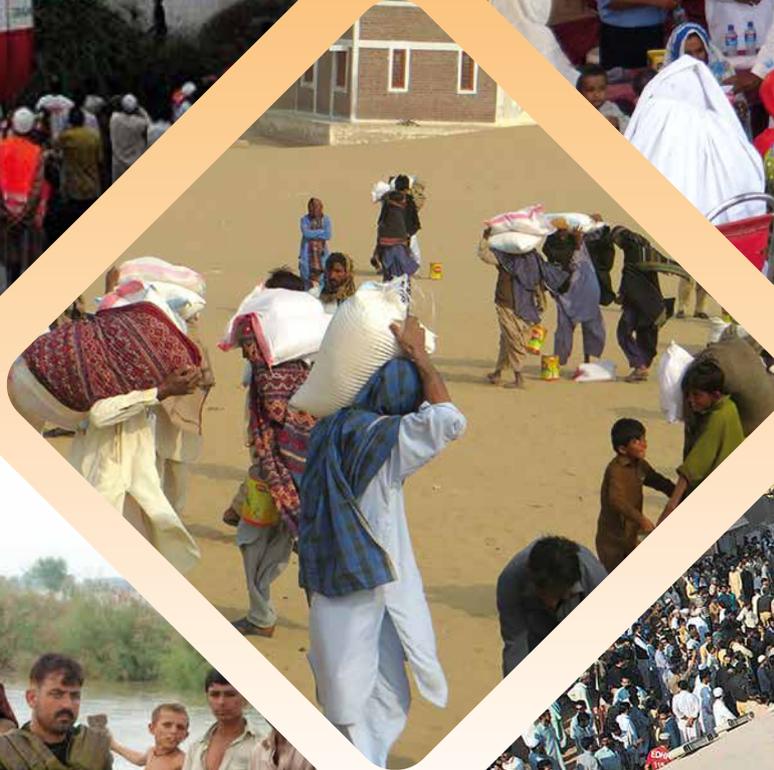
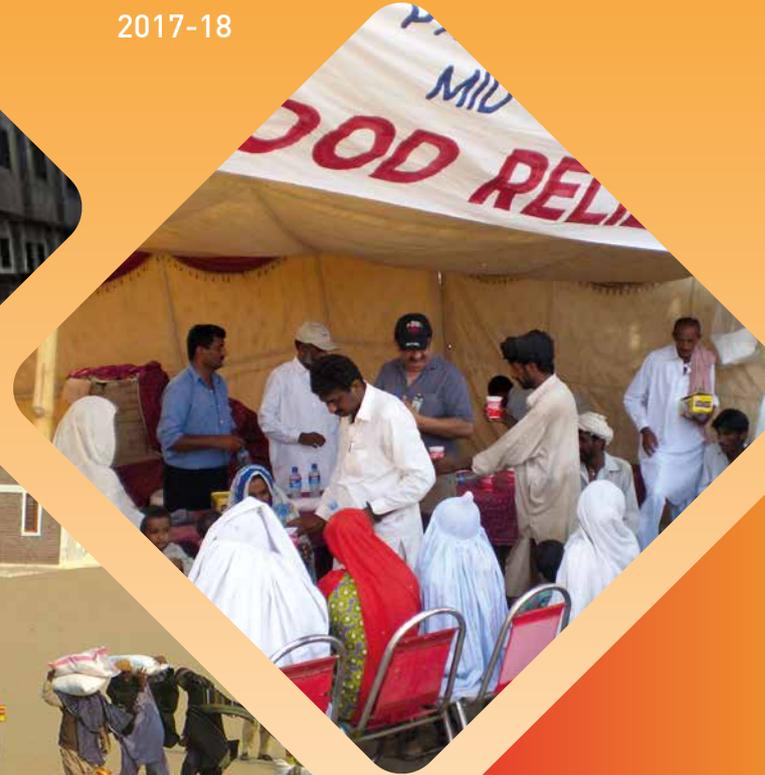
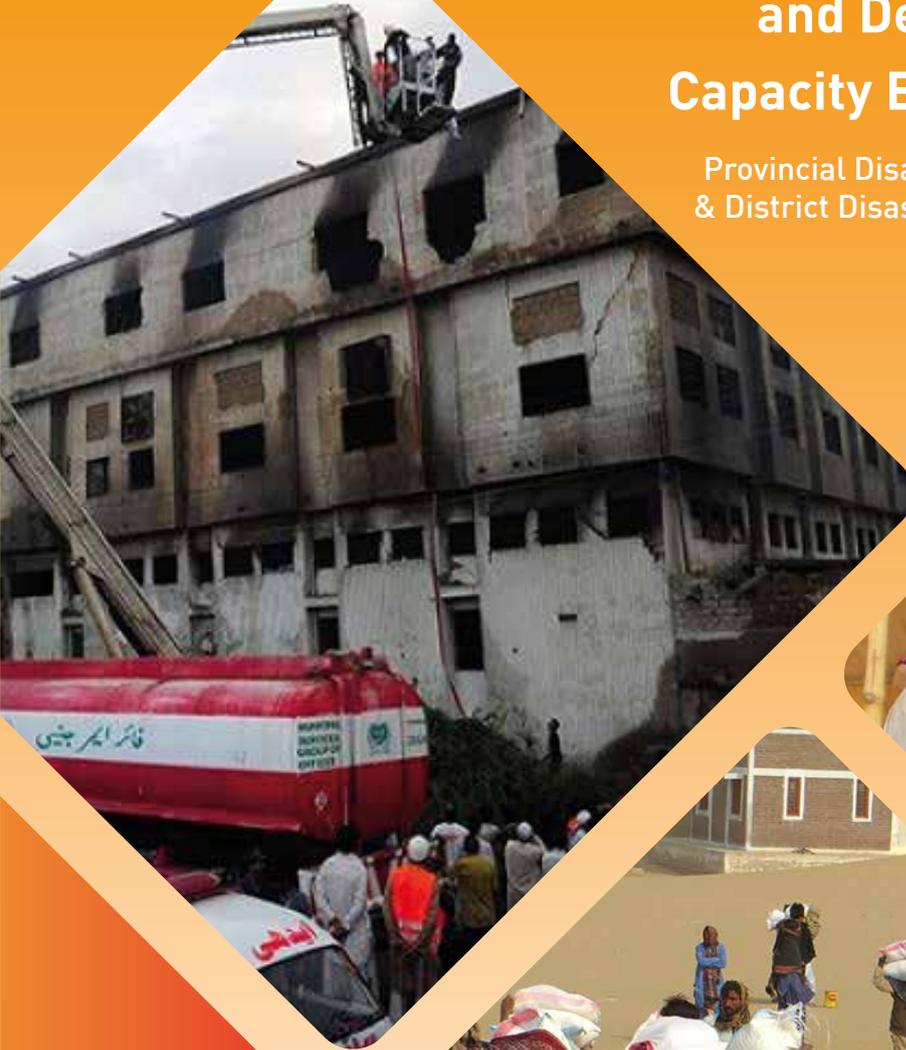


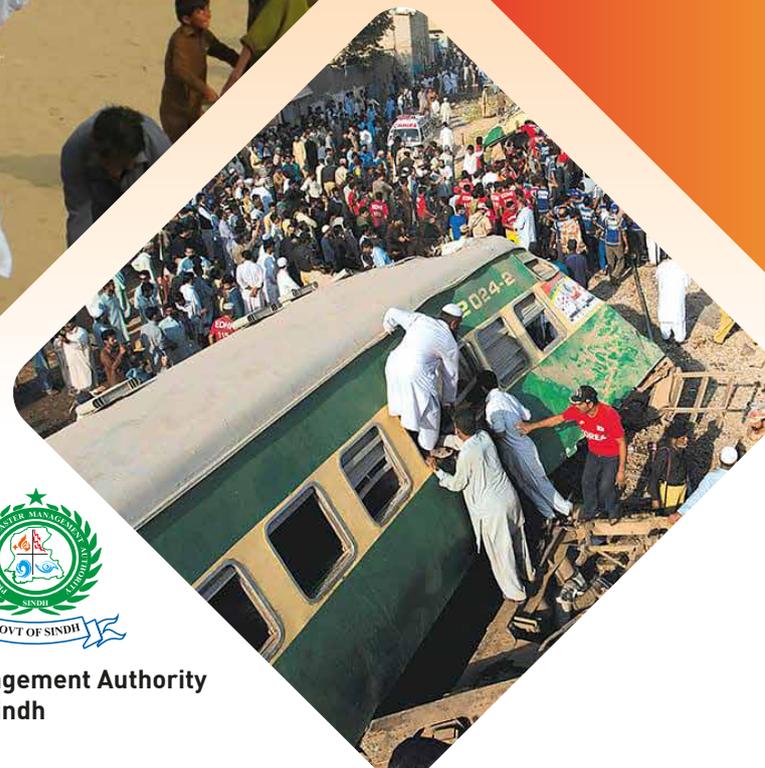
Organizational Capacity Assessment and Development of Capacity Enhancement Plan

Provincial Disaster Management Authority
& District Disaster Management Authorities
Sindh

2017-18



Part -A



Provincial Disaster Management Authority
(PDMA), Sindh



Provincial Disaster Management Authority
(PDMA), Sindh



Organizational Capacity Assessment and Development of Capacity Enhancement Plan

Provincial Disaster Management Authority
& District Disaster Management Authorities
Sindh

(Part- A)

Prepared & Submitted by:



National Support Organization (NSO)
Islamabad

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With the financial support from World Bank, PDMA Sindh is implementing five years' project, titled "Sindh Resilience Project" (SRP). The project aims to strengthen Government of Sindh's capacity to manage risks from natural disasters and climate change and to improve resilience of communities and economic assets in the Province of Sindh to natural disasters.

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Acknowledgement

The Institutional Capacity Assessment and Development of Capacity Enhancement Plan for PDMA and DDMA Sindh presents a value-added analysis of the disaster management institutions in Sindh. This assessment report represents a concerted endeavour on the part of PDMA Sindh and its stakeholders to map out the institutional framework for disaster management, whilst simultaneously analysing areas requiring further attention and improvements.

The National Support Organization (NSO) gratefully acknowledges that the preparation of this assessment report would not have been possible without crucial inputs from Government of Sindh's, District Administrations and line departments. Special thanks must be given to Director General PDMA and Project Director SRP (Syed Salman Shah) and Project Coordinator SRP (Mr. Asif Jan Siddiqui) for their guidance enabling us to overcome challenges.

It would be remiss not to express a special note of gratitude to former Project Director SRP (Mr. Gahanwer Ali Laghari), Disaster Management Specialist-SRP (Mr. Hassan Jafferie), Financial Management Specialist-SRP (Mr. Ahmed Saquib) and Disaster Risk Management Specialist- World Bank (Mr. Ahsan Tehsin) who played a key role in setting the strategic direction for this Capacity Assessment report and extending unwavering cooperation for data gathering and data analysis. Their instrumental role in brain-storming and guidance for planning out capacity assessment activities, in addition to their insightful engagement for detailed overview of technical aspects has boosted the authenticity of this document.

All of the professionals involved in the process and their institutions, made commendable efforts to ensure access to technical staff, the timely provision of all documentation, assets and to make relevant HR available.

Message (Director General - PDMA Sindh)



When PDMA Sindh was setup, we were faced with the enormous task of setting up a comprehensive disaster management system and creating resilient teams without much precedent. Over the past decade, Sindh has witnessed an unprecedented scale of natural disasters causing loss of lives, livelihoods and hundreds of millions in damages to property and infrastructure. In the face of repeated flooding, Sindh's rapidly growing urban population and the cumulative impacts of climate change, inaction is no longer an option. It is critical that systems for disaster management are scaled up and made functional on a priority basis to meet rising demand and to encourage stability in the region.

This assessment's findings will be utilized to better funnel investment in Sindh's disaster management institutions in the form of technical capacity building and vital equipment. Moreover, it will help establish presence of disaster management teams and equipment in the vulnerable Districts of Sindh Province.

It is hoped that the system of disaster management set up in Sindh will serve as a model for other provinces and territories in the country. This should in turn encourage closer coordination and inter-provincial information sharing on forecasting and data collection. PDMA Sindh acknowledges and thanks all institutions and individuals for their efforts in producing such a comprehensive assessment report.

As a Director General, PDMA (Sindh), creation of this assessment report that assessed plan implementation, preparedness and response and which involves all the vital aspects of Disaster Management to ensure smooth coordination between the various stake holders of Govt/Non Govt that are necessary for emergency response as well as for preparedness. I am sure our commitment and preparation towards the Province will withstand any challenging situation.

Syed Salman Shah
Director General
Provincial Disaster Management Authority
Sindh

Acronyms

AD	Assistant Director	M&E	Monitoring and Evaluation
ADPC	Asian Disaster Preparedness Center	MDGs	Millennium Development Goals
AJ&K	Azad Jammu and Kashmir	MIS	Management Information System
ARP	Air Raid Precaution	NADRA	National Database and Registration Authority
BHU	Basic Health Unit	NDM	National Disaster Management
CBDRM	Community Based Disaster Risk Management	NDMA	National Disaster Management Authority
CBOs	Community Based Organization	NDMC	National Disaster Management Commission
CDCP	Citizen Damage Compensation Program	NDMF	National Disaster Management Fund
DBA	Data Base Analyst	NDRF	National Disaster Response Force
DD	Deputy Director	NGOs	Non-Government Organization
DDMA	District Disaster Management Authority	NIDM	National Institute of Disaster Management
DEO	Data Entry Officer	NSO	National Support Organization
D.E.R.T	Disaster Emergency Response Team	Ops	Operations
DG	Director General	P&D	Planning and Development
DMIS	Disaster Management Information System	PCU	Project Coordination Unit
DRM	Disaster Risk Management	PDMA	Provincial Disaster Management Authority
DRR	Disaster Risk Reduction	PDMC	Provincial Disaster Management Commission
DSS	Decision Support System	POL	Petroleum, Oil, Lubricants
EOC	Emergency Operation Center	PRO	Public Relation officer
ERRA	Earthquake Reconstruction and Rehabilitation Authority	R&R	Reconstruction and Rehabilitation
F&A	Finance and Administration	RAS	Response Action System
FEMA	Federal Emergency Management Agency	SDGs	Sustainable Development Goals
FMIS	Financial Management Information System	SDMA	State Disaster Management Authority
FRC	Federal Relief Commission	SFDRR	Sendai Framework for Disaster Risk Reduction
GDP	Gross Domestic Product	SMBOR	Senior Member Board of Revenue
GIS	Geographic Information System	SoPs	Standard Operating Procedures
HDI	Human Development Index	SRP	Sindh Resilience Project
HQ	Head Quarter	TNA	Training Need Assessment
HR	Human Resource	ToRs	Terms of References
HRD	Human Resource Development	UN	United Nation
IBA	Institute of Business Administration	UNDP	United Nations Development Programme
ILO-ITC	International labor Organization-International Training Center	US	United States
INGOs	International Non-Government Organizations	USD	United States Dollar
IT	Information Technology	WFP	World Food Program
LIS	Land Information System	WIS	Weather Information System
LUMS	Lahore University of Management Sciences	W&S	Work & Services

Table of Contents

Executive Summary	1
Part 1: Sindh Profile	5
1.1 Background and Context	7
1.1.1 Sindh Socioeconomic Profile	7
1.1.2 Administrative Profile	8
1.1.3 Sindh Disaster Context	11
1.1.3.1 Flooding	11
1.1.3.2 Sea Level Rise	12
1.1.3.3 Tropical Cyclones	12
1.1.3.4 Wind Storms and Hailstorms	12
1.1.3.5 Tsunami	13
1.1.3.6 Drought	13
1.1.3.7 Heatwave	14
1.1.3.8 Deforestation and Forest Fires	14
1.1.3.9 Earthquakes	14
Part 2: DRM Institutional Setup in Pakistan and Sindh	15
2.1 DRM Legal and Institutional Setup	17
2.1.1 National level Institutions for DRM	17
2.1.1.1 Relief Department	18
2.1.1.2 Civil Defence	18
2.1.1.3 National Disaster Management Council (NDMC)	18
2.1.1.4 The National Disaster Management Authority (NDMA)	19
2.1.1.5 National Institute of Disaster Management (NIDM)	20
2.1.1.6 National Disaster Response Force (NDRF)	20
2.1.1.7 National Disaster Management Fund (NDMF)	20
2.1.2 Legislative Basis of DRM Legislation in Pakistan	21
2.1.3 Disaster Management Institutions in Sindh	21
2.1.3.1 Provincial Disaster Management Commission (PDMC)	21
2.1.3.2 Provincial Disaster Management Authority (PDMA)	22
2.1.3.3 District Disaster Management Authorities (DDMA)	24
2.1.4 Line Departments and DRM/DRR	24
2.1.4.1 The Role of Civil Defence	25
2.1.4.2 Irrigation Department Sindh	26
2.1.4.3 Works & Services Department (W&S)	27
2.1.4.4 The Role of Union Councils and Talukas	27
2.1.5 The Role of Community Organizations in Sindh	28
2.2 Disaster Risk Reduction and the Millennium Development Goals	28
2.3 Disaster Risk Reduction and Sustainable Development Goals	28
2.4 The Sendai Framework and the Role of Government in DRR	29

2.4.1	Summary of the Sendai Framework for Disaster Risk Reduction	30
2.5	Capacity Gaps confronted by DRM Institutions in Pakistan	30
2.5.1	The need for Institutional Capacity Building	31
Part 3: Institutional Assessment of PDMA and DDMA Sindh		33
3.1	The Sindh Resilience Project	35
3.2	Capacity Assessment of PDMA Sindh	35
3.2.1	Assessment Approach and Methodology	36
3.2.1.1	Capacity Assessment Tool-kit for Key Informant Interviews (KIIs)	36
3.2.2	Data Collection Process and Training	37
3.2.2.1	HR for Data collection	37
3.2.2.2	Data Sources	37
3.2.2.3	Key Informant Interviews of Government Officials (KIIs)	38
3.2.2.4	Data analysis undertaken for quantitative and qualitative data	38
3.3	Assessment and Recommendations for the Capacity Building of PDMA Sindh	38
3.3.1	Comparative Progress in the setup of DRM Institutions in Pakistan	38
3.3.2	Head Office PDMA Sindh	39
3.3.2.1	Governance	39
3.3.2.2	Current Human Resource	40
3.3.2.3	Recommendations for Human Resource	41
3.3.2.4	Functions of Departments	45
3.3.2.5	Estimated Budget in PKR for Proposed HR	48
3.3.2.6	Performance Management System for HR	49
3.3.2.7	Digital Library for HR Training	49
3.3.2.8	HR Manual/Guidelines	50
3.3.2.9	Decision Support System (DSS)	51
3.3.2.10	PDMA Sindh Operational Capacity (Head Office)	51
3.3.2.11	Assessment and Recommendations for the Emergency Operations Centre (EOC) PDMA Sindh's Head Office	54
3.3.2.12	Supply Chain System/ Inventory Management	55
3.3.2.13	Operational Manual	55
3.3.2.14	Stakeholder Coordination: horizontal and vertical linkages	56
3.3.2.15	Capacity for Disaster Risk Reduction at Head Office Level	59
3.3.2.16	PDMA Capacity for Mitigation and Preparedness Activities Including the vulnerable	60
3.3.2.17	Disaster Management Information System (DMIS)	61
3.3.2.18	Monitoring of National and International Governmental Organizations	62
3.3.2.19	PDMA Capacity for Financial Administration	63
3.3.3	District Level Coverage (District Disaster Management Authorities)	64
3.3.3.1	Current Situation of DDMA S	64
3.3.3.2	Establishment of DDMA S (HR, Facilities, Vehicles and Equipment)	69
3.3.4	Disaster Emergency Response Team (D.E.R.T)	73
3.3.4.1	Recommendation for Disaster Emergency Response Team (D.E.R.T)	73

3.3.4.2 Operational Role	73
3.3.4.3 Community Linkages	73
3.3.4.4 Training and Development	73
3.3.4.5 Recommendations for Disaster Emergency Response Team (D.E.R.T)	73
3.3.4.6 Proposed HR for Disaster Emergency Response Team (D.E.R.T)	75
3.3.4.7 Assessment and Recommendations for facilities at Divisional Offices	75
3.3.4.8 Capacity for Emergency Rescue Operations at Divisional Offices (search and rescue equipment and logistics)	77
3.3.4.9 Capacity for Emergency Relief (Supplies and Outreach)	80
3.3.4.10 Relief, Rehabilitation and Reconstruction	81
3.3.4.11 Disaster Insurance	83
Part 4: Summary of Recommendations	85
4.1 Summary of Recommendations	87
Part 5: Training Needs Assessment	93
5.1 Training Needs Assessment	95
5.1.1 The Purpose of the Training Needs Assessment (TNA)	95
5.1.2 The Training Needs Assessment (TNA) Process/Methodology	96
5.1.3 Prioritized Training Needs	97
5.1.3.1 Trainings Raised as a Requirement in the Questionnaire	97
5.1.3.2 Prioritized Training Areas from KIIs	98
5.1.4 Challenges and Further Recommendations	99
5.1.5 Three-Year Training Plan for PDMA Sindh, Divisional Offices and DDMA S	101
5.1.6 Proposed Training Institutions and Cost	104
5.1.7 Year-Wise Breakdown of Trainings	106
Part 6: Capacity Enhancement Plan	109
6.1 Four Year Physical Financial Phasing	111
Part 7: Annexures	121
Annex 1: Tools, Institutional Capacity Assessment of PDMA Sindh	123
Annex 2: ToRs for Proposed HR	128
Annex 3: Specification of Proposed Equipment	147
Annex 4: Picture Gallery	164

Tables

Table 1: District land areas, population and proportion of population at risk from disasters	8
Table 2: Internal and External Factors Affecting DRM Institutional Capacity and broad requirements	32
Table 3: List of Key Informant Interviews	38
Table 4: List of Current PDMA Sindh HR	41
Table 5: Proposed HR for PDMA Head Office	43
Table 6: Proposed HR for PDMA Head Office-(Cost/Year 2019-20)	48
Table 7: Proposed HR for PDMA Head Office-(Cost/Year 2020-21)	48
Table 8: Proposed basic furniture PDMA Sindh Head Office	52
Table 9: Current Hardware at PDMA Sindh Head Office	52
Table 10: Proposed IT and basic office equipment PDMA Sindh Head Office	52
Table 11: Current vehicles used by PDMA Sindh Head Office	53
Table 12: Proposed vehicles for PDMA Sindh Head Office	53
Table 13: Operational Cost for PDMA Head Office-(Cost/Year)	54
Table 14: Proposed equipment for EOC	54
Table 15: Estimated operational costs for EOC	54
Table 16: Proposed GIS Specific Hardware	60
Table 17: Proposed GIS Specific Software	60
Table 18: Suggested Reporting for I/NGOs	63
Table 19: Feedback received against key indicators – Divisional Level	66
Table 20: Proposed HR for 29 DDMA-(Cost/Year)	70
Table 21: Proposed Furniture with estimated cost for 29 DDMA	71
Table 22: Proposed Office facilities with estimated Cost for 29 DDMA	71
Table 23: Estimated Office Space Cost for 29 DDMA	71
Table 24: Estimated Office Renovation cost for 29 DDMA	71
Table 25: Proposed General, IT, Office Equipment with estimated cost for 29 DDMA	72
Table 26: Proposed Vehicles with estimated cost for 29 DDMA	72
Table 27: Proposed Operational Cost and POL for 29 DDMA-(Cost/Year)	72
Table 28: Proposed HR for 6 Divisional Teams-(Cost/Year)	75
Table 29: Estimated Construction Cost for 6 Divisional Offices (D.E.R.T)	76
Table 30: Proposed Furniture for 6 Divisional Offices (D.E.R.T)	76
Table 31: Proposed Facilities for 6 Divisional Offices (D.E.R.T)	76
Table 32: Proposed General, IT, Office Equipment for 6 Divisional Offices (D.E.R.T)	76
Table 33: Current Rescue Equipment and Transport	78
Table 34: Proposed Equipment for 6 Divisional Offices (D.E.R.T)	78
Table 35: Proposed vehicles for 6 Divisional Offices (D.E.R.T)	80
Table 36: Operational Cost and POL for 6 Divisional Teams-(Cost/Year)	80
Table 37: Current Emergency Relief Items	81
Table 38: Proposed Trainings by Department	101
Table 39: Trainings by Cost and Institution	104
Table 40: Year-Wise Breakdown of Training by Institution	106

Figures

Figure 1: Map of Sindh	7
Figure 2: Flood Map of Pakistan, NDMA	11
Figure 3: Sendai Framework for Disaster Risk Reduction	30
Figure 4: Sindh Flood Map	35
Figure 5: Capacity Assessment Framework	36
Figure 6: Current HR structure PDMA Sindh Head Office	40
Figure 7: Proposed Organogram for PDMA Sindh	44
Figure 8: Suggested DRM Sub-committees to improve coordination	57
Figure 9: Proposed Organogram for DDMA Sindh	70
Figure 10: Proposed Organogram for D.E.R.T	74
Figure 11: Delineation of areas for differing emergency response strategies	77
Figure 12: Training Need Assessment (TNA) Process	96

Executive Summary

Capacity Assessment and Capacity Enhancement Plan of PDMA and DDMA Sindh

Introduction to Disaster

Disasters are the combined product of hazards, vulnerabilities and risk resulting from the complex interaction of numerous factors, many of which are not in human control. However, it is possible to identify and precisely monitor the potentials of disaster by application of GIS technology and by singular attention of experts and dedicated staff specially trained in disaster management. It is possible to develop strategies for prevention or for minimizing the losses by strengthening resilience among communities and by enhancing capacities of human resources.

Sindh in the Context of Disaster

The geographic location and climatic conditions of Sindh renders it vulnerable to various natural and manmade disasters. The scope of its vulnerability to natural disaster includes but not limited to; Drought, Flood, Wind Storm/Hailstorm, Heat Waves, Forest Fire, Sea and River Intrusions, Cyclones, Earthquake and Tsunami. Whereas, the human-induced hazard includes but not limited to; scarcity of drinking and irrigation water, deforestation of mangroves, industrial wastages, chemical emissions, industrial and radiological accidents, unplanned urbanization and buildings, Water-logging and Salinities, Epidemics and Pandemics have also been threatening the Province. In recent decades, land and water resources have been significantly depleted in the Province as a result of drought and rising levels of salinity. This situation has worsened due to large-scale and repeated flooding threatening aquifers and surface water resources.

As a result of climate change and unsustainable farming practices, hydrological related hazards have had devastating impacts on Sindh's farming communities. As a downstream Province, the Sindh is under threat from sudden water releases from upstream areas, dam bursts, flash flooding, severe and prolonged drought. The effects of natural disasters and the mismanagement of water resources are severely hindering economic development in the Province. The impact of such disasters have been severe due to poverty prevailing in Sindh. These challenges reflect the situation in the Province, now confronting significant financing issues due to the large-scale and frequency of natural catastrophes in recent years. The risk level and impacts of natural hazards has been made worse in recent decades by deforestation, river erosion, poorly enforced building codes, weak infrastructure and building across natural drainage channels and unplanned settlements in low lying areas. The high levels of impact resulting from disasters in Sindh stems in part from the fact that large segments of the Provincial population live at subsistence levels and are scattered in remote areas. This makes search and rescue operations challenging and expensive.

Government Endeavors

Over a passage of time, the Government has made significant efforts to improve disaster management system. Key institutions within this system comprise National Disaster Management Authority (NDMA), Provincial Disaster Management Authorities (PDMA),

District Disaster Management Authorities (DDMAs) and Divisional level administrative setups for disaster management. However, due to increasing vulnerability and exposure of population in Sindh to natural disasters, the assessment finds that the present system of disaster management needs further work. With slow investment in the Government Authorities for disaster management, the current system in Sindh is functioning to a limited level, when compared to achievements in other countries in the region. Core areas of concern are; absence of dedicated emergency response mechanisms, the delayed setup of DDMA along with non-availability of dedicated and trained staff, shortage of manpower at PDMA and DDMA level and the need to set up the Emergency Operations Centers across the Province.

Sindh Resilience Project PDMA Component

In support of these efforts and the continuing level of natural disasters confronted in Sindh, with the financial support from World Bank, PDMA Sindh is implementing a project, titled “Sindh Resilience Project” (SRP). The project aims to strengthen capacity of Government of Sindh to manage risks from natural disasters and climate change and to improve resilience of communities and economic assets against natural disasters. To achieve the goal, a detailed capacity assessment and capacity enhancement of disaster management authorities has been carried out with the objective to seek gaps and suggest portfolio of investment to strengthen disaster management administration at Provincial and local level. The study also recommends need for (improvement in Disaster Risk Management system in the stages of pre, during and post-disaster periods). The assessment finds that the present setup of disaster management has limited functioning vis-à-vis vast the scope. Slow pace investment in the disaster management system is the main reason of the limited functioning in comparison to the achievements of other countries in the region.

Assessment Methodology

The assessment seeks to improve stakeholder coordination, upgrade the use of technology for disaster related monitoring, upgrade communication systems for rapid disaster response and mitigation, strengthen planning for preparedness and improve budgetary utilization for DRM/ DRR activities. A dedicated team of expert was deployed to carry out capacity assessment who employed the number of well-practiced tools of assessment included but not limited to; Field visits, In-person meetings with the concerned Stakeholders, FGDs, Consultative and brainstorming workshops, telephonic discussions with the experts of World Bank Group (WBG), National Disaster Management Authority (NDMA) and United Nations International Search And Rescue Advisory Group (UNINSARAG). Moreover, the Sendai Framework for DRR was also consulted for assessment purpose. The assessment was completed in collaboration with the concerned stakeholders of PDMA Sindh and SRP that aims to integrate and improve disaster resilience and mitigation activities.

Findings and Interventions

Keeping in view of the existing structure, currently there is no dedicated and specialized force to response multi-scenario disaster, like, building collapses, industrial disaster, drowning etc. In order to fill this gap, there is a need to establish a dedicated Disaster Emergency Response Team (D.E.R.T). It is recommended that 06 divisional teams comprising of required staff per division be raised for Karachi, Hyderabad, Larkana, Mirpurkhas, Shaheed Benazirabad and Sukkur. At later stage, the system will be cascaded at District level to ensure availability of timely response facility in all the districts of Sindh. During the course of assessment, it was

also revealed that the DDMA's are not fully operational, due to absence of dedicated and trained staff. To make DDMA's fully functional, it is proposed that a stipulated sized-team be posted in each District with a dedicated District Disaster Management Coordinator (DDMC). GIS application has become an essential part of an effective disaster management system. The proposed structure includes a position of GIS tool operator in each DDMA.

Few gaps were identified in PDMA's HR capacity with a significant shortage of technical staff in the critical areas of DRR/DRM. The paucity of technically strong staff has hindered the effective and efficient delivery of activities being mandated to PDMA. In addition to the technical staff and to meet minimum requirements, certain number of the proposed staff is urgently needed for placement in Provincial office and in Divisional warehouses. The remaining proposed staff can be hired later i.e. post completion of three warehouses in Shaheed Benazirabad, Larkana and Mirpurkhas. To have sustainability and ownership of the system, the newly proposed HR as well as the current HR on contract basis, needs to be placed under Government sanctioned posts. It is vital that staff begin to see working in PDMA Sindh as a longer-term career option to encourage investment in the institution and improve knowledge management and planning. The technical and response capacity of PDMA Sindh needs to be improved with the provision of GIS Lab and EOCs. Moreover, for improved functioning of PDMA provision of various Management Information Systems need to be made including but not limited to;

- i. Disaster Management Information System - DMIS
- ii. Geographical Information System - GIS
- iii. Financial Management Information System - FMIS
- iv. Logistic Management Information/Supply Chain Management System
- v. Decision Support System - DSS
- vi. Human Resource Information System - HRIS

Given Sindh's large land area, coverage is the second highest priority. In order to increase its field presence, field monitoring and ensure a rapid response to hazard situations, it is submitted that four more divisional offices are set up in Mirpurkhas, Larkana, Shaheed Benazirabad and Karachi. These hub offices would cover all administrative divisions in Sindh. This would also enable HR to specialise more by hazard/climatic zone e.g. on flooding in Hyderabad, cyclones and flooding in coastal areas and drought in the Mirpurkhas division. To further increase coverage in more remote areas, it is suggested that mobile units are set up for the purposes of hazard monitoring, communications and awareness raising. Logistical capacity needs to be improved for staff in the main PDMA office. In the light of on-going financial constraints, greater investment also needs to be made in community based disaster risk management (CBDRM) as a realistic and effective strategy for both response and mitigation. The assessment team recommends that endeavors are made to mitigate the impacts of disaster events in the Province as a high priority via disaster planning and response strategies. The strategies will require the use of technologies which can aid in the study and management of natural disasters including Geographical Information System (GIS), Remote Sensing (RS) and Global Positioning System (GPS) and hiring HR with relevant skillsets. Hazard planning needs to be strengthened as a key priority.

Capacity Building Plan

The findings of Training Needs Assessment (TNA) is outlined in the final section of the report along with a 3-year Capacity Building Plan. The TNA finds major capacity gaps in the concept of DRM/DRR, leadership training, the use of specialised technology for hazard monitoring

and data analysis and all institutional coordination for planning, resource use and response. DRR, financial management, contracts and procurement were other major areas identified for trainings. Identified trainings are the key areas of the PDMA Sindh. All areas highlighted are addressed in 3-year staged Capacity Building Plan mentioned in the final section of the report along with suggested training institutions and cost. Keeping in view the proposed capacity enhancement interventions in the said assessment report, it is proposed to have the copious budgets be allocated for capacity building of staff in PDMA and DDMA Sindh.

Conclusion

The report forwards a 3-year plan for the capacity building of PDMA Sindh, divisional offices, DDMA Sindh and PEOC Karachi. This plan lays out the need for HR and other resources along with estimated budget. The need for specialised HR and resources for PDMA Sindh and increasing outreach are major focus areas of the financial plan. Increase in outreach in the form of the proposed divisional offices and the set-up of D.E.R.T together, constitute a significant but necessary cost. Further investment areas include communications equipment, GIS, MIS and the better use of online database software.

Part 1: Sindh Profile



1.1 Background and Context

1.1.1 Sindh Socioeconomic Profile

Sindh covers a total land area of 140,914 (km²)¹ and supports a population of more than 47 million people². The Province has a population growth rate of 2.41 per annum over 1998-2017³ with 7.57 people per rural household and 6.53 per urban household. The population density in Keti Bundar in Thatta is the lowest (33.3% per sq. km²) and highest in Sakrand in District Shaheed Benazirabad. In keeping with national demographic profiling, a high proportion of the population is young and below 18 years of age with 27.83 million people of working age in 2007-08. The economically active population has risen in recent years from 12.66 million in 2007-08 to 14.07 million in 2010-11⁴. Population is rapidly increasing in the Province rising in rural areas increasing from 50.7% to 52.3% in 2010-11. 56.8% of Sindh's labour force resides in rural areas and 43.2% in urban showing the Province's largely agricultural economy⁵. Sindh's capital city of Karachi is located next to the Arabian Sea and where more than 16 million inhabitants reside⁶. The port of Karachi also serves as a hub for imports and exports for Pakistan. Sindh's second largest city of Hyderabad is located further inland holding a population of just over 2.1 million people.

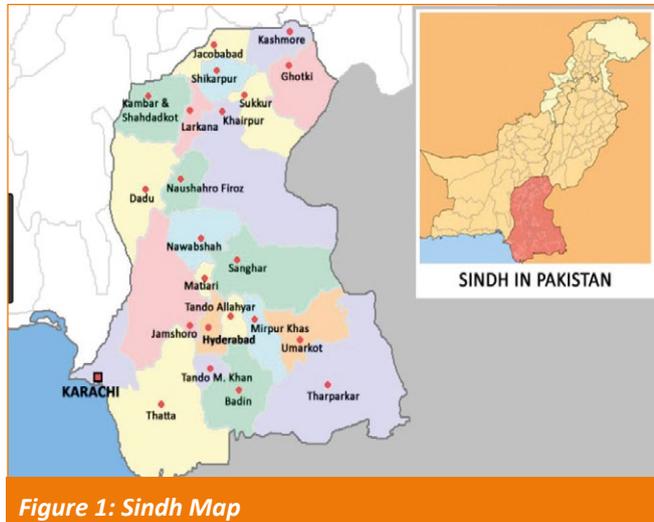


Figure 1: Sindh Map

Sindh's economy is very diversified with Sindh being a centre of heavy industry. Major sources of employment are construction, hospitality, commerce and finance. Predominant sectors comprising mining, with oil, petrol, coal and natural gas abundant in the region, manufacturing and daily wage labour. Agriculture is a significant sector in Sindh employing 45.7% of the population and rising to 74.7% in rural areas⁷. Irrigated agriculture is present along the Indus River. The main produce grown is cotton, rice, wheat, sugarcane, bananas and mangoes. Livestock and dairy is also a large sector with a livestock population of 46.28 million accounting for 21% of the national total⁸. 41% of income is derived from agricultural products, 34% from wages and 7% from livestock.

Although Sindh has the highest per capita income among the four Provinces of Pakistan, only 44.3% of people are reported as food secure. Within Sindh, Sanghar and Thatta are among the most deprived districts. However, with increasing economic activity, the rate of poverty in Sindh is decreasing and is lower than the national average. Despite this, 30% of the rural population in Sindh live below the poverty line with the rate of poverty in rural areas being

1 Ministry of Agriculture, Government of Sindh <http://sindhagri.gove.pl/history-sindh.html>

2 <http://unpo.org/members/7906> 2017

3 http://www.pbscensus.gov.pk/sites/default/files/DISTRICT_WISE_CENSUS_RESULTS_CENSUS_2017.pdf

4 Ibid

5 Ibid

6 <http://worldpopulationreview.com/world-cities/karachi-population/>

7 <http://www.finance.gov.pk/survey/chapters/12-Population08.pdf> Labour Force Survey 2006-07

8 Livestock census 2006

double than that of urban areas. This makes poverty reduction a critical development area in the Province⁹. The average monthly household income in Sindh is PKR 14,819 or PKR 19,185 for urban areas and PKR 10,410 for rural areas¹⁰. However, rural households spend 60% of the expenditure of urban households with food constituting 53% of the household budget.

Sindh is the second least developed Province in Pakistan in terms of human and social development. Sindh has a literacy rate of 45% being close to the national average of 43%¹¹. Higher ratios are present in districts containing large urban areas. In District Shaheed Benazirabad for example the urban literacy rate was almost twice that of rural areas (54.3% urban versus 26.5 % rural)¹². As in other parts of Pakistan, there are marked urban-rural and male-female differentials in literacy rates and HDI indicators. Female literacy is particularly low in rural Shaheed Benazirabad at 10.9%. In keeping with the national demographic pattern, districts in Sindh showed a negative sex ratio at the time of the last census. Sindh has high rates of maternal morbidity with a significant number of births not attended by a skilled birth attendant and a low contraception prevalence rate¹³. In Sanghar District the Total Fertility Rate is 4.9% and the contraceptive prevalence rate 15.1%. A large number of coastal talukas do not have any health centres or veterinary dispensaries, Basic Health Units (BHU) are also small in number. The coastal District of Thatta is also poor in terms of piped water being available to only 14% of housing¹⁴. There are further problems of access to potable water in many areas with arsenic found in groundwater in areas such as Shaheed Benazirabad.

1.1.2 Administrative Profile

In Sindh there are 06 divisions comprising of 29 Districts. A table of districts is provided below:-

Table 1: District land areas, population and proportion of population at risk from disasters¹⁵

Sr.	Administrative Units	Division	House Holds	Population 2017	Population 1998	Average Annual Growth Rate (1998-2017)
1	Badin District	Hyderabad	359,376	1,804,516	1,106,272	2.6
	Rural		282,574	1,414,138	872,490	2.57
	Urban		76,802	390,378	233,782	2.73
2	Dadu District		286,810	1,550,266	1,106,717	1.79
	Rural		217,340	1,167,097	871,600	1.55
	Urban		69,470	383,169	235,117	2.6
3	Hyderabad District		434,869	2,199,463	1,494,866	2.05
	Rural		71,523	366,708	233,568	2.4
	Urban		363,346	1,832,755	1,261,298	1.98

9 World Bank staff estimation based on PHIS 2000-1 and PSLM 2004-5 taken from Poverty Profile of the Islamic Republic of Pakistan (JBIC 2007)

10 Household Integrated Economic Survey (HIES) 2007-08, Pakistan Federal Bureau of Statistics

11 http://open_jicareport.jica.go.jp/pdf/12044442_02.pdf

12 SPO, "District Profile Nawabshah". (n.d.) The brief profile consists of information from secondary data. As the Report quotes the draft Census 2005-2006 one can presume it was put together in 2006

13 "Facts and Figures Pakistan 2002," Ministry of Education, GoP. Available: <http://www.moe.gov.pk>

14 Figures based on the 1998 Housing Census in World Bank study, "Socioeconomic Study and proposal for Livelihood Improvements: Badin and Thatta Districts, Sindh, Pakistan." Mimeo. 2005. p.16

15 <http://www.pbscensus.gov.pk/sites/default/files/Pakistan%20Population%20and%20Housing%20Census-2017%20National%20Report.pdf>

4	Jamshoro District		180,922	993,142	582,094	2.85	
	Rural		103,199	558,955	437,282	1.3	
	Urban		77,723	434,187	144,812	5.94	
5	Matiari District		143,023	769,349	494,244	2.35	
	Rural		110,382	586,759	380,934	2.29	
	Urban		32,641	182,590	113,310	2.54	
6	Sujawal District		153,018	781,967	513,702	2.23	
	Rural		136,397	696,262	452,667	2.29	
	Urban		16,621	85,705	61,035	1.8	
7	Tando Allahyar District		165,503	836,887	493,526	2.81	
	Rural		114,105	575,094	344,944	2.72	
	Urban		51,398	261,793	148,582	3.02	
8	Tando Muhammad Khan District		131,565	677,228	438,624	2.31	
	Rural		103,853	535,178	338,254	2.44	
	Urban		27,712	142,050	100,370	1.84	
9	Thatta District		184,868	979,817	599,492	2.61	
	Rural		152,881	803,759	508,214	2.44	
	Urban		31,987	176,058	91,278	3.51	
10	Karachi Central District	Karachi	538,983	2,971,626	2,277,931	1.41	
	Urban		538,983	2,971,626	2,277,931	1.41	
11	Karachi East District		509,239	2,907,467	1,472,896	3.64	
	Urban		509,239	2,907,467	1,472,896	3.64	
12	Karachi South District		327,518	1,791,751	1,478,047	1.02	
	Urban		327,518	1,791,751	1,478,047	1.02	
13	Karachi West District		634,459	3,914,757	2,089,509	3.35	
	Rural		44,051	283,247	73,568	7.34	
	Urban		590,408	3,631,510	2,015,941	3.14	
	Korangi District		421,618	2,457,019	1,561,742	2.41	
14	Urban		421,618	2,457,019	1,561,742	2.41	
	Malir District		338,257	2,008,901	976,193	3.86	
15	Rural		149,820	857,922	333,942	5.08	
	Urban		188,437	1,150,979	642,251	3.11	
16	Jacobabad District			177,867	1,006,297	727,190	1.72
	Rural			125,341	709,170	536,883	1.47
	Urban			52,526	297,127	190,307	2.37
17	Kashmor District			185,143	1,089,169	677,120	2.53
	Rural			140,872	835,556	509,199	2.64
	Urban			44,271	253,613	167,921	2.19
18	Kambar Shahdad Kot	Larkana	223,154	1,341,042	924,294	1.97	
	Rural		155,051	943,478	690,371	1.65	
	Urban		68,103	397,564	233,923	2.83	
19	Larkana District		261,331	1,524,391	1,001,608	2.23	
	Rural		140,795	822,754	596,129	1.71	
	Urban		120,536	701,637	405,479	2.92	
20	Shikarpur District		207,555	1,231,481	880,438	1.78	
	Rural		155,902	928,232	668,459	1.74	
	Urban	51,653	303,249	211,979	1.9		

21	Mirpur Khas District	Mirpur Khas	286,547	1,505,876	1,006,329	2.14			
	Rural		209,861	1,080,124	683,876	2.43			
	Urban		76,686	425,752	322,453	1.47			
22	Tharparkar District		Mirpur Khas	301,625	1,649,661	914,291	3.15		
	Rural			274,691	1,517,590	868,146	2.98		
	Urban			26,934	132,071	46,145	5.68		
23	Umer Kot District			Mirpur Khas	212,356	1,073,146	664,797	2.55	
	Rural				163,551	829,785	535,375	2.33	
	Urban				48,805	243,361	129,422	3.37	
24	Sanghar District				Shaheed Benazirabad	374,609	2,057,057	1,319,881	2.36
	Rural					270,891	1,468,652	920,185	2.49
	Urban					103,718	588,405	399,696	2.05
25	Naushahro Feroze District	Shaheed Benazirabad				275,693	1,612,373	1,087,571	2.09
	Rural					212,073	1,232,571	855,746	1.94
	Urban					63,620	379,802	231,825	2.63
26	Shaheed Benazirabad District		Shaheed Benazirabad			297,133	1,612,847	1,102,584	2.02
	Rural					210,984	1,123,510	776,160	1.96
	Urban					86,149	489,337	326,424	2.15
27	Ghotki District			Sukkur		296,670	1,646,318	968,797	2.82
	Rural					223,706	1,242,780	764,799	2.58
	Urban					72,964	403,538	203,998	3.65
28	Khairpur District				Sukkur	412,857	2,404,334	1,547,751	2.34
	Rural					280,079	1,628,484	1,042,543	2.37
	Urban					132,778	775,850	505,208	2.28
29	Sukkur District	Sukkur				263,042	1,487,903	931,387	2.49
	Rural					135,906	767,788	449,102	2.86
	Urban					127,136	720,115	482,285	2.13

1.1.3 Sindh Disaster Context

1.1.3.1 Flooding

Floods remain the dominant hazard in Pakistan, floods in 1997, 2010, 2012, 2013, 2014 and 2015 led to the loss of human lives and caused significant damages to public infrastructure and housing. The record July 2010 floods were caused by heavy monsoon rains. The northern parts of Pakistan were affected first by flash flooding caused by heavy concentrated rainfall in river catchments, augmented by snow-melt flow. This continuous heavy rainfall triggered flooding and landslides. The extent of rainfall caused barrages to collapse causing releases of further large volumes of water. The resulting flood water travelled from northern Pakistan down through to Sindh where 16 districts were affected. 20 million people were affected in the country as a whole with 475 people killed in Sindh and 8,065,846 people affected¹⁶. Economic losses were high with widespread damage to housing, crops and livestock losses. Damage to infrastructure is estimated to have exceeded USD 4 billion and damage to wheat crops at more than USD 500 million, the total economic impact is estimated at USD 43 billion.

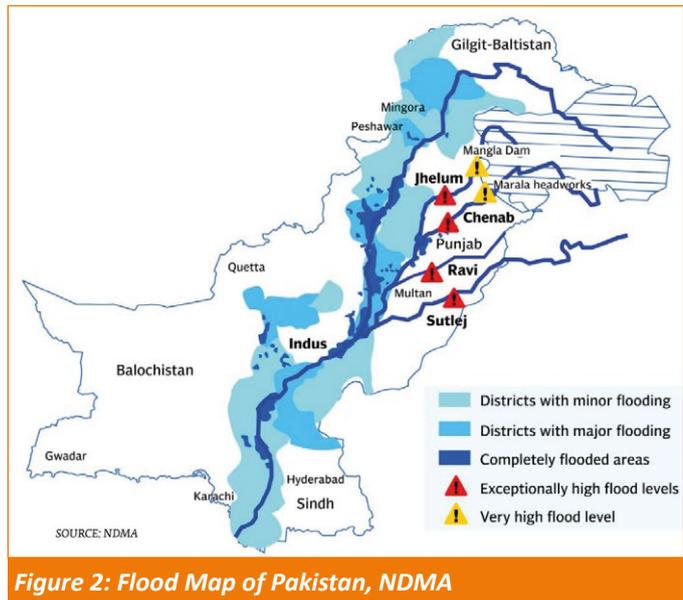


Figure 2: Flood Map of Pakistan, NDMA

Sindh was heavily hit by the August 2011 floods with the return of the monsoon rains. 462 civilians were killed and 8,634,995 people affected resulting in temporary and permanent migration. Extensive damage was done to the local economy of Sindh via crop damage. Badin and Mithi were the worst affected District. Other severely affected districts included Mirpurkhas, Jacobabad, Kamber Shahdakt, Dadu and Sanghar constituting 61% of the total inundated area. The total volume of water received in Sindh during the four weeks of the monsoon was 37 million acre-feet, 271% above the normal range for the period 1961 to 2011. Those in low-lying areas close to river banks were particularly vulnerable. Flooding returned to Sindh in 2012 with the death of 280 people and in 2013 when urban flooding in Karachi killed 47 people¹⁷. These disaster events have led to the disruption of economic activity and service delivery causing significant diversions in budgetary allocation and HR¹⁸. Sindh was also affected by the September 2014 floods making thousands of people homeless. Damages were concentrated in Ghotki with Kashmoor also affected by water torrents and settlements inundated in Kahirpur. Further riverine flooding was experienced in 2015.

Flood damages have been exacerbated in recent years by massive deforestation in the northern areas. With increased snow-melt and higher variability in rainfall, floods have become an annual event in the downstream Province of Sindh. Sindh is consistently one of

16 PDMA Sindh report – History of Flood Events Annex A

17 PDMA Sindh report – History of Flood Events Annex A

18 Government of the Punjab and Development Partners (2012), Pakistan: Public Financial and Accountability Assessment

the worst hit Provinces by flooding in Pakistan. Persistent damages from floods have made it difficult to meet growth targets due to widespread damages to crops and infrastructure supporting industry and trade. As of 2014, reconstruction costs for the impacts of flooding were estimated at around USD 120 million for Pakistan as a whole¹⁹.

1.1.3.2 Sea Level Rise

There are major concerns over the impact of sea intrusion along the coastal areas of Sindh if the current trends of sea erosion in the Indus delta and coastlines continue unchecked. This is predicted by the National Institute of Oceanography (NIO) to result in the sinking of Badin and Thatta in 30 years, followed by Karachi by 2060. Many coastal areas in Badin and Thatta had already been submerged due to rising sea levels, a significant part of Karachi's Malir area also been affected. Urgent steps are needed to prevent the loss of high-risk assets in the future, these steps may involve dam removal where necessary in order to prevent sediment loss and increase river discharge.



Picture of Sea Level Rised

1.1.3.3 Tropical Cyclones

The coastal areas of southeast Sindh are under threat from cyclones with residents evacuated to safe areas following cyclone warnings in 2014. Six districts were affected by the 2014 cyclone including Karachi, Thatta, Badin, Sujawal and Tharparker. There were again warnings of a cyclone affecting coastal areas off the Arabian Sea in Sindh and Balochistan in 2015. The cyclone impacts were reported to be in the form of torrential rains of around 25mm to 30mm and high winds of up to 40km². The worst recorded cyclone



Picture of Cyclone, Sindh

to date in Pakistan was Cyclone Yemyin which killed 200 people in Karachi alone. Cyclones previously only formed off the Bay of Bengal but have started forming in the Arabian Sea in recent years due to increased temperatures triggered by climate change.

1.1.3.4 Wind Storms and Hailstorms

Torrential rain and hailstorms are increasingly damaging crops, further threatening farmer investments. In recent years' winter rains have been accompanied by violent hailstorms and drops in temperature.

¹⁹ World Bank (2015) reference to request from the Pakistan Economic Affairs Division in 2014

1.1.3.5 Tsunami

Warnings of a possible tsunami affecting Sindh and Balochistan were issued in September 2016. It is unclear to what extent this was based on physical evidence but such events may be a real threat in the future.

1.1.3.6 Drought

Sindh suffers from severe drought conditions. As an agricultural based economy, economic activities in areas of Sindh are under major threat from drought with below quantities of rainfall received and higher rates of precipitation expected in the coming years. People are particularly affected in already water scarce areas such as Tharparkar and surrounding areas where food security is an ongoing challenge. This area suffers from frequent crop failures and the death of small animals as an otherwise stable income source



Picture of Drought, Sindh

greatly impoverishes communities. Due to these conditions, poverty is endemic in the area. 99 children and 67 adults are reported to have died as a result of water shortages, chronic malnutrition and poor health services in Tharparkar, Sindh 2014²⁰. More than 190 children and 22,000 adults were hospitalized in District Tharparkar in 2016 due to drought-related, water-borne and viral diseases with families traveling an average of 17km² to the nearest health facilities²¹. Tharparkar has now confronted four consecutive years of drought. Lower than average rainfall is frequently reported in talukas Chachro, Diplo, Khinser, Islamkot and Mithi. According to the Joint UN Needs Assessment Report, 62% of people in Jamshoro and 100% of people in Tharparkar are affected by ongoing water shortages resulting in harvests reducing by 34-53% and livestock by 48%²². A further drought event was concentrated in Kohistan in 2014/15.

Drought differs from other disasters in that the effects of it are often cumulate over a considerable period and may linger for years after the termination of the event. For this reason, the impacts of this 'creeping disaster' are less obvious and spread over larger geographical areas than damages from other hazards. For this reason, drought affects more people than any other type of natural hazard²³. Drought management has proved problematic as it affects long-term agricultural productivity and weakens long-term cropping strategies via the loss of productive assets. This is an aspect that has been worsened by climate change altering patterns of rainfall and temperature levels throughout the Province. The worst drought experienced to date took place in 1998-2000, which severely stunted economic activities in Sindh, Balochistan and South Punjab where less rainfall was received. Due to the combined effects of flooding and drought, Pakistan now spends USD 4 billion annually on cotton imports to support its textile industry. In 2016, the country's cotton production fell by 15.5 million

20 OCHA Humanitarian Bulletin Pakistan Issue 24 | 16 February – 20 March 2014

21 Global Emergency Overview Snapshot: 10 – 16 February 2016

22 UNICEF, Pakistan Situation Report # 01, January - June 2016

23 <http://www.ndmc.pmd.gov.pk/quater216.pdf>

bales to 10.9 million²⁴. The Government is currently investing in heat resistant varieties of cotton.

1.1.3.7 Heatwave

Sindh suffered from a severe heatwave in 2015. This phenomenon is becoming more common with climate change and requires the provision of more shaded communal spaces using greenery and urban design. In such situations, water and fans should also be made available to the most vulnerable such as the elderly people, sick and children.

1.1.3.8 Deforestation and Forest Fires

Sindh has 751,063 acres' Coastal forests of Mangroves and 605,583 acres' Riverine forests on both banks of the River Indus, these forests play key role in the mitigation of climate change. The forests provide livelihoods to dependent communities, manage ecosystem and biodiversity, reduce disaster risks and mitigate climate change impacts. Mangroves forests in Sindh reduce disaster risks of sea erosion, cyclones and tsunamis. Riverine forests reduce the risk of floods, act as windbreaks and reduce the risk of breaches in embankments of the Indus River in flood season. However, due to deforestation coastal belt of Sindh and most of the area including cities are at risk of inundation during flood season. Temperatures have also risen and climate change impacts have badly affected agriculture and other sectors. Due to the shortage of water in the River Indus, short-term policies and political influence in the forest department; 90% of forest cover has been deforested. Nearly the entire forest land cleared after deforestation is under occupancy for agriculture and today the entire forest land is under threat of Agriculture conversion. Deforestation is a common hazard in Sindh and occupying forest land or setting fire to it with a view to future use for agriculture is not considered as a major crime²⁵.

1.1.3.9 Earthquakes

Pakistan is one of the most seismically active country in the world, being crossed by several major faults and overlapping both the Eurasian and Indian tectonic plates. Sindh lies on the North-Western edge of the Eurasian plate on the Indian plate in South Asia and hence is under threat of earthquakes as the two tectonic plates collide. Sindh has been increasingly affected by relatively mild earthquakes in recent years. An earthquake of the magnitude of 4.5 struck Sindh in May 2014 at a depth of 14.7 kms. A mild earthquake measuring 3.5 also hit Sindh's coastal belt in 2015 with its Expanded Program for Immunization (EPI) center in Badin and a depth of 10 kms. Sindh was affected again in 2016 when an earthquake measuring 4.9 struck parts of the Province with one person killed and six injured. Its EPI center was 60 kms North-East of Benazirabad at a depth of 20 kms in 2015.

²⁴ <http://www.reuters.com/article/us-pakistan-cotton-drought-idUSKCN0Y31UE>

²⁵ Zain Daudpoto 2014, Global Forest Watch, The Sorrows of Forests in Sindh, Pakistan

Part 2:
DRM Institutional Setup
in Pakistan and Sindh

2.1 DRM Legal and Institutional Setup

Pre-2005, there was no DRM system of institutional set up in Pakistan for disaster response. However, the Government was unable to respond to the massive scale of destruction caused by the 2005 earthquake with Pakistan's existing authorities having neither the experience nor the capacity to take on the relief program. The authorities also confronted time constraints imposed by the immediate needs of people post-disaster and demand for action from communities throughout the region. This factor highlighted the need for all



Picture of Earthquake

initiatives to be people focused and driven from the field level requiring strong M&E and feedback mechanisms. The multi-sectoral requirements meant that expertise was needed across disciplines. The scale and nature of required activities also necessitated the involvement and consensus of multiple stakeholders with the need to incorporate donor requirements.

The Federal Relief Commission (FRC) was therefore formed as a central unit mandated “to manage and coordinate the entire relief effort”. This was set up with the realization that the long-term recovery process was a huge task and that a separate institutional setup needed to be established to rapidly drive and own activities. At the close of immediate relief work in March 2006, the FRC was subsumed into Earthquake Reconstruction and Rehabilitation Authority (ERRA), a time-bound central authority to tackle residual relief, early recovery issues and more formally, long-term reconstruction and rehabilitation. Further to this, the Government passed the National Disaster Management Authority (NDMA) Ordinance on December 21, 2006, paving the way for the establishment of the National Disaster Management System.

The newly established DRM system is responsible for end-to-end management of disasters including preparation/mitigation in response to early recovery to finally reconstruction and rehabilitation. Promulgation of National Disaster Management Act marked a shift in approach to how disasters were addressed from simply relief and response to preparedness and mitigation with a disaster risk management regime put into place. However, the definition of disasters provided under the NDM Act 2010 still needs to be broadened e.g. to include negligence. The Act also does not qualify disasters as events demanding high quantum responses and fails to include disaster mitigation and capacity building or mention all steps, procedures and arrangements to ensure effective DRM. The most important omission in the Act remains the failure to define ‘declaration of disaster’ and to outline the procedures and processes for this to take place at the national, provincial or local level.

2.1.1 National level Institutions for DRM

The DRM system in Pakistan comprises of national, provincial and District level institutions which work alongside rescue teams and Emergency Operating Centres. These institutions are responsible for handling all stages of the disaster cycle including pre, during, post and long-

term rehabilitation. The National Disaster Management System in Pakistan comprises the following institutions.

2.1.1.1 Relief Department

The Relief Department was formed under the West Pakistan 1958 National Calamities Act, focusing on Prevention and Relief Operations. This Act provides for the maintenance and restoration of order in areas affected by certain calamities and for the prevention and control of and relief against, such calamities or any other calamity which, in the opinion of the Government, warrants action under this Act which was being adopted as mirror legislation in the four Provinces.

2.1.1.2 Civil Defence

This institution was established under the Civil Defence Act 1952 (later amended in 1993). The Act originally mandate the envisaged Civil Defence Department to ‘take measures not amounting to actual combat, for affording defence against any form of hostile attack by a foreign power or for depriving any form of hostile attack by a foreign power of its effect, wholly or in part, whether such measures are taken before, during or after the time of the attack’. In 1993, its mandate was expanded to peacetime activities as well, including: remedial measures against “natural or man-made” disasters e.g. rescue, evacuation and relief measures, supplement supporting anti-flood efforts by the Army and providing HR support for flood training in rescue and relief work.

2.1.1.3 National Disaster Management Council (NDMC)

NDMC was established under the Chairmanship of the Prime Minister of Pakistan as a Government coordination body with NDMA as its executive arm.

Institutional set-up

As the highest decision making body on disaster management and headed by the Prime Minister. NDMC members include the Leader of the Opposition in the Senate and the National Assembly, Ministers for Defence, Health, Foreign Affairs, Social Welfare and Special Education, Communications, Finance and Interior, Governor Khyber Pakhtunkhwa (for FATA), Chief Ministers of all the Provinces, Chairman, Joint Chief of Staff Committee or his nominee and representatives of civil society or any other person appointed by the Prime Minister are its members.

Legislated role

1. Subject to the provisions of NDM Act 2010, the National Commission shall have the responsibility for laying down the policies, plans and guidelines for disaster management.
2. Without prejudice to generality of the provisions in sub-section (1) of the NDM Act 2010, the National Commission may:
 - Lay down policies on disaster management,
 - Approve the National Plan,
 - Approve plans prepared by the Ministries or Divisions of the Federal Government in accordance with the National Plan,
 - Lay down guidelines to be followed by Federal Government and Provincial Authorities,
 - Arrange for and oversee, the provision of funds for the purpose of mitigation measures, preparedness and response,

- Provide such support to other countries affected by major disasters as the Federal Government may determine,
- Take such other measures for the prevention of disaster, or the mitigation, or for preparedness and capacity building for dealing with disaster situation as it may consider necessary.

Coordination mechanism:

The Deputy Director Coordination is appointed to oversee coordination with all partners under NDMA. Coordination is undertaken by NDMA for preparedness, disaster risk management and operations. Each of these forms and mechanisms for coordination is outlined.

Coordination for preparedness

- Coordination for preparedness is undertaken in the form of pre-monsoon review/conferences with NDMA chairing the regional and consultative process for the preparation of monsoons while facilitating the compilation of provincial/regional planning and inputs to build a coordinated national response against the approaching season.

Coordination undertaken by the Disaster Risk Reduction Wing

- Project Coordination: responsible for planning, coordination, execution, management and monitoring of all projects executed by NDMA with donor(s)/development partner(s) assistance,
- Coordination with UN Agencies, bilateral/multilateral organizations and I/NGOs with respect to all matters in the given domain,
- Coordination with all stakeholders within the given domain of DRR.

Coordination undertaken by the Operations Wing

- Coordination of humanitarian assistance and rescue, relief and recovery, rehabilitation efforts with Federal/Provincial authorities and organizations as well as all stakeholders including UN Agencies and I/NGOs.

2.1.1.4 National Disaster Management Authority (NDMA)

NDMA was formed as an executive arm of the NDMC to coordinate, monitor and implement national policies and strategies for disaster management.

Institutional set-up

NDMA is directly under the Prime Minister's Office.

Legislated role

1. Under the 2010 Act, NDMA oversees its provincial and District affiliates.
2. Without prejudice to generality of the provisions in sub-section (1) of the NDM Act 2010, NDMA may:
 - Implement, coordinate and monitor disaster management institutions,
 - Coordinate response in the event of disaster situation and provides guidelines or directions to the concerned Ministries or Provincial Governments and Provincial authorities for measures to be taken in response to disaster situations,
 - Prepare the national plan to be approved by the National Commission,

- Implement, coordinate and monitor the implementation of national policy,
- Lay down guidelines for preparing disaster management plans by different ministries and departments and the Provincial authorities,
- Provide necessary technical assistance to the Provincial Governments and provincial authorities to prepare disaster management plans in accordance with the guidelines laid down by the national commission,
- Promote general education and awareness in relation to disaster management.

At present, there are no formal coordination mechanisms set up between NDMA and provincial disaster management institutions in the way.

2.1.1.5 National Institute of Disaster Management (NIDM)

NIDM is tasked to develop training modules, undertake research and documentation in the field of Disaster Management and organize training programmes. The Institute will formulate and implement a comprehensive Human Resource Development Plan, covering all aspects of Disaster Management. The NIDM will also provide assistance in national and provincial level policy formulation in the field of Disaster Management. NIDM develops educational materials for Disaster Management including Academic and Professional Courses and will promote awareness among stakeholders, including college or school teachers and students, technical personnel and others associated with multi-hazard mitigation, preparedness and response measures.

2.1.1.6 National Disaster Response Force (NDRF)

The Ordinance permits NDMA to establish a National Disaster Response Force for the purpose of specialist response to a threatening situation or disaster. The Force shall be constituted in a prescribed manner and the terms and conditions of service of the members of the Force shall be laid down. The general superintendence, direction and control of the NDRF shall vest in the NDMA.

2.1.1.7 National Disaster Management Fund (NDMF)

Under Ordinance, the Federal Government has a provision to constitute a National Disaster Management Fund through notification, for meeting any threatening situation or disaster.

The Fund shall be financed from the following sources, namely:

- (a) Grants made by the Federal Government,
- (b) Loans, aid and donations from the national or international agencies,
- (c) Donations received from any other source.

NDMF shall be kept in one account maintained in local or foreign currency in scheduled banks in Pakistan and shall be operated in accordance with the directions by the NDMA. The Fund shall be administered by the NDMA towards meeting the cost for emergency preparedness, response, mitigation, relief and reconstruction.

Each Provincial Government shall establish a Provincial Disaster Management Fund. It shall be financed through grants made by the Federal Government/Provincial Governments; loans, aid and donations from the national/international agencies. This fund shall be used for meeting the expenses for emergency preparedness, response, mitigation, relief and reconstruction in the Province.

2.1.2 Legislative Basis of DRM Legislation in Pakistan

It should be noted that most disaster-related legislation in Pakistan has not aimed at addressing issues in a holistic manner but was designed to respond to specific needs arising out of necessity. Due to this factor, disaster-related legislation in Pakistan does not cross reference or endeavour to relate or incorporate the provisions of previous laws.

Disaster Management is under the exclusive jurisdiction of the Provinces as it is not included in the Federal legislative list nor the defunct concurrent list as enumerated in the fourth schedule of the Constitution (Fourth Schedule, Article 70 (4)). Furthermore, Article 142 (c) of the Constitution states that Parliament shall have no powers to make laws with respect to any matter not enumerated in either the Federal Legislative List or the Concurrent Legislative List²⁶. For this reason, the NDM Act 2010 was enacted by invoking the powers given to the Federal Legislature under Article 144 which confers the power upon Federal Legislature to legislate for two or more Provinces, if two or more provincial legislatures pass resolutions to the effect that the parliament may by law regulate any matter not enumerated in either legislative list in the fourth schedule of the constitution. Therefore, the NDM Act was promulgated after the Parliament was empowered by four provincial assemblies through their resolutions.

2.1.3 Disaster Management Institutions in Sindh

2.1.3.1 Provincial Disaster Management Commission (PDMC)

PDMCs were formed with their respective PDMA to oversee disaster-related matters at Provincial level.

Institutional set up

PDMC has established with the following structure: Chief Minister Sindh (Chairman), Leader of the Opposition, One member nominated by Leader of Opposition, Any member of the Cabinet, who shall be the Vice Chairperson, Finance Minister, Minister for Revenue, Minister for Law, Three Elected Representatives, Chief Secretary Sindh, Relief Commissioner Sindh, Chairman P&D, Home Secretary, Finance Secretary, DG PDMA (Secretary of the PDMC), Secretary Sindh Red Crescent and Four members of NGOs or Civil Society.

Legislated role

The Provincial Disaster Management Commission is the highest policy-making body for disaster management in Sindh²⁷. PDMC has established to oversee the provision of funds and set guidelines on Provincial Disaster Management Policy and the Provincial Disaster Management Plan for Sindh. The key role of the PDMC is to:

- Formulate the Provincial Disaster Management Policy,
- Prepare a Provincial plan in accordance with guidelines provided by the National Commission,
- Approve the disaster management plan prepared by the Provincial Departments,
- Review the implementation of the plan,
- Oversee the provision of funds for mitigation and preparedness measures,
- Review the development plans of Provincial departments and ensure that prevention and mitigation measures are integrated therein; and

²⁶ http://www.actionaid.org/sites/files/actionaid/policy_brief-governance_issues_in_drm.pdf

²⁷ <http://pdma.pitb.gov.pk/pdmc>

- Review the measures have been taken by Provincial Departments for mitigation, capacity building and preparedness and issue necessary guidelines/directions.

2.1.3.2 Provincial Disaster Management Authority (PDMA)

Institutional set up

Following officials lead PDMA operations: Minister Rehabilitation Department (Chairperson), Chairman Zakat Council Sindh, Senior Member Board Of Revenue (SMBOR)/Relief Commissioner Board of Revenue, Secretary Finance Department Government of Sindh (GoS), Secretary Zakat Department GoS, Secretary Rehabilitation Department GoS, Secretary Irrigation Department GoS, Secretary Local Government Department GoS, Secretary Local Government, Director General PDMA Sindh, Secretary Health Department GoS, Director Operations PDMA, Director Administration and Finance PDMA and any other members to be co-opted by the Chairperson.

Legislated role

1. The Provincial Disaster Management Authority (PDMA) is a comprehensive endeavour towards combating natural and man-induced disasters at the Provincial and local level and in securing lives and livelihoods of the affected people²⁸.
2. Constituted under the NDM Act (National Disaster Management Act) in 2010, PDMA may:
 - Coordinate response in the event of a disaster,
 - Coordinate and monitor the implementation of the National Policy, National Plan and Provincial Plan,
 - Formulate the Provincial Disaster Management Policy with the approval of the Provincial Commission,
 - Examine the vulnerability of different parts of the Province to various disasters and specify prevention or mitigation measures,
 - Lay down guidelines for Disaster Management Plans by the Provincial Departments and District Authorities,
 - Evaluate preparedness at all Governmental or Non-Governmental levels to respond to disaster and to enhance preparedness,
 - Give directions to any Provincial Department or Authority regarding actions to be taken in response to disaster,
 - Promote general education, awareness and community training in this regard,
 - Provide technical assistance or give advice to District authorities and local authorities,
 - Advise the Provincial Government regarding financial matters in relation to disaster management,
 - Ensure that prescribed construction standards are complied,
 - Ensure that communication systems are in order and disaster management drills are being carried out regularly; Perform such other functions as may be assigned to it by the National Authority.

PDMA Sindh has notified to formulate the Provincial Disaster Management Policy, to coordinate and monitor the implementation of the National Policy, National Plan and Provincial Plan, to examine the vulnerability of different parts of the Province to different disasters and specify prevention or mitigation measures to lay down guidelines for preparation

²⁸ <http://pdma.gop.pk/overview>

of Disaster Management Plan by Provincial Departments and District Authorities to evaluate preparedness at all Governmental and non-Governmental levels to respond to disasters and to enhance preparedness and advise them regarding financial matters in relation to disasters management.

PDMA's Role in Coordinating Response and Current Coordination Mechanisms

The most critical part of PDMA's scope of work is in providing a platform for all Provincial departments to come together and strategies management and response to disasters. PDMA is responsible for spearheading Government response acting as a hub to manage the coordination of all stakeholders at the District, Provincial and National levels during disaster periods. In case of a disaster, PDMA oversees search, rescue and evacuation of affected peoples and takes concrete measures to provide immediate relief, early recovery and long-term rehabilitation.

Government Coordination and Mechanisms

PDMA acts as the coordinating authority which articulates the coordination mechanism between key Provincial Departments including Rescue 1299, Urban Search and Rescue, Civil Defence, District Government, Sindh Irrigation Department, Sindh Police and immediate rescue and rehabilitation operations. Regular meetings are carried out with the Pakistan Army, NDMA and PDMA, for coordination purposes and to ensure synchronised response. In case of emergencies PDMA works closely with District Administrations to organize initial subsequent assessments of disaster affected areas and determine the course of action to ensure long-term rehabilitation.

Challenges in Coordination

Linkages between NDMA and PDMA are at present weak with no clear coordination mechanism between NDMA and DDMA. Since the National Disaster Risk Framework was prepared in 2007, Pakistan has experienced heavy losses from flooding in 2010, 2011, 2012 and 2013. The coordination mechanism of disaster management among National, Provincial and local levels needs to be strengthened²⁹, particularly in terms of policy integration and technical and financial resource mobilization. There is currently no assigned professional for coordination with Federal and District level institutions at PDMA, an aspect recommended in the report. It is envisioned that in future, PDMA will take a stronger role in leading stakeholders in disaster response and management. This will enable PDMA to better fulfill their original mandates and improve the lines of communication and efficiency of disaster-related institutions.

It should be noted that in order to strengthen the authority of PDMA Sindh and its powers to push other departments on coordination and DRM/DRR activities, that it needs to be recognized as a formal department by the Provincial Government of Sindh. Given that PDMA Sindh's main mandate is as a coordinating institution, efforts should be made towards this change as a matter of urgency.

29 J Int Dev 22:218-232 Government of Pakistan (GoP) (2012) National Climate Change Policy. Ministry of Climate Change, Government of Pakistan, Islamabad

2.1.3.3 District Disaster Management Authorities (DDMA)

Institutional set-up

According to the NDM Act 2010, each Provincial Government shall establish a District Disaster Management Authority for every District. The District Authority consists of Head of the local council at the District level who will be Chairperson, District Co-ordination Officer, District Police Officer, Executive District Officer Health and other District level officers appointed by the District Government.

Legislated role

Disaster Management at the District level is vital serving as the lynch-pin for the entire DRM framework, yet legislation does not provide for a mandatory (legally enforceable) mechanism for making DDMA functional. The establishment of these institutions is now a high priority. The key role of DDMA are:

- To prepare a Disaster Management Plan including District Response Plan,
- To coordinate and monitor the implementation of the National Policy Provincial Policy, National Plan, Provincial Plan and District Plan,
- To ensure that the areas in the District vulnerable to disasters are identified and measures for the prevention of disasters and the mitigation of its effects are undertaken by the departments,
- To ensure that the Guidelines for prevention, mitigation, preparedness and response measures as laid down by the NDMA and the PDMA are followed by all Departments,
- To give directions to authorities at the District level to take all such measures for the prevention or mitigation of disasters as may be necessary,
- To lay down Guidelines for preparation of Disaster Management Plans by the Departments and local authorities in the District,
- To set up, maintain, review and upgrade the mechanism for early warnings and dissemination of proper information to public,
- To prepare, review and update District Response Plans and Guidelines,
- To coordinate with local authorities and give them Guidelines to ensure that pre-disaster and post-disaster management activities in the District are carried out promptly and effectively.

2.1.4 Line Departments and DRM/DRR

In the first quarter of 2010, the Government passed the 18th Amendment to the Constitution, a critical portion of which dealt with the autonomy of the Provinces. This was a long-standing demand of the Provinces and since the passage of the amendment, many social and developmental issues can no longer be decided and planned at the Federal level, with a scope for Provincial variations in approaches. For this reason, Provincial level line departments are gradually assuming responsibilities formally undertaken at the Federal level including responsibilities in disaster management.

NDMA states that PDMA may give direction to any Provincial department in regards to actions to be taken in response to disasters. They must further provide technical assistance for authorities to carry out their functions effectively and advise Provincial Government on financial matters related to disaster management. There have been calls for the addition of a liability clause for the DRM Act, to ensure that line departments carry out their duties in

DRM/DRR with enforcing the implementation of recommendations to mitigation flooding an ongoing issue³⁰.

2.1.4.1 The Role of Civil Defence

The most important mandate of the Civil Defence Department is to prepare and train the community in meeting any disaster with a view to mitigating the effects of the disaster. The Department was established in 1948 under the name Air Raid Precaution (ARP) in the aftermath of World War-II. In 1951, the organization was renamed as Civil Defence Department under the Civil Defence Ordinance 1951 (later amended as Civil Defence Act 1952) and Civil Defence Special Power Rules 1951. In 2001, the Department was devolved after devolution of power plan was promulgated. The Department has devoted itself to the peacetime needs of civil defence in spite of limited staff, resources and financial constraints. The main functions of the Department during peacetime are to provide Bomb Disposal Service, organize warden service, inspection of fire protection measures and impart trainings to the general public, Government departments, institutions and industrial/commercial concerns. The administrative department of the Civil Defence Department is the Home Department.

Provincial Level Functions

At the Provincial level, Civil Defence performs the following functions:

- Prepares and implements Civil Defence Policies,
- Liaise with Armed Forces for Fortress and Air Defence on matters relating to Civil Defence,
- Facilitates the Home Department in periodic review to update War Schemes at Provincial levels,
- Ensures implementation of War Schemes in the Districts,
- Monitors the performance of local Civil Defence Organization in the Province,
- Issue directives to local Civil Defence authorities,
- Arrange trainings for Civil Defence instructors and volunteers,
- Coordinates working among the Civil Defence and various departments/agencies,
- Coordinates with the Federal Government and sends periodical reports to the higher authorities,
- Recommends the Federal Government regarding matters of classification of towns.

District Level Functions

Following functions are being performed by Civil Defence:

- Provide Bomb Disposal Service at District level,
- Organization of Warden Service in classified towns and train its volunteers for Defence Services,
- Assist the Government departments/local administration in peace and war emergencies through the Warden Service and its volunteers,
- Inspection of industrial/commercial concerns for implementation of fire safety/fire-fighting and civil defence measures and render technical guidance to the management,
- Conduct training on basic civil defence, first aid, fire safety and fire-fighting to general public, institutes, Government offices, industries and volunteers,
- Hold large and small scale civil defence demonstrations and exercises,
- Preparation and implementation of civil defence policies and plans/schemes at the

30 Sarwar Bari (2015) CEC Member, Provincial Coordinator NHN, National Humanitarian Network Pakistan Disaster Management and Local Governments

local level as per report of the Civil Defence Committee on defence planning or as per instructions issued by the Federal/Provincial Government,

- Carry out operational and relief activities,
- Suggested Coordination Mechanism: It is suggested that the District level offices and equipment of Civil Defence is utilised for DDMA. This would enable the pooling of resources, office space, technical HR in the way of engineers, improve capacity for field assessments and District level coordination.

Suggested Coordination Mechanism: It is suggested that the District level offices and equipment of Civil Defence is utilised for DDMA. This would enable the pooling of resources, office space, technical HR in the way of engineers, improve capacity for field assessments and District level coordination.

2.1.4.2 Irrigation Department Sindh

Sindh's Irrigation Department has a critical role during flooding and monsoon seasons in the redistribution flood waters and in monitoring flood levels for early warnings.

Roles and Responsibilities

- The Irrigation Department should ensure that the following actions are taken well before the onset of the monsoon season,
- Irrigation Department has to work in coordination with other civil authorities to take care of the encroachments on embankments and spurs,
- Continuous monitoring of the water levels in the major water channels and dams,
- In case of rising discharge rates, the Irrigation department issues early warnings to PDMA and other districts about such discharges,
- Protection of barrages, settlements, canals, bunds, spurs and communication infrastructure such as railways, highways etc., has to be ensured. Vulnerable embankments have to be properly protected and strengthened,
- The Chief Engineer should review the zonal plans and prepare a comprehensive contingency plan for the entire department,
- Chief Engineer (Drainage and Floods) through the Executive Engineers should ensure the inspection of flood works to identify damages to embankments or the encroachments blocking passage of water in various channels,
- The department must maintain a state of readiness and ensure the availability of stones and other flood-fighting materials in proper stocks prior to the monsoon season,
- Preparation to reinforce or breach a section in case of any emergency should be in place,
- The Irrigation personnel is deputed at headworks and vulnerable points for timely warning equipped with wireless sets (base and mobile) to communicate the discharge rates,
- Irrigation Department may manage an increase in water levels by diverting excess water into the breaching sections.

Coordination Mechanism

It is mandated that the Irrigation Department setup a flood warning and control room in coordination with the allied departments for coordinating planning, mitigation and response activities. Chief Engineers and Executive Engineers may be used as key contacts for coordination.

2.1.4.3 Works and Services Department (W&S)

Works and Services Department, Government of Sindh is responsible for providing services in the form of road network and building facilities for various departments of Government of Sindh. Its main objective span around planning, designing, construction and maintenance of Roads/Highways and Buildings of the Province.

Post-disasters, the W&S department restores and repairs infrastructure to restore communication. In case of any disaster or calamity, the W&S Department will ensure that the following measures are in place:

- Executive Engineers supervise the local emergency response and ensure provision of equipment such as heavy machinery, torches, lamps, red lights and even the steel floating and bailey bridges to the District administration when needed,
- W&S department will conduct an immediate survey of the calamity-hit area in order to assess damage to local roads bridges and allied infrastructure. Repair work is based on this early survey and analysis. The department prepares alternative route plans to guide commuters to roads that are still open and safe for thoroughfare,
- Bridges are important links in any road network and their repair and restoration are critical for rehabilitation. The help of the Pakistan Army's similar resources may be called in if needed,
- In case a particular road or bridge is damaged by the disaster, the Sub Divisional Officer along with Executive Engineer Incharge would visit the affected site and report the extent of the damage and possible remedial measures to the Superintending Engineer and Chief Engineer,
- Executive Engineer would then inspect the possibility of diverting traffic on other roads and would impose speed and load restrictions on roads that are susceptible to any damage. In case the road is blocked by a landslide or falling debris is threatening ongoing traffic, the Sub Engineer and Road Inspector will blast the land mass with explosives and clear the rest of the debris with heavy machinery or manual labour.

Coordination Mechanism

The Works and Services department has divided its geographic jurisdiction in Provincial Highway Circles, headed by a Superintending Engineer who is responsible for disaster response in his particular circle. The Superintending Engineer is the key contact person for PDMA and DDMA in their assigned jurisdiction.

2.1.4.4 The Role of Union Councils and Talukas

The Local Government Act 2013

The Local Government Act 2013, of all Provinces and the Disaster Management Act 2010, shows functional discrepancies in the expected role of Union Councils and Talukas. By the end of 2015, local councils were made functional in all Provinces. However, in the Local Government Act 2013, DRM responsibilities are not clearly mentioned. Whereas, DRR is missing from local Government laws which unlike National level legislation, remain relief and response-oriented. The ruling parties in all Provinces must now harmonise local Government laws with the Disaster Management Act in light of the National Disaster Management Policy, the Sendai DRR framework and the SDGs.

2.1.5 The Role of Community Organizations in Sindh

Community and local level Government are acknowledged to have a major role in disaster response activities as the first responders in periods of emergency. Although investment was placed in early Community Based Disaster Risk Management (CBDRM) programmes, further capacity building is required to facilitate cooperation between local Government and communities on DRM/DRR activities. Much research has been completed on CBDRM programme internationally and knowledge/training needs to be updated in this regard.

2.2 Disaster Risk Reduction and the Millennium Development Goals

Due to significant economic losses and damage to infrastructure, disasters triggered by natural hazards have cumulatively undermined efforts to achieve the MDGs. The impacts of hazards are worsening with the increased exposure of populations and economic assets, climate change and ecosystem degradation resulting in livelihood changes. The UN Strategy for Disaster Risk Reduction states that reducing the risks of disaster and increasing resilience to natural hazards can have multiplier effects accelerating the achievement of the Millennium Development Goals (MDGs)³¹. Experience shows that disaster risk reduction measures can have long-term benefits in the form of reduced future losses, avoiding investment in reconstruction and maintaining productive ecosystems. The Hyogo Framework of Action adopted by Governments in 2005, observes DRR as a cross-cutting issue in the context of sustainable development and vital in the achievement of internally agreed development goals.

According to the Millennium Declaration, Member States are resolved to 'intensify cooperation to reduce the number and effect of natural and man-made disasters'³². The recognition of the link between the achievement of the MDGs and DRR places an expectation on Governments to substantially invest in disaster risk reduction activities and incorporate these into mainstream strategies.

2.3 Disaster Risk Reduction and Sustainable Development Goals

Further investment has been made in preparing Provincial level strategies to meet the MDGs resulting in the Sustainable Development Goals with a SDG Unit launched in Sindh. This unit was established by the Planning and Development Department, Government of Sindh in Collaboration with the United Nations Development Programme (UNDP). Pakistan's Sustainable Development Goals were set out in 2015, with the aimed achievement for these set goals by 2030.

The SDGs are to:

1. End all forms of poverty,
2. End hunger,
3. Achieve good health and well-being to end epidemics and other communicable diseases,
4. Achieve quality education,
5. Achieve gender equality,
6. Achieve clean water and sanitation,
7. Affordable and clean energy to reduce climate change,

³¹ http://www.un.org/en/ecosoc/julyhls/pdf10/isdr_side_event.pdf

³² United Nations Millennium Declaration, A/RES/55/2, 18 September 2000, and its Road Map A/56/326, paragraphs 187-191

8. Decent work and economic growth,
9. Industry, innovation and infrastructure,
10. Reduce inequalities,
11. Sustainable cities and communities with green and resilient design,
12. Responsible consumption and production cutting food waste and minimizing the impact of chemicals on the environment,
13. Climate action,
14. Life below water to ensure the sustainability of marine life,
15. Life on land to protect and promote the sustainable use of ecosystems,
16. Peace, justice and strong institutions to reduce corruption and bribery and
17. Partnerships for the goals revitalizing global partnerships for trade and protecting the environment.

It is very positive that eight of the seventeen SDGs are connected with DRR and climate change. These goals should be utilized to guide policy and the review of institutional mandates.

2.4 The Sendai Framework and the Role of Government in DRR

Pakistan has signed up to the Sendai Framework for Disaster Risk Reduction which replaced the Hyogo Framework for Action in 2015. The 2015-2030 Sendai Framework, guides strategic goals relating to disaster resilience and disaster reduction activities. The Framework applies to both small and large scale, frequent and slow-onset disasters caused by natural or man-made hazards. It aims to guide the multi-hazard management of disaster risks in development at all levels as well as within and across all sectors. The Sendai Framework is a 15-year non-binding voluntary agreement which recognizes that the State has re-primary role for disaster risk reduction with responsibilities shared with local Government. As key stakeholders, this means that authorities such as PDMA and DDMA are expected to place more of an emphasis on DRR activities. This is in the way of reducing risk and losses in lives, livelihoods, health and in 'economic, physical, social, cultural and environmental assets'³³. Government stakeholders and experts are expected to contribute to generating evidence-based guidance for effective implementation. A summary of the Sendai Framework is provided.

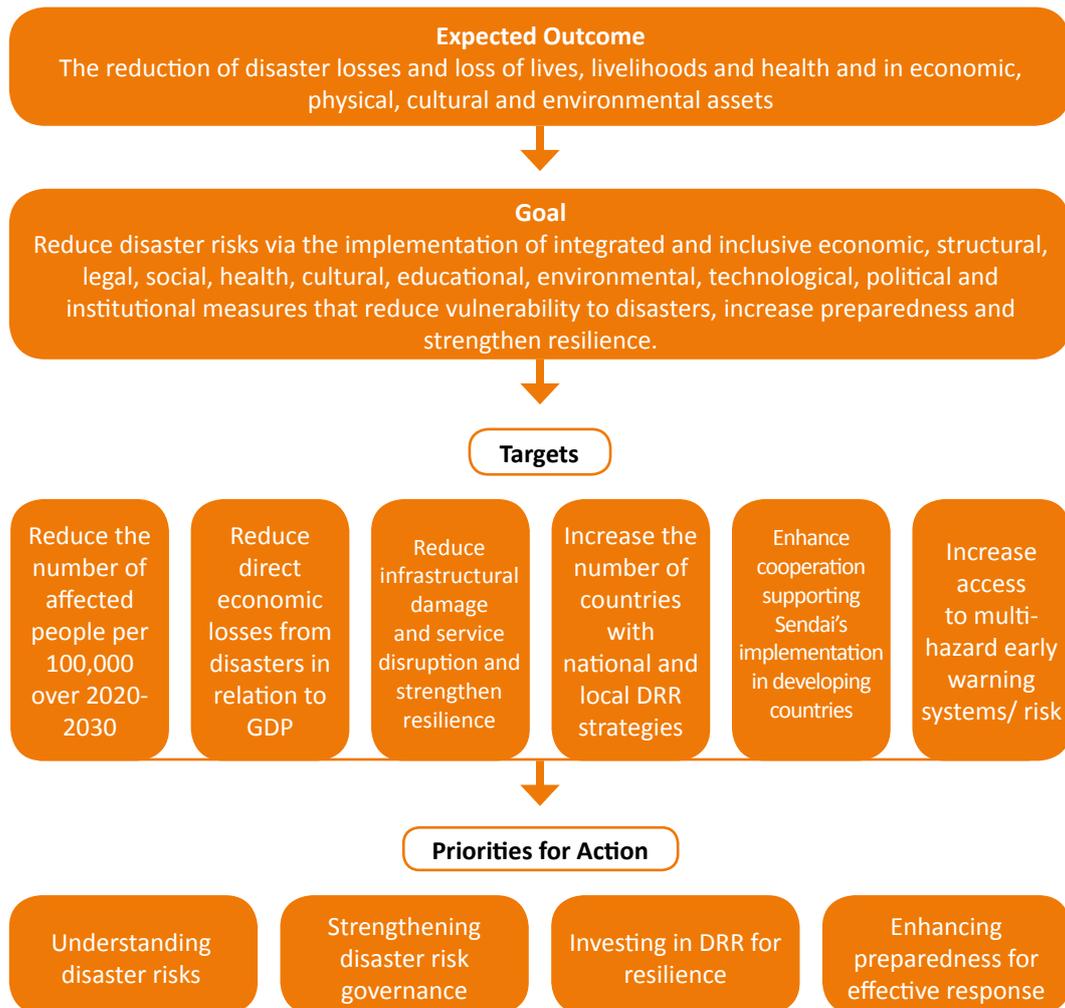
International research has collated via Sendai platform. This research showed country priorities are for greater science in DRR decision-making and solutions. The main themes highlighted by countries were promoting research and practitioner engagement; increase technology transfer mechanisms (the highest priority demand made by Pakistan); open data; communication of usable evidence and user's needs; education and training; and lastly, international cooperation all contributing to national capacity building. As identified, the main difficulties with existing delivery are gaps in knowledge, lack of coordination and a gap in capacity to use scientific evidence for policy-making. The Sendai Framework for Disaster Risk Reduction (SFDRR) signals a clear mandate to the science and technology and innovative community to work together with Governments in developing and sharing the knowledge and solutions needed to improve the resilience of communities, save lives and reduce disaster losses. These findings have fed into donor funding for DRR globally for capacity building in DRR/DRM and to improve linkages between Government and scientific institutions as countries seek to address the gaps they face. It is now hoped that understanding country priorities and challenges will help decision-makers

33 <http://www.unisdr.org/we/coordinate/sendai-framework>

and scientists in developing implementation plans to consider how science, technology and innovation can be enabling factors for DRR. An implementation plan of action underpinned by scientific evidence has the potential to save lives, more accurately target investment and contribute to greater resilience in Provinces severely affected by climate change such as Sindh over the coming decades.

2.4.1 Summary of the Sendai Framework for Disaster Risk Reduction

Figure 3: Sendai Framework for Disaster Risk Reduction



2.5 Capacity Gaps confronted by DRM Institutions in Pakistan

Despite the comprehensive institutional setup established in response to the 2005 earthquake, due to the continuous and massive scale of disasters, Pakistan continues to confront major capacity and resource gaps remain. This was demonstrated during the 2010 floods, affecting 78 districts and covering an area of 160,000 kilometres constituting an area equal to one fifth of Pakistan. The scale of devastation caused by the disaster was more than the Pakistan Earthquake 2005, Cyclone Katrina, Indian Ocean Tsunami, Cyclone Nargis and Haiti Earthquake combined. Under such conditions, massive institutional and HR capacity building is required to go some way in meeting the scale of demand and risk confronted throughout the country.

During the 2010 floods, it was shown that provincial/state level officials had little experience in dealing with disaster recovery and reconstruction efforts at the required scale. Line Departments had also received no specialized training to manage their devolved responsibilities passed down from the national level as part of the 18th Amendment to support DRM institutions. No comprehensive training had also been received in the areas of grants management, donor, relations, disaster planning, environmental management and fast track procurement processes to manage these systems and activities again on the required scale. Further to this, no financial and M&E systems were put into place for the tracking of DRM funds or for reconstruction activities. The lack of standardized systems for information sharing and reporting formats has meant that each Province/State has created their own arrangements. These adhoc arrangements can lead to delayed response, the duplication of activities, weakened fund mobilization and donor confidence, weakened coordination and weakened grievance redressal have lessened the accuracy of reporting and accordingly the effectiveness of response planning.

2.5.1 The need for Institutional Capacity Building

Government of Pakistan's Disaster Management Authority has cited six key areas to focus on DRM investments. The objectives of these investments are to:

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 assessment and monitoring of disaster risks,
4. Promote mechanisms for main-streaming DRR measures into development planning processes,
5. Promote DRM at local and community levels,
6. Strengthen the capacity of all relevant actors in disaster management.

There is a need for coordination and communication between departments and multi-sectoral planning with mandates updated to incorporate DRR, information sharing for early warning systems at all levels, evacuation planning, coordination and reporting for international donors, the need for real-time data collection, M&E and MIS systems, the need for the use of GIS mapping of disasters and web-based dissemination of information on high risk areas and activities, the update of HR skills for disaster planning and response, DRR activities in connection to infrastructure, community education, bioengineering and in planning for buffer zones in urban development. There also needs to be strong political backing for resources and ongoing activities if impacts are to be sustainable and systems continuously developed in the long-term to keep pace with research and technology.

Table 2: Internal and External Factors Affecting DRM Institutional Capacity and broad requirements

	Weaknesses	Strengths	Opportunities	Threats
External Dimension	<p>Lack of standardization for data collection, sharing and reporting formats and frequency</p> <p>Funding Restraints Instability</p> <p>Environment/ Landscape (remoteness of populations)</p> <p>Lack of capacity and resources among supporting institutions</p>	<p>Basic DRM legislation in place</p> <p>Basic institutional setup in place</p> <p>Partner institutions available</p> <p>Coordination mechanisms to some extent in place</p>	<p>Government DRM goals set</p> <p>Increased funding for DRM and DRR and institutional capacity building</p> <p>Guiding international frameworks available for use</p> <p>Increasing pressure on Government to support DRM/DRR initiatives</p>	<p>Repeated disasters removing funds from DRR and capacity building activities</p> <p>Weak Government commitment to strengthening the DRM system</p> <p>Weak enforcement on implementation of DRM activities for partner institutions barring future cooperation</p> <p>Weak laws on DRM for local Government barring stronger DRM setup</p> <p>Failure in sustainable development of country</p> <p>Community level continuous losses and damages due to disaster</p>
Internal Dimension	<p>Weak capacity among HR.</p> <p>No systems set up for reporting or data collection.</p> <p>Poor linkages with communities and stakeholders.</p> <p>Paucity of resources hindering effective response.</p> <p>Poor planning. Lack of national center for crisis management.</p> <p>lack strategies for DRR and DRM</p>	<p>Provincial DRM plan in place</p> <p>HR, vehicles and equipment to some extent in place</p> <p>Offices setup in Karachi, Hyderabad and Sukkur</p>	<p>Debate opening on how to strengthen DRM institutions in Sindh</p> <p>Recognition among senior managers of the need for improvements</p> <p>Funding is being made available under projects such as SRP</p>	<p>Resource limitations preventing longer term planning</p> <p>Lack of technical experts available in the required areas</p> <p>Short-term contract system affecting long-term staff motivation</p>

Part 3: Institutional Assessment of PDMA and DDMA Sindh



3.1 The Sindh Resilience Project

Since the late 1990s, there has been increasing recognition of the need to focus on disaster risk reduction and capacitating Disaster Management Authorities by both Government and donors. Pakistan has a comprehensive National Disaster Management Plan (2013-2022) that places capacity building of DMAs high on the agenda.

With the financial support from World Bank, PDMA Sindh is implementing a 05 years' project, titled "Sindh Resilience Project" (SRP).

The project aims to strengthen Government of Sindh's capacity to manage risks from natural disasters and climate change and to improve resilience of communities and economic assets in the Province from flood and drought events. Direct beneficiaries include the population of Sindh affected by the 2012 and 2014 floods and exposed to recurrent flooding in the Indus River. Through technical assistance and institutional strengthening of disaster management and irrigation authorities, the population of Sindh and adjoining areas, will indirectly benefit from increased capacity to identify, manage and respond to disasters and climate variability. Activities will include: a) Institutional and policy review; b) Strengthening of DMAs down to District level and improving early warning systems; and c) Main-streaming DRM and climate variability aspects in the planning process in collaboration with Planning and Development (P&D) Department, Sindh³⁴.

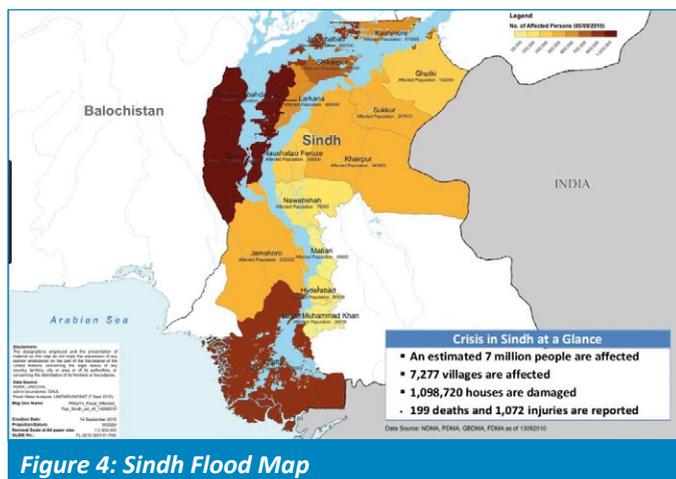


Figure 4: Sindh Flood Map

This project represents a huge opportunity for PDMA Sindh to build upon its ongoing efforts to meet the growing demand for disaster related activities and services. The project addresses all critical areas for effective disaster risk management including the strengthening of Disaster Management Authorities at the Provincial and District levels. Envisioned activities include the technical enhancement of the operational facilities such as Emergency Operations Centres (EOCs), strengthening the capacity of DMA's in Sindh to respond adequately to disaster events through the better integration of SoPs and resources at emergency response agencies. The project also provides better search and rescue equipment and improves stockpiles and associated logistics for rescue and relief operations by DMAs and other relevant agencies. This assessment therefore forms a key component of the resilience project informing a large part of envisioned activities.

3.2 Capacity Assessment of PDMA Sindh

This assignment assesses PDMA's capacity, identifying weaknesses in organizational performance efficiency and to make concrete recommendations for improvement. The specific components of the assessment are:

- An institutional capacity assessment of Provincial Disaster Management Authority,
- The identification of needs and areas for improvement and prioritization of critical

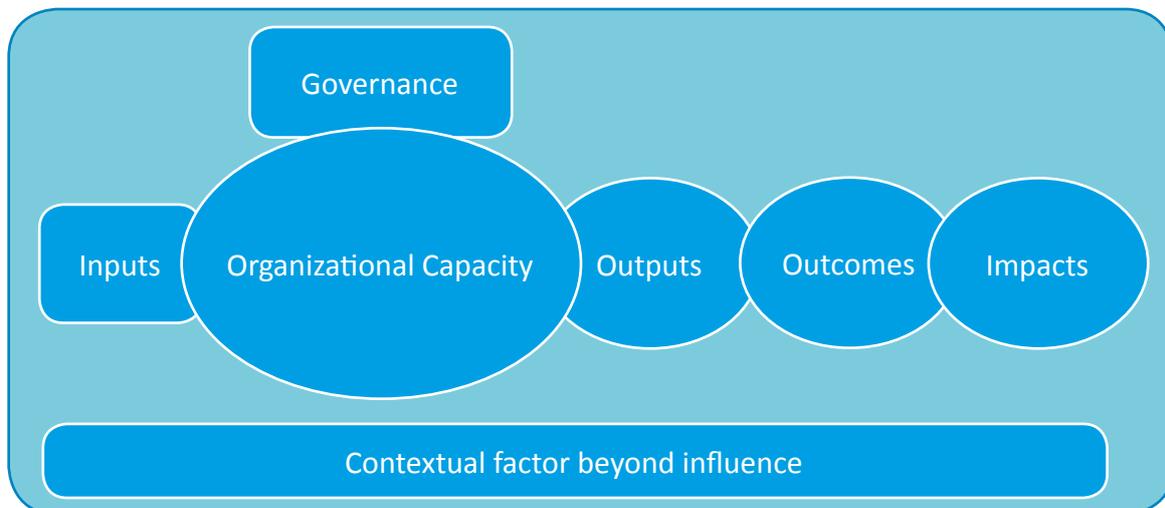
34 <http://www.unisdr.org/we/coordinate/sendai-framework>

- activities for funding,
- An institutional capacity building plan (interventions and their financial implications).

3.2.1 Assessment Approach and Methodology

The National Support Organization (NSO) took a highly consultative approach to the project with all components informed by staff at PDMA Sindh. Assessment tools were further informed by a desk review of documentation and evaluations of existing initiatives alongside key informant interviews. The context was taken into account in the assessment of logistics, training needs and subsequent recommendations. The institutional assessment covered management and communication systems, management information systems and data analysis, software use (mapping), resources and outreach, storage capacity, HR structures and skills sets, monitoring and reporting, financial resources, performance, the capacity for lessons learning and institutional culture. In the external context, the project team took into account the areas covered by each institution, ongoing security and the remote location of populations, affecting staff mobility and monitoring and cultural norms relating to women affecting access to services. All information relating to costs and existing capacity was verified where possible and outputs finalized with the agreement of PDMA Sindh. Figure 5 summarizes the framework used for the designing assessment tools for data collection and analysis.

Figure 5: Capacity Assessment Framework



3.2.1.1 Capacity Assessment Tool-kit for Key Informant Interviews (KIIs)

The assessment process was owned by PDMA Sindh with change ultimately envisioned as an internal process. Tools and checklist were finalized in consultation with PDMA Sindh and are placed in the annexure. A logical sequence guided all assessment areas moving from structure, to systems, to HR, to records, to planning and lastly to implementation. A list of key staff members and other stakeholders interviewed for self-assessment were forwarded to PDMA Sindh for approval along with the proposed questionnaire to ensure that all areas are covered. Further interviews were carried out with staff and key stakeholders to assess potential challenges in the proposed methodology for information collection, areas missed, HR concerns and priorities and the utility of potential assessment tools.

NSO utilized the World Bank's proposed tool-kit for the capacity assessment. This tool was developed for the capacity assessment of public institutions aiming to support decision-making and overall operational planning.

Tools for data collection were divided into core sections including:

1. Disaster Context,
2. National Strategy and Action Plans,
3. Governance Structure,
4. Disaster Management Tools and Early Warning Systems,
5. Training and Public Awareness,
6. Disaster Funds and Grants Administration,
7. Response Team.

Methods for data collection included:

1. Key Informant Interviews with staff and other key stakeholders to assess linkages, feedback on working practices, information sharing, other Government departments to assess guidance provided on DRM/DRR and institutional culture,
2. Open Discussions with PDMA Sindh management team and staff,
3. Visits to verify conditions at District authorities and assessment working context.

3.2.2 Data Collection Process and Training

During the course of this assignment all the districts of Sindh were visited for data collection and feedback. List of districts visited can be seen below.

1	Badin District	11	Karachi East District	21	Mirpur Khas District
2	Dadu District	12	Karachi South District	22	Tharparkar District
3	Hyderabad District	13	Karachi West District	23	Umer Kot District
4	Jamshoro District	14	Korangi District	24	Naushahro Feroze District
5	Matiari District	15	Malir District	25	Sanghar District
6	Sujawal District	16	Jacobabad District	26	Shaheed Benazirabad District
7	Tando Allahyar District	17	Kashmor District	27	Ghotki District
8	Tando Muhammad Khan District	18	Kambar Shahdad Kot	28	Khairpur District
9	Thatta District	19	Larkana District	29	Sukkur District
10	Karachi Central District	20	Shikarpur District		

3.2.2.1 HR for Data collection

Local HR were hired for data collection for all districts. The team was orientated in the project goals, methodology, key informants and data collection formats prior to the start of fieldwork. The team was requested to work closely with the PDMA Coordinator. This meant that interviewed staff were contacted by PDMA Sindh to prepare all required documentation prior to arrival and to ensure the availability of HR. Data collected was sent to concerned District offices for re-verification.

3.2.2.2 Data Sources

Data was collected from PDMA staff, DDMA, local authorities and line departments in Districts where DDMA were not yet fully established. Types of indicators focused on included

existing resources (financial, HR, equipment, tools, furniture, office space for operations, logistical capacity, storage facilities and capacity to hold specialized supplies e.g. medicinal). Further focus areas included budget usage, institutional structures and how they were aligned with ongoing activities and mandate. Recommendations were then made as to whether institutional mandates needed clarifying, whether staff needed to be expanded based on gaps/missing activities, suggestions were forwarded for institutional restructuring and the expansion of resources (furniture, vehicles, software and equipment). Logistical capacity was analysed from the viewpoint of both coverage and networking.

3.2.2.3 Key Informant Interviews of Government Officials (KIIs)

NSO conducted interviews with Government officials in selected districts. Respondents included the Deputy Commissioner, representatives from District authorities and other line departments. NSO prioritized interviews from the following departments. The list contains professionals from Provincial and District level institutions working on aspects of disaster management in Sindh.

Table 3: List of Key Informant Interviews

Sr.	Departments/Institutions
1	PDMA Sindh Representatives
2	Sindh Resilience Project Staff
3	Planning and Development Department
4	Irrigation Department
5	Local Government Department
6	Civil Defence
7	Rescue 1299
8	Urban Search and Rescue Unit
9	Deputy Commissioner/District Representative

3.2.2.4 Data analysis undertaken for quantitative and qualitative data

Data analysis was carried out by institution, District, department and sectoral area. Recommendations were made against these categories and sub-categories of analysis. Cross-cutting concerns were brought out such as the need for improved coordination or technologies, the need for the better integration of preparation and response planning and early warning systems, inclusion and the need for stronger links with communities to better utilize them as a front-line resource. Once the key informant interviews were completed, field associates transcribed the interview notes before undertaking thematic data analysis.

3.3 Assessment and Recommendations for the Capacity Building of PDMA Sindh

3.3.1 Comparative Progress in the setup of DRM Institutions in Pakistan

The establishment of PDMA, DDMA and EOCs in Pakistan is an ongoing process in all Provinces. All PDMA at present are failing to meet their institutional mandate and functioning to a very limited level. This is primarily due to limited technical capacity and training, having limited institutional linkages and authority to coordinate pre and post-disaster activities

and having inadequate resources. DDMA are not functioning properly in any of Pakistan's Provinces, linkages to tehsil level authorities and communities are absent. PDMA Balochistan has undergone some capacity building with all staff orientated in DRM/DRR concepts and administrative staff having undergone training in IT. DMIS and GIS have also been set up in Balochistan but further training, institutional linkages and field offices are required to collate more meaningful analysis. Whilst, State Disaster Management Authority (SDMA) in Azad Jammu and Kashmir (AJ&K) functions to a very limited level, it underwent an institutional assessment in 2016 and is currently in the process of procuring DRM related supplies. Rescue 1122 has a limited presence in both administrative areas although it has almost 50% coverage in AJ&K. In Punjab, Rescue 1122 is functioning as a model institution for disaster response in Pakistan. However, greater investment needs to be placed in PDMA Punjab to give the institution more meaningful functionality and authority, stronger linkages with Rescue 1122 also need to be established. It is expected that PDMA Sindh will confront similar challenges due to funding shortages and limited HR capacity.

One of the most significant area that will be looked into is how to improve the organizational culture in Sindh as a repeatedly reported problem within PDMA. It is essential that all staff be orientated in the PDMA's mission to effectively manage disasters to minimize loss of lives, damage to property and environment through coordinated efforts, its vision 'to achieve sustainable social, economic and environmental development' through reducing vulnerabilities and supporting recovery from disaster events and the importance of professionalism. The work of PDMA could potentially play a critical role in protecting Pakistan's populations but if no action is taken it is likely that the work of these organizations may be increasingly questioned in the coming years³⁵.

3.3.2 Head Office PDMA Sindh

3.3.2.1 Governance

3.3.2.1.1 *Leadership and Management: The requirement for strong leadership*

Disaster events are increasing globally with climate change and increased infrastructural developments and deforestation disrupting natural hydrological cycles. There were 373 disaster events globally in 2010³⁶. With its varied climate and environment, South Asia is particularly vulnerable to hazards including drought and flooding in the plains and cyclones originating in the Arabian Sea. The impact of repeated disasters has set back development efforts in the South Asia region with significant losses incurred to GDP across countries annually. Given the inter-sectoral nature of disasters across administrative borders, strong leadership is required within institutions to push decisions quickly. Strong authority is required in disaster management institutions to push through rapid activities and funding. High levels of authority are needed within DRM institutions to ensure line departments work closely with them for the purposes of information sharing.

It was observed that the average stay of senior management in PDMA Sindh is approximately 6-8 months, this inconsistency is responsible for not to build concrete policies and systems. The swift replacement of leadership also impacts on the motivation of employees and the

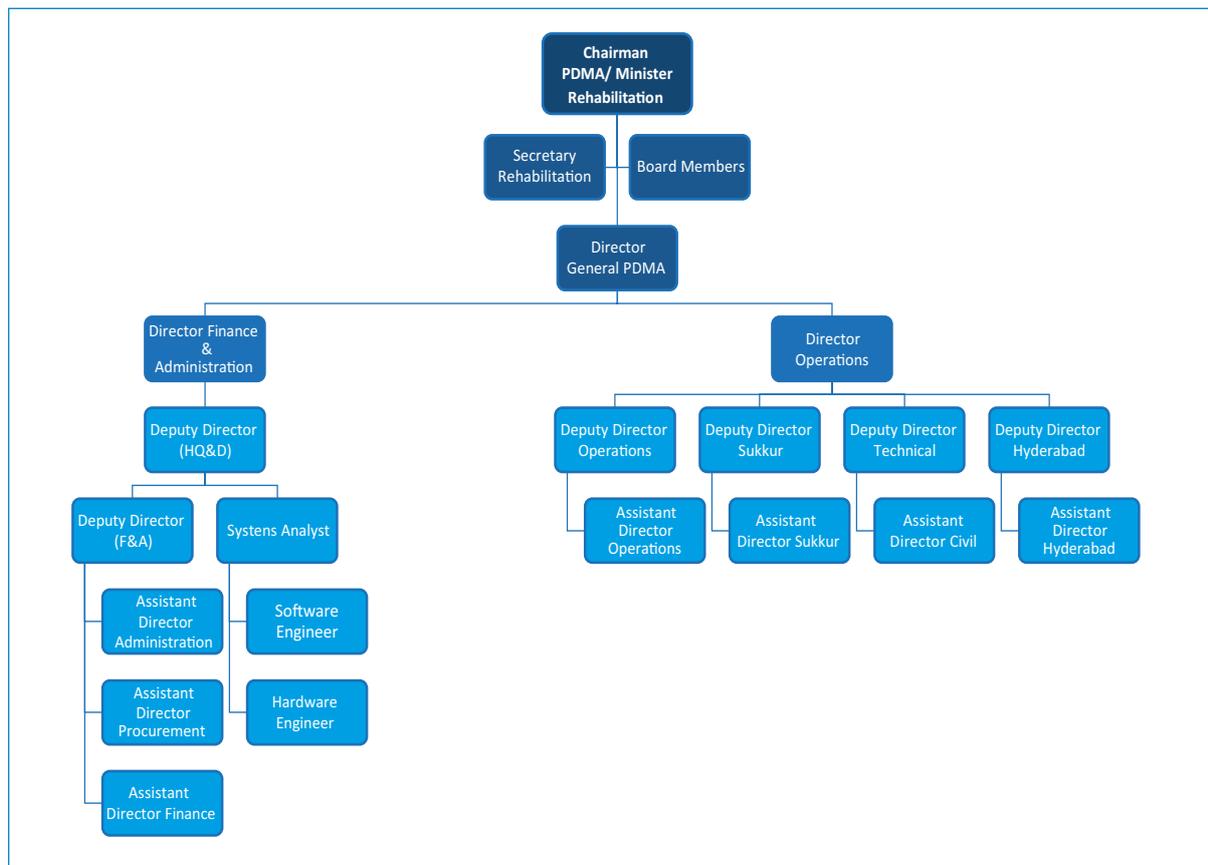
35 Sarwar Bari (2015) CEC Member, Provincial Coordinator NHN, National Humanitarian Network Pakistan Disaster Management and Local Governments

36 SDMC, 2011. South Asia Disaster Report, SAARC Disaster Management Centre Delhi Publication from <http://saarc-sdmc.nic.in/pdf/Publications/SADR2011.pdf>

morale of the organization. It was also revealed that a proper chain of command was not being followed, resulting an increase of workload, responsibility and accountability of senior management.

At present, leadership within PDMA Sindh needs to be strengthened. This may be achieved by the filling of higher professional vacancies such as Director and Deputy Director to improve departmental leadership and management with additional management staff added in the field of DRR, R&R, Implementation and Planning. Sub committees may also be set up to push through decisions quickly. Management also needs to be provided with training to ensure best practices are put into place through the institution.

Figure 6: Current HR structure PDMA Sindh Head Office



3.3.2.2 Current Human Resource

Skills shortages/gaps can significantly stunt organizational performance and growth. This is particularly felt when HR leave for new roles with their positions remaining unfilled or no staff in place to take over their role. Currently, PDMA Sindh runs on a very lean HR structure with its Director General based in Karachi and Deputy Directors allocated to oversee operations in the divisional areas. Considering the size of the Sindh Province, there is a clear shortage of overall staff and in particular, technical staff. There are no professional staff specializing in DRR and research, hazard assessments/damage assessments and GIS, Management Information Systems, Monitoring and Reporting, Flood Control, WASH and Sanitation for Disease Control, Early Warning Systems, Community Linkages, or Logistics and Emergency Relief and there is no Media and Communications Specialist.

There are also a large number of vacant positions including Directors, Deputy Directors, a Capacity Building Officer, IT specialists/engineers and warehouse supervisors. At present, people are hired on daily wages to oversee the warehouses in Sukkur and Hyderabad which has affected the documentation of items and equipment. Skill gaps are affecting PDMA's day-to-day operations, technical capacity, fundraising, inter-departmental coordination and leadership within PDMA Sindh.

Table 4: List of Current HR of PDMA Sindh Head Office

Sr.	Post	BPS	Vacancies	Filled	Total
1	Director General	Bs-20	0	1	1
2	Director(s)	BS-19	1	1	2
3	Deputy Director	BS-18	1	4	5
4	System Analyst	BS-18	1	0	1
5	Assistant Director	BS-17	0	5	5
6	Accounts Officer	BS-17	0	1	1
7	Hardware Engineer	BS-17	1	0	1
8	Software Engineer	BS-17	1	0	1
9	Capacity Building Officer	BS-17	1	0	1
10	Procurement Officer	BS-17	0	1	1
11	PS to Director General	BS-16	0	1	1
12	Warehouse Supervisor	BS-16	2	0	2
13	Assistant	BS-16	1	0	1
14	Assistant/DPA	BS-14	1	7	8
15	Steno Typist/DPA	BS-12	2	0	2
16	Accounts Assistant	BS-14	0	1	1
17	Store Keeper	BS-14	2	0	2
18	Receptionist	BS-12	0	1	1
19	Assistant Storekeeper	BS-09	4	0	4
20	Junior Clerk	BS-07	4	0	4
21	Record Keeper	BS-07	0	1	1
22	Dispatch Rider	BS-04	1	3	4
23	Driver	BS-05	2	0	2
24	Security Guard	BS-05	18	0	18
25	Driver	BS-04	2	8	10
26	Chowkidar	BS-01	1	2	3
27	Naib Qasid	BS-01	6	14	20
28	Sanitary Worker	BS-01	7	2	9
Total			59	53	112

3.3.2.3 Recommendations for Human Resource

Current vacancies are forcing existing staff to take on more roles, many of which entailing tasks they are not qualified to carry out. Overworked staff are also more likely to make mistakes and can negatively affect operations. Some departments may be more affected by vacancies than others so a review must be undertaken to decipher the most urgent positions to be filled. If vacancies remain unfilled, existing staff will need to be motivated by way of compensation if

extra roles and responsibilities are taken on in order for the organization to function on a day-to-day basis. However, it is urged that all vacant positions are advertised and filled as soon as possible. In particular, the warehouses need to be properly managed to increase transparency, response capacity and prevent wastage.

Issues connected with HR turnover and short-term contracts also need to be addressed as this will ultimately cost the organization. Current staff needs to be assessed to ensure they are in the most suitable positions for their skillsets, their roles and responsibilities need to be clarified with specific tasks laid out in ToRs for both existing and proposed staff in line with PDMA's institutional mandate. Time-logging software may also be utilized to ensure that existing employees are supporting the organization as much as possible.

To strengthen the institutional administration and DRM/DRR operations, a total of 124 members are proposed which include professionals as well as support staff. The hiring of additional staff needs to be skill and location-based to ensure a good response strategy is in place for the entire Province. Priority positions need to be added in the sections of DRR/ DRM, GIS, Institutional Development, Audit and Operations. Out of the proposed aforementioned staff, 61 personnel need to be placed on immediate basis whereas the remaining proposed staff can be hired later i.e. post completion of 03 warehouses in Shaheed Benazirabad, Larkana and Mirpurkhas.

Currently, there is no specified internship and management trainee programme in PDMA Sindh, for which it is recommended that PDMA should introduce a six-month management training program for fresh graduates and three months summer internship program for students. Induction of management trainees should be open to all.

Moreover, for sustainability and ownership of the system, the newly proposed staff needs to be placed under Government sanctioned posts. The details of newly proposed staff are clearly marked in the organogram.



Table 5: Proposed HR for PDMA Head Office

Sr.	Proposed HR	BPS	Units
1	Disaster Management Specialist	Market Based	1
2	CBDRM Specialist		1
3	Deputy Directors	18	4
4	Assistant Director	17	3
5	Internal Auditor	17	1
6	Sub Engineer	16	1
7	Warehouse Supervisor	16	4
8	GIS Operators/ Shift Incharges	15	4
9	Store Keeper	14	4
10	Assistant	14	1
11	IT Technician	12	1
12	Assistant Store Keepers	11	8
13	Control Room Operators	7	4
14	Fork Lifter Drivers/ Technicians	5	12
15	Security Guards	5	20
16	Drivers (HTV)	5	4
17	Drivers (LTV)	5	3
18	Helpers	1	36
19	Gardeners	1	12
Total			124

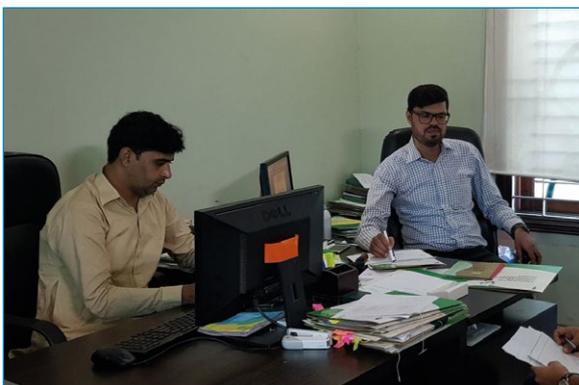
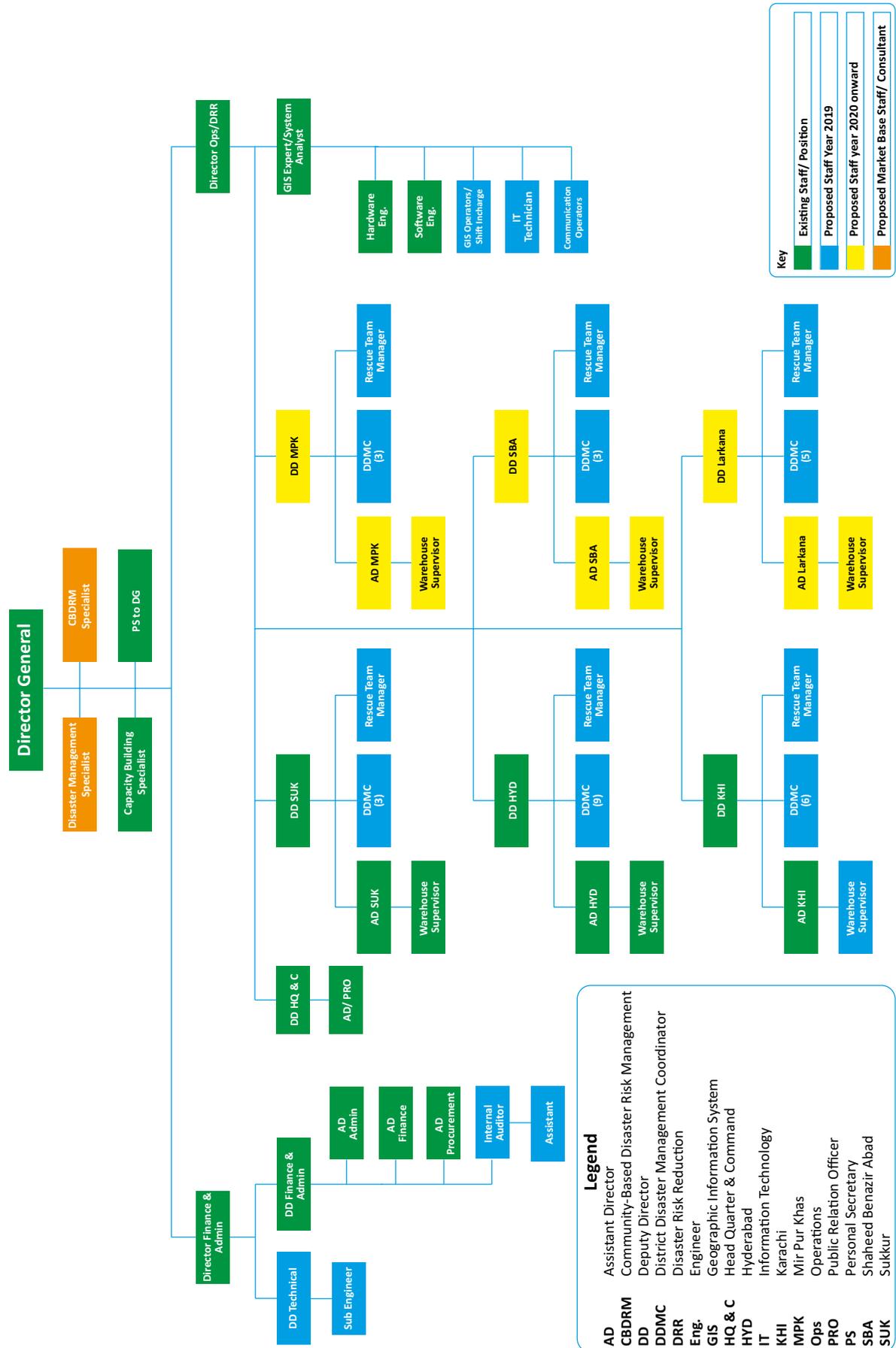


Figure 7: Proposed Organogram for PDMA Sindh



3.3.2.4 Functions of Departments

To ensure maximum output, it is suggested that department/section system should be followed to prevent work overlaps and promote HR efficiency. Well defined roles will push PDMA Sindh to meet its Government mandate and support Pakistan in the wider context to implement international commitments made as part of the Sendai Framework of Action and MDGs.

ToRs for all proposed key staff members are added in the Annex, which may be utilized as a competency/skills framework being inclusive of required qualifications, experience and skills for each position.

3.3.2.4.1 Admin and Finance Department

a. Admin Section

It will manage the overall daily office operations of PDMA, including office management, technology, human resources, contracts, the implementation of administrative systems and lead on long-term internal organizational planning for matters related to HR and administration. The admin department will also be responsible for ensuring general health and safety practices are followed in the office with appropriate training and manuals/guidelines provided for new staff. Basic orientation is to be provided to all the new staff in the office environment, contracts, complaints and HR guidelines.

b. Finance Section

Finance Section will be responsible for managing all financial matters. The Section will manage affairs related to the financial administration of projects and administer the preparation of annual budgets and financial reports, the auditing of annual accounts and supervise loan withdrawal and disbursement. In addition, the Section will also be responsible for issuing Financial Reports to Donors and the Government of Sindh. The Section will ensure control and maintain overall financial discipline in disbursements and the reimbursement of funds for the projects/programmes. Other functions include:

- Preparation and approval of annual budgets,
- Preparation of financial statements and
- Overseeing further matters related to audits.

3.3.2.4.2 Procurement Department

The Procurement Department will be responsible for managing all matters related to procurements and their management. The Section will be responsible for the preparation and management of procurement plans in accordance with the Government of Sindh's and donor-specific procurement procedures and guidelines. The Section will manage and coordinate procurement activities for programmes and will support in preparing the scope of work and specifications of goods, works and services.

3.3.2.4.3 Information Technology Department

The IT Department will be responsible for the overall planning, the organization and the execution of all IT functions. This includes directing all IT operations to meet PDMA requirements as well as providing support and troubleshooting for the use of existing applications and the development of new technical solutions. The IT department will be expected to provide technical support in the set-up of new software and online databases, ensuring appropriate

and up-to-date licenses are procured, ensuring adequate anti-virus protections/firewalls are installed and that equipment and software manuals are accessible for all new staff. The IT department must ensure that all office equipment is safe to use and well maintained.

3.3.2.4.4 MIS, GIS and M&E Department

a. Management Information System Section

The Section will be responsible for designing/planning the rollout, setting up, directing and managing the Management Information System in collaboration with the IT Department. The department must ensure the development and implementation of Management Information Systems as per the requirements of PDMA and donors (when used for projects). Furthermore, the Section will be responsible for developing and maintaining Disaster Management Information System (DMIS) to support PDMA Sindh in preparedness planning, mitigation planning and decision making on response and recovery activities along with ensuring the integration of the cross-sectoral information.

b. Geographic Information System Section

The Section will be the focal section for managing all matters related to GIS and will be responsible for data collection, identifying appropriate external databases for use, internal database compilation, hazard evaluation, data interpretation and illustration in partnership with the M&E Department, database maintenance and the distribution of GIS and remotely sensed data and meta-data to relevant stakeholders and other staff. The Section will provide technical support to identify appropriate data sources, acquisition/retrieval, storage and in the archiving of data/imagery (digital), processing for the interpretation and analysis of remote sensor and GIS data.

c. Monitoring and Evaluation Section

The Monitoring and Evaluation Section will design and set up comprehensive M&E systems covering all levels. These systems must include performance indicators, information needs by department/project, output indicators and related targets, data collection methods, sampling procedures and reporting formats and procedures. The Section will oversee and manage the implementation of the M&E system, including the accurate and timely collection of information on project activities and ensuring effective monitoring of the projects/programmes.

3.3.2.4.5 Media Department

The Media Department will be responsible for managing, developing and driving PDMA's media communications activity. The department will work with the media for the purpose of informing the public of PDMA's mission, policies and practices in a positive, consistent and credible manner. The department will regularly coordinate directly with the people responsible for producing the news and features in the mass media to manage public relations and news relating to the management of natural hazards. It will further be responsible for maximizing awareness of PDMA Sindh's services using multiple media channels (press, TV, radio, social media) to support immediate and long-term goals for DRR and DRM in a creative and cost effective manner.

3.3.2.4.6 Operations and Implementation Department

a. Operations Section

The Operations Section will lead on the planning and coordination of all matters and investments related to Disaster Risk Management Operations including Preparedness, Mitigation, Emergency Response and Reconstruction and Rehabilitation. The Section will be responsible for reviewing and examining Federal, Provincial and District level DRM policies, proposals, Plans and supervising the preparation of Provincial Flood Relief and Protection Plans along with District level DRM plans. It is advised that the planning of activities is undertaken in collaboration with the M&E Department. The Section will also take the lead in carrying out damage assessments following disasters or emergencies.

b. Implementation Section

The Implementation Section will be the focal section for managing all matters related to the implementation and rollout of DRM activities including preparedness, mitigation, emergency response and relief activities across the Province. The section will further support in ensuring the transparency of activities and in the development of lessons learning for the further development of programme/project proposals for DRM/DRR.

3.3.2.4.7 Human Resource Development Department

Currently, Public Sector Organization Culture dominates in PDMA which is based on File, Fax, Letters dispatching. During the assessment, it was surprisingly revealed that due to lack of IT Culture and E-Learning, a good number of employees are not capable to use email communications through their Laptop/Desktop. PDMA Sindh has not specified a competencies and skills model for employees according to the needs of the PDMA in future.

3.3.2.4.8 Coordination and Response Department

The Coordination Department will be the focal unit for managing all matters related to Coordination with Donors/Stakeholders, Line Departments, DDMA and other stakeholders. The Coordination Department must ensure that key contacts within partner institutions are made available to departmental managers and lists maintained and kept up to date. They must also ensure that resources are pooled when possible, that meetings for coordinating activities take place between relevant stakeholders and PDMA and DDMA. This Department is also responsible for the registration of I/NGOs and the documentation of I/NGO mandates, for the documentation of department resources such as technical HR and equipment for use during emergencies and for the setup of provincial level meetings and forums pre and immediately post-disaster for the purposes of fundraising and planning. The coordination department will work with the administration department on matters related to emergency logistics. The department must ensure that adequate networking takes place between DRM institutions and external partners.

3.3.2.4.9 Reconstruction and Rehabilitation Department

The Reconstruction and Rehabilitation Department will be the focal section for the implementation and management of all matters related to post-disaster reconstruction and rehabilitation activities in the Province. In collaboration with the Operations and Implementation sections, the Reconstruction and Rehabilitation Section will provide inputs in the development of the overall strategy for reconstruction and rehabilitation in affected areas and be responsible for their finalisation. They will also be responsible for the implementation

of all R&R activities to a high level which complies with donor/Government standards. R&R will further provide technical support/assistance to management, local authorities, communities, field and programme staff on issues related to public works, rehabilitation and restoration of infrastructure assets.

3.3.2.5 Estimated Budget in PKR for Proposed HR

The rates provided in this budget are based on existing Government rates for standard Government positions along with additional financial incentives. The purpose of this table is to provide an idea of the potential long-term incremental operational cost of restructuring. The status and remuneration and associated calculations for all proposed staff are for permanent staff only based on the forwarded plan for institutional restructuring. Deputations may also be considered where appropriate, in which case, salaries may be amended by the concerned authorities.

Table 6: Proposed HR for PDMA Head Office-(Cost/Year 2019-20)

Sr.	Proposed HR (2019-20)	BPS	Units	Unit Cost/ Month	Cost/ Month*	Annual Cost
1	Disaster Management Specialist	Market Based	1	200,000	200,000	2,400,000
2	Community Based Disaster Risk Management (CBDRM) Specialist		1	200,000	200,000	2,400,000
3	Deputy Director Technical	18	1	177,000	177,000	2,124,000
4	Internal Auditor	17	1	138,000	138,000	1,656,000
5	Sub Engineer	16	1	84,000	84,000	1,008,000
6	Warehouse Supervisor	16	1	84,000	84,000	1,008,000
7	GIS Operators/ Shift Incharge	15	4	71,000	284,000	3,408,000
8	Store Keeper	14	1	67,000	67,000	804,000
9	Assistant	14	1	67,000	67,000	804,000
10	IT Technician	12	1	62,000	62,000	744,000
11	Assistant Store Keeper	11	2	61,000	122,000	1,464,000
12	Control Room Operator	7	4	46,000	184,000	2,208,000
13	Fork Lifter Drivers/ Technician	5	6	39,000	234,000	2,808,000
14	Security Guard	5	8	39,000	312,000	3,744,000
15	Drivers (HTV)	5	4	39,000	156,000	1,872,000
16	Helpers	1	18	37,000	666,000	7,992,000
17	Gardener	1	6	37,000	222,000	2,664,000
Total			61	1,448,000	3,259,000	39,108,000

*Cost include basic pay and allowances.

Table 7: Proposed HR for PDMA Head Office-(Cost/Year 2020-21)

Sr.	Proposed HR (2020-21)	BPS	Units	Unit Cost/ Month	Cost/ Month	Annun Cost
1	Deputy Director Mirpur Khas	18	1	177,000	177,000	2,124,000
2	Deputy Director Shaheed Benazirabad	18	1	177,000	177,000	2,124,000
3	Deputy Director Larkana	18	1	177,000	177,000	2,124,000
4	Assistant Director Mirpur Khas	17	1	138,000	138,000	1,656,000

5	Assistant Director Shaheed Benazirabad	17	1	138,000	138,000	1,656,000
6	Assistant Director Larkana	17	1	138,000	138,000	1,656,000
7	Warehouse Supervisor	16	3	84,000	252,000	3,024,000
8	Store Keeper	14	3	67,000	201,000	2,412,000
9	Assistant Store Keeper	11	6	61,000	366,000	4,392,000
10	Security Guard	5	12	39,000	468,000	5,616,000
11	Fork Lifter Driver	5	6	39,000	234,000	2,808,000
12	Driver	5	3	39,000	117,000	1,404,000
13	Helpers	1	18	37,000	666,000	7,992,000
14	Gardener	1	6	37,000	222,000	2,664,000
Total			63	1,348,000	3,471,000	41,652,000

Grand Total	Units	Cost/ Month	Annum Cost
	124	6,730,000	80,760,000

3.3.2.6 Performance Management System in PDMA

Currently, PDMA Sindh is not using any system for the performance management of employees. It is suggested that an online performance management system for HR be setup with profiles and performance plans for every employee. Employees may also be connected to experts within their sector or experienced peers who may advise in their development or link them with training institutions and professionals or provide them with constructive feedback. This may be completed via online chats, conference calls, or video calls. This makes employee development and individualized rewards for performance a more transparent and collaborative process. It also enables real-time feedback for employees on their progress and areas to work on. The online performance management system which ultimately empowers employees to reach their full potential and enables managers to track their progress more easily using the Manager's Dashboard/Summary of Progress. This will also aid management to link performance with employee salary/grade. This system, therefore, increases staff motivation as employees see themselves progressing in the organization leading to a higher performance culture aligning employee goals with the objectives of the organisation.

Online system profiles/cases should hold information relating to:

- Goals and objectives-whether they are actively being completed, on hold, or completed,
- Skills Development-whether they are at the required level or below,
- Learning and certifications-whether they are in progress, completed or pending action in the way of training programmes,
- Automated performance reviews, targets, meetings and interviews-detailing dates reviews have been completed, findings and progress to date.

3.3.2.7 Digital Library for HR Training

A separate programme may also be set up for online trainings, participation in interactive webinars and requests for registration on training programmes. These registrations and completions would then be documented on the system for all staff. Such softwares enable staff in remote areas to have professional and vetted access to information to improve their technical skills and knowledge base. Such online resources may also be utilized to look up documentation on policies, procedures and legislation and improve networking skills. Further softwares enable staff to use phone apps to access training programmes and document their

progress. These applications use built-in templates or enable employers to create their own programmes. They may also be used to organize networking events and encourage positive competition between employees and team building.

3.3.2.8 HR Manual/Guidelines

Given the urgent need to retain staff on a longer-term basis, it is suggested that an HR manual is developed. This needs to provide clear policies and guidance for managers to make decisions. Typical contents will consist of:

a. Institutional Standards

Guidance on equal opportunities, sexual harassment and discriminatory complaints procedures, conflicts of interest, communications, ethics, leaders, safety and security procedures, work environment, productivity, attendance, whistle-blower, confidentiality and relationships in the workplace.

b. Employment Information

Employee classification and status, alternative work arrangements, employment decisions, committees, employment planning and responsibility, employment procedures, relocating new employees, temporary employment orientation period, re-employment of former employees, termination of employment, holiday closures and other events, work week and pay systems, payroll procedures, employment records, reorganization and maternity cover.

c. Employee Development

Internal employment opportunities and employment procedures, positive corrective action, employee resource centre and employee recognition.

d. Compensation and Benefits

Compensation philosophy, overtime, staff salary plan, health and welfare, retirement planning, vacation days, educational advantages, absence and leave for personal medical, family medical, sick days, other leaves of absence and amenities.

e. Employee Services

Employee assistance, employee references, employee wage verification, grievances, emergency salary advance, violence in the workplace and parking.

3.3.2.8.1 Grievance Redressal System (GRS) for Employee

During the assessment, it was observed that GRS is considerably weak and needs much improvement. GRS can be improved by taking the following steps;

- Maximum time frame to address the grievance should be defined and made part of the policy ,
- GRS should be handled by a full-time officer. A part-time employee would not have a sense of responsibility and ownership, also would not be able to gain the trust of the grievant,
- PDMA should launch an online GRS to avoid unnecessary delays and to increase confidentiality,
- Grievant staff should have the right to appeal against the verdict.

3.3.2.9 Decision Support System (DSS)

It is recommended that DSS should be installed at PDMA Sindh head office, DSS is a specific class of computerized information system that supports organizational decision making activities. A properly designed Decision Support System is an interactive software-based system that will help senior leadership of PDMA Sindh to compile useful information from raw data, documents, personal knowledge to identify and solve problems and make decisions. Moreover, DSS will help PDMA to;

- Perform deeper data exploration, so analysts and other users can uncover critical patterns, trends, anomalies and outliers,
- Deploying comprehensive self-service tools for non-technical users to create, analyse and share findings,
- Operationalizing insights by embedding analytics into existing processes, work-flows and applications for greater impact.

3.3.2.10 PDMA Sindh Operational Capacity (Head Office)

3.3.2.10.1 *Assessment and Recommendations for Head Office Location and Space*

Ideally, PDMA and DDMA offices should easily be accessible for the purposes of coordination and linkage formation with relevant line departments. Offices should also be independent with research showing that when located within line ministries, other departments are less likely to participate in planning and decision-making due to issues of impartiality and transparency³⁷. Long term requirements also need to be taken into consideration during the selection of office size and location. PDMA Sindh is currently working from a rented office having a limited space with no dedicated parking. Aside from the DG PDMA and Director's office, 3 to 4 people work in each room.

It is suggested that, a larger building be found for better accommodation of current staff, furniture and equipment. If staffing were to expand in the form of technical experts, additional office space would be required. Based on proposed staffing, PDMA Sindh requires a minimum of 16 rooms with enabling specialization and separate areas for staff training, research and development, a place for mock exercises, command and control center and donor meetings.

PDMA head office needs to improve basic amenities for all employees. They should have proper seating arrangement along with the kitchen and lunchroom and proper scheduling of cleaning toilets with regular water and other article provision. Additionally, there should be separate lavatory and prayer area for female staff.

3.3.2.10.2 *Assessment of Head Office facilities and Recommendations (equipment, furniture and hardware)*

The PDMA Sindh Head Office in Karachi has 3 UPS and 9 stabilizers. A solar system with UPS and power backup should also be considered along with generators for longer power cuts, in particular during crisis periods when PDMA Sindh is most needed.

However, limited furniture is available to accommodate all staff at PDMA Sindh Head office. If all vacant positions are filled and additional staff is taken on-board as proposed, then the number of basic furniture will need to be significantly increased.

37 InterWorks, 1998. Model for a National Disaster Management Structure, Preparedness Plan, and Supporting Legislation, DISASTER MANAGEMENT TRAINING PROGRAM Document Series from http://www.preventionweb.net/files/5142_US01MH840-Ft.pdf

Table 8: Proposed basic furniture PDMA Sindh Head Office

Sr.	Furniture	Units	Unit Cost	Total Cost
1	Computer Tables With Chair	22	35,000	770,000
2	Office Chairs	44	5,000	220,000
3	Wooden File Cabinets	20	20,000	400,000
Total		86	60,000	1,390,000

Hardware is quite basic in the existing head office and divisional offices with no specialized equipment other than a video conferencing system for monitoring, reporting, or communications. Current IT equipment is shown in table the below: -

Table 9: Current Hardware at PDMA Sindh Head Office

Sr.	Hardware	Units
1	Desktops	20
2	Laptops	9
3	Speakers	6
4	LCD TV	8
5	HP Printers	12
6	Panasonic Fax Machine	3
7	HP Scanner Jet 8300	1
8	Photocopier	1
9	Video Conference System	2
10	Wi-Fi Routers	3
11	Wi-Fi USB Device	2
12	Power Edge Server R710	3
13	8-Port Switch	1
14	24-Port Switch	2

It is recommended that, the furniture and IT equipment be added to accommodate proposed technical and operational staff and visitors/stakeholders for meetings, networking, fundraising and information sharing. It is also recommended that laptops and further desktops be provided to staff to prevent the use of personal IT equipment for security reasons. Further, basic equipment needs to be provided in the form of cameras to improve field monitoring. Minimum basic IT equipment required for PDMA head office is shown below:-

Table 10: Proposed IT and basic office equipment PDMA Sindh Head Office

Sr.	General, IT, Office Equipment	Units	Unit Cost	Total Cost
1	Desktop Computer (Full Set)	11	95,000	1,045,000
2	Laptop Core i7	10	110,000	1,100,000
3	LCD 52"	5	75,000	375,000
4	Multi-Function Office Machine	6	400,000	2,400,000
5	Conference Calling System	1	60,000	60,000
6	Networking Cost	1	50,000	50,000

7	Miscellaneous	-	300,000	300,000
Total		34	1,090,000	5,330,000

3.3.2.10.3 Improving Logistical Capacity

PDMA Sindh currently has a limited fleet of 25 vehicles for coordinating and monitoring emergency operations. However, many of these vehicles are in poor condition, few vehicles such as trucks are available for general staff use.

Table 11: Current vehicles used by PDMA Sindh Head Office

Sr.	Vehicle Type	Year	Units	Type	HR Allocation
1	Fortuner	2015	2	4X4	DG PDMA, Chairman PDMA
2	Toyota Corolla GLI	2011	4	Car	DG PDMA Deputy Director Hyderabad, Deputy Director Ops Deputy Director Finance and Admin
3	Toyota Hilux	2009 2010 2011	4	Pickup truck	Chairman PDMA Director Ops, Director Finance and Admin Protocol Duty
4	Suzuki Cultus	2009 2010	3	Hatchback	Director HQ Assistant Director (P) Assistant Director Ops,
5	Suzuki Alto	2010 2011	5	Small Hatchback	Deputy Director Civil, Assistant Director Hyderabad PS to Chairman PDMA Assistant Director Finance Assistant Director Admin
6	Suzuki Bolan	2010	1	Carry Van/Truck	PRO/ Assistant Director
7	Suzuki Van	2010	5		Hyderabad General Use x2, Karachi General Use x2, Sukkur General Use x1
8	Toyota Hiace	2010	1	Van	All- general use x1
Total			25		

It is suggested that, fork lifters be secured for warehouses for lifting and moving equipment/ relief supplies. Vehicles need to be provided to the Deputy Directors for networking, donor meetings and the coordination of relief work. A total of 03 vehicles are proposed for PDMA Sindh's Head Office for the purpose of coordination, networking and monitoring operations.

Table 12: Proposed vehicles for PDMA Sindh Head Office

Sr.	Vehicle Type	Units	Unit Cost	Total
1	4x4 Double Cabin Pickup	3	6,000,000	18,000,000
2	Fork Lifter	6	7,500,000	45,000,000
Total				63,000,000

Operational costs for vehicles are expected to increase with the recommended scope of activities, staff and operations under the proposed HR structure. The following table covers basic operational costs only.

Table 13: Operational Cost for PDMA Head Office-(Cost/Year 2019-21)

Sr.	Operational Cost for Proposed Staff -(2019-20)	Units	Unit Cost/ Month	Cost/ Month	Annum Cost
1	Utilities	1	75,000	75,000	900,000
2	Miscellaneous	1	100,000	100,000	1,200,000
Total		2	175,000	175,000	2,100,000
Operational Cost and POL for PDMA Head Office-(Cost/Year 2020-21)					
1	Utilities	1	95,000	95,000	1,140,000
2	Miscellaneous	1	130,000	130,000	1,560,000
3	POL - Operational Vehicles	3	30,000	90,000	1,080,000
Total		5	255,000	315,000	3,780,000
Grand Total		7	430,000	490,000	5,880,000

3.3.2.11 Assessment and Recommendations for the Emergency Operations Centre (EOC) PDMA Sindh's Head Office

Currently, only one Assistant Director Operations is responsible for Emergency Operations in Sindh. He is using a wireless phone set which he maintains with him in the office and at home. It is suggested that this setup be formalized with a separate office room, staff, communications, vehicles and monitoring equipment such as cameras and computers for data analysis. In 2014, warnings were sent via SMS Alerts in collaboration with the Pakistan Telecommunication Authority.

Table 14: Proposed equipment for EOC

Sr.	Proposed Equipment for EOC - Karachi	Units	Unit Cost	Total Cost
1	Data Base Server (with Accessories)	1	800,000	800,000
2	Desktop Computer	1	90,000	90,000
3	UHF Radio Communication System	1	1,000,000	1,000,000
4	Liquid Color Display	4	75,000	300,000
5	Networking Cost	1	25,000	25,000
6	Generator 10 KVA (Diesel)	1	450,000	450,000
7	UPS + Batteries	1	200,000	200,000
8	Multi-Function Office Machine	1	400,000	400,000
9	Telephone Set (with installation)	1	6,500	6,500
10	AC (Inverter) 1.5 Ton	1	90,000	90,000
Total			3,136,500	3,361,500

Table 15: Estimated operational costs for EOC

Sr.	Estimated Operational Costs for EOC	Units	Unit Cost/ Month	Cost/ Month	Annum Cost
1	Operational Costs for EOC	1	4,200,000	4,200,000	50,400,000
Total			4,200,000	4,200,000	50,400,000

3.3.2.12 Supply Chain System/Inventory Management

PDMA Sindh currently has no online inventory system/database, this is recommended as a means to improve the management of stock and assets. Storage, insurance and warehouse space cost money and keeping too much stock can lead to significant extra costs. Conversely, warehouse supplies need to be restocked as soon as they start to fall low. DRM institutions particularly needs to know what resources they have in order to make quick decisions on emergency response capacity and planning. An online system via item tagging/coding is an efficient way to optimize resource management enabling real-time information on what equipment/resources are available, in which location and may be linked to financial systems for budget planning.

The advantages of an online system are:

- It gives managers an insight into issues such as stock levels and location, which can be integrated into planning, purchase orders and transferring items between locations,
- They may show maximum space certain items take up in storage and their cost to improve planning,
- Some systems contain built-in age analysis for food products or medical supplies and equipment. They may also show item models,
- Online software such as 'cloud', have the advantage of connecting the PDMA system with the systems of suppliers. This makes the process transparent. It also makes it possible to check what suppliers have and they see what is required,
- Stock is delivered in a timely manner and invoices paid forging better relationships with suppliers by not rushing them and improving trust,
- Automatic currency conversions for asset/equipment costs,
- Asset checks may be made remotely,
- The system can be used to generate quick reports of stock and inventories.

a. Quality Control

It is suggested that the supply chain system is also utilized as a means of quality control in terms of equipment, warehouse/relief supplies allowed to be distributed. Further systems of quality control will require the setup of data systems for internal monitoring, spot checks, service reviews by third parties and the evaluation of work by independent parties also.

b. Filing system

PDMA Sindh currently has no proper filing system at its office. It is advised that all files and documentation is reviewed, categorized, placed date-wise, in alphabetical order and labelled prior to the setup of its online system using scanning for existing files. The online system will need to be properly planned in order to make it easy to access financial and other administrative documentation. Access will also need to be planned by staff level and department in order to keep HR documentation confidential, safe and coding utilized where appropriate.

3.3.2.13 Operational Manual

PDMA Sindh currently has no Operations Manual. It is recommended that procedures are documented as a matter of urgency in order to improve the efficiency of activities and as a means of orientating staff on their expected roles and responsibilities. Typically, an operations manual for DRM/DRR authorities will include information on:

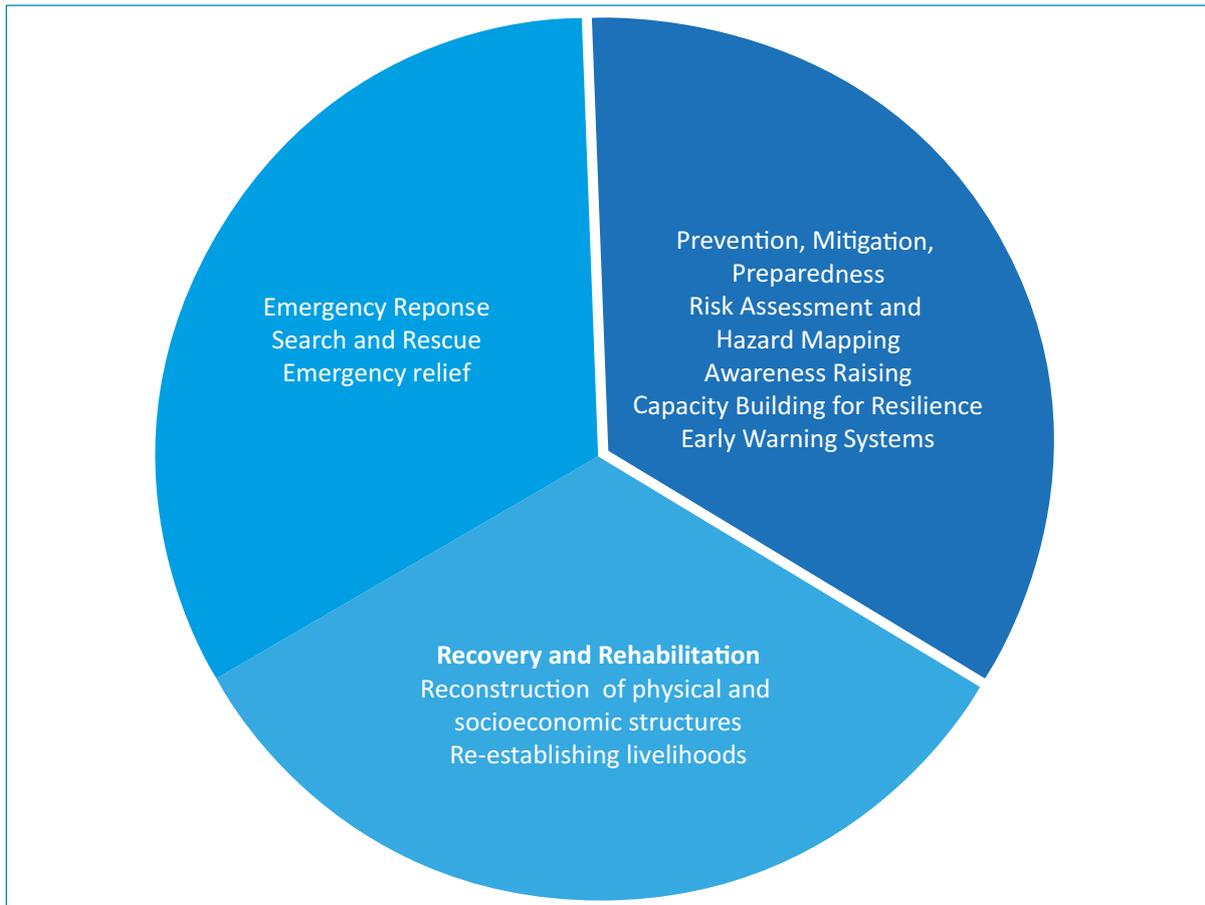
- Hazards and potential epidemics confronted within the administrative area and related environmental degradation,

- PDMA Sindh’s mission, objectives and structure,
- Information on the national, provincial and District disaster management structure and policy framework,
- Partner institutions and stakeholders,
- Donors and I/NGOs,
- Roles and responsibilities of PDMA Sindh in each phase of the disaster cycle (pre, post and during),
- The role of different departments and sections within PDMA Sindh,
- The role of DRM/DRR committees in coordination,
- Relief Operations including principles, the distribution of relief supplies, beneficiary criteria, appropriate conduct during relief operations, the role of I/NGOs in relief operations, conditions and code of conduct for implementing I/NGOs, expectations from implementing NGOs, incentives for implementing I/NGOs, contracting transporters for relief operations, conditions and code of conduct for contracted transporters and specific obligations of transporters,
- Information on flooding including assumptions, activities, early warning activities, declaration of flooding, implementation of response activities,
- Information on droughts including assumptions, activities, early warning activities, declaration of drought disaster, implementation of response activities,
- Information on epidemics including assumptions, activities, early warning activities, declaration of drought disaster, implementation of response activities,
- Guidelines on refugees and internally displaced persons,
- Guidelines on Community Based Disaster Risk Management (CBDRM),
- Disaster preparedness plan formats, disaster notification format, post-disaster evaluation format, example donor reporting reports, definitions of short, medium and long term interventions.

3.3.2.14 Stakeholder Coordination: horizontal and vertical linkages

3.3.2.14.1 Coordination with Line Departments

Disasters affect multiple sectors and require multi-sectoral stakeholder coordination from Government, non-Government and international agencies. For this reason, DRM/DRR need to be integrated into mainstream development planning. Sectoral coordination works best with clearly defined tiers and specialised HR. Increasingly, relevant line departments are participating in both disaster preparedness and response activities requiring higher levels of stakeholder participation. Sub-committees are also frequently utilized for teams to specialize in the areas of prevention, emergency response and recovery. Such committees should ideally have assigned contacts to work with Government departments based on knowledge, professional level and skills sets.

Figure 8: Suggested DRM Sub-committees to improve coordination

Ongoing stakeholder coordination is required outside of disaster periods to improve inter-departmental information sharing, improve inter-Provincial early warning systems and coordination on upstream and downstream resource management. Staff must therefore, have clear lines of accountability and responsibilities to expedite quick decisions. Currently, there is insufficient information sharing or coordination between line departments and PDMA Sindh without which HR capacity and data are inadequate to have any meaningful response. This means there is no holistic system in place for DRM/DRR activities indicating resource and activity overlaps and showing minimum coordination on ensuring Provincial wide coverage. The reasons for this are in part due to staffing shortages, limitations in software use and equipment. Clearly defined mandates also need to be agreed with Line Departments outlining their role in DRM and DRR planning and response.

3.3.2.14.2 Coordination with Emergency Services

Disasters cycles are generally split into two stages: preparedness and response with reactive emergency response initially led by security agencies whilst pro-active preparedness is led more by development related agencies. With the establishment of the Hyogo Framework and Sendai Framework for Action, disaster management institutions in Pakistan are required to work closely with international agencies on prevention and relief and national security forces on emergency search and rescue operations. Strong coordination at the higher management tiers is therefore a major factor in ensuring effective prevention and response activities. In Sindh, the Government and I/NGOs currently work on the area of prevention with PDMA Sindh leading in the planning of activities at the provincial and District level. Civil Defence, UN

Agencies, I/NGOs and PDMA Sindh operate in the area of Emergency Response in the way of search and rescue, emergency shelter and the storage and supply of relief goods. Government and I/NGOs work on Recovery and Rehabilitation with coordination from PDMA Sindh.

Currently, PDMA Sindh needs to coordinate more closely with security and emergency response services as an immediate lifeline for information and to highlight vulnerable areas. It should be ensured that proper coordination mechanisms are established during this early period. Staff will need clearly defined roles for coordinating with institutions based at the central, city, peripheral and rural areas, with the role of the private sector taking into account. To this end, staff ToRs need to be clarified along with lines of responsibility. It is suggested that current staff ToRs should be reviewed/written and contracts re-written accordingly. Longer term contracts should be preferential to improve institutional loyalty and inter-departmental relationships.

3.3.2.14.3 Coordination with Donors and Emergency Funding

In order to facilitate emergency funding, it is suggested that a donor section be set up focusing more on networking, research and project development. Technical and financial reporting, monitoring and evaluation will also need to be improved to strengthen transparency, donor confidence and compliance.

3.3.2.14.4 Coordination with the Media for Awareness Raising

PDMA Sindh has neither a dedicated media cell nor efficient linkages to media networks for television and radio reports. There is also a weak management/updating of the PDMA website as a potential source of real-time disaster information and no use of social media for awareness raising. At present, the PRO carries out all media management in the way of responses. A Media Department needs to be set up on an urgent basis. A communications strategy/plan also needs to be devised for information management pre and post disaster to issue hazard warning and to provide details on relief supply sites, camps and suggested evacuation routes/points. This plan should be approved by the DG so that review and written approvals are not required in emergency situations.

3.3.2.14.5 Media Strategy

Media strategies will typically focus on widespread public awareness campaigns being of critical means to reducing loss of life resulting from natural disasters. People must be made aware of potential natural hazards they might confront in their own communities. They should know in advance what preparations to make before an event, what to do during a drought, flood, fire, or cyclone and what actions to take in their aftermath. Efforts must be made to reach and plan for the care of vulnerable segments of the population such as children, the elderly, individuals in healthcare and correctional facilities, people with disabilities and those who do not speak Urdu or Sindhi with information about possible disasters and what to do in an emergency.

Public officials and the media, television, radio and newspapers, must be prepared to respond effectively and responsibly to large-scale emergencies. They need to be aware, in advance, of procedures to follow in a crisis and they need to know how to communicate effective information to the public. Community-wide planning should be encouraged in partnership with medical groups. Checklist, information handouts and training videos should be created and widely distributed to convey such information as the location of nearby emergency

resources and appropriate use of the emergency contact numbers both during and after a disaster. Regional and community demonstration programs, disaster day exercises, volunteer courses and conferences should be undertaken and evaluated for their effectiveness. It is recommended that community-wide awareness programs and media sensitization about natural and man-made disasters be made a provincial priority.

Information campaigns, materials and educational efforts should be developed in partnership with relevant departments and I/NGOs and their effectiveness evaluated for improvements. It is suggested that Household survival plans provide information on what hazardous events are most likely to occur in particular communities, what emergency equipment and supplies should be accessible, what precautions should be taken to the damage and what preparations should be made for escape and evacuation. Such information might best be illustrated in print and electronic media. Bold, easily recognizable graphic symbols signifying each natural hazard should be created and widely publicized to identify impending emergencies and quickly alert the public to the degree of seriousness and the imminence of danger. To stimulate public awareness, brochures, posters, games, calendars, museum exhibits, public service announcements (for print, radio and television) and entertainment programmes should be used.

3.3.2.15 Capacity for Disaster Risk Reduction at PDMA Head Office Level

3.3.2.15.1 Requirement and Recommendations for Hazard Monitoring

Currently, PDMA Sindh Head Office has very limited connections with the Pakistan Meteorological Department which leads to delayed weather updates. It is suggested that improved early warning systems are set up. These systems can involve forming stronger contacts with communities for information or taluka level authorities. Sensors may also be installed for real-time monitoring or data collection with specific indicators set for data collection. This may be conducted in collaboration with the Irrigation Department as sensors/ means of real-time measurements for water levels in some areas may already be in place with access to the required data. Since this latter item requires heavy investment, a detailed plan for hazard monitoring and appropriate sites and technologies needs to be formulated with close consultation with PDMA and local Government.

3.3.2.15.2 Requirement and Recommendations for Hazard Analysis

Limited data collection is currently being held for hazard risks, vulnerability levels by geographical area or damages and losses is currently held at Head Office. It is understood that information on damages and losses are currently provided by the Revenue Department. Setting up a Geographic Information System (GIS) Lab and Databases would enable PDMA Sindh to better analyse areas repeatedly at risk and the scale of risk in each climatic zone over a longer period. GIS Technology enables users to visualize and analyse spatial information in a dynamic, digital environment. It provides tools for integrating, querying and analysing a wide variety of data types, such as scientific, cultural data, statistical data, satellite imagery and aerial photography, as well as data collected by individuals, into projects, with geographic locations providing the integral link between all the data. More specifically GIS databases may contain information on various resources fields such as land, water, vegetation and socio-economic situation, which can be potentially tapped as per needs an information system such as Land Information System (LIS), Water Information System (WIS), Disaster Management Information System (DMIS), etc.

Advanced GIS survey equipment are required to establish the new GIS lab at PDMA Sindh's Karachi office. A list of recommended hardware, software and GIS specific equipment can be seen in the tables below:-

Table 16: Proposed GIS Specific Hardware

Sr.	List of recommended GIS specific hardware	Unit	Unit Cost	Total Cost
1	Drone Mapping Device with Integrated HD Camera	1	42,000,000	42,000,000
2	GNSS system (base + receiver)	1	6,400,000	6,400,000
3	Mobile sensing platform	1	10,500,000	10,500,000
4	Latest Server(Racks and Server Cabinets)	1	2,200,000	2,200,000
5	Large Format Scanner (62 Inch)	1	1,100,000	1,100,000
6	Network Attached Storage	1	1,000,000	1,000,000
7	Laptop Core i7 or latest generation	1	110,000	110,000
8	Colour Laser-jet Printer	1	550,000	550,000
9	Workstations with all accessories	2	200,000	400,000
10	Hardware Firewall	L/S	300,000	300,000
11	Software Firewall	L/S	200,000	200,000
12	Switches, Hubs, Routers and Networking Equipment	L/S	300,000	300,000
Total			64,860,000	65,060,000

Table 17: Proposed GIS Specific Software

Sr.	List of recommended GIS specific software	Unit	Unit Cost	Total Cost
1	ARC GIS Basic	L/S	7,350,000	7,350,000
2	ESRI City Engine	L/S	650,000	650,000
3	Leica Photogrammetry Suite (LPS)	L/S	1,200,000	1,200,000
4	ENVI+IDL (Single Node)	L/S	1,000,000	1,000,000
5	GeoMedia Professional	L/S	1,200,000	1,200,000
6	Manifold System	L/S	100,000	100,000
7	Global Mapper	L/S	100,000	100,000
8	Falcon View	L/S	100,000	100,000
9	Prezi Desktop	L/S	100,000	100,000
10	Microsoft Windows Server (Latest Edition)	L/S	105,000	105,000
11	Anti-virus (Server Based)	L/S	75,000	75,000
Total			11,980,000	11,980,000

3.3.2.16 PDMA Capacity for Mitigation and Preparedness Activities

3.3.2.16.1 Mitigation

Disaster mitigation activities are discussed under the DRR section which outlines the need to put measures in place such as structural mitigation in the form of construction projects such as small dams, windbreaks, terracing and hazard-resistant buildings, building codes/regulations also need to be reviewed and enforced to minimize the impact of a disaster. Non-structural activities may include the replanting of mangroves, flood/drought/wind resistant crops, economic diversification, policies and practices to raise awareness of hazards and preventative health measures. Further measures include zoning and land use management

and planning, vulnerability analysis and public awareness and education.

3.3.2.16.2 Preparedness

Preparedness and planning response is an area largely missing from PDMA Sindh activities. At present, a disaster management plan is in place for the Sindh Province but planning with more concrete agreed measures and roles between line departments need to be agreed, updated District level plans also need to be devised. It is further recommended that training activities are carried out in schools and other public institutions. Improved warning systems also need to be put into place.

3.3.2.16.3 Vulnerability

Services and HR need to be hired to ensure coping strategies for most vulnerable people are strengthened. This means that PDMA Sindh needs to ensure the presence of female field staff to reach out to women, that presence of field staff who have worked with mentally and physically disabled people and understand the challenges they confront and field staff who have worked with the destitute and understand the barriers they face to inclusion and mobility. Many vulnerable may be outside of social and economic networks, may have low or negligible levels of literacy, or may be dependent upon charity. In periods of crisis, where people's first priorities are their own families, it should be ensured that efforts are made to assist vulnerable individuals in accessing emergency relief and temporary shelter.

3.3.2.17 Disaster Management Information System (DMIS)

Currently, unavailability of data prevails in PDMA and DDMA. A verified but ready-made data and statistics on hazards, vulnerabilities, risks and disasters are not easily available at all levels at the time of crucial needs. PDMA Sindh currently has no DMIS set up for use in hazard mitigation and planning. DMIS enables the assessment of the occurrences of natural hazards and their impacts analysing spatial and non-spatial data. If such information is made available, it would be useful in the:

1. Identification of the processes responsible for natural hazards and their impacts on natural resources,
2. Planning appropriate preventive measures/preparedness,
3. Assessing damages caused by hazards and to plan mitigation measures.

With the advent of Satellite Remote Sensing and GIS technology, it has become easier to generate databases, storage data, retrieve data and analyse it. This facilitates information exchange for the quick implementation of action plans and their monitoring. GIS databases have the following advantages with reference to hazards enabling:

1. The assessment of the situation through integrated analysis,
2. Improved risks and planning,
3. Spatial modelling, querying and map creation for efficient and effective implementation of Response Action System (RAS),
4. The simulation of models and visualizing the scenario of hazards.

Disaster Management Information Systems (DMIS) have a digital database within GIS oriented towards providing information for decision makers and encompasses information on natural resources. The integration of these datasets aids in decision making for systematic planning

and the better management of resources and disaster situations. In order for PDMA Sindh to set up this system, a wide variety of maps would be collated and further generated for the study of hazards. These maps would provide information on political boundaries, transport networks, settlements and natural resources. These maps provide basic location information concerning hazards with thematic support maps such as tectonic features, geological features, landforms, drainage, land use/land cover, soils, etc.

Information provided by thematic maps are may be as follows:

1. Geological maps to identify earth materials, geological hazards and river courses,
2. Geomorphology maps to create an integrated picture of natural land surfaces and their hazards (erosion, floods, landslides, subsidence). These maps form a part of a wider endeavour to understand the sensitiveness of geomorphologic processes to human interferences and the risks associated with development and settlements on hazardous sites,
3. Soil maps to depict the variation and changes in soil characteristics. Specialized maps with collateral data enable area specific prediction such as landslides and mass washing, epidemic surveillance of soil-borne diseases. They also help in providing information on drainage, waterlogging, erosion susceptibility, salinization,
4. Land use/land cover maps to depict the land use pattern such as animal, forest, scrub-land, etc. These maps can be used for assessing the extent of damage as a consequence of hazards and valuation and to identify areas prone to floods and fires.

3.3.2.17 .1 Non-spatial database

Socio-economic and infrastructure data would be useful in the analysis of growth trends, demographic situations, the consequences of hazards depending on the demographic pattern, economic profiles, infrastructure status, communication networks and linkages.

In order to set up a DMIS at PDMA Sindh, staff would require specialized training in this software, GIS would be required, databases would need to be collated and further information/ data collected either via satellite imagery or external partners. Staff would also need to be allocated for the DMIS to be regularly updated and properly utilized.

3.3.2.18 Monitoring of National and International Governmental Organizations

Monitoring is a key activity currently absent from PDMA Sindh's activities. Over the last decade, there has been significant growth in the number of I/NGOs involved in development aid. The total amount of public funds being spent through I/NGOs has grown substantially and the proportion of development aid going through I/NGOs, relative to bilateral or multilateral agencies, has also increased. Associated with this growth has been a growing concern about identifying the achievements of I/NGOs. It is critical for Government to efficiently monitor the work of I/NGOs. Due to the scale of I/NGO operations it is suggested that monitoring systems are set up. Methods that may be considered are remote monitoring and participatory monitoring approaches. It is suggested that Government monitoring guidelines for checks focus on whether the organization has clear objectives, assessing activities and performance against baselines, the management of information and data, transparency and accountability and impact.

Table 18: Suggested Reporting for I/NGOs

Sr.	Report Type	Recommended Report Contents
1	Monthly	Current month: progress for previous month on all relevant outputs Targets and achievements for the month Breakdown by tasks Cumulative analysis of targets and achievements Goals for following month
2	Quarterly	Current quarter: progress for past quarter on all relevant outputs Targets and achievements for the quarter Breakdown by tasks Cumulative analysis of targets and achievements Milestones completed to data against work-plan Issues and areas of slow progress and resolution of problems Goals for following quarter
3	Annual	Summary of progress: project, objective, time-frame, achievements to date Targets and achievements for the year Cumulative analysis of targets and achievements Milestones completed to data against work-plan Issues and areas of slow progress Goals for following year

3.3.2.19 PDMA Capacity for Financial Administration

3.3.2.19.1 *Financial Management Information Systems (FMIS)*

FMIS supports the automation and integration of public financial management processes including budget formulation, execution (e.g. commitment control, cash/debt management, treasury operations) accounting and reporting. FMIS solutions can significantly improve the efficiency and equity of Government operations and offer a great potential for increasing participation, transparency and accountability. It is advised that staff are trained in FMIS and software procured to improve transparency increasing the confidence of donors and the public in funding for DRM/DRR institutions.

3.3.2.19.2 *HR for Financial Management and Administration*

There is currently limited managerial staff in PDMA dealing with financial management or administration. It is recommended that professionals are hired in this area on an urgent basis. An internal audit is also recommended to verify asset value and location within the organization.

3.3.2.19.3 *Requirement and Recommendations for a Research Hub*

Aimed at reducing risk and preventing natural hazards, DRR has received increasing international investment in recent years. This area requires strong technical skills to increase flood preparedness, landslide control measures, strength of dam structures and earthquake resistant structures. 15% of the budget for DRR/DRM in Sindh is currently spent on flood prevention compared to 92% in Punjab over 2003-2008. Improved research is required to strengthen planning and investment. At present, there is no research hub set up in PDMA Sindh's Head Office. It is suggested that this be considered as a priority for DRR and hazard monitoring activities with linkages set up with research institutions. Alongside in-house research, it is recommended that third party studies be carried out by specialist consultancies/institutions. To this end, several studies are proposed in the areas of climate change, hazard risks, land use and resilience:

1. Guidelines and Instructor's Manual on Community based Disaster Risk Reduction to encourage locally appropriate and locally owned strategies for disaster risk management,
2. Guidelines and Instructor's Manual on Community based Early Warning System as a vital part of evacuation planning and for multi-hazard risk planning,
3. Development of land-use Management Plans vital to inform the sustainable development and strategic public use of natural resources,
4. Guidelines for effective utility of Information Communication Technologies for DRR to facilitate information access and contribute to the enhancement of local capacities,
5. Studies on Urban and Flash Flooding. Due to impervious surfaces, urban areas being prone to severe flooding within shorter time-spans than rural areas making research on appropriate DRR measures critical.

3.3.3 District Level Coverage (District Disaster Management Authorities)

3.3.3.1 Current Situation of DDMA

During the field visits of districts, a detailed questionnaire was used to assess the current situation of DDMA. It was assessed that there was no proper setup of DDMA in any District. There was no dedicated staff for DDMA in any District, extra duties were currently being assigned to existing Government officials working on other positions. Other gaps identified during the detailed survey were;

- There were no details of information on previous disasters in most of the districts,
- No measures were being taken from DDMA for reoccurring epidemic diseases,
- There was no proper District level legal framework/SoPs in DDMA,
- Disaster management plan was not found in most of the districts,
- Coordination system is built up in numerous districts, yet was observed to be at starting stage and was not as per the standards,
- Lack of coordination amongst all the stakeholders is a major hindrance in implementation and progress of the Disaster Risk Reduction process,
- Resource allotment in all areas was discovered inadequate in terms of cash, staff hardware and office space,
- No legitimate early warning system was set up in any area, however, few regions were sending early notices to communities through SMS and nearby radio based on data received by PDMA and MET office,
- Disaster management information system was not found in any District, damage assessment in few districts was being done through field surveys and most of the times data was being manually collected by revenue officials,
- There was no proper mechanism for purchasing disaster relief supplies in most of the districts,
- Basic GPS devices were being used in some districts for location mapping, but there was no proper GIS setup in any District,
- Education and awareness campaigns were being carried out in most of the districts however there were no proper guidelines and Behaviour Change Communication material for such activities,
- There are no well-defined local level evacuation areas, routes/shelters in most of the districts.
- There was limited rescue, relief and search equipment in most of the districts,

- There has been no mechanism for insurance of assets that have been at risk of disaster for communities,
- Dedicated IT department was not found in any District, even the basic IT equipment was not available in the offices,
- All the districts lacked technical and experienced staff.

The District wise feedback received during the assessment against key indicators can be seen in the table: -



Table 19: Feedback received against key indicators – Divisional Level

District	Population	Recent Disasters	Hazards	Epidemic Diseases	Availability of Disaster Management Plan				IT Department	
					Contingency Plan	Coordination Mechanism	EWS	GIS		
Karachi	Karachi Central	2971626	Heavy Rain	Urban Flooding	Diarrhoea	Yes	Yes	Yes	No	No
	Karachi West	3914757	Monsoon Rain, Heat Wave	Dengue, Malaria, Food and Mouth Diseases, Bird Flu, Tsunami and Earthquake	Malaria, Dengue, Gastro, Diarrhoea	Yes	Yes	Yes	No	No
	Karachi East	2907467	Flood	Torrential Rain, Heat Waves, Animal Diseases, Human Diseases, Pollution	Nil	No	Yes	Yes	No	No
	Karachi South	1791751	Heat Wave and Urban Flooding	Viral Diseases, Waterborne Diseases, Building Collapses, Accidents, Fire Incidents, Urban Flooding	Diarrhoea	Yes	Yes	Yes	Yes	No
	Malir	2008901	Flood, Monsoon Rain, Heat Waves	Cyclone, Drought, Flood, Earthquake, Pest Attack, Sand Storm, Hail Storm, Heat Waves, Torrential Rain, Animal Diseases, Human Diseases	Malaria, Gastro, Diarrhoea	No	Yes	Yes	No	No
Mirpur Khas	Mirpur Khas	1505876	Rain Fall and Earthquake	Drought, Flood, Earthquake, Cyclone, Pest Attack, Erosion, Torrential Rain	Malaria, Gastro, Diarrhoea	Yes	Yes	Yes	Yes	No
	Tharparker	1649661	Flood due to Rainfall	Animal Diseases, Heat Waves, Earthquake, Human Diseases	Malaria, Diarrhoea, Scabies, Chlorea, Small Pox and Typhoid	No	Yes	No	Yes	No
	Umer Kot	1073146	Heavy Rainfall	Flood, Heat Waves, Animal and Human Diseases	Malaria, Diarrhoea, Gastro, Chlorea, Dengue and Typhoid	No	Yes	No	Yes	No

District	Population	Recent Disasters	Hazards	Epidemic Diseases	Availability of Disaster Management Plan				GIS	IT Department
					Contingency Plan	Coordination Mechanism	EWS	Management Plan		
Sanghar	2057057	Flood, Rainfall	Heat Waves, Tornados, Twister, Drought	Diarrhoea, Measles, Chicken Pox	No	Yes	No	No	No	No
	1612847	Flood	Riverine, Flood, Drought	Malaria, Diarrhoea, Cholera, Typhoid	Yes	Yes	Yes	Yes	No	No
	1612847	Riverine Floods	Riverine/ Rain Floods, Droughts, Earthquake	Malaria, cholera, Small Pox, Diarrhoea	No	No	Yes	Yes	Yes	No
Ghotki	1646318	River Flood	Flood, Torrential Rain	Measles and other Epidemic Diseases	Yes	Yes	Yes	No	No	No
	2404334	Flood, Rain	Flood, Pest Attack, Heat Waves, Extreme Cold, Animal Diseases, Human Diseases	Malaria, Typhoid, Gastro, Diarrhoea	Yes	No	Yes	No	Yes	No
	1487903	Flood, Rain	Torrential Rain, Flood		No	No	No	No	No	Yes
Badin	1804516	Flood	Flood, Torrential Rain, Heat Waves, Animal Diseases, Human Diseases	Malaria, Chlorea, Typhoid, Dengue, Gastro, Diarrhoea	No	No	No	No	No	No
	1550266	Heavy Rainfall	Cyclone, Flood, Torrential Rain, Heat Waves	Malaria, Chlorea, Typhoid, Dengue, Gastro, Diarrhoea	Yes	Yes	No	No	No	No
	2199463	Heavy Rain	Flood, Human Diseases, Animal Diseases, Heat Waves	Malaria, Chlorea, Diarrhoea	No	No	No	No	No	No
Jamshoro	993142	Flood, Drought	Drought, Flood, Human Diseases, Animal Diseases	Malaria, Diarrhoea, Chlorea, Typhoid, Dengue, Scabies, Gastro	No	No	Yes	No	No	No
	769349	Flood	Cyclone, Flood, Earthquake, Sand Strom, Heat Waves, Animal Disease, Human Diseases	Malaria, Diarrhoea, Chlorea, Typhoid, Dengue, Scabies, Gastro	No	No	No	No	Yes	No

District	Population	Recent Disasters	Hazards	Epidemic Diseases	Availability of Disaster Management Plan				IT Department
					Contingency Plan	Coordination Mechanism	EWS	GIS	
Sujawal	781967	Flood	Flood	Malaria, Diarrhoea, Chlorea, Typhoid, Dengue, Scabies, Gastro	No	Yes	No	Yes	Yes
Tando Allah Yar	836887	Flood	Drought,	Malaria, Diarrhoea, Scabies	No	No	No	No	No
Tando Muhammad Khan	677228	Flood,	Drought, Extreme Cold, Animal Diseases	Malaria, Gastro, Diarrhoea	No	No	No	No	No
Thatta	979817	Flood, Drought,	Flood	Malaria, Chlorea, Scabies, Gastro	No	Yes	Yes	Yes	Yes
Jacobabad	1006297	Earthquake,	Drought, Flood, Earthquake, Animal Disease	Malaria, Scabies, Diarrhoea	No	Yes	No	No	No
Larkana	1524391	Water shortage	Extreme Cold,	Malaria, Diarrhoea	No	No	No	No	No
Kashmor	1089169	Animal Diseases	Flood, Human Diseases, Animal Diseases, Agricultural Loss	Measles	Yes	Yes	Yes	No	No
Kambar Shahdad	1341042	Flood, Sea	Flood, Sea	Gastro, Diarrhoea	Yes	Yes	Yes	Yes	No
Shikarpur	1231481	Flood, Rain	Drought, Flood, Animal Disease	Hepatitis	Yes	Yes	Yes	Yes	No

Larkana

3.3.3.2 Establishment of DDMA (HR, Facilities, Vehicles and Equipment)

Disaster Management has two components: (a) emergency response and (b) identification of potential hazards, risk mitigation and resilience. Both the components require singular attention to bring about a perpetual mechanism for achieving a scenario where potential disasters can be timely identified and mitigation approach can be rationally employed and for responding disaster emergencies both the tasks required absorbed concentration to the operations and communications.

Currently, the Deputy Commissioner performs as the chairman of District Disaster Management Authority. No denying the fact that the office of Deputy Commissioner the District is trustworthy for a job done including that of disaster management, but no blinking the fact that this office has multifarious jobs to do in normal situations. Whereas, disaster management is a continuously active job; achieving resilience, identification of potential hazards, coordination for their mitigations, constitution and activation of community volunteer teams, referrals to an update of District Disaster Management Plans, monitoring of and coordination with (I) NGOs and private donors require engrossed involvement of an officer.

The setup of District offices is envisioned to improve data collection and as focal points for coordination with PDMA, agencies and communities. Under the command of chairman DDMA the District disaster management staff would further strengthen efforts for local capacity building and awareness raising. Staff would have more in-depth contextual knowledge of District hazards and vulnerable communities improving decision making.

3.3.3.2.1 Proposed HR for DDMA

Post assessment, it is proposed to establish an office of District Disaster Management Coordinator along with his/her supporting staff in each District. Resembling set up have already introduced in the KPK and Punjab. To make District level disaster management facilities/ DDMA fully functional, it is proposed that a minimum provision of 07 staff members be made in each District with a full-time District Disaster Management Coordinator as the lead. Efforts also need to be made to link these institutions with local Government and communities via improved logistical capacity and staff ToRs. Proposed DDMA staff along with estimated cost forwarded below: -

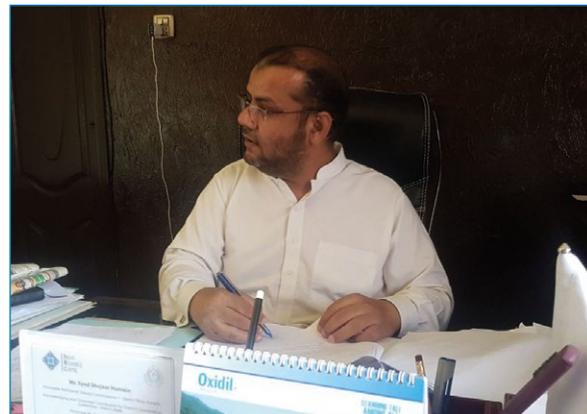


Figure 9: Proposed Organogram for DDMA Sindh

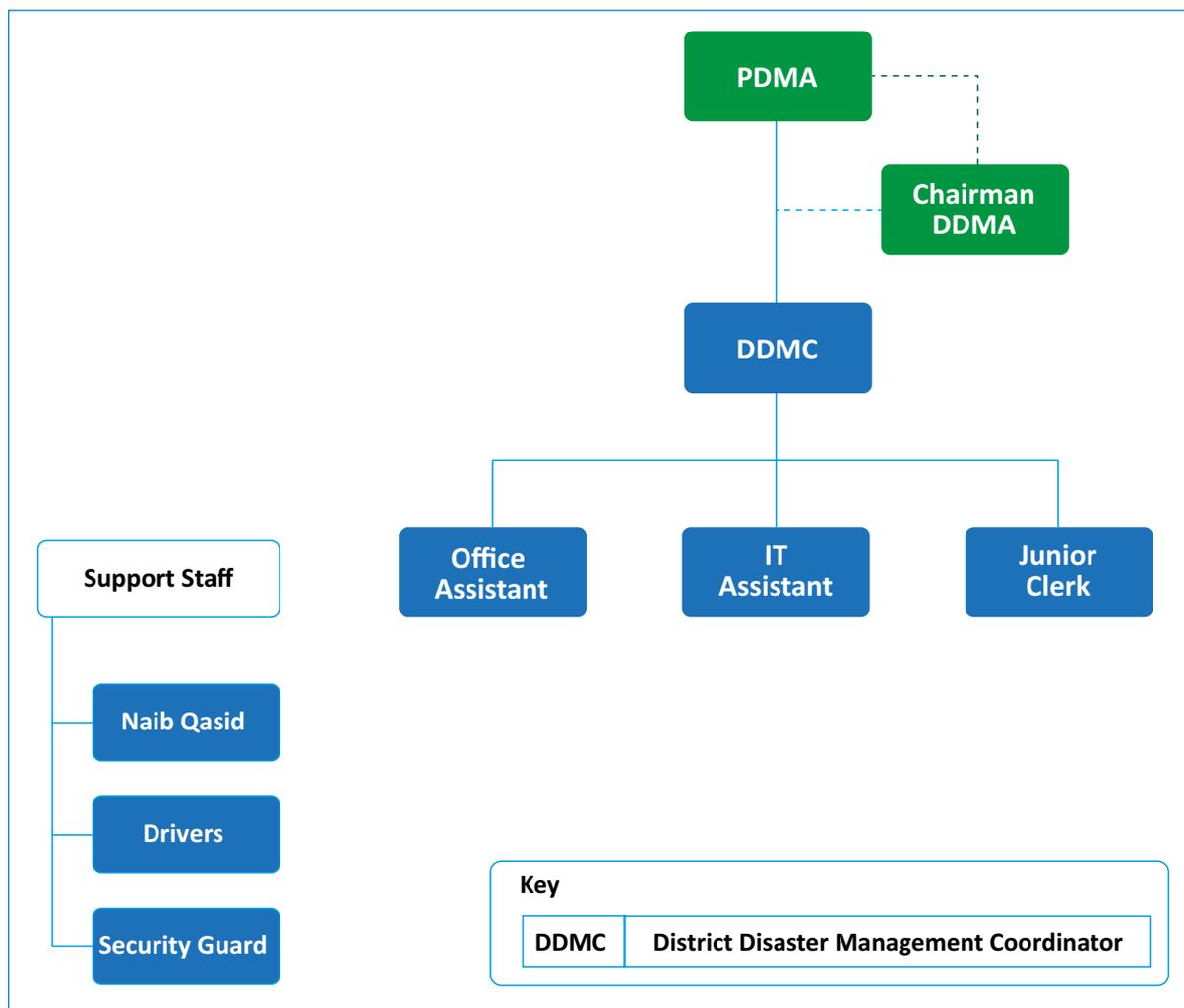


Table 20: Proposed HR for 29 DDMA Sindh-(Cost/Year)

Sr.	Proposed HR	BPS	Units/DDMA	Total Units/29 DDMA Sindh	Unit Cost	Cost/Month/DDMA*	Cost/Annum/DDMA	Cost/Month/29 DDMA Sindh	Cost/Annum/29 DDMA Sindh
1	District Disaster Management Coordinator (DDMC)	17	1	29	138,000	138,000	1,656,000	4,002,000	48,024,000
2	Office Assistant	14	1	29	67,000	67,000	804,000	1,943,000	23,316,000
3	IT Assistant	14	1	29	67,000	67,000	804,000	1,943,000	23,316,000
4	Junior Clerk	7	1	29	46,000	46,000	552,000	1,334,000	16,008,000
5	Driver	5	1	29	39,000	39,000	468,000	1,131,000	13,572,000
6	Security Guard	5	1	29	39,000	39,000	468,000	1,131,000	13,572,000
7	Naib Qasid	2	1	29	38,000	38,000	456,000	1,102,000	13,224,000
Total			7	203	434,000	434,000	5,208,000	12,586,000	151,032,000

*Cost includes basic pay and allowances.

3.3.3.2.2 Office Setup for DDMA

To make DDMA functional, investment is required in staffing, offices, planning, equipment, vehicles and software. Once the proposed HR is appointed, following basic office facilities will need to be procured. Given the adhoc power supply in interior Sindh, UPS with a long backup is also proposed along with generators for uninterrupted power supply during emergency response. The proposed office furniture, basic office facilities along with estimated rental cost can be seen below:-

Table 21: Proposed Furniture with estimated cost for 29 DDMA

Sr.	Furniture	Unit/ DDMA	Total Units - 29 DDMA	Unit Cost	Total Cost
1	Computer Tables with Chair	4	116	35,000	4,060,000
2	Office Chairs	8	232	5,000	1,160,000
3	Wooden File Cabinets	6	174	20,000	3,480,000
4	Conference Tables with Chairs (Set)	1	29	150,000	4,350,000
5	Miscellaneous (Other Chairs/ Accessories and Stationary)	1	29	50,000	1,450,000
Total		20	580	260,000	14,500,000

Table 22: Proposed Office facilities with estimated Cost for 29 DDMA

Sr.	Office Facilities	Unit/ DDMA	Total Units - 29 DDMA	Unit Cost	Total Cost
1	AC (Inverter) 1.5 Ton	3	87	90,000	7,830,000
2	Generator 6 KVA (Diesel)	1	29	200,000	5,800,000
3	UPS + Maintenance free Batteries	1	29	100,000	2,900,000
4	Telephone Sets with installation	3	87	6,500	565,500
Total		8	232	396,500	17,095,500

Table 23: Estimated Office Space Cost for 29 DDMA

Sr.	Office Space	Units	Cost/ Month/ DDMA	Cost/ Annum/ DDMA	Cost/ Month/29 DDMA	Cost/ Annum/29 DDMA
1	Office Rent	29	50,000	600,000	1,450,000	17,400,000
Total			50,000	600,000	1,450,000	17,400,000

Table 24: Estimated Office Renovation cost for 29 DDMA

Sr.	Renovation	Units	Unit Cost	Total Cost
1	Renovation Cost (1 Time)	29	150,000	4,350,000
Total			150,000	4,350,000

3.3.3.2.3 General, IT and Office Equipment for DDMA

Personal computers need to be provided reflecting the emphasis on information collection and dissemination at this level. A multifunction office machine is also required for faster sharing of documentation should internet facilities not be available. As the first-point-of-contact for

communities and the primary resource for field monitoring, DDMA should be provided with laptops, landline phones and cameras. Details of proposed equipment along with estimated cost is given below:-

Table 25: Proposed General, IT, Office Equipment with estimated cost for 29 DDMA

Sr.	General, IT, Office Equipment	Unit/DDMA	Total Units-29 DDMA	Unit Cost	Total Cost
1	Desktop Computer (Full Set)	3	87	95,000	8,265,000
2	Digital Camera	1	29	80,000	2,320,000
3	Laptop (Core i7)	1	29	110,000	3,190,000
4	LCD 52"	2	58	75,000	4,350,000
5	Multi-Function Office Machine	1	29	400,000	11,600,000
6	Conference Calling System	1	29	60,000	1,740,000
7	4G USB	1	29	3,500	101,500
8	Networking Cost	1	29	15,000	435,000
Total		11	319	838,500	32,001,500

3.3.3.2.4 DDMA's Capacity for Field Monitoring

Currently, DDMA are not functional and no vehicles have provided for field monitoring. It is recommended that the operational vehicles along with motor-bikes should also be given for making DDMA more independent and functional.

Table 26: Proposed Vehicles with estimated cost for 29 DDMA

Sr.	Vehicle Type	Units/29 DDMA	Unit Cost	Total Cost
1	4x4 Single Cabin Pickup	29	4,500,000	130,500,000
2	70 cc Motor Bike (2/District)	58	60,000	3,480,000
Total				133,980,000

Operational costs are expected to increase with the recommended increase activities, staff and operations under the proposed HR structure. Basic operational costs and POL for proposed vehicles can be seen in the table below:-

Table 27: Proposed Operational Cost and POL for 29 DDMA-(Cost/Year)

Sr.	Operational Cost and POL	Units	Units/29 DDMA	Unit Cost	Cost/ Month/ DDMA	Cost/ Annum/ DDMA	Cost/ Month/29 DDMA	Cost/ Annum/29 DDMA
1	Fuel and Maintenance Generators	1	29	30,000	30,000	360,000	870,000	10,440,000
2	Utilities	1	29	15,000	15,000	180,000	435,000	5,220,000
3	Miscellaneous	1	29	40,000	40,000	480,000	1,160,000	13,920,000
4	Maintenance and POL for Operational Vehicles	1	29	25,000	25,000	300,000	725,000	8,700,000
5	Maintenance and POL for Motor-Bikes	2	58	10,000	20,000	240,000	580,000	6,960,000
Total				120,000	130,000	1,560,000	3,770,000	45,240,000

3.3.4 Disaster Emergency Response Team (D.E.R.T)

3.3.4.1 Recommendation for Disaster Emergency Response Team (D.E.R.T)

Pakistan's approach to disaster management has changed since the 2005 Earthquake. Significant progress has been made towards institutionalization of disaster management system particularly the response mechanism. A standard rescue component of the Disaster Management system does not exist in Sindh. The Karachi Metropolitan Corporation has made an individual effort to fill the wide scale gap by forming a rescue team, but there is a long felt need for a properly equipped and trained team capable of not only responding to building collapse incidents but also to respond in industrial accidents involving hazardous materials and to meet the requirements for drowning incidents. In order to fill this gap and reduce dependence on armed forces/other agencies, raising of D.E.R.T is need of the hour. In natural disasters, the goal of a search and rescue operation is to rescue the largest number of people in the shortest time, while minimizing risk to rescuers.

3.3.4.2 Operational Role

The D.E.R.T will provide specialized assistance to local disaster management authority/emergency service, when it is felt necessary. The Force will be available 24/7 and can be a 1st or 2nd responder as the case may be. Team lead has the ultimate responsibility for the emergency response team. He will be responsible for ensuring that the team is organized in accordance with organizational guidelines and standard operating procedures. Furthermore, an explicit coordination mechanism will be required for effective monitoring and coordination. D.E.R.T will report to PDMA Sindh through Divisional Deputy Director's and coordinate with DDMA's when required. It will provide timely response, rescue and emergency medical treatment to the victims of an emergency including floods, earthquake and medical emergencies.

The team establishes what types of structures are involved, the extent of damage, the layout of building(s), hazards (downed power lines, gas leaks, flooding, animals, hazardous materials, structures that may collapse during the rescue, etc.); and what rescue personnel and equipment are required and are available. The team includes Hazardous Materials (HAZMAT) Expert specializing in detecting, containing and removing any release or potential release of hazardous substances in order to control or stabilize an incident.

3.3.4.3 Community Linkages

D.E.R.T will also be responsible to establish community emergency response teams through enlistment, training, coordination and supervision of volunteers to assist the Service in safety promotion and management of emergencies. D.E.R.T will impart training and grant certificates to rescuers, volunteers and other private persons for due performance of emergency management duties. It will coordinate and maintain an effective liaison with all other organizations managing emergencies.

3.3.4.4 Training and Development

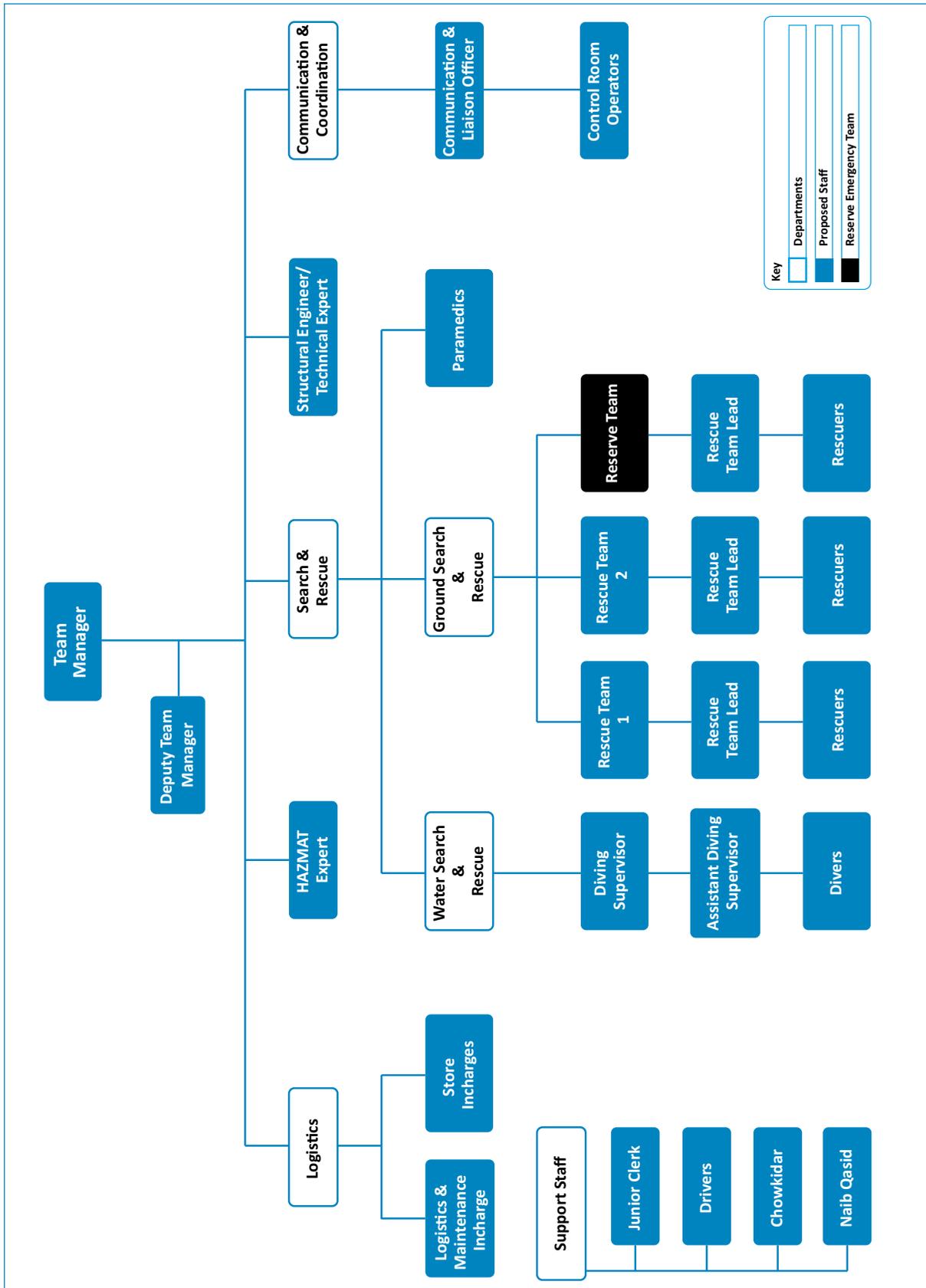
D.E.R.T responders will be given basic training to deal with earthquakes, cyclones, storms and tornadoes, floods, road accidents, dam failures, technological accidents and hazardous materials releases.

3.3.4.5 Recommendations for Disaster Emergency Response Team (D.E.R.T)

It is proposed that each D.E.R.T should ideally hold 62 members of staff. These should specialize

in the areas of Search and Rescue Operations, Logistics and Coordination. The D.E.R.T will directly coordinate with Head Office Karachi. Organogram of D.E.R.T can be seen below:-

Figure 10: Proposed Organogram for D.E.R.T



3.3.4.6 Proposed HR for Disaster Emergency Response Team (D.E.R.T)

Post detail assessment, it is recommended that 06 divisional teams comprising of 62 staff per division be raised for Hyderabad, Karachi, Larkana, Mirpurkhas, Shaheed Benazirabad and Sukkur. At the later stages, the system can be cascaded at District level to ensure availability of timely response facility in all the Districts of Sindh.

Table 28: Proposed HR for 6 Divisional Teams-(Cost/Year)

Sr.	Proposed Staff	BPS	Units/ Division	Total Units/6 Divisions	Unit Cost	Cost/ Month/ Division	Cost/ Annum/ Division	Cost/ Month/6 Divisions	Cost/ Annum/6 Divisions
1	Team Manager	17	1	6	138,000	138,000	1,656,000	828,000	9,936,000
2	Deputy Team Manager	16	1	6	84,000	84,000	1,008,000	504,000	6,048,000
3	Communication and Liaison Officer	16	1	6	84,000	84,000	1,008,000	504,000	6,048,000
4	Structural Engineer/ Technical Expert	16	1	6	84,000	84,000	1,008,000	504,000	6,048,000
5	Logistic Maintenance Incharge	14	1	6	67,000	67,000	804,000	402,000	4,824,000
6	Store Incharges	12	2	12	62,000	124,000	1,488,000	744,000	8,928,000
7	Hazmat Expert	12	1	6	62,000	62,000	744,000	372,000	4,464,000
8	Paramedics	12	6	36	62,000	372,000	4,464,000	2,232,000	26,784,000
9	Control Room Operators	7	3	18	46,000	138,000	1,656,000	828,000	9,936,000
Water Search and Rescue Unit									
10	Diving Supervisor	Market Based	1	6	100,000	100,000	1,200,000	600,000	7,200,000
11	Assistant Diving Supervisor		1	6	80,000	80,000	960,000	480,000	5,760,000
12	Divers	7	5	30	46,000	230,000	2,760,000	1,380,000	16,560,000
Ground Search and Rescue Unit									
13	Rescuers	7	21	126	46,000	966,000	11,592,000	5,796,000	69,552,000
Support Staff									
14	Junior Clerk	7	1	6	46,000	46,000	552,000	276,000	3,312,000
15	Drivers	5	12	72	39,000	468,000	5,616,000	2,808,000	33,696,000
16	Chowkidar	5	2	12	39,000	78,000	936,000	468,000	5,616,000
17	Naib Qasid	2	2	12	38,000	76,000	912,000	456,000	5,472,000
Total			62	372	1,123,000	3,197,000	38,364,000	19,182,000	230,184,000

3.3.4.7 Assessment and Recommendations for facilities at Divisional Offices

To establish divisional offices, investment is required in staffing, offices, planning, equipment, vehicles and software. Once the proposed HR is appointed, following basic office facilities need to be procured. It is recommended that generators or UPS are added for office use during load-shedding and disaster periods when PDMA is most needed in divisions. Means of ensuring reliable power supply will need to be added in all divisional offices. The proposed office furniture, basic office facilities along with estimated construction cost can be seen in table:-

Table 29: Estimated Construction Cost for 6 Divisional Offices (D.E.R.T)

Sr.	Construction Cost	Units/ Division	Total Units-6 Divisions	Unit Cost	Total Cost
1	8000 Sq Ft Covered Area (Office Rooms)	1	6	14,400,000	86,400,000
2	8000 Sq Ft Covered Area (Warehouse + dormitory)	1	6	9,600,000	57,600,000
Total			12	24,000,000	144,000,000

It is recommended that furniture is added to accommodate proposed technical and operational staff at all divisional offices. Recommended furniture can be seen in table below: -

Table 30: Proposed Furniture for 6 Divisional Offices (D.E.R.T)

Sr.	Furniture	Units/ Division	Total Units-6 Divisions	Unit Cost	Total Cost
1	Computer Tables With Chair	7	203	35,000	7,105,000
2	Office Chairs	25	725	5,000	3,625,000
3	Wooden Tables	8	48	5,000	240,000
4	Wooden File Cabinets	12	348	20,000	6,960,000
5	Conference Tables With Chairs (Set)	1	6	200,000	1,200,000
Total		53	1,330	265,000	19,130,000

Table 31: Proposed Facilities for 6 Divisional Offices (D.E.R.T)

Sr.	Office Facilities	Units/ Division	Total Units-6 Divisions	Unit Cost	Total Cost
1	AC (Inverter) 1.5 Ton	6	36	90,000	3,240,000
2	Generator 10 KVA (Diesel)	1	6	450,000	2,700,000
3	UPS + Maintenance Free Batteries	1	6	200,000	1,200,000
4	Telephone Sets With Installation	5	30	6,500	195,000
5	UHF Radio Communication System	1	6	1,000,000	6,000,000
6	Radio Set for Operational Vehicles	3	18	100,000	1,800,000
7	Tow Way Radio Communication Set	6	36	45,000	1,620,000
8	Miscellaneous	-	6	200,000	1,200,000
Total		23	144	2,091,500	17,955,000

It is recommended that laptops and further desktops be provided to staff to prevent the use of personal IT equipment for security reasons. Further basic equipment needs to be provided in the form of cameras to improve field monitoring.

Table 32: Proposed General, IT, Office Equipment for 6 Divisional Offices (D.E.R.T)

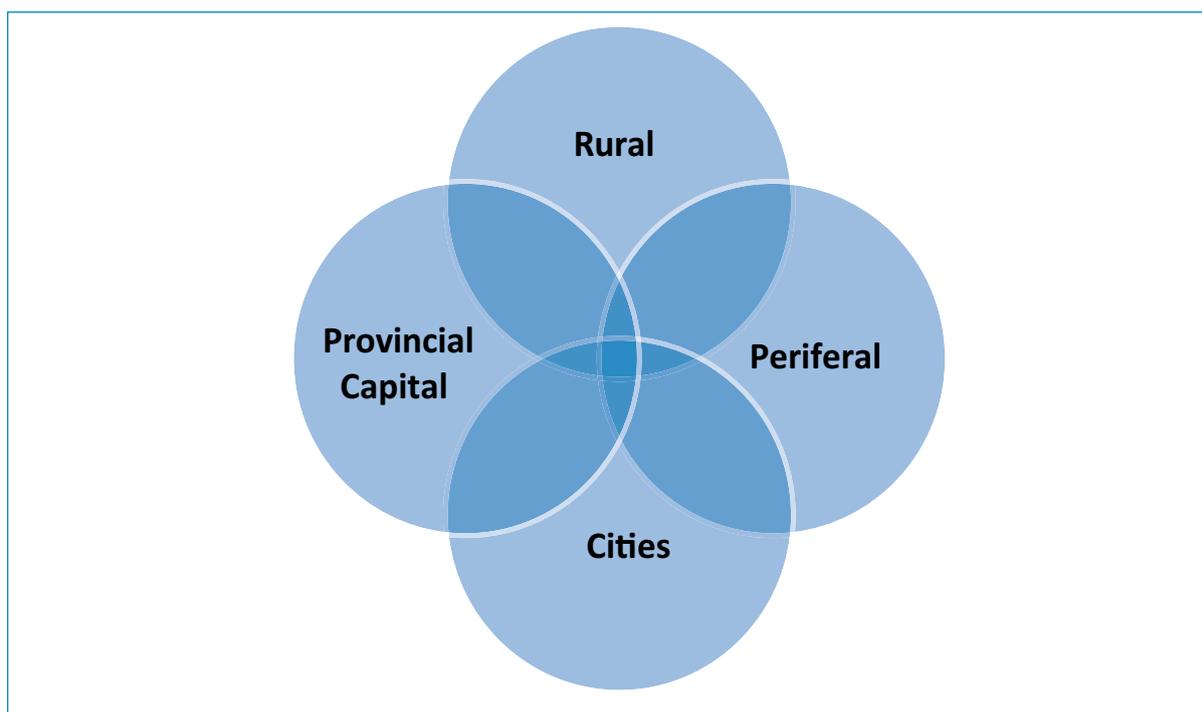
Sr.	General, IT, Office Equipment	Units/ Division	Total Units-6 Divisions	Unit Cost	Total Cost
1	Desktop Computer (Full Set)	4	24	95,000	2,280,000
2	Digital Camera	2	12	80,000	960,000
3	Laptop (Core i7)	3	18	110,000	1,980,000

4	LCD 52"	3	18	75,000	1,350,000
5	Multi-Function Office Machine	1	6	400,000	2,400,000
6	Conference Calling System	1	6	60,000	360,000
8	4G USB	2	12	3,500	42,000
Total		16	96	823,500	9,372,000

3.3.4.8 Capacity for Emergency Rescue Operations at Divisional Offices (search and rescue equipment and logistics)

Rescue equipment, transport and HR skills sets will also differ by District/zone depending on the type of hazards confronted e.g. cyclones, flash flooding, or drought. Emergency rescue operations will further alter depending on population density, accessibility in terms of infrastructure and location and levels of vulnerability e.g. literacy, the distance to safe zones and transport to obtain access to services and information. It is expected that different strategies will be utilized for rural, urban and peripheral areas. For example, in urban areas investment may be concentrated in ensuring access to buildings and mass stockpiling, strong coordination will also be required with municipal authorities. In rural areas the emphasis will be more on evacuation to camps in safe areas, providing clean water and the logistics of search and rescue operations given infrastructural challenges.

Figure 11: Delineation of areas for differing emergency response strategies



Currently, the rescue equipment available in PDMA Sindh offices is limited. Heavy investment is required in e.g. Earth moving equipment and portable water tunnels in case of bridge collapses etc. for basic operations to be take place. It is understood that further specialized equipment is held with the Pakistan Navy and Com Coast in the way of underwater flash lights, fins, goggles, air cylinders, diving equipment, buddy lines, weight belts, pressure gauges, wet suits, wet suits and diving ropes. Current and proposed search and rescue equipment can be seen in table.

Table 33: Current Rescue Equipment and Transport

Sr.	Rescue Equipment/ Transport	Karachi Division	Hyderabad Division	Sukkur Division	Larkana Division	Total
1	Pneumatic boats	-	25	-	-	25
2	Fibre glass boats	-	45	-	-	45
3	Rubber boats	-	-	-	-	
4	Boats with Outboard Motor	6	61	12	-	79
5	Outboard Motor 30, 40, 45, 55 HP	-	42	-	-	42
6	Anchors	-	-	-	-	-
7	Life rings	-	10	-	-	10
8	Search lights	-	13	-	-	13
9	Life jackets	-	3,100	72	-	3,172

Table 34: Proposed Equipment for 6 Divisional Offices (D.E.R.T)

Sr.	Description	Units/ Division	Total Units-6 Divisions	Unit Cost	Total Cost
1	SCUBA Air Set	6	36	12,000	432,000
2	Buoyancy Compensator fitted with Inflation Cylinder	6	36	120,000	4,320,000
3	Diving Goggles	6	36	4,500	162,000
4	Swim Fins (Pair)	6	36	3,500	126,000
5	Wet suits 8.5 mm (Top,Bottom, Hood, Gloves, Booties)	6	36	81,000	2,916,000
6	Diving Knife	6	36	15,000	540,000
7	Rescue Knife	6	36	5,000	180,000
8	Weight Belt 1 Kg	6	36	15,000	540,000
9	Life Line (8 MM, Length of 200 Meter)	3	18	10,000	180,000
10	Buddy Line	3	18	5,000	90,000
11	Under Water Torch	3	18	18000	324,000
12	Head Under Water Torch	3	18	20,000	360,000
13	Jack Stay (up-to Length of 200 Feet)	2	12	60,000	720,000
14	Sinkers (50 KG)	6	36	15,000	540,000
15	Sinkers (30 KG)	6	36	10,000	360,000
16	Sinkers (20 KG)	6	36	8,000	288,000
17	Floats/ Swim Marker (35 Kg Buoyancy)	6	36	15,000	540,000
18	Life Buoy	6	36	5,500	198,000
19	Under Water Camera with Monitor	1	6	160,000	960,000
20	Life Jackets	20	120	4,000	480,000
21	Rubber Inflatable Boats (with Paddles)	3	18	100,000	1,800,000
22	Out Board Motor (OBM) 40 HP (Lead & Fuel Tanks)	3	18	40,000	720,000
23	Inflation Pump	3	18	25,000	450,000
24	Portable Trolley	2	12	15,000	180,000
25	High Powered Compressor	1	6	120,000	720,000
26	Over Boots	12	72	6500	468,000

27	Water Bottle	12	72	1000	72,000
28	Gas Mask	15	90	16000	1,440,000
29	Harness Full Body	5	30	28,500	855,000
30	Helmet with Strips	25	150	10,500	1,575,000
31	Figure of Eight	5	30	4,000	120,000
32	Single Pulley	2	12	8,000	96,000
33	Search Lamp	8	48	12,000	576,000
34	Safety Goggles	25	150	4,000	600,000
35	Nappy Harness	5	30	15,400	462,000
36	Individual Descenders	2	12	60,000	720,000
37	High Visibility Vests	25	150	2,000	300,000
38	Global Positioning System (GPS)	4	24	50,000	1,200,000
39	Field pack/rucksack with hydration system	10	60	25,000	1,500,000
40	Torch with complete accessories	12	72	35,000	2,520,000
41	Shoes	25	150	15,000	2,250,000
42	Cuts scratch and flame resistant gloves	21	126	3,000	378,000
43	Open gate carabineer	10	60	3,000	180,000
44	Asltclost (lock) gate carabineer	10	60	4,000	240,000
45	Rope Dynamic 11 mm	2	12	10000	120,000
46	Flame Cutter	3	18	700,000	12,600,000
47	Concrete Cutter	3	18	150,000	2,700,000
48	Angular Grinder	3	18	20,000	360,000
49	Spine Board	10	60	20,000	1,200,000
50	Fire Extinguisher DCP 9 KG	10	60	10,530	631,800
51	Fire Extinguisher CO 2, 5 KG	10	60	10,530	631,800
52	Crowbar and pic axe	5	30	3,500	105,000
53	Shovels/KarahiandKahi/Hammer/Chisel-Each	4	24	10,000	240,000
54	Portable Generator	2	12	30,000	360,000
55	Rescue Saw Cutter	3	18	800,000	14,400,000
56	Manual Jacks	5	30	6,000	180,000
57	Chemical Suit	2	12	30,000	360,000
58	Oxygen Generating Mask	7	42	15,000	630,000
59	Oxygen Cylinder	7	42	5,000	210,000
60	First Aid Kit	2	12	20,000	240,000
61	Thermal Imagery Camera	1	6	800,000	4,800,000
62	Hydraulic Cutter	1	6	700,000	4,200,000
63	Resuscitation Kit	2	12	27,000	324,000
64	Collapsed Structure Audio/Video Scope	1	6	1,755,000	10,530,000
65	Rope Thrower Gun	1	6	850,000	5,100,000
66	Blanket for Rescue lashing	10	60	5,000	300,000
67	Jumping inflated Sheet	2	12	530,000	6,360,000
68	Inflatable Rescue Tunnel	1	6	2,000,000	12,000,000
69	Drone for Surveillance	1	6	1,000,000	6,000,000
Total		456	2736	10,327,960	118,260,600

In reflection to the proposed structure of D.E.R.T following vehicles are recommended to meet the minimum requirement.

Table 35: Proposed vehicles for 6 Divisional Offices (D.E.R.T)

Sr.	Vehicle Type	Units/ Division	Total Units-6 Divisions	Unit Cost	Total Cost
1	4x4 Single cabin pickup + Fabrication	3	18	5,700,000	102,600,000
2	Rescue Ambulance	3	18	11,100,000	199,800,000
3	Disaster Response Vehicles	3	18	21,500,000	387,000,000
Total		9	54	38,300,000	689,400,000

Operational cost along with POL for newly proposed D.E.R.T divisional offices is given below:-

Table 36: Operational Cost and POL for 6 Divisional Teams-(Cost/Year)

Sr.	Operational Cost and POL	Units	Units/6 Divisions	Unit Cost	Cost/ Month/ Division	Cost/ Annum/ Division	Cost/ Month/6 Division	Cost/ Annum/6 Divisions
1	Fuel and Maintenance for Generators	1	6	50,000	50,000	600,000	300,000	3,600,000
2	Utilities	1	6	50,000	50,000	600,000	300,000	3,600,000
3	Miscellaneous	1	6	40,000	40,000	480,000	240,000	2,880,000
4	Maintenance and POL for Disaster Response Vehicles	3	18	50,000	150,000	1,800,000	900,000	10,800,000
5	Maintenance and POL for Life Saving Ambulances	3	18	40,000	120,000	1,440,000	720,000	8,640,000
6	Maintenance and POL for 4x4 Single Cabin Pickups	3	18	30,000	90,000	1,080,000	540,000	6,480,000
Total			72	260,000	500,000	6,000,000	3,000,000	36,000,000

3.3.4.9 Capacity for Emergency Relief (Supplies and Outreach)

3.3.4.9.1 Mobile Units for Remote Areas

With limited coping strategies, vulnerability of the rural destitute is the most important cause of disaster casualties. The poor are the most heavily affected group by disasters often residing in kutcha housing and on flood plains, unstable hills and having fewer coping strategies. Given that the majority of marginalized people in Sindh reside in rural areas, greater investment needs to be placed into improving the transport of emergency relief to these areas. 3 mobile units are proposed for PDMA Sindh and for use by divisional offices to provide rapid access to more remote incident sites. They can also be utilized to support in awareness raising, drills, training, Hazards monitoring and early warning systems.

3.3.4.9.2 Relief Supplies

Currently, PDMA Sindh rents one storage space in Maripur Road, Karachi and owns two warehouses funded by the World Food Programme (WFP) situated in Hyderabad and Sukkur. 10 other districts have flospan (portable steel building) facilities including: Badin, Shaheed Benazirabad, Dadu, Larkana, Khairpur, Matiari, Tharparkar, Thatta and Umerkot. Given that Sindh's population is dispersed over a vast land area and often difficult to access, particularly

during flooding. Currently, the storage for emergency rescue and relief supplies are inadequate. At least six new larger storage halls are required to secure emergency rescue and relief equipment. These need to be constructed in accessible safe zones in strategic locations i.e. with a view to covering as many people as possible.

Given the scale of previous flooding and drought confronted in the Province, the current relief supplies stored at PDMA Sindh are inadequate. It should be ensured that numbers of items match e.g. the number of tents, sheets and blankets and then are moved to vulnerable areas. This will ensure a significant percentage of families have shelter and basic facilities in high-risk districts in the events of disasters. Supplies may be tailored to the type of disaster confronted in each District e.g. drought in Tharparkar. There are also few relief supplies held at the offices covering the cities of Karachi and Sukkur compared to Hyderabad. It is recommended that this situation is rectified given the high population numbers in these areas. Further supplies need to be added to proposed warehouses in Mirpurkhas, Larkana and Shaheed Benazirabad.

Table 37: Current Emergency Relief Items

Sr.	Emergency Relief Items	Karachi Division	Hyderabad Division	Sukkur Division	Total
1	Tents	3,000	36,938	23,700	63,638
2	Tarpaulin	-	200	-	200
3	Plastic mats/ chatai	-	651	-	651
4	Blankets	-	59,801	3,800	63,601
5	Towels (Medium)	-	-	-	-
6	Mosquito nets	1,000	39,861	33,000	171,861
7	Folding bed/ tabula charpoy	-	-	-	-
8	Solar LED	-	10,485	-	10,485
9	Pedestal fans	-	-	-	-
10	Water purifier	-	1,820	-	1,820
11	Jerry cans	-	230	-	230
12	Life straw purifiers	-	1,820	-	1,820
13	De-watering pumps	11	61	-	272
14	Water Tanks	-	15	-	15

Drought response and mitigation are the major area missing in the equipment and planning of PDMA Sindh. It is recommended that water bowsers are procured to facilitate the supply of water in drought affected areas. As resistant, strong and durable tanks, these will be cost effective and are critical for communities reliant on farming and livestock rearing and living in prolonged conditions of water scarcity.

3.3.4.10 Relief, Rehabilitation and Reconstruction

3.3.4.10.1 Citizen Compensation Programmes

Compensation programmes are an effective means to support in relief, recovery and rehabilitation efforts for affected population. The World Bank research shows that the faster support can reach the poor, the less likely they are to resort to damaging coping strategies. Rapid response grant programmes were utilised after the 2005 earthquake, in 2009 for

internally displaced population and following the 2010 floods in the form of the Watan card scheme or Citizen Damage Compensation Program (CDCP).

a. Beneficiary Criteria: It is critical to develop criteria along with means of verification for prioritized beneficiaries. Criteria may include: poverty status, severely affected households e.g. those who had completely or almost completely lost their homes and geographical area of residence.

b. Institution criteria: If commercial banks or micro-finance institutions are utilized, it must be ensured that networks in the proposed coverage areas and experience in e.g. cash transfers to unbanked households.

c. Methods of disbursement: payment should be provided in one go to the affectee so that they may utilize the money for rehabilitation.

d. Database: It is important to be able to track payment dates, amounts and transfers through an online database which is accessible to all managing and implementing partners.

e. Operating Procedures: It is vital that standard operating procedures are developed and shared with national, provincial, District partners for mobilizing beneficiaries to register at secure locations with programmes and informing them of transfer points and commercial partners for the setting up of data collection and reporting systems and the use of databases for updating beneficiary information.

Challenges may be in the form of the verification of beneficiaries, grievance redressal, monitoring and evaluation and communications. Further challenges can be in the form of accessing locations during flooding, the remoteness of some communities and difficult terrain and the availability of HR during disaster situations when capacity is already stretched. Strong collaboration is also required between all administrative levels of the Government and their partners. Partner institutions may include NADRA for verification and tracking purposes, national level institutions such as the Ministry of Finance, NDMA for its citizen database, BISP, Provincial and District departments, PDMA, DDMA and commercial banks and donors.

Major lessons taken from previous programmes are the need to assess the capacity of implementing organisations to carry out such programmes on the required scale. Further lessons have been in the form of the need for a speedy process of grievance redressal and proper staff training to improve coordination. Independent verification by a third party has also been realized to be an important requirement for transparency purposes.

f. Resource Planning: planned funding and resources for compensation programmes to cover Sindh's 29 districts will require a provisional study on access to banking institutions by area, population density, type of hazards confronted and likely severity/levels of damages, infrastructural vulnerabilities in terms of type of housing, access/remoteness of populations and poverty levels to assess required levels of support. The CDCP operational model may also be reviewed as part of the planning process for resources covering e.g. for the development of proxy indications, verification processes, public information campaigns, registration process, the issuance of compensation/beneficiary cards for withdrawals etc.

3.3.4.11 Disaster Insurance

Disaster insurance is a monetary agreement between an insurance company and an individual, entitling the individual to be compensated for losses incurred during disasters. A few common examples include natural disaster insurance, earthquake insurance, flood insurance and tsunami insurance. Currently, the Government of Sindh has no programme offering disaster insurance, in part due to the difficulties of funding a sustainable model. Subsidised programmes may be considered for housing damages or for loss of investments e.g. for crop damages sustained by farmers, or for the loss of livestock. Contributions may depend on the level of risk or level of cover required. Disaster health insurance may also be considered to cover conditions of cholera and contagious diseases.



Part 4:
Summary of Recommendations

4.1 Summary of Recommendations

S.No.	Recommendation	Description
4.1.1	Vision and Mission Statement	<ul style="list-style-type: none"> i. PDMA Sindh needs to reform its vision and mission statement which should reflect the objectives of the organization clearly, organization development specialist may be hired for this purpose.
4.1.2	Institutional Strengthening	<ul style="list-style-type: none"> i. For sustainability and ownership of the system the newly proposed HR as well as the current HR on contract basis needs to be placed under Government sanctioned posts. ii. 05-years period should be fixed for senior management staff in PDMA Sindh, placing staff on longer-term contracts to strengthen institutional knowledge and linkages. iii. PDMA should introduce management training program for fresh graduates and summer internship program for students. Induction of management trainees should be open to all. iv. Proper chain of command should be followed to reduce the work load on senior management. v. Information sharing/knowledge management needs improving between institutions to pool data and resources and enable the identification of longer term trends. This will also add to GIS databases. vi. As a potential valuable source of technical expertise, PDMA Sindh needs to take a more active role in the sharing of specialized knowledge and resources across the actors and institutions to generate better results. vii. Taluka, village and community level coverage and linkages with local level authorities will only be addressed once divisional and District level institutions have been properly established with strong linkages to PDMA Sindh. viii. Provision of Emergency Response Team to meet the minimum criteria of emergency response system. ix. Preparation of SoPs for usage of all sophisticated equipment and machinery.
4.1.3	Technical Capacity	<ul style="list-style-type: none"> i. A comprehensive programme of organizational restructuring and capacity building is to be carried out to improve institutional management, funds management, monitoring, DRR and relief and rehabilitation activities. ii. Capacity building needs to go beyond traditional training approaches by focusing on approaches that involve work on practical assessments and planning over formal theory-based courses.

		<ul style="list-style-type: none"> iii. Scenario case studies are recommended that involve working with multiple institutions on decision making, planning and implementation resulting in a more holistic response. iv. The technical and response capacity of PDMA Sindh needs to be improved with the provision of GIS Lab and EOCs. v. To improve functioning of PDMA, provisions need to be made for essential Management Information Systems. vi. Technical HR also needs to be recruited using appropriate ToRs and criteria. vii. PDMA Sindh requires restructuring into clearly defined units with defined responsibilities against its institutional mandate and lines of accountability. viii. Pre-qualification of contractors for emergency procurement.
4.1.4	Emergency Response and Preparedness (ERP)	<ul style="list-style-type: none"> i. As a vital part of PDMA Sindh's activities preparations for emergency response needs to be improved across the Province, hence, D.E.R.T has been proposed at divisional level consisting of specialized and trained Response Force for search and rescue operations. Initially the model has been proposed at divisional level that may be cascaded to District level to maximize the coverage later when the funding is available. ii. Investment needs to be placed in encouraging community engagement and CBDRM activities with community members being the first line of response iii. Specialized equipment and vehicles need to be procured along with office setup for D.E.R.T.
4.1.5	Linkages with Line Departments	<p>Long-term, in-depth engagement is required at all administrative levels to strengthen vertical and horizontal linkages and improve planning. PDMA needs to facilitate partner institutions in order to navigate long-term change processes to develop response paths and systems to counter the increasing impacts of climate change in the Sindh. In order to achieve this, underlying institutional culture and incentive systems must change to reward cooperation and achieve sustained progress. Coordination with DDMA and line Departments may be improved via:</p> <ul style="list-style-type: none"> i. Revisiting institutional mandates and staff ToRs to ensure the inclusion of DRR/DRM and capacity building. ii. Conducting exposure visits to increase networking and information sharing. iii. Strengthening logistical capacity to facilitate networking between stakeholders.

		<ul style="list-style-type: none"> iv. Hiring dedicated technical staff. v. Assigning and identifying key contacts within PDMA and partner institutions for coordination. vi. Placing staff on longer term contracts to strengthen institutional knowledge and linkages. Research has shown that repeated multi-sectoral engagement can lead to incremental progress in planning by identifying mutual, dynamic tasks rather than individual and static roles.
4.1.6	Linkages and Coordination with I/NGOs	<p>Over the last decade there has been significant growth in the number of I/NGOs involved in DRM/DRR activities which need to be recorded and monitored to avoid duplication for which these steps may be taken:</p> <ul style="list-style-type: none"> i. The setup of clear monitoring, information sharing and reporting guidelines for I/NGOs and a point of contact for registration. ii. It is recommended that Government monitoring guidelines for checks focus on whether the organization has clear objectives, assessing activities and performance against baselines, the management of information and data, transparency and accountability and impact.
4.1.7	Disaster Risk Reduction (DRR) and Research	<ul style="list-style-type: none"> i. It is recommended that a research section be established within the M&E Department to e.g. investigate the effects of climate change in Sindh and means to strengthen DRR activities in the Province. This department may also be utilized for project development and donor liaison. ii. Various strategies with the help of technical experts need to be developed for DRR and Disaster Risk Management (DRM). iii. Better control needs to be taken of land use planning at the Provincial and District levels to prevent environmentally hazardous buildings or structures e.g. across major drainage channels in run off areas. iv. Efforts also need to be made to strengthen mitigation against coastal erosion such as the planting of mangroves. v. Technical staff need to be hired in the area of DRR with HR trained in this area for a better understanding of its importance. vi. DRR needs to become a greater focus of PDMA Sindh's activities shifting the emphasis away from response only. vii. Awareness raising and educational campaigns on local hazards and DRR activities need to be carried out in communities in conjunction with I/NGOs.

4.1.8	Media and Communications	<ul style="list-style-type: none"> i. It is recommended that a specialized Media Section is setup in PDMA Sindh for management of public relations, information management and to carry out awareness raising activities. ii. Develop a media strategy for PDMA Sindh for use at Provincial, District, village, community and household levels. iii. Develop information and education materials, media management and guidelines e.g. for TV and Radio procedures on reporting disasters and for overall coordination and management of information. iv. Utilization of Ham Radio through PTA would be particularly effective when cell phone towers are overloaded or downed due to environmental forces. Since Ham radio can be used with rechargeable batteries and/or generators, it provides communication despite power outages or other disaster-related issues. v. As an early warning system, it is recommended that PDMA should have its own radio station channel for messages, warnings and news dissemination at the grass root level. vi. Form linkages with media institutions and personnel to ensure rapid and accurate reporting on disaster events. vii. SOP for emergency communication should be prepared. viii. Develop a responsive and two-way communication website. ix. Issuance/Allocation of short code for PDMA Sindh emergency Communication. x. Training needs to be provided on communications, fundraising and networking to high level PDMA staff. xi. Communications with partner institutions need to be improved via regular networking and holistic planning. xii. Early warning systems need to be setup. xiii. Linkages need to be set up with the Pakistan Meteorological Department. xiv. All vehicles of PDMA and DDMA should have visible PDMA logo.
4.1.9	International Conferences and Exposure Visits	<ul style="list-style-type: none"> i. To increase networking, information sharing and capacity of the Provincial, District and Divisional team it is highly recommended that exposure visits should be conducted and staff should be nominated for related international conferences.

4.1.10	Geographical Information System (GIS)	<ul style="list-style-type: none"> i. Information sharing/knowledge management needs improving between institutions to pool data and resources and enable the identification of longer term trends. This will also add to GIS databases. ii. A GIS lab needs to be set up to identify long-term trends in hazards and changes in hazard intensity or frequency. iii. Software needs to be updated to enable the use of GIS mapping.
4.1.11	Warehouses	<ul style="list-style-type: none"> i. Given the Sindh's population and magnitude of previous disasters, current storage space in warehouses is not enough for required relief supplies. It is recommended that storage space of existing warehouses should be increased to meet the minimum requirements. ii. Warehouses need to be properly stocked. iii. Warehouses supervisors need to be hired along with support staff including store keepers and assistant store keepers on permanent basis.
4.1.12	Disaster Management Information System (DMIS)	<p>DMIS enables the assessment of the occurrences of natural hazards and their impacts analyzing spatial and non-spatial data. If such information is made available, it would be useful in the:</p> <ul style="list-style-type: none"> i. Identification of the processes responsible for natural hazards and their impacts on natural resources. ii. Planning appropriate preventive measures/preparedness. iii. Assessing damages caused by hazards and to plan mitigation measures. iv. Establishment of beneficiaries database.
4.1.13	HR Manual Development	<ul style="list-style-type: none"> i. HR Manuals need to be devised to clarify procedures for hiring, complaints, leave and encourage proper staff conduct. ii. The drawing up of an HR manual to improve work ethics and provide an outline of processes and how to connect with key contacts. iii. Grievance redressal system needs to be improved, maximum time frame to address grievances should be described in the policy. iv. Revisiting institutional mandates and writing staff ToRs to ensure the inclusion of DRR/DRM.

4.1.14	Performance Management System	<p>Setting up an online performance management system is recommended to:</p> <ol style="list-style-type: none"> i. Boost staff motivation and encourage a professional working culture. ii. Support staff in achieving their work and career goals by identifying training needs and development opportunities. iii. Provide constructive and continuous feedback on performance. iv. Ensure that employee work plans support the strategic direction of the organization. v. Provide both positive feedback for a job well done and constructive feedback when improvement is needed.
4.1.15	Decision Support System	<ol style="list-style-type: none"> i. Decision support system should be developed for not only accommodating range of criteria but also scale able to meet analytical capabilities.
4.1.16	Financial Management Information System (FMIS)	<ol style="list-style-type: none"> i. FMIS needs to be setup for the more transparent management of finances and to improve accountability to donors.
4.1.17	Inventory Management System	<ol style="list-style-type: none"> i. An online inventory management system needs to be set up for enabling real-time information on what equipment/resources are available, in which location and may be linked to financial systems for budget planning.
4.1.18	Monitoring	<ol style="list-style-type: none"> i. Hazard monitoring needs to be improved via the better use and staffing of the Emergency Operations Centre. This center needs to be adequately equipped with trainings provided. ii. Drought monitoring is an area that requires particular attention given the threat of climate change in the form of extreme temperatures in Sindh. iii. Mobile units may be used to improve hazard monitoring. iv. Field monitoring needs to be setup, once DDMA Sindh are established. v. Field monitoring may also be improved via departmental linkages e.g. with the Irrigation Department.
4.1.19	Awareness Raising	<ol style="list-style-type: none"> i. Awareness raising and educational campaigns on local hazards and DRR activities needs to be carried out in communities in conjunction with I/NGOs.

Part 5:
Training Needs Assessment

5.1 Training Needs Assessment

5.1.1 The Purpose of the Training Needs Assessment (TNA)

Disaster management training builds the competencies of HR and volunteers in improving preparedness and response times at all levels pre-and post-disasters. It is essential to provide training for those to ensure provincial and District disaster management plans are implemented as envisioned. Both those responsible for issuing hazard warnings must be trained, as well as those responsible for direct relief functions. This assessment focuses on disaster risk management training to improve the technical skills of professionals and volunteers in Sindh and to strengthen team management. It will also aid in improving the coordination and investment in capacity building for disaster preparedness and disaster management. Findings will support policymakers, managers and development professionals to place HR investments where most needed.



The training needs assessment (TNA) is used as a tool to facilitate change management and ensure HR capacity can meet increased levels of demand. In accordance with international standards, the TNA was undertaken as a systematic process with PDMA Sindh and its partner institutions. It is important to take into account the specific challenges in conducting TNAs for disaster management institutions with this exercise usually taking place in a context in which job performance can be regularly observed. The complex and unpredictable nature of hazard events means that job performance cannot be observed. Consequently, novel approaches to training needs analysis and exercise design are required.

Training cannot be a one-time event and refresher courses are essential. Resource availability, population and climatic conditions are continuously changing requiring different types of skills sets to effectively respond to environmental challenges. Further demands are placed by the introduction of new technologies to better standardize practices and facilitate system integration for improved data management and response. If institutions are to avoid becoming obsolete or replaced, they will need to shift investment to key resources and HR as technology and demand type changes. HR skills in disaster management institutions therefore need to be periodically assessed and updated. Periodic programmes of capacity building and needs assessments are therefore critical for institutions dealing with disaster management and disaster risk reduction where research is continuously changing our approach to preventing and managing disasters.

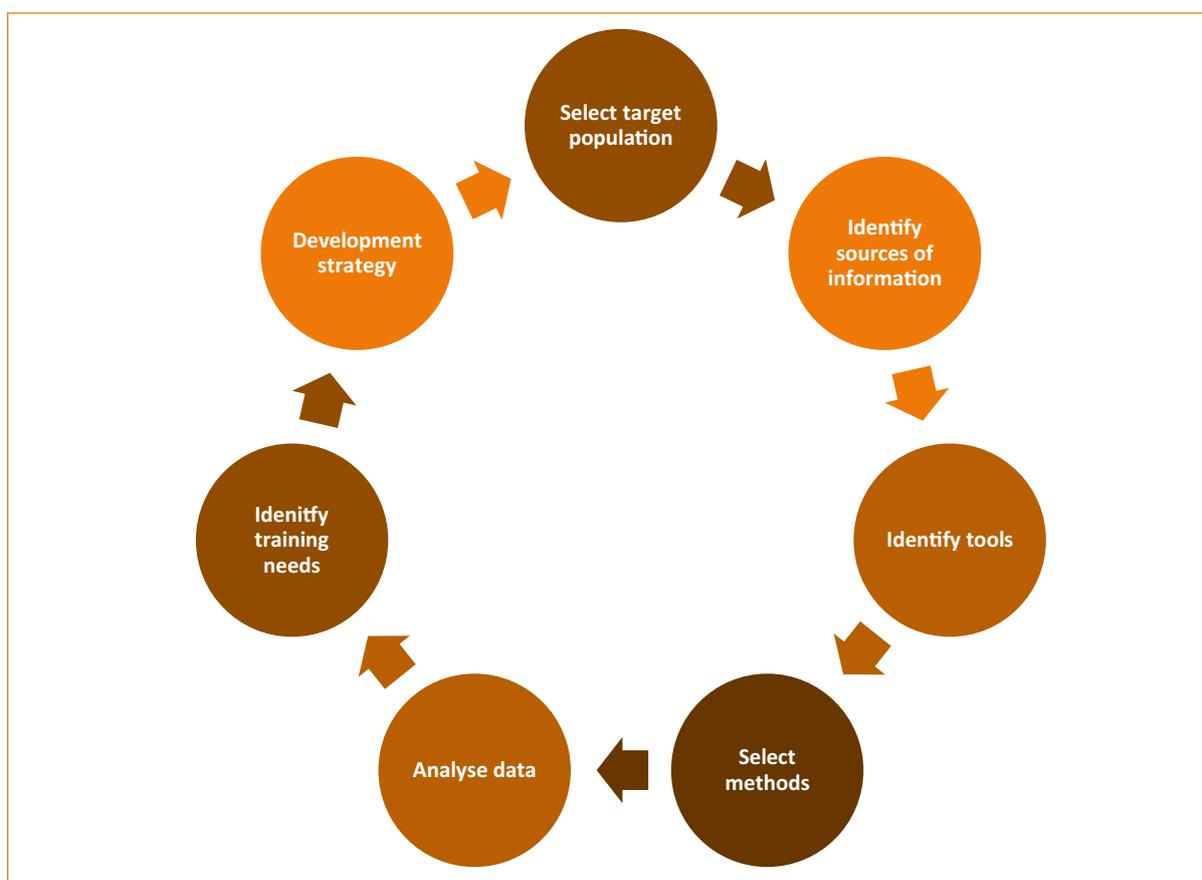
The Training Needs Assessment is considered here as the first step in the training cycle to bring desired change(s). Training needs are used to indicate the gap between existing and desired situations. The difference between these two scenarios can be in terms of knowledge, skills and attitudes that trainees need to learn/ upgrade to enhance performance. This framework is used to guide managers in the formulation of training objectives and the identification of training contents. Both recognized and unrecognized needs will be assessed where possible.

Unrecognised Needs	Recognised Needs
Problem(s) not perceived	Aware of problem(s) but unable to determine the amount/ level of effect on output
Unaware that problem(s) are due to poor/irrelevant/ lack of training	Aware of problem(s) and able to identify type and amount of training required.

5.1.2 The Training Need Assessment (TNA) Process/ Methodology

TNA is a cyclical process and must be repeated at regular intervals to effectively respond to the changing needs of individuals and institutions

Figure 12: Training Need Assessment (TNA) Process



The TNA was carried out by the NSO assessment team during the 2017. Information for the TNA was primarily collated from key informant interviews and a review of staff numbers and designations within each department. External institutional partners were also interviewed for further feedback on training requirements. It is important to note that the TNA takes into account the earlier review of disaster management legislation and policies conducted as part of the Capacity Assessment Report, this documentation included DRM planning in Sindh, DRR Policy, the Sendai Framework for DRR and DRM institutional legislation in Sindh. The TNA is envisioned to feed into a comprehensive training program for PDMA Sindh and DDMA Sindh. The TNA focused on determining the training needs at the organizational, operational and individual level, identifying what kind of training is needed and to what level.

During the key informant interviews, questions on sectoral expertise and managerial aspects were discussed. Areas covered included: communications relating to disasters, food supplies and distribution, gender inclusion, hazard risk assessment, GIS, DRM, CBDRM, M&E, DRR, adaptation, early warning systems, damage assessment, incident management and first aid. Questions on managerial expertise covered: impact evaluation, knowledge management, strategic project management, results based management, negotiation, institutional capacity building, procurement management, project cycle, risk management, financial management, monitoring and computer skills.

5.1.3 Prioritized Training Needs

5.1.3.1 Trainings Raised as a Requirement in the Questionnaire

The tick-box questionnaire was split into six sections covering head-quarter activities, field activities, research and sectoral orientation, tools, monitoring and evaluation and administration with required trainings identified under each area. The areas marked as priorities for training are listed below under their relevant sections:

a. Head-quarter Activities

Leadership Management, Response Management, Financial Management, Teamwork, Inter-agency Coordination, Financial and Administrative Recording, Meetings and Briefings, Information Analysis, Community Engagement, International Appeals, Plan of Action, Service Delivery Plans and Access to Resources.

b. Research and Sectoral Orientation

Disaster Management Cycle, Hazard Identification, Risks and Vulnerability, Government Disaster Management Plans, Humanitarian Principles (Accountability, Code of Conduct, DRR Policy and international frameworks on climate change Minimum Standards in Disaster Relief), the Management of People, Resources and Information, the Recognition of Vulnerable Groups, Risk Management Principles, Principles of Coordination, Advocacy and Gender Awareness.

c. Field Activities

First Aid, Search and Rescue, Assessment Techniques, Resource Mobilization, Relief Distribution, Situation Reports and Care of Mass Casualties, Communication of disaster risks, Early Warning Systems, CBDRM and awareness raising.

d. Tools

Emergency Communications Equipment, Incident Management Systems, Information Management, Emergency Operations Centres, Satellite Phones, Global Positioning Systems, VHF Radio and Logistics.

e. Data Management

The use of MIS, Results Based Management, Project Logframes, Activity Planning, beneficiary registration, Strategic and analytical thinking, Project cycle management, GIS for DRM/ DRR and social mapping.

f. Administration

Programme and contract management, Facilitation and coordination, service procurement, logistics and Financial Administration.

5.1.3.2 Prioritised Training Areas from KIIs

Training areas and potential challenges were discussed in greater detail during key informant interviews. Prioritised areas are outlined:

a. Management Training

It was discussed that due to the need to set up the divisional offices and DDMA that management training would be required to oversee these institutions and their establishment. These institutions are expected to form a critical part of the disaster management system in Sindh and will need to be prioritized for capacity building to improve current coverage and field activities.

b. Orientation for all staff

It was felt that there was a strong need for all staff to undergo a basic orientation/overview of standard responses and preparatory activities to common hazards confronted in Sindh. Staff further require orientation on existing DRM plans, departmental mandates and DRR Policy. It is recommended that this orientation cover SoPs including emergency response procedures to increase 'surge' capacity. This type of access course or basic training is envisioned to enhance the impact of further specialized training and improve job performance and motivation.

c. All Agency Approach

In terms of maximizing potential fund raising and the use of resources, management professionals requested training in the 'all agency approach'. This would require scenario based trainings or case studies of real like situations and responses, it would also require stakeholder collaboration to ensure course contents are realistic. It is recommended that relevant line departments participate in this training alongside PDMA staff.

d. Disaster Preparedness

As a vital area intended to increase the readiness and knowledge of staff and communities, training was requested on disaster preparedness. This is usually taught using scenarios for up to three types of hazards e.g. flooding, landslides and drought. Exposure visits may be undertaken as part of this training to the National Disaster Management Strategy organisation in Malaysia or FEMA in the US. NDMS's vision is to create a safe environment for communities through disaster management and sustainable development. Hands on scenario based trainings are proven to be the most effective.

e. Hazard Monitoring

Hazard monitoring is a major area currently missing from PDMA staff skillsets. Staff requested training in the setup of shared decision support systems based on forecasting. Staff at present have received very little training on how to interpret risk data provided at the District level and data analysts need to be taken on board specialized in the area of disaster management. PDMA staff will also require training on GIS if staff are not taken on already trained in this area.

f. DRR

PDMA staff requested capacity building for DRR for use in both urban and rural areas. The incorporation of DRR into reconstruction works is a significant area missing from planning. Linked to this, lessons learning and the evaluation of DRR and rehabilitation structures needs to be undertaken to assess what works across multiple hazards. In this respect, training needs to be undertaken which links DRR to rehabilitation activities.

g. Drought Mitigation

Given the high frequency of droughts in Sindh, it was felt that staff in divisional offices overseeing drought prone areas will require training in drought mitigation and response. This will involve scenario/simulation based trainings and the mock formation of basic mitigation plans including water conservation practices suitable for Sindh's environment.

h. Flood Response

Given the frequency of flooding in Sindh, staff requested the development of SOPs and trainings specifically in the areas of flood mitigation and response. They requested that wider awareness campaigns and drills be carried out advising on appropriate responses in high risk areas to reduce the burden on local staff.

i. Standardized Formats for Disaster Assessment

An area raised was the need for training in standardized formats for the assessment of disasters and damage resulting from disasters. Training was requested in assessment methodology such as the need for gender disaggregated data and data collection tools.

j. Communication and Coordination

The need for training in improving communication and information sharing via standardized data systems and formats was a high priority. It was defined during discussion that in this context, communication was used to mean human informational interaction or the better exchange of information for improved coordination. It was agreed that there is a need to develop better communication at all levels: interpersonal, within a department, between line departments, between stakeholders and with beneficiaries.

k. Protection and Inclusion

A strong case was made for the need for better training in protection and its integration into disaster response. This was deemed a critical area given the disproportionate number of women killed as a result of disasters and the security risk to women within disaster contexts.

5.1.4 Challenges and Further Recommendations

As stated potential challenges to maximizing the impact of trainings were also discussed and are noted here:

a. Short Term Contracts

The proportion of staff on short-term contracts is a major bottleneck to increasing institutional capacity over the longer term. This needs to be addressed as part of a comprehensive programme of institutional strengthening.

b. The Need for Professional Development

Staff expressed a need for improved professional development and clearer pathways to promotional opportunities e.g. via capacity building, improving grade systems and on the job experience. This area will have a major impact on how learning from trainings can be applied and passed on over the longer term.

c. Collaboration and HR Availability

Participants raised institutional collaboration as a key factor in ensuring the success of future

training programmes. This is a factor which has previously hindered the effectiveness of operations and institutions from maximizing their use of available resources. It is felt that any future training programmes should be utilized as an opportunity to improve organizational networking and coordination.

d. Funding for Training Materials/Equipment

Due to an awareness of poor funding for institutional activities in recent years, participants were concerned that appropriate equipment/tools and materials be provided for the entirety of training courses. This is to ensure that courses such as emergency relief training are effective and objectives met. It is suggested that costs can be kept low by conducting trainings requiring less facilities in-house.

e. Accredited Trainings

The concern was raised that trainings should only be undertaken by accredited organisations and individuals for quality assurance.

f. Training Methodologies

Staff requested that various methodologies should be utilized in planned trainings to ensure trainings are as interactive as possible and maximize learning.

g. The Need to Document Trainings

There is currently no database on PDMA staff trainings received to date by varying institutions. This will be required if periodic trainings are going to be provided as part of a more holistic programme of capacity building.



5.1.1.5 Three-Year Training Plan for PDMA Sindh, Regional Offices and DDMA S

Objective

The proposed 3-year training plan is forwarded in consideration of the immediate, medium and long term HR requirements in the assessed institutions. The training plan aims at enhancing long term institutional capacity with an immediate focus on critical areas identified during the assessment. Intended participants are from all levels of Government. The expected outcome of the training programme is a more comprehensive and integrated system for managing and mitigating natural hazards in Sindh. Due to the short-term nature of some of the contracts for PDMA staff and strengthen PDMA Sindh as a long-term institution, one of the pre-requisites to participate in proposed national and international trainings is that selected trainees support in knowledge transfer to new/ other employees.

Key Areas for Skill Enhancement

Key trainings are forwarded by institution, HR tier and department. Those listed in red are proposed staff.

Table 38: Proposed Trainings by Department

Training Type	Section	PDMA Head Office	Divisional Offices	DDMA S
1. Orientation in DRM and DRR policy and planning in Pakistan and their application	All	All		All
2. Orientation in the DRM/DRR plan, building codes and hazard risk mapping for Sindh				
3. Institutional networking for improved system integration	PDMAs/ DRM/ DRR institutions Pakistan	Director, Deputy Director, Assistant Doirector	Deputy Director Assistant Director	District Disaster Management Officer
4. Leadership and People Management	Senior Management	Director, Deputy Director, Assistant Doirector	Deputy Director Assistant Director	District Disaster Management Officer
5. Organizational Development				
6. Advocacy and Policy Influencing				
7. Gender and organizational change				
8. Financial management for development projects	Finance, Accounts and Procurement	Procurement Officer, Accounts Assistant, Assistant Director Procurement, Accounts Officer, Procurement Officer	Deputy Director Assistant Director	District Disaster Management Officer

Training Type	Section	PDMA Head Office	Divisional Offices	DDMAs
9. Strategic Leadership 10. Management of Development Projects and Programmes 11. Project Management 12. General Management 13. Leadership and motivation skills: Making teams effective 14. Finance for Non-Finance Managers	Mid-level Management	Director, Deputy Director, Assistant Director	Deputy Director Assistant Director	District Disaster Management Officer
15. Selection and recruitment of consultants in WB projects	Procurement M&E	Procurement Officer, Director Procurement, Deputy Director Procurement, Procurement Officer, Director M&E,		
16. Gender Equity in DRR 17. Managing Risk in the face of Climate Change 18. Community Based Disaster Risk Management 19. Early Warning Systems	DRR and HRD Team	Director, Assistant Director, Capacity Building Specialist,	Deputy Director Assistant Director	District Disaster Management Officer
20. Risk management in development projects 21. Monitoring and Evaluation 22. Monitoring and evaluation of development projects/ programs 23. Results Based Management 24. Results-Based Management in public and international organizations 25. Impact Evaluation/ Survey Management 26. Impact evaluation of public policies, programs, projects	Monitoring and Evaluation	Director, Deputy Director Assistant Director	Deputy Director Assistant Director	District Disaster Management Officer

Training Type	Section	PDMA Head Office	Divisional Offices	DDMAs
27. Data formats and information sharing, MIS and Reporting	Data Management	Private Secretary to Director General, System Analyst, Steno typist, Assistant, Junior Clerk Director Deputy Director Hazard Mapping GIS Analyst, GIS Developer Software Engineer	Deputy Director Assistant Director	District Disaster Management Officer
28. Financing skills development	Finance	Procurement Officer, Accounts Assistant, Director, Deputy Director, Assistant Director,	Deputy Director Assistant Director	District Disaster Management Officer, Assistant, Junior Clerk
29. Professional IT skills	Computer Skills	Private Secretary to the Director, System Analyst, Steno-typist, Assistant, Junior Clerk, Receptionist, Accounts Officer Admin officer, IT Assistant, Assistant DBA, DEO	Assistant Director	District Disaster Management Officer, Assistant, Junior Clerk, IT Technician
30. Logistics and coordination for DRM/DRR	Admin, Procurement and Logistics	Private Secretary to the Director, Accounts Officer, Warehouse supervisor Deputy Director AD	Assistant Director, Warehouse Supervisors, Logistic and Maintenance Incharge	District Disaster Management Officer, Assistant, Junior Clerk,
31. Contract Management	GIS	GIS Developer, Hazard Mapping/GIS Analyst	Deputy Director, Assistant Director	District Disaster Management Officer IT Assistant
32. Strategic Procurement Management	DRR, Management and Ops	Director General Director Deputy Director DRM Specialist CBDRM Specialist	Deputy Director, Assistant Director	District Disaster Management Officer
33. Procurement management for equipment, works in World Bank funded projects				
34. Geographic Information System (GIS) for DRM				
35. Flood Risk Management				

5.1.6 Proposed Training Institutions and Cost

A list of potential training institutions is forwarded based on reputation, availability and training type. The minimum number of participants reflects the number of existing staff that require training and the maximum number reflects the number of existing and proposed staff that would require training e.g. if DRM institutions in Sindh were functioning at their full capacity. The minimum and maximum costs are based on the same calculations. All costs have been converted from Euros, dollars and pounds sterling into Pakistan Rupees. Allowances must be made in the final budget for inflation.

Table 39: Trainings by Cost and Institution

Training type	Institution(s)	Cost per person	Max pax Existing HR	Max pax Existing + Proposed HR	Min Cost	Max cost
1. Orientation in DRM and DRR policy and planning in Pakistan and their application	NIDM/ consultancy Pakistan	Tailor made	23	494	TBC	TBC
2. Orientation in the Sindh DRM/DRR plan and hazard risk mapping for Sindh	NIDM/ consultancy Pakistan	Tailor made	23	494	TBC	TBC
3. Institutional networking for improved system integration	NIDM, PDMA/ DRM/ institutions Pakistan	Exposure visits	7	137	TBC	TBC
4. Leadership and People Management	MDF Myanmar, Thailand	85,673		599,711		11,737,201
5. Organizational Development	MDF Netherlands	400,187	7	137	2,801,309	54,825,619
6. Advocacy and Policy Influencing	MDF Netherlands	223,202			1,562,414	30,578,674
7. Gender and organizational change	ILO-ITC Italy	245,749			1,720,243	33,667,613
8. Financial management for development projects	ILO-ITC Italy	408,642	2	41	817,284	16,754,322
9. Strategic Leadership	IBA Pakistan	190,000	10		1,900,000	20,140,000
10. Management of Development Projects/ Programs	MDF Netherlands	624,518			6,245,180	66,198,908
11. Project Management	IBA, LUMS Pakistan	110,000		106	1,100,000	11,660,000
12. General Management	IBA Pakistan	250,000			2,500,000	26,500,000
13. Leadership and motivation skills: Effective teams	ILO-ITC Italy	245,749			26,049,394	26,049,394
14. Finance for Non-Finance Managers	IBA, Pakistan	40,000			400,000	4,240,000
15. Selection and recruitment of consultants in WB- projects	ILO-ITC Italy	242,367	1	5	242,367	1,211,835

Training type	Institution(s)	Cost per person	Max pax Existing HR	Max pax Existing + Proposed HR	Min Cost	Max cost
16. Gender Equality in DRR		112,692			338,076	9,916,896
17. Managing Risk in the face of Climate Change	ADPC Thailand	388,914	3	88	1,166,742	34,224,432
18. Community Based Disaster Risk Management		388,914			1,166,742	34,224,432
19. Early Warning Systems		388,914			1,166,742	34,224,432
20. Risk management in development projects	ILO-ITC Italy	245,749			491,498	20,888,665
21. Monitoring and Evaluation	MDF Sri Lanka, Thailand, ILO-ITC Italy	85,673			171,346	7,282,205
22. Monitoring and evaluation of development projects/ programs		448,097			896,194	38,088,245
23. Results Based Management	MDF Myanmar	85,673	2	85	171,346	7,282,205
24. Results-Based Management in public/international organizations	ILO-ITC Italy	408,642			817,284	34,734,570
25. Impact Evaluation/ survey management	MDF Myanmar,	85,673			171,346	7,282,205
26. Impact evaluation of public policies, programs, projects	ILO-ITC Italy	245,749			491,498	20,888,665
27. Data formats, MIS, Reporting	Consultancy Pakistan	Tailor made	5	131	TBC	TBC
28. Financing skills development	ILO-ITC Italy	245,749	2	47	491,498	11,550,203
29. Professional IT skills	Consultancy Pakistan	Tailor made	7	116	TBC	TBC
30. Logistics and coordination in emergencies	ADPC Thailand	Tailor made			TBC	TBC
31. Contract Management	IBA Pakistan	35,000	5	86	175,000	3,010,000
32. Strategic Procurement Management	LUMS Pakistan	90,000			450,000	7,740,000
33. Procurement management for equipment, works in WB-projects	ILO-ITC Italy	408,642			2,043,210	35,143,212
34. Geographic Information System (GIS) for DRM	SUPARCO Pakistan	25,000	0	39	-	975,000
35. Flood Risk Management	HR Wallingford UK ADPC Thailand	77,987 238,488	4	95	311,948 953,952	7,408,765 22,656,360
Total					57,412,324	641,084,058

5.1.1.7 Year-Wise Breakdown of Trainings

The table below proposed a year-wise breakdown of proposed trainings by institution. This has been based on recruitment or induction timelines and the number of staff to be recruited prior to trainings.

Table 40: Year-Wise Breakdown of Training by Institution

Year 1 - PDMA Sindh Head Office	Year 2 -- PDMA Sindh Head Office	Year 3 - PDMA Sindh Head Office
<ol style="list-style-type: none"> 1. Orientation in DRM and DRR policy and planning in Pakistan and their application 2. Orientation in the DRM/DRR plan and hazard risk mapping for Sindh 3. Institutional networking for improved system integration Leadership and People Management 4. Organizational Development 5. Advocacy and Policy Influencing 6. Gender and organizational change 7. Financial management for development projects 8. Strategic Leadership 9. Management of Development Projects and Programmes 10. Selection and recruitment of consultants in WB projects 11. Finance for Non-Finance Managers 12. Professional IT skills 	<ol style="list-style-type: none"> 1. Monitoring and evaluation of development projects/programs 2. Results Based Management 3. Results-Based Management in public and international organizations 4. Impact Evaluation 5. Impact evaluation of public policies, programs, projects 6. Logistics and coordination for DRM/DRR 7. Contract Management 8. Strategic Procurement Management 9. Procurement management for equipment, works in World Bank funded projects 10. Project Management 11. General Management 12. Leadership and motivation skills: Making teams effective 	<ol style="list-style-type: none"> 1. Risk management in development projects 2. Monitoring and Evaluation 3. Survey management, Data formats and information sharing, MIS and Reporting 4. Gender Equity in DRR 5. Managing Risk in the face of Climate Change 6. Community Based Disaster Risk Management 7. Early Warning Systems 8. Financing skills development 9. Geographic Information System (GIS) for DRM 10. Flood risk management

Year 1 – Divisional Offices	Year 2 – Divisional Offices	Year 3 – Divisional Offices
	<ol style="list-style-type: none"> 1. Orientation in DRM and DRR policy and planning in Pakistan and their application 2. Orientation in the DRM/DRR plan and hazard risk mapping for Sindh 3. Institutional networking for improved system integration Leadership and People Management 4. Organizational Development 5. Advocacy and Policy Influencing 6. Gender and organizational change 7. Financial management for development projects 8. Strategic Leadership 9. Management of Development Projects and Programmes 10. Finance for Non-Finance Managers 11. Professional IT skills 12. Monitoring and evaluation of development projects/ programs 13. Results Based Management 14. Impact Evaluation 15. Results-Based Management in public and international organizations 16. Impact evaluation of public policies, programs, projects 	<ol style="list-style-type: none"> 1. Logistics and coordination for DRM/DRR 2. Contract Management 3. Strategic Procurement Management 4. Procurement management for equipment, works in World Bank funded projects 5. Project Management 6. General Management 7. Leadership and motivation skills: Making teams effective 8. Risk management in development projects 9. Monitoring and Evaluation 10. Survey management, Data formats and information sharing, MIS and Reporting 11. Gender Equity in DRR 12. Managing Risk in the face of Climate Change 13. Community Based Disaster Risk Management 14. Early Warning Systems 15. Financing skills development 16. Geographic Information System (GIS) for DRM 17. Flood risk management

Year 1 – Divisional Offices	Year 2 – Divisional Offices	Year 3 – Divisional Offices
	<ol style="list-style-type: none"> 1. Orientation in DRM and DRR policy and planning in Pakistan and their application 2. Orientation in the DRM/DRR plan and hazard risk mapping for Sindh 3. Institutional networking for improved system integration Leadership and People Management 4. Organizational Development 5. Advocacy and Policy Influencing 6. Gender and organizational change 7. Financial management for development projects 8. Strategic Leadership 9. Management of Development Projects and Programmes 10. Finance for Non-Finance Managers 11. Professional IT skills 12. Monitoring and evaluation of development projects/ programs 13. Results Based Management 14. Impact Evaluation 15. Results-Based Management in public and international organizations 16. Impact evaluation of public policies, programs, projects 	<ol style="list-style-type: none"> 1. Logistics and coordination for DRM/DRR 2. Contract Management 3. Strategic Procurement Management 4. Procurement management for equipment, works in World Bank funded projects 5. Project Management 6. General Management 7. Leadership and motivation skills: Making teams effective 8. Risk management in development projects 9. Monitoring and Evaluation 10. Survey management, Data formats and information sharing, MIS and Reporting 11. Gender Equity in DRR 12. Managing Risk in the face of Climate Change 13. Community Based Disaster Risk Management 14. Early Warning Systems 15. Financing skills development 16. Geographic Information System (GIS) for DRM 17. Flood risk management

Part 6:
Capacity Enhancement Plan

6.1 Four Year Physical and Financial Phasing

The four-year phased plan for the procurement of HR and assets is outlined below. This plan lays out the need for HR and other resources along with estimated budget. The need for specialised HR and resources for PDMA Sindh and increasing outreach are major focus areas of the financial plan. Increases in outreach in the form of the proposed divisional offices, vehicles and the set-up of D.E.R.T together constitute a significant but necessary cost. Further investment areas include communications equipment, GIS, MIS and the better use of online database software.

A. Proposed HR for PDMA Head Office-(Cost/Year-2019-21)							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
Disaster Management Specialist	1	200,000	2,400,000	-	-	-	2,400,000
CBDRM Specialist	1	200,000	2,400,000	-	-	-	2,400,000
Deputy Directors	4	177,000	2,124,000	6,372,000	-	-	8,496,000
Assistant Directors	3	138,000	-	4,968,000	-	-	4,968,000
Internal Auditor	1	138,000	1,656,000	-	-	-	1,656,000
Sub Engineer	1	84,000	1,008,000	-	-	-	1,008,000
Warehouse Supervisor KHI	4	84,000	1,008,000	3,024,000	-	-	4,032,000
GIS Operators/ Shift Incharges	4	71,000	3,408,000	-	-	-	3,408,000
Store Keeper	4	67,000	804,000	2,412,000	-	-	3,216,000
Assistant	1	67,000	804,000	-	-	-	804,000
IT Technician	1	62,000	744,000	-	-	-	744,000
Assistant Store Keepers	8	61,000	1,464,000	4,392,000	-	-	5,856,000
Control Room Operators	4	46,000	2,208,000	-	-	-	2,208,000
Fork Lifter Drivers/ Technicians	12	39,000	2,808,000	2,808,000	-	-	5,616,000
Security Guards	20	39,000	3,744,000	5,616,000	-	-	9,360,000
Drivers (LTV)	3	39,000	-	1,404,000	-	-	1,404,000
Drivers (HTV)	4	39,000	1,872,000	-	-	-	1,872,000
Helpers	36	37,000	7,992,000	7,992,000	-	-	15,984,000
Gardeners	12	37,000	2,664,000	2,664,000	-	-	5,328,000
Total	124	1,625,000	39,108,000	41,652,000	-	-	80,760,000
B. Proposed basic furniture PDMA Sindh Head Office							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
Computer Tables With Chair	22	35,000	770,000	-	-	-	770,000
Office Chairs	44	5,000	220,000	-	-	-	220,000
Wooden File Cabinets	20	20,000	400,000	-	-	-	400,000
Total	86	60,000	1,390,000	-	-	-	1,390,000

C. Proposed IT and basic office equipment PDMA Sindh Head Office							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
Desktop Computer (Full Set)	11	95,000	1,045,000	-	-	-	1,045,000
Laptop Core i7	10	110,000	1,100,000	-	-	-	1,100,000
LCD 52"	5	75,000	375,000	-	-	-	375,000
Multi Function Office Machine	6	400,000	2,400,000	-	-	-	2,400,000
Conference Calling System	1	60,000	60,000	-	-	-	60,000
Networking Cost	1	50,000	50,000	-	-	-	50,000
Miscellaneous	1	300,000	300,000	-	-	-	300,000
Total	35	1,090,000	5,330,000	-	-	-	5,330,000
D. Proposed equipment for EOC							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
Data Base Server (with Accessories)	1	800,000	800,000	-	-	-	800,000
Desktop Computer	1	90,000	90,000	-	-	-	90,000
UHF Radio Communication System	1	1,000,000	1,000,000	-	-	-	1,000,000
Liquid Color Display	4	75,000	300,000	-	-	-	300,000
Networking Cost	1	25,000	25,000	-	-	-	25,000
Generator 10 KVA (Diesel)	1	450,000	450,000	-	-	-	450,000
UPS + Batteries	1	200,000	200,000	-	-	-	200,000
Multi Function Office Machine	1	400,000	400,000	-	-	-	400,000
Telephone Set (with installation)	1	6,500	6,500	-	-	-	6,500
AC (Inverter) 1.5 Ton	1	90,000	90,000	-	-	-	90,000
Total	13	3,136,500	3,361,500	-	-	-	3,361,500
E. Proposed vehicles for PDMA Sindh Head Office							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
4x4 Double Cabin Pickup	3	6,000,000	-	18,000,000	-	-	18,000,000
Fork Lifter	6	7,500,000	22,500,000	22,500,000	-	-	45,000,000
Total	9	13,500,000	22,500,000	40,500,000	-	-	63,000,000
F. Operational Cost for PDMA Head Office-(Cost/Year)							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
Utilities	1	170,000	900,000	1,140,000	-	-	2,040,000
Miscellaneous	1	230,000	1,200,000	1,560,000	-	-	2,760,000
Operational Cost EOC	1	4,200,000	50,400,000	-	-	-	50,400,000
POL - Operational Vehicles	3	30,000	-	1080000	-	-	1,080,000
Total	6	4,630,000	52,500,000	3,780,000	-	-	56,280,000

G. Proposed GIS Specific Hardware							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
Drone Mapping Device with Integrated HD Camera	1	42,000,000	-	-	42,000,000	-	42,000,000
GNSS system (base + receiver)	1	6,400,000	-	-	6,400,000	-	6,400,000
Mobile sensing platform	1	10,500,000	-	-	10,500,000	-	10,500,000
Latest Server(Racks and Server Cabinets)	1	2,200,000	-	-	2,200,000	-	2,200,000
Large Format Scanner (62 Inch)	1	1,100,000	-	-	1,100,000	-	1,100,000
Network Attached Storage	1	1,000,000	-	-	1,000,000	-	1,000,000
Laptop Core i7 or latest generation	1	110,000	-	-	110,000	-	110,000
Color LaserJet Printer	1	550,000	-	-	550,000	-	550,000
Workstations with all accessories	2	200,000	-	-	400,000	-	400,000
Hardware Firewall	L/S	300,000	-	-	300,000	-	300,000
Software Firewall	L/S	200,000	-	-	200,000	-	200,000
Switches, Hubs, Routers and Networking Equipments	L/S	300,000	-	-	300,000	-	300,000
Total		64,860,000	-	-	65,060,000	-	65,060,000

H. Proposed GIS Specific Software							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
ARC GIS Basic	L/S	7,350,000	-	-	7,350,000	-	7,350,000
ESRI City Engine	L/S	650,000	-	-	650,000	-	650,000
Leica Photogrammetry Suite (LPS)	L/S	1,200,000	-	-	1,200,000	-	1,200,000
ENVI+IDL (Single Node)	L/S	1,000,000	-	-	1,000,000	-	1,000,000
GeoMedia Professional	L/S	1,200,000	-	-	1,200,000	-	1,200,000
Manifold System	L/S	100,000	-	-	100,000	-	100,000
Global Mapper	L/S	100,000	-	-	100,000	-	100,000
Falcon View	L/S	100,000	-	-	100,000	-	100,000
Prezi Desktop	L/S	100,000	-	-	100,000	-	100,000
Microsoft Windows Server (Latest Edition)	L/S	105,000	-	-	105,000	-	105,000
Antivirus (Server Based)	L/S	75,000	-	-	75,000	-	75,000
Total		11,980,000	-	-	11,980,000	-	11,980,000

I. Proposed HR for 29 DDMA's-(Cost/Year)							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
DDMA Disaster Management Coordinator (DDMC)	29	138,000	48,024,000	-	-	-	48,024,000
Office Assistant	29	67,000	23,316,000	-	-	-	23,316,000
Grand Total PDMA Head Office Karachi		100,881,500	124,189,500	85,932,000	77,040,000	-	287,161,500

IT Assistant	29	67,000	23,316,000	-	-	-	23,316,000
Junior Clerk	29	46,000	16,008,000	-	-	-	16,008,000
Driver	29	39,000	13,572,000	-	-	-	13,572,000
Security Guard	29	39,000	13,572,000	-	-	-	13,572,000
Naib Qasid	29	38,000	13,224,000	-	-	-	13,224,000
Total	203	434,000	151,032,000	-	-	-	151,032,000
J. Proposed Furniture with estimated cost for 29 DDMA's							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
Computer Tables With Chair	116	35,000	4,060,000	-	-	-	4,060,000
Office Chairs	232	5,000	1,160,000	-	-	-	1,160,000
Wooden File Cabinets	174	20,000	3,480,000	-	-	-	3,480,000
Conference Tables With Chairs (Set)	29	150,000	4,350,000	-	-	-	4,350,000
Miscellaneous (Other Chairs/Accessories and Stationary)	29	50,000	1,450,000	-	-	-	1,450,000
Total	-	260,000	14,500,000	-	-	-	14,500,000
K. Proposed Office facilities with estimated Cost for 29 DDMA's							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
AC (Inverter) 1.5 Ton	87	90,000	7,830,000	-	-	-	7,830,000
Generator 6 KVA (Diesel)	29	200,000	5,800,000	-	-	-	5,800,000
UPS + Maintenance Free Batteries	29	100,000	2,900,000	-	-	-	2,900,000
Telephone Sets With Installation	87	6,500	565,500	-	-	-	565,500
Total	-	396,500	17,095,500	-	-	-	17,095,500
L. Proposed General, IT, Office Equipment with estimated cost for 29 DDMA's							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
Desktop Computer (Full Set)	87	95,000	8,265,000	-	-	-	8,265,000
Digital Camera	29	80,000	2,320,000	-	-	-	2,320,000
Laptop Core i7	29	110,000	3,190,000	-	-	-	3,190,000
LCD 52"	58	75,000	4,350,000	-	-	-	4,350,000
Multi Function Office Machine	29	400,000	11,600,000	-	-	-	11,600,000
Conference Calling System	29	60,000	1,740,000	-	-	-	1,740,000
4G USB	29	3,500	101,500	-	-	-	101,500
Networking Cost	29	15,000	435,000	-	-	-	435,000
Total	319	838,500	32,001,500	-	-	-	32,001,500
M. Estimated Office Space + Renovation cost for 29 DDMA's							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total

Office Rent	29	50,000	17,400,000	-	-	-	17,400,000
Renovation Cost (1 Time)	29	150,000	4,350,000	-	-	-	4,350,000
Total	58	200,000	21,750,000	-	-	-	21,750,000
N. Proposed Vehicles with estimated cost for 29 DDMA							
	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
4x4 Single Cabin Pickup	29	4,500,000	130,500,000	-	-	-	130,500,000
70 cc Motor Bike (2/District)	58	60,000	3,480,000	-	-	-	3,480,000
Total	87	4,560,000	133,980,000	-	-	-	133,980,000
O. Proposed Operational Cost and POL for 29 DDMA-(Cost/Year)							
	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
Fuel and Maintenance Generators	29	30,000	10,440,000	-	-	-	10,440,000
Utilities	29	15,000	5,220,000	-	-	-	5,220,000
Miscellaneous	29	40,000	13,920,000	-	-	-	13,920,000
Maintenance and POL for Operational Vehicles	29	25,000	8,700,000	-	-	-	8,700,000
Maintenance and POL for Motor-Bikes	58	10,000	6,960,000	-	-	-	6,960,000
Total	174	120,000	45,240,000	-	-	-	45,240,000
Grand Total DDMA			415,599,000	-	-	-	415,599,000
P. Proposed HR for 6 Divisional Teams-(Cost/Year)							
	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
Team Manager	6	138,000	9,936,000	-	-	-	9,936,000
Deputy Team Manager	6	84,000	6,048,000	-	-	-	6,048,000
Communication and Liaison Officer	6	84,000	6,048,000	-	-	-	6,048,000
Structural Engineer/ Technical Expert	6	84,000	6,048,000	-	-	-	6,048,000
Logistic Maintenance Incharge	6	67,000	4,824,000	-	-	-	4,824,000
Store Incharge	12	62,000	8,928,000	-	-	-	8,928,000
Hazmat Expert	6	62,000	4,464,000	-	-	-	4,464,000
Paramedics	36	62,000	26,784,000	-	-	-	26,784,000
Control Room Operator	18	46,000	9,936,000	-	-	-	9,936,000
Water Search & Rescue Unit							
Diving Supervisor	6	100,000	7,200,000	-	-	-	7,200,000
Assistant Diving Supervisor	6	80,000	5,760,000	-	-	-	5,760,000
Divers	30	46,000	16,560,000	-	-	-	16,560,000
Ground Search & Rescue Unit							
Rescuers	126	46,000	69,552,000	-	-	-	69,552,000

Support Staff									
Junior Clerk	6	46,000	3,312,000	-	-	-	-	-	3,312,000
Drivers	72	39,000	33,696,000	-	-	-	-	-	33,696,000
Chowkidar	12	39,000	5,616,000	-	-	-	-	-	5,616,000
Naib Qasid	12	38,000	5,472,000	-	-	-	-	-	5,472,000
Total	372	1,123,000	230,184,000	-	-	-	-	-	230,184,000
Q. Proposed Furniture for 6 Divisional Offices (D.E.R.T)									
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total		
Computer Tables With Chair	203	35,000	7,105,000	-	-	-	7,105,000		
Office Chairs	725	5,000	3,625,000	-	-	-	3,625,000		
Wooden Tables	48	5,000	240,000	-	-	-	240,000		
Wooden File Cabinets	348	20,000	6,960,000	-	-	-	6,960,000		
Conference Tables With Chairs (Set)	6	200,000	1,200,000	-	-	-	1,200,000		
Total	1330	265,000	19,130,000	-	-	-	19,130,000		
R. Proposed General, IT, Office Equipment for 6 Divisional Offices (D.E.R.T)									
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total		
Desktop Computer (Full Set)	24	95,000	2,280,000	-	-	-	2,280,000		
Digital Camera	12	80,000	960,000	-	-	-	960,000		
Laptop Core i7	18	110,000	1,980,000	-	-	-	1,980,000		
LCD 52"	18	75,000	1,350,000	-	-	-	1,350,000		
Conference Calling System	6	60,000	360,000	-	-	-	360,000		
Multi Function Office Machine	6	400,000	2,400,000	-	-	-	2,400,000		
4G USB	12	3,500	42,000	-	-	-	42,000		
Total	96	823,500	9,372,000	-	-	-	9,372,000		
S. Proposed Facilities for 6 Divisional Offices (D.E.R.T)									
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total		
AC (Inverter) 1.5 Ton	36	90,000	3,240,000	-	-	-	3,240,000		
Generator 10 KVA (Diesel)	6	450,000	2,700,000	-	-	-	2,700,000		
UPS + Maintenance Free Batteries	6	200,000	1,200,000	-	-	-	1,200,000		
Telephone Sets With Installation	30	6,500	195,000	-	-	-	195,000		
UHF Radio Communication System	6	1,000,000	6,000,000	-	-	-	6,000,000		
Radio Set for Operational Vehicles	18	100,000	1,800,000	-	-	-	1,800,000		
Tow Way Radio Communication Set	36	45,000	1,620,000	-	-	-	1,620,000		
Miscellaneous	6	200,000	1,200,000	-	-	-	1,200,000		
Total	144	2,091,500	17,955,000	-	-	-	17,955,000		

T. Proposed Equipments for 6 Divisional Offices (D.E.R.T)							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
SCUBA Air Set	36	12,000	432,000	-	-	-	432,000
Buoyancy Compensator fitted with Inflation Cylinder	36	120,000	4,320,000	-	-	-	4,320,000
Diving Goggles	36	4,500	162,000	-	-	-	162,000
Swim Fins (Pair)	36	3,500	126,000	-	-	-	126,000
Wet suits 8.5 mm (Top,Bottom, Hood, Gloves,Booties)	36	81,000	2,916,000	-	-	-	2,916,000
Diving Knife	36	15,000	540,000	-	-	-	540,000
Rescue Knife	36	5,000	180,000	-	-	-	180,000
Weight Belt 1 Kg	36	15,000	540,000	-	-	-	540,000
Life Line (8 MM, Length of 200 Meter)	18	10,000	180,000	-	-	-	180,000
Buddy Line	18	5,000	90,000	-	-	-	90,000
Under Water Torch	18	18,000	324,000	-	-	-	324,000
Head Under Water Torch	18	20,000	360,000	-	-	-	360,000
Jack Stay (upto Length of 200 Feet)	12	60,000	720,000	-	-	-	720,000
Sinkers (50 KG)	36	15,000	540,000	-	-	-	540,000
Sinkers (30 KG)	36	10,000	360,000	-	-	-	360,000
Sinkers (20 KG)	36	8,000	288,000	-	-	-	288,000
Floats/ Swim Marker (35 Kg Buoyancy)	36	15,000	540,000	-	-	-	540,000
Life Buoy	36	5,500	198,000	-	-	-	198,000
Under Water Camera with Monitor	6	160,000	960,000	-	-	-	960,000
Life Jackets	120	4,000	480,000	-	-	-	480,000
Rubber Inflatable Boats (with Paddles)	18	100,000	1,800,000	-	-	-	1,800,000
OBM 40 HP (with Lead and Fuel Tanks)	18	40,000	720,000	-	-	-	720,000
Inflation Pump	18	25,000	450,000	-	-	-	450,000
Portable Trolley	12	15,000	180,000	-	-	-	180,000
High Powered Compressor	6	120,000	720,000	-	-	-	720,000
Over Boots	72	6,500	468,000	-	-	-	468,000
Water Bottle	72	1,000	72,000	-	-	-	72,000
Gas Mask	90	16,000	1,440,000	-	-	-	1,440,000
Harness Full Body	30	28,500	855,000	-	-	-	855,000
Helmet with Strips	150	10,500	1,575,000	-	-	-	1,575,000
Figure of Eight	30	4,000	120,000	-	-	-	120,000
Single Pulley	12	8,000	96,000	-	-	-	96,000
Search Lamp	48	12,000	576,000	-	-	-	576,000
Safety Goggles	150	4,000	600,000	-	-	-	600,000
Nappy Harness	30	15,400	462,000	-	-	-	462,000

Individual Descenders	12	60,000	720,000	-	-	-	-	720,000
High Visibility vests	150	2,000	300,000	-	-	-	-	300,000
GPS	24	50,000	1,200,000	-	-	-	-	1,200,000
Field pack /rucksack with hydration system	60	25,000	1,500,000	-	-	-	-	1,500,000
Torch with complete accessories	72	35,000	2,520,000	-	-	-	-	2,520,000
Shoes	150	15,000	2,250,000	-	-	-	-	2,250,000
Cuts scratch and flame resistant gloves	126	3,000	378,000	-	-	-	-	378,000
Open gate carabineer	60	3,000	180,000	-	-	-	-	180,000
Asitlost (lock) gate carabineer	60	4,000	240,000	-	-	-	-	240,000
Rope Dynamic 11 mm	12	10,000	120,000	-	-	-	-	120,000
Flame Cutter	18	700,000	12,600,000	-	-	-	-	12,600,000
Concrete Cutter	18	150,000	2,700,000	-	-	-	-	2,700,000
Angular Grinder	18	20,000	360,000	-	-	-	-	360,000
Spine Board	60	20,000	1,200,000	-	-	-	-	1,200,000
Fire Extinguisher DCP 9 KG	60	10,530	631,800	-	-	-	-	631,800
Fire Extinguisher CO 2, 5 KG	60	10,530	631,800	-	-	-	-	631,800
Crowbar and pic axe	30	3,500	105,000	-	-	-	-	105,000
Shovels/ KarahandKahi/ Hammer/ Chisel - Each	24	10,000	240,000	-	-	-	-	240,000
Portable Generator	12	30,000	360,000	-	-	-	-	360,000
Rescue Saw Cutter	18	800,000	14,400,000	-	-	-	-	14,400,000
Manual Jacks	30	6,000	180,000	-	-	-	-	180,000
Chemical Suit	12	30,000	360,000	-	-	-	-	360,000
Oxygen Generating Mask	42	15,000	630,000	-	-	-	-	630,000
Oxygen Cylinder	42	5,000	210,000	-	-	-	-	210,000
First Aid Kit	12	20,000	240,000	-	-	-	-	240,000
Thermal Imagery Camera	6	800,000	4,800,000	-	-	-	-	4,800,000
Hydraulic Cutter	6	700,000	4,200,000	-	-	-	-	4,200,000
Resuscitation Kit	12	27,000	324,000	-	-	-	-	324,000
Collapsed Structure Audio / Video Scope	6	1,755,000	10,530,000	-	-	-	-	10,530,000
Rope Thrower Gun	6	850,000	5,100,000	-	-	-	-	5,100,000
Blanket for Rescue lashing	60	5,000	300,000	-	-	-	-	300,000
Jumping inflated Sheet	12	530,000	6,360,000	-	-	-	-	6,360,000
Inflatable Rescue Tunnel	6	2,000,000	12,000,000	-	-	-	-	12,000,000
Drone for Surveillance	6	1,000,000	6,000,000	-	-	-	-	6,000,000
Total	2736	10,696,960	118,260,600	-	-	-	-	118,260,600
U. Proposed vehicles for 6 Divisional Offices (D.E.R.T)								
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total	Total

4x4 Single cabin pickup + Fabrication	18	5,700,000	102,600,000	-	-	-	102,600,000
Rescue Ambulance	18	11,100,000	199,800,000	-	-	-	199,800,000
Disaster Response Vehicles	18	21,500,000	387,000,000	-	-	-	387,000,000
Total	54	38,300,000	689,400,000	-	-	-	689,400,000
V. Estimated Construction Cost for 6 Divisional Offices (D.E.R.T)							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
8000 Sq Ft Covered Area (Office Rooms)	6	14,400,000	86,400,000	-	-	-	86,400,000
8000 Sq Ft Covered Area (Warehouse + dormitory)	6	9,600,000	57,600,000	-	-	-	57,600,000
Total		24,000,000	144,000,000	-	-	-	144,000,000
W. Operational Cost & POL for 6 Divisional Teams-(Cost/Year)							
Title	Unit	Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
Fuel and Maintenance Generators	6	50,000	3,600,000	-	-	-	3,600,000
Utilities	6	50,000	3,600,000	-	-	-	3,600,000
Miscellaneous	6	40,000	2,880,000	-	-	-	2,880,000
Maintenance and POL for Disaster Response Vehicles	18	50,000	10,800,000	-	-	-	10,800,000
Maintenance and POL for Life Saving Ambulances	18	40,000	8,640,000	-	-	-	8,640,000
Maintained and POL for 4x4 Single Cabin Pickups	18	30,000	6,480,000	-	-	-	6,480,000
Total	72	260,000	36,000,000	-	-	-	36,000,000
Grand Total D.E.R.T		77,559,960	1,264,301,600	-	-	-	1,264,301,600
Great Grand Total (PDMA HQ/DDMA/D.E.R.T)							
		Unit Cost	Y-I	Y-II	Y-III	Y-IV	Total
		185,250,460	1,804,090,100	85,932,000	77,040,000	-	1,967,062,100

**Part 7:
Annexure**

Annex 1: Tools, Institutional Capacity Assessment of PDMA Sindh

Following is the toolkit utilized for data collection:

Disaster Contents				
Area/Indicator	Required information	Details in case data is Available	Source of Information	Notes/ Remarks
Type of Disasters in Sindh both natural and manmade	<ul style="list-style-type: none"> List of Disasters List of potential hazards Data on previous disasters (Type/ damage, severity) 			
Vulnerability (Communities, Structures, Services etc.)	<ul style="list-style-type: none"> Geographic area wise vulnerability of communities to disasters Types of construction (Rural and urban wise housing and other infrastructure) Vulnerable services (electricity, road and transport, health, education etc.) 			
Average annual/ probable Maximum loss/ damage				
Government approach for preparedness	<ul style="list-style-type: none"> Planning methodology Annual Budget allocations 			
Recent Experience of major disasters	<ul style="list-style-type: none"> Recent Experience of major disasters 			
National strategy and action plans				
Area/Indicator	Required information	Details in case data is Available	Source of Information	Notes/ Remarks
Legal Framework of Disaster Management	<ul style="list-style-type: none"> PDMA Act NDMA Act National DRM Framework Others 			
Bilateral/multilateral treaties or agreements	<ul style="list-style-type: none"> Copy of treaties/agreements 			
Disaster Management Plan	<ul style="list-style-type: none"> Has DMP prepared or any substitute for DMP and are they being updated regularly Quality of DMP Procedures of review and entities 			
Contingency Plans	<ul style="list-style-type: none"> are contingency plans prepared and are they being updated regularly? Quality of CP Procedures of review and entities 			
Governance structure / Authorities /Inputs				
Area/Indicator	Required information	Details in case data is Available	Source of Information	Notes/ Remarks
Laws/directives	<ul style="list-style-type: none"> Copies of applicable laws/ directives 			
Bodies related to disaster risk	<ul style="list-style-type: none"> Which bodies are related to disaster risk reduction at each level 			
Functions, Roles and Responsibilities	<ul style="list-style-type: none"> Who, when and What at all levels 			

Structure	<ul style="list-style-type: none"> Are the organizational structures well defined? If not what should be the revised structures? 			
Logistic support availability	<ul style="list-style-type: none"> Quantity Quality Gap and Requirements 			
Coordination with other departments and units	<ul style="list-style-type: none"> Has a coordination mechanism been established? Does the existing coordination foster collaboration in order to avoid the duplication and overlap of activities in the field, to make the most efficient use of resources and to raise awareness of the risk of disaster? 			
Communication Systems	<ul style="list-style-type: none"> Details existing communication systems and gaps What alternative means of communication are ready, such as telephones, radios and the internet? Are there multiple options in case of a disaster? 			
Equipment and Furniture	<ul style="list-style-type: none"> Quantity Quality Gap and Requirements 			
Office Location and Space	<ul style="list-style-type: none"> Adequacy Quality Gaps and requirements 			
Human Resource	<ul style="list-style-type: none"> Sufficient and capable Current staffing and gaps 			
Resource Allocation	<ul style="list-style-type: none"> Sufficient or not? Gap Required resources 			
What lessons have been learned from previous experiences of disasters in view of the position and authority of the relevant organizations? Have these lessons been properly reflected in such areas as the reorganization and strengthening of authorities?				

Disaster management and early warning systems

Area/Indicator	Required information	Details in case data is Available	Source of Information	Notes/Remarks
Early warning mechanisms	<ul style="list-style-type: none"> Details of early warning mechanisms to predict calamities Quantity Quality and Gaps 			
Assessments	<ul style="list-style-type: none"> Hazard risk, vulnerability and disaster risk, at national and sub-national levels, undertaken on a regular basis? Are these properly documented? Quality of assessments Exchange mechanisms? Cost benefit /fiscal risk assessments? 			

	<ul style="list-style-type: none"> • Effective and appropriate instruments to guide the local authorities in making the risk assessment in their own areas in accordance with the national strategy and policies? • Are the results of this assessment used for decision-making and the improvement of future disaster management initiatives? 			
DMIS	<ul style="list-style-type: none"> • System in place to determine the extent of loss or damage following a disaster? • Up-to-date disaster management information system? • DMIS suitable for analyzing risks and planning efforts to reduce the risk and/or mitigate the impact of disasters? • Information system contain enough information on hazards and risks to determine, at the local level, who is exposed and who is vulnerable? 			
GIS	<ul style="list-style-type: none"> • Is an appropriate geographical information system used? For what purpose? • What information management activities can be supported by the GIS? • What types of decisions can be supported with a GIS? • Is the in-house technical expertise capable for using GIS? • What are the institutional arrangements that would enable the appropriate use of this GIS? • Who will be the users of the information generated with the GIS? • In terms of information, time and training needs, what is required to obtain the desired results? • Is the budget sufficient and is staff availability adequate? What agencies are participating in similar projects? 			
Disaster Relief Supplies	<ul style="list-style-type: none"> • Arrangements for purchasing, receiving, storing, distributing disaster relief supplies? 			

Training and Public Awareness

Area/Indicator	Required information	Details in case data is Available	Source of Information	Notes/Remarks
Public awareness and education	<ul style="list-style-type: none"> • DRR/CBDRM training for Public • Public education campaigns in DRR • Education Programs in schools / local communities 			

	<ul style="list-style-type: none"> • Training needs assessment and planning? • Necessary material and equipment for training Programs • Local level evacuation areas/routes/ shelters established along with disaster drills • Responsibility for developing and conducting emergency exercises and training clearly defined and assigned to an appropriate agency, department or individual? • Local drills and simulation exercises conducted at all levels of Government? • Specific Program for training/ emergency exercises for particularly vulnerable people • Involvement of various local departments (fire dept., police and hospitals), community-based organisations, the media etc. in training/emergency exercises? • Capacity building by sending officials to other countries for purposes of learning the most effective emergency exercises during disasters? 			
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Disaster funds and grants administration

Area/Indicator	Required information	Details in case data is Available	Source of Information	Notes/ Remarks
Funds and Grants	<ul style="list-style-type: none"> • Sources of funds? • Source wise allocation along with purpose and implementing agencies • Dedicated budget allocations by the Govt.? • Strategic reserve for disaster relief goods 			

Building Development and Planning

Area/Indicator	Required information	Details in case data is Available	Source of Information	Notes/ Remarks
Building Development and planning	<ul style="list-style-type: none"> • Building development plans been drawn up with a disaster sensitive approach? • Building development plans been drawn up on the basis of geological survey reports? • Has the disaster resistance of existing buildings and common infrastructures been examined in disaster prone areas, in line with the aim of disaster risk reduction? • Are criteria for reinforcement and reconstruction decisions specified? 			

	<ul style="list-style-type: none"> Are measures taken against licensed and unlicensed buildings constructed previously in areas declared unfit for housing? 			
	<ul style="list-style-type: none"> Are priorities and long and short term strategies/Program/plans specified for making urban areas disaster-resistant? Programs/projects for making existing buildings disaster resistant, reinforcing them Is the safety of public buildings such as schools and health facilities assessed and are they upgraded as necessary? Is the legal framework adequate for the measures relating to reinforcement and reconstruction? Are there any studies and investments concerning critical infrastructure that reduces risk? Have any finance models for resilient housing been designed taking low- income citizens into consideration? Have any alternatives been assessed? 			
Response Team				
Area/Indicator	Required information	Details in case data is Available	Source of Information	Notes/ Remarks
Response team	<ul style="list-style-type: none"> Structure Human Resource Equipment and Vehicles Capacity Gaps 			

Annex 2: ToRs for Proposed HR

Job Description's for Proposed Staff at PDMA Head Office

DRM Specialist

Tasks:

DRM Specialist will be responsible for the following tasks:

- Support activities leading to formulation, management and evaluation of Program activities within his/her portfolio, as well as provides policy advice services,
- Ensures implementation of program strategies related to Disaster Risk Management articulated with Climate Change Adaptation focusing on achievement through identification of areas for support and interventions related to Disaster Risk Management maximizing their articulation and coherence with climate change interventions and strategy,
- Support effective management of the project within the Disaster Risk Management area, focusing on quality control from formulation to implementation of the program,
- Ensure integration of DRM best practices in program project interventions, particularly those related to Climate Change Adaptation and Mitigation,
- Contribution to knowledge building and policy development in support of the coupling of DRM and Climate Change Adaptation strategies,
- Guide and supervise activities for adaptive research and participatory learning of DRM.
- In close collaboration with the PDMA staff, develop and supervise the implementation of an integrated program for DRM in various sectors,
- Develop and supervise the implementation of a training program on DRM strategies and practices and undertake the practical training of communities, subject matter specialist's/master trainers and other staff,
- In close collaboration with the PDMA team, design, support and supervise the implementation of District and provincial disaster reduction/management plans,
- Represent PDMA at the relevant forum/networks conferences and platforms related to DRR/DRM,
- Perform other related duties within his/her area of technical competence.

CBDRM Specialist

Tasks:

CBDRM Specialist will be responsible for the following tasks:

- Provide technical support and training to PDMA in the formation, coordination, guidance, supervision and implementation of CBDRM component,
- Coordinate with DDMA, line departments and other agencies to initiate high quality CBDRM activities, including identification and prioritization of adaptation/mitigation measures,
- Guide the process and provide technical support for establishment DRM committees and risk assessment through hazard, livelihoods and vulnerability assessment etc,
- Support PDMA and DDMA in development of village/UCs level resilience strategies and implementation of preparedness, mitigation, prevention and adaptation activities,
- Support PDMA and DDMA in preparing the curricula for the training and awareness on DRR/DRM for key stakeholders,
- Prepare education materials and SOPs of potential interventions for well-coordinated and smooth implementation of mitigation/adaptation activities in the project areas.
- Facilitate programme technical unit and sectoral specialist in the impact of interventions in the project areas,
- Prepare ToRs for required individual and institutional consultancy services and expert technical support as may be required,
- Prepare relevant annual work plans; Support timely implementation of the CBDRM activities and their delivery in line with agreed quality and timelines,
- Represent PDMA at the relevant forum/networks conferences and platforms related to DRR/M,
- Provide technical guidance and advice to implementing partners on requiring services and inputs to obtain effective results,
- Support PDMA and DDMA through process of preparation technical reports, guidelines, field documents and training materials to meet the needs of less literate community viz-e-viz extensive use of illustrations/graphics/pictorial) information for effective communication,
- Facilitate the exchange of information and best practices across Sindh through publications, workshops and other events,
- Prepare case studies/success stories and document lesson learned during the project implementation. develop, document and disseminate appropriate best-practices in community-based approaches to support DRR/DRM,
- Perform other related duties within his/her area of technical competence.

Internal Auditor

Tasks:

Internal Auditor will be responsible for the following tasks:

- Developing, directing and coordinating a comprehensive internal audit program, which supports improvement of the risk management of PDMA Sindh,
- Coordinate and monitor the Internal Audit function and programs,
- Participate in the design, implementation and monitoring of all the processes required in the audit work (annual plan, standard working papers, reporting format and protocols) etc,
- Review the current Internal Control Systems for its effectiveness and appropriateness to achieve the Organization's objectives and report on areas of improvement,
- Monitor actions taken by management in response to audit reviews, ensuring that all agreed audit actions and recommendations are accurate and timely implemented,
- Work closely with external or visiting auditors and support their audit process,
- Analyze all success factors and risks facing the organization, report them to management and provide recommendations for improvement of the risk management and overall Internal Control system,
- Ensure that audits are performed with due professional care and there are credible audit observations, conclusions and recommendations,
- Perform other duties, including undertaking complex or sensitive reviews and investigations as assigned,
- Appraisal and annual appraisal are timely completed and documented,
- Planning, monitoring and quality review of assurance engagements on key systems, processes, policies,
- Review on-going assurance assignments on the work plan in line with International standards on internal auditing,
- Prepare reports to relevant stakeholders on audit engagement assignments undertaken,
- Monitor the process of management's actions in response to audit/assurance reviews,
- Provide practical recommendation on how to improve systems, processes, policies and controls,
- Perform other related duties within his/her area of technical competence.

Assistant (Internal Auditor)

Tasks:

Assistant will be responsible for the following tasks:

- Under the overall guidance of the Internal Auditor, Prepare or contribute to the preparation of work plans (including risk assessment) and audit programs for assurance and/or consulting engagements,
- Conduct discussions of preliminary nature with heads of operations audited,
- Conduct - in accordance with audit standards - segments of financial, operational and compliance audits of complex operations and conduct similar audits of small and medium sized operations,
- Obtain required information directly or indirectly through examination of records or interviews with staff,
- For the processes audited, review and evaluate the system of management controls and assess their adequacy and effectiveness and, where appropriate, draft potential recommendations for improvements,
- Prepare working papers documenting adequately work performed,
- Draft segments of the reports and communications on the results of work performed, for review by Internal Auditor,
- Assess the reliability and effective use of internal controls and assist in reviewing administrative procedures,
- Perform other related duties within his/her area of technical competence.

Sub Engineer

Tasks:

Sub Engineer will be responsible for the following tasks:

- Conduct field surveys/assessments; document such assessment including construction practices,
- Provide technical guidance on hazard resistant and improved construction to implementing partners and communities,
- Ensure adherence to PDMA Sindh operational policies, procedures and standards of conduct,
- Implement the daily activities of the Housing, WATSAN, Hygiene Promotion works,
- Ensure construction quality and building materials according to the standards and specifications,
- Supervise the construction of shelters and other demonstration works,
- Ensure the activities of the projects according to the design, drawings and BOQs,
- Prepare all required project documentation and keep reports for PDMA,
- Perform other related duties within his/her area of technical competence.

GIS Operator/Shift Incharge

Tasks:

GIS Operator/Shift Incharge will be responsible for the following tasks:

- Generate files/reports/sheets/maps, as and when required basis,
- Liaison with pertinent line departments, agencies etc,
- Undertake repairing of the system if required,
- Post information into GIS and ensure the accuracy of data,
- Support GIS Specialist in selecting and uploading satellite pictures in data systems,
- Debug or program the software to eliminate errors and improve efficiency of the system,
- Perform other related duties within his/her area of technical competence.

IT Technician

Tasks:

IT Technician will be responsible for the following tasks:

- Assist GIS Expert to build and maintain efficient IT systems and networks aiming for the highest functionality,
- Setup workstations with computers and necessary peripheral devices (routers, printers etc.),
- Check computer hardware (HDD, mouse, keyboards etc.) to ensure functionality,
- Install and configure appropriate software and functions according to specifications,
- Develop and maintain local networks in ways that optimize performance,
- Ensure security and privacy of networks and computer systems,
- Provide orientation and guidance to users on how to operate new software and computer equipment,
- Organize and schedule upgrades and maintenance,
- Perform troubleshooting to diagnose and resolve problems (repair or replace parts, debugging etc.),
- Train users of the systems to make appropriate and safe usage of the IT infrastructure.
- Assess hardware requirements,
- Perform other related duties within the area of technical and managerial competence.

Job Description's for Proposed Staff at DDMA's

District Disaster Management Coordinator

Tasks:

District Disaster Management Coordinator will be responsible for the following tasks:

- Coordinate with District administration/divisional D.E.R.T in the state of disaster/emergency,
- Registration and enrollment of volunteers for Community Emergency Response Teams (CERTS) at District/union council level,
- liaison and deployment of Community Emergency Response Teams in case of major emergency/disaster/event,
- Implementation of actions/duties as directed by PDMA HQ,
- Liaison with District administration on establishment of evacuation centers during disasters,
- Provide technical support in the implementation of CBDRM programs as ignited by PDMA HQ,
- Manage District level trainings for pertinent officials and communities,
- Managing flood control center and EWS control at District level,
- Carry out drills and awareness events as planned by PDMA HQ,
- Obtain and disseminate baseline data needed for M&E of HQ,
- Collect/verify field reports to determine for implementation under the guidance and approval of PDMA HQ,
- Facilitate and monitor disbursement of relief supplies,
- Identification of potential hazards through community's/line departments inputs,
- Alerting appropriate formal warnings for risk reduction,
- Supervise social field surveys and damage assessment surveys,
- Ensure quality of surveys and per directives of PDMA HQ,
- Perform other related duties within the area of technical and managerial competence advised by PDMA HQ.

IT Assistant

Tasks:

IT Assistant will be responsible for the following tasks:

- Build and maintain efficient IT systems and networks aiming for the highest functionality and connectivity with PDMA HQ/Divisional Offices,
- Set up workstations with computers and necessary peripheral devices (routers, printers etc.),
- Check computer hardware (HDD, mouse, keyboards etc.) to ensure functionality,
- Install and configure appropriate software and functions according to specifications,
- Develop and maintain local networks in ways that optimize performance,
- Ensure security and privacy of networks and computer systems,
- Organize and schedule upgrades and maintenance,
- Perform troubleshooting to diagnose and resolve problems (repair or replace parts, debugging etc.),
- Assess hardware requirements,
- Perform other related duties requested by DDMC.

Office Assistant

Tasks:

Office Assistant will be responsible for the following tasks:

- Design and maintain filing and storage systems in the office,
- Schedule meetings, travel arrangements,
- Maintain office supply inventory,
- Retrieve documents and files when requested,
- Read and route incoming mail and process outgoing mail,
- Create, edit and update records,
- Perform other related duties requested by DDMC.

Job Description's for Proposed Staff at D.E.R.T

Team Manager

Tasks:

Team Manager will be responsible for the following tasks:

- Team manager will be responsible for overall command and strategy of divisional office,
- Ensure optimal management of emergencies/ disasters by responding to each case and major emergencies in his/her area with all Service and other resources,
- Ensuring quality service delivery indicators and submit its initial report immediately to PDMA, detail analysis of major emergencies in terms of resources, trainings and implementation of SOPs,
- Ensure strategic human resource management as per rules, staff attendance, turnout, discipline and behavior at station,
- Monitoring of changing shifts daily,
- Ensuring practice of patient shifting and ladder drills/practice of rescue tools and techniques daily at the rescue station preferably at the start of each shift,
- Ensuring that no physically or professionally unfit person is working in the divisional office through regular staff monitoring, training, physical exercises, motivational events and monthly evaluation,
- Ensuring optimal condition of cleanliness, working of equipment, vehicles and maintenance/development of rescue station and arranging necessary stores for the station and vehicles at the station and shall submit monthly report in this regard,
- Registration and enrollment of volunteers for Community Emergency Response Teams (CERTS) at each Union Council level,
- Conducting awareness campaigns and training programs for community, maintenance of their record, liaison and deployment of Community Emergency Response Teams in case of major emergency/disaster/event with close coordination of Emergency Officer,
- Perform other related duties within the area of technical and managerial competence.

Deputy Team Manager

Tasks:

Deputy Team Manager will be responsible for the following tasks:

- Ensure optimal management of emergencies/disasters by responding to each case and major emergencies in his/her area with all Service and other resource, ensuring quality service delivery indicators and submit its initial report immediately to Team Manager,
- Detail analysis of major emergencies in terms of resources, trainings and implementation of SOPs and submit final report with recommendations to the Team manager,
- Documentation of all emergencies investigations reports etc. and submission of daily emergency state to the Team Manager,
- Ensure strategic human resource management as per rules, staff attendance, turnout, discipline and behavior at station, monitoring of changing of shifts daily, ensuring practice of patient shifting and ladder drills/practice of rescue tools and techniques daily at the rescue stations preferably at the start of each shift and redressal of grievances of Staff.
- Ensuring that no physically or professionally unfit person is working in the station through regular staff monitoring, training, physical exercises, motivational events and monthly evaluation.
- Ensuring optimal condition of cleanliness, working of equipment's, vehicles and maintenance/development of rescue station and arranging necessary stores for the station and vehicles at the station and shall submit monthly report in this regard.
- Registration and enrollment of volunteers for Community Emergency Response Teams (CERTS) at each Union Council level; conducting awareness campaigns and training programs for community, maintenance of their record, liaison and deployment of Community Emergency Response Teams in case of major emergency/disaster/event,
- Responsible to maintain own physical fitness, professional outlook and Body Mass Index below 30 level.
- Perform other related duties within the area of technical and managerial competence.

Technical Search Specialist

Tasks:

Technical Search Specialist will be responsible for the following tasks:

- Searching structures or other locations indicated in the mission assignment, utilizing appropriate technical search equipment and techniques,
- Documenting and marking locations of victims, potential victims and hazards,
- Making assessments through the use of technical search equipment,
- Land navigation and site mapping,
- Cooperating with and assisting other search and rescue resources,
- Providing accountability, maintenance and minor repairs of all issued equipment,
- Performing additional tasks or duties as assigned,
- Conduct detailed structural assessments,
- Identifying structural hazards,
- During the rescue operation making sure if the structure is safe,
- Supervision while lifting/moving of heavy structure during an operation,
- Perform other related duties within the area of technical and managerial competence.

HAZMAT Expert

Tasks:

HAZMAT Expert will be responsible for the following tasks:

- Providing an initial and ongoing survey (detection, monitoring and sampling) for and identification of, the presence of hazardous materials at search and rescue sites,
- Directing decontamination procedures for any task force member victim, canine, or equipment,
- Performing minor mitigation operations within the scope of the Hazmat Concept of Operations,
- Assisting Team in providing information to personnel regarding chemical data and Personal Protective Equipment (PPE) compatibility and capability for tactical operations.
- Document all related information regarding the incident,
- Adhering to all safety procedures,
- Properly utilizing the detection monitors and devices during rescue operation,
- Working with Logistics Team personnel to establish and maintain a regular maintenance scheduled for hazmat cache items as required, including calibration, battery charging, function tests and field repair,
- Perform other related duties within the area of technical and managerial competence.

Liaison/Communication Officer

Tasks:

Liaison/Communication Officer will be responsible for the following tasks:

- Attend District board meetings, Village, community organizations for the purpose of developing a District presence in the community and serving as a liaison between PDMA and external stakeholders,
- Collaborates with internal and external stakeholders for the purpose of building effective communication, enhancing relationships and ensuring a high quality of customer service to achieve District goals and objectives,
- Recommend responses and action plans as a result of interacting with the external stakeholders ensuring effective communication practices to meet District strategic goals and objectives and to provide PDMA visibility,
- Develop, plan and/or coordinates various system-wide District activities (e.g. community outreach, media/public relations functions, etc.) for the purpose of enhancing District/community relationships, improving customer services/programs and promoting a positive public image,
- Design in conjunction with the Divisional Team and PDMA the implementation and solicitation of feedback from external stakeholders for the purpose of improving services and programs provided and forecasting future needs of the District and community,
- Contributes to the promotion of various District and school programs and events (e.g. public relations program, community relations, School safety programme, etc.) for the purpose of communicating and implementing District vision and culture with internal and external stakeholders,
- Perform other related duties within the area of technical and managerial competence.

Control Room Operator

Tasks:

Control Room Operator will be responsible for the following tasks:

- Receiving emergency calls and answering politely and professionally as per quality service indicator within 10 seconds,
- Convey to Wireless Base Operator for timely dispatch of emergency vehicles,
- Guide the movement of emergency vehicles on the basis of familiarization with streets, roads and buildings of the area and monitoring on tracker and if all ambulances or fire vehicles are busy in operations, inform the caller as per guidelines,
- Maintain the emergency response/call forms/trauma forms and dispatch registers and their compilation, telephone, computer and wireless systems and ensure 24/7 functionality of calls recording and monitoring system always with proper handing/ taking over in each shift and shall submit monthly report in this regard,
- Responsible for proper filling of emergency call forms, compiling and submitting the emergency data to Station Coordinator/SI after each emergency and submit weekly report also to Station Coordinator/Control Room Incharge,
- Responsible for daily data entry through dashboard and Citizen Feedback Model and Generating daily, weekly, monthly and yearly consolidated reports of emergencies and average response time,
- Timely disposal of any other duties or tasks assigned by the Competent Authority,
- Perform other related duties within the area of technical and managerial competence.

Logistic and Maintenance Incharge

Tasks:

Logistic and Maintenance Incharge will be responsible for the following tasks:

- Responsible for overseeing the inventory management process, defining departmental strategies for appropriate inventory levels, eliminating obsolete and off-spec material and reduce aging material,
- Create, manage and achieve the overall logistics department budgets,
- Ensure Company follows laws and regulations regarding transportation, including hazardous materials,
- Resolve any legal issues pertaining to transportation/distribution,
- Maintain receiving, warehousing and distribution operations by initiating, coordinating and enforcing program operational and personnel policies and procedures,
- Safeguard warehouse operations and contents by establishing and monitoring security procedures and protocols,
- Motivate, organize and encourage teamwork within the workforce to ensure set productivity targets are met,
- Oversee the planned maintenance of vehicles,
- Participate in personnel development at all levels through talent acquisition, performance management, providing opportunity for high performers, education, communication, expectation setting and self-actualization,
- Perform other related duties within the area of technical and managerial competence.

Diving Supervisor

Tasks:

Diving Supervisor will be responsible for the following tasks:

- Before diving takes place, the supervisor must satisfy themselves of the purpose for diving and be clear they have authority to conduct diving,
- The operation is carried out so far as responsibly practicable, without risk to the health and safety of all those taking part and of other persons who may be affected thereby,
- Their divers and any persons involved in the operation are competent, current and able to carry out their duties. If the supervisor is in doubt that anyone is medically fit to conduct their duties, they should consult a medical specialist,
- A risk assessment is conducted based on an assessment for the risks to the health and safety of any person taking part in the diving operation. The risk assessment is to be completed and recorded prior to any diving taking place. The risk assessment must be reviewed at regular intervals if circumstances change,
- All personnel are fully briefed and understand the task expected of them,
- Any diver under their control has a sufficient and available primary gas supply and bail out gas (where applicable) to safely complete the dive,
- A person suitably qualified in first aid and a serviceable oxygen resuscitator are available,
- They have a safe method of recalling the divers,
- They are on site throughout the dive and do not enter the water,
- They have an accurate means of timing the dive, is able to establish the maximum depth to which the diver has dived and that an accurate record of the dive is kept,
- They have established the depth of water applicable to the dive,
- They are to be in possession of decompression table applicable to the type of dive and equipment in use,
- That diving is conducted within the working parameters of the breathing equipment's being used,
- They establish the tidal stream/current prior to divers entering the water,
- They establish and brief a casualty evacuation plan at the commencement of diving operations,
- The breathing apparatus and associated diving equipment is maintained and prepared in accordance with the relevant maintenance operating routines,
- Perform other related duties within the area of technical and managerial competence.

D.E.R.T Rescuer

Tasks:

D.E.R.T Rescuer will be responsible for the following tasks:

- Ensuring timely response, evacuation of victims from hazardous material incidents, building collapse and any other disaster,
- Maintain a courteous and smooth attitude and behavior with the victims and their families at each emergency,
- Conduct rescue drills (check functionality of equipment at the start of every shift and be ready to combat any incident/disaster at any time,
- Timely disposal of any other duties or tasks assigned by the Competent Authority,
- Perform other related duties within the area of technical and managerial competence.

Annex 3: Specification of Proposed Equipment

Drone Mapping Device

Performance Specifications	
Rotor	Flettner Dual Rotor 2 x 2.8 m (4 blades)
Engine	Turbine
Fuel	Diesel / Jet A1
Dimensions LxHxW	2.17 m x 0.98 m x 0.7 m
Empty weight	35 kg (without camera pod)
Payload Capacity	50 kg
Maximum take-off weight	85 kg
Fuel Capacity / Endurance	
Maximum fuel capacity	Main tank 13l + add. tank 20l (2 x 20l)
Maximum time of flight	1 hr main tank + 4 hrs with add. tanks
Endurance	Up to 4 hrs (depending on configuration and payload)
Maximum airspeed	100 km/h
Service ceiling	1500m AGL / 3000 MSL
Ground Control Station (CGS)	
Weight	25 kg, Pelicase IP67 hard case
Dimensions L x W x H	0.6 m x 0.53 m x 0.23 m
Temperature range	- 10 °C to + 70 °C
Screens	2 monitors 17" and 8.5", Daylight suitable, built-in speakers and microphone
Control	2 joysticks with hall sensors for flight and gimbal control; industry keyboard, illuminated
Power	Redundant power supply, operating 3 hrs in battery use
Live available data	2 monitors 17" and 8.5", Daylight suitable, built-in speakers and microphone
Control	RPM, temperature, coordinates, altitude, fuel level, flight plan, accuracy, height level, heading, energy, voltage, course, PDOP, ground speed, climbing speed
Data link	Customized frequency 400-450 Mhz / Frequency hopping, Range 50 km (VLOS)
Autopilot	Auto-start, auto-landing, mission flight, coming home, heading, direct waypoint, change mission within mission, up to 256 waypoints.
Features	Altitude stabilization and velocity control, integrated GPS / inertial navigation, built-in data logger and telemetry, programmable hardware for rapid customization, built-in payload interfaces, built-in vibration isolation.
GPS Receiver	
Receiver	Novatel OEMV1 receiver, DGPS
Positional accuracy	1.8m RMS
Piezo resistive pressure sensor	300 – 1100 mbar
Avionic Box	
Integrated autopilot system, rectifier, charge controller and three voltage regulators for extern voltage supplies.	
Output voltage	1 x 12.1 V, 1 x 24 V (adjustable internally), redundancy for flight controller
Output current	16A, integrated generator
On-board battery	Li-Fe 27.6 V
Time to fly in case of generator failure	50 minutes
Case	Aircraft aluminium, screw plugs
Sensor Characteristics	
CCD Size (60MP / 80MP)	8956 x 6708 / 10320 x 7752 pixels

Pixel Size (60MP / 80MP)	6 um / 5.2 um
Dynamic Range of CCD	73 dB
Resolution A/D Converter	14-bit
Data Channel	16-bit lossless compressed
Max. Frame Rate (60MP / 80MP)	1.0 sec / 1.25 sec
Motion Compensation	Mechanical, multi-directional
Spectral Range	CH62 / 82 RGB and NIR (780 – 880 nm), co registered
Weight (w/o lens)	3.1 kg
Dimensions	Height 167 mm, diameter 128 mm
Camera Controller CC32	
Weight (w/o MM30)	6.1 kg
Dimensions L x W x H	300 mm x 260 mm x 140 mm
Capacity	Controls up to 5 CH6 x Includes deeply coupled GNSS/IMU solution
Processor	WIN7 64-bit, 8 GB RAM, 32 GB flash, USB 2.0, SATA
Mass Memory	MM30 Solid state available in 320 GB, 600 GB and 1,200 GB CC32 holds up to 2 MM30s Weight 0.5 kg Removable and portable
Mass Memory Capacity	For oblique configurations only a joint MM30 mode is available.
Joint MM30 1,200GB	39,600 RGB images or 31,600 RGBN images
Joint MM30 600GB	18,800 RGB images or 15,800 RGBN images
Joint MM30 320GB	10,600 RGB images or 8,400 RGBN images
POD for Drone	
Weight (empty)	5 kg
Electrical	
Average Power Consumption	< 200 W / 28 VDC
Standards	RTCA DO-160G, EUROCAE-14G, FAR§23.561, FAR§27.561, USA FCC Part 15, EU Directive 1999/5/EC

GNSS System (Base + Receiver)

Options	Specification	Description
Performance	Technology	Advanced Measurement engine
		Jamming resistant measurements
		High precision pulse aperture multipath correlator for pseudo range measurements
		Excellent low elevation tracking
		Very low noise GNSS carrier phase measurements with
	No. of Channels	120 Channels
GNSS Antennas	GNSS technology	Smart Track
	Satellite signal tracking GPS	L1, L2, L5 GLONASS, Galileo, BeiDou
	Ground plane	Built-In Ground plane
	Weight	7.6 kg
	Gain	typically 40 dbi
Hardware	Supply voltage	Nominal 12 V DC Range 10.5 – 28 V DC
	Power consumption	3.2 W, 270 mA
	Internal power supply	Recharge and removable LI-Ion battery, 4.4 Ah / 7.4 V, 2 batteries fit into receiver
	Internal power supply, operation time	15.00 h receiving RTK data with standard radio3 13.00 h transmitting RTK data with standard radio3 14.00 h RTK via GSM / GPRS connection3 using 2 internal batteries

Communications	Communication ports	2 x serial RS232 Lemo 1 x USB / RS232 Lemo 1 x 5pin Lemo external power 1 x Bluetooth® port, Bluetooth® v 2.00 + EDR, class 2
	Simultaneous data links	Up to 3 data links can be attached and used simultaneously 2 real-time output interfaces via independent ports, providing identical or different RTK / RTCM formats

Mobile Sensing Platform

Hardware	<p>Six 4 MB cameras located to capture 360° x 270° view and optional road and sky cameras</p> <p>Operator adaptable attainment breaks based on the distance travelled</p> <p>Operator adaptable camera alignment</p> <p>Should deliver a sophisticated GNSS receiver with a tough field established IMU for location accuracy of 20 mm RMS after 10 secs of outage</p> <p>L-Band, QZSS and SBAS for GPS, Galileo, BeiDou and GLONASS constellations</p> <p>Transportable system fitting into carrying cases</p> <p>Battery based</p> <p>Multi-core PC, SSD, USB3, Ethernet and wireless connection</p>
Software Features	<p>Semi-automatic tools</p> <p>Pavement investigation</p> <p>Sequenced videos and images</p> <p>Software pointer snaps continuously onto the point cloud data from inside an image</p> <p>Instant access to point clouds for a precise measurement</p> <p>Elective 3 Dimensional stereoscopic view</p> <p>Missing 3D points can be obtained through photogrammetric procedures</p> <p>Data capture shows the existing location of the vehicle based on a GIS interface</p> <p>Data capture shows all cameras live</p> <p>Data capture allows laser scanner administration and GNSS processing</p> <p>Live monitoring of system throughout data acquirement</p>
Software Benefits	<p>Digitize objects during mobile mapping</p> <p>A natural approach for amateur operators while offering a specialized interface for more advanced users</p> <p>Lidar precision with image usability</p> <p>Scalable to your uses</p> <p>Object Recognition with advanced features including street sign recognition and object distorting</p> <p>Less critical Point cloud density with image incorporation</p> <p>Short data achievement time</p> <p>High achievement throughput</p> <p>Adaptable licence options</p> <p>Esri® ArcGIS for Desktop friendly</p> <p>Leverages Esri interpersonal platform</p>

Mobile Communication Unit

Body Super Structure	
Type	Single deck skeleton type bus body
Body frame	Principle frame work of hollow square and rectangular galvanized steel tubes
Body Panelling	
Front /Rear Panels	Fibre glass moulded panel
Exterior Side Panels	M.S Steel sheet
Exterior Roofing	M.S Steel sheet
Insides Panelling	FRP or MDF

Insides Ceiling	FRP or MDF
Insides Partition	MDF dual side laminated
Heat insulation	Glass wool/ Thermopol
Doors	Passenger doors One no. folding type Pneumatically Operated door with Tinted Toughened glasses. At front over hang.
Door Entrance	2 or 3 steps covered with Aluminium Chequered Plate.
Emergency door	Easily accessible door equipped on driver side with Fix Tinted Toughened glasses.
Drive door	Flap type with window single sliding toughened Tinted Glasses
Wind Screen and Windows	
Front wind screen	2 pieces clear safety laminated triplex curved glasses.
Side Windows	Aluminium window frame fitted with Tinted Toughened Glasses upper 1/3 fixes and half of lower single sliding.
Seats and Couches	
Capacity and Type	02 Nos. fully foam cushioned with combined bottom and Individual Backrest, covered with Rexene 04 Nos. Sofa fully foam cushioned covered with Cloth / Rexene.
Driver Seat	Adjustable Reclining Seat with safety belt
Bed/Couches	02 nos. fully foam cushioned Bunk bed with safety side rail with ladder, Sliding drawer under bed
Exterior Fitting	
Front /Rear bumper	Fiberglass moulded bumpers with steel reinforcement.
Rear view Mirrors	Convex type with under view mirror
Towing Hook	One at front
Spare Wheel Carrier	Under the chassis with lifting arrangement
Battery Compartment	Provided L/H side with sliding tray and lockable lid
Route board	Front and rear with lights arrangement
Mud flaps	Complete set
FRP Wheel caps	One set
Carpet on engine bonnet	1 no
Inspection/service lids	provided for transmission /fuel Tank/AC and engine where necessary
Roof Ventilator	3 No at suitable places
Interior fittings	
Doorway support pipes	S.Steel pipes
Ceiling grab rail	S.Steel pipes
Ceiling grab handles	According to placement
Compartment mirror	One near front bulkhead
Dashboard	FRP moulded panel with leather texture
Driver's partition	1 No behind driver seat
Fabric curtains	For all windows
A/C Ducting	FRP moulded panel with leather texture
Air Louver	For Driver and According to placement
Document box	1 No.
Sun visor	One for driver
Fire Extinguisher	2 No
First Aid box	1 No
Floor	Plywood 19mm with Undercoating
Flooring	PVC Floor Mat
Cabinets	01 no
Interior partition	
Partition	Complete one partition behind driver with sliding door.
Toilet and washroom	Provided one no, with all accessories (waste and fresh water tank).
Electrical Equipment	

Front head light	4 No Sealed beam type
Indicators	2 No at front and 2nos at rear
Side Indicators	4 No at Wheels arch.
Rear/ Back lights	2 No stop /tail lights with reflectors
Roof indicator lights	2 No at front and 2 # at rear
Room lights	Tube/LED lights type 24V DC
Room lights	Tube/LED lights type 220v AC
Reverse light	2 No rear
Digital Clock	1 No 24V, 12 hours
CD/Cassette Player	1 No with FM Radio and 4 No speakers
Fog lamp	2 No at front
Step light	1 No on Passenger doors
Wipers and washers	Electrically operated large size wipers at front with Windshield washers
Refrigerator	1 No
Paint	All part anti rust treatment prior to applying 2k primer
Exterior	2k primer applied prior to final paint
Room Heater	Floor Mounting type
Air Conditioner (Complete Unit)	20,000~24000 Kcal/h, (Separate Diesel Engine Driven
Washroom	Complete wash room with English and Indian W.C with sewer system
Other Accessories	<ul style="list-style-type: none"> • Operation Desk for operators • Desktop Computers Core i7 (Disaster Management Software Installed) • VHF Communication System • External flood Lights • Monitoring Camera Controls • Conference Room with video conferencing • LCD Display • Local and Satellite Internet Facility • Telescopic Tower with Flood and Monitoring Camera • UPS 3 KVA • Generator 5KVA

Vehicles for PDMA Sindh

Vehicle	Made	Specification	
4x4 SUV	2017	Displacement	2755 cc
		Maximum Power	177 PS @ 3400 rpm
		Maximum Torque	450 NM @ 1600-2400 rpm
		Gearbox	6-speed AT
		Ground Clearance	225 mm
		Fuel Tank Capacity	80 liters
		Fuel Type	Petrol
4x2 Single Cabin Pickup	2016	Dry Weight	1770 KG
		Engine	2494 cc
		Gearbox	5-speed Manual
		Fuel Tank Capacity	76 liters
		Seating Capacity	2 persons
		Fuel Type	Diesel

4x4 Double Cabin Pickup	2017	Dry Weight	2890 KG
		Displacement	2982
		Gearbox	5-speed Sequential
		Fuel Tank Capacity	80 liters
		Seating Capacity	5
		Fuel Type	Diesel

Database Server

Description
<ul style="list-style-type: none"> • Gen9 Server • 1 x Intel® Xeon® E5-2620v4 (2.1GHz/8core/20MB/85W) Processor Kit • Intel® C610 Series Chipset with 2 Processors Support • 1 x 16GB (16GB Single Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit) • Embedded 1Gb Ethernet 4-port 331i Adapter, HP • Flexible Smart Array P440ar/2GB, • Supported RAID 0, RAID 1, RAID 1 ADM, RAID 10, RAID 10 ADM, RAID 5, RAID 50, RAID 6, RAID 60 • 2 x 300GB 6G SAS 10K 2.5in SC ENT HDD • 8 SFF HDD Bays (Upgradeable to 24 SFF + Rear 2 SFF with Media cages support) • Half-Height SATA DVD-RW Optical Drive (Included) • 3 PCIe slots (+3 PCI slots available with upgrade option, second processor required) • 1 x HP 500W Flex Slot Platinum Power Supply 4 hot plug fans, redundant • ILO Management (standard), Intelligent Provisioning (standard), Rack (2U), HP Easy Install Rails with CMA • Support for: Microsoft Windows Server; Canonical Ubuntu; Red Hat Enterprise Linux (RHEL); SUSE Linux Enterprise Server (SLES); Oracle Solaris; VMware; • Citrix XenServer

Desktop PCs

Description
<ul style="list-style-type: none"> • Intel Core i7 6700 Processor • 4GB DDR4 RAM • 500 SATA Hard Drive • Free DOS, • Optical Drive DVD/RW • Dell Keyboard and Mouse • 19.5" LED MONITOR

Laptop PCs

Description
<ul style="list-style-type: none"> • Intel Core i7-7500U Processor • 8GB DDR4 RAM • 1TB STA Hard Drive • Optical Drive DVD RW • Integrated WIFI/BT HD WEBCAM • Integrated AMD RADEON R5 M335 4GB Card

- 15.6" HD (1366 x 768) LED Backlit Display
- ESSENTIAL BACKPACK | MCAFEE

Proposed Furniture

Description of Items	Specification
Computer Table	Table size 2.5'x4'x30" H, all moulding made of seasoned Shesham Wood, Key board tray ,3 Piece Channels, 3 Drawers, with locks, ICI polish.
Computer Chair	Standard Size, having 5 star revolving base with hydraulic system,
Officer Table	Table Size 2.5'x4'x30" H, all moulding made of seasoned Shesham Wood, one drawer in box consist of 3 Piece Channels, 3 Drawers, with locks, ICI polish.
Wooden File Cabinet	(6'x4'x1.5') with Doors best quality Shesham veen board, with locks and ICI polish.
Office Chair	Outer frame and legs out of Shesham Wood, Seat and Back Cushioned
Conference Table with Chairs	2.7'x 6'x 2.5' Round Table with Officer Chair Revolving with Cushion. all moulding made of seasoned Shesham Wood,

Digital Cameras

Specifications
• Minimum 20 Megapixel (MP)
• Lens: 4.5 to 108mm approximately
• LCD
• Image and Video Stabilization
• Full HD Video
• Minimum 24X Optical Zoom
• Focus Adjustment: Inner-focusing
• Zoom System: Rotating Type
• Image Sensor, High-sensitivity, high-resolution

HF Base Radio Set

Transmit frequency range	1.6 MHz to 30 MHz (continuous)
Receive frequency range	500 kHz to 30 MHz (continuous)
Channel capacity	Up to 400 programmable channels (simplex or semi duplex) or more
Frequency resolution	10 Hz program Mode, 1 Hz tunable receiver
Frequency stability	±10 Hz or better than 0.3 PPM over temperature range -30°C to + 70°C or better
Operating modes	J3E (USB, LSB) - H3E (AM) - J2A (CW) - J2B(AFSK)Optional J2B, (AFSK) with narrow filter.
Operating temperature	-30°C to +70°C Humidity 95% relative, non- Condensing or better
Supply Voltage	13.8VDC + 20% / - 10% (negative ground) Polarity protected. Over voltage protected Manpack 22VDC to 27VDC (100-260VAC or 11 16VDC with power adaptor or better
Current consumption	470mAstandby (muted, back lighting off)
Sel Call System	Based on CCIR 493-4,
Switching Speed	Less than 15mS Tx to Rx, Rx to Tx or better
Receiver Specifications	
Sensitivity	-120dBm (0.224uV) for 10dB SINAD - J3E Mode pre- amp on – -110dBm (0.708uV) for 20dB SINAD - J3E Mode pre- amp on
Selectivity J3E	1 kHz and + 4 kHz better than 50dB -2 kHz and +5 kHz better than 55dB -5 kHz and +8 kHz better than 60dB

Selectivity J2B	-500 Hz and + 500 Hz better than 60dB The level of an unwanted signal above the level of a wanted signal that will reduce the SINAD of the wanted signal from 20dB SINAD to 14dB SINAD
Blocking:	-20 kHz and +20 kHz better than 71dB - the level of an unwanted signal above the level of a wanted signal that will reduce the SINAD of the wanted signal by 6dB or cause an output level change of 3dB
Intermediation	Better than 89dB μ V - the level of two unwanted signals, that are within 30kHz of the wanted signal, above the level of wanted signal that reduces the SINAD of the wanted signal to 20dB or better
Spurious response ratio	Better than 70dB or better
Reciprocal mixing	Better than 105dB μ V or better
In-band IMD	Better than 34dB or better
Audio output	4W into 4 Ohms at less than 2% distortion or better
Audio response	Less than 6dB variation from 350 Hz to 2700 Hz
Input protection	Better than 30V RMS from a 50 Ohm source
Transmitter Specifications	
RF output power	125-watt PEP voice \pm 1.5dB or 30-watt PEP voice \pm 1.5dB or 10watt PEP voice \pm 1.5dB or better
Duty Cycle:	100% two tone input signal with fan option
Intermediation products	Better than -31dB below PEP (25dB below two tone peak) or better
Audio frequency response	Less than 6dB variation 350 Hz to 2750 Hz
Current Consumption	Voice average less than 9Amps typical Two tone less than 12Amps typical
Standards	Exceeds/complies with Australian/ New Zealand standard AS/NZS 4770:2000 and AS/NZS 4582:1999 Exceeds/complies with European Standard 300 373 and associated Amendment an Exceeds/complies with EMC and vibration standard IEC 945 Complies with MIL Spec. 810 F for drop, dust, temperature, shock and vibration, NTIA Approved. Should have compatibility of Frequency Hopping and also Encryption
Minimum with following Features	Software Defined Transceiver Core Advanced Digital Signal Processing (DSP) Lightweight and compact design Detachable front panel for remote extended Control Operation, Detachable Front Panel Enhanced DSP noise reduction Digital Voice, Intuitive operation Second antenna connector Lightweight and Compact Design SMS Page Call

VHF Walkie Talkie Wireless Radios

1. Technical Specification for Digital Walkie-Talkie (with Limited Keypad and Display)
2. The offered Digital Walkie-Talkie shall meet the following technical specifications.
3. Transmitter Time Out Timer (TOT) operation.
4. Radio should operate in Analog mode and Digital mode.
5. The offered radio should support to work in dual time slot mode dynamically in Direct Mode and Repeater Mode to enhance the channel resources.
6. The radio shall support mixed (digital and analog) channel in one dedicated channel.
7. The radio shall be capable to communicate in repeater mode and direct mode.
8. Capable to send and receive canned text messages.
9. Capable to scan analogue channels from a digital channel and to scan digital channels from an analogue channel.
10. Programmable displayed channel name.
11. Operation with low or high power.
12. Broad cast call, Individual call, Group call, text messages, caller id.
13. The Walkie-Talkie radio transceiver shall meet the Military Standards 810 C/D/E/F/G
14. and IP54
15. The radio shall support 5 tone and 2 tone signaling.
16. The radio shall support 40bit,128bit, 256bit basic encryption.

General

Frequency Ranges	136 – 174 MHz
Channel Capacity	500(min)
Channel Spacing	Analog: 25/20/12.5kHz
Digital Protocol	TDMA (DMR ETSI)
Modulation	Analog: FM Digital: 4FSK
Standard Battery	1500mAh Li-ion battery(min)
Battery Life	Analog/digital 10/14hours
Operating Voltage	7.4V
Transmitter	
Output R.F. Power	1-5W
Frequency Stability	±0.5 ppm or better
Modulation Limiting	±2.5/4.0/5.0kHz @ 12.5/20/25 kHz
Adj. Channel Power	60dB@12.5kHz, 70dB@20/25kHz
Audio distortion	Less than 3%
FM Noise	40dB or better
Receiver	
Frequency Stability	±0.5 ppm or better
Sensitivity	Analog: 0.22µV for 12dB SINAD or better Digital: 0.22µV at 5%BER or better
Adjacent Channel Selectivity	60dB@12.5kHz, 70dB@20/25kHz
Spurious Rejection	70- 90dB or better
Inter-modulation	65-70dB or better
Accessories	
Battery	1500 or 2000mAh
Charger	Rapid with 170-240V AC Adapter
Carrying Case, Antenna and microphone	
Service Manual	1 with 100 sets
Programming Cable	1 with 100 sets

Generator for PDMA Sindh Office

Description of Items	Specification
PERKINS 220 KVA.	Engine Perkins Alternator Meccalte /Stamford Water Cool 400/230v, 3 Phase o.8 P E. Digital Control Panel Deep Sea. Manufacturing Year 2016/17 R P M 1500 / Hz50 Open Set

Power Backup System for Divisional Office

Description of Items	Specification
Generator (5 KVA)	5 KVA/220 V/50 Hz/1P/ 8 to 15 letters fuel capacity
UPS with Solar with installation	Solar System 2000 to 2500 W with DRY Battery/Electrical Appliances Supported/ Hybrid Inverter/ Installation + cabling /Solar panel stand

Water Bowser for Drought Areas

Specifications	
Performance:	
Max. Engine power @ 2,200 rpm	85 hp
Max. Torque at 1,600 engine rpm	291 Nm
Max. PTO power at 2,200 Engine rpm	70 hp
Certified to BS AU 141a	
Engine:	
Make/Type	Perkins / 4.41
No. of Cylinders	4
Injection	Direct
Bore	101 mm
Stroke	127 mm
Capacity	4.1
Aspiration	Natural
Compression Ratio	15.3:1
Starting Aid	Thermostart
Throttle Control	Hand and Foot
Cooling	Water
Air Cleaner Type	Oil Bath
Air Pre-Cleaner	Over bonnet air swirl
Fuel Filter	Dual high capacity
Exhaust	With sedimentor
Oil Cooler	Vertical; muffler under bonnet Water Cooled
Electrics:	
Voltage	12V, Negative Earth
Battery	96 Ah
Alternator/Starter	45 A/2.8 KW
Clutch:	
Type	Dual
Diameter	305x254 mm

Lining Material	Cerametallic
Take - Off:	
Type	Live
Engine Speed at 540 PTO rpm	1,789 rpm
Shaft Diameter	35 mm
No. of Splines	6
Tyres:	
Front 7.50-16 (6PR)	7.50-16 (6PR)
Rear 18.4 / 15-30 (6PR)	18.4 / 15-30 (6PR)
Track Adjustment:	
Front Axle	1,376 - 1,944 mm
Rear Axle	1,423-2,134 mm
Steering:	
Type	Hydrostatic
Transmission:	
Type	Sliding spur
Number of Gears	8 Forward, 2 Reverse
Road speed at 2,200 engine rpm with 18.4/15-30 rear tyres	
Gear Speed	(km/hr)
Forward 1	2.7
Forward 2	3.7
Forward 3	5.1
Forward 4	6.8
Forward 5	10.4
Forward 6	15.2
Forward 7	20.8
Forward 8	27.9
Reverse 1	3.5
Reverse 2	14.1
Hydraulics:	
Function	Draft , Position and Response
Pump Type	Control, Constant pumping
Maximum Out put	4 Piston, Ferguson pump
Maximum lift capacity with Lower links horizontal	16.7 liters / min 2,145 kg
Maximum pressure Lower links	21 MPa (205 bars) at Normal Operating Temperature Category I and II Interchangeable balls
Front Axle:	
Axle Type	Parallel Drive
Engagement	Mechanical
Rear Axle and Brakes:	
Axle Type	Straddle with epicyclic
Brake Type	reduction
Brakes Area	Oil immersed, multi - disc
Brakes Actuation	1,774 Sq. cm.
Parking Brakes	Hydraulic Hand Lever Operated
Capacities:	
Fuel Tank	108 lit
Engine Sump	7.5 lit
Air Cleaner Oil Bath	0.7 lit

Cooling System	15.2 lit
Hydraulic System	47.4 lit
Power Steering Reservoir	2 lit
4WD Front Axle Differential	5.6 lit
Hub each Side	1 lit
Instrumentation:	
Gauges	Tachometer, Hourmeter,
	Fuel lever,
Warning Lights	Water Temperature
	Battery Condition
	Direction Indicators
	Electric Charge,
	Headlight Main Beam,
	Low Engine Oil Pressure,
	4WD Indication Lights
Weight and Dimensions:	
With 12.4-24 Front and 18.4/15-30 Rear Wheel with Full Fuel, Oil and Water	
Weight Front	
Weight Rear	1,429 kg
Weight Total	1,582 kg
Dimensions	3,011 kg
Overall Length	3,810 mm
Width (minimum)	1,871 mm
Wheel Base	2,350 mm
Height	2,485 mm
Over Exhaust	1,781 mm
Over Steering Wheel	8,518 mm
Turning Circle	501 mm
Without Brakes	395 mm
Ground Clearance	
Under Gearbox	
Under 4WD Front Axle	
Standard Equipment:	
Weight Frame without Weights	
Standard Tool Box with Set of Tools	
Top Link	
Cat-I and II Balls	
Check Chains	
Chain Stabilizers	
Spring Suspension Seat	
Flat Top Fenders and	
Operator's Manual	
Optional Equipment / Accessories:	
Cabin (A/C or Non-A/C)	
Sun Canopy (ROPS Style)	
Front Ballast/Weights	
Adjustable Pintle Hook, Simple Pintle Hook	
Swinging Drawbar, 9 Hole Drawbar	
Auto Hitch	
Hydraulic Control Outlets/Spool Valves	
External Electric Switch	
PTO Belt Pulley and International Warranty Tool Kit	

* with 10,000 litter water tank

Disaster Response Vehicle (DRV)

Specifications	
General:	This special vehicle has been designed to facilitate the work of brigades in handling the various types of accidents and carrying out the rescue operations in different calamities. A wide range of equipment is included which covers diverse activities such as road accidents, building collapse, industrial accidents, floods and fire etc.
Chassis :	4 x 4 RHD, 4 Cylinders, 4 cycle, water cooled, inline OHC, direct injection diesel engine, 4570 cc 121 PS/3200 rpm, 31Kg-m/1600 rpm GVM 13500 KG. The GVW of the chassis is adequate to carry the fully equipped apparatus, including full water and superstructure.
Driver's Cabin	Factory-built by chassis manufacturer; for seating 3 persons including driver
Crew Cabin:	It is provided immediately behind driver's cabin; for accommodating 3-4 persons. The frame work is made of steel rectangular/square tubing and the outer covering is done with 18 SWG Galvanized steel sheets. The cabin has, on each side, one door and one window. The doors are fitted with lock and key. Interior lights and luxury type foam-padded seats are provided.
Equipment Body:	Immediately behind the crew cabin, the equipment body is fabricated in box shape. It is suitably compartmented for storing maximum equipment.
Compartments:	They are provided along the sides of the vehicle as well as the rear, accessible from outside only. They are provided with roller shutters. Internal lights are also installed.
Roof:	The roof has a heavy reinforced construction, suitable and strong enough to guarantee its safe use as a working and observatory platform. Fixed ladders are provided at the rear for climbing to the top.
Vehicle's Warning Equipment:	Following, are fitted on top: - 1. One bar type emergency light, incorporating flashing LEDs. 2. One high range siren, 12 V 3. Two search lights, 12 V
Lighting Equipment :	1. Portable generator, driven by petrol engine, output 2.0 / 2.5 kw, 220 AC. 2. Two search lights, 220 V AC, with Stand. 3. Two cable reels, each with 30 meters. 4. 4 Rechargeable hand torches
Protective Clothing and Equipment:	1. 5 Nos. cover-alls, NOMEX, fire resistant 2. 3-pairs of leather gloves. 3. 3-pairs of long rubber gloves, for handling acids. 4. 3-pairs of rubber gloves, for electric hazards. 5. 3 pairs of heat resistant gloves. 6. 3-pairs of safety goggles, splash-proof. 7. 5-Nos. of safety helmets. 8. 5-Nos. of reflector jackets. 9. 2-Nos. Fire blankets, non-asbestos, 1.8m x 1.8m

<p>Breathing Equipment:</p>	<ol style="list-style-type: none"> 1. One set of compressed air, self-contained breathing apparatus, 45 minutes' duration (for entry into contaminated, confined areas), c/w <ul style="list-style-type: none"> • Demand Valve, • Integrated Cylinder Holder, • Pressure Reducer with Safety Valve, • Audible Warning Signal, • Pressure Gauge MSA/Europe 2. One set of fresh airline respirators for rescuing men working in sewers. 3. 3Nos. of gas masks, full face, with general purpose filters 4. "MSA" made in Europe.
<p>Extinguishing Equipment :</p>	<ol style="list-style-type: none"> 1. Two water fire extinguisher, 10 litres. 2. Two dry powder fire extinguisher 6 Kg. Size. 3. 2 Halotron fire extinguishers, 4 Kg.\
<p>Rescue Equipment and Hand Tools:</p>	<ol style="list-style-type: none"> 1. Tripod and Winch: Salalift™ II Winch with 9 ft. Aluminum Tripod:8300040: Salalift™ II Winch length 60 ft. of 1/4" galvanized cable, winch bag and 9 ft. tripod (8000010) 2. One telescopic ladder, 12 feet. 3. One extension ladder, 30 feet. [on top] 4. One Jumping Sheet, Canvas, 10' x 10' 5. Two Safety harnesses 6. one lengths, rope manila ½" x 100' 7. one lengths, rope manila ¾" x 100' 8. One cutting knife 9. One Crow bar, 3 feet. 10. One axe, 6 lbs flat head. 11. Two axes with rubberised insulated handles 12. One hammer, sledge, 6 lbs. 13. Two Shovels. 14. Two pick-axes. 15. One plier. 16. Two salvage covers 12" x 12" 17. One set of Chisels 18. One fire hook 19. One fire beater. 20. One set of screw drivers 21. One set of Spanners 22. Two tarpaulins, 12" x 14" 23. one cable cutter. 24. One door opener.
<p>Special, Latest Hydraulic Rescue Equipment:</p>	<p>This comprises of a combine tool for spreading and cutting, to be operated by a hydraulic power unit.</p> <p>They are used to remove steering columns, open barred windows, force doors open, lift heavy loads, cut doorposts, pull back roofs and sheet metal and lift roll-up doors. All these tools can be easily operated by one man.</p> <p>The package will consist of the following: Frontliner/Combi Tool (01) Nominal Pressure Ultimate Pressure TM 350 Tailhose safety Factor - Dimensions(L×W×H) 859×306×265mm Operational Weight 19.3kg Max. Cutting opening 300mm Reach 142mm Max. cutting force 1251Kn/127.5ton Max. Spreading opening 374mm Spreading force at base of Jaw 57.2 up to 176.3Kn Spreading force 25mm from tips 39.5up to 81.6Kn Max.pulling opening 375mm Pulling force 29.8 up to 97.8Kn Equipped with EWO and Advance Blade System EN 13204 and NFPA 1936 Compliant Product</p>

<p>TELERAMS (01) TELE RAMS V3T NEO1 Nominal PressureUltimate Pressure™350 Bar Telihose safety Factor 8:1(2800 bar) Dimensions incl detachable rear jaw 340×205×268mm Dimension excl detachable rear jaw 322×205×268mm Max. extended length incl detachable rear 622mm Max. Stroke (hydraulic stroke+added jaw)282+ 18mm Operational weight 12.7kg Max. Spreading/pushing force (1st Stage) 203kN Max.Spreading/pushing force (2nd Stage) 91Kn/9.3 ton EN 13204 and NFPA 1936 Compliant Product</p>
<p>TELE RAMS V5T NEO1 (01) Nominal PressureUltimate Pressure™350 Bar Telihose safety Factor 8:1(2800 bar) Dimensions incl detachable rear jaw 556×205×268mm Dimension excl detachable rear jaw 538×205×268mm Max. extended length incl detachable rear 1270mm Max. Stroke (hydraulic stroke added jaw)714+ 18mm Operational weight 19.2kg Max. Spreading/pushing force (1st Stage) 203kN Max. Spreading/pushing force (2nd Stage) 91Kn/9.3 ton EN 13204 and NFPA 1936 Compliant Product</p>
<p>POWER UNIT 2×2 GX100MTO 3SR (01) Nominal PressureUltimate Pressure™ 350 Bar EN-13204 Designation MTO Running Time Ca.180 min Engine/Power Supply Honda 2.1Kw(2.8HP) 4 Stroke Petrol EN-13204 noise level at 1 Meter di Lpa 80dB NFPA emission sound Level at 4meter Not Applicable Dimension (L×W×H) 424×340×511mm(±10mm) EN-13204 weight (Ready to use HF and 28.3kg Weight with HF but no fuel 27.6kg Dry Shipping weight (with motor oil) 24.6kg Pump 3-Stage radial piston Total Hydraulic Fluid capacity 3.8 L Effective Hydraulic Fluid capacity 2.8L 1stage (0-120 Bar) 2×3200 cc/min (3.2l/m) 2nd Stage (120-240 bar) 2×1972 cc/min (2.0 l/m) 3rd Stage (240-350 bar) 2×986cc/min (1.0 l/m)</p>
<p>Ttwin hoses, for rescue tools, with connectors (02) 10 m length</p>
<p>NT LIFTING BAG SET NT 2 LIFTING BAG Incl. Storage Case (02) Max Working Pressure 10Bar Max Lifting Capacity 23000kg Max. Lifting Height N×275mm Max. Air Content (10bar) 242 Liter Temperature Range -20°c till+65° Weight 8.5kg Safety Factor >4 Dimension Case 585×59×85mm Weight Case 2.65kg</p>
<p>NT Regulator 300 Bar, Incl. 2M Fixed Inlet Hose (01) Dimension (L×w×H) wo hose 215×200×65mm Weight Incl. Hose 2.3kg Hose length 2.m</p>
<p>Connectable Handheld Dual Controller (V-Conn) (01) Dimension (L×w×H) 230×180×90mm Max inlet/outlet .8/8bar Dead man Control/handle Yes Connectable yes Safety Valve Yes</p>
<p>Power Plate (01) Dimension Ø300×30mm Weight 4.5kg</p>

	<p>Power Plate Plug (01) Dimension Lxw×H Ø60×40mm</p> <p>Connector Key (01) Accessories Storage Case (01) Dimension Lxw×H 640×490×260mm Weight 8kg Color Gray</p> <p>Delivery Hose 10 M/Red Color (02) Length 10 M Operating Temperature -20° to 65° C Weight 1.5kg Max Working Pressure 10Bar Safety Factor >4 Rubber Hose Grip Yes</p> <p>Shut Off Hose 2M Red with Safety Valve (02) Color Red Length 2m Operating Temperature -20°C to 65° Weight 0.7kg Safety Coupling Yes Max Working Pressure 10 Bar Safety Factor >4 Rubber Hose Grip Yes</p> <p>Air Cylinder 300 Bar (01)</p>
Electric Tools:	<ol style="list-style-type: none"> 1. One electric drill with set of 6 bits. 2. One electric grinder 9". 3. One electric chain saw.
First-Aid and Resuscitation Equipment:	<ol style="list-style-type: none"> 1. Two folding stretchers. 2. Two blankets, woolen. 3. Two sheets for stretchers. 4. One first-aid-box. 5. One manual resuscitator.
Ventilation Equipment:	<p>SMOKE EJECTOR: Horse Power 1/3 HP Length 40,6cm Width 27,3cm Height 29,2cm Weight 9,9kg Speed (RPM) 3250 at 60 Hz Material Housing Roto molded Plastic AMCA Rating AMCA 240 Duct for smoke ejector ,7.5m,with adapter</p>
Water Rescue:	<ol style="list-style-type: none"> 1. 3 Nos. Life jackets 2. 2 Nos. Life Buoys
Public Address Equipment:	<ol style="list-style-type: none"> 1. One public address system, with microphone and amplifier, operating on vehicle's battery. 2. One portable megaphone, powered by dry cells.
Road Warning Equipment:	<ol style="list-style-type: none"> 1. 100 meters of cordoning-off chain, black yellow, in plastic bags. 2. 10 poles, approx. for attaching the cordoning-off chain. 3. Traffic signs, including one reflector triangle and eight road coans. 4. 3 pairs knee and elbow pads.
Electric Winch:	<p>5 ton pulling capacity electrical 24V winch with corded remote and control box should be installed with specially designed platform strong enough to with stand 5 ton pulling load.</p>
Painting and Finishing:	<p>The vehicle is painted in Rescue truck standard color or as per your instructions.</p>

Multi Function Office Mechine

Specifications	
Functions	PRINT, COPY, SCAN, FAX
Dimension	23" (W) x 23" (D) x 31" (H)
Document Feeder	Optional DSDF 300 sheets / RADF 100 sheets
Duplex	Standard
Finishing Options	Yes
Function	Copy, Print, Scan, Optional Fax
Max Paper	3,200 sheets
Memory / HDD	4 GB
Model	e-studio 3508A
Monthly Duty Cycle	125000
Network	Standard
Optional Tray (s)	2 x 550 sheets/Envelope drawer/1 x 2,000 sheets
Paper Size	A3, up to 11" x 17"
Print Resolution	2400 x 600 dpi
Replacement Toner	K=43.9K Yield
Scan Resolution	600 x 600 dpi
Speed	35 ppm Mono
Standard Bypass	100 sheets
Standard Tray(s)	2 x 550 sheets
Starter Toner	Not Included
Weight	128 lbs

Annex 4: Picture Gallery













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