

Earthquake Risk Management Action Plan for Mansehra City



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A Product of
Earthquake Risk Reduction & Preparedness Programme

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National Disaster Management Authority Pakistan



United Nations Development Programme Pakistan

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Foreword

The Kashmir earthquake claimed over 73000 lives, affected over 2.5 million people and unearthed severe discrepancies in the construction trends of the country. Traditionally, Pakistan's approach to tackle disasters has always remained primarily reactive, however the devastation caused by Kashmir earthquake stimulated planning around pro-active disaster risk reduction approach and the focus shifted from Emergency Response to Prevention and Mitigation of Disaster Risks. To cater for the challenges in implementing this pro-active approach, National Disaster Management Authority (NDMA) was established with institutionalization of allied policy and legal instruments as to enable the lead institution to function as per mandate. This new system of Disaster management is supported by legal and institutional arrangements at the Federal, Provincial and District level.

NDMA in collaboration with UNDP's Bureau for Crisis Prevention and Recovery (BCPR) has launched a programme, titled as Earthquake Risk Reduction and Recovery Preparedness Programme (ERRP) in Pakistan. This programme is within the fold of regional initiative, and is being replicated in four other South Asian countries i.e. Bangladesh, Bhutan, India, Nepal. The programme addresses the critical issues around institutional capacities, public education & awareness; enhance community capacities to undertake risk reduction, practical application of risk reduction principles through demonstration projects.

One of the most important components of ERRP was to conduct Earthquake Risk Assessment (ERA) of Muzaffarabad and Mansehra municipalities. Based on this Earthquake Risk Assessment, Earthquake Scenario documents have been formulated for Muzaffarabad and Mansehra municipalities which were shared with all stakeholders before publishing and their inputs have also been incorporated. The main aim of preparing the earthquake scenario is to raise awareness at different level and it provides information on loss estimation of buildings and infrastructures, casualty estimate in terms of probable death and injuries, identification of specific locations where infrastructures damage is worse and identification of gaps and limitations on existing capacities.

It is hoped that this document will help members of civil society, government officials, and general public weigh various risks associated with the earthquake and begin to set priorities that will systematically reduce the impact of the likely future event.

Chairman
National Disaster Management Authority Pakistan



Abbreviations

BCPR	Bureau for Crisis Prevention and Recovery
CBO	Community Based Organization
CDO	Central Design Office
DDMA	District Disaster Management Authority
DMC	Disaster Management Cell
DRM	Disaster Risk Management
EQ	Earthquake
ERM	Earthquake Risk Management
EVRP	Earthquake Vulnerability Reduction and Preparedness Programme
GDP	Gross Domestic Product
GIS	Geographical Information System
HFA	Hyogo Framework for Action
ILO	International Labour Organization
ISDR	International Strategy for Disaster Reduction
JICA	Japan International Cooperation Agency
TMA	Tehsil Municipal Authority
MDA	Mansehra Development Authority
MDMC	Municipal Disaster Management Cell
MGDs	Millennium Development Goals
NDMA	National Disaster Management Authority
NGO	Non Government Organization
NSET	National Society for Earthquake Technology - Nepal
NWFP	North West Frontier Province
OFDA	Office of Foreign Disaster Assistance
PDMA	Provincial Disaster Management Authority
TEVTA	Technical Education and Vocational Training Authority
UN	United Nations
UN Habitat	United Nations Human Settlements Programme
UNDP	United Nations Development Programme
USAR	Urban Search and Rescue
VCA	Vulnerability Capacity Assessment
WATSAN	Water and Sanitation
WB	The World Bank



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1. Introduction and Executive Summary

UNDP Pakistan has implemented the Project, Earthquake Vulnerability Reduction and Preparedness (EVRP) as part of its technical assistance to the National Disaster Management Authority (NDMA) under the broad framework of National Disaster Management Framework of Pakistan. The project has been implemented also as part of the Earthquake Risk Reduction and Recovery Preparedness (ERRRP) Project which is being implemented in five South Asian countries by Bureau for Crisis Prevention and Recovery of UNDP (UNDP/BCPR) with the funding support from the Government of Japan.

In addition to a number of awareness raising and capacity building activities, the EVRP consisted of conducting earthquake risk assessment studies and developing action plans for earthquake risk management for Muzaffarabad and Mansehra cities. The current action plan has been developed under the action planning component of the project.

This Action Plan for earthquake risk management for Mansehra city has been prepared after series of consultation meetings, interactions with key stakeholders followed by an Action Planning Workshop organized in Mansehra city. Hence, the current action plan tries to address current needs, current capacities as well as the existing gaps identified by the city stakeholders.

The major actions suggested for short-terms and medium-term periods are:

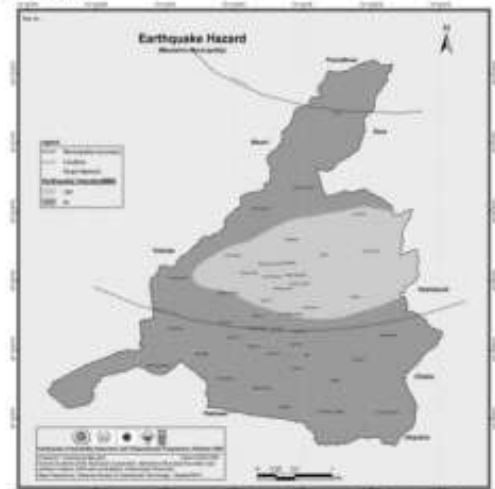
1. Re-Strengthening of essential Traffic, Police, Civil Defense & fire Brigade Structures.
2. Enforcement of simplified & up-dated version of building-codes & by-laws.
3. Establishment of emergency response committees at ward level.
4. Rehabilitation of identified & most vulnerable structures.
5. Provision of latest tools & equipments/relevant trainings to concerned Department.
6. Operationalization of DDMA, allocation of required resources finance & HR.
7. Earthquake Museum.
8. Training about E.Q & others Hazards.
9. Operationalization of search & rescue/EMS team at Distt & Tehsil level.
10. Implementation of School safety initiative.
11. Community based disaster risk management.
12. Monitoring & Evaluation of the implementation.
13. Workshops/Trainings/Seminars & coordination meetings for knowledge management.
14. In time response of all stake holders.
15. Emergency response teams equipped with emergency kit & provision of stock piles to communities/offices.

Each of the actions suggested are accompanied with the responsible agency, supporting agencies, tentative timeframe for the accomplishment and tentative budgets required.

2. Earthquake Hazard and Risk of Mansehra City

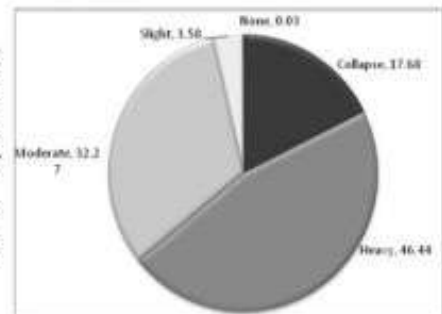
Pakistan is situated in a highly seismically active region which has experienced many disastrous earthquakes during historical times. The recent disastrous earthquake in October 2005, M 7.6 has shaken the entire nation in many ways. It took several days and weeks for the full extent of the disaster to become clear.

The seismic hazard assessment carried out in Mansehra involves different steps; and finally possible intensity distribution map of the city was prepared. Figure shows the intensity distribution map of the Mansehra city. As shown in figure, most of the City area is estimated to face MMI IX level of earthquake shaking.



The building inventory and household surveys were conducted to receive the necessary information on buildings and population for loss estimations. Thus, a total of 11,047 buildings were surveyed involving local experts and students. A Quick Bird Image (2006) was used as the basis for individual building identification in the field.

Considering, earthquake intensity, existing characteristics/condition of buildings and population distribution (spatial and temporal), the building damages and casualties were estimated. Similarly loss of infrastructures such as road, bridges, electricity, gas line, and water supply (pipelines and reservoirs) etc. were also estimated.

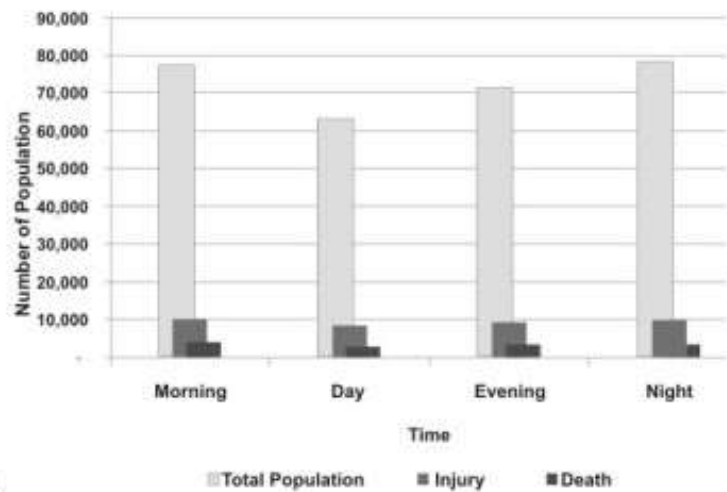


Though the losses were estimated for individual buildings, they were presented by blocks, dividing the whole city in 43 blocks. It was done considering the negative impact on the local people by the results.

Considering the different vulnerabilities in the existing buildings Mansehra city, 1953 (18%) out of 11,407 buildings will be collapsed, 5130 (46%) will be heavily damaged, 3565 (32%) will be moderately damaged and about 4% get none to slight damage during scenario earthquake taken for the risk assessment.

As the number of population presence varies by different times, the estimated number of casualties are also varies with the times. The maximum building occupancy in Mansehra was recorded during night. The total population present in the buildings during night was surveyed to be 78,291 followed by morning with 77,386. Based on the existing building condition and population recorded during the field survey, 4242 deaths are estimated if the scenario earthquake occurred at night followed by morning and evening (figure).

Different vulnerability functions for different lifelines components are used for loss estimation of lifeline systems. However, mainly these functions are taken from ATC-25 for the current study. The material types and connections are taken consideration when the damage ratio or numbers due to earthquakes are estimated. Secondary hazards like landslide and liquefaction are also considered while estimating damages to lifelines.



In Mansehra city there is about 20 km distributed pipeline of different types; of which about 97 breaks are estimated if the scenario earthquake occurred in Mansehra. Similarly out of 11 water tanks, there is probability of >60% damage to all 4 Brick in Cement type water tanks; and 4 out of 7 get 30%-60% damage probability for the reinforced concrete type of the tanks.

Roadways and bridges distributed inside the city both were assessed during the study. Both the direct damage and possible blockage by debris were considered for the estimation of road blockages. Considering the road types and width the possible blockage of roads are estimated. The different levels of road blockages are presented in table:

Table 1: Probability of different level of blockage to different kind of roads

Type of roads	Length of Roads with Different Level of Probability of Blockage (Km)				Total Length (Km)
	< 10%	10-30%	30-60%	> 60%	
HW	9.24		1.67		10.91
Link road		2.34	4.87	1.26	8.48
Main road	4.77	0.18	3.17		8.12
NHA	7.13				7.13
Street			14.00	23.62	37.62
Total	21.14	2.52	23.71	24.89	72.26

Total of 7 bridges are studied within Mansehra city. All the bridges in Mansehra are found with less than 10% probability of damages during the scenario earthquake.

Likewise significant damage and losses of other lifeline systems such as electricity, telecom and gas line were estimated.

3. Institutions related to Earthquake Risk Management (ERM) and their Responsibilities

Name of Institution	Regular mandates and responsibilities	Identified/potential responsibilities in terms of ERM
Tehsil (Municipal Authority (TMA)	Solid waste and sanitation, street light, fire-fighting, bus/truck terminal management, building control, encroachment control, reception of VIPs, price control, management of public parks.	<ul style="list-style-type: none"> Review development plans and provide guidance on mainstreaming disaster risk reduction measures in these plans. Undertake appropriate preparedness measures at municipal level. The exercise may include maintenance of early warning system, identification of buildings to be used as evacuation sites, stockpiling relief and rescue materials and identifying alternative means for emergency communication
Mansehra Development Authority (MDA)	Provision of housing, recreational facilities, public facilities, civic amenities etc.	<ul style="list-style-type: none"> Ensuring that new development and construction activities are not carried out in the hazard prone areas. Examine construction in the area and if hazard safety standards have not been followed, direct the relevant entities to secure compliance of such standards Encourage the people in earthquake prone areas to adopt earthquake resistant technologies.
District Disaster Management Authority (DDMA)	Prescribing guidelines for preparation of departmental disaster management plans at district level and monitoring their implementation. Preparation of district disaster management and response plan; Establishing stockpiles of relief and rescue materials and ensuring availability of such material at short notice.	<ul style="list-style-type: none"> Giving direction to district and local authorities for taking necessary for prevention and mitigation. Remove debris, conduct search and rescue operation. Establish emergency communication system in affected areas. Develop a coordination mechanism in case of emergencies.

<p>Provincial Disaster Management Authority (PDMA)</p>	<p>Monitor/Integrate/Enforce DRM in the province</p>	<ul style="list-style-type: none"> • To formulate the Provincial Disaster Management Policy with the approval of the Provincial Commission. • 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 various disasters, and specify prevention or mitigation measures. • To lay down guidelines for Disaster Management Plans by the Provincial Departments and District Authorities. • Ensuring periodical disaster management drills. • Coordinating pre and post disaster management activities.
<p>Public Health Engineering Division (PHED)</p>	<p>Provide clear drinking water & sewerage in capital cities and big towns</p>	<ul style="list-style-type: none"> • Restoration of basic infrastructure facilities, including water storage tanks, supply lines and sanitation carriages. • Making water supply and sanitation arrangements for relief camps. • Maintaining quality of water supplied to relief camps within the tolerable limits.
<p>PESCO/Electricity Department</p>	<p>Supply & Distribution of electricity. Operation and Maintenance of Power Distribution network in the province.</p>	<ul style="list-style-type: none"> • Restoration of electricity supplies to critical installations of the city such as hospitals and emergency cells. • Disconnecting damaged transformers/power lines from the distribution system
<p>Health Department</p>	<p>To provide primary and preventive healthcare for people of the province.</p>	<ul style="list-style-type: none"> • Carry out and disseminate a risk evaluation of the population. • Ensure adequate availability of Emergency Health Kits in high risk areas. • Preparing a list of medical and paramedical personnel in disaster prone areas.

<p>Highways Directorate of Public Works Department</p>	<p>Construction and maintenance of roads and allied infrastructure</p>	<ul style="list-style-type: none"> • Take proper steps to ensure that the road links are not blocked in case of disaster. • Ensure that the bridges and other infrastructure are designed using Earthquake resistant design and techniques.
<p>Directorate of Public Works Department Building</p>	<p>Planning of physical infrastructures; preparation of master plans, outlines of development schemes for town improvement; housing, office accommodation as well as residential housing for government functionaries; matters relating to Public Health Engineering Department (water supply, sewerage etc.) including its establishment</p>	<ul style="list-style-type: none"> • Take precautionary steps for the protection of government property against possible loss • Formulate guidelines for safe construction of public works. • Prepare list, with specifications and position, of heavy construction equipment in the province. • Organize periodic training of engineers and other construction personnel on disaster resistant
<p>Education Department</p>	<p>To implement government policies, to maintain discipline in the department throughout the state; to make provision for education throughout the province</p>	<ul style="list-style-type: none"> • Find out space and scope to educate students on disaster related matters in schools, colleges and technical streams. • Arrange for training of teachers and students of disaster prone areas about the steps at different stages of disaster and organise them as volunteers and inspire them for rescue, evacuation and relief works. • Ensure that construction of all educational institutions in earthquake zones is earthquake resistant.
<p>Pakistan Red Crescent Society (PRCS)</p>	<p>Disaster management, psychosocial support, first aid services and training, PHAST training (First Aid, PSP, H&H etc.)</p>	<ul style="list-style-type: none"> • Engaging volunteers to deal with disaster response • Providing medical supplies to the relief camps • Conduct trainings on Disaster risk management

Pakistan Telecommunication Company Limited (PTCL)	To ensure uninterrupted telecommunication connections within the city and with the rest of the country.	<ul style="list-style-type: none"> • Restoration of connections of critical installations of the city such as hospitals and emergency cells.
Civil Defence	To develop safety culture for creating awareness among masses about protection of lives and to develop readiness for calamities and disasters.	<ul style="list-style-type: none"> • Training of volunteers and school children in disaster response . • Conduct emergency response and evacuation drills in the city. • Assist other organizations in disaster response related activities.
Pakistan Army	National Security and Defence related activities.	<ul style="list-style-type: none"> • Search and Rescue activities. • Setting up of relief camps. • Maintaining law and order situation in-case of disasters.
Pakistan Police	<ul style="list-style-type: none"> • Maintaining law and order. • Managing traffic of the city. 	<ul style="list-style-type: none"> • Impart training to the members of Police Force in first aid, evacuation, rescue and relief. • Train volunteers from among citizens and voluntary organizations. • Identify the 'High Risk' and 'Risk' areas for different disasters and instruct the existing police installations located in those areas for keeping themselves in readiness for undertaking emergency rescue, evacuation and relief operations.
UN Agencies/ INGO's	Support government departments in the development of projects related to Education, WATSAN, Health, Environment, Governance and poverty reduction etc.	<ul style="list-style-type: none"> • Carryout relief activities such as provision of shelter, transitory WATSAN and education facilities. • Assist in Rehabilitation of government functioning. • Assist in rehabilitation and reconstruction of public infrastructure.

4. The Action Planning Process (How the Action Plan was Created?)

Following logical steps were followed for developing the action plan:

4.1 Loss Estimation Study (Earthquake Risk Assessment)

Earthquake loss estimation i.e. the estimate of potential losses due to a probable earthquake shaking is assumed to be a crucial information required for developing action plans for risk reduction. The loss estimation serves as the basis for establishing the planning assumptions. Therefore, a systematic loss estimation study was carried out for Mansehra city as a part of the action plan development process. The details of such loss estimation have been reflected in a separate report named "Mansehra City's Earthquake Scenario"; summary of the study has also been included in "Chapter 2: Earthquake Hazard and Risk of Mansehra City."

4.2 Identification of Key Stakeholders

Various key stakeholders and agencies that are directly or indirectly related to different aspects of earthquake/disaster risk management are identified through a desk review and consultation meetings. The list of such stakeholders, their normal time mandates as well as their potential role for mitigation, preparedness, response and long-term reconstruction, rehabilitation to the earthquakes are as reflected in Chapter 3 of this document.

4.3 Interaction Meetings with Stakeholders

Interaction meetings with key stakeholders were organized:

- to share preliminary results of risk assessment and to get their feedback on the results.
- to get inputs on what can/should be done to reduce the risk and to be prepared for responding to the potential disasters.

The results of risk assessment were verified with the recent earthquake disaster of 2005 together with the stakeholders during the meetings. Such combined effort for improving the risk scenarios are believed to generate greater ownership of the stakeholders. Also, the stakeholders provided their thoughts on how to reduce the risk factors; they suggested many new ideas and actions to be included in the plan of actions.

The list of agencies and professionals with whom the interaction meetings were organized is attached in the Annex 2.

4.4 Questionnaire Survey

A survey questionnaire was developed and distributed to the organizations during the interaction meetings to collect information about their organizations; their future course of actions; their mandates, roles and responsibilities in terms disaster risk management etc. in a more systematic manner. The organizations were requested to send the filled questionnaires within a few days.

A sample of the survey questionnaire is attached in the Annex 1.

4.5 Preparation of Long List of Actions

Based on the suggestions provided during the interaction meetings and the actions listed in questionnaire survey, a long list of possible actions for earthquake risk management for Mansehra city is prepared. The list was then provided to all the agencies during the action planning workshop to decide the priority actions.

4.6 Action Planning Workshop

An Action Planning Workshop was organized in Mansehra on 19-20 March 2009. The workshop was participated by around 61 senior professionals from 20 number of key organizations. The full list of participants of the workshop is attached in the Annex 2.

Following was the general agenda of the workshop:

- Presentation on methodology and key features of Action Plan and Action Planning Process.
- Discussion and decision on who should own the plan.
- Group work and presentation on suggesting various objectives and actions based on five priority areas of Hyogo Framework for Action (HFA).
- Group work and presentation on identifying prioritization criteria and prioritized actions.

The various objectives and actions as well as the prioritized actions are included in next chapter.

4.7 Finalization and Writing the Plan

The final action plan is then prepared based on the prioritized actions suggested by different groups. There was some duplication as well as some missing parts in the suggested actions; such duplications were revised and missing parts were completed by the project team following the intents expressed during the workshop which was captured in audio and video records.

5. The Action Plan

5.1 List of Actions Suggested by Stakeholders

Following actions were suggested by the stakeholders during the interaction meetings and in the questionnaire surveys:

1. The capacity building of each organization needs to be done in terms of requirement to cope with any disaster in future.
2. Action Concerning Seismic Building Code were:
 - a) All new construction be done strictly in accordance to new building code.
 - b) Necessary seminars to be conducted to appraise the population of any threat of disaster and remedial measures.
 - c) New seismic building code of Pakistan should be advertised/wide publicity to the knowledge/awareness of general public in addition to government department.
 - d) It must be made available in open market to the convenience of general public.
 - e) Retrofitting/ strengthening of buildings based on Building codes.
 - f) Building code application and land use regulation needs to be effectively enforced.
3. To increase Awareness following Actions were suggested:
 - a) Community level measures/trainings.
 - b) Increased awareness of partner community through which preparedness is ensured
 - c) Sensitization of communication about incorrect intervention with natural ecological system.
4. Preparedness related suggestions:
 - a) Identification of alternative resources and resources mobilization.
 - b) Village/area level savings for immediate response.
 - c) Health communities should be formed and equipped with first aid boxes and trainings etc.
 - d) Fire suits.
 - e) Effective response mechanism and providing emergency stockpiles.
5. Building the capacity of existing system and providing effective and efficient coordination/ communication system as well as response mechanism.
6. Minimum training and preparedness standard needs to be developed and enforced.
7. A central command system at district level under DDMA needs to be established to regularize DRM activities.
8. Effective coordination mechanism needs to be developed.
9. Comprehensive Hazard Vulnerability and Capacity Assessment (HVCA) is required.

5.2 Objectives and Suggested Initiatives

Following main objectives and initiatives were suggested during the action planning workshop. The objectives and initiatives are grouped into different HFA priorities.

HFA Priority 1: Policy, Governance and Institutional Strengthening

(Ensure that disaster risk reduction is a local priority with a strong institutional basis for implementation)

Objective 1: To develop a comprehensive Disaster Program for reducing risk of earthquake in Mansehra Municipality.

Actions:

- Establishment of transparent Coordination Cell comprising representatives from concerned departments and elected representatives.
- Capacity building/trainings of concerned departments representatives.
- Formation of DMCs at ward level.
- Establishment of monitoring and evaluation mechanism.

Objective 2: Integration of DRR into development policy & planning.

Actions:

- All departments must prepare their action plan.
- Allocation of fund for disaster mitigation and response.
- Co-ordination mechanisms among stake holders.

Objective 3: Strengthening good governance practices (Institutional and Political)

Actions:

- Advocacy campaign and information.
- Ensure mandates and responsibilities.
- Legislation from local district to national level.
- Enforcement of building codes.

Objective 4: Building Institutional Capacity.

Actions:

- Training.
- Sensitization.
- Priority action for governance.
- Equipment.

Objective5: Improve the flow of information, coordination and accountability amongst various line departments, as well as political partners.

Actions:

- In time information sharing.
- Assign roles and responsibilities.
- Monitoring of the implementation.
- Ensure bottom – top approach.

HFA Priority 2: Risk Assessment

(Identify, assess and monitor disaster risks and enhance early warning)

Objective 1: To identify and assess earthquake risks of Mansehra Municipality.

Actions:

- Identify the most critical areas:
 - Water/DWSS.
 - Electricity.
 - Bridges/Roads.
 - Public and Private Buildings.
- Verification/updating of available data/resources.

Objective 2: To reduce the potential risk to make community resilient.

Actions:

- Hazard assessment.
- Vulnerability assessment.
- Capacity assessment.
- Disaster assessment at multi sector level and integration.

Objective 3: To recognize and document indigenous knowledge.

Actions:

- Interviews.
- Historical events.
- Coping mechanism.

Objective 4: To develop early warning

Actions:

- Alarming system.
- Satellite phones.
- Use of communication system.

Objective 5: To identify potential risk for effective emergency planning.

Actions:

- Identification of the most vulnerable groups/areas through various surveys/tools.
- Collection and updating of information regarding all sectors of life lines including water, sanitation, telecommunication, media and housing capacity assessment.

HFA Priority 3: Knowledge Management (Capacity Building/Awareness)

(Use knowledge, innovation and education to build a culture of safety and resilience at all levels)

Objective 1: To enhance the capacity development of all stakeholders.

Actions:

- Provide trainings for professionals in conducting VCA and retrofit design/BTT for EQ resistant.
- Provision of basic equipments/tools for respond in real time disaster.
- Conduct earthquake risk awareness program at community level.
- Inclusion of DRM in curriculum and at all levels.

Objectives 2: Enhance capacity and awareness of the community and the system.

Actions:

- Training about EQ and other hazards to fire fighters, civil defence, scouts/girls guides, political leaders.
- Full equipment of fire brigades.
- Hospitals should be prepared for any kind of emergencies.

Objective 3: Enhance awareness about the risks, policies and implementing agencies amongst all stakeholders.

Actions:

- Workshops/Training.
- Seminars.
- Co-ordination.
- Accountability forums.
- Curriculum development/updating.
- Media (Print and Electronic)

Objective 4: Enhance the capacity of various stakeholders for risk reduction.

Actions:

- Capacity building trainings to civil defences, youth volunteer organization provision of stock piles.
- Re-organize scouts, girls guide etc.

HFA Priority 4: Implement Disaster Risk Reduction Initiatives

(Reduce the underlying risk factors)

Objective 1: Integrate resistance design into new constructions.

Actions:

- Enforcement of building regulations with special reference to encroachment.

Objective 2: Integrate and improve the seismic performance of existing buildings.

Actions:

- Identification and labeling of most vulnerable buildings etc.

Objective 3: Integration of DRR in Development Planning Process and Works.

Actions:

- All new constructions are done strictly in according with the new building codes.
- Establishment of solid waste management with focus on converting into energy resources to avoid epidemics.

Objective 4: Increase the safety of school children.

Actions:

- Develop emergency and evacuation plan for each school.
- Awareness raising campaign for communities to reduce risks at school level etc.

Objective 5: To minimize the impact of disaster.

Actions:

- DRR planning.
- Structural and non-structural mitigations.
- Building codes should be enforced.
- Capacity building/fire fighters.
- Land use management plan develop and enforcement.

Objective 6: To reduce risks of disaster in the community through different tools and techniques.

Action:

- In time response of all stakeholders.
- Establishment disaster management committee in villages.
- Organize coordination forum/meetings.

HFA Priority 5: Enhance Preparedness

(Strengthen disaster preparedness for effective response at all levels)

Objective 1: Improve and enhance sustainable emergency planning and capability.

Actions:

- Create an EQ-resistant emergency operations center.
- Develop emergency communication capability.
- Trainings for emergency response.
- Re-strengthening of essential traffic, police and fire brigade structures.

Objective 2: Strengthening disaster preparedness for effective response at all levels.

Actions:

- Provide ward level emergency response trainings to respond to disaster self-sufficiently.

Objective 3: To make community EQ resilient

Actions:

- Assessment and identification of hazards.
- Removal of encroachment.
- Communication facilities (alternate routes).
- Identification of damages to old building.
- Improve electric poles/electrification system.
- Improve fire fighting services.
- Reconstruction of old bridges.
- Awareness on building codes.
- Contingency plans.
- Volunteers and civil defence.

Objective 4: Ensure preparedness and development of monitoring mechanism.

Actions:

- Emergency response team/staff and stock piles.
- Emergency kits/blankets/food/first aid etc.
- Communication tools.

5.3 Prioritized Actions

S. No.	Action	Explanation	Responsible Organization	Supporting Organizations	Time Frame	Budgets (PKR)
1	Re-Strengthening of essential emergency response organizations like: Traffic, Police, Civil Defense & fire Brigade Structures.	<ul style="list-style-type: none"> Conduct seismic vulnerability assessment of response organizations' buildings and infrastructures and prioritization Seismic rehabilitation of prioritized structures 	District Co-ordination Office	TMA, Police Deptt	July,09 to June 2010	30 M
2	Enforcement of simplified & up-dated version of building codes & by-laws.	<ul style="list-style-type: none"> Preparation of training manuals, guidelines, commentary and awareness materials related to building code Conduct trainings for engineers, contractors, masons etc. Review and update of codes and by-laws 	TMA	Works Deptt, NESPAP, UN-Habitat	Sep,09 to On-going	20 M
3	Establishment of emergency response committees at wards level	<ul style="list-style-type: none"> Establish ward-level emergency response committees <ul style="list-style-type: none"> Define the roles and responsibility of the committees Define administrative link with city and district authorities Conduct SHVRA, First aid, LSAR and other trainings to volunteers 	DDMA	Civil Society Organizations	July 2009 to Dec 2009	25 M

S.No.	Action	Explanation	Responsible Organization	Supporting Organizations	Time Frame	Budgets (PKR)
4	Rehabilitation of identified & most vulnerable structures.	<ul style="list-style-type: none"> Identify most vulnerable structures and prioritize for their historical and functional importance Conduct detail assessment Rehabilitate in priority basis 	TMA	Line Deptt, Donors	Dec 09 to Dec 2010	50 M
5	Provision of latest tools & equipments/ relevant trainings to concerned departments	<ul style="list-style-type: none"> Conduct training need assessment Conduct trainings Provide tools and equipment 	DDMA	Donors	Dec 09 to Dec 2010	70 M
6	Operationalization of DDMA, allocation of required resources finance & HR	<ul style="list-style-type: none"> Provision of regular staff and budget for DDMA to coordinate disaster risk management activities in district 	DDMA, P&D, NDMA & District Govt.	DDMA, NDMA, INGO,NGO, UNDP	1 st July 2009	20 M
7	Earthquake Museum	<ul style="list-style-type: none"> Construction of Earthquake Museum building Selecting and installing, earthquake damage photographs, remaining of damaged structures, documents, documentary, earthquake reconstruction progress and success stories etc. in memory of 2005 earthquake 	District Govt.	Relevant Ministry	1 Year	15 M
8	Training about EQ & others Hazards	<ul style="list-style-type: none"> Conduction of regular trainings on earthquake and other hazard risk management for different sector of people. 	Civil Defence, ERRA	UNDP,NDMA, PDMA,NSET	1 Year	15 M

S.No.	Action	Explanation	Responsible Organization	Supporting Organizations	Time Frame	Budgets (PKR)
9	Operationalization of search & rescue/EMS team at District & Tehsil level	<ul style="list-style-type: none"> Establish district and Tehsil level emergency response system in coordination with DDMA. Provide training on Search and Rescue and other skills to respond to emergencies. Establish interagency coordination mechanism. 	Civil Defence, DDMA, TMA	UNDP, GTZ, ERRA	Upto continue certification	40 M
10	Implementation of School safety initiative	<ul style="list-style-type: none"> Implement school disaster safety initiatives including risk assessment, earthquake re-construction or retrofitting, masons training, teachers training, drill etc. 	Civil Defence TMA, DDMA, Education Deptt.	GTZ, UNDP, ERRA, UNICEF	April 2009 onwards.	5 M
11	Community based disaster risk management.	<ul style="list-style-type: none"> Establish ward/community level disaster risk management organizations Conduct community based disaster risk management programs in cooperation with local NGOs and CBOs. 	Social welfare department	TMA, DDMA, NGO, Media, Academia.	Long term	TBD
12	Monitoring & Evaluation of the implementations.	<ul style="list-style-type: none"> Establish institutional mechanism for monitoring and evaluation of disaster risk management activities 	Public representative, Concerned departments.	TMA, DDMA, NGO, Media, Academia.	Long term	TBD

S.No.	Action	Explanation	Responsible Organization	Supporting Organizations	Time Frame	Budgets (PKR)
13	Workshops/Trainings /Seminars & coordination meeting for knowledge management.	<ul style="list-style-type: none"> Establish system for continuous training on disaster risk management Conduct training need analysis and required trainings 	Concerned Deptt. & Area organizations.	TMA, DDMA, NGO, Media, Academia.	Long Term	TBD
14	In time response of all stake holders.	<ul style="list-style-type: none"> Establish system of coordination mechanism Prepare SOPs for response organizations 	Concerned Deptt. & Area organizations.	TMA, DDMA, NGO, Media, Academia.	Long term	TBD
15	Emergency response teams equipped with emergency kit & provision of stock piles to communities/offices.	<ul style="list-style-type: none"> Prepare disaster response contingency plans and stock piles the relief items 	Concerned Deptt. & Area organizations.	TMA, DDMA, NGO, Media, Academia.	Long term	TBD

5.4 Owner of the Plan

After a long and intensive discussion, the participants agreed that the ultimate owner of this action plan should be the Municipal Disaster Management Cell (MDMC) that will be formulated within Tehsil Municipal Authority (TMA) as per the Disaster Management Framework of Pakistan. However, the MDMC has not yet been formed and it will take some time for its establishment and functioning. Therefore, the current owner of the plan should be the District Disaster Management Authority (DDMA) which is already functional. The DDMA with the support and involvement of TMA and other relevant agencies will initiate the establishment of MDMC and its strengthening. Until the MDMC is functional, it is the DDMA's responsibility to own this Action Plan and facilitate, support and monitor the implementation of actions prioritized in this plan by the relevant agencies.

5.5 Implementation Strategy

The key activities suggested as the implementation strategy are:

1. **Building Support for the Plan and Earthquake Risk Management in General**
 - Using transparent and inclusive processes.
 - Making decisions rationally.
 - Using open financial policies.
 - Building relationships with all possible groups.
 - Raising general awareness.
 - Educating decision makers through awareness efforts.
 - Conducting regular public hearings.
2. **Supporting the Individual Initiatives**
 - Coordinating initiatives.
 - Planning initiatives.
 - Arranging technical support.
 - Conducting peer review of initiatives.
 - Seeking external funding for respective agencies.
 - Publicizing successful initiatives.
3. **Keeping the Plan Going**
 - Monitoring the initiatives annually.
 - Evaluating the objectives and strategies periodically.
 - Creating new edition of the plan periodically.

6. Annexes

6.1 Annex 1: Typical Survey Questionnaire

Earthquake Vulnerability Reduction and Preparedness Program
 Earthquake Scenario Development and Action Planning for Risk Reduction
Interview Questionnaire for Critical Facilities and Lifeline Agencies

Name of Agency:	
Address:	
Name and Designation of Respondent:	

1. When was your organization established?
2. What are the regular mandates and functions of your organization?
3. What main services does your organization provide to the people?
4. What are the organizational capacities of your organization? (Physical infrastructures, facilities, departments/divisions, human resources/staff etc.)
5. How effectively do you think your organization has been providing its services?
6. What were the effects of October 2005 Earthquake to your organization? (Damages to physical facilities, casualties, disruption of services etc.)
7. Are the buildings/structures damaged during the earthquake repaired, retrofitted or reconstructed?
 If yes, how they are done? Earthquake-resistance is considered or not? Who assisted?
 If not, why? And what is the plan?
8. Do you believe that Mansehra is earthquake prone area and similar earthquake may hit Mansehra area in the future also?
9. What could be the situation in case similar earthquake re-occurs affecting Mansehra?
10. Is your organization prepared or preparing for the future possible earthquakes? What types of preparations/preparedness have been or are being done?
11. What precautionary measures are taken against earthquake by your organization keeping in mind the possible consequences?
12. What are the main problems faced by your organization in delivering normal services and functions?
13. What will be the main problem that your organization faces during an earthquake disaster?

14. Are there any points in your critical facility / lifeline system that seems especially vulnerable to earthquakes?
If yes, please explain it.
What may be the consequences of damage to these points?
15. Which points are most critical for operation of the entire system even during the earthquake disasters?
16. Do you have any specific plan or program for the time of disaster?
17. Are these plans or programs formally documented and known to the staff?
18. How aware are the staff and decision-makers about the risk of earthquake or other disasters?
19. Does your organization practice emergency exercises and drills?
20. Your organization is responsible for designing and constructingstructures in Mansehra Municipal area; how many (no. of length) such structures are constructed per month/year?
21. Is there any defined system for maintaining the proper design and construction of such structures? Process: needs assessment, design, check, construction?
22. Does your organization have sufficient capacity to properly maintain the required quality of such constructions in the ground?
How many staff is dedicated for this job? And what categories of staff?
23. How much does your system depend on other systems (i.e. electricity/transportation or others to operate)?
24. Can your system operate if these systems are not available?
25. How much does your organization's emergency response depend on other systems, i.e. communications, electricity, roads etc.
26. Are there any laws, codes, standards of practice, inspections etc. that regulate the safety of your system?
27. If so, how well are they enforced?
28. Do you have any plans for expansion your system in the municipal area? If yes, what type of expansion? How do you consider earthquake safety during such expansion?
29. Does your system store spare parts?
30. How difficult would it be to get spare parts at short notice?
31. Does your system have reserves in case of disaster (i.e. stored- water, fuel, electric generators etc) ?
32. How long would such reserves last?
33. What other organizations have reserves that could help your system in time of need?
34. How long would the city be without service if system is damaged from the disaster?
35. How long would it take to rebound from a disaster?
36. Are there existing arrangements to secure funding to recover from a disaster?
37. Has your organization thought of doing any mitigation work for earthquakes or other potential disasters?

38. Have any detailed studies been made about the vulnerability of your system to natural disasters? If yes, mention in brief.
39. How feasible are mitigation measures for your system?
40. Is it possible to get funds and other support for mitigation work? What would be the process to initiate mitigation work?
41. Who would need to be involved in order to successfully undertake a mitigation project?
42. What are the immediate actions to be taken to improve the system keeping in mind the possible consequences of a future disaster?
43. What do you think are the most important and critical activities to avoid the disaster like that of 2005?
44. Can you please suggest some critical actions in detail?



6.2 Annex 2: List of Participants during Scenario and Action Planning Workshop
EARTHQUAKE SCENARIO AND ACTION PLANNING WORKSHOP
 25 -26 March 2009, Circuit House, Mansehra

S. No	Name	Department/Organization	Designation	Contact No.
1.	Shahida Rafique	DRM - ERRA	Master Trainer	0346-5629275
2.	Abdul Wahid Khan	ERRA - DRM	Project Coordinator	0300-5072056
3.	Dr. Amir Khan	University of Peshawar	Professor	0300-5907301
4.	Iqbal Hussain	Hazara University Mansehra	Dy: Director R&P	0300-5741574
5.	Abdul Latif	TMA Mansehra	Tehsil infrastructure officer (I&S)	0300-5055570
6.	Amjad Ali	TMA Mansehra	APO	0300-5636692
7.	Bahadar Sher	Forest Deptt	DFO	03349104386
8.	Dr. Niaz Mohammad	Health Deptt:	MED-Supdt:	03219981001
9.	Aftab Ahmed	Civil Defence	Incharge Civil Defence	0343-9521970
10.	Mushtaq Ahmed	Food Deptt:	Head Clerk	0345-9483232
11.	Bashir Ahmed	T.M.A	A.P.O	0346-5556886
12.	Hashim Khan	S.N.G.P.L	I/C SNGPL	0300-5621373
13.	Amjad Iqbal	TMA	A.T.O (R)	0333-5022307
14.	Abdul Rashid	TMA Mansehra	SFO TMA	0301-8133933
15.	Dullahmad	Mansehra Development Authority, Mansehra	Director	0300-5644422
16.	Fahim Ahmed	Sungi development foundation	AC	0303-8035661

S. No	Name	Department/Organization	Designation	Contact No.
17.	Shaheen Kausar	Sungi Development Foundation	Manager	0321-9953983
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21.	Assad Mehmood	Watsan/PRCS	PO	0301-5606640
22.	Irshad Hussain	Finance/PRCS	Finance Manager	0300-9773018
23.	Zahid Amin	Ex-Chairman Devl: Authority Muzaffarabad	Ex-Chairman	0300-5224292
24.	Zubair Murshed	Advisor (DRR)	UNDP	0308-5059879
25.	Sajida Tabasum (Adv)	(Member Provincial Assembly) NWFP	MPA	0307-8140435
26.	Nematullah	(WS&S) W&S Deptt:	DDO	0300-9113552
27.	Syed Zahir Ali Shah	District Government	EDO (F&P) Mansehra	0300-5844891
28.	Gul Naz Shah	District Government	Distt: Councillor	0301-8131011
29.	Nargis Bibi	District Government	District councillor	0331-9113783
30.	Gul Nisa	Union Council Kanal	Union Councillor	0331-9113783
31.	Ayaz Mehmood Abbasi	District Reconstruction Unit Mansehra (PERRA)	M&E Officer	0313-5382368
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33.	Mohammad Jehangir	Handicap International	Technical Officer	0300-5644298
34.	Omar Ahmed Shah	PESCO/WAPDA	S.D.O	0345-9200688
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36.	Syed Harir Shah	GTZ-DPMP	P.C	0301-8581094
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38.	S. Yousaf Shah	Works & Services	Assistant Director	0300-8112728

S. No	Name	Department/Organization	Designation	Contact No.
39.	Mohammad Tayyab	Save The Children	S. Mobilizer	0302-3507615
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44.	Amjad Khan	Hazara University D. Regis:	Registrar	0301-8341246
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46.	Tariq Adeed	In charge Press Club Mans:	Reporter	0346-9600064
47.	Dr.Humaira Ismail	PRCS (PAK RED CRESC SOC)	F.M.O	0346-5371979
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49.	Dr. Naeem Awan	District Health Dept:	DC, HMIS	0300-5853665
50.	Jahan Zaib	Judiciary	Advocate	0300-5615662
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56.	Naeem Iqbal	UNDP (NCBDRM)	Expert	
57.	Surya Narayan Shrestha	NSET-Nepal	Deputy Executive Director	
58.	Amod Mani Dixit	NSET-Nepal	Executive Director	
59.	Ramesh Guragain	NSET-Nepal	Director	
60.	Tariq Rafique	UNDP/NCBDRM	NPM	
61.	Abdul Hameed	TMA Mansehra	S.F.O TMA	0301-8133933

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