probability of a disaster.

Punjab

Current Expenditure

Head of Account	2008-09 B.E	2008-09 R.E	2009-10 B.E	2009-10 R.E	2010-11 B.E	2010-11 R.E	2011-12 B.E	2011-12 R.E	2012-13 B.E
Civil Defence (Admn)	**24.10**	-	-	-	**32.03**	**36.38**	**41.87**	**39.61**	**46.31**
Salary cost	21.39				28.09	32.19	37.38	34.86	40.63
Non-Salary cost	2.71				3.93	4.20	4.49	4.76	5.69
District Fire Fighting & Resue establishment	-	-	-	-	-	-	-	-	-
Salary cost	-								
Non-Salary cost	-								
Medical Establishment	**2.89**	-	-	-	**3.43**	**3.12**	**4.09**	**3.43**	**4.86**
Salary cost	2.55				3.03	2.81	3.66	3.00	4.37
Non-Salary cost	0.34				0.41	0.31	0.44	0.43	0.49
Civil Defence (Total)	**26.99**	**26.72**	**41.56**	**33.12**	**35.46**	**39.50**	**45.97**	**43.04**	**51.17**
Salary cost	23.94	23.09	28.71	27.59	31.12	35.00	41.04	37.86	45.00
Non-Salary cost	3.04	3.63	12.85	5.53	4.34	4.50	4.93	5.18	6.18
Flood Control	**1,061.20**	**985.08**	**1,117.84**	**1,047.88**	**985.48**	**2,985.44**	**1,289.69**	**1,723.81**	**1,358.70**
Salary cost	270.95	279.88	345.16	323.60	402.56	481.27	524.66		
Non-Salary cost	790.25	705.20	772.68	724.28	582.92	2,504.17	765.03		
Releief Measures	**20.02**	**332.99**	**23.93**	**317.20**	**25.97**	**7,250.87**	**65.76**	**1,992.73**	**287.49**
Salary cost	10.93	15.15	14.79	17.39	16.57	20.12	24.33	23.95	27.81
Non-Salary cost	9.09	317.84	9.14	299.80	9.40	7,230.75	41.43	1,968.78	259.68
Punjab Emergency and Ambulance Services (Rescue 1122)	**65.72**	**92.72**	**959.90**	**917.27**	**1,049.80**	**921.72**	**1,903.49**	**1,920.85**	**2,549.54**
Salary cost	34.53	61.53	800.34	739.70	869.43	710.23	1,560.30	1,545.95	2,049.60
Non-Salary cost	31.20	31.20	159.57	177.57	180.37	211.48	343.19	374.91	499.94
Natural Calamities & other disasters	-	-	-	-	-	-	-	-	-
Salary cost	-								
Non-Salary cost	-								
Crises Management and Control Centre	**3.82**	**2.30**	**4.47**	**2.73**	**4.47**	**2.31**	**6.82**	**2.73**	**8.16**
Salary cost	2.84	1.32	3.40	1.47	3.40	1.44	5.61		
Non-Salary cost	0.99	0.99	1.07	1.26	1.07	0.87	1.21		
District Public Safety Commission	**80.87**	**80.87**	**80.87**	**5.46**	**80.87**	**8.28**	**81.11**	**8.28**	**80.87**
Salary cost	59.49	59.49	59.49	4.47	59.49	5.19	59.49		
Non-Salary cost	21.39	21.39	21.39	1.00	21.39	3.09	21.63		
Current Expenditure	**1,258.62**	**1,520.68**	**2,228.58**	**2,323.65**	**2,182.05**	**11,208.11**	**3,392.83**	**5,691.43**	**4,335.94**
Development Expenditure									
Head of Account	3,273.19	3,200.28	3,003.06	2,526.48	**2,556.82**	**2,545.05**	**4,234.77**	**3,553.19**	**3,672.96**
Flood Control & Drainage	773.19	1,203.28	1,376.06	1,465.63	556.82	1,286.06	2,134.77	2,677.20	1,072.96
Emergency Services	2,500.00	1,997.00	1,627.00	1,060.85	2,000.00	1,258.99	2,100.00	875.98	2,600.00
Total:-	**4,531.81**	**4,720.96**	**5,231.64**	**4,850.13**	**4,738.88**	**13,753.15**	**7,627.60**	**9,244.62**	**8,008.90**
reponse	2,670.43	2,505.89	2,696.18	2,303.50	3,161.12	9,442.16	4,157.18	4,800.57	5,526.07
preparedness	1,861.38	2,215.07	2,535.46	2,546.63	1,577.76	4,311.00	3,470.42	4,444.05	2,482.83
Total	4,531.81	4,720.96	5,231.64	4,850.13	4,738.88	13,753.15	7,627.60	9,244.62	8,008.90

Sindh

Current Expenditure									
Head of Account	2008-09	2008-09	2009-10	2009-10	2010-11	2010-11	2011-12	2011-12	2012-13
	B.E	R.E	B.E	R.E	B.E	R.E	B.E	R.E	B.E
Relief Department	**1.39**	**1.69**	**2.04**	**2.15**	**2.13**	**2.41**	**2.41**	**2.24**	-
Salary cost	1.17	1.44	1.56	1.65	1.77	2.06	2.06	1.84	
Non-Salary cost	0.22	0.26	0.48	0.51	0.35	0.35	0.35	0.41	
Rehabilitation & Settlement organization	**11.80**	**4.81**	**15.04**	**12.77**	**17.13**	**18.36**	**19.22**	**17.24**	**19.81**
Salary cost	11.14	4.05	14.27	11.49	16.33	17.56	18.49	16.51	19.05
Non-Salary cost	0.66	0.76	0.77	1.29	0.80	0.80	0.73	0.73	0.76
Civil Defence	**9.41**	**9.41**	**38.36**	**38.99**	**37.17**	**38.94**	**16.82**	**69.23**	**101.37**
Salary cost	6.31	6.31	8.75	9.73	11.49	13.26	13.89	60.16	92.17
Non-Salary cost	3.09	3.09	29.60	29.26	25.68	25.68	2.93	9.07	9.21
Natural Calamities & other disasters	**228.24**	**519.13**	**357.02**	**521.27**	**393.39**	**10,398.84**	**279.32**	**18,613.10**	**1,085.74**
Salary cost	9.85	9.65	12.30	33.39	25.89	30.01	45.45	43.23	57.64
Non-Salary cost	218.39	509.48	344.71	487.88	367.50	10,368.84	233.87	18,569.88	1,028.09
Total Current	**250.84**	**535.04**	**412.45**	**575.19**	**412.64**	**10,419.61**	**300.95**	**18,632.59**	**1,105.55**
Salary cost	28.48	21.45	36.89	56.26	43.99	49.62	65.99	61.57	76.70
Non-Salary cost	222.37	513.59	375.56	518.93	368.65	10,369.99	234.96	18,571.02	1,028.85
Response Total Current	**241.44**	**525.64**	**374.10**	**536.20**	**412.64**	**10,419.61**	**300.95**	**18,632.59**	**1,105.55**
Salary cost	22.16	15.14	28.14	46.53	43.99	49.62	65.99	61.57	76.70
Non-Salary cost	219.27	510.50	345.96	489.67	368.65	10,369.99	234.96	18,571.02	1,028.85
Development Expenditure									
Head of Account									
Flood Emergency							500.00		
Flood Control & Drainage (Normal Emergent Flood Program						30.69	61.94	-	-
Flood control & drainage normal emergent flod program	120.00					26.04			
Re-construction/ Re-habilitation of 2010 Flood Affected Roads							443.27		
DERA Relief Assistance Program		34.57		811.37		154.19		23.08	
Rehabilitation							125.00	-	-
Emergent Works/ Disaster Assistance	500.00				68.00	111.00			
Flood Affected village re-habilitation							4,000.00		
Improvement of major fishermen's and rehabilitation of flood affected area in costal areas of karachi, Badin and Thata									63.86
Construction of delay action dam	37.25	1.50	157.69	50.00	367.71	344.22	100.00	332.48	-
Fire Fighting Equipment For Food Godowns in Sindh					20.00		20.00	-	-
Disaster Management			200.00	-	25.00				500.00
Establishment of Ambulance & Rescue							20.00	-	-
Establishment of Rescue stations (Mines)		30.00	42.31	46.71	257.11	38.53	151.81	43.84	138.30

Balochistan

Balochistan Current	2008-09 B.E	2008-09 R.E	2009-10 B.E	2009-10 R.E	2010-11 B.E	2010-11 R.E	2011-12 B.E	2011-12 R.E	2012-13 B.E
Civil Defence	12.11	13.61	27.85	28.13	25.76	25.34	34.38	37.74	67.63
Salary	10.66	11.83	13.42	12.43	22.68	20.20	31.00	33.68	40.45
Non-Salary	1.45	1.78	14.43	15.71	3.08	5.14	3.38	4.06	27.19
Natural Calamities & Other Disasters	25.50	184.79	25.50	35.98	2,027.00	2,045.26	3,030.00	1,001.24	3,045.00
Flood Drainage									
Total Current	37.61	198.40	53.35	64.11	2,052.76	2,070.60	3,064.38	1,038.98	3,112.63
Salary cost	10.66	11.83	13.42	12.43	22.68	20.20	31.00	33.68	40.45
Non-Salary cost	26.95	186.57	39.93	51.69	3.08	5.14	3.38	4.06	27.19
Response Total Current	25.50	184.79	25.50	35.98	2,027.00	2,045.26	3,030.00	1,001.24	3,045.00
Salary cost									
Non-Salary cost									
Preparedness Total Current	12.11	13.61	27.85	28.13	25.76	25.34	34.38	37.74	67.63
Salary cost	10.66	11.83	13.42	12.43	22.68	20.20	31.00	33.68	40.45
Non-Salary cost	1.45	1.78	14.43	15.71	3.08	5.14	3.38	4.06	27.19
Development									
Natural Disaster Package									
Water Resources development through Delay action Dam	138.64	137.77	83.85	92.99	30.51	24.00	88.63		
Flood Control/Protection	18.50	21.50	43.00	35.99	349.00	440.50	898.50		
Restoration of flood affected					20.00	30.00			
Total Development	157.14	159.27	126.85	128.97	399.51	494.50	987.13	-	-
Response	-	-	-	-	20.00	30.00	24.75		
Preparedness	157.14	159.27	126.85	128.97	379.51	464.50	987.13	-	-
Total (C+D)	194.75	357.67	180.20	193.09	2,452.27	2,565.11	4,051.51	1,038.98	3,112.63
Response	25.50	184.79	25.50	35.98	2,047.00	2,075.26	3,054.75	1,001.24	3,045.00
Preparedness	169.25	172.88	154.70	157.11	405.27	489.84	1,021.51	37.74	67.63
Total (R+P)	194.75	357.67	180.20	193.09	2,452.27	2,565.11	4,076.26	1,038.98	3,112.63

NATIONAL DISASTER RISK REDUCTION POLICY

GOVERNMENT OF PAKISTAN
Ministry of Climate Change
National Disaster Management Authority

2012

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Acronyms

CBDRM	Community Based Disaster Risk Management
CBO	Community Based Organization
CS	Civil Society
CSO	Civil Society Organization
DDMA	District Disaster Management Authority
DDP	District Development Programme
DM	Disaster Management
DRC	Disaster Resource Centre
DRFI	Disaster Risk Financing and Insurance
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EWS	Early Warning System
F/G/S/PDMAs	FATA/GB/State/Provincial Disaster Management Authorities
GDP	Gross Domestic Product
GIS	Geographic Information System
GLOF	Glacial Lake Outburst Floods
HFA	Hyogo Framework of Action 2005-2015
M&E	Monitoring and Evaluation
NDMA	National Disaster Management Authority
NDMC	National Disaster Management Commission
NDMO	National Disaster Management Ordinance (2006)
NIDM	National Institute of Disaster Management
NIM	National Institute of Management
PDMC	Provincial Disaster Management Commission
R&D	Research and Development
SOP	Standard Operating Procedure
UC	Union Council

Chapter 1

Preamble

1. Preamble

1.1 Context

Due to geo-physical conditions, climatic extremes, and high degrees of exposure and vulnerability, Pakistan is a disaster-prone country. A range of hydro-meteorological, geo-physical and biological hazards including avalanches, cyclones and storms, droughts, floods, glacial lake outburst floods (GLOF), earthquakes, landslides, tsunamis and epidemic pose risks to Pakistani society. Some of these hazards (e.g. floods, landslides etc.) are predominantly seasonal and occur on an annual basis, whereas other hazards such as earthquakes and tsunamis are rare events but potentially highly destructive. In addition to natural hazards a variety of human-induced hazards threaten Pakistani society, economy and environment. They include industrial and transport disasters including oil spills, nuclear hazards, urban and forest fires as well as civil unrest.

Pakistan is undergoing rapid changes turning from a predominantly rural and agrarian to an industrial, service-based and urban economy. Communities that have been living in hazard-prone areas for centuries often have mechanisms that allow them to recognize and mitigate the threats that surround them. As people migrate or are forced to migrate within the country increasing numbers of - predominantly poor - people live in areas that are exposed to hazards they have little familiarity with. A high rate of population growth further feeds into this trend, and leads to environmentally damaging practices such as uncontrolled logging or overgrazing, that may intensify and modify existing hazards. Climate Change threatens to alter monsoon and rainfall patterns further and is predicted to lead to more severe and less predictable flooding and drought episodes. Rapid urbanization with little attention to spatial planning and construction norms exposes higher numbers of people to highly damaging events such as cyclones and earthquakes.

Both the 2005 earthquake and the 2010 and 2011 floods have revealed the vulnerability of Pakistani society and economy to disasters. Damages and losses have been massive but could have been largely reduced if disaster risk reduction measures had been incorporated into physical, social and economic development. The 2005 earthquake illustrated the fact that disasters are not natural; they are closely related to human knowledge, skills and action or inaction. The 2005 earthquake provided a wake-up call to move away from an emergency response paradigm, and to devote more attention to prevention, mitigation and preparedness.

The 2010 and 2011 floods resulted in unprecedented and unsustainable losses to the national GDP[1]. A reliance on "ex post" or reactive public financing sources and donor assistance led to liquidity shortfalls in the immediate aftermath of floods and proved insufficient to cover important recovery and reconstruction needs, leaving some key infrastructure in disrepair and communities less resilient. The 2010 floods further exposed the government to fiscal imbalances and threatened the national economy. The floods demonstrated that much more energetic and multi-sectoral efforts are needed to deal with increasing levels of exposure and vulnerability. Capacity to act upon disaster risks needs to be created where it matters – at the local level, in high risk areas – and geared towards strengthening the resilience of communities. At the national and provincial levels a robust capacity to coordinate, monitor and resource Disaster Risk Reduction (DRR) activities require priority attention.

1.2 Scope and Building Blocks of the Policy

The National DRR Policy provides an overall guiding framework for addressing the high levels of disaster risk permeating Pakistani Society. It covers both natural and man-made hazards. The policy seeks to promote priority measures to ameliorate already existing vulnerability to hazards, and equally important measures to ensure future development processes and programs strengthen resilience. The policy serves as a guiding framework both for DRR and relevant development plans and programs to focus attention upon priority issues.

Pakistan is one of the signatories of the UN Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters. At the core of the HFA lies the integration of risk reduction as an essential component of national development policies and programs. The earthquake in 2005 highlighted Pakistan's vulnerability to disaster risks and motivated a shift from the erstwhile response-focused to the current, more proactive approach. This shift found its first expression in the National Disaster Management Ordinance (NDMO, 2006, replaced in 2010 by the current National Disaster Management - NDM Act), followed up by the National Disaster Risk Management Framework (NDRMF) (2007-2012) that outlined a comprehensive national DRR agenda.

The policy is based upon an extensive review of existing background documentation including assessments, relevant frameworks, policies and plans. The building blocks of the current DRR policy reflect the priority actions of the HFA and are within the NDM Act 2010 that decentralized responsibilities for the

[1] 2010 Floods caused losses and damage amounted to 5.8% of the Pakistani 2009/10 GDP according to the WB/ADB Disaster Needs Assessment making it considerably more costly – in relative terms – than the 2011 Japanese Tsunami (4.6%).

implementation of DRR to the provincial and district level. The policy is based upon consultations with district, provincial and national government stakeholders as well as civil society actors and development partners.

1.3 Policy Challenges

The overarching policy challenges the policy deals with are as follows:

1.3.1 Low levels of risk awareness and knowledge

The risk to be affected by disasters is basically a function of the degree of vulnerability[2], exposure to damaging hazard events and the frequency, and severity of hazards. Risk atlases and indices help to establish a comparative picture within a country identifying geographical "hot spots" or areas that are at relatively higher levels of risk from one or multiple hazards. Risk assessments are needed to establish the probability and possible impact of hazard events on people, livelihoods and sectors. At a lower scale risk assessments are used to diagnose causes and identify technically, environmentally and socially sound options for risk prevention and mitigation.

Risk knowledge is as of yet low in Pakistan. This applies both to the mapping and understanding of a number of key hazards and the underlying dynamics and causes (including climate change), and to the lack of sound data and analysis of vulnerability. Only a small number of risk assessments have been undertaken covering limited territory and hazards. There is no national standard methodology or institutionalized capacity to conduct multi-hazard risk or vulnerability analysis. This includes the absence of a standard for geo-spatial mapping which is an essential prerequisite for a national risk atlas. Hazard-data is spread out over several institutions at national and provincial levels. The same applies to data on disaster losses and damages that is not yet systematically brought together and analyzed to monitor vulnerability and hazard trends. At the community level risk awareness is usually higher in those areas that have been recently affected by disasters and involved in subsequent Community Based Disaster Risk Management (CBDRM) activities. In other disaster-prone areas communities have often extremely

[2] Vulnerability can be distinguished as follows (a) **social/ organizational** vulnerability i.e. displacement, lack of awareness and social cohesion; (b) **economic** i.e. lack of access to services and resources and (c) **physical or environmental** vulnerability i.e. health status; sub-standard buildings; physically isolated communities. These factors often overlap.

limited information and understanding of the hazards that surround them. Access to information can be especially difficult for women and children.

1.3.2 Development not "risk conscious" and DRR not yet effectively integrated

The integration of DRR into development is at its initial stage. This applies to all levels of development planning i.e. a) national development plans and poverty reduction strategy papers; b) development programs and sector-specific projects and c) the application of building codes for construction and land-use and zoning regulations for settlement planning. This can be attributed to a mix of both technical and institutional factors; namely the need to raise awareness and commitment at policy- and decision-making levels; the need to build dedicated capacity and resources; a lack of institutional and legal mechanisms to promote enforcement; and a lack of monitoring, evaluation and accountability. As a consequence development currently exacerbates rather than reduces disaster risks.

1.3.3 Insufficient DRR capacity at all levels of society.

An important aspect of the current DRR legislation is the decentralization of core responsibilities to provincial and district levels. However this decentralization is not yet matched by institutionalized capacity, in particular at the district level that is closest to high-risk communities under its jurisdiction. Capacities at community, union council and tehsil levels are overall low. At the national level the National Disaster Management Authority (NDMA) needs to acquire the capacity to act as the main facilitator of DRR in the country and provide overall support and technical guidance to line agencies, FATA/GB/State/Provincial Disaster Management Authorities (F/G/S/PDMAs) and District Disaster Management Authorities (DDMAs). In many other national-level ministries and agencies as well as provincial-level departments capacity is also lacking to apply DRR to specific sector policies, plans and interventions. Outside government Civil Society Organizations (CSOs) have played an important role in promoting DRR at the community level, however these efforts have largely depended upon external funding and are patchy. The involvement of the private sector in DRR is as of yet negligible.

In view of these challenges the policy suggests a number of key objectives targeting risk awareness and knowledge, DRR mainstreaming and capacity building within the context of preparedness, prevention and mitigation.

Chapter 2

Vision, Principles and Objectives

2. Vision, Principles and Objectives

The vision statement emphasizes the urgency of strengthening adaptive and coping capacity against the dynamic nature of hazards, vulnerabilities and risks within the wider context of a changing society and a changing climate.

2.1 Vision: "A Pakistan that build up its resilience to shocks from natural and man-made hazards with a sense of urgency, creating a solid base to address disaster risk reduction in vulnerable areas, while involving an increasingly wider range of stakeholders from government, civil society and private sector."

2.2 DRR Approach

A fundamental purpose of the policy is to advocate an approach to disaster management that focuses on reducing risks – the probability of losing one's life or health, assets and livelihoods. Disasters – both large and small - have become a regular phenomenon in vulnerable communities across Pakistan. However, the adaptive capacity to withstand or cope with these events is low, and future disasters and climate change threaten to erode it further. In the past decade disaster events have caused unprecedented levels of loss and damage, wreaking havoc on communities, the local and national economy, exacerbating poverty and hampering development. These losses could have been largely reduced through preparedness, prevention and mitigation.

The DRR approach promotes risk reduction as part and parcel of development. Risk reduction strategies need to be mainstreamed to increase Pakistan's resilience to natural hazards and to ensure that development efforts do not increase vulnerability. It is imperative that the reduction of vulnerability and risks is viewed as a continuous set of activities across social, economic, governmental and professional sectors. Activities within these sectors need to be integrated into planning and development strategies that facilitate widespread exchange of information. A shared awareness, commitment and responsibility need to be created at all levels of Pakistani society to reduce risk in disaster-prone areas and communities.

2.3 Principles

2.3.1 Multi-hazard approach

Developing institutions, mechanisms and capacities that are capable of addressing multiple hazards raises the resilience, efficiency and effectiveness of the whole system.

2.3.2 Vulnerability and risk analysis as the basis of DRR

DRR plans and initiatives need to be based upon assessments that identify the nature and degree of vulnerability or risk (including the identification of particularly vulnerable groups), that allow prioritizing problems or geographical areas on a rational basis and that inform the design of appropriate and technically sound DRR interventions. Hazard and Vulnerability Assessments, Risk Assessments and Indices are core tools and processes to identify, diagnose and prioritize risk but also to create awareness and a common perception of how risks can be addressed.

2.3.3 Strengthening community participation and resilience

When they are hit by disaster, vulnerable communities in Pakistan are often on their own for hours or even days before external assistance arrives. DRR cannot be effective without strengthening the capacities of those who are most vulnerable and who need to have the information and skills to reduce the impact of hazards on their lives and livelihoods. DRR initiatives need to build upon existing community organizations and relevant coping mechanisms to be sustainable. Engaging communities in vulnerability and capacity assessments provide entry points to build awareness, commitment and resilience in the face of disasters.

2.3.4 Strengthening the resilience of vulnerable groups

The specific DRR needs of women and children, in particular the poor, are often overlooked perpetuating patterns that lie at the heart of their current vulnerability and lead to greater disaster losses in Pakistan. While mechanisms need to be culturally appropriate, DRR requires the involvement of women as stakeholders to build resilient communities. Needs and damage as well as vulnerability and risk assessments, and DRR programs (such as CBDRM, recovery and reconstruction or sector-specific mitigation initiatives) need to demonstrate gender-sensitivity.

Other groups requiring specific attention from risk assessment, over implementation of DRR measures to monitoring and evaluation include persons with disabilities, older people, marginalized and remote communities as well as different religious groups.

2.3.5 Compatibility with local customs and norms

DRR interventions need to take into account local customs and norms and build upon local institutions.

2.3.6 Clearly defined division of roles and responsibilities between different layers of government

DRR is first and foremost a provincial and district-level subject. National policies provide an over-arching framework for risk reduction but provincial, district and municipal governments, together with civil society groups, are best placed to promote and support risk-reduction behavior among vulnerable communities. This requires a clear definition of roles and responsibilities between different layers of governance and actors. For DRR to effectively reduce vulnerability amongst those most at risk, partnerships with and between provincial, district-, tehsil/ union council governments should be promoted.

2.3.7 Promoting inter-organizational partnerships (Govt. /CS; Govt./Govt./; Govt./Private)

DRR covers a complex set of problems demanding a response that no single organization can provide. This requires not just strong vertical linkages but also horizontal connections between different types of organizations (public, private and civil society organizations including academia) and different sectors.

2.3.8 Transparency and accountability in all DRR interventions

Resources for DRR need to be allocated on a transparent basis based upon verifiable assessments. Information on resource allocation should be in the public domain and be subjected to third party scrutiny. DRR programs and activities are ultimately accountable towards those who are vulnerable to or affected by disasters. Their input and feedback needs to be sought proactively through the establishment of communication channels, monitoring and beneficiary feedback mechanisms.

2.4 Policy Objectives

In line with the outlined principles the DRR policy has the following objectives:

2.4.1 Creating an integrated national capacity to identify and monitor vulnerability and hazard trends including potential climate change impact

2.4.2 Creating Multi-Hazard Early Warning capacity while building upon existing systems and emphasizing the information and warning needs of vulnerable end-users

2.4.3 Strengthening an integrated disaster preparedness and response capacity from the local to the national level

2.4.4 Promoting development planning that considers and addresses disaster risks alongside environmental and climate change concerns

2.4.5 Strengthening the structural and non-structural resilience of key infrastructure and lifelines in Pakistan

2.4.6 Strengthening capacity at national and provincial levels to facilitate and provide support to the implementation of DRR policies, plans and programs across sectors and in high-risk areas

2.4.7 Strengthening Local Level Risk Reduction capacity focusing upon communities, and supportive linkages with Union Councils, tehsils and districts

2.4.8 Ensuring DRR is systematically integrated into recovery and reconstruction programming, "building better, safer and stronger" and informing DRR mainstreaming in general

Chapter 3

Policy Interventions

3 Policy Interventions

3.1 Risk Knowledge

3.1.1 Risk or vulnerability atlas and index at national level

DRR strategies and initiatives need to be based upon clear assessments of disaster risks i.e. a quantitative and qualitative understanding of the underlying causes and vulnerabilities, geographical distribution of vulnerability and hazards , the probability of hazard occurrence and predicted losses. The establishment of a nation-wide vulnerability and multi-hazard vulnerability atlas and index for Pakistan requires the involvement of a range of Pakistani scientific and government institutions that can provide or generate data for analysis[3]. In addition multiple line departments that have data on elements at risk i.e. infrastructure and key life-lines need to be involved in the exercise. Furthermore government institutions such as the National Disaster Management Commission (NDMC), NDMA, Provincial Disaster Management Commissions (PDMCs) and F/G/S/PDMAs, selected DDMAs, and planning commission and departments need to participate in the design process to promote a common understanding of disaster risks, build ownership and ensure that the ultimate product meets relevant information requirements. Only a highly credible assessment will help to promote the resulting index as a basis for planning.

A risk assessment is not a one-off exercise but provides the base-line for future disaster risk monitoring. This includes adding information layers and increasing the resolution of the exercise to allow for more meaningful analysis at the provincial and district level. Continuity of efforts is all the more important as climate change may affect the severity, frequency and geographical distribution of known hydro-meteorological hazards in Pakistan. The vulnerability and risk atlas therefore needs to result in the establishment of an inter-active and integrated national capacity and spatially referenced data-base that can be accessed, manipulated and updated utilizing Geographic Information Systems. This requires a risk assessment and data-base construction process that not only involves Pakistani scientists but also strengthens their capacity as well as the capacity of future data-base operators and users. Such an objective

[3] Including the Meteorological Department, Geological Survey of Pakistan, SUPARCO, Federal Flood Commission and Federal Bureau of Statistics.

involves the harmonization and standardization of geo-spatial mapping tools and soft-ware. The national GIS-powered data-base should have its institutional home within the NDMA providing access to relevant line departments as well as provinces and districts. Based on the national GIS more work will be undertaken to refine and down-scale the system to fit the needs of PDMAs and DDMAs. Ultimately the results of risk assessments should be in the public domain and be easily accessible.

3.1.2 Local/ district level risk assessments

National risk assessment would identify highly vulnerable districts and be complemented by higher resolution work at local level to diagnose the underlying causes of risk, explore concrete risk reduction options and inform development planning and prioritization exercises and/ or disaster preparedness planning. Assessments should be conducted using a uniform methodology and process for multi-hazard vulnerability and risk assessment so they can help to refine the national/ provincial data-bases. This requires the development of a national Hazard, Vulnerability and Risk Assessment standard providing for differentiation between urban and rural areas. Such a standard would cover the need to engage in participatory research to address citizens' and communities' risk perception and build their ownership in DRR strategies and measures.

Outputs of local/ district level risk assessments will include hazard and risk maps. Technical assessments should be performed by appropriate specialists and scientists. The role of F/G/S/PDMAs and DDMAs in these assessments should be one of monitoring and coordination. PDMCs should provide overall guidance on expected outputs of risk assessments and review the results against their utility for the intended purpose.

Assessments undertaken at the community level can add more qualitative information and data to technical risk assessments, and technical assessments can provide communities with necessary outside expertise. This requires building closer partnerships between F/G/S/PDMAs, DDMAs and civil society organizations that are most active in conducting these exercises. The sharing of information needs to be agreed with communities and ultimately community based organizations should be encouraged to raise their vulnerability concerns with local government actors directly.

3.1.3 Damage and loss data-base and climate change-focused research

Data from damage and loss assessments provide insights into patterns of vulnerability, hazard occurrence, magnitude and severity. The creation of an integrated multi-hazard damage loss data-base is therefore a prerequisite for systematic vulnerability and risk monitoring. Against this objective a multi-hazard damage and loss data-base, uniting data that is currently scattered across various organizations, needs to be created.

While damage-loss data-bases help to identify trends based on past events, research into the impact of climate change on glaciers and ice caps in the North need to be carried out to inform scenarios for DRR planning that consider further changes to existing patterns of hydro-meteorological hazards.

3.2 Prevention and Mitigation

3.2.1 Creating more resilient communities

DRR needs to address and involve local level actors in high-risk communities to be effective and produce sustainable results. Disasters are by definition local events since vulnerability and disaster risk are context-specific and communities are not only first hit by disasters but also the first to respond. Resilient communities adapt to hazards, avoid or mitigate negative consequences and are able to recover more quickly from shocks. Linkages and synergies need to be created between high-risk communities, civil society and voluntary organizations and local government at village, union council, tehsil and district levels to make the best use of limited resources. Local DRR activities need to focus upon high risk areas and communities that experience disasters frequently.

Local-level DRR requires the strengthening of community organization/ capacity building and preparation of plans at village- and Union Council (UC) level that are based upon participatory assessments of vulnerabilities and hazards. Plans require the identification of especially vulnerable groups and how to protect them and provisions to involve women in DRR forums and activities. Plans need to identify mitigation options and cover adequate preparedness measures[4]. Village and UC-level plans need to link up with higher-level, supportive plans at district levels including

[4] I.e. early warning and evacuation procedures; management of local shelters; search and rescue; first aid; basic response; communication and requesting or accessing support from government/ agencies.

development plans. Plans require rehearsals and simulations to deepen awareness and skills and test their effectiveness.

While local and community-based DRR needs to address the specifics of local risk and vulnerabilities as well as variations in social and cultural norms a national standard on local-level DRR should identify process and critical components based upon best practices and accumulated experience in Pakistan. This includes the need to build linkages, information exchange and communication channels between community-based actors, local governments and DDMAs/ PDMAs. The national standard would identify the core characteristics of a resilient community in Pakistan and could be further adapted and refined at provincial and district levels. The creation of the standard should be based upon consultations between government, CSOs and communities.

3.2.2 Promoting "risk conscious" and resilient development

a. Integrate DRR into development planning (macro-level: national-level plans and strategies; mega-projects)

The relationship between disasters and development is twofold: disasters have the potential to offset development gains while development can increase exposure and vulnerability to hazards. For the poor this often means that disasters feed into a vicious cycle of worsening vulnerability and ultimately destitution. DRR therefore needs to be treated as an integral component of major strategic frameworks for development i.e. national-level development plans and Poverty Reduction Strategy Papers. DRR focusing on hydro-meteorological hazards by addressing already existing climate change variability should also be promoted as a major component of Climate Change Adaptation Plans. Last but not least DRR needs to inform the design of projects of national significance and be factored into project cycle management.

b. Put into place adequate regulatory regimes to promote DRR

Against a background of rapid urban growth and potential urban disasters, the promotion of DRR through land-use plans and building codes needs to be given high priority in urban settlements. There is an urgent need to revisit municipal regulations in relation to building by-laws and structural and non-structural safety-features to identify a) major safety issues in relation to major hazards including earthquakes, landslides, fires and flooding and b) proper and realistic measures to strengthen the enforcement regime and compliance mechanisms. Building codes need to

be updated every three years in relation to observed hazard and vulnerability trends and be disseminated to both concerned agencies and departments at all levels as well as the wider public. Strategically the focus should be on ensuring that new buildings comply with building codes, while retrofitting is applied to lifeline buildings.

There is need to address the issue of land-use planning and zoning in sprawling urban areas taking into account anticipated future growth. Master plans need to be reviewed against findings from risk and vulnerability assessments and current land-use patterns. Where master plans do not exist they need to be developed to promote sustainable and risk conscious strategies for urban development. This requires the engagement of concerned national and provincial ministries/ departments as well as scientific institutions to develop alternative and realistic land-use models for selected high-risk areas covering various priority hazards, variations in geography and socio-economic development. Particular attention needs to be given to finding sustainable solutions for poor communities inhabiting areas that are deemed unsafe. Relocation can be an option, however it requires community participation and the design of holistic solutions that effectively lower existing levels of risk[5] taking into account not only physical aspects but also social and economic dimensions of vulnerability.

In rural areas with mostly non-engineered buildings and different land-use patterns and needs, an approach needs to be pursued that centers on the promotion of safer building techniques through awareness-raising and training of local construction workers building upon experience gathered from previous "risk-conscious" recovery and reconstruction efforts . The promotion of safer and environmentally sustainable patterns of land-use needs to be backed up by specific, local regulations while consulting and agreeing their design with communities and strengthening community organizations to assist with monitoring rules once they are established. District development plans need to address the settlement of unsafe areas in a holistic manner looking at "living with hazards" models (through CBDRM) and/ or working with communities to develop safer livelihoods and settlement alternatives.

[5] Resettlement can replicate risk or even increase risk especially in areas where "safe" land is scarce, risk knowledge is low and moving people may only lead to the exchange of one hazard against another.

c. Integrate DRR into development planning (micro-level projects)

At the project level efforts have been completed to develop a DRR checklist for basic development project formats PC 1 & 2 at national, provincial and district levels. Future efforts should concentrate on building capacity within national, provincial and district Planning and Development departments to manage and monitor the proper use of these checklists while ensuring proper technical support from NDMA and PDMAs. This includes capacity to analyze development alternatives against their potential impact on risk. In addition integration of DRR into development needs to be gradually expanded to cover all stages of the project management cycle including monitoring and evaluation with clear criteria and guidelines. This also requires sector-specific guidelines for a number of priority sectors.

Ultimately checks performed during the project appraisal phase must be able to flag projects that require more in-depth assessments to a) identify risks, b) formulate recommendations to address these risks. Risk Assessment elements may be incorporated into Environmental and Social Impact Analysis.

d. Integrate DRR into the whole spectrum of post-disaster interventions

The time following a disaster provides a unique window of opportunity to address DRR by promoting equitable and effective recovery that addresses vulnerability within a multi-hazard context. Such efforts need to be initiated in the response and early recovery phase while continuing throughout the rehabilitation and reconstruction phase. They include capacity building of local governments and development planners. DRR activities in areas affected by disasters need to be eventually harmonized with longer-term development objectives.

Systematic integration of DRR into rehabilitation, recovery and reconstruction needs to be guided by a national rehabilitation, recovery/ reconstruction framework and multi-hazard and sector-specific guidelines.

3.2.3 Resilient key-infrastructure and life-lines

In the light of competing demands upon limited resources the resilience of critical infrastructure and key life-lines demands particular attention both at the macro-level (plans and strategies) as well as at the micro-level of development (projects and regulations). Key infrastructure and lifelines include those facilities, structures and services whose disruption or

destruction would seriously affect peoples' lives and livelihoods including those whose functioning is crucial in a post disaster situation i.e.

- Educational and Health Facilities; Key Government Buildings
- Water Supply and Sanitation, Electricity, Transport and Communication
- Irrigation and Flood Protection

In order to guide the design of resilience-strengthening measures, the vulnerability of various infrastructure systems and services needs to be evaluated against multiple priority hazards. Against findings from these sector-specific assessments, DRR strategies and plans need to define a program to promote and enforce appropriate construction norms and location requirements, suggest eventual retrofitting activities and measures to mitigate non-structural damage[6] as well as appropriate preparedness, operation and maintenance procedures. Sector-specific DRR plans or strategies should also guide safer reconstruction through better-quality and risk-informed planning, engineering and building following destructive events.

Flood protection is a cross-cutting and trans-boundary challenge and any improvements to existing infrastructure need to be guided by overall strategies for water and flood-management taking into account environmental, social and economic considerations. This is particularly important in the light of climate change concerns and scenarios that predict both more erratic and severe flooding in the future.

3.2.4 Promoting risk awareness and knowledge through DRR education

Addressing DRR awareness-raising and education needs to happen at various levels of society to ensure DRR enjoys adequate political, technical, professional and public support. An important role in human resource development is to be played by the NIDM as the nodal training, research and education institution.

a. Promoting DRR through public awareness campaigns

Reaching the wider public with DRR messages requires clearly targeted awareness campaigns with clear objectives, core target groups and

[6] This applies in particular to buildings with high levels of occupancy i.e. schools, colleges and health-centers. Non-structural measures refer to building contents and components that are not part of the physical structure i.e. doors, electrical and heating systems etc.

appropriate methodologies that ensure messages reach men and women. The NIDM has an important role to play in advising on the design of such campaigns but also in creating capacity within NDMA, PDMAs and DDMAs to design, conduct and evaluate public awareness campaigns in the appropriate regional languages.

b. Promoting DRR education in schools and colleges

The integration of DRR into the education syllabus at all levels should focus upon creating awareness of priority hazards, mitigation or prevention options and building basic self-help and mutual-help capacities through school-based preparedness or safety plans (covering recovery of functionality in a post-disaster situation). School preparedness needs to be linked into wider community-based DRR plans and mechanisms as schools may serve as shelters and safe havens in disaster situations. For better coverage it is important that DRR education is also promoted in private and religious schools. Peer mechanisms are effective in reaching out of school children and youth.

c. Promoting professional and technical education

Professional and technical education in DRR needs to be enhanced through a range of activities including:

The development of DRR as a professional discipline needs to be further promoted at national and provincial levels through high-quality academic programs while agreeing on common curricula standards.

The curricula of graduate and postgraduate courses in architecture, engineering, medicine, earth-, environmental and social sciences need to be further updated to incorporate the latest DRR knowledge and practices.

Everyday emergency responders (ambulance services, police, fire-services) require enhancement of their training and skills through dedicated DRR training

Integrate DRR into curriculum of Civil Defense Training Institutions

At the local level training initiatives require support that target artisans such as builders and masons, and train them in hazard-resistant construction, focusing upon non-engineered buildings.

d. Strengthening DRR capacity amongst key stakeholders and decision-makers

Through the NIDM curricula and training opportunities will be developed targeting national and provincial key stakeholders. Furthermore specific training opportunities and courses will address the professional development needs of NDMA and PDMA staff. The NIDM will also develop short courses targeting decision- and policy-makers striving to increase both understanding of DRR and commitment to identify and act upon DRR needs. At the provincial level capacity needs to be strengthened to address the training needs of district level stakeholders.

DRR will be integrated into the syllabus of Civil Services Academy, NIMs, Administrative Staff College, National Defense College and Staff College.

3.3 PREPAREDNESS

3.3.1 Multi-hazard EWS

The fact that Pakistan experiences a range of regularly occurring hazards provides a strong rationale for investing in multi-hazard Early Warning Systems (EWS) that provide advance warnings to both decision-makers and communities. Effective EWS depend upon risk knowledge, an effective hazard monitoring and threat assessment, warning system, dissemination and communication of warning messages and communities that respond to warnings. Ultimately EWS are only as good as the life-, livelihood- and property-saving action that they manage to induce. EWS therefore require attention to people centered and gender sensitive approaches in establishing warning and dissemination mechanisms.

The concepts, mechanisms and activities of multi-hazard Early Warning need to be embedded in wider DRR strategies and preparedness or response plans at national, provincial and district/local/community levels. At the same time gaps and deficiencies in staffing and equipment of technical agencies responsible for monitoring individual hazards need to be addressed and protocols for the provision and exchange of information need to be established. Key actors in government agencies require legitimate mandates (following a mutually agreed plan) to coordinate, monitor and issue warnings on a variety of hazards. This requires the

establishment of clear centers of responsibility at all levels and for all key steps of warning[7].

For highly localized, destructive hazards that are difficult to monitor and predict using remote technology and systems, community-based monitoring and alert systems need to be developed within the wider framework of CBDRM building upon traditional warning mechanisms.

3.3.2 Integrated disaster preparedness and response capacity

An effective disaster preparedness and response system rests upon clearly defined roles including leadership roles, an effective flow of information between stakeholders and heightened response capacity in areas that are most likely to experience disasters. In addition more specialized capacity (i.e. Urban Search and Rescue Units) needs to be created to back up local emergency services. There is a need to have clear arrangements that allow the system to switch into emergency mode and mobilize necessary resources in a timely and effective manner.

a. Disaster preparedness and response plans[8]

There is need to clarify mutual roles and responsibilities (horizontal and vertical) and coordination arrangements in an updated, multi-hazard national response plan that is based upon current legislation. The same needs to happen at provincial and district levels while following a common approach to planning, so plans complement each other. Plans need to be based upon risk assessments, operational realities and existing resources while making specific suggestions how to improve upon current levels of performance.

b. Hazard- and sector-specific plans[9]

Effective response requires each relevant sector to define their responsibilities and interventions in their own response plans (based upon the overall plan) specifying technical details, standards and requirements as well as sector-specific coordination.

Given the regularity, significance and/or highly specific nature of certain events such as floods, oil-spills or terrorist attacks single-hazard

[7] A Draft Multi Hazard Early Warning System Plan is available and awaits finalization.
[8] These plans can be part of broader DM plans.
[9] In principle also to be performed at all levels.

contingency plans need to be created for specific scenarios bringing together concerned agencies and stakeholders.

c. Defining levels and geography of disaster situations

There is a need to set criteria for the identification and declaration of "disaster affected" areas. Disaster declarations may temporarily restrict individual rights (such as property rights or mobility). They eventually open up local areas to assistance from higher levels and they denote a condition where local capacity to cope with the event and its aftermath is either at its limit or overwhelmed.

Hazards rarely coincide with administrative boundaries. Therefore an integrated national disaster preparedness and response system needs to be prepared to deal with situations that exceed the capacity of a single district or province or even the nation. A Standard Operating Procedure needs to define criteria to determine whether a disaster is a "district", "provincial" or "national" level disaster. Broad criteria for the declaration of disaster situations at various levels may apply to the level of physical damage and/ or the numbers of casualties and/ or the loss of functionality of key services including local government capacity to lead, implement and coordinate response efforts. Furthermore the SOP needs to highlight the mechanism for declaring an emergency, and subsequent responsibilities at various levels of government. In the event of a national-level disaster an appeal for international assistance may be launched by the national government.

There is a need to clarify the legal ramifications of a disaster declaration defining rights and duties of citizens, private businesses and government organizations in the affected and (in the case of "district", "provincial" or "national" level disasters) surrounding areas. This requires by-laws at all levels that also clearly define centers of authority and mechanisms to declare a disaster area or situation, conditions for keeping these declarations in place and phasing out from such declarations.

d. Disaster response forces / volunteers

Communities are the first to respond to disasters and the importance of training the community in preparedness and life-saving measures is well recognized. Their immediate response needs to be backed up by more specialized and better-resourced response forces. There is a need to create such forces at provincial and district levels while building upon everyday emergency services (medical services, fires-service etc.) and Civil defense

with its volunteer structure. The specific roles and potential of other voluntary organizations such as the Pakistan Red Crescent Society and Edhi Foundation should be considered. The role and protection of volunteers participating in DRR activities require legal clarification to address issues of status, liability and insurance. It is likely that different provinces will come up with slightly different models for disaster response forces[10] however they need to perform to overall standards as set out in guidelines and SOPs.

At provincial level and in major cities including the national capital more specialized search and rescue units and hazmat teams that can also be deployed to local areas need to be created.

e. Assessments and information management

Effective response rests upon timely, accurate and up-to-date information. This requires clear procedures and standardized forms for information collection, sharing and analysis. Situation Reports, (Rapid) Needs and Damage and Needs Assessments require harmonized protocols, methodologies and forms. Needs and damage assessments protocols and methodologies need to define a) methodologies to gather gender-differentiated data, and b) ways to gather information from women and children to address their specific needs. Multi-sectoral capacity needs to be built to perform assessment and tasks in a timely fashion.

At provincial and national levels an integrated data-base should capture available disaster response in all areas under their jurisdiction resources including human, material and financial to facilitate mobilization in times of need. This data-base should also reach out to the district level.

f. Civil-military relations

The Pakistani military plays an important role in emergency response. In the light of increasing decentralization of DRR to provinces and districts, there is need to strengthen civil-military coordination to pursue common goals and minimize inconsistencies. Coordination as a shared responsibility should include a) joint planning covering agreed alert and mobilization procedures; b) information sharing including the sharing of SOPs, c) task division and d) hand-over procedures between civilian authorities and the military where appropriate. Joint simulations can help to clarify coordination and cooperation modalities. Overall there is a need

[10] For instance in the Punjab, Provincial and District Response Forces have been established under the executive leadership of Rescue 1122 incorporating the voluntary structure of Civil Defense.

to define the use of military assets in natural, industrial and conflict emergencies (as well as in emergencies where conflict and natural hazards overlap) in specific guidelines for Pakistan.[11]

3.3.3 Financial protection and disaster risk financing mechanisms

The objective of financial protection is to mitigate the impact of natural hazards on communities and wider society through a range of instruments employing a combination of public (international and national) and private channels of funding. The efficient financing of natural disasters relies on public-private partnerships between the private insurance and reinsurance industries and governments.

Pakistan has very low private insurance penetration and the government is often expected to support private reconstruction representing a huge burden on public funds. At the national and provincial level the current financial protection practice is largely reliant on public post-disaster financial instruments (budget reallocations and tax increases) as well as donor assistance. Such ex-post instruments have been insufficient to cover recovery and reconstruction needs and have also led to liquidity shortfalls in the immediate aftermath of disasters. The government's ultimate responsibility to provide post-disaster assistance to the poor and vulnerable and restore lifeline infrastructure has been challenged by wide and competing demands.

Proactive financial protection strategies based upon advance planning would allow to increase Pakistan's financial response capacity in the aftermath of disasters and to reduce the economic and fiscal burden of natural disasters by transferring excess losses to private capital and insurance markets. Well designed disaster risk financing and insurance strategies can create financial incentives for public and private agencies and/or households to take responsibility and further mitigate their risks. For example, access to Disaster Risk Financing and Insurance (DRFI) instruments can be made contingent upon compliance with earthquake-resistance building codes.

Risk Assessments and risk modeling techniques provide the tools to assess the likely economic and fiscal impact of natural hazards upon which cost-effective risk financing and insurance strategies can be built. A holistic financial protection strategy needs to be designed that explores the following categories of financial protection and risk transfer:

[11] See UN IASC Civil-Military Guidelines for global reference on the topic.

a. Public catastrophe risk financing

There is need to develop a sovereign catastrophe risk financing strategy to increase the financial response capacity of the Pakistani government. Such a strategy could suggest a layered system: a) a national DM reserve for funding the response and recovery following frequent but low impact hazard events; b) contingent credit facilities and emergency loans to finance the medium layer of risk and c) parametric insurance[12] or catastrophe bonds to finance rare but high impact events. .

b. Property catastrophe insurance system[13]

There is need to create a conducive environment for the development of a competitive private catastrophe insurance market targeting home-owners, small and medium enterprises, and public entities for example through catastrophe-(re) insurance pools and defining top layers of risk that insurances will have to absorb. This will require a dialogue between the Insurance Department and Security Exchange Commission with the Insurance Industry.

There is also a need to encourage programs for farmers, herders and agricultural financing institutions (e.g., rural banks, microfinance institutions) to increase their financial resilience to adverse natural hazards. Special insurance products will have to be created to protect the livelihoods of the poor, in particular against extreme weather events.

[12] Triggered by an event of an agreed magnitude, such as wind speed of a cyclone, not linked to loss assessment.

Chapter 4

Implementation Framework

4. Implementation Framework

The success of the National DRR Policy lies in the effective implementation of operational plans to be prepared and implemented by national and provincial governments in line with broad policy parameters. Most significantly, the role of F/G/S/PDMAs and district authorities will be the key to enhancing DRR capacities of line departments and at-risk communities. In the following section, an overall framework for implementation is recommended to facilitate the subsequent process of formulating detailed action plans.

4.1 National DRR Policy: A Living Adaptable Document

The National DRR Policy will remain a dynamic document to be reviewed and updated continually in order to keep the policy parameters aligned with national priorities, changing weather patterns and risk profile of the country, and international obligations. The reviews and updates, however, will be made on the basis of:

a) Scientific information / data related to hazards, risks and vulnerabilities;

b) Any changes in legal, constitutional or governance setups at the national or provincial level; and

c) Lessons learnt to improve, enhance and strengthen mitigation, preparedness and response management systems at the national, provincial and local levels.

The process of introducing changes to the policy document will ensure multi-stakeholders' consultations with technical and legal experts, federal ministries / divisions / departments, authorities and institutions, and provincial and regional governments.

The DRR Policy would be reviewed every three years, however, in case of a need to introduce changes at a specific point of time to address any policy issues based on the feedback during implementation of action plans, the national and provincial DRM institutions (NDMA & F/G/S/PDMAs) will hold consultations and propose changes for approval by the competent forum..

4.2 Operationalizing through Plans

The current policy will be implemented through three main instruments: a) development plans; b) disaster risk reduction/management plans; and c) sectoral and hazard-specific plans. In order to implement specific components of the policy, a range of specific plans and strategic frameworks need to be designed or finalized. These include, among other, a human resource development plan, a national multi-hazard early warning system plan, a financial risk protection strategy and a range of strategic frameworks to

promote safer and sustainable land-use in a variety of socio-economic, geographic and risk contexts. In parallel to DM planning processes preparedness, prevention and mitigation objectives will also be integrated into development planning at national, provincial and district levels as well as into specific plans of key and lifeline sectors.

Disasters and development go hand-in-hand and the mainstreaming of DRR in the overall development process is considered to be the foundation of a long-term agenda that allows to mitigate risks and vulnerabilities and to make communities more resilient to natural or man-made shocks. .

For a risk-sensitive development environment in Pakistan, the National DRR Policy reinforces that all the relevant ministries, departments, organizations and agencies will attach greater importance to integrating DRR considerations into policy, planning and programming at all levels. NDMA will facilitate the process of developing specific guidelines by engaging technical experts and organizing consultations with relevant entities at all levels. Planning for disasters and disaster risk management/reduction is a participatory process and will aim to involve a multitude of stakeholders from across government sectors, the private sector, NGOs, CBOs and communities. It would therefore be necessary to cluster stakeholders into planning groups relevant to the various activities associated with disasters and disaster risk management, e.g. hazard-specific contingency plans and operational plans, development of disaster risk reduction strategies, etc

4.2.1 Development plans

The national, provincial and district governments will ensure that disaster risk reduction principles are incorporated in the development agenda and other country programs. In order to guarantee availability of financial resources for the disaster risk reduction activities, the annual and long-term mega development programs/ projects and the poverty reduction strategies will recognize and include DRR as an integral part of development agenda. Development programs or projects will only be approved by the competent authorities when they comply with the general and specific DRR guidelines.

NDMA and F/G/S/PDMAs will work closely with the National Planning Commission and the Provincial Planning & Development Departments respectively and provide technical assistance to help scrutinize DRR-sensitive programs/projects for approval and implementation.

Similarly, the DDMA will be the focal point for technical assistance to be provided during the formulation of annual or 5-year District

Development Program (DDP). DDMAs will have to ensure that the DDPs take into account the risk and vulnerability profile of the district and incorporate feedback from hazard-prone communities. DDMAs will also be required to guide and assist the local governments (Tehsil and Union Council) on integrating DRR into development planning and implementation.

4.2.2 Disaster risk reduction / management plans

In addition to regular development plans, the national, provincial and district governments will develop and implement DRR/DRM plans in order to continuously identify, treat and manage risks through appropriate structural and non-structural means. A National Disaster Management Plan (NDMP) will be developed outlining measures for disaster prevention, mitigation and preparedness as well as defining roles and responsibilities of different ministries or divisions of the Federal Government to be performed at different stages of disaster risk management. Similarly, F/G/S/PDMAs will develop provincial DRR/DRM plans, which will be approved by the PDMC. Respective F/G/S/PDMAs will ensure overall coordination and implementation of the Provincial DRR/DRM Plan.

Local governments have a key role in identifying and understanding the hazards and risks that could impact on the safety and sustainability of their communities. At local level, DDMAs, with technical assistance from F/G/S/PDMAs, will prepare District DRR/DRM Plans keeping in view the detailed analysis of risks and vulnerabilities of the area, mapping of capacities available with public and private sector, and clearly defined roles and responsibilities of district line departments to be performed in pre- and post-disaster phases. The District DRR/DRM Plans will also provide long-term DRR/DRM vision, key priorities and financial arrangements necessary for implementing programs and activities aimed at making the local communities resilient to hazards and threats from potential climatic changes. The District DRR/DRM Plans will not entirely focus on structural or engineering solutions but equal importance will be given to non-structural aspects of DRR/DRM. DDMA will endorse the District DRR/DRM Plan for final approval by F/G/S/PDMAs. For effective implementation of the Plan, F/G/S/PDMAs will also help district authorities in resource mobilization.

UC DRR/DRM Plans are equally important to be prepared as risks and vulnerabilities may vary from rest of the areas and UCs of the district. NDMA will assist F/G/S/PDMAs in developing and finalizing specific

guidelines that the DDMAs will follow during the process of developing a UC-DRR/DRM Plan. The planning process will have to ensure active participation of communities, CBOs and other local-level stakeholders so that they could identify prevailing risks and suggest medium and long-term means to mitigate them on the basis of indigenous knowledge and local capacities. DDMAs will impart necessary training to district and UC officials for undertaking the planning activity. UC-DRR/DRM Plans will be approved by DDMAs. UC-level planning inputs can be very useful for updating the District DRR/DRM Plans as well. DDMAs will be required to review / update district and UC DRR/DRM plans annually for their effectiveness and complementarities.

4.2.3 Sectoral and hazard-specific plans

In addition to capitalizing on multi-tier development and DRR/DRM plans, federal ministries / departments and provincial and district line departments will be required to develop sector-specific DRR/DRM plans to be reviewed and updated annually. This approach will allow each public-sector entity to complement and strengthen the overall structure of DRM both horizontally and vertically. NDMA will provide technical assistance in terms of preparing guidelines and imparting technical skills to government officials for developing sectoral DRR/DRM plans at the national and provincial levels. Likewise, F/G/S/PDMAs will take this initiative down to the districts. For the approval of sectoral plans, NDMA and F/G/S/PDMAs will undertake technical reviews before their approval by relevant ministries / divisions at the national and provincial level. The technical reviews will revolve around: a) department-specific risk analysis; b) measures for structural and non-structural mitigation of identified risks and allocation of budget; c) defined mandate of the department vis-à-vis DRM; and d) inter-department linkages.

Moreover, NDMA will also develop and implement a Multi-hazard Early Warning System Plan and a National Human Resource Development Plan.

4.2.3 Planning guidelines

The National DRR Policy emphasizes that for effective multi-tier DRR / DRM planning that is in consonance with the requirements and provisions of the HFA and the NDM Act 2010, NDMA will engage the technical agencies from public and private sectors and develop a set of guidelines and templates for the following:

a) Risk Assessment guidelines for national, provincial and district DRR/DRM plans;
b) DRR Mainstreaming guidelines;
c) Community-Based Risk Assessment Guidelines;
d) Guidebook on Indigenous Coping Mechanism for flood, drought, earthquake, landslide and coastal hazards;
e) Damage and Needs Assessment template for district authorities, F/G/S/PDMAs and national entities;
f) Hazard-specific Risk Assessment Guidelines;
g) Emergency Response Guidelines;
h) Contingency Planning template and guidelines;
i) Guidelines and templates for Sectoral DRR/DRM plans;
j) Guidelines for Industrial Hazards Mitigation;
k) Guidelines and templates for monitoring and evaluation of DRR / DRM plans; and
l) Guidelines for reviewing and updating DRR / DRM plans at national, provincial, district and Union Council level.

4.3 Finance

Adequate resources and their efficient utilization is of critical importance for effective disaster risk reduction measures. Timely and adequate investment on DRR will substantially reduce hazard risks but also the costs associated with response, recovery and rehabilitation. NDMA, F/G/S/PDMAs should be provided with sufficient financial resources for designing and implementing disaster risk reduction measures. The resource mobilization and disaster risk financing arrangements are based upon the provisions of NDM Act 2010. The financing needs to be guided by the principles of Adequacy, Equity, Predictability, Administrative efficiency, Incentive effects, Autonomy, and Risk pooling.

The National DRR Policy recommends that a separate and dedicated budget line for disaster risk reduction be created at federal, provincial and district tiers. For the sustainability of prevention, mitigation and preparedness efforts and to ensure a timely response to any disaster situation, the NDM Act 2010 calls for establishing and managing National and Provincial Disaster Management Funds separately; National Disaster Management Fund (NDMF) and Provincial Disaster Management Fund (PDMF). The Act identifies two major sources of funding: a) government's grants; and b) loans, aids and donations by national or international agencies or other sources. It also requires the Federal and Provincial governments to make provisions for funds in their annual budgets for carrying out activities and programs set out in disaster management plans as required by N/F/G/S/P/DMAs. The National

DRR Policy also recommends for development partners to contribute to strengthen the national and provincial disaster management funds.

4.4 Knowledge Management and Research and Development (R&D)

A predominant response-oriented approach till 2007 did not provide enough space for the academic work on DRR to take roots and inform and prioritize policy decisions and strategic interventions. Similarly, whatever amount of DRR knowledge was created over the years within the public and private-sector domains remained scattered and inaccessible, which could have otherwise been transformed into 'life-saving' knowledge for risk-prone communities.

DRR knowledge management has gained importance given the global acknowledgement that losses to lives and livelihoods can be reduced substantially if people are informed about risk and vulnerabilities and using their capacities for DRR. However, it requires the collection, compilation and dissemination of relevant knowledge and information.

The National DRR Policy thus recognizes that an environment has to be established to create, share, learn, enhance, organize and utilize DRR knowledge in best possible manners. In view of the above context, following key policy measures will be taken to promote DRR-related R & D and knowledge management:

4.4.1. Research on disaster risk reduction

To guide, promote and strengthen research aspects, NDMA, in consultation with scientific and technical institutions, will set up a core group of experts to identify research needs in disaster risk reduction, and to undertake a range of research studies. Emphasis is required to be given to climate change and adaptation and global warming in addition to research on cross-cutting themes including technological and man-made disasters. Research into indigenous coping mechanism for flood and drought hazards, micro-zonation and scenario development based on simulation studies will be of significant importance.

Similarly, post-disaster field studies will be undertaken as an institutional measure to identify gaps and analyze the status of preparedness, response and mitigation. The findings of such studies will be fed into national, provincial and local level DRM plans for their enhanced effectiveness.

Additionally, NIDM will document lessons of past disasters vis-a-vis recovery and reconstruction to guide the future course of mainstreaming DRR into post-disaster phases. NIDM will also document DRM case studies and best practices to be disseminated to all stakeholders for the promotion of DRM in Pakistan.

4.4.2. Strategic plan of NIDM

NDM Act 2010 outlines the roles and responsibilities of the NIDM with regard to research and capacity building. In order to effectively fulfill legal and technical obligations, NIDM will prepare a Strategic Plan in consultation and collaboration with NDMA and relevant provincial institutions/academies to take forward the agenda of research, training and capacity building for disaster risk reduction and management. NIDM will also extend desired technical assistance to provincial disaster management institutions for preparing research, training and capacity building action plans.

4.4.3. Academic affiliations

In order to enhance academic and technical scope, credibility and effectiveness of NIDM, options will be explored for its affiliation with research, training and educational institutions at the national, regional and international levels.

4.4.4. Disaster resource center

NIDM will establish and run a Disaster Resource Center (DRC) to support and complement DRR efforts through technical inputs on research, training, education, advocacy and awareness throughout the country. DRC will be a hub of disaster-related information for consumption of public-sector departments and organizations, print and electronic media, students, development professionals, and academicians.

4.4.5. Training and capacity building

A training and capacity building agenda will flow out of NIDM's Strategic Plan. NIDM will gather all the available training, awareness and capacity building material and consolidate/adapt it for use by different actors. Besides developing training manuals and modules in Urdu and English languages, NIDM will chalk out a detailed strategy for mass awareness on DRR through appropriate means.

Training and capacity building programs become more useful if the training content is based on the training needs of different stakeholders. Therefore, NIDM will prepare Training Needs

Assessment template and guidelines and complete the practical exercise before finalizing the list and outlines of training courses / materials. Lastly, NIDM, in consultation with NDMA and F/G/S/PDMAs, will plan for regularly conducting drills and simulations at different levels.

4.5 Community Based Disaster Risk Management

CBDRM has a pivotal role to play in strengthening the overall DRR/DRM system and structures. Although, there is a world-wide broad consensus on established principles and techniques for CBDRM, different countries, however, have developed CBDRM frameworks and guidelines according to their own national priorities and specific community and cultural needs. In Pakistan, national and international NGOs have largely been implementing CBDRM programs and activities according to their own understanding of the local context. In the absence of a national CBDRM framework, it becomes difficult to create synergies and get maximum benefits for hazard-prone communities out of the CBDRM efforts. Therefore, a national CBDRM framework that could be further adapted and refined at provincial and district levels will be developed.

4.6 DRR Mainstreaming in Education System

DRR agenda will remain inconclusive unless the national education system is made an integral part of it. Efforts are already underway to mainstream DRR in education curricula at all levels (school, college, university). However, the task at hand is to develop the DRR curricula in national and regional languages for subsequent mainstreaming. NDMA will facilitate the process of developing DRR curricula in consultation with relevant forums. Similarly, an appropriate mechanism will be devised to review with DRR lens the curricula of graduate and post-graduate level courses in architecture, engineering, and earth sciences, etc.

4.7 Monitoring & Evaluation

Needs-based prioritization of future DRR/DRM interventions becomes relatively difficult if the monitoring and evaluation (M&E) of past and on-going DRR/DRM programs and projects is not done systematically. NDMA, in collaboration and consultation with provincial governments, federal departments, institutions, and development partners, will develop a monitoring & evaluation framework for periodic oversight of the implementation of DRR/DRM activities in Pakistan. The framework will aim to objectively

evaluate the relevance, effectiveness, efficiency, sustainability and impact of DRR/DRM interventions.

More specifically, the M&E framework will provide unified tools and templates for tracking the implementation status of the National DRR Policy, Disaster Management Plans and other DRR/DRM-related programs and projects at the national, provincial and local levels.

F/G/S/PDMAs will undertake M&E activities at the provincial and district levels whereas NDMA will do the same for national-level initiatives. At the end of each year or in the first month of the following year, NDMA and F/G/S/PDMAs will share their M&E findings and analysis for subsequent consolidation and sharing with relevant stakeholders. NDMA will annually publish a national report on M&E of DRR/DRM interventions, which will be presented to the NDMC together with overall progress related to DRR / DRM. F/G/S/PDMAs will present their M&E reports to respective PDMCs.

4.8 Harmonizing DRR initiatives

Over the last few years, the federal and provincial governments have taken various initiatives aimed at reducing structural and non-structural vulnerabilities to different hazards and building capacities of government officials and communities. However, there is a need to create synergies within and among provincial and national initiatives and making optimum use of on-going efforts. The implementation of such activities in isolation is not likely to achieve desired results. Therefore, it is imperative for the federal and provincial governments to dovetail all such initiatives of structural and non-structural nature within the holistic framework of DRR in order to effectively contribute to the national agenda of making Pakistan a disaster resilient country

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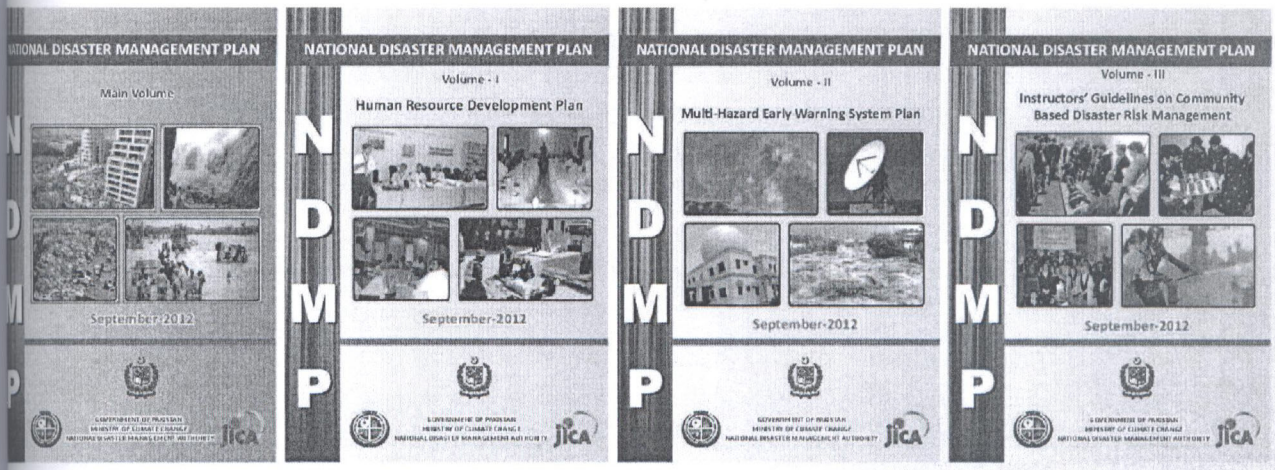
ATIONAL DISASTER MANAGEMENT PLAN

EXECUTIVE SUMMARY



September-2012

GOVERNMENT OF PAKISTAN
MINISTRY OF CLIMATE CHANGE
NATIONAL DISASTER MANAGEMENT AUTHORITY

N D M P

PREFACE

The National Disaster Management Plan (NDMP) is a milestone in the history of the Disaster Management System (DRM) in Pakistan. The rapid change in global climate has given rise to many disasters that pose a severe threat to human life, property and infrastructure. Disasters like floods, earthquakes, tsunamis, droughts, sediment disasters, avalanches, GLOFs, and cyclones with storm surges are some prominent manifestations of climate change phenomenon. Pakistan, which is ranked in the top ten countries that are the most vulnerable to climate change effects, started planning to safeguard and secure the life, land and property of its people in particular the poor, the vulnerable and the marginalized. However, recurring disasters since 2005 have provided the required stimuli for accelerating the efforts towards capacity building of the responsible agencies, which include federal, provincial, district governments, community organizations, NGOs and individuals.

Prior to 2005, the West Pakistan National Calamities Act of 1958 was the available legal remedy that regulated the maintenance and restoration of order in areas affected by calamities and relief against such calamities. An Emergency Relief Cell within the Cabinet Division has been serving since 1971 as an institutional disaster relief support at the national level. Similar institutional arrangements existed at the provincial level in the form of relief commissioners. However, that regime provided a reactive approach towards emergency response only.

The United Nations International Strategy for Disaster Reduction (UNISDR) introduced the paradigm shift from a reactive to a proactive approach in the form of the Hyogo Framework of Action (2005-2015) signed by 168 countries including Pakistan. To fulfill the global obligations as well as cope with the challenges emerged in the aftermath of the October 2005 earthquake, the Government of Pakistan promulgated the National Disaster Management Ordinance in 2007 to introduce a comprehensive National Disaster Management System in the country. The Ordinance became the Act called the National Disaster Management Act in December 2010. The Act establishes three tiers for the disaster management system: i.e., national, provincial and district levels.

Under the Act, the National Disaster Management Commission (NDMC) was established at the national level, and has the responsibility for laying down policies and guidelines for disaster risk management and approval of the National Plan. The National Disaster Management Authority (NDMA) was subsequently established in 2007 in line with the Act, and serves as the implementing, coordinating and monitoring body for disaster risk management at the national level. Along with the Ordinance (now Act), the National Disaster Risk Management Framework (NDRMF) was prepared by the NDMA in March 2007. The NDRMF served as an overall guideline for disaster risk management at national, provincial and district levels. In March 2010, the NDMA formulated the National Disaster Response Plan (NDRP) identifying specific roles and responsibilities of the relevant stakeholders in emergency response including Standard Operation Procedures (SOPs).

Concurrently, NDMA, in collaboration with national and international partners, had been in the process of strengthening the DRM system in the country. In order to support this new approach in Pakistan, the Japan International Cooperation Agency (JICA) dispatched a series of missions from the year 2008 to 2009 based on the request from the Government of Pakistan. It studied the whole legal and administrative system of DRM in Pakistan and held meetings with all stakeholders to identify the needs and requirements to enhance the capacity of the national DRM system. Based on thorough bilateral consultations, a project document on formulation of a National Disaster Management Plan (NDMP) for Pakistan was conceived for implementation through Japanese Grant-in-Aid. A PC-II was prepared accordingly and was approved by the Planning Commission in the meeting of Central Development Working Party held on 19-11-2009. For implementation through Grant-in-Aid, the scope of work for the project was discussed, agreed and signed between the Government of Pakistan and JICA on 11-12-2009 and the project Inception Report was prepared in April 2010. The Plan, aimed at enhancing the capacity of the country to prepare for and respond to disasters by defining the measures to be considered necessary for disaster management and risk reduction in line with the provision of the National Disaster Management Act (Chapter II, Section 10), was finalized in June 2012.

The overall NDMP is a comprehensive plan, having a total investment cost of USD 1040.9 million (PKR 92.02 Bn with 1 USD = PKR 88.4), consisting of the "Main Plan" document along with three supporting volumes besides the Executive Summary, which identifies macro level hazards and risk assessment, development of the multi hazard early warning system to reduce the vulnerability to disasters by enhancing and strengthening the early warning capacity, identification of the roles and responsibilities of the stakeholders, including federal, provincial and district governments, community organizations, NGOs, businesses, and individuals who are involved in the disaster management. The Community Based Disaster Risk Management (CBDRM) approach, in view of its universal reorganization and importance in DRM planning, has been given due place in the Plan. Based on pilot activities tested in different hazard contexts and social settings, best practices and guidelines have been documented in the Plan to serve as models for future CBDRM activities in Pakistan. The Plan also provides strategic direction for systematic human resource development in the field of disaster management and the operational plan for the National Institute of Disaster Management (NIDM).

The components of NDMP published in one main document with three supporting volumes, besides the Executive Summary, are entitled:

National Disaster Management Plan	Main Plan
Human Resource Development Plan on Disaster Management	Vol. I
Multi-Hazard Early Warning System Plan	Vol. II
Instructors' Guidelines on Community Based Disaster Risk Management	Vol. III

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LIST OF ABBREVIATION

AD	Assistant Director
ADB	Asian Development Bank
ADPC	Asian Disaster Preparedness Center
AFD	France's Development Assistance (Agence Française de Développement)
AJK	Azad Jammu and Kashmir
A/P	Administration and Procurement
APEC	Asia Pacific Economic Cooperation
APT	Automatic Picture Transmission
ATO	Assistant Town Officer
AWS	Automatic Weather Stations
AZRI	Arid Zone Research Institute
BoG	Board of Government
C&IM	Coordination and Information Management
C&W	Communication and Works
CAA	Civil Aviation Authority
CBDRM	Community Based Disaster Risk Management
CBDRR	Community Based Disaster Risk Reduction
CBOs	Community Based Organizations
CD	Capacity Development
CDG	City District Government
CDGR	City District Government Rawalpindi
CDH	Climate Discussion Hour
CDMC	Community Disaster Management Committee
CEA	Chief Engineering Adviser
CFFC	Chairman, Federal Flood Commission
CIDA	Canadian International Development Agency
CM	Centimeter
COS	Chief of Staff
COSPAS	Cosmicheskaya Sistema Poiska Avariynyh Sudov in Russian (Space System for the Search of Vessels in Distress): Name of Satellite
C/P	Counter part
CPI	Cumulative Precipitation Index
CPO	City Police Officer
CSO	Civil Society Organization
CTII	CTI engineering International
DC	Deputy Commissioner
DCO	District Coordination Officer
DD	Deputy Director
DDMA	District Disaster Management Authority
DDMP	District Disaster Management Plan
DDRMPs	District Disaster Risk Management Plans
DDO	Deputy District Officer
DDO	Drawing and Disbursing Office (in Figure 7.3.2 in Chapter 7)
DDRC	District Disaster Resource Centers
DERA	Drought Emergency Relief Assistance
DEWS	Disease Early Warning System
DEO	District Emergency Officer
DFCC	District Flood Control Centre
DF/R	Draft Final Report
DG	Director General
D.G. Khan	Dera Ghazi Khan
DHQ	District Head Quarter
DIG	Disaster Imagination Game
D.I. Khan	Dera Ismail Khan
DM	Disaster Management
DMA	Disaster Management Authority
DNA	Damage and Needs Assessment
DRAC	District Reconstruction Advisory Committee
DRM	Disaster Risk Management
DRMP	Disaster Risk Management Program
DRR	Disaster Risk Reduction
DRUs	District Reconstruction Units
D&SCC	Donors and Sponsors Coordination Cell
DTC	Diarrhea Treatment Center
EAD	Economic Affairs Division
ECNEC	Executive Committee on National Economic Council
ECSRC	Executive Committee of the Space Research Council
EDO	Executive District Officer
EEZ	Exclusive Economic Zone
EM-DAT	Electron Microscopy Data
ENERCON	National Energy Conservation Centre
EO	Evacuation order
EOC	Emergency Operations Centre
EQ	Earthquake
ERC	Emergency Relief Cell
ERRA	Earthquake Reconstruction and Rehabilitation Authority
ETo	Reference Crop Evapotranspiration
EWS	Early Warning System
FAO	Food and Agriculture Organization
FANA	Federally Administrated Northern Areas
FATA	Federally Administrated Tribal Areas
FAX	Facsimile
FDMA	FATA Disaster Management Authority
FEWS	Flood Early Warning System
FFC	Federal Flood Commission
FFD	Flood Forecasting Division
FFWMCC	Flood Forecasting and Warning Master Control Centre
FFWS	Flood Forecasting and Warning System
FGD	Focus Group Discussion
F/G/S/P	FATA/GB/State/Provincial
FHA	Focus Humanitarian Assistance
FIDC	Federal Irrigation and Drainage Cell
FM	Financial Management
FMIS	Financial Management Information System
FOCUS	FOCUS Humanitarian Assistance
FPSP	Flood Protection Sector Projects
F/S	Feasibility Study
FY	Fiscal Year
GB	Gilgit Baltistan
GBDMA	Gilgit Baltistan Disaster Management Authority
GDP	Gross Domestic Product
GFAS	Global Flood Alert System
GIS	Geographic Information System
GLOF	Glacial Lake Outburst Flood
GM	General Manager

GMDSS	Global Maritime Distress Safety System
GOP	Government of Pakistan
GPS	Global Positioning System
GPRS	General Packet Radio Service
GSHAP	Global Seismic Hazard Assessment Program
GSM	Global System for Mobile Communications
GSP	Geological Survey of Pakistan
GTS	Global Telecommunication System
GTZ	German Society for Technical Cooperation (Deutsche Gesellschaft fur Technische Zusammenarbeit)
HA	Hazard Assessment
HEPR	Health Emergency Preparedness and Response
H. F.	High Frequency
HFA	Hyogo Framework for Action 2005-2015
HH	Household
HLV	Hazard, Livelihood and Vulnerability
HR	Human Resource
HRDP	Humana Resource Development Plan
H.R.P.T.	High Resolution Digital Telemetry
H&WM	Hydrology and Water Management Organization
IBR	Institution-Based Rehabilitation
IBDR	International Bank for Reconstruction and Development
ICID	International Commission on Irrigation and Drainage
ICOLD	International Commission on large Dams
ICT	Islamabad Capital Territory
IDB	Islamic Development Bank
IESCO	Islamabad Electrical Supply Company
IFAS	Integrated Flood Analysis System
IFRC	International Federation of Red Cross
IIEES	International Institute of Earthquake Engineering and Seismology
IIMI	International Irrigation Management Institute
INGOs	International Non-governmental Organizations
IPC	Inter-Provincial Coordination
IPCC	http://www.ipcc.ch/
IPP	Independent Power Producers
IRSA	Indus River System Authority
ISDR	International Strategy for Disaster Reduction
IT	Information Technology
IT/R	Interim Report
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
JMA	Japan Meteorological Agency
JPs	Joint Programs
JPCs	Joint Program Components
KESC	Karachi Electricity Supply Corporation
KFW	Kreditanstalt für Wiederaufbau, (meaning Reconstruction Credit Institute (German government-owned development bank))
KP	Khyber Pakhtunkhwa
KMC	Knowledge Management Cell
K MGM	Knowledge Management
Las	Local Authorities
LFFFC	Local Flash Flood Forecasting Centres
LGRD	Local Government and Rural Development
MAC	Management Advisory Committee
MAF	Million Acre Feet
M&E	Monitoring and Evaluation
M&P	mitigation and preparedness
MBC	Mid East Broadcasting Center
MDMA	Municipal Disaster Management Authority
METI	Japan's Ministry of Economy, Trade, and Industry
MHEWP	Multi-Hazard Early Warning Plan
MIS	Management Information System
M/M	Man and Month
MMI	Modified Mercalli Intensity
MOA	Memorandum of Agreement
MOD	Ministry of Defence
MOHW	Ministry of Housing and Works
MOST	Ministry of Science and Technology,
MRDEA	Medical Rehabilitation for Persons with Disabilities in Earthquake Affected Areas
MSA	Maritime Security Agency
MTO	Mechanical Transport Officer
MWG	Ministerial Working Group
MWP	Ministry of Water and Power
NA	Northern Areas
NASA	U.S. National Aeronautics and Space Administration
NCA	National Command Authority
NDMA	National Disaster Management Authority
NDMC	National Disaster Management Commission
NDMO	National Disaster Management Ordinance
NDMF	National Disaster Management Fund
NDMP	National Disaster Management Plan
NDRF	National Disaster Management Force
NDRMF	National Disaster Risk Management Framework
NDRP	National Disaster Response Plan
NEC	National Economic Council
NEOC	National Emergency Operations Centre
NESPAK	National Engineering Services of Pakistan
NESPC	National Engineering Services Pakistan
NFPP	National Flood Protection Plans
NGDC	National Geographical Data Center
NGOs	Non-governmental Organizations
NHA	National Housing Authority
NIDM	National Institute of Disaster Management
NIO	National Institute of Oceanography
NLC	National Logistics Cell
NPO	Nonprofit Organization
NSC	National Steering Committee
NSMC	National Seismic Monitoring Centre
NSPP	National School of Public Policy
NWFC	National Weather Forecast Centre
NWFP	North West Frontier Province
NWP	Numerical Weather Prediction
OC	Oriental Consultants Co., Ltd.
ODA	Official Development Assistance
OIC	OYO International
Ops	Operations
PAEC	Pakistan Atomic Energy Commission
PARC	Pakistan Agriculture Research Council
PC&WD	Provincial Communication and Works Department

PCATAP	Pakistan Council of Architects and Town Planners
PCIW	Pakistan Commissioner for Indus Waters
PCRWR	Pakistan Council of Research in Water Resources
PDMA	Provincial Disaster Management
P&D	Planning and Development Authority
PDMC	Provincial Disaster Management Commission
PEC	Pakistan Engineering Council
PEER	Program for Enhancement of Emergency Response
PEMRA	Pakistan Electronic Media Regulation Authority
PEOC	Provincial Emergency Operations Centre
PEPAC	Pakistan Environmental Planning and Architectural Consultants Limited
PEPCO	Pakistan Electric Power Company
PERRA	Provincial Earthquake Reconstruction and Rehabilitation Agency
PICU	Project Implementation Coordination Unit
PID	Provincial Irrigation and Power Department
PIDA	Provincial Irrigation and Drainage Authority
P&Imp	Planning and Implementation
PIPD	Provincial Irrigation and Power Department
PM	Prime Minister
PMD	Pakistan Meteorological Department
PMF	Probable Maximum Flood
PRCS	Pakistan Red Crescent Society
PSO	Personal Staff Officer
PSPM	Principal Secretary to the Prime Minister
PTA	Pakistan Telecommunication Authority
PTCL	Pakistan Telecommunication Company Limited
PWDs	Persons with Disabilities
QPM	Quantitative Precipitation Measurement
R&D	Research and Development
R&R	Roles & Responsibilities
RBC	Reinforced Brick Concrete
RCC	Reinforced Cement Concrete
RDFF	Routine Daily Flood Forecast
RDMC	Regional Drought Monitoring Center
REDIM	Regional Drought Identification Model
RFFWC	Regional Flood Forecasting and Warning Centres
SARSAT	Search And Rescue Satellite-Aided Tracking
S&S	Support and Services
SCARP	Salinity Control and Reclamation Project
SERRA	State Earthquake Reconstruction and Rehabilitation Agency
SDMA	State Disaster Management Authority
SLMP	Sustainable Land Management Project
SMA	Senior Management Advisor
SMRFC	Specialized Medium Range Forecasting Centre
SO	Section Officer
SOE	Standard Operating Environment
SOPs	Standard Operating Procedures
SPC	Special Projects Cell
SPI	Standard Precipitation Index
SPU	Strategic Planning Unit
SRC	Space Research Council
SRS	Satellite Remote Sensing
SSPM	Special Secretary to the Prime Minister
SUPARCO	Space and Upper Atmospheric Research Corporation
TC	Tropical Cyclone
TCMC	Tropical Cyclone Monitoring Centre
TCP/IP	Transmission Control Protocol/Internet Protocol
TCWC	Tropical Cyclone Warning Centre
TDF	Tarbela Development Fund
TMA	Tehsil Municipal Administration
TMO	Tehsil Municipal Officer
TOT	Training of Trainers
TRC	Transnational Relief Cell
TS	Technical Services
TV	Television
UAN	Universal Access Number
UC	Union Council
UCDMC	Union Council Disaster Management Committee
UCERT	Union Council Emergency Response Team
UN	United Nations
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UTC	Universal Time, Coordinated
VCA	Vulnerability and Capacity Assessment
WAPDA	Water and Power Development Authority
WASA	Water and Sanitation Agency
WASH	Water, Sanitation and Hygiene
WB	World Bank
WCAP	Water Sector Capacity Building and Advisory Services Project.
WCDR	World Conference on Disaster Reduction
WEC	World Engineering Council
WFP	World Food Plan
WMO	World Meteorological Organization
XEN	Executive Engineer

LIST OF BASIC TERMS

Acceptable risk
The level of loss a society or community considers it can live with and for which it does not need to invest in mitigation

Biological hazard
Biological vectors, micro-organisms, toxins and bioactive substances, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

Capacity
A combination of all the strengths and resources available within a community, society or organization that can reduce the level of risk, or the effects of a disaster.

Capacity may include physical, institutional, social or economic means as well as skilled personnel or collective attributes such as leadership and management. Capacity may also be described as capability.

Capacity building
Efforts aimed to develop human skills or societal infrastructure within a community or organization needed to reduce the level of risk. In extended understanding, capacity building also includes development of institutional, financial, political and other resources, at different levels of the society.

Climate change
The climate of a place or region is changed if over an extended period (typically decades or longer) there is a statistically significant change in measurements of either the mean temperature or variability of the climate for that region.

Coping capacity
The means by which people or organizations use available resources and abilities to face a disaster. In general, this involves managing resources, both in normal times as well as during crises or adverse conditions.

Disaster
A serious disruption of the functioning of a community or society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources. It results from the combination of hazards, conditions of vulnerability and insufficient capacity to reduce the potential negative consequences of risk.

Disaster risk management (DRM)
The comprehensive approach to reduce the adverse impacts of a disaster. DRM encompasses all actions taken before, during, and after the disasters. It includes activities on mitigation, preparedness, emergency response, recovery, rehabilitation, and reconstruction.

Disaster risk reduction/disaster reduction
The measures aimed to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development.

Early warning
The provision of timely and effective information, through identified institutions, to communities and individuals so that they could take action to reduce their risks and prepare for effective response.

Emergency management
The management and deployment of resources for dealing with all aspects of emergencies, in particularly preparedness, response and rehabilitation

Forecast
Estimate of the occurrence of a future event (UNESCO, WMO). The is term is used with different meanings in different disciplines.

Geological hazard
Natural earth processes that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. For example earthquakes, tsunamis, volcanic activity and emissions, landslides, rockslides, rock falls or avalanches, surface collapses, expansive soils and debris or mud flows.

Hazard
potentially damaging physical event or phenomenon that may ca use the loss of life or injury, property damage, social and economic disruption or environmental degradation.

Hazards can include natural (geological, hydro meteorological and biological) or induced by human processes (environmental degradation and technological hazards). Hazards can be single, sequential or combined in their origin and effects. Each hazard is characterized by its location, intensity, frequency and probability.

Hazard analysis
Identification, studies and monitoring of any hazard to determine its potential, origin, characteristics and behavior.

Land-Use planning
Branch of physical and socio-economic planning that determines the means and assesses the values or limitations of various options in which land is to be utilized, with the corresponding effects on different segments of the population or interests of a community taken into account in resulting decisions. Land-use planning can help to mitigate disasters and reduce risks by discouraging high-density settlements and construction of key installations in hazard-prone areas, control of population density and expansion
Mitigation Structural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards.

Natural hazards
Natural processes or phenomena occurring on the earth that may constitute a damaging event. Natural hazards can be classified by origin namely: geological, hydro meteorological or biological. Hazardous events can vary in magnitude or intensity, frequency, duration, area of extent, speed of onset, spatial dispersion and temporal spacing.

Preparedness
Activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary evacuation of people and property from threatened locations.

Prevention
Activities to ensure complete avoidance of the adverse impact of hazards.

Public awareness
The processes of informing the general population, increasing levels of consciousness about risks and how people can reduce their exposure to hazards. This is particularly important for public officials in fulfilling their responsibilities to save lives and property in the event of a disaster.

Recovery
Decisions and actions taken after a disaster with a view to restoring or improving the pre-disaster living conditions of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk.

Relief / response
The provision of assistance during or immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected. It can be of an immediate, short-term, or protracted duration.

Resilience / resilient
The capacity of a community, society or organization potentially exposed to hazards to adapt, by resisting or changing in order to maintain an acceptable level of functioning. Resilience can be increased by learning from past disasters for better future protection and to improve risk reduction measures.

Retrofitting (or upgrading)
Reinforcement of existing buildings and structures to become more resistant and resilient to the forces of natural hazards.

Risk
The chances of losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between hazards and vulnerable social conditions. Risk is expressed as Risk = Hazards x Vulnerability. Some experts also include the concept of exposure to refer to the physical aspects of vulnerability.

Risk assessment/analysis
A methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing vulnerability that could pose a potential threat to people, property, livelihoods and the environment.

Structural/ non-structural measures
Structural measures refer to any physical construction to reduce or avoid possible impacts of hazards, which include engineering measures and construction of hazard-resistant and protective structures and infrastructure.

Non-structural measures refer to policies, awareness, knowledge development, public commitment, and methods and operating practices, including participatory mechanisms and the provision of information, which can reduce risk and related impacts.

Sustainable development
Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of "needs", in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and the future needs. (Brundtland Commission, 1987).

Technological hazards
Danger originating from technological or industrial accidents, infrastructure failures or certain human activities, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. Some examples: industrial pollution, nuclear activities and radioactivity, toxic wastes, dam failures; transport, explosions, fires, spills.

Vulnerability
The conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community or society to the impact of hazards.

Wildland fire
Any fire occurring in vegetation areas regardless of ignition sources, damages or benefits.

Executive Summary

National Disaster Management Plan (Main Plan)

1. National Disaster Management System

The West Pakistan National Calamities Act of 1958 provides for the maintenance and restoration of order in areas affected by calamities and relief against such calamities and focuses on emergency response. Based on the Act, an Emergency Relief Cell was created within the Cabinet Division in 1971 and has been responsible for disaster relief at the national level. The Government of Pakistan promulgated the National Disaster Management Ordinance in 2007 (the Ordinance) in order to establish a National Disaster Management System in the country. The Ordinance became the Act called the National Disaster Management Act in December 2010. The Ordinance (now Act) established three levels for the disaster management system: i.e., national, provincial and district levels. At the national level, the National Disaster Management Commission (NDMC) was established, which has the responsibility for laying down policies and guidelines for disaster risk management and for approval of the National Plan. The National Disaster Management Authority (NDMA) was created in 2007 as the executive arm of the NDMC and serves as the implementing, coordinating and monitoring body for disaster risk management at the national level.

Along with the Ordinance (now Act), the National Disaster Risk Management Framework (NDRMF) was prepared by the NDMA in March 2007. The NDRMF served as an overall guideline for disaster risk management at national, provincial and district levels. In March 2010, the NDMA formulated the National Disaster Response Plan (NDRP), which presents emergency response activities for all stakeholders including Standard Operation Procedures (SOPs) of emergency response.

2. The National Disaster Management Plan

The National Disaster Management Plan (NDMP), prepared based on the Act, aims at enhancing the capacity of the country to prepare for and respond to disasters (floods, earthquakes, tsunamis, droughts, sediment disasters, avalanches, GLOFs, cyclones with storm surges, etc.) by defining the measures to be considered necessary for disaster management. The NDMP identifies the roles and responsibilities of the stakeholders, including federal, provincial and district governments, community organizations, NGOs, businesses, and residents who are involved in the disaster management. Disaster management is one of the most important administrative measures for protecting the land and people's lives, welfare and property from disasters.

3. Vision

To achieve sustainable social, economic and environmental development in Pakistan through reducing disaster risks and vulnerabilities, particularly those of the poor and marginalized groups of people in the country; and to enhance country's ability to manage all disasters (floods, earthquakes, tsunamis, droughts, landslides, sediment disasters, avalanches, GLOFs, cyclones with storm surges, etc.) using a comprehensive national approach.

4. Mission

To manage the complete spectrum of disasters by development of disaster risk reduction policies, strategies, measures and actions of all stakeholders, especially at the national level; and to enhance institutional capacities, and human and material resources for mitigation, prevention and preparedness, response and recovery in disasters.

5. Objectives

The objectives of the NDMP are:

i) To develop resilience in society against disasters that Pakistan has experienced in the past, such as the 2005 Earthquake and floods of 2010 and 2011.

ii) To mitigate damages from recurring disasters such as floods, urban flooding, earthquakes, tsunamis, droughts, landslides, sediment disasters, avalanches, GLOFs, cyclones with storm surges, etc.

iii) To reduce disaster risks and vulnerabilities, particularly those of the poor and the marginalized groups of people in the country.

iv) To clarify the roles and responsibilities of the national and local governments, public agencies, corporations, NGOs, communities and residents to reduce disaster risk.

6. Disaster Risk Management Approach

According to the National Disaster Management Act 2010, the National Plan should include the following:

- Measures to be taken for the prevention of disasters and/or the mitigation of their effects.
- Actions to be taken for the integration of mitigation measures in the development plans.
- Measures to be taken for preparedness and capacity building to effectively respond to any threatening disaster situation or disaster.
- Roles and responsibilities of different Ministries or Divisions of the federal government in respect of measures specified above.

The National Plan has been organized/based on three stages: (i) pre-disaster including mitigation and preparedness measures, (ii) during disaster including emergency rescue, response and relief measures, and (iii) post-disaster including recovery, rehabilitation and reconstruction measures.

7. Disaster Reduction Measures

In order to reduce disaster damage, there must be a close combination of three types of measures: "self-help efforts" rooted in the awareness of people and corporations, "mutual–help efforts" of community-based organizations and NGOs, and "public-help efforts" made by national, provincial and local governments. These three types of measures are essential in all stages of the disaster cycle.

8. Hazard Analysis

A hazard is a potentially damaging physical event or phenomenon that may cause the loss of life or injury, property damage, social and/or economic disruption or environmental degradation. Hazards can include natural (geological, hydro meteorological and biological) phenomena or those induced by human processes (biological, environmental and technological hazards). Hazards can be single, sequential or combined in their origin and effects. Each hazard is characterized by its location, intensity, frequency and probability.

Pakistan is one of the most vulnerable countries to natural disasters since it has great variety in terms of topography and meteorology throughout the country. Among all types of natural disasters, Pakistan has experienced floods most frequently, which have caused huge losses to human lives and damage to properties. Earthquakes have also caused severe damage in the country, especially in the northern region. Drought has caused significant loss of crops and affected a large number of people. Over the last few years, Pakistan has experienced some unprecedented and devastating disasters in the form of drought during 1998-2002 due to extremely low rainfall, the 2005 Earthquake, countrywide floods in 2010 and 2011 flooding in Sindh due to an abnormal monsoon rain pattern. These disasters have manifested Pakistan's vulnerability to disaster risks. Furthermore, recent climate change and urbanization has increased the vulnerabilities of Pakistani society to natural disasters. All these climate change trends have been very well identified by the IPCC reports.

9. National Policies and Strategies for Disaster Management

Key issues for disaster management in Pakistan include:

1) Strengthen disaster management administration at the national, provincial and local levels.
2) Enhance the disaster management system in the stages of pre-, during and post-disaster periods.
3) Establish mechanisms for monitoring and assessment of disaster risks.
4) Promote mechanism for mainstreaming disaster risk reduction measures into development planning processes.
5) Promote disaster risk management at local and community levels.
6) Strengthen capacity of all relevant players in disaster management.

The NDMP, in line with Hyogo Framework for Action (HFA), envisages ten (10) disaster management interventions to establish an efficient and effective disaster management system in Pakistan through forty two (42) strategies and one hundred eighteen (118) proposed priority actions/programs. These policies are:

Intervention-1:
Establish the institutional and legal system for disaster management.

Intervention-2:
Prepare disaster management plans at various levels.

Intervention-3:
Establish national hazard and vulnerability assessment.

Intervention-4:
Establish multi-hazard early warning systems.

Intervention-5:
Promotion of training, education and awareness in relation to disaster management.

Intervention-6:
Strengthen the awareness program on disaster risk reduction at the local level.

Intervention-7:
Infrastructure development for disaster risk reduction.

Intervention-8:
Mainstreaming disaster risk reduction into development.

Intervention-9:
Establish a national emergency response system.

Intervention-10:
Capacity development for post-disaster recovery.

The time frame for implementation of the above Interventions, over the next ten years (2012-2022) under the overall NDMP (Main Plan, Vol.-I to Vol.-III) have been identified as shown in Table 1 whereas Priority Actions/Programs under the Main Plan including Cost are shown in Table 2. The policies are guidelines covering all actions raised in the Hyogo Framework for Action as illustrated in Table 3. Intervention-wise strategies and proposed priority actions/programs to be undertaken by the responsible organizations are given in Table 4 to Table 13.

Table 1 Priority Actions/Programs for the Next Ten Years (2012-2022)

Strategy	app. Cost (million USD)	Time Frame									
		Phase 1				Phase 2			Phase 3		
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
4.1 Intervention-1: Establish the Institutional and Legal System for Disaster Management											
1. Establish and function disaster management organizations at national, provincial and district levels.	2.0										
2. Formulate disaster management operation plans for relevant organizations.	0.2										
3. Implement periodic meetings among the disaster management organizations to monitor the situations.	0.1										
4. Implement drills and training of disaster management activities in the organizations to improve their capacities.	-										
4.2 Intervention-2: Prepare Disaster Management Plans at Various Levels											
1.Formulate and update disaster management plans at national, provincial, district and community or TMA levels.	1.0										
2.Develop hazard specific contingency plans.	1.0										
3.Develop sectoral disaster risk management operation in federal ministries, departments and authorities.	1.0										
4.3 Intervention-3: Establish national hazard and vulnerability assessment											
1.Conduct detailed multi-hazard vulnerability and risk analysis/assessments at national level	14.0										
2.Conduct detailed multi-hazard vulnerability and risk analysis/assessments at local level	5.0										
3.Conduct research and studies on impact of climate change on glaciers and ice cap	5.0										
4.4 Intervention-4: Establish multi-hazard early warning and evacuation systems											
1.Strengthen forecasting and early warning systems	168.5										
2.Prepare hazard maps at local scale in targeted locations	5.7										
3.Strengthen early warning dissemination systems	3.1										
4.Develop capacity of early warning and evacuation systems	11.2										
4.5 Intervention-5: Promotion of training, education and awareness in relation to disaster management											
1. Develop NIDM (National Institute of Disaster Management) to promote human resource development in the field of disaster management.	20.7										
2. Enhance the capacity of government agencies in charge of disaster management.	12.9										
3. Promote mainstreaming DRR through capacity enhancement of governmental officers.	2.6										
4. Develop the capacity of communities to cope with disasters.	26.2										
5. Raise people's awareness of disaster management.	1.9										
4.6 Intervention-6: Strengthen awareness program on disaster risk reduction at local level											
1. Enhance knowledge on disasters management in the general public	1.0										
2. Establish safe evacuation places in the case of disaster situation	10.0										
3. Implementi and disseminate CBDRM activities	1.0										
4. Disseminate self help and mutual help efforts in disaster management	1.0										
5. Establish disaster mitigation measures incorporated with existing development program	1.0										
4.7 Intervention7: Infrastructure development for disaster risk reduction											
1. develop schools, hospitals and other important public facilities with safe against disasters	100.0										
2. Protect imprtant coastal facilities against disasters taking into account climate change	21.0										
3. Enforce the building code in construction of buildings	10.0										
4. Implement appropriate structural measures in flood prone areas taking into account comprehensive and integrated flood management plans	565.6										
5. Enhance disaster risk management capacity in urban areas	11.0										
4.8 Intervention-8: Mainstreaming disaster risk reduction into development											
1. Establish disaster risk reduction policies in National Development Plan and National Poverty Reduction Strategy	-										
2. Set up sectoral guidelines on mainstreaming disaster risk reduction	1.0										
3. Establish criteria to assess development projects from a risk reduction perspective	0.2										
4. Improve technical capacity of federal and provincial governments to integrate risk reduction into development plans and programs	-										
4.9 Intervention-9: Establish national emergency response system											
1.Establish and strengthen warehouse or stockpiling system for storing food, medicine, relief supplies and rescue equipments.at strategic locations	10.0										
2.Enhance emergency response capacities, such as emergency operation centers, Civil Defence and urban search and rescue teams in major cities.	10.0										
3.Establish a robust communication system and efficient transport and logistics mechanism to be used during emergency situations.	6.0										
4.Develop and implement emergency response plans in relevant ministries and departments at federal, provincial and district levels	5.0										
5.Establish an National Disaster Management Fund to enable the federal government to organize emergency response effectively.	-										
4.10 Intervention-10: Capacity Development for Post Disaster Recovery											
1. Prepare guidelines for post disaster recovery programs and activities	1.0										
2. Develop capacity of stakeholders in post disaster recovery	3.0										
3. Develop system and methodology for recovery needs assessment	1.0										
Total Cost (million USD)	**1,040.90**										
Total Cost (billion PKR)	**92.02**										

1USD=88.4PKR

Table 2 Priority Actions/Programs/Cost of NDMP (Main Plan) for the Next Ten Years (2012-2022)

Strategy	app. Cost (million USD)	Time Frame									
		Phase 1				Phase 2			Phase 3		
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
4.1 Intervention-1: Establish the Institutional and Legal System for Disaster Management											
1. Establish and function disaster management organizations at national, provincial and district levels.	2.0										
2. Formulate disaster management operation plans for relevant organizations.	0.2										
3. Implement periodic meetings among the disaster management organizations to monitor the situations.	0.1										
4. Implement drills and training of disaster management activities in the organizations to improve their capacities.	-										
4.2 Intervention-2: Prepare Disaster Management Plans at Various Levels											
1.Formulate and update disaster management plans at national, provincial, district and community or TMA levels.	1.0										
2.Develop hazard specific contingency plans.	1.0										
3.Develop sectoral disaster risk management operation in federal ministries, departments and authorities.	1.0										
4.3 Intervention-3: Establish national hazard and vulnerability assessment											
1.Conduct detailed multi-hazard vulnerability and risk analysis/assessments at national level	14.0										
2.Conduct detailed multi-hazard vulnerability and risk analysis/assessments at local level	5.0										
3.Conduct research and studies on impact of climate change on glaciers and ice cap	5.0										
4.7 Intervention7: Infrastructure development for disaster risk reduction											
1. develop schools, hospitals and other important public facilities with safe against disasters	100.0										
2. Protect imprtant coastal facilities against disasters taking into account climate change	21.0										
3. Enforce the building code in construction of buildings	10.0										
4. Implement appropriate structural measures in flood prone areas taking into account comprehensive and integrated flood management plans	565.6										
5. Enhance disaster risk management capacity in urban areas	11.0										
4.8 Intervention-8: Mainstreaming disaster risk reduction into development											
1. Establish disaster risk reduction policies in National Development Plan and National Poverty Reduction Strategy	-										
2. Set up sectoral guidelines on mainstreaming disaster risk reduction	1.0										
3. Establish criteria to assess development projects from a risk reduction perspective	0.2										
4. Improve technical capacity of federal and provincial governments to integrate risk reduction into development plans and programs	-										
4.9 Intervention-9: Establish national emergency response system											
1.Establish and strengthen warehouse or stockpiling system for storing food, medicine, relief supplies and rescue equipments.at strategic locations	10.0										
2.Enhance emergency response capacities, such as emergency operation centers, Civil Defence and urban search and rescue teams in major cities.	10.0										
3.Establish a robust communication system and efficient transport and logistics mechanism to be used during emergency situations.	6.0										
4.Develop and implement emergency response plans in relevant ministries and departments at federal, provincial and district levels	5.0										
5.Establish an National Disaster Management Fund to enable the federal government to organize emergency response effectively.	-										
4.10 Intervention-10: Capacity Development for Post Disaster Recovery											
1. Prepare guidelines for post disaster recovery programs and activities	1.0										
2. Develop capacity of stakeholders in post disaster recovery	3.0										
3. Develop system and methodology for recovery needs assessment	1.0										
Total Cost (million USD)	**774.10**										
Total Cost (billion PKR)	**68.43**										

1USD=88.4PKR

Table 3 The Relation between National Intervention and the Hyogo Framework

Hyogo Framework for Action 2005-2015	National Intervention in Disaster Management
HFA-1: Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation	Intervention-1: Establish the institutional and legal system for disaster management
	Intervention-2: Prepare disaster management plans at various levels
HFA-2: Identify, assess and monitor disaster risks and enhance early warning	Intervention-3: Establish a national hazard and vulnerability assessment
	Intervention-4: Establish a multi-hazard early warning system
HFA-3: Use knowledge, innovation and education to build a culture of safety and resilience at all levels	Intervention-5: Promotion of training, education and awareness in relation to disaster management
	Intervention-6: Strengthen awareness program on disaster risk reduction at local level
HFA-4: Reduce the underlying risk factors	Intervention-7: Infrastructure development for disaster risk reduction
	Intervention-8: Mainstreaming disaster risk reduction into development
HFA-5: Strengthen disaster preparedness for effective response at all levels	Intervention-9: Establish a national emergency response system
	Intervention-10: Capacity development for post-disaster recovery

Table 4 Intervention-1: Establish the Institutional and Legal System for Disaster Management

Strategies	Priority Actions / Programs	Responsible Organizations
1. Establish and function disaster management organizations at national, provincial and district levels	1.1. Promulgation of laws and regulations of disaster management	NDMA, F/G/S/PDMAs
	1.2. Provincial Disaster Management Commission and Authority are established and functioning	F/G/S/PDMAs
	1.3. District Disaster Management Authorities should be established and be functional	DDMA
	1.4. TMA and UC should recognize their roles and responsibilities in disaster management	TMA, UC
	1.5. Specific roles and responsibilities of each disaster management organization are recognized	NDMA, F/G/S/PDMAs, DDMA, TMA, UC
	1.6. NDMA follows the disaster management activities of disaster management organizations that are recognized by NDMC	NDMA
	1.7. Establishment of a disaster management organization in federal, provincial and district organizations	NDMA, F/G/S/PDMAs, DDMA
	1.8. Roles and responsibilities of the disaster management organizations are approved by NDMC	NDMC, PDMC
	1.9. Preparation of roles and responsibilities of TMA and UC	TMA, UC, DDMA
2. Formulate disaster management operation plans for relevant organizations	2.1. Formulation of disaster operation and contingency plans for each organization	NDMA, DDMA
	2.2. NDMA prepares the guidelines for disaster operation and contingency plans for disaster management organizations	NDMA
3. Implement periodic meetings among the disaster management organizations to monitor the situations	3.1. Periodic meetings should be held by NDMA to monitor the situations	NDMA, F/G/S/PDMAs, DDMA
4. Implement drills and training of disaster management activities in the organizations to improve their capacities	4.1. Implement drills and training and feed back to disaster operation and contingency plans	NDMA, F/G/S/PDMAs, DDMA
	4.2. Each disaster management organization implements drills and training based on its disaster operation and contingency plans	NDMA, F/G/S/PDMAs, DDMA

Table 5 Intervention-2: Prepare Disaster Management Plans at Various Levels

Strategies	Priority Actions / Programs	Responsible Organizations
1. Formulate/update disaster management plans at national, provincial, district and community or TMA levels	1.1. Revise and update provincial and district DMPs in light of lessons learned in the floods of 2010 and 2011.	NDMA, F/G/S/PDMAs, DDMAs
	1.2. Develop district DMPs in remaining districts	F/G/S/PDMAs, DDMAs
	1.3. Develop community-based DMPs at TMA level	F/G/S/PDMAs, DDMAs
2. Develop hazard specific contingency plans	2.1. Develop hazard specific contingency plans at national and provincial levels	NDMA, F/G/S/PDMAs, Federal Ministries, Department and Authorities
3. Develop sectoral disaster risk management operational plans in federal ministries, department and authorities	3.1. Develop sectoral disaster management operational plans in federal ministries, departments and authorities	NDMA, Federal Ministries, Department and Authorities
	3.2. Develop detailed roles and responsibilities of federal ministries, departments and authorities in disaster management	NDMA, Federal Ministries, Department and Authorities

Table 6 Intervention-3: Establish a National Hazard and Vulnerability Assessment

Strategies	Priority Actions / Programs	Responsible Organizations
1. Conduct detailed multi–hazard vulnerability and risk analysis/assessments at national level	1.1. Preparation of vulnerability atlas*1 at the national level	NDMA in association with F/G/S/PDMAs, DDMA, FFC, PMD, GSP and ERRA
	1.2. Digitization of vulnerability atlas and the preparation of database	NDMA and F/G/S/PDMAs
2. Conduct detailed multi–hazard vulnerability and risk analysis/assessments at local levels	2.1. Preparation of vulnerability analysis and creation of hazard maps for selected districts and cities*2	NDMA in association with F/G/S/PDMAs, DDMA, FFC, PMD, GSP and ERRA
	2.2. Digitization of vulnerability/hazard maps and the preparation of database	NDMA and F/G/S/PDMAs
3. Conduct research and studies on impact of climate change on glaciers and ice caps	3.1. Conduct research on impact of climate change on glaciers and ice caps	WAPDA, PMD, FFC and GCISC in coordination with NDMA
	3.2. Establishment of GLOF early warning system for selected vulnerable areas	PMD in association with NDMA, FFC and WAPDA

Note *1: Vulnerability Atlas refers to the hazard and risk maps for targeted disasters.

*2: As the local levels to be targeted, districts vulnerable to disasters and high economic and densely populated major cities with high disaster vulnerabilities (based on the disaster experiences in the past) are prioritized. Thus, Karachi, Hyderabad, Faisalabad, Gujranwala, Sialkot, Peshawar, Lahore and ICD with their suburbs shall be included for the city level.

On the other hand, micro hazard (risk) m aps shall be prepared for the most vulnerable locations for each disaster, such as Indus River floods, flash floods by nullahs, and landslides through projects to be undertaken by each responsible agency

Table 7 Intervention-4: Establish a Multi-hazard Early Warning System

Strategies	Priority Actions /Programs	Responsible Organizations
1. Strengthen forecasting and early warning systems	1.1. Establishment of a specialized medium range forecasting centre (SMRFC) with the meteorological radar station at Islamabad, upper air observations at designated locations	PMD
	1.2. Strengthening of flood forecasting by satellite information and hazard maps of Indus River	PMD/FFC/SUPARCO
	1.3. Establishment of a river flood forecast and warning system, including establishment of regional flood forecasting and warning centres (RFFWC)	PMD/WAPDA in consultation with NDMA/ F/G/S/PDMAs
	1.4. Establishment of a flash flood forecasting and warning system including local flash flood forecasting centres (LFFFC)	PMD in consultation with NDMA/ F/G/S/PDMAs
	1.5. Establishment of landslide forecast and warning system	PMD in consultation with NDMA/ F/G/S/PDMAs
	1.6. Establishment of a new tide level monitoring network including a data communication system	PMD
	1.7. Establishment of a GLOF and snow melt flash flood forecast and warning system with an avalanche advisory information system	PMD/WAPDA
	1.8. Establishment of a seismic intensity reporting system including a data communication system	PMD
	1.9. Establishment of a meteorological radar system along coastal areas	PMD
	1.10. Establishment of a meteorological radar system at designated locations	PMD
	1.11. Replacement of the meteorological radar systems at D.I. Khan, R.Y. Khan and Karachi	PMD
	1.12. Expansion and additional installation of an automatic weather observation system (AWS)	PMD in consultation with NDMA/ F/G/S/PDMAs
	1.13. Expansion of the real-time rainfall & water level observation network	PMD
2. Prepare hazard maps at local scale in targeted locations	2.1. Preparation of hazard maps and capacity development against local flash floods in vulnerable areas	PMD/FFC
	2.2. Preparation of landslide hazard maps based on the topographical and geological analysis at vulnerable locations	PMD/FFC GSP/NDMA
	2.3. Training on tsunami simulation and preparation of hazard maps	PMD /NDMA/ F/G/S/PDMAs /D DMA/Related Agencies
3. Strengthen early warning dissemination system	3.1. Innovation of the communication system between PMD and NDMA, and among DDMAs (NDMA-PDMA-DDMA) and a communication system utilizing cellular phone and radio broadcast networks	NDMA/ F/G/S/PDMAs /DDMAs/PMD/PID/ NGOs/PTA/PEMR A/Local Governments
	3.2. Development of the EWS National Plan, Guidelines and SOPs for Health Emergency Preparedness and Response (HEPR)	NDMA/ F/G/S/PDMAs Ministry of Health
	3.3. Weather information broadcasting system and weather information broadcasting program production system and installation of GTS in SMRFC Project	PMD
	3.3. Finalization of SOP of cyclone EWS	PMD
4. Develop capacity of early warning and evacuation systems	4.1. Enhancement of research activities for snow/glacier/glacial lakes	PMD/GCISC /WAPDA
	4.2. Establishment of weather forecast guidance system	PMD
	4.3. Enhancement of community enlightenment for EWS with execution of training and drills	NDMA/ F/G/S/PDMAs /D DMAs/PMD/FFC/ NGOs
	4.4. Education program for advanced meteorology and hydrology for PMD staff	PMD

Table 8 Intervention-5: Promotion of Training, Education and Awareness in Relation to Disaster Management

Strategies	Priority Actions / Programs	Responsible Organizations
1. Develop NIDM (National Institute of Disaster Management) to promote human resource development in the field of disaster management	1.1. Setting up of organization of NIDM	NDMA
	1.2. Construction of NIDM	NDMA
	1.3. Enhancement of coordination and partnership with stakeholders	NIDM
	1.4. Systemization of DRM capacity building	Relevant organizations
	1.5. Improvement of DRM training quality	NIDM
	1.6. Establishment of library	NIDM
	1.7. Promotion of research	NIDM
2. Enhance the capacity of government agencies in charge of disaster management	2.1. DRM courses for NDMA, F/G/S/PDMAs, and DDMAs staff	NIDM
	2.2. Capacity enhancement of urban search and rescue teams	City District Government
	2.3. Implementation of regular refresher training for district fire brigades	Provincial Fire Brigade, Provincial Civil Defence
	2.4. DRM workshops for TMA staff	NIDM, DDMA
3. Promote mainstreaming DRR through capacity enhancement of governmental officers	3.1. DRM workshops for relevant ministries	NIDM
	3.2. DRM workshops for relevant departments of provincial governments	
	3.3. DRM workshops for district governments	DDMA
	3.4. DRM subjects into curriculum of government training institutes	NIDM
4. Develop the capacity of communities to cope with disasters	4.1. DRM workshops for community leaders	DDMA, NGO
	4.2. Search and rescue training for members of community emergency response teams	District Fire Brigade, District Civil Defence, NGO
5. Raise people's awareness of disaster management	5.1. Awareness campaigns	NIDM, F/G/S/PDMAs, DDMAs, TMAs
	5.2. Promotion of disaster education at schools	NIDM, Provincial Education Department
	5.3. Promotion of disaster education in higher education	NIDM, Provincial Education Department, University

Table 9 Intervention-6: Strengthen Awareness Program on Disaster Risk Reduction at Local Level

Strategies	Priority Actions / Programs	Responsible Organizations
1. Enhance knowledge of disaster management in the general public	1. Conducting awareness campaigns for the general public utilizing various media such as radio, TV, the Internet, posters, mosques, and schools	NDMA F/G/S/PDMAs
2. Establish safe evacuation places in the case of a disaster situation	2. Preparing evacuation maps for vulnerable districts	F/G/S/PDMAs Districts
3. Implement and disseminate CBDRM activities	3.1. Establishing special teams of trainers for CBDRM activities	NDMA F/G/S/PDMAs
	3.2. Preparing information site regarding CBDRM on NDMA web page for CBDRM practitioners	NDMA
	3.3 Calling for donors to conduct CBDRM activities	NDMA
4. Disseminate self-help and mutual help efforts in disaster management	4.1. Conducting standardized[1] CBDRM activities for Union Councils at vulnerable districts	NDMA F/G/S/PDMAs Districts
	4.2. Conducting standardized CBDRM activities for communities at vulnerable districts	NDMA F/G/S/PDMAs Districts
	4.3. Conducting standardized CBDRM activities for Union Councils at locations other than vulnerable districts	NDMA F/G/S/PDMAs Districts
	4.4. Installing equipment for disaster risk management at UC	NDMA F/G/S/PDMAs Districts
5. Establish disaster mitigation measures incorporated with the existing development program	5.1 Planning small scale mitigation measures during CBDRM activities	NDMA F/G/S/PDMAs Districts
	5.2 Mitigation measures for community DRM are incorporated in the local government development program	NDMA Provinces F/G/S/PDMAs Districts

[1] Management Committees and response teams are to be organized at Union Councils. For Union Council Disaster Management Committees, a 4-day training course is planned and key activities are DRM basic concepts, hazard vulnerability capacity assessment, mainstreaming DRR, early warning system, emergency management (first aid, evacuation, relief, etc.), situation analysis and reporting, damage and need assessments, and resource mobilization. For Union Council response teams, a 6-day training course is planned and the key activities are DRM basic concepts, emergency first aid, search & rescue, fire fighting, stockpile management, emergency management, and simulation exercises.

Table 10 Intervention-7: Infrastructure Development for Disaster Risk Reduction

Strategies	Priority Actions/Programs	Responsible Organizations
1. Develop schools, hospitals and other important public facilities to be safe against disasters	1.1. Structural vulnerability evaluation for schools and hospitals against earthquakes, tsunamis and floods in Pakistan	NDMA/ F/G/S/PDMAs /DDMAs
	1.2. Preparation of guidelines for new public building construction in the areas vulnerable to disasters	NDMA/ F/G/S/PDMAs /DDMAs
	1.3. Retrofitting works of important public facilities (schools and hospitals)	NDMA/ F/G/S/PDMAs /DDMAs Ministry of Education Ministry of Health
2. Develop important coastal facilities to be safe against disasters taking into account climate change	2.1. Construction of coastal dikes along major public facilities against tsunamis and storm surges (cyclones)	Ministry of Ports and Shipping
	2.2. Construction of DRM centres in vulnerable areas to disasters	NDMA/ F/G/S/PDMAs /DDMAs
3. Enforce the building code in construction of buildings	3.1. Preparation of guidelines for housing construction in the areas vulnerable to disasters	NDMA/ F/G/S/PDMAs /DDMAs
4. Implement appropriate structural measures in flood prone areas taking into account comprehensive and integrated flood management plans	4.1. Establishment of comprehensive and integrated flood management/protection plan in Pakistan • A review of breaching mechanism of the river embankments (flood bunds) and a review of designated breaching points • Revision and updating of NFPP-IV • Revision of SOPs of Tarbela Dam for flood mitigation • Flood plain zoning and management • Capacity building of the stakeholders in flood mitigation	 FFC/PIDs/Pakistan Army FFC/PIDs/WAPDA/PMD /Planning Commission FFC/WAPDA FFC/PIDs/PDMAs FFC/PIDs/PMD/WAPDA
	4.2. Construction and rehabilitation of flood control/mitigation structures • Implementation of NFPP-IV • Construction of DRM centres in flood prone areas • Retrofitting of existing dams, barrages and flood protection works to increase floodwater retarding capacity and ability to accommodate design discharges • Constructing of new flood protection works, dams and barrages to increase flood mitigation/protection capacity	 FFC/PID/WAPDA/PMDs /Planning Commission NDMA/ F/G/S/PDMAs / DDMAs FFC/PIDs/WAPDA/ Planning Commission FFC/PID/WAPDA/ /Planning Commission
5. Enhance disaster risk management capacity in urban areas	5.1. Formulation of urban disaster management plan to propose corresponding countermeasures against natural hazard risk in the urban areas	NDMA/ F/G/S/PDMAs /DDMAs
	5.2. Enforcement of effective land use control and regulations based on urban disaster management plan; introduction of the space needed for evacuation and disaster relief into land utilization program	NDMA/ F/G/S/PDMAs /DDMAs Planning Commission
	5.3. Construction of DRM centres in areas vulnerable to urban disasters	NDMA/ F/G/S/PDMAs /DDMAs

Table 11 Intervention-8: Mainstreaming Disaster Risk Reduction into Development

Strategies	Priority Actions / Programs	Responsible Organizations
1. Establish disaster risk reduction policies in National Development Plan and National Poverty Reduction Strategy	1.1. Collect lessons learnt from pilot projects on mainstreaming DRM	NDMA, F/G/S/PDMAs, Planning Commission
	1.2. The National Development Plan and National Poverty Reduction Strategy should include disaster risk reduction as a national policy	NDMA, F/G/S/PDMAs, Planning Commission
	1.3. Disaster risk reduction is put into practice as pilot projects	NDMA, F/G/S/PDMAs, Planning Commission
2. Set up sectoral guidelines on mainstreaming disaster risk reduction	2.1. Undertake case studies on previous experiences of line ministries on mainstreaming DRR	NDMA, F/G/S/PDMAs, Planning Commission
3. Establish criteria to assess development projects from a risk reduction perspective	3.1. Conduct cost-benefit analysis of integrated risk reduction into development sectors	NDMA, F/G/S/PDMAs, Planning Commission
	3.2. Establish the evaluation criteria and guidelines for mainstreaming DRM into development projects	NDMA, F/G/S/PDMAs, Planning Commission
	3.3. Disseminate the evaluation criteria to federal and provincial governments through workshops and awareness programs	NDMA, F/G/S/PDMAs, Planning Commission
	3.4. Review the development programs by the criteria set by NDMA	NDMA, F/G/S/PDMAs, Planning Commission
4. Improve technical capacity of federal and provincial governments to integrate risk reduction into development plans and programs	4.1. Prepare curriculum of national and provincial workshops on mainstreaming DRM	NDMA, F/G/S/PDMAs, Planning Commission
	4.2. Hold workshops for sharing lessons learnt and experience	NDMA, F/G/S/PDMAs, Planning Commission

Table 12 Intervention-9: Establish a National Emergency Response System

Strategies	Priority Actions / Programs	Responsible Organizations
1. Establish and strengthen warehousing or stockpiling system for storing food, medicine, relief supplies and rescue equipment at strategic locations	1.1. Develop emergency operation centres at national, provincial and district levels	NDMA, F/G/S/PDMAs, DDMA
	1.2. Establish a database of resources and equipment for emergency response in relevant agencies	NDMA, F/G/S/PDMAs, DDMA
	1.3. Prepare emergency response plans for the major lifelines and critical facilities, such as telephone, electricity, health, and water supply	Ministry of Communication, Ministry of Water and Power
2. Enhance emergency response capacities, such as emergency operation centres, Civil Defence and urban search and rescue teams in major cities, response force in provinces/districts	2.1. A capacity development of professionals to undertake assessment of damage for the use of multiple stakeholders	NIDM
	2.2. Establish search and rescue teams to deal with multiple hazards in provincial and regional capitals and key industrial cities, response force in provinces/districts	NDMA, F/G/S/PDMAs, DDMAs
	2.3. Strengthen training institutions of the Pakistan Civil Defence to train emergency responders	NDMA, Civil Defence
	2.4. Enhance emergency response capacities at the community level	TMA, UC
3. Establish a robust communication system, supply chain and efficient transport and logistics mechanism to be used during emergency situations	3.1. Establish a robust communication system that can be used during emergency situations	NDMA, Ministry of Information and Broadcasting, Ministry of Information and Technology
	3.2. Establish efficient supply chain, transport and logistics management mechanism	NEOC, Ministry of Communication
4. Develop and implement emergency response plans in relevant ministries and departments at federal, provincial and district levels	4.1. Refine standard operating procedures (SOP) for emergency response at national, provincial and district levels based on the experience of the 2010 Flood	NDMA, F/G/S/PDMAs, DDMA
	4.2. Implement the Program for Enhancement of Emergency Response (PEER)	NDMA in association with F/G/S/PDMAs
5. Establish a National Disaster Management Fund to enable the federal government to organize emergency response effectively	5.1. Establish a National Disaster Management Fund	NDMA in association with F/G/S/PDMAs

Table 13 Intervention-10: Capacity Development for Post-Disaster Recovery

Strategies	Priority Actions / Programs	Responsible Organizations
1. Prepare guidelines for post-disaster recovery programs and activities	1.1. Preparation of guidelines for the formulation of recovery and rehabilitation plans	NDMA, SPU in consultation with F/G/S/PDMAs
	1.2. Documents of lessons learnt regarding recovery from the Pakistan 2010 Flood by related agencies	NDMA, F/G/S/PDMAs/ DDMAs and PMD/FFC
	1.3. Establishment of a funding system for post-disaster recovery and rehabilitation	NDMA, SPU in consultation with F/G/S/PDMAs
2. Develop capacity of stakeholders in post-disaster recovery	2.1. Holding of orientation workshops for line ministries and other stakeholders on post-disaster recovery program design and implementation	NDMA in association with F/G/S/PDMAs
	2.2. Database on technical capacity of relevant stakeholders in designing and implementing recovery programs	NDMA in association with F/G/S/PDMAs
	2.3. Set-up of a system to coordinate and monitor flood early recovery activities	NDMA, F/G/S/PDMAs, DDMAs
	2.4. Capacity development of research activities for new techniques for recovery and rehabilitation	Research Institutes
3. Develop system and methodology for recovery needs assessment	3.1. Preparation of guidelines for recovery needs assessment and recovery program design and management for multiple sectors	NDMA, F/G/S/PDMAs, SPUs

Human Resource Development Plan (Volume I)

The plan consists of three parts: Part I - Introduction, Part II - Comprehensive Human Resource Development Plan and Part III NIDM Operation Plan.

PART I INTRODUCTION

1. Background

Human resources are one of the most important factors to reduce disaster damage. However, the current human resource development activities do not systematically provide sufficient human resources in Pakistan and there is a big need for qualified human resources to boost disaster management. In order to provide direction for systematic human resource development in the field of disaster management, this Human Resource Development Plan (HRDP) has been developed. The HRDP is a supplemental document to other important documents regarding disaster management in Pakistan such as the National Disaster Management Act and the National Disaster Management Plan.

PART II COMPREHENSIVE HUMAN RESOURCE DEVELOPMENT PLAN

1. Framework of the Plan

Vision: To build a culture of safety and resilience at all levels utilizing knowledge, innovation and education.

Goal: To improve preparedness against disasters and to reduce disaster damage.

Objective: A system of human resource development required in the field of disaster management will be established and human resources that promote "self-help efforts," "mutual-help efforts," and "public-help efforts" will be developed with better coordination.

Time frame: Ten (10) years (2012 to 2022)

2. Strategies

The following strategies will be adopted over the next ten years.

- Involvement of various organizations to implement the capacity building activities of stakeholder groups with good coordination;
- Emphasis on capacity building of main stakeholders groups;
- Development of a system of accumulation and sharing of research results and lessons learnt in the field of disaster management; and
- Fictionalization of NIDM as a national level focal organization for human resource development in the field of disaster management.

3. Outputs and Activities

In order to achieve its objectives, HRDP is expected to produce the following five (5) outputs. Each output shall be produced through several activities shown below in Table 14.

Table 14 Output and Activities of Comprehensive HRDP

Output	Activity
1. NIDM takes initiative for improvement of human resources in the field of disaster management	1-1 Setting up of organization of NID M
	1-2 Construction of N IDM Building Complex
	1-3 Enhancement of coordination and partnerships with national and international organizations in the field of disaster management
	1-4 Systematization of DR M capacity building in various organizations
	1-5 Improvement of DR M training quality through technical advisories
	1-6 Establishment of a library and disaster information Resource Centre (DIRC) specialized for disaster management
	1-7 Promotion of research in the field of disaster management
2. Capacity of governmental staff who are in charge of DRM is enhanced.	2-1 Implementation of D RM training courses for F/G/S/C/PDMAs and DDM As staff
	2-2 Capacity enhancement of urban search and rescue teams
	2-3 Implementation of regular refresher trainings for district fire brigades
	2-4 Implementation of D RM work shops for TM A staff
3. Capacity of staff of government offices related to disaster management is enhanced for mainstreaming D RR activities for their implementation.	3-1 Implementation of DRM work shops for relevant ministries
	3-2 Implementation of DRM work shops for relevant departments of provincial governments and state governments
	3-3 Implementation of DRM work shops for district governments
	3-4 Incorporation of DRM subjects into curriculum of government training institutes
4. Capacity of communities is	4-1 Implementation of DRM work shops for community leaders 4-2 Search and rescue training for members of community emergency response teams
5. Individuals are aware of importance of DRM.	5-1 Implementation of awareness campaigns for the general public
	5-2 Promotion of disaster education at schools
	5-3 Implementation of DRM workshops for university students

PART III N I D M OPERATION PLAN

1. Goal and Objectives

Goal: To promote human resource development in the field of disaster management in diverse ways.

Objectives: To accelerate construction of the NIDM building complex (Step 1); to prepare the NIDM institution after the completion of the NIDM building complex; to increase the number of people who implement DRR through human resource development (Step 2).

Time Frame: Step 1 is from 2012 to 2016 (before NIDM is not fully operational) and Step 2 is after 2016 (after NIDM is fully operational).

2. Strategies

There are two strategies as below.

- Preparation for the full operation of NIDM
- Strengthening the institutional capacity of NIDM

3. Organizational Structure

Currently, the organizational structure of NIDM is not clear. Considering the roles and responsibilities regulated by the National Disaster Management Act, the proposed organizational structure is as shown below in Figure 1.

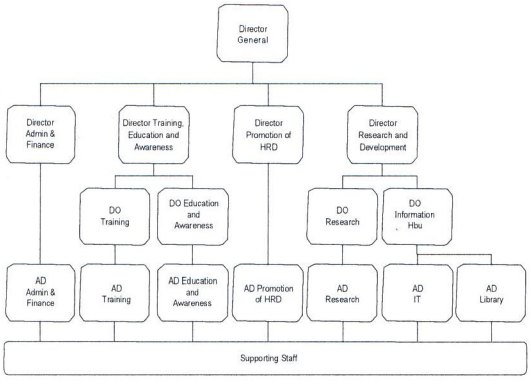

Figure 1 Proposed Organization Structure of NIDM

4. Activities for the Next Ten Years (2012-2022)

In order to achieve the objectives, the sub-activities that need to be implemented step by step while the institutional capacity of NIDM is strengthened are given in Table 15.

Table 15 Sub-Activities

Training	
T-1	Training of NDMA satff
T-2	Training of F/G/S/PDMAs staff
T-3	Training of DDMA satff
T-4	Training of TM A staff through DD M A T-5 Training of staff of Federal Ministries T-6 Training of university students
Education	
E-1	Incorporation of disaster management subjects into curriculum of governmental satff general training
E-2	Promotion of disaster education in basic education
E-3	Promotion of disaster education in higher education
Awareness	
A-1	Holding of national disaster management exhibition , seminars, workshops, conferences etc.
A-2	Awareness campaign through media
Promotion of Comprehensive HumanResource Development	
P-1	Enhancement of coordination among organizations which conduct capacity building in the field of disaster management
P-2	Technical advisories and assistances for human resource development activities in the field of disaster management
Research	
R-1	Establishment and operation of a library and Disaster Information Resource C entre (DIRC)
R-2	Promotion of research in the field of disaster management

5. Implementation Schedule

The implementation schedule of the sub-activities is shown in Figure 2 below. Programs and related cost under HRDP (Vol.-I) is in Table 16.

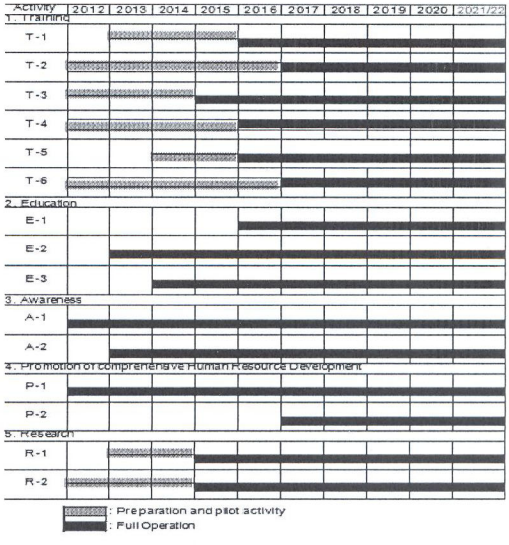

Figure 2 Implementation Schedule

Table 16 HRDP Priority Actions/Programs/Cost for the Next Ten Years (2012-2022)

Strategy	app. Cost (million USD)	Time Frame									
		Phase 1				Phase 2			Phase 3		
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
4.5 Intervention-5: Promotion of training, education and awareness in relation to disaster management											
1. Develop NIDM (National Institute of Disaster Management) to promote human resource development in the field of disaster management.	20.7										
2. Enhance the capacity of government agencies in charge of disaster management.	12.9										
3. Promote mainstreaming DRR through capacity enhancement of governmental officers.	2.6										
4. Develop the capacity of communities to cope with disasters.	26.2										
5. Raise people's awareness of disaster management.	1.9										
Total Cost (million USD)	**64.30**										
Total Cost (billion PKR)	**5.68**										

1USD=88.4PK

Multi-Hazard Early Warning System Plan (Volume II)

The Plan consists of two Parts. Part-I is an introduction and Part-II consists of the contents of Plan.

PART I INTRODUCTION

1. Background

Pakistan is vulnerable to natural disasters from a range of hazards including floods (river/flash

/coastal floods and other floods due to storms and cyclones with storm surge), cyclones, droughts, earthquakes, glacial lake outburst floods (GLOFs), landslides, avalanches and tsunamis, together with appurtenant secondary disasters such as river erosion, waterborne diseases and epidemics after natural disasters, pest attacks, oil spills, forest fires, etc.

The need to establish multi-hazard early warning systems (EWSs) that decrease personal and economic damages by informing the populous of disasters in advance has become a serious consideration in recent years. Until now, however, technical efforts in multi-hazard EWS have often resulted in systems that are not fully functional for multiple reasons, e.g., inadequate human and technical capacities, insufficient cooperation among the agencies concerned, ignorance about the significance of EWS on the part of communities, and lack of experience-based know-how with no record of the historical or cultural background in areas of disaster prevention. For the reduction of vulnerabilities and risks to natural disasters, a multi-hazard EWS is proposed as the fundamental measure against floods, GLOFs and sediment disasters, including landslides, cyclones with storm surges, droughts and tsunamis.

2. Vision/Goals of Multi-Hazard Early Warning System Plan

The vision of the Multi-Hazard EWS Plan is to reduce the vulnerability to natural disasters by enhancing and strengthening the early warning capacity against multiple hazards due to natural disasters so that the overall vision of formulation of the Disaster Management Plan will be achieved. The Multi-Hazard EWS Plan shall support and lead each activity smoothly for early warning at the national level; whereas, the establishment of a Multi Hazard EWS is a condition precedent to the operation of mitigation systems against possible damage arising from the occurrence of natural calamities.

3. Composition of the Multi-Hazard Early Warning System Plan

The structure of the multi-hazard early warning system plan consists of salient items as shown in Table 17.

Table 17 Salient Items

Salient Item	Section
Introduction	1.1 Introduction
	1.2 Hazards Targeted in the Proposed Multi-Hazard Early Warning System Plan
Goal of the Multi-hazard Early Warning System Plan	2.1 Vision and Goals of Multi-Hazard Early Warning System Plan
	2.2 Implementation Policy
Existing Conditions	3.1 Current Meteorological Observations and Common Policy of Alerts
	3.2 Current Seismic Observations
	3.3 Review on Current SOPs and Dissemination System
	3.4 Current Information and Communication System Situation
	3.5 Current Education System Situation regarding EWS i n Pakistan
Planning Issue, Challenges, and Conceivable Projects	4.1 Introduction
	4.2 Summary of Hazard and Risk Assessment
	4.3 Planning Issues for Each Type of Disaster
	4.4 Dissemination System of Multi –Hazard Early Warning
	4.5 Required Human Resources Development
Planning Framework	5.1 Introduction
	5.2 Programs and Projects Proposed in the Multi -Hazard EWS Plan
	5.3 Prioritized Multi -Hazard EWS
	5.4 Proposed Implementation Scheme
Scope of Feasibility Stu die	6.1 Introduction
	6.2 General Scope of Feasibility Study
	6.3 ToR of the Feasibility Study on Multi-Hazard EWS in Pakistan

PART II CONTENTS OF THE PLAN

1. Implementation Policy

1) Target Year

The target year for the establishment of the Multi-Hazard EWS Plan is set for 2022 (10 year implementation) with the framework subject to review every five years.

2) Basic Implementation Framework

The implementation of the Multi-Hazard EWS Plan has been categorized into the short to medium

term, long-term and other recognized super long-term projects. The short to medium projects shall consist of rehabilitation and new installation and/or establishment of new equipment, facilities and systems including social programs (CBDRM) urgently required within 2-3 years as the priority projects. The long-term projects shall also consist of strengthening and improvement or new establishment of equipment and facilities including the systems required within 6-7 years as priority projects with feasibility study to be executed. In addition, the plan framework, including super long-term projects, shall cover the overall Multi Hazard EWS projects or components proposed in this plan as shown in Table 18 below.

Table 18 Target Year of Multi-Hazard EWS

Plan	Year
Framework (Whole Plan)	2022
Short to Medium Term Projects/Studies	2015
Long Term Projects/Studies	2018
Interim Evaluation of Plan	2016

2. Planning Framework

1) Strategy

The strategies to be adopted for the Plan over the next ten years are given in Table 19 below.

Table 19 Strategies for Multi-Hazard EWS

No.	Strategy
Strategy 1	Strengthen weather forecasting and early warning systems
Strategy 2	Prepare hazard maps at local scale in targeted locations
Strategy 3	Strengthen early warning dissemination systems
Strategy 4	Develop capacity of early warning and evacuation systems

2) Relevant and Responsible Agencies

The activities for the Multi-Hazard Early Warning System should be executed with the involvement of a number of stakeholders so that effective operations resulting in numerous benefits are expected in the cycle of the whole system. In this regard, the agencies given in Table 20 below shall be involved.

Table 20 Relevant and Responsible Agencies

Category	Relevant and Responsible Agencies
Central Government	NDM A, FFC, PMD, WAPD A, GSP, PCIW, Army, NIO, IR SA, SUPARCO, ER R A, Planning Commission, MW P
Provincial Government	F/G/S/C/PDMAs, PIDs, Civil Defence, Rescue 1122 (Fire Brigades), Police, Department of Information / C &W/ H earth and Social Welfare
District Government	DDM As (D Cs/DCO s, Revenue Offices, etc.), Police, C &W, Civil Defence, TM As, CDG s, Tehsils, UC s
Others	NGOs, INGO s, Mosques, Schools, Media, PRCS

3) Basic Communication Routes

The warnings and alerts shall all be disseminated to related agencies and vulnerable districts (DDMAs) likely to be affected by the expected disasters. As basic policy, PMD and agencies observing essential data regarding disasters shall directly issue the warning(s) to DDMAs and other related agencies.

DDMAs to which the warnings are issued by PMD should disseminate the information on magnitudes and significance of anticipated hazards based on the District Disaster Management Plans (DDMPs) and contingency plan(s) for expected disaster(s) without any delay.

The media, particularly electronic media (TV and radio stations), should play an important role as disseminating agencies in the EWS. The media shall send warning messages in a ticker or news flash in accordance with the request from PMD and/or NDMA/ F/G/S/PDMAs /DDMAs.

4) Basic Communication Mode

The communication mode for all types of EWSs should be multiplexed to secure reliable communication and information between early warning agencies (PMD) and end users (communities and vulnerable persons).

The available modes should be adopted as much as possible. The main mode(s) for each EWS to be used are phone/fax, siren, the media (radio/TV), SMS, the Internet by virtual private network (VPN) and public address systems by CDMA, DDMAs, Civil Defence, Police, Fire Brigade, etc.

Basically, current warning communication criteria should be sustained to avoid any confusion or complicated situations because current criteria have no fatal errors when sending warnings regarding targeted disasters from engineering and

social points of views. However, the criteria of the warning communication shall be reviewed annually by the PMD and the revision of warning criteria shall be concurred with by NDMA/ F/G/S/PDMAs when revisions are required based on the propriety evaluation and verification to be conducted by the PMD.

5) Policy on Outline of System Formulation

Observed data related to the forecast approach can be transmitted by appropriate communication systems in terms of reliability, economic efficiency and maintenance aspects. The General Packet Radio Service (GPRS) with the Internet, SMS, Meteor Burst Communication, H.F. radio wave and satellite V-Sat shall be adopted for the data transmission from meteorological observation equipment.

The Plan proposes not only mere improvement with its extension of capacity, but also shifting of warning contents from qualitative to quantitative forecasts.

6) Cooperation and Coordination in Other Related Activities

The Multi-Hazard EWS would not be appropriately operated alone and its effectiveness would be reduced if the acceptance and orientation of the EWS are not recognized by target communities. The suitable operation of the EWS could be achieved in collaboration with other related activities on a routine basis.

In addition to innovation and enhancement of the Multi-Hazard EWS based on a review of the current EWS, it is essential to undertake the following activities for more efficient operation of the system:

- Preparation of Hazard Maps
- Enhancement of DRM Education and Public
- Awareness (Enlightenment) regarding EWS
- Capacity Development of the Staff of Early Warning Agency(ies)

3. Programs and Projects Proposed in the Plan

The proposed programs and projects to be implemented under the plan are given in Table 21 below.

Table 21 List of the Projects and Programs

Priority-1 (Short to Medium Term Projects/Studies)		Related Strategy No.
1-1	Establishment of Specialized Medium Range Forecasting C entre, including Appurtenant Facilities	1, 3
1-2	Establishment of (Additional) Upper –Air Observation Systems	1
1-3	Replacement of Existing Radar Stations Phase -I -Isla ma bad - Karachi (based on comparative analysis/ study)	1
1-4	Strengthening of Flood Forecasting by Satellite Info. and Hazard Maps of Indus River	1
1-5	Establishment of Communication System Between PMD and N DM A	3
1-6	Development of the EWS National Plan, Guidelines and SOPs for HEPR	3
1-7	Establishment of New Meteorological Radar Stations Phase-1 (for Charta)	1
Priority-2 (Long Term Projects/Studies with F/S)		**Related Strategy No.**
2-1	Tsunami Simulation and Hazard Ma ps	2
2-2	Expansion of AWS Network including Communication System	1
2-3	Establishment of New Meteorological Radar Stations Phase -II (Pasni/Gwadar – Balochistan), (Badin/Thatta only if replacement of Karachi radar is not found feasible under Priority-1 based on comparative analysis/study) with finalization of SOPs	1, 3
2-4	Establishment of Regional Flood Forecast sting Warning Centres	1
2-5	Expansion of Rainfall and Water Level Observation Network	1
2-6	Establishment of Local Flash Flood Forecast and Warning System (LFFFC) w/ Hazard Map Phase-I	1, 2
2-7	EW S for GLO F and Snowmelt Flash Flood w/ Hazard Maps	1, 2
2-8	Research Activities for Snow/Glacier/G lacial Lakes	1, 4
2-9	Preparation of Landslide Hazard Maps	
2-10	Establishment of Communication System among D M As (NDMA, F/G/S/PDMAs, DDMA)	1, 2 3
2-11	Establishment of Weather Forecast Guidance System	1, 4
Priority-3 (Super Long Term Projects/Stu dies with F/S)		**Related Strategy No.**
3-1	Establishment of New Meteorological Radar Stations Phase-III (for Chitral and Quetta)	1
3-2	Additional Installation of AWS for the Observation of Basic Meteorological Data	1
3-3	Establishment of Local Flash Flood Forecast and Warning System (LFFFC) w/ Hazard Ma p Phase-II	1, 2
Priority-4 (Super Long Term Projects/Stu dies with F/S)		**Related Strategy No.**
4-1	Replacement of Existing Radar Stations Phase-II (D. I. Khan and Rahim Yar Khan Radars)	1
4-2	Establishment of New Meteorological Radar Stations Phase-IV (for D. G. Khan and Sukkar)	1
Priority-5 (Super Long Term Projects/Stu dies with F/S)		**Related Strategy No.**
5-1	Establishment of Tide Monitoring Network	1
5-2	Establishment of Seismic Intensity Reporting System	1
5-3	Establishment of Landslide EWS	1
5-4	Establishment of Avalanche EW S	1
Recurring Activities		**Related Strategy No.**
R-1	Education Program for M tee-Hydrology for PMD Staffs	4
R-2	Enhancement of Community Enlightenment regarding EWS with training and drills	4

4. Implementation Cost

The priority-wise estimated cost for implementation of projects is given in Table 22 whereas Table 23 shows the cost of MHEWS (Vol.-II).

Table 22 Estimated Cost of Projects/Programs

Priority Projects	Estimated Cost (million PKR)
Priority-1	3,226
Priority-2	5,535
Priority-3, 4 and 5	7,330
Recurring Activities	570
Total	**16,661**

(US$ 188.5) 1USD=88.4PKR

Table 23 Priority Actions/Programs/Cost of MHEWS for the Next Ten Years (2012-2022)

Strategy	app. Cost (million USD)	Time Frame									
		Phase 1				Phase 2			Phase 3		
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
4.4 Intervention-4: Establish multi-hazard early warning and evacuation systems											
1.Strengthen forecasting and early warning systems	168.5										
2.Prepare hazard maps at local scale in targeted locations	5.7										
3.Strengthen early warning dissemination systems	3.1										
4.Develop capacity of early warning and evacuation systems	11.2										
Total Cost (million USD)	**188.50**										
Total Cost (billion PKR)	**16.66**										

1USD=88.4PKR

Instructors' Guidelines on Community Based Disaster Risk Management (Volume III)

The CBDRM Guidelines consist of three parts. Part-I is the introduction, Part-II is the proposed methodology and Part-III consists of CBDRM activities, findings and lessons learnt.

PART I INTRODUCTION

1. Necessity of CBDRM

The Great Hanshin Awaji Earthquake of 1995 was the first milestone, proving the effectiveness of community participation. Statistics show that 72% of the people were either self-evacuated or were rescued from the debris by their neighbors. This indicates the importance of community, and a community-based disaster management committee immediately after a disaster. The greater the devastation and vastness of the disaster impacts, the less the chances are of public assistance. Secondly, the community participation and involvement has become a universal process. Under such circumstances, the necessity for Community Based Disaster Risk Management (CBDRM) is being stressed and recognized widely. In the JICA project, the CBDRM approach has been applied in view of its universal reorganization and importance.

2. Objectives of CBDRM

The objectives of the Community Based Disaster Risk Management (CBDRM) activities are:

1) To establish a system for reflecting lessons learned from the CBDRM activities to the disaster risk management plans; and
2) To create best practices to be used as models for other CBDRM activities.

PART II Methodology

1. Unit of Community

In JICA Activities regarding CBDRM, the community is defined as a unit in which constituents can feel the sense of unity. The members of the community are community leaders, school principles, teachers, Imam of the mosque, leader of CBOs and residents of the community.

2. CBDRM Model

The community activities have taken the following three major steps.

1) Recognizing Disaster Risk

The first step is to recognize and have a clear image of the past and possible future disasters in the community and understand the external forces that create disasters. For this, visual materials are shown. Town watching and hazard mapping exercises can help understand hazards and risks in the community. The Disaster Imagination Game helps visualize the disasters and disaster situation clearly.

2) Examining Countermeasures

While imagining disaster situations, countermeasures are discussed and examined and a Community Based Disaster Risk Management Plan is prepared. Formulation of Community Based Disaster Risk Management Committees is planned and their roles and responsibilities are decided. Plans for training and drills are developed.

3) Actions

Disaster Risk Management Plans are implemented. A Disaster Risk Management Committee is established. Preparedness and mitigation activities are implemented. Awareness raising activities and drills are conducted. By conducting activities and drills, necessary improvements are identified. Then Disaster Risk Management Plans are revised accordingly. Figure 3 shows the CBDRM Model.

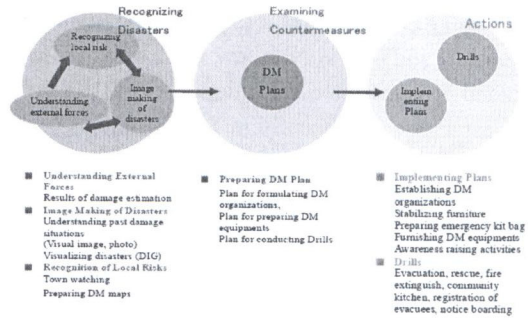

Figure 3 CBDRM Model

3. Planning Methodology

The process of developing CBDRM plans is shown in Figure 4. Pilot activities were conducted at five pilot community sites for five different disasters, namely, flood/flash floods, earthquakes, tsunamis, droughts, and cyclones. In these pilot communities, a series of activities were conducted; including vulnerability and capacity assessment, awareness raising activities, knowledge development, community based DRM plans, practical training, and drills. Community based DRM plans were prepared to link with local development plans. After the CBDRM activities, model plans for five disasters were prepared and good practices and lessons learnt were compiled. Finally, by including these experiences, a CBDRM plan in the National DRM plan was prepared.

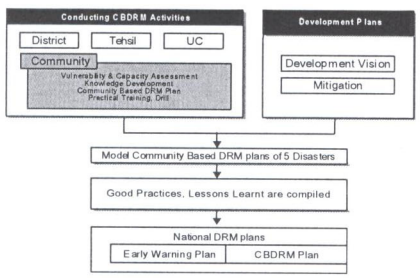

Figure 4 Planning Methodology

PART III CBDRM Activities and Lessons Learnt

1. Selected Communities

One community is selected for one target disaster. For some communities like in Rawalpindi, due to requests and necessity, a few more disasters were added. Five selected communities and their target disasters are summarized in Table 24.

Table 24 Five Selected Communities

#	Province	District	Thesile Township	Union Council	Community	Population	Target Disasters
1	Punjab	Rawalpindi	Rawalpindi	UC 45	Javed Colony	15,000	Flash Flood (Earthquake) (Fire)
2		Bhakkar	Mankera	Hyderabad 42	Dar Boola	5,000	Drought
3							
4	Sindh	Karachi City Urban Area	Saddar Town	Punjabi Club UC 3	Kharadar	616,151 (Saddar Town)	Earthquake (Tsunami)
5		Thatta	Keti Bandar	Keti Bandar	Keti Bandar	22,000	Cyclone (High Tide) (Tsunami)

2. Baseline Survey

The activities start by conducting a Baseline Survey, which is the assessment of vulnerabilities and capacities of individuals and communities, followed by town watching, hazard and risk mapping, preparation of CBDRM plans, and drills. As common activities for five pilot sites, a Study, Visit and Forum were separately conducted. Details are given in Table 25.

Table 25 CBDRM Activities

Category	Activities
Selection	Preliminary Visit
	Discussion with the Concerned
Baseline	Baseline Survey
Preparation	Strategic Meeting
	Preparation of CBDRM Guidelines for Instructors
	Preparation of CBDRM Materials
	TOT
CBDRM Activities	Stakeholders' meetings
	Disaster Awareness Raising Activities
	Town Watching
	Hazard Mapping
	CBDRM Pl an
	Installing DRR Equipment
	Disaster Scenario, Drill
End	End Survey
Common Activities	
	Minutes of Agreement

3. Preparing Instructors' Guidelines

Afterwards, ToT and the actual training sessions were conducted along with these guidelines. These guidelines have been improved incorporating field experiences and are expected to be utilized as a tool for conducting CBDRM activities in other areas of Pakistan. The characteristics of the guidelines include scientific knowledge of different disasters, past damage situations in Pakistan, and structural and non-structural countermeasures for each different disaster and highlighting CBDRM planning by introducing the Disaster Imagination Game, known as DIG as a planning tool.

4. Baseline and Post Completion Survey

In these CBDRM activities, baseline and post completion surveys were conducted to measure the effect of the activities. One of the examples is shown in Figure 5.

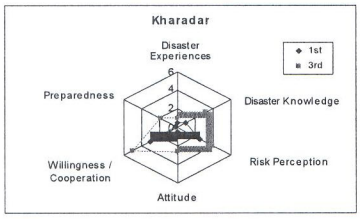

Figure 5 Baseline and Post Completion Survey Results

Characteristics of the findings are summarized below.

1) Increase in Risk Perception, Knowledge and Preparedness

After implementing CBDRM training, awareness about risk perception, preparedness and knowledge was observed. The greatest impact was found in Karachi compared to the other communities. The reason being that earlier, the risks of earthquakes were not widely disseminated to community people in Karachi.

2) Increase of Risk Perception in Urban Scenarios

Compared to the rural Areas of Bhakkar, Muzaffargarh, and Thatta, the Risk Perception was initially quite low in the urban areas of Rawalpindi and Karachi. Now, an increase in risk perception can be observed more in the urban settings after conducting CBDRM activities.

3) Similarity among the target communities

There are similar tendencies in the radar charts. The risk perception and the willingness are higher than the disaster knowledge and preparedness.

5. Lessons Learnt

Key findings are listed below.

1) Participation

- Encouraging participation in the rural areas is not a problem, while in urban areas, it is extremely difficult.
- There should be various efforts from not only the public, but also private entities to encourage the participation in urban areas. Exhibitions, seminars, workshops, symposiums and poster presentations on DRM can be organized as an attraction to increase participation in urban areas.
- Females participated very actively and took leadership of the Community Disaster Management Committee (CDMC).

2) Delivery of Activities

- Practical activities increase and retain the interest and attention of the participants.
- There was little scientific knowledge on disasters. Considering the low literacy rate, visual materials, visual demonstrations of experiments, town watching and mapping exercises can be used to draw the attention and interest of the participants.
- Both males and females in equal numbers participated in the drills on the last day and tested putting the knowledge gained into practice.

3) Mapping Exercise

- Risk and resource mapping increased the enthusiasm of participants and a large number of participants were involved.

4) Continuation of the DRM Activities

- Some intervention by public officials is necessary to ensure sustainability of DRM activities at the community level. To realize this, a budget for travel and technical support needs to be secured.

5) Intervention of Public Officials

- Discussions among public officials were effective and also gave local government officials a clear image of ground realities.
- The community and the Community Disaster Management Committee (CDMC) wish to have a permanent link with the implementing organizations, so a comprehensive community DRM plan for follow up would help retain the cohesion in the newly formed Committee and the level of collaboration between the government and local stakeholders. A budget for such activities needs to be secured at the district level.

6) Establishing a Mechanism for Incorporating Local Needs into Planning

- DRM plans were effectively discussed among the community and local government officials for implementation. However, establishment of a mechanism for incorporating village DRM needs into local government development plans will require more time and effort.

7) Implementing Mitigation Measures

Participants at the drought site in Bhakkar were keen to learn about drought and its impacts and asked a lot of questions to the drought impact assessment expert. They were also interested in changing crop patterns and methods of cultivation.

Priority Actions/Programs under CBDRM (Vol.-III) including cost are shown in Table 26.

Table 26 Priority Actions/Programs/Cost of CBDRM for the Next Ten Years (2012-2022)

Strategy	app. Cost (million USD)	Time Frame									
		Phase 1				Phase 2			Phase 3		
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
4.6 Intervention-6: Strengthen awareness program on disaster risk reduction at local level											
1. Enhance knowledge on disasters management in the general public	1.0										
2. Establish safe evacuation places in the case of disaster situation	10.0										
3. Implementi and disseminate CBDRM activities	1.0										
4. Disseminate self help and mutual help efforts in disaster management	1.0										
5. Establish disaster mitigation measures incorporated with existing development program	1.0										
Total Cost (million USD)	**14.00**										
Total Cost (billion PKR)	**1.24**										

1USD=88.4PKR





GOVERNMENT OF PAKISTAN
MINISTRY OF CLIMATE CHANGE
NATIONAL DISASTER MANAGEMENT AUTHORITY



NATIONAL DISASTER MANAGEMENT PLAN

	Executive Summary
Main Volume	National Disaster Management Plan
Volume-I	Human Resource Development Plan
Volume-II	Multi-Hazard Early Warning System Plan
Volume-III	Instructors' Guidelines on Community Based Disaster Risk Management

National Disaster Management Authority
Prime Minister's Secretariat, Islamabad
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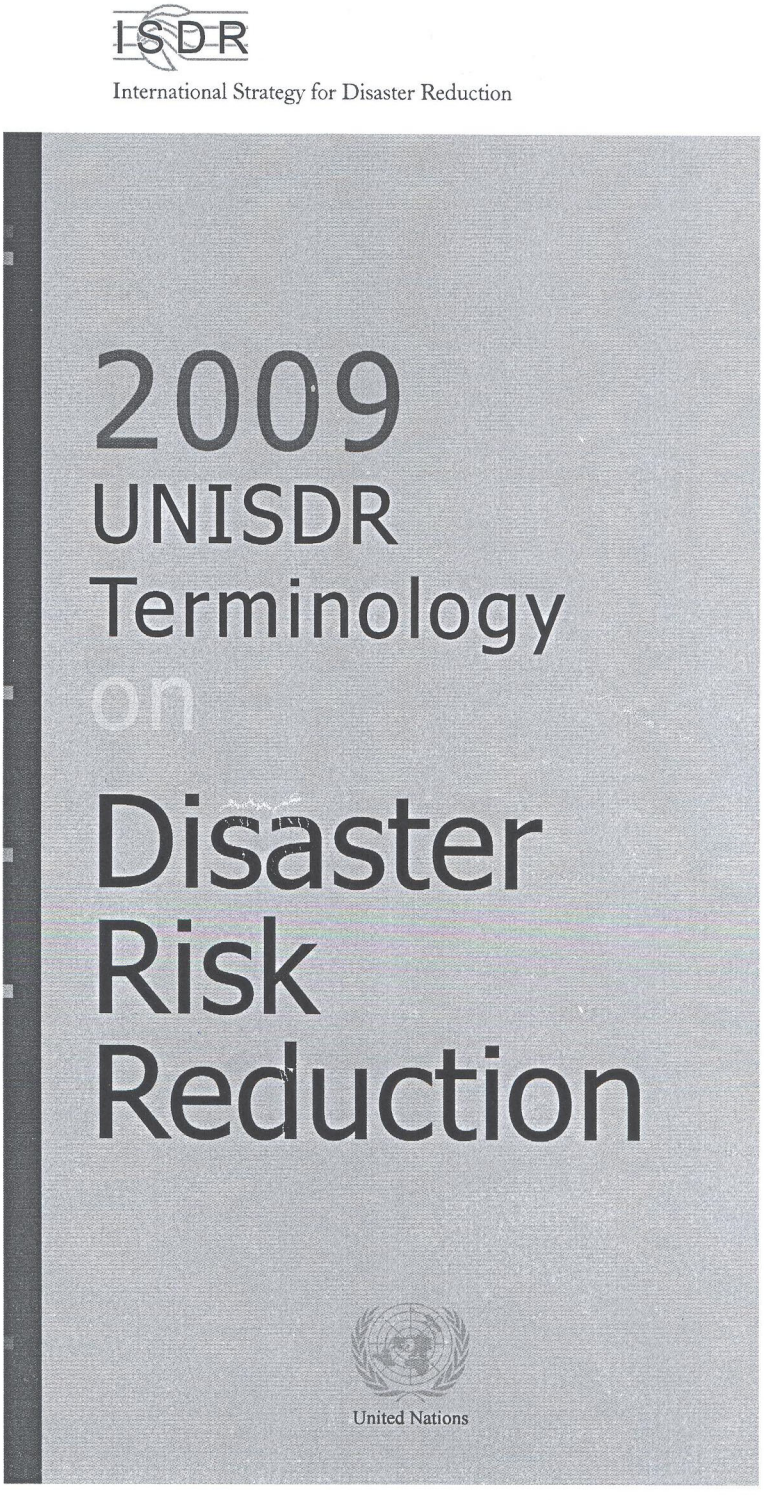
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2009 UNISDR Terminology on Disaster Risk Reduction

The United Nations International Strategy for Disaster Reduction (UNISDR) Terminology aims to promote common understanding and common usage of disaster risk reduction concepts and to assist the disaster risk reduction efforts of authorities, practitioners and the public. The previous version "Terminology: Basic terms of disaster risk reduction" was published in "Living with risk: a global review of disaster risk reduction initiatives" in 2004. The following year, the Hyogo Framework for Action 2005-2015 requested the UNISDR to "update and widely disseminate international standard terminology related to disaster risk reduction, at least in all official United Nations languages, for use in programme and institutions development, operations, research, training curricula and public information programmes".

The 2009 version is the result of a process of ongoing review by the UNISDR and consultations with a broad range of experts and practitioners in various international venues, regional discussions and national settings. The terms are now defined by a single sentence. The comments paragraph associated with each term is not part of the definition, but is provided to give additional context, qualification and explanation. It should be noted that the terms are not necessarily mutually exclusive, and in some cases may have overlapping meanings.

The Terminology has been revised to include words that are central to the contemporary understanding and evolving practice of disaster risk reduction but exclude words that have a common dictionary usage. Also included are a number of emerging new concepts that are not in widespread use but are of growing professional relevance; these terms are marked with a star (*) and their definition may evolve in future. The English version of the 2009 Terminology provides the basis for the preparation of other language versions. Comments and suggestions for future revisions are welcome and should be directed to the UNISDR (see www.unisdr.org).

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Acceptable risk

The level of potential losses that a society or community considers acceptable given existing social, economic, political, cultural, technical and environmental conditions.

Comment: In engineering terms, acceptable risk is also used to assess and define the structural and non-structural measures that are needed in order to reduce possible harm to people, property, services and systems to a chosen tolerated level, according to codes or "accepted practice" which are based on known probabilities of hazards and other factors.

Adaptation

The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Comment: This definition addresses the concerns of climate change and is sourced from the secretariat of the United Nations Framework Convention on Climate Change (UNFCCC). The broader concept of adaptation also applies to non-climatic factors such as soil erosion or surface subsidence. Adaptation can occur in autonomous fashion, for example through market changes, or as a result of intentional adaptation policies and plans. Many disaster risk reduction measures can directly contribute to better adaptation.

Biological hazard

Process or phenomenon of organic origin or conveyed by biological vectors, including exposure to pathogenic micro-organisms,

toxins and bioactive substances that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Comment: Examples of biological hazards include outbreaks of epidemic diseases, plant or animal contagion, insect or other animal plagues and infestations.

Building code

A set of ordinances or regulations and associated standards intended to control aspects of the design, construction, materials, alteration and occupancy of structures that are necessary to ensure human safety and welfare, including resistance to collapse and damage.

Comment: Building codes can include both technical and functional standards. They should incorporate the lessons of international experience and should be tailored to national and local circumstances. A systematic regime of enforcement is a critical supporting requirement for effective implementation of building codes.

Capacity

The combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals.

Comment: Capacity may include infrastructure and

physical means, institutions, societal coping abilities, as well as human knowledge, skills and collective attributes such as social relationships, leadership and management. Capacity also may be described as capability. Capacity assessment is a term for the process by which the capacity of a group is reviewed against desired goals, and the capacity gaps are identified for further action.

Capacity Development

The process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions.

Comment: Capacity development is a concept that extends the term of capacity building to encompass all aspects of creating and sustaining capacity growth over time. It involves learning and various types of training, but also continuous efforts to develop institutions, political awareness, financial resources, technology systems, and the wider social and cultural enabling environment.

Climate change

(a) The Inter-governmental Panel on Climate Change (IPCC) defines climate change as: "a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural

internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use".

(b) The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".

Comment: For disaster risk reduction purposes, either of these definitions may be suitable, depending on the particular context. The UNFCCC definition is the more restricted one as it excludes climate changes attributable to natural causes. The IPCC definition can be paraphrased for popular communications as "A change in the climate that persists for decades or longer, arising from either natural causes or human activity."

Contingency planning

A management process that analyses specific potential events or emerging situations that might threaten society or the environment and establishes arrangements in advance to enable timely, effective and appropriate responses to such events and situations.

Comment: Contingency planning results in organized and coordinated courses of action with clearly-identified institutional roles and resources, information processes, and operational arrangements for specific actors at times of need. Based on scenarios of possible emergency conditions or disaster events, it allows key

actors to envision, anticipate and solve problems that can arise during crises. Contingency planning is an important part of overall preparedness. Contingency plans need to be regularly updated and exercised.

Coping capacity

The ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters.

Comment: The capacity to cope requires continuing awareness, resources and good management, both in normal times as well as during crises or adverse conditions. Coping capacities contribute to the reduction of disaster risks.

Corrective disaster risk management *

Management activities that address and seek to correct or reduce disaster risks which are already present.

Comment: This concept aims to distinguish between the risks that are already present, and which need to be managed and reduced now, and the prospective risks that may develop in future if risk reduction policies are not put in place. See also Prospective risk management.

Critical facilities

The primary physical structures, technical facilities and systems which are socially,

economically or operationally essential to the functioning of a society or community, both in routine circumstances and in the extreme circumstances of an emergency.

Comment: Critical facilities are elements of the infrastructure that support essential services in a society. They include such things as transport systems, air and sea ports, electricity, water and communications systems, hospitals and health clinics, and centres for fire, police and public administration services.

Disaster

A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

Comment: Disasters are often described as a result of the combination of: the exposure to a hazard; the conditions of vulnerability that are present; and insufficient capacity or measures to reduce or cope with the potential negative consequences. Disaster impacts may include loss of life, injury, disease and other negative effects on human physical, mental and social well-being, together with damage to property, destruction of assets, loss of services, social and economic disruption and environmental degradation.

Disaster risk

The potential disaster losses, in lives, health status, livelihoods, assets and services, which

could occur to a particular community or a society over some specified future time period.

Comment: The definition of disaster risk reflects the concept of disasters as the outcome of continuously present conditions of risk. Disaster risk comprises different types of potential losses which are often difficult to quantify. Nevertheless, with knowledge of the prevailing hazards and the patterns of population and socio-economic development, disaster risks can be assessed and mapped, in broad terms at least.

Disaster risk management

The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.

Comment: This term is an extension of the more general term "risk management" to address the specific issue of disaster risks. Disaster risk management aims to avoid, lessen or transfer the adverse effects of hazards through activities and measures for prevention, mitigation and preparedness.

Disaster risk reduction

The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to

hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.

Comment: A comprehensive approach to reduce disaster risks is set out in the United Nations-endorsed Hyogo Framework for Action, adopted in 2005, whose expected outcome is "The substantial reduction of disaster losses, in lives and the social, economic and environmental assets of communities and countries." The International Strategy for Disaster Reduction (ISDR) system provides a vehicle for cooperation among Governments, organisations and civil society actors to assist in the implementation of the Framework. Note that while the term "disaster reduction" is sometimes used, the term "disaster risk reduction" provides a better recognition of the ongoing nature of disaster risks and the ongoing potential to reduce these risks.

Disaster risk reduction plan *

A document prepared by an authority, sector, organization or enterprise that sets out goals and specific objectives for reducing disaster risks together with related actions to accomplish these objectives.

Comment: Disaster risk reduction plans should be guided by the Hyogo Framework and considered and coordinated within relevant development plans, resource allocations and programme activities. National level plans needs to be specific to each level of administrative responsibility and adapted to the different social and geographical circumstances that are present. The time frame and responsibilities for implementation and the sources of funding should be specified in the plan. Linkages to climate change adaptation plans should be made where possible.

Early warning system

The set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss.

Comment: This definition encompasses the range of factors necessary to achieve effective responses to warnings. A people-centred early warning system necessarily comprises four key elements: knowledge of the risks; monitoring, analysis and forecasting of the hazards; communication or dissemination of alerts and warnings; and local capabilities to respond to the warnings received. The expression "end-to-end warning system" is also used to emphasize that warning systems need to span all steps from hazard detection through to community response.

Ecosystem services

The benefits that people and communities obtain from ecosystems.

Comment: This definition is drawn from the Millennium Ecosystem Assessment. The benefits that ecosystems can provide include "regulating services" such as regulation of floods, drought, land degradation and disease, along with "provisioning services" such as food and water, "supporting services" such as soil formation and nutrient cycling, and "cultural services" such as recreational, spiritual, religious and other non-material benefits. Integrated management of land, water and living resources that promotes conservation and sustainable use provide the basis for maintaining ecosystem services, including those that contribute to reduced disaster risks.

El Niño-Southern Oscillation phenomenon

A complex interaction of the tropical Pacific Ocean and the global atmosphere that results in irregularly occurring episodes of changed ocean and weather patterns in many parts of the world, often with significant impacts over many months, such as altered marine habitats, rainfall changes, floods, droughts, and changes in storm patterns.

Comment: The El Niño part of the El Niño-Southern Oscillation (ENSO) phenomenon refers to the well-above-average ocean temperatures that occur along the coasts of Ecuador, Peru and northern Chile and across the eastern equatorial Pacific Ocean, while La Niña part refers to the opposite circumstances when well-below-average ocean temperatures occur. The Southern Oscillation refers to the accompanying changes in the global air pressure patterns that are associated with the changed weather patterns experienced in different parts of the world.

Emergency management

The organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular preparedness, response and initial recovery steps.

Comment: A crisis or emergency is a threatening condition that requires urgent action. Effective emergency action can avoid the escalation of an event into a disaster. Emergency management involves plans and institutional arrangements to engage and guide the efforts of government, non-government, voluntary and private agencies in comprehensive and coordinated ways to respond to the entire

spectrum of emergency needs. The expression "disaster management" is sometimes used instead of emergency management.

Emergency services

The set of specialized agencies that have specific responsibilities and objectives in serving and protecting people and property in emergency situations.

Comment: Emergency services include agencies such as civil protection authorities, police, fire, ambulance, paramedic and emergency medicine services, Red Cross and Red Crescent societies, and specialized emergency units of electricity, transportation, communications and other related services organizations.

Environmental degradation

The reduction of the capacity of the environment to meet social and ecological objectives and needs.

Comment: Degradation of the environment can alter the frequency and intensity of natural hazards and increase the vulnerability of communities. The types of human-induced degradation are varied and include land misuse, soil erosion and loss, desertification, wildland fires, loss of biodiversity, deforestation, mangrove destruction, land, water and air pollution, climate change, sea level rise and ozone depletion.

Environmental impact assessment

Process by which the environmental consequences of a proposed project or programme are evaluated, undertaken as an integral part of planning and decision-making processes with a view to limiting or reducing the adverse impacts of the project or programme.

Comment: Environmental impact assessment is a policy tool that provides evidence and analysis of environmental impacts of activities from conception to decision-making. It is utilized extensively in national programming and project approval processes and for international development assistance projects. Environmental impact assessments should include detailed risk assessments and provide alternatives, solutions or options to deal with identified problems.

Exposure

People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses.

Comment: Measures of exposure can include the number of people or types of assets in an area. These can be combined with the specific vulnerability of the exposed elements to any particular hazard to estimate the quantitative risks associated with that hazard in the area of interest.

Extensive risk *

The widespread risk associated with the exposure of dispersed populations to repeated or persistent hazard conditions

of low or moderate intensity, often of a highly localized nature, which can lead to debilitating cumulative disaster impacts.

Comment: Extensive risk is mainly a characteristic of rural areas and urban margins where communities are exposed to, and vulnerable to, recurring localised floods, landslides storms or drought. Extensive risk is often associated with poverty, urbanization and environmental degradation. See also "Intensive risk".

Forecast

Definite statement or statistical estimate of the likely occurrence of a future event or conditions for a specific area.

Comment: In meteorology a forecast refers to a future condition, whereas a warning refers to a potentially dangerous future condition.

Geological hazard

Geological process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Comment: Geological hazards include internal earth processes, such as earthquakes, volcanic activity and emissions, and related geophysical processes such as mass movements, landslides, rockslides, surface collapses, and debris or mud flows. Hydrometeorological factors are important contributors to some of these processes. Tsunamis are difficult to categorize; although they are triggered by undersea earthquakes and other geological

events, they are essentially an oceanic process that is manifested as a coastal water-related hazard.

Greenhouse gases

Gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds.

Comment: This is the definition of the Intergovernmental Panel on Climate Change (IPCC). The main greenhouse gases (GHG) are water vapour, carbon dioxide, nitrous oxide, methane and ozone.

Hazard

A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Comment: The hazards of concern to disaster risk reduction as stated in footnote 3 of the Hyogo Framework are "... hazards of natural origin and related environmental and technological hazards and risks." Such hazards arise from a variety of geological, meteorological, hydrological, oceanic, biological, and technological sources, sometimes acting in combination. In technical settings, hazards are described quantitatively by the likely frequency of occurrence of different intensities for different areas, as determined from historical data or scientific analysis.

See other hazard-related terms in the Terminology: Biological hazard; Geological hazard; Hydrometeorological hazard; Natural hazard; Socio-natural hazard; Technological hazard.

Hydrometeorological hazard

Process or phenomenon of atmospheric, hydrological or oceanographic nature that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Comment: Hydrometeorological hazards include tropical cyclones (also known as typhoons and hurricanes), thunderstorms, hailstorms, tornados, blizzards, heavy snowfall, avalanches, coastal storm surges, floods including flash floods, drought, heatwaves and cold spells. Hydrometeorological conditions also can be a factor in other hazards such as landslides, wildland fires, locust plagues, epidemics, and in the transport and dispersal of toxic substances and volcanic eruption material

Intensive risk *

The risk associated with the exposure of large concentrations of people and economic activities to intense hazard events, which can lead to potentially catastrophic disaster impacts involving high mortality and asset loss.

Comment: Intensive risk is mainly a characteristic of large cities or densely populated areas that are not only exposed to intense hazards such as strong earthquakes, active volcanoes, heavy floods,

tsunamis, or major storms but also have high levels of vulnerability to these hazards. See also "Extensive risk."

Land-use planning

The process undertaken by public authorities to identify, evaluate and decide on different options for the use of land, including consideration of long term economic, social and environmental objectives and the implications for different communities and interest groups, and the subsequent formulation and promulgation of plans that describe the permitted or acceptable uses.

Comment: Land-use planning is an important contributor to sustainable development. It involves studies and mapping; analysis of economic, environmental and hazard data; formulation of alternative land-use decisions; and design of long-range plans for different geographical and administrative scales. Land-use planning can help to mitigate disasters and reduce risks by discouraging settlements and construction of key installations in hazard-prone areas, including consideration of service routes for transport, power, water, sewage and other critical facilities.

Mitigation

The lessening or limitation of the adverse impacts of hazards and related disasters.

Comment: The adverse impacts of hazards often cannot be prevented fully, but their scale or severity can be substantially lessened by various strategies and actions. Mitigation measures encompass engineering techniques and hazard-resistant construction as

well as improved environmental policies and public awareness. It should be noted that in climate change policy, "mitigation" is defined differently, being the term used for the reduction of greenhouse gas emissions that are the source of climate change.

National platform for disaster risk reduction

A generic term for national mechanisms for coordination and policy guidance on disaster risk reduction that are multi-sectoral and inter-disciplinary in nature, with public, private and civil society participation involving all concerned entities within a country.

Comment: This definition is derived from footnote 10 of the Hyogo Framework. Disaster risk reduction requires the knowledge, capacities and inputs of a wide range of sectors and organisations, including United Nations agencies present at the national level, as appropriate. Most sectors are affected directly or indirectly by disasters and many have specific responsibilities that impinge upon disaster risks. National platforms provide a means to enhance national action to reduce disaster risks, and they represent the national mechanism for the International Strategy for Disaster Reduction.

Natural hazard

Natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Comment: Natural hazards are a sub-set of all hazards. The term is used to describe actual hazard events as well as the latent hazard conditions that may give rise to future events. Natural hazard events can be characterized by their magnitude or intensity, speed of onset, duration, and area of extent. For example, earthquakes have short durations and usually affect a relatively small region, whereas droughts are slow to develop and fade away and often affect large regions. In some cases hazards may be coupled, as in the flood caused by a hurricane or the tsunami that is created by an earthquake.

Preparedness

The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.

Comment: Preparedness action is carried out within the context of disaster risk management and aims to build the capacities needed to efficiently manage all types of emergencies and achieve orderly transitions from response through to sustained recovery. Preparedness is based on a sound analysis of disaster risks and good linkages with early warning systems, and includes such activities as contingency planning, stockpiling of equipment and supplies, the development of arrangements for coordination, evacuation and public information, and associated training and field exercises. These must be supported by formal institutional, legal and budgetary capacities. The related term "readiness" describes the ability to quickly and appropriately respond when required.

Prevention

The outright avoidance of adverse impacts of hazards and related disasters.

Comment: Prevention (i.e. disaster prevention) expresses the concept and intention to completely avoid potential adverse impacts through action taken in advance. Examples include dams or embankments that eliminate flood risks, land-use regulations that do not permit any settlement in high risk zones, and seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake. Very often the complete avoidance of losses is not feasible and the task transforms to that of mitigation. Partly for this reason, the terms prevention and mitigation are sometimes used interchangeably in casual use.

Prospective disaster risk management *

Management activities that address and seek to avoid the development of new or increased disaster risks.

Comment: This concept focuses on addressing risks that may develop in future if risk reduction policies are not put in place, rather than on the risks that are already present and which can be managed and reduced now. See also Corrective disaster risk management.

Public awareness

The extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually

and collectively to reduce exposure and vulnerability to hazards.

Comment: Public awareness is a key factor in effective disaster risk reduction. Its development is pursued, for example, through the development and dissemination of information through media and educational channels, the establishment of information centres, networks, and community or participation actions, and advocacy by senior public officials and community leaders.

Recovery

The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.

Comment: The recovery task of rehabilitation and reconstruction begins soon after the emergency phase has ended, and should be based on pre-existing strategies and policies that facilitate clear institutional responsibilities for recovery action and enable public participation. Recovery programmes, coupled with the heightened public awareness and engagement after a disaster, afford a valuable opportunity to develop and implement disaster risk reduction measures and to apply the "build back better" principle.

Residual risk

The risk that remains in unmanaged form, even when effective disaster risk reduction measures are in place, and for which emergency response and recovery capacities must be maintained.

Comment: The presence of residual risk implies a continuing need to develop and support effective capacities for emergency services, preparedness, response and recovery together with socio-economic policies such as safety nets and risk transfer mechanisms.

Resilience

The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

Comment: Resilience means the ability to "resile from" or "spring back from" a shock. The resilience of a community in respect to potential hazard events is determined by the degree to which the community has the necessary resources and is capable of organizing itself both prior to and during times of need.

Response

The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Comment: Disaster response is predominantly focused on immediate and short-term needs and is sometimes called "disaster relief". The division between this response stage and the subsequent recovery stage

is not clear-cut. Some response actions, such as the supply of temporary housing and water supplies, may extend well into the recovery stage.

Retrofitting

Reinforcement or upgrading of existing structures to become more resistant and resilient to the damaging effects of hazards.

Comment: Retrofitting requires consideration of the design and function of the structure, the stresses that the structure may be subject to from particular hazards or hazard scenarios, and the practicality and costs of different retrofitting options. Examples of retrofitting include adding bracing to stiffen walls, reinforcing pillars, adding steel ties between walls and roofs, installing shutters on windows, and improving the protection of important facilities and equipment.

Risk

The combination of the probability of an event and its negative consequences.

Comment: This definition closely follows the definition of the ISO/IEC Guide 73. The word "risk" has two distinctive connotations: in popular usage the emphasis is usually placed on the concept of chance or possibility, such as in "the risk of an accident"; whereas in technical settings the emphasis is usually placed on the consequences, in terms of "potential losses" for some particular cause, place and period. It can be noted that people do not necessarily share the same perceptions of the significance and underlying causes of different risks.

See other risk-related terms in the Terminology: Acceptable risk; Corrective disaster risk management;

Disaster risk; Disaster risk management; Disaster risk reduction; Disaster risk reduction plans; Extensive risk; Intensive risk; Prospective disaster risk management; Residual risk; Risk assessment; Risk management; Risk transfer.

Risk assessment

A methodology to determine the nature and extent of risk by analysing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend.

Comment: Risk assessments (and associated risk mapping) include: a review of the technical characteristics of hazards such as their location, intensity, frequency and probability; the analysis of exposure and vulnerability including the physical social, health, economic and environmental dimensions; and the evaluation of the effectiveness of prevailing and alternative coping capacities in respect to likely risk scenarios. This series of activities is sometimes known as a risk analysis process.

Risk management

The systematic approach and practice of managing uncertainty to minimize potential harm and loss.

Comment: Risk management comprises risk assessment and analysis, and the implementation of strategies and specific actions to control, reduce and transfer risks. It is widely practiced by organizations to minimise risk in investment decisions and to address

operational risks such as those of business disruption, production failure, environmental damage, social impacts and damage from fire and natural hazards. Risk management is a core issue for sectors such as water supply, energy and agriculture whose production is directly affected by extremes of weather and climate.

Risk transfer

The process of formally or informally shifting the financial consequences of particular risks from one party to another whereby a household, community, enterprise or state authority will obtain resources from the other party after a disaster occurs, in exchange for ongoing or compensatory social or financial benefits provided to that other party.

Comment: Insurance is a well-known form of risk transfer, where coverage of a risk is obtained from an insurer in exchange for ongoing premiums paid to the insurer. Risk transfer can occur informally within family and community networks where there are reciprocal expectations of mutual aid by means of gifts or credit, as well as formally where governments, insurers, multi-lateral banks and other large risk-bearing entities establish mechanisms to help cope with losses in major events. Such mechanisms include insurance and re-insurance contracts, catastrophe bonds, contingent credit facilities and reserve funds, where the costs are covered by premiums, investor contributions, interest rates and past savings, respectively.

Socio-natural hazard *

The phenomenon of increased occurrence of certain geophysical and hydrometeorological hazard events, such as landslides, flooding,

land subsidence and drought, that arise from the interaction of natural hazards with overexploited or degraded land and environmental resources.

Comment: This term is used for the circumstances where human activity is increasing the occurrence of certain hazards beyond their natural probabilities. Evidence points to a growing disaster burden from such hazards. Socio-natural hazards can be reduced and avoided through wise management of land and environmental resources.

Structural and non-structural measures

Structural measures: Any physical construction to reduce or avoid possible impacts of hazards, or application of engineering techniques to achieve hazard-resistance and resilience in structures or systems;

Non-structural measures: Any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, public awareness raising, training and education.

Comment: Common structural measures for disaster risk reduction include dams, flood levies, ocean wave barriers, earthquake-resistant construction, and evacuation shelters. Common non-structural measures include building codes, land use planning laws and their enforcement, research and assessment, information resources, and public awareness

programmes. Note that in civil and structural engineering, the term "structural" is used in a more restricted sense to mean just the load-bearing structure, with other parts such as wall cladding and interior fittings being termed non-structural.

Sustainable development

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Comment: This definition coined by the 1987 Brundtland Commission is very succinct but it leaves unanswered many questions regarding the meaning of the word development and the social, economic and environmental processes involved. Disaster risk is associated with unsustainable elements of development such as environmental degradation, while conversely disaster risk reduction can contribute to the achievement of sustainable development, through reduced losses and improved development practices.

Technological hazard

A hazard originating from technological or industrial conditions, including accidents, dangerous procedures, infrastructure failures or specific human activities, that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Comment: Examples of technological hazards include industrial pollution, nuclear radiation, toxic wastes, dam failures, transport accidents, factory explosions, fires, and chemical spills. Technological hazards also may arise directly as a result of the impacts of a natural hazard event.

Vulnerability

The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.

Comment: There are many aspects of vulnerability, arising from various physical, social, economic, and environmental factors. Examples may include poor design and construction of buildings, inadequate protection of assets, lack of public information and awareness, limited official recognition of risks and preparedness measures, and disregard for wise environmental management. Vulnerability varies significantly within a community and over time. This definition identifies vulnerability as a characteristic of the element of interest (community, system or asset) which is independent of its exposure. However, in common use the word is often used more broadly to include the element's exposure.

* Emerging new concepts that are not in widespread use but are of growing professional relevance; the definition of these terms remain to be widely consulted upon and may change in future.