

**INVESTIGATING BEST DRR PRACTICES AT THE  
COMMUNITY LEVEL FOR MAJOR NATURAL  
HAZARDS;  
(FLOODS, EARTHQUAKE, DROUGHT, LANDSLIDES)**

By

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**(NUST2014-64362-MMCE15714F)**

A thesis submitted in partial fulfillment of  
the requirements for the degree of

**Master of Science**

in

**Disaster Management**



**Civil Engineering Wing**

**Military College of Engineering, Risalpur**

**National University of Sciences & Technology (NUST)**

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**This is to certify that the**

**Thesis Titled**

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## **ACADEMIC THESIS: DECLARATION OF AUTHORSHIP**

I, Abid Hassan Registration No NUST201464362MMCE15714F, declare that this thesis and work presented in it are my own and this thesis has been generated by me because of my own original research.

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Dated: 18 August 2018

# **DEDICATION**

Dedicated to

**MY MOTHER**

Whose prayers have enlightened my soul to understand the real meanings of

**LOVE**

## **ACKNOWLEDGEMENTS**

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## LIST OF ABBREVIATIONS

ADP	Annual Development Program
CBDRM	Community Based Disaster Risk Management
CDPM	Centre for Disaster Preparedness and Management
CCBs	Citizen Community Boards
CERT	Community Emergency Response Team
DC	Deputy Commissioner
DDMAs	District Disaster Management Authorities
DDMO	District Disaster Management Officer
DDMU	District Disaster Management Unit
DRM	Disaster Risk Management
DDRMP	District Disaster Risk Management Plan
DRM&CCASU	Disaster Risk Management & Climate Change Adaptation Strategic Unit
DRR	Disaster Risk Reduction
DRRF	Disaster Risk Reduction Forum
HFA	Hyogo Framework for Action
EEC	Earthquake Engineering Centre
ERM	Emergency Response Management
EWS	Early Warning System
FDRM	Flood Disaster Risk Management
FFC	Federal Flood Commission
FGD	Focus Group Discussion
GIS	Geographical Information System
INGO	International Non-Government Organization
KP	Khyber Pakhtunkhwa
LGA	Local Government Authority
LG-SAT	Local Government Self-Assessment Tool
LoA	Level of Achievement
MC	Municipal Corporation
MHVCRA	Multi Hazard, Vulnerability, Capacity and Risk Assessment

MoU	Memorandum of Understanding
NCEG	National Centre of Excellence in Geology
NDMA	National Disaster Management Authority
NDM-ACT	National Disaster Management Act
NGO	Non-Government Organization
PARRSA	Provincial Reconstruction, Rehabilitation & Settlement Authority
PDMA	Provincial Disaster Management Authority
PDMC	Provincial Disaster Management Commission
PMD	Pakistan Meteorological Department
PWG	Provincial Working Group
P&DD	Planning and Development Department
PEOC	Provincial Emergency Operations Centre
RR&SD	Relief, Rehabilitation and Settlement Department
TMA	Tehsil Municipal Administration
SBDRM	School Based Disaster Risk Management
SPSS	Statistical Package for Social Sciences
UC-DRMC	Union Council Disaster Risk Management Committee
UET	University of Engineering and Technology
UNISDR	United Nation International Strategy for Disaster Reduction

## ABSTRACT

Pakistan is prone to both natural & human induced disasters for reasons varying from topography to population density and poverty. Disaster management in the country has historically been reactive rather than proactive. This study has been undertaken by Military College of Engineering with a purpose to develop a situation analysis of CBDRM in district Swat of KP. For this purpose, tools were developed i.e. questionnaire and checklist, that were used for data collection from various stakeholders (PDMA, P&DD, DDMU, N/INGOs i.e. IDEA, CARE International and DRR Forum) at Swat. FGDs were carried out with communities and group of students at different localities of the targeted Union Councils. The UNISDR Local Government Self-Assessment Tool (LG-SAT) comprises of 10 essential parameters which relate to the five priorities of the *Hyogo Framework for Action 2005-2015* was used to analyze the DRM situation in Community. The findings are that there is less awareness about the hazards, disaster impacts, ways to reduce risks and mitigate. Only floods are considered as hazard while ignoring the earthquake, land sliding and droughts. Inter/intra coordination among the stakeholders are weak which can be catastrophic.

Recommendations are presented which are mostly focusing on capacity building of the community, linkages development with stakeholders and awareness. LG should be linked with DDMU and capacitated accordingly. The recommendations given in this report would serve to achieve the common objectives of the strategies that enable vulnerable communities to be prepared, mitigate, respond linkages development during disasters and reduce the risk and vulnerabilities of Swat.

## **INTRODUCTION**

### **1.1 Background**

Pakistan is a developing country, which has been in the clutches of major disasters events of floods, drought, landslides and earthquakes in the recent past. During 2001–2013, a total of 80,415 individuals died in which 74,484 were victimized of Earthquakes, 5,722 died due the frequent flood disasters and 209 of landslides events in different regions of the country.

KPK: Khyber Pakhtunkhwa (KPK), formerly known as the North-West Frontier Province, is one of the five provinces of Pakistan, located in the northwest of the country. It borders the Federally Administered Tribal Areas (FATA) to the west and south, Gilgit-Baltistan to the northeast, Azad Kashmir to the east and Punjab and the Islamabad Capital Territory to the southeast. KPK consists of the 25 districts. It is one of the most disaster-prone provinces in Pakistan. Recent disasters include: natural disasters: earthquake (2005), flash floods (1992, 1998, 2010 and 2011), landslides and avalanches (2010), and b) manmade disasters, ongoing terrorism, tribal conflicts, and resulting internal and external displacement. The tornado/whirling winds of 26<sup>th</sup> April 2015 in Peshawar Division alone killed 49, injured 267 and hundreds of houses collapsed<sup>1</sup>.

In accordance with the 2001 Local Government Ordinance, Swat was given the status of a district and subdivided into 7 Tehsils. Each Tehsil consists of a group of Union Councils. But as with many other Pakistani cities, Swat's expansion has largely been unplanned and unregulated, with development taking place mainly along the major roads and routes leading to other regional canters.

Apart from natural disasters, KP is also highly prone to human-induced disasters such as fire, suicide bombing, civil unrest, transport accidents, etc. Droughts are also common especially in southern districts of Khyber Pakhtunkhwa. Similarly, landslides are also common in the northern regions of the province especially Malakand Division.

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<sup>1</sup>[http://pdma.gov.pk/recent\\_updates/Special\\_Situation\\_Report.pdf](http://pdma.gov.pk/recent_updates/Special_Situation_Report.pdf)

Khyber Pakhtunkhwa province, in general, and Swat district (in particular) are prone to multiple disasters with various degrees of vulnerability and has a history of various kinds of disasters and most common hazards include: floods, wind storms, drought, earthquakes, heavy rains, water logging, acute waterborne diseases, riverbank soil erosion, animal diseases and human induced disasters (tribal conflicts disputes, terrorism/ war against terrorism).

The General vulnerabilities include: poor economic conditions/lack of coping capacity, lack of education, lack of awareness about Disaster Risk Reduction (DRR), lack of early warning systems, lack of knowledge of disaster resilience, building codes are not followed (many houses are mud-made), lack of equipment/tools (boats, life jackets, etc.), lack of medical facilities and staff, lack of coordination and capacity among communities and Government departments, no knowledge about geographic locations offering basic life and livelihood support, and safe exit routes, lack of shared historical knowledge on Hazards, impact and frequency.

## **1.2 Problem Statement**

Reducing Disaster Risk is a cost-effective investment in preventing future losses and effective which contributes to sustainable development. During the ten-year timeframe of the Hyogo Framework for Action in 2005-2015, progress has been achieved in reducing disaster risk at local, national, regional and global levels by countries and other relevant stakeholders, leading to a decrease in mortality in the case of some hazards.

At the targeted district level, the overall emergency preparedness and response is not well coordinated. Furthermore, the level of preparedness is low both at community and government level, as almost all stakeholders depend on first response from the army (which historically has been the case) and are insufficiently prepared to take control of disaster preparedness on their own. Some Village Disaster Risk Management Committees (VDRMCs) and Union Council Disaster Risk Management Committees (UC-DRMCs) exist but are not always functional and do not sufficiently address the needs of vulnerable groups. These community structures have been formed by the NGOs/INGOs during the flood emergency response of 2010. Governmental structures for DP/DRR have improved since the 2010 floods and are trying to expand their outreach and access, but district doesn't have well-articulated plans to cope with the catastrophic events. Capacity gaps remain, especially on district level, where line

departments often lack the understanding of their role, responsibilities and needs of communities in disaster preparedness and response. DDMA had produced contingency plans for monsoon every year but lacks supportive active DRM plan. Moreover, it was also confirmed that no defined and functional Emergency Response Team (ERT) exists at communal and government level at the district. There is some division of roles between district stakeholders in contingency plans.

### **1.3 Objectives of the study**

- i. To identify the DRM gaps at community level.
- ii. To identify resources, timeframe and mutually beneficial partnerships to improve the DRM programs at local level.
- iii. To identify gaps and potential areas (departments/ institutions) for integrating DRR

### **1.4 Research questions**

- i. Are there any Disaster Risk Management gaps at community level in the study area keeping in view the traditional approach of disaster management?
- ii. What is the situation of availability of required resources at community and government level?
- iii. What is the overall need and perception at departmental level regarding integration of effort and capacities to counter disaster?

### **1.5 Significance of the study**

The CBDRM issues in the context of urbanization and realization assume critical form when human induced hazards like influx of refugees, displaced population and terrorism adds to it for example in Swat. This study thus aims to provide the situational analysis of CBDRM in situation like floods, earthquake, landslides and drought in the urban and rural areas of Swat and a layout of advocacy efforts needed to ensure effective disaster management strategies at community of District Swat.

## **LITERATURE REVIEW**

### **2.1 Community Based Disaster Risk Management**

CBDRM is an approach which provides opportunities for the local community to evaluate their situations based on their own experiences and promotes participation and partnership. Now a day's community based DRR becomes one of the important component in any disaster. In Pakistan also on Government level departments are working on it, i.e. PDMA, NDMA, DDMA and mostly NGO/INGOs also include DRR as a core component in their programs.

### **2.2 Disaster Management System**

Comparatively weak disaster management systems in Pakistan exist. It was only in 2005 when not only Pakistan became a signatory to the Hyogo Framework for Action (HFA), indicating a shift toward more comprehensive disaster management that is proactive as well as being reactive, but also was the year when the country was struck by a devastating earthquake whereby damages around the area of 30,000 km<sup>2</sup> in KP. Province of Pakistan and other parts of Pakistan (Qaiser Ali, et al.). The sheer scale of this disaster highlighted Pakistan's exposure to disasters and their commitment for better preparedness, resulting in the promulgation of the NDMO in 2006. The ordinance provided legal arrangements for DM at all levels.

In December 2010, the NDMO was converted into an Act of the Parliament as the National Disaster Management Act (NDMA) 2010, with retrospective effect from August 2007. The three-tier hierarchical framework sets out the NDMC headed by the Prime Minister as being at the top of the hierarchy and responsible for national disaster policymaking in the country. The NDMA is the focal point for the coordination and implementation of disaster management policies in the country. The second tier consists of the Provincial Disaster Management Commissions and at the third tier, P/DDMAs, which are responsible for drawing up Disaster Management plans at their administrative level (Zubair et al.).

2013 has been yet another landmark year in the disaster management arena in Pakistan. In February of this year, the NDRR Policy of Pakistan was formulated to 'advocate an



approach to disaster management that focuses on reducing risks'. Although this policy is thorough and comprehensive, its implementation is still a question mark, especially in its failure to create institutional synergies and assignment of responsibilities to various layers of governance and actors in the field. This means that the plague of overlapping duties and responsibilities of departments is carried forward yet again.

PMU has been established at NDMA recently in 2015, the implementation of the plan remains a concern. The plan clearly enunciates the need for village level DRM in Pakistan. As per the Intervention No. 7 'Infrastructure development for disaster risk reduction' of priority actions/ programs one of the five important strategies include "Enhance disaster risk management capacity in urban areas" with indicative budget of USD 11 million. It further lay down the actions/ programs for this component as under:

- i. Development of urban DRM Plan to allocate funds for the identified potential risk and hazards.
- ii. Implementation of effective land use control along with regulations focusing on urban DRMP and identification of evacuation routes for the preparedness.
- iii. Establishment of DRM Centers in areas vulnerable areas at communal as well as at district level. The plan again in intervention No. 9 "Establishing a national emergency response system" lay down the need for enhance emergency response capacities through search and rescue teams in major each village at community level. It articulates further to state the "establishment of search and rescue teams to deal with multiple hazards in provincial and regional capitals and key industrial cities, response force in provinces/ districts" as a priority action.

### **2.3 Strengths and Opportunities for Disaster Risk Management**

Presently the DRM system has been introduced in the KP after the establishment of PDMA at Khyber Pakhtunkhwa during 2007. Capacities have been built-up to cater the aspects of the DRM.

The priority should be investment in DRM. The PDMA Khyber Pakhtunkhwa is inclined and taking keen interest to align all DRR related interventions considering the UN-ISDR Hyogo Framework for Action (HFA, 2005-2015), National Disaster

Management Plan (NDMP, 2012-2022) and National Disaster Management Policy 2012.

Although, KP has been instrumental in building synergies among different stakeholders. It has been realized that there still required a lot to be done for converting the communities into disaster resilient.

Following are some of the strength and opportunities which provide window opportunity to fully functionalize the disaster risk management system;

- i. Disasters provide development opportunities and there is lot to learn from the recent decade's disasters happened one after another in the province.
- ii. Paradigm shift approach from re-active to pro-active and as a result institution are in place to more focus on preparedness and mitigation and well-coordinated emergency response.
- iii. Heightened awareness and commitment at all levels and most importantly amongst decision makers about disaster risks and vulnerabilities.
- iv. Due to frequent natural and human induced disasters, clear strategic goals and road map has been developed by the PDMA KP for effective and efficient disaster risk management system.
- v. Donors' are committed to support government of Pakistan for disaster risk reduction and implement safer development. UN supporting under Operational Plan I and II since 2009.
- vi. Awareness on mainstreaming of DRR into ADPs and practices. Provincial working group is in place for technical guidance and supervision.
- vii. Hands on experience and lot to share with International communities in the form of built back better after the devastating 2005 earthquake. Massive flood response, recovery, rehabilitation and reconstruction experience.
- viii. Influx of resources and I/NGO investments on community mobilization/organization combined with technical expertise in certain sectors offer potential for enhanced community capacities to contribute to disaster risk management and effective response.

## 2.4 Profile of District Swat

District Swat is situated near the Pakistan-Afghanistan border and is the upper valley of the Swat River, which upsurges from the Hindu Kush range. Saidu Sharif is the capital of Swat District while the main town is the Mingora city which is most populated in the overall district. Mostly the District has both Urban and Rural characteristics. District Swat was also known as princely state in Khyber Pakhtunkhwa before 1969. Entirely the district is populated by Pashtun.

**Table 2.1 Estimated population of Swat 2015**

<b>Area</b>	<b>1257602 persons</b>
<b>Male</b>	648009 (51.53 %)
<b>Female</b>	609593 (48.47 %)
<b>Sex Ratio (males per 100 females)</b>	107.3
<b>Population Density</b>	238.6 per Sq. Km
<b>Urban Population</b>	173878 (13.83 %)
<b>Rural Population</b>	1083774 (86.17 %)
<b>Average Household Size</b>	8.2
<b>Literacy Ratio (10 +)</b>	29.75%
<b>Male</b>	46.16%
<b>Female</b>	18.45%
<b>Population – 2014</b>	1995693 persons
<b>Average Annual Growth Rate (1981 - 98)</b>	3.47%
<b>Total Housing Units</b>	142314
<b>Pacca Housing Units</b>	107185 (75.31 %)
<b>Housing Units having Electricity</b>	96547 (67.84 %)
<b>Housing Units having Piped Water</b>	34904 (24.53 %)

**Table 2. 2 Population of Swat (Tehsil level)**

S #	Tehsils	Population as per 1998 Census				Population as per 2014			
		(Projected based on 1998 Census)							
		Total	Male	Female	HHs	Total	Male	Female	HHs
1	Bahrain	125,250	63,985	61,265	15,274	199,189	101,750	97,439	28,456
2	Khwaza Khela	141,193	72,184	69,009	17,219	224,562	114,806	109,756	32,080
3	Charbagh	73,683	38,743	34,940	8,986	117,190	61,618	55,572	16,741
4	Matta	251,364	126,864	124,500	30,654	399,793	201,781	198,012	57,113
5	Kabal	244,143	126,172	117,971	29,774	383,837	198,586	185,251	54,834
6	Babozi	321,994	169,616	152,378	39,268	512,120	269,769	242,351	73,160
7	Barikot	99,972	50,441	49,531	12,192	159,002	80,225	78,777	22,715
	<b>Total</b>	<b>1,257,599</b>	<b>648,005</b>	<b>609,594</b>	<b>153,366</b>	<b>1,995,693</b>	<b>1,028,535</b>	<b>967,158</b>	<b>285,099</b>

**Table 2. 3 Projected 2014 population of the district with different Age Groups**

(in years)	Projected total 2014		
	Total	Male	Female
00 – 04	345,803	176,461	169,342
05 – 09	364,296	189,989	174,307
10 – 14	300,385	159,793	140,592
15 – 19	218,417	110,190	108,227
20 – 24	179,344	88,238	911,06
25 – 29	140,370	69,175	71,194
30 – 34	108,534	55,944	52,590
35 – 39	73,207	39,814	33,393
40 – 44	84,812	39,655	45,157
45 – 49	64,534	31,974	325,601

50 – 54	61,067	31,668	29,399
55 – 59	36,763	20,544	16,219
60 – 64	35,590	19,545	16,044
65 – 69	17,379	10,093	7,287
70 – 74	19,061	11,232	7,829
75 &+	18,018	11,052	6,966

*Source: District Census Report 1998, Pakistan Bureau of Statistic, while projected by the consulting firm,*

## **2.5 Tourist attractions**

### **2.5.1 Marghazar**

Marghazar is located near the main city of District Swat, Mingora while also it is adjacent with the capacity of District Swat, Saidu Sharif around 16 Km away. Basically, it is famous for its White Palace which is built by the first *Wali* of the said District. This place is also known as the summer residence. Queen of England was also hosted there once as well. The marble used in the White Palace was also used in Taj Mahal India.

### **2.5.2 Fizagat Park**

Fizagat is situated on the river Swat adjacent to the main city of Mingora, it has the public park and residential area as well. The Fizagat is the hub of local hotel and also a place of recreational activities of the local community and tourists spot.

### **2.5.3 Madyan**

Madyan is the small town and is located in Tehsil Behrain on the River Swat. Madyan is also known by its natural beauty and the tourist spot. Madyan bazar is also famous for local embroidery and rich cultural material.

## 2.5.4 Bahrain

A quarter of an hour past Madyan, the road squeezes through Behrain. Tourists stop to shop or have a look around for beautiful carved wood chairs and tables and other handicrafts. Behrainis are a mix of Pashtuns and Kohistanis (Torwali). Behrain is ten kilometers north of Madyan and only slightly higher, at about 1,400 metres (4,500 feet).

## 2.6 Industries

### 2.6.1 Handicrafts

Swat is famous for its handicrafts. During the visits of tourist to the region, they must buy and accumulates the handicrafts and other precious gifts. All crafts designed and prepared here are having high quality and reasonable prices.



Figure 2.1 District Map of Swat

## **2.7 Hazard Profile of Swat**

Swat is a disaster-prone district and vulnerable to many both natural and man-made hazards. As per the severity index of the NDMP 2012-22 it ranks at 26 among the 125 districts of the country with a scoring key of 19 and categorized as “very high Risk”. The index highlights that Swat is at the highest level of risk for earthquake and floods. However, a critical analysis of the index calculation reveals some flaws especially in case of cyclone; the risk of which has been categorized as low. This was proved wrong recently in August 2014 and April 2015 when very strong winds caused a huge amount of destruction in Swat. Moreover, it can be safely argued that Swat would have fallen in the category of top three vulnerable districts if human induced hazards like refugees & displaced persons influx, terrorism, fires would have been considered while calculating these risk indices for NDMP. The list of hazards thus confronting the district in general and the city in specific is a diverse and alarming one. Some of the noteworthy natural disaster events in Swat are shown in the figure No 6 below.

According to a country wide study done by Dr. Sarosh Lodhi of NED University Karachi by combining the EMS technology for risk assessment coupled with extensive research and field work and using the building inventory record from 2005 to produce intensity-based fragility curves, the building stock of Swat will face significant amount of damages in case of any strong shaking of earthquake.

### **2.7.1 Floods**

- i. NDMP categorize Swat as one of the top few cities in terms of flood risk. The PDMA KP has also listed Swat as highly vulnerable to floods in the last three consecutive Monsoons Floods Contingency Plans. The flood Plains/zones falls from the upper Swat i.e. Kalam and then it flows down towards the settle districts. The district was also one of the worst affected districts in floods 2010 when river Swat devastated most parts of the district affecting 18 UCs, destroying 33,867 houses with 46 dead and 68 injured.
- ii. Similarly, in 2012, three precious lives were lost while seven injured and a total of 217 houses were damaged. In 2014, 13 drowned, 54 injured. The same went on for 2015 when 224 houses were partially damaged, 19 fully collapsed and 7 persons lost their lives due to heavy rains and flash floods.

- iii. Urban flooding is a well-known and usual phenomenon, which has intensified since few years in Swat. Poor drainage system in urban areas, which the newly established Water and Sanitation system calls “almost completely clogged drainage system”, is one of the reason for increased urban flooding. The reason being that almost all the drainage from Swat has its outfall into the same Nala which eventually run into the Swat River. An anti-encroachment drive to clear the Nala is in progress as per the directions of the provincial Government.
- iv. The precipitation pattern has changed in Pakistan over the last century. The amount of precipitation has increased significantly in the northern part of Pakistan. In addition, a study by PMD found that there has been a shift of precipitation toward the west by about 60-80 km. The hazard for Swat valley has thus increased with this shift.

### **2.7.2 Earthquakes**

Most of Swat, as per the building codes of Pakistan, lies in seismic zone 2B except for small area in the north west of district adjoining to Dir Lower, Buner, Shangla and Dir Upper which falls in seismic zone 3. The relative severity of risk index of NDMP by JICA puts Swat into the very high category in terms of earthquake risk. Swat lies in the zone, which consists of southern part of Eurasian plate and northern part of Indo-Australian plate. Highly Seismic Hindu Kush region is approximately 200 km North West of Swat. Most of the earthquakes felt at Swat have their origin in the Hindu Kush region of Afghanistan or Northern areas of Pakistan. A recent unpublished study by Earthquake Engineering Centre (EEC), University of Engineering & Technology which has been funded by the Provincial Government on the recommendations of PDMA KP records the historical seismicity of Swat and reflects the high intensity of earthquakes in 1865, 1868, 1869, 1878, 1879 and 1883 with intensities of as high as level VIII. EEC experts also feel that with such a record of historical seismicity, possibility of a huge earthquake in Swat soon cannot be ruled out.

Enforcement of building codes is conspicuous by its absence. Interview with P&DD & C&W revealed that after 2005 earthquake the Pakistan building codes Seismic provisions of 2007 are being followed by the Government departments for the public buildings and infrastructure. However, for the private buildings no codes enforcement regime in Swat is in prospect. DDMU and other key relevant departments in theory is



carrying out the checks to implement the safety standards in private construction; in practice, it seems to be not enforced except few open space regulations. The most recent building regulations available for Swat date from 1985 and apply to the “urban areas of the North-West Frontier Province” (PUDB, 1985). These by laws have essentially no requirements for either structural or earthquake designs. In the Town administration there now exists in a building control section which reports to the TMO contrary to the previous practice in the Municipal Corporation years when its functions were sublet to a private contractor. The TMA officer Infra agreed that there were no standards followed by the contractor and approvals for new buildings were used to revenue taxes only. The TMA officer agreed that building control function is the most important and that lack of engineering/ staff is the major hurdle. It is worth noticing that only one engineer is available with TMA.

## **2.8 Stakeholders Analysis**

The stakeholder’s analysis in the context of CBDRM in Swat is not a simple one. Complications and complexities are evident as one move deeper to investigate the roles, responsibilities, capacities and resources of various stakeholders in the city. Less clarity overlapping roles and responsibilities, duplications and mismanagement of resources is what-ever stakeholders agree is an issue. The same issue was highlighted by the newly elected District Nazim who at the same time was extremely zealous about the CBDRM and the District DRM plan for what he referred to as bringing ‘clarity on who shall do what’ in the DRR/M process in the district. A brief stakeholder analysis is as below:

### **2.8.1 Provincial Disaster Management Authority (PDMA)**

The KP Government established PDMC on 27 October 2008 under NDM Ordinance 2007 and PDMA-KP was established on 27 October 2008 under the same Ordinance 2007 to cater to the whole spectrum of policy and coordination for DM. In order to deal with the crisis of 3.2 million displaced population of Malakand Division (Swat, Buner, Dir, and Shangla) PaRRSA was established as an autonomous body beneath of PDMA-KP to plan and coordinate the overall infrastructure damage assessment, rehabilitation/reconstruction and settlement for post-war-on-terror of the affected areas.

In 2014 PDMA Khyber Pakhtunkhwa, with support from CARE International developed its Five Years Road Map for DRM in KP. The Road map is a comprehensive

document, which broadly focuses on eight thematic areas in line with NDMP and HFA. The document was developed after extensive consultations with different Provincial & Federal Departments, Armed Forces Academia, United Nation, I/NGOs, District Authorities, Development practitioners, communities and experts.

Road Map notes that “the province is faced with complex humanitarian emergency situation and urbanization issues due to influx of displaced population from the FATA region. A province of 27 million is hosting 2.6 million DPs and over a million refugees, which poses a huge challenge for the province, its communities which are hosting them”. It further stress on the need of emphasizing “on addressing the underlying causes of disasters, such as poverty, unplanned urbanization and environmental degradation”. The Road map under the fifth thematic area ‘Mainstreaming DRR into ADP’ identifies Disaster Risk Reduction measures in Urban areas especially related to Fire Management, flooding, earthquakes related activities needs to be carried out in short term.

PDMA has recently floated the EOIs for the MHVCRA of 5 districts mentioned in the Road Map and to be funded from the ADP funds. The same is also a priority under the newly formed PMU at NDMA where initially MHVRA will be carried out in 37 districts. The senior MHVRA Specialist NDMA confirmed that provincial Headquarters will be a priority and Swat being one of them. How soon the MHVRA is initiated is still not confirmed.

The PDMA also house in its building a Provincial Emergency Operation Centre which is fully equipped with Disaster Management Information System (DMIS) and other modern communication systems. PEOC is the Command & Control Centre pre, during and post disaster situation. It is connected to the DC offices/ DDMUs, however, the PEOC staff complains about non-functionality at the end of DDMUs.

### **2.8.2 District Disaster Management Unit (DDMU)**

The DDMU is the coordinating body with DRM section of PDMA takes guideline from the provincial authority for completing the plan. Following major steps are necessary for completing the district level plan for any type of disaster:

### **Starting to Plan**

- i. The DDMU shall take guidance of planning from PDMA and/or the District DRM Planning guideline is also available on the website of PDMA-KP
- ii. As a first step the DDMU shall list all the line departments and involve them in initial meeting about the disasters.
- iii. In the meeting the representatives of line departments shall identify the relevant people who can work on specific disasters, like Irrigation and Public Health shall work on flood related disasters, 1122 and fire department will work on fire related disasters, health and public health departments will work on disease outbreaks and so on.
- iv. The DDMU shall conduct a survey in the district and identify all the vulnerable areas (Tehsil or UC) prone to the disasters and prepare a comprehensive report involving all the line departments working in the district.

### **Taking Stock of situation**

- i. The DDMU shall first list all the available staff and volunteers that will work during disasters. The names and contact details of all shall be prepared
- ii. Take lists of all the elected representatives of local governments and ask for their consents. As they will be the most suitable people to provide volunteer support during disasters and they are very well versed with the local conditions and territory.
- iii. DDMU shall list all the areas/locations that can be used as camps for the displaced people during disasters. The locations shall have clean drinking water facility as well toilets.
- iv. The DDMU shall prepare the lists of all materials and equipment required during disasters. In case of shortage, PDMA-KP shall be asked to support the finalization of the required materials/equipment. It is important to note that machines/equipment and other materials with all line departments shall be considered during the stock-taking.
- v. All NGOs and/or CBOs working in the district shall be taken on board

### **Contingency planning**

- i. Prepare a plan which shall identify that who will do what during disasters

- ii. Conduct trainings for the government staff, NGOs/CBOs, local politicians and communities on how to cope with emergency situations
- iii. Distribute numbers of departments and persons who shall be contacted if an emergency occurs.

### **Finalization**

Shall share the preparedness plan named as DDMP for each disaster with DRM section of PDMA-KP and finalize it as per the feedback provided.

### **2.8.3 During Emergency Response**

The DDMUs during response to an emergency shall do the following activities:

#### **Confirmation**

- i. The DDMU shall first confirm that whether the magnitude of disaster is bigger enough to be declared as a disaster. If yes, then DC shall inform PEOC of the scale of disaster and immediately activate the District Emergency Operations Center (DEOC), which shall work 24/7 during the disasters. The communication with PEOC shall be done through the following pattern:
- ii. In presence of mobile communication technologies after the disaster has struck the district, DC shall use mobile communication
- iii. If the towers of Mobile communications are damaged by the disasters, then PTCL landlines can be used to inform PEOC
- iv. If landline networks are also damaged by the disaster, then Police wireless loops can be used to inform PEOC.
- v. During emergency situations, Deputy Commissioner (DC) shall act as overall head of the district and all line departments including Police and other Federal departments automatically comes under DC's authority.
- vi. DEOC shall within first hour of activation shall call all line departments in the district and conduct the first meeting for coordination. The first meeting shall be chaired by DC.

#### **Rescue and Relief**

- i. DC shall immediately appoint staff to start rescue operations upon receipt of call for emergency like situation

- ii. DC shall appoint another team to check the places identified for camps and make all necessary arrangements as soon as possible
- iii. Any requirements from PDMA-KP like food items or NFIs shall be quickly assessed by a team appointed by DC and shall be communicated to Relief Section of PDMA-KP.
- iv. Upon approval of the list of needed items by Relief Section of PDMA-KP, DDMU can make purchases from nearby markets or in case the district is near Peshawar, PDMA-KP can send the items through transport.
- v. Upon rescue of the affected people and placement in the designated camps, the DC shall appoint team(s) to conduct the initial assessment report that shall give ideas about:
  - a. Number of people died during disasters
  - b. Number of people got injured
  - c. Damage to the property of people
  - d. Damages to government properties
  - e. Other damages that need to be reported
- vi. DEOC shall share the findings of the report with PEOC
- vii. Upon approval of the Relief Section of PDMA-KP, the DDMU shall make payments to the families of deceased and injured.
- viii. Parallel to the preparation of DEOC stops working 24/7 after the initial payments are made

### **Recovery and Rehabilitation**

- i. DDMUs shall, upon guidance of PDMA-KP, check the progress of works undertaken by line government departments so as to ensure on time completion of rehabilitation projects and ensure timely return of the affected people from designated camps
- ii. DDMUs can check monitor the work of NGOs working in the district for rehabilitation and recovery
- iii. DDMUs may work as an arm for the M&E section of PDMA-KP and may inspect and monitor the progress of work in affected areas as and when required.

#### **2.8.4 Duties of Health Department at District Level**

Health Department is one of the major stakeholders in disasters, as it works in almost all kind of disasters where human health is at risk. Thus, following are major duties of Health department at district level:

- i. To actively involve with DDMU in planning process
- ii. To actively involves in DDMU in stocktaking process and provide lists of all equipment, materials and ambulances available for operations during disasters
- iii. Actively participate in contingency planning
- iv. Help DDMUs to provide first aid trainings to various stakeholders at district level
- v. Appoint a person in the district level setup who shall respond to emergencies
- vi. To act on guidance of DC during emergency situations

#### **2.8.5 Duties of Public Health Department at District Level**

Public Health Department shall help the DDMUs in following task:

- i. To actively involve with DDMU in planning process
- ii. To actively involves in DDMU in stocktaking process and provide lists of all equipment, materials and availability of portable water in designated camps
- iii. Actively participate in contingency planning
- iv. Appoint a person in the district level setup who shall respond to emergencies
- v. To act on guidance of DC during emergency situations

#### **2.8.6 Duties of C&W Department at District Level**

C&W Department shall help the DDMUs in following task:

- i. To actively involve with DDMU in planning process
- ii. To actively involves in DDMU in stocktaking process and provide lists of all equipment, materials and availability of heavy machines to help in rescue and rehabilitation operations
- iii. Actively participate in contingency planning
- iv. Appoint a person in the district level setup who shall respond to emergencies
- v. To act on guidance of DC during emergency situations

### **2.8.7 Duties of Irrigation Department at District Level**

Irrigation Department shall help the DDMUs in following task:

- i. To actively involve with DDMU in planning process
- ii. To actively involves in DDMU in stocktaking process and provide lists of all equipment, materials and availability of heavy machines to help in rescue operations
- iii. Actively participate in contingency planning
- iv. Appoint a person in the district level setup who shall respond to emergencies
- v. To act on guidance of DC during emergency situations

### **2.8.8 Duties of Police Department at District Level**

Police Department shall help the DDMUs in following task:

- i. To actively involve with DDMU in planning process
- ii. Actively participate in contingency planning
- iii. Appoint a person in the district level setup who shall respond to emergencies
- iv. To provide wireless loop for communication with PEOC if the disaster has damaged the mobile and landline communication networks
- v. To act on guidance of DC during emergency situations

## **2.9 UC-DRMC Roles & Responsibilities**

### **2.9.1 Chairperson**

- i. To provide guidance in managing UC-DMC
- ii. To lead the session of committee
- iii. To call and adjourn the session of committee
- iv. To coordinate with the UCDCMs.
- v. To assign tasks and duties to the committee members
- vi. To inquire about the assigned tasks from the committee members
- vii. To monitor the performance/transparency of the committee members
- viii. To ensure coordination and cooperation's among the committee members and with the UCDCMs and relevant line departments.

- ix. Vice chairperson will assist the chair person in accomplishments of the above-mentioned tasks and in the absence of chairperson he/she will be responsible for the duties of chairperson in the same capacity.

### **2.9.2 General Secretary**

- i. Will be responsible for arranging meetings on monthly, weekly or on need base.
- ii. Will maintain records to provide timely information when needed.
- iii. Will be responsible for maintaining coordination among VDMC members and other UCDMCs.

### **2.9.3 Advocacy Secretary**

- i. Will be in close contact with the line departments and institutions/ bodies.
- ii. Will be responsible for highlighting the village DRR needs at the UDMC level and advocate for resource allocation in the UC ADP.
- iii. Will raise the voices of the community for their rights to relevant line departments.
- iv. Will inform the communities on the measures/initiatives taken against the issues advocated for at various levels.

### **2.9.4 Logistic members**

- i. Will be responsible to maintain the facilities provided in safe places
- ii. Will be responsible for the safe keeping and maintenance of kits, if any.
- iii. Will be responsible to maintain and update the stock piling.
- iv. Will be responsible to arrange transportation for the communities in case of evacuation in time of emergency.

### **2.9.5 Early Warning System (EWS) & Communication members:**

- i. Will be responsible for sharing of information about emergency with the VDMC and other community members.
- ii. Will be in contact with government institutions particularly with DDMU and DPO/local police station.
- iii. Will be responsible for dissemination of prior information to the communities.
- iv. Will be in close contact with the up-stream communities in case of flood.
- v. Will be responsible for the overall info and communication of the VDMC.



- vi. Will communicate the complaints, suggestions, opinions and queries of the community to the chairperson and general secretary
- vii. Will disseminate information to the community at large on the performance of VDMC.
- viii. Will be responsible for collection/ assessment of relevant data and presentation to the VDMC.
- ix. Will derive information from government institutions and disseminate it in community during emergency/ disaster.
- x. Will disseminate warnings in times of emergency

### **2.9.6 Emergency Response members**

- i. To lead and facilitate the overall emergency response process.
- ii. In consultation with VDMC, selection of place to store emergency response toolkits and make it sure that all community members should have easy access to toolkits, if any.
- iii. Conduct meetings with elected representatives for the mitigation and precautionary measures of the prevailing hazards.
- iv. Share the meetings updates with VDMC.
- v. Participate in designing of emergency response planning in close coordination with VDMC.
- vi. To conduct weekly, monthly, quarterly meetings or when they are necessary to formulate planning & response activities.
- vii. Will be responsible for conduction of refresher training and mock drills for their respective teams.
- viii. Will be responsible for ensuring the availability of emergency response team to generate effective response activities

## **2.10 Police Department**

### **2.10.1 Before Disaster**

- i. “Each police station that may be used during any disaster or emergency”.
- ii. Always make sure that the main phone exchange and the wireless system works properly.

- iii. Develop DRR Plan and Contingency as well for the department.
- iv. Liaison with the PMD and DC office, support in dissemination of early warning to the vulnerable communities.
- v. Support DC office in the process of evacuation to safer places.

### **2.10.2 During Disaster**

- i. Implementation and ensuring law and order at a time of disaster in the affected area.
- ii. Ensure that over-loaded trucks are not coming/going to disaster affected areas.
- iii. Divert traffic where necessary to keep the emergency relief operations going smoothly.
- iv. Ensure security of humanitarian workers who perform duties after any disaster.
- v. Prevent harassment of women and children during any emergency.

### **2.10.3 After Disaster**

- i. Keep law & order and prevent obstruction on public places.
- ii. Aid and cooperate with other agencies for the prevention of destruction of public property by violence, fire or natural calamities.
- iii. Aid victims of road accidents.
- iv. Protect life and property of citizens.
- v. Preserve and promote public peace.

## METHODOLOGY

### 3.1 Research Design

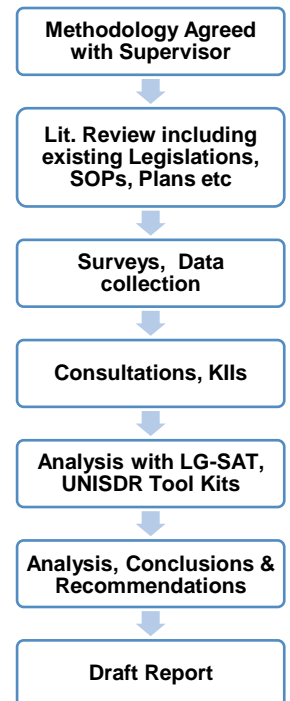
A mixed method approach was used in the study, detailed methodology was developed in consultation with the DRR Experts, senior students and faculty members. The critical analysis of both qualitative and quantitative information was kept in mind while designing the methodology for the study. Literature review was followed by interviews and consultations with relevant stakeholders. A checklist was prepared and discussed with Supervisor. Questionnaire was developed for various targeted stakeholders including those for the Focus Group Discussions (FGDs) with Communities.

### 3.2 Literature Study

The literature study and the theory behind the concept of a CBDRM is described as a theoretical framework for this specific research.

### 3.3 Data Collection and Analysis

A detailed methodology was developed in consultation with the DRR Experts, senior students and faculty members. The critical analysis of both qualitative and quantitative information was kept in mind while designing the methodology for the study. Literature review was followed by interviews and consultations with relevant stakeholders. A checklist was prepared and discussed with Supervisor. Questionnaire was developed for various targeted stakeholders including those for the Focus Group Discussions (FGDs) with Communities. Areas for community surveys, their perceptions about CBDRM in their respective localities were selected on the basis of the most prominent hazard the area was faced with and the hazardous built environment. Existing Coordination mechanisms among the Government institutions with a role in CBDRM were analyzed. The budgets of the Government were considered to identify the specific allocations for DRM as well as the prospects of upcoming finances for the purpose to reduce disaster risks. The “UNISDR Local Government Self- Assessment Tool (LG-SAT)” comprises of 10 essential parameters, which relate to the five priorities of the



“Hyogo Framework for Action 2005-2015” was used to analyses the CBDRM situation in Swat. Recommendations were rendered for enhancing the disaster resilience in Swat as well as to identify some urgent action areas for future government interventions.

### **3.4 Methodology of Study**

#### **3.4.1 Sampling Design and Sample Size for Survey**

The research used cluster sampling method to select the respondents for interviewing and discussion. Selection was based on flood prone villages & associated hazards. This was discussed with locals and based on historical record of disasters in Swat which was collected from PDMA record, UET EEC, PMD, DC office etc. This approach helped to gather necessary data for analysis with minimum cost and time. This study used semi-structured questionnaire (SSQ) as a tool for quantitative data collection.

The population for surveys was selected to represent a suitable sample on basis of natural-geographic & social indicators such as disability, sex, age, the built environment they belong to with special focus on the pattern of urbanization and associated risks especially physical vulnerabilities (housing patterns, living conditions etc.). The population of the selected clusters was divided into non-overlapping homogeneous groups of different strata. Respondents were selected following probability-sampling techniques.

#### **3.4.2 Sample Size Estimation**

The sample size was approximately to ensure the overall representation of the target groups as highlighted by district authorities. The selection of reasonable sample size having all the indicators is a complex one encountering diverse parameters. So, the sample size was selected considering a parameter that is one of the rarest events.

“The sample size had been estimated with the help of the statistical formula (WHO, 1991; Cochran, 1977) for test of a hypothesis of equality of two proportions. This formula is elaborated below:

$$n = \frac{p(1-p)}{(p_1-p_2)^2} \cdot (z_\alpha + z_\beta)^2 \cdot (def.t.)$$

Where

$$p = \frac{p(1 + p2)}{2}$$

- $p1$  = proportions to be estimated for the indicator of interest in baseline,
  - $p2$  = proportions to be estimated for the indicator of interest in end line,
  - $z_{\alpha}$  = standard normal value with 5% level of significance = 1.96,
  - $z_{beta}$  = standard normal value with 80% power = 1.28,
  - $p1 - p2$  = Admissible error difference between the estimates from baseline and end line and
- $deft$  = design effect for cluster sampling. =1.2

According to statistical formula, around 60 HHs are considered as bare minimum for statistical data analysis (Champion 1970:89). However, many researchers regard 50 as the minimum size to be considered. According to Fisher et al. (1991), sample size could also be found by considering different categories. If awareness is considered and the minimum percentage of people with awareness is allowed to be 5%, then the minimum sample size would be (Islam, M. Nurul).”

$$n = \frac{\text{MinimumNumberofSampleSize}}{\text{MinimumPercentageofaParameter}}$$

Again, this formula is used in the case of random sampling and in the case of more complex designs like cluster sampling, design effect needs to be considered. So, the formula would be

$$n = \frac{\text{MinimumNumberofSampleSize}}{\text{MinimumPercentageofaParameter}} \cdot \text{DesignEffect}$$

Considering all the techniques above, and in consultation with urban DRM Experts, a sample size of minimum 65 households was selected from each locality thus reaching a cumulative figure of 258 HHs. This sample size complemented two of our stated formulas and enabled us to select the samples in the stipulated time period.

### 3.4.3 Sample Design and Selection Process

The study conducted multi-stage cluster sampling where clusters were selected at first and secondly, the households were selected from those clusters. The clusters here refer to the distribution of villages and union councils. The study was designed to select a

sample size of around 65 households from each of the four clusters. The areas were identified in consultation with District Disaster Management Unit of Swat.

### 3.4.4 Questionnaire Design and Pre-test

Questionnaires for Community, Students and KIIs were developed. Data entry tools in excel were developed, and the data analyst was supervised while entering the data. After identifying and rectifying some minor errors, the data were then used for analysis. Software was also utilized for some graphical representations, the results of which are presented in the following sections.

## 3.5 Training and Data Collection

### 3.5.1 Data Collection from Primary Sources

- **Household Interview:** 200 households were interviewed.
- **Key Informant Interviews (KII):** 29 Key Informant Interviews were conducted.
- **Focus Group Discussions (FGD):** 6 Focused Group Discussions were held.

**Table 3.4 Data Collection**

<b>Source</b>	<b># and type</b>	<b>Total number of Participants</b>
Focus group discussions(FGDs)	6 FGDs with communities	58 persons
Key informant interviews	Around more than 5 key informants interviews with government officials at provincial and District level	5 persons
Survey	3 Union Councils	260
<b>Total</b>		<b>323</b>

**Table 3.5 Distribution of Survey Interviewees**

<b>Areas/ Union Council</b>	<b>Significant Hazard in the area</b>	<b>No of HHs considered</b>
Madyan	Fires / Flash Floods/ Epidemics/ Earth Quake/ Land Sliding	86
Behrian	Fires / Flash Floods/ Epidemics/ Earth Quake/ Land Sliding	86
Beshigram	Flash Floods/ Epidemics/ Earth Quake/ Land Sliding/Strong Winds/ Fire	86
<b>Total</b>		<b>258</b>





### **3.6 Data Processing and Analysis**

The research applied on both qualitative and quantitative techniques. At the first stage all the required tools and techniques were developed based on analyzing the secondary information collected at the earlier stage of the research. The qualitative methods were adopted for the purpose to validate the field data collected. Key informant interviews, door to door interview and Focus group discussions were also conducted with the key stakeholders in the targeted area.

SPSS was also effectively utilized for the data analysis and graphics development. The quantitative data was fed in SPSS and processed accordingly.



## STUDY FINDINGS & CONCLUSIONS

### 4.1 Study Demographics

#### 4.1.1 Gender Segregation of Respondents

Data analysis shows that 59.62 (60 percent) of the respondents to this study were from male population while remaining 40.38 (40 percent) respondents were female.

#### Gender Segregation of Respondents

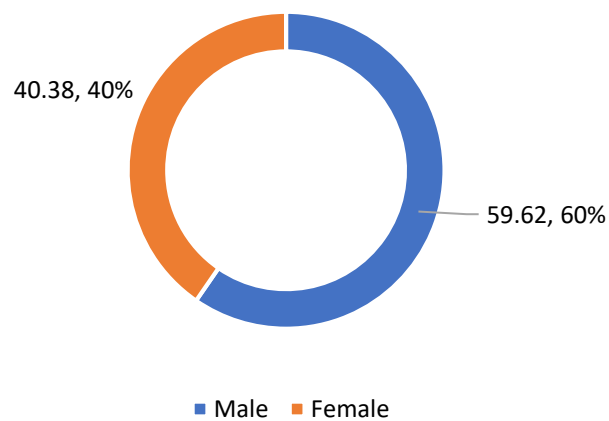
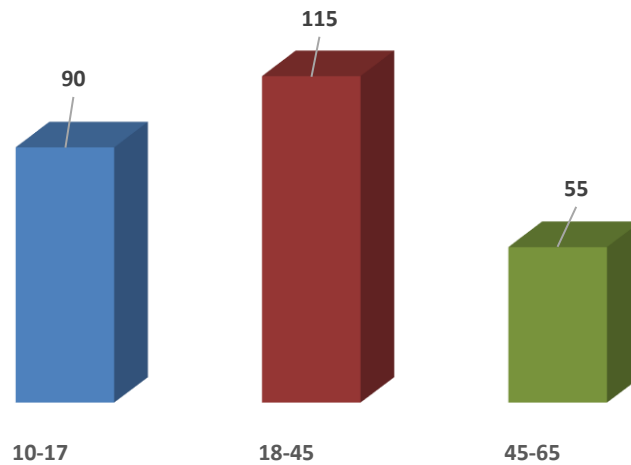


Figure 4.2.1 Gender Segregation of Respondents

#### 4.1.2 Survey Respondents Age Group

Most of the respondents were from age group 18-45 years (44 percent) followed by 10-17 years (35 percent) and 45-65 years (21 percent). Researcher tried to cover old age respondents for historical/ background knowledge and children under 18 for inclusiveness purposes.

### Survey Respondents Age Group



**Figure 4.3.2 Survey Respondents Age Group**

#### 4.1.3 Education background of the respondents

Researcher tried to include respondents with different education background to cover participants’ experience at a wider level.

**Table 4.6 Education background of the respondents**

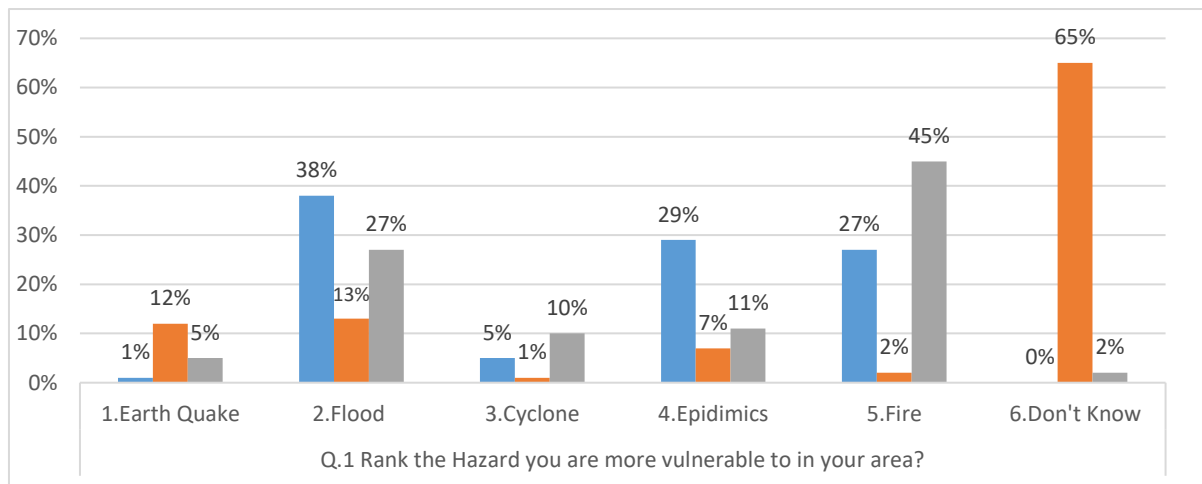
Respondents Educational Background	Male	Female
Illiterate	5	7
Under Primary	11	15
Primary	23	31
Middle	19	23
Secondary School	33	20
Higher Secondary	24	5
Graduate	22	4
Post Graduate or Above	18	0

It is important to note that all the respondents were from rural areas of 3 union councils of district Swat.

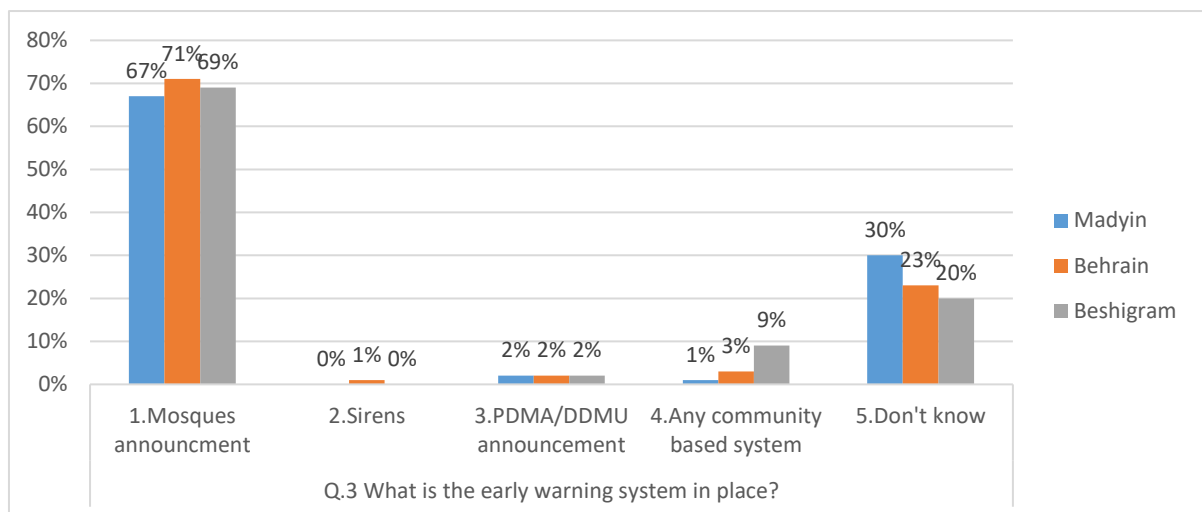
#### 4.2 Survey Findings

The survey findings have been thought-provoking but not unanticipated. The perceptions in most of the cases and for almost questions have been almost the same.

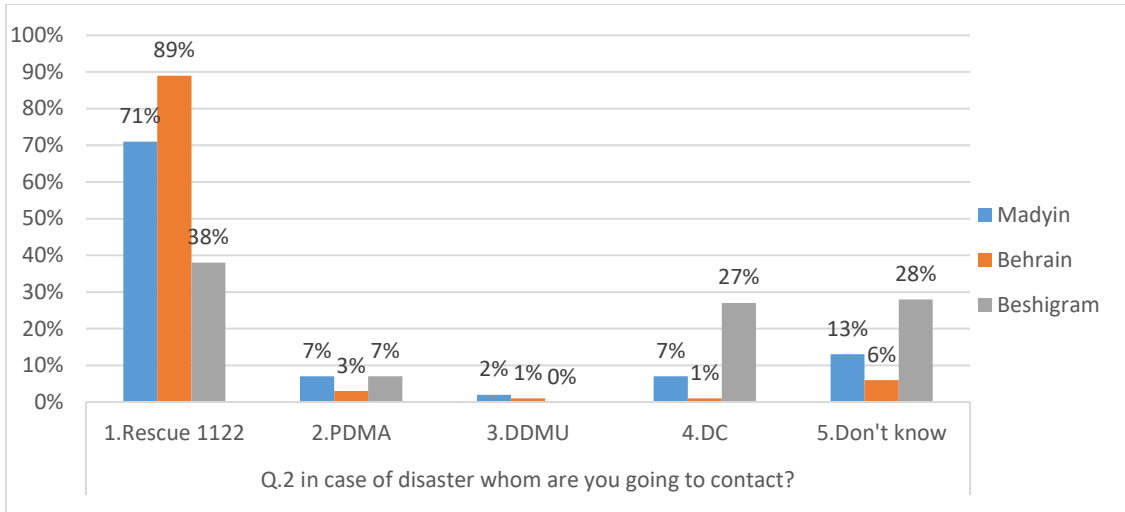
Below are the graphical representations of the responses of the four different communities of urban areas of Swat to the 11 questions asked during the survey.



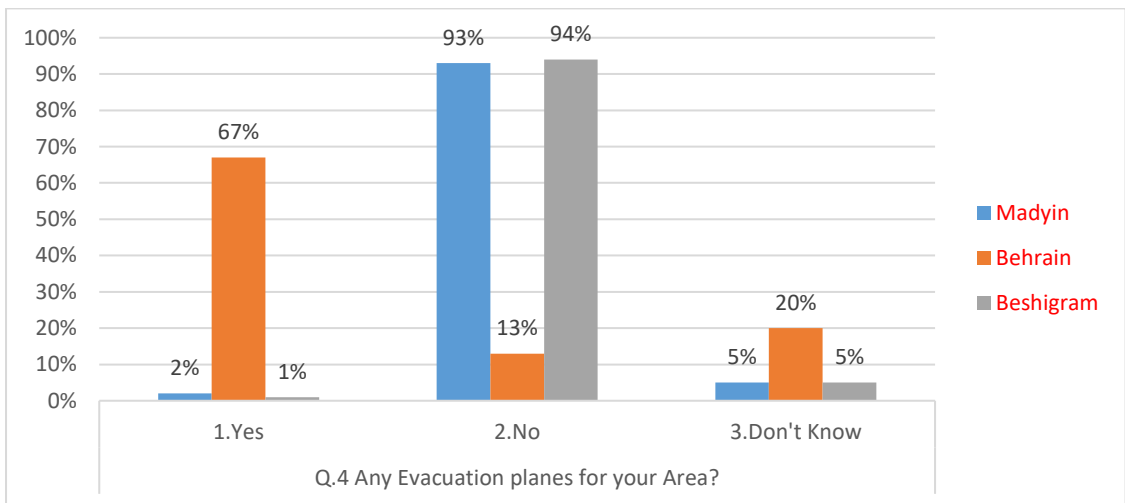
**Figure 4.2.4 Rank the Hazard you are more vulnerable to in your area?**



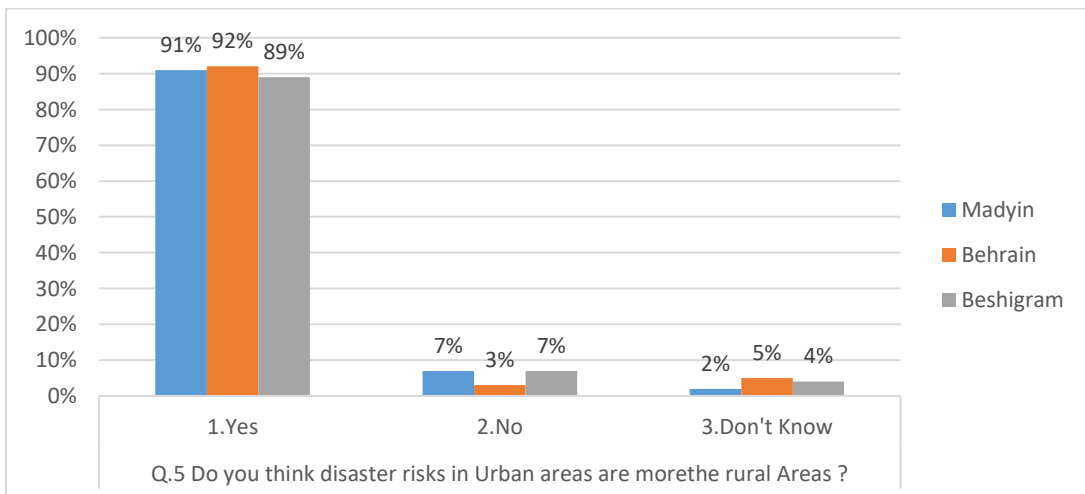
**Figure 4.2.2 What is the early warning system in place?**



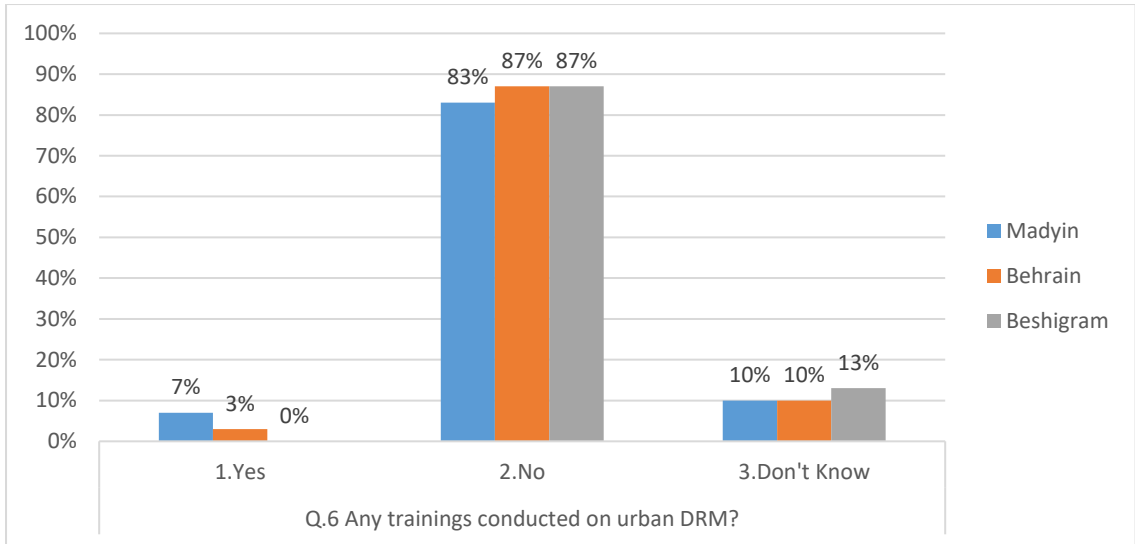
**Figure 4.2.3 In case of disaster whom are you going to contact?**



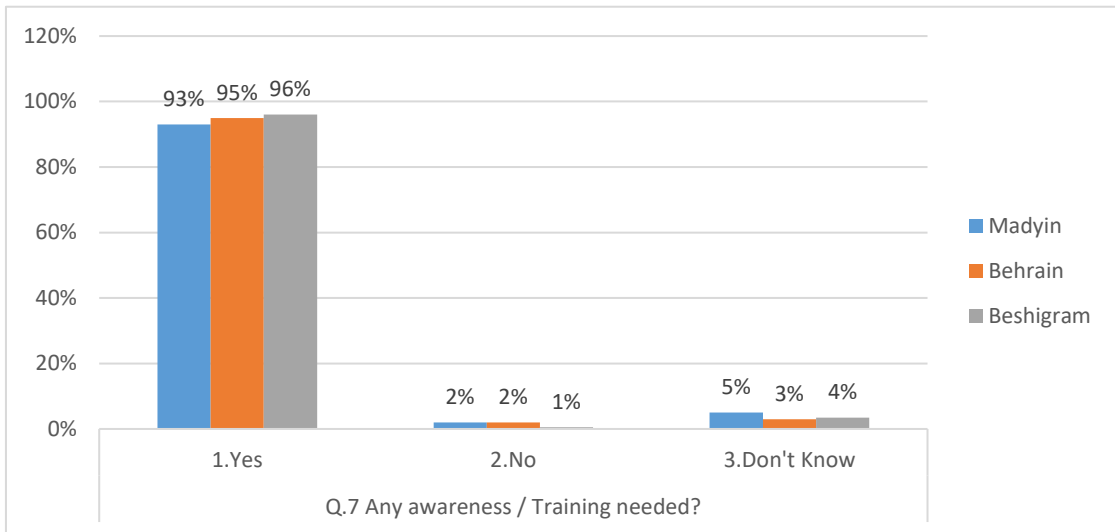
**Figure 4.2.4 Any Evacuation Planes for your Area?**



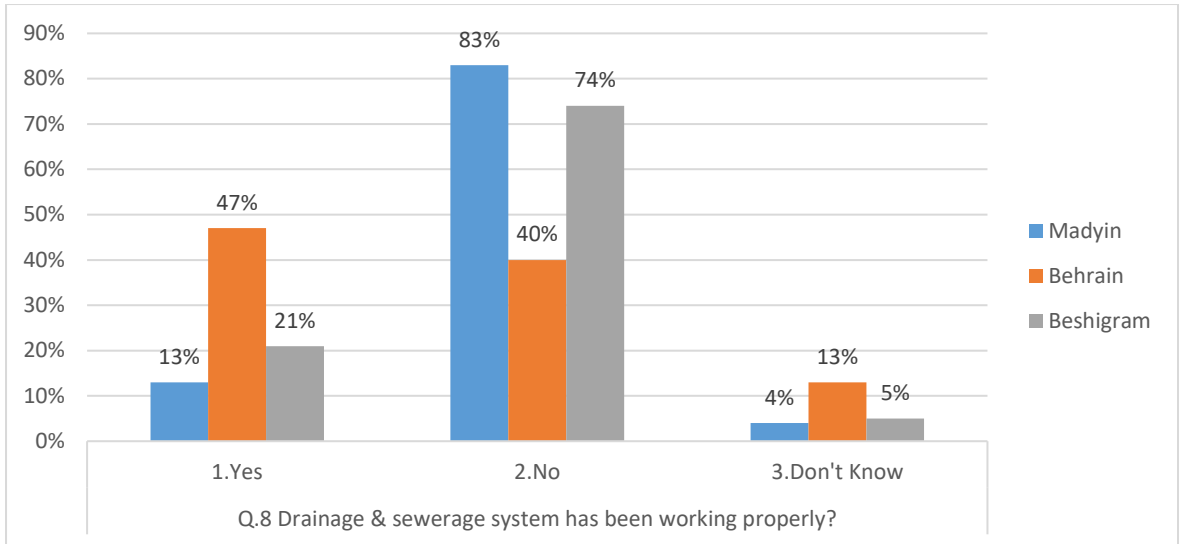
**Figure 4.2.5 Do you think disaster risks in Urban areas are more the rural Areas?**



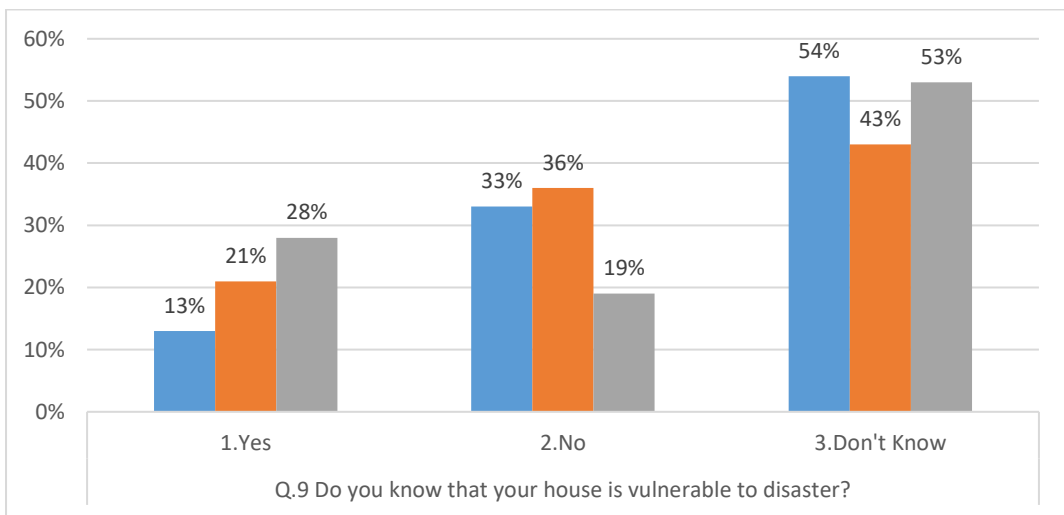
**Figure 4.2.6 Any trainings conducted on urban DRM?**



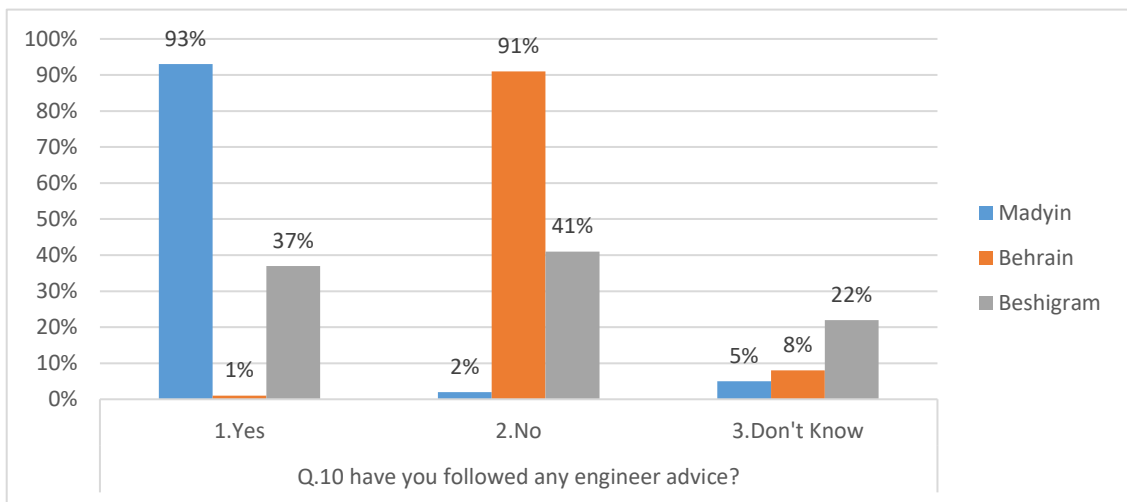
**Figure 4.2.7 Any awareness / Training needed?**



**Figure 4.2.8 Drainage % sewerage system has been working properly?**



**Figure 4.2.9 Do you know that your house is vulnerable to disaster?**



**Figure 4.2.10 Have you followed any engineer advice?**

Few interesting points to note are that very few (max of 12 %) consider earthquake as hazard while maximum number of respondents termed flood as the major hazard while this is not the case and there is severe earthquake risk to the city. Most of the respondent in Mingora, Madyan and Behrain area said it's Fire which is the most critical hazard they are faced with while in Beshigram it's the flood. The trend requires urgent attention to sensitize the communities on earthquake risk. This may be attributed to the fact that rural areas is very congested and in below villages on river side are flooding happens almost every year and sometime several times a year.

Most of respondents opted for R1122 in case they have to call any authority during disaster. This may be attributed to the quick response of R1122 but also indicate the lack of level of awareness to differentiate between an emergency and disaster. This also indicates that Fire brigade has been weaker as compared to R1122 where fire is the main hazard most of respondents opted for R1122. Astonishing and critical is the response in Madyan area where 58 % responded that they don't know as whom to be contacted in case of disaster. Not more than 2 % in any area responded that they would be contacting DDMU in case of any disaster situation.

In a question where they were asked about early warning system, majority of around 70 % respondent relied on announcements from the mosques. A significant number, around 20-30 in each locality didn't know about any system in place for EW. Very few (1-2%) said they look for announcements from PDMA or DDMU.

While response regarding advice from engineers is mixed it was also found that it didn't referred to proper designing and above all the capacity of significant engineers in understanding of current building codes is a question. A paradoxical situation can be noted where most of respondents in Swat don't know whether their house is vulnerable to disasters or not? The less awareness about house safety and safer construction standards can be understood, the less confidence on engineers whom they contacted presumably for 'informal advice' remains unclear. This was substantiated by another response where around 93 per cent of respondents even in Behrian area said no reinforcements have been used in foundations and walls in the house. An interesting comparison is that the same number of people in same area responded to an earlier question that an engineer designed their house. This also leads us to infer that engineers usually think that Swat is a non-seismic zone and load bearing masonry with no reinforcement will suffice.

Majority of responders said that urban DRM is more critical to address than rural. Majority responded that no trainings on urban DRM has been ever received or observed to be conducted in areas. Similarly, around 95% agreed that trainings and awareness is needed.

The main findings from the LGSAT for Swat reflected that the scoring for each of the “essential was at an average of Grade 2, this implies that Swat's preparedness at the local level is incomplete and there are signs of improvements but limited commitment and capacities. Local organizations are aware of disaster risks and climate change following the floods of 2010”. The District Government has official mandate as per the NDM Act as amended by Khyber Pakhtunkhwa 2012 and LG Act 2013. Contingency plans do not exist for Swat except a Flood contingency plan which is prepared by DDMU/PDMA in pre-monsoon period. No MHVCRA and mapping have been carried out at the city level. A MHVRA is now planned by NDMA as well as PDMA for Swat. Early warning is missing and master planning for the city by UPU is in progress of initiation.



## **CONCLUSION AND RECOMMENDATIONS**

The study concludes that there is lack of clarity on Roles & Responsibilities among stakeholders in the context of CBDRM in Swat at all levels which is essential and requires an urgent response. The activity need to be initiated by the DDMU in the leadership of the Chairperson as District Nazim. Humanitarian organizations must come forward to play their role in supporting the Government in this regard. Technical studies and researches including a comprehensive MHVRA and in-depth consultations with all the stakeholders is the key to success. Resources mapping for the exercise shall be immediately initiated by the DDMU. Secondly linkages among the stakeholders i.e. PDMA with DDMU, District Government Administrations, Planning & development Department, Line Departments, Civil Defense, Academia and Humanitarian organizations are important to make the DRR a priority. Improved coordination will speed up the process of DRM planning, mainstreaming DRR into Development planning, framing of bye laws in the context of DRM, enforcement of building codes and regulations etc. Similarly, the DDMU needs to be linked to all the stakeholders and to play a lead role in the DRM planning. Linkage between organizations with overlapping mandates like Fire Brigade & R1122 needs closer collaboration to avoid duplication of efforts in emergencies.

Re-enforcement and functionalization of DDMU is the key to success. The opportunity of the new leadership of the DDMU who is at the same time the head of the City District Government- an elected representative of the communities is a mix that can perform outstandingly well. The provincial Government at the same time is appreciative and receptive of new ideas and has no political differences with the City Government Administration; the time is ripe to vigorously functionalize the DDMU. The humanitarian organizations through the secondment/ hiring of DRR technical experts may fill the gap of technical capacities at the DDMU level for advocacy, resource mapping and planning as well as identifying points of intervention to ensure funding for DRR legislation at district level and financing of DRR schemes.

Technical Working group (TWG) on DRM in Swat may be notified by DDMU or PDMA to steer the process of urban DRR planning for Swat. The TWG can start with the linkages development to ensure the Urban Planning Unit process being initiated by

UPU for Swat fully includes the DRR perspectives. Similarly, the DRM Plan fully recognizes the plans of the UPU to avoid any inconsistency. The TWG may include relevant departments, TMAs, District Government, academia (University of Swat, MCE Risalpur, DRR experts and professionals who can volunteer for the cause, technical organizations like Asian Disaster Preparedness Centre, representatives from Military (11 Corps), R1122 amongst others. Such think tanks open to volunteers and professionals are providing technical advice and render recommendations to authorities. It may also facilitate policy dialogues between Swat and other cities and national counterparts.

Capacity Building of the elected local Government representatives at neighborhood, Town, communities and District level on DRR/M is extremely important. They not only represent communities, have say in the budget formulation of the District Government but have an additional benefit to be composed of all important segments of society like the female members, farmers, minorities etc. They can be used as the ‘Change Agents’ to bring down the DRR planning process to the grass root level. The department of Local Government and the Local Governance School at Swat with an excellent training, boarding and lodging facilities recently inaugurated by CM KP can be utilized to train them. PDMA may take the lead to initiate this and the Academia (CDPM, UOP), R1122, UPU, NHN/ NGOs and INGOs can volunteer to support the process. The capacity building shall include shake table demonstrations at EEC-UET for greater sensitization and simulation drill and mock exercises at field level.

Linking DRM Planning & Urban Planning is essential for Swat right from the initiation stage to the later stages of implementation to avoid overlapping, duplication of efforts and to ensure DRM is the key point while District Planning. It is also recommended that mechanisms must be evolved by the district Government to ensure the plans and DRM plans are enforced and followed as well. The issues of Governance in enforcements need to be removed if success is to be met in this sphere. The plans shall not be shelved like the earlier three master plans of 1950s, 1986/87, 1990s for Swat.

DRM Literacy & Awareness Campaigns involving both Public & Private Academia & Media is much important step needs to be adopted to ensure everyone in Swat is aware of the urban hazards, in a positions to understand the context and can at-least know whom to be contacted if there is one or how to tackle it at personal level (for instance a

domestic fire or be inside a safe place in a cyclone, early warning or to avoid shopping bags to avoid clogging of drainage system). Getting the Minimum information and the key message to every individual of Swat can save lives. The Academia both private and public needs to be involved to volunteer for the cause to launch the 'Making Cities Resilient Campaign'. The social networking websites WhatsApp, face-book, twitter are powerful tools to help raise the awareness. The Media role is much important in making this campaign a cost effective and far reaching one. The FM radio at the disposal of DC Swat and the one at Department of Information KP can be utilized to support this venture. Creating of small android apps by the students of IT universities will also be helpful. The role of religious scholars and Ulama's also needs to be underscored to create awareness about DRM and various sessions with them to signify the importance of DRR and their important role to create awareness to save lives will be imperative.

Institutionalization of DRR is required to make the process sustainable. Sustainability is always difficult but as one beautifully said there seem to be no 'wonderful' practices without substantial impact. There is thus a dire need to institutionalize Urban DRR to get it done. And getting it to the micro level will ensure its sustainability. Similarly, ensuring that children are socialized to think in DRR terms since childhood. The School guides, Students scouts and national cadet Course (NCC) are important activities which have been out partially or completely of practice since years and these voluntary public service groups have dwindled to near extinction. The same needs to revived and reinvigorated and the students be provided 10 marks as it used to be for NCC for attending the training. The training needs to be designed with not only considering the civil defense aspects but the overall disaster management and risk reduction concepts. This will ensure institutionalization of the DRM especially the SBDRM.

Linking of CBDRM with SBDRM becomes critical in urban context. The schools are comparatively more vulnerable in urban areas than in rural. The communities must be cognizant of this fact to ensure their children are safe. They must know that terrorism is not the only disaster, which can take lives of the precious children, and that earthquakes, fires and roof collapses are as catastrophic as firing by terrorists. Key elements of DRR should be incorporated in school curricula. Given that it takes time to do so (design and approval of the curriculum, development of new text books and their publication) work on it should start on an urgent basis. District Education officials are recommended to be involved and trained with necessary skills to enable them to prepare

School Based Disaster Risk Management Plans (SBDRM-Plans) for each school in the urban areas of Swat.

Enforcement of Building Codes is a point everyone agrees on when urban DRM is discussed. “The most recent building regulations available for Swat date from 1985 and apply to the “urban areas of the North-West Frontier Province” (PUDB, 1985). These bylaws have essentially no requirements for either structural or earthquake design”. Since 2007 when the building codes do exist, their enforcement remains a question mark, especially in commercial areas and the unplanned expansion along the outskirts of the city, and the slum areas. There can be no alternate to the enforcement of Building codes and byelaws in urban areas if DRR is the intention. There is a dire need to build capacity for building code implementation i.e. to train engineers, Govt officers (TMA & PDA Building Control officials especially) enforcing officers and architects. Without support to professional development of the engineering community the process will be incomplete. Development of fragility data and retrofit schemes for resilience-critical urban building types is the next stride, which can be part of the codes enforcements. The TMAs, for private housing shall promulgate existing guidelines for earthquake-resistant non-engineered construction. A lot of work has been done by UET EEC, University of Swat, ERRA, UNHABITAT etc.

A dedicated working group or preferably a Task Force on Building Codes is extremely important to be notified by Provincial Government/ PDMA. Advocacy with the District Government to make it functional and effective forum with its meetings headed by the Chairperson of DDMU (District Nazim). The working group may be placed University of Swat as its Secretariat. The membership shall include the P&DD, Pakistan Engineering Council, Technical organizations (like ADPC, NESPAK), representative of Chamber of Commerce, insurance companies amongst others. This will not only create linkages among various stakeholders but will provide a forum for advice and advocacy with Provincial Government and Members of Parliaments for legislations and enforcement. The task force shall take up the case of Swat as a pilot and shall not only work on enforcement of Pakistan Building Code in urban areas but may also extend its role to the rural areas. The Rural housing codes and standards as prepared by ERRA and approved after earthquake may be utilized for rural areas where poverty is rampant. The forum/ task force may also advice on and advocate for the Government funding for strengthening of vulnerable schools, hospitals, offices.

Preservation of Eco Systems like forestation and plantations that protects against flash flooding, help to remediate air pollution, avoidance of non-recyclable materials like shopping bags etc. The recent initiative taken by KP Government in form of “Billion Tree Tsunami” Project is a step in the direction of DRR.

There is a dire need to train the artisans, engineers, local Govt. representatives, TMAs and the communities on vernacular construction guidelines as developed after 2005 earthquakes. The available material can be reviewed and revised for Swat by UET/ engineers followed by extensive trainings.

An urban &rural earthquake scenario study for Swat that a projects specific loss from specific hypothetical event and lay down options for recovery is suggested to be carried out. The scenario study should be extended to establish objectives from coordinated recovery and mitigation planning. The study can lead to more insight into developing consensus protocols for post-earthquake safety assessment and aid recovery.

## **Recommendations:**

Following are the recommendations based on the data analysis of the research study;

- Clarity for the roles & responsibilities of all the stakeholders in the context of DRM in Swat is essential and requires an urgent response.
- DRM Literacy & Awareness Campaigns involving both Public & Private Academia & Media is much important step needs to be adopted to ensure everyone in Swat.
- Strengthening Linkages between communities and line departments i.e. PDMA DDMU, District Government Administrations, Planning & development Department, Civil Defense, Academia and media, Humanitarian organizations are important to make the DRR a priority.
- Local communities should be formed in proper structure and their capacities should also be enhanced through different trainings and providing the DRR Kits.
- Resources mapping for the exercise shall be immediately initiated by the DDMU at District level.
- Capacity Building of the elected local Government representatives at neighbor-hood, Town and District level on DRR/M is urgently required.
- During planning process, voices of the vulnerable groups should be incorporated.
- Planning is essential for Swat right from the initiation stage to the later stages of implementation to avoid overlapping, duplication of efforts and to ensure DRM is the key point while District Planning.
- The Media role is much important in making this campaign a cost effective and far reaching one. The FM radio at the disposal of DC Swat and the one at Department of Information KP can be utilized to support this venture.
- Linking of CBDRM with SBDRM becomes critical in urban context. The schools are comparatively more vulnerable in urban areas than in rural.
- Capacity should be enhanced of the local communities through trainings and providing emergency kits.
- Awareness at schools and community level should be conducted.
- The role of religious scholars and Ulama's also needs to be underscored to create awareness about DRM and various sessions with them to signify the

importance of DRR and their important role to create awareness to save lives will be imperative.

- Curriculum needs to be revived and reinvigorated and the students be provided 10 marks as it used to be for NCC for attending the training. The training needs to be designed with not only considering the civil defense aspects but the overall disaster management and risk reduction concepts. This will ensure institutionalization of the DRM especially the SBDRM.
- The communities must be cognizant of this fact to ensure their children are safe. They must know that terrorism is not the only disaster, which can take lives of the precious children, and that earthquakes, fires and roof collapses are as catastrophic as firing by terrorists.
- The TMAs, for private housing shall promulgate existing guidelines for earthquake-resistant non-engineered construction. A lot of work has been done by UET EEC, University of Swat, ERRRA, UNHABITAT etc.
- Preservation of Eco Systems like forestation and plantations that protects against flash flooding, must be enforced to remediate air pollution, avoidance of non-recyclable materials like shopping bags etc.

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## **Appendices**

- i. List of Consultations/ Interviews
- ii. Questionnaires
- iii. Terms & Reference of the Study
- iv. Brief Profile of the Consultant
- v. Few snapshots

## **List of Consultations/ Interviews**

Name	Designation & Department/ Org
Mr.Aurenzeb Khan	Lecturer (Peshawar University)
Mr. Saeed Khan	Lecturer (Peshawar University)
Mr. Kaleem Ullah	Student (Peshawar University)
Arslan Khan	Lecturer Govt Degree College Swat.
Saleem Ullah,	SHO. Police Station, Mangora
Faisal Khan	TMA, Swat
Misbah Khan	Lecturer Gov. Degree College Swat.
Shmus Deen Khan	School Teacher
Saleh Muhammad Afreedi	Assistant Commissioner, Swat
MALIK SAFER KHAN AFREEDI	NADRA OFFICER
Wahee Khn Bungush	NGO (Swat Welfare Organization)
Mrs. Sabhia Saleem	NGO (Swat Welfare Organization)
Malik Saad Khan Advocate	Advocate
Jabbar Khan	Social Worker (Swat)
Salamut Khan	Social Worker (Swat)
Sarfaraz Khan	Social Worker(Shangla)

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Adeel Khan Pasha	Social Worker(Shangla)
Aqeel Khan Pasha	Social Worker (Malum Jabba)
Muhammad Wasiq	Social Worker (Malum Jabba)
Waheed Khan Shanwari	School Teacher
Shahzad Khan	Local Businessman
Munawar Ahmad	Local Businessman
Slaeh Muhammad	TMA, Swat
Muhammad Sabeen	Writer
Nishat Azim	Electrical Engineer.
Shahbaz Afridi	NGO (Swat Welfare Organization)
Shamus Ud Deen	School Teacher
Anwar Ahmad	School Teacher
Dr.Nadeem Mahmood	Medical Officer
Dr Jawaira Rasheed	Medical Officer
Dr Kashf Ramey	Medical Officer

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سوالنامہ

اطلاع دہندہ کی بنیادی معلومات

نام \_\_\_\_\_ عمر \_\_\_\_\_

ضلع \_\_\_\_\_ جنس \_\_\_\_\_

تعلیم \_\_\_\_\_ پیشہ \_\_\_\_\_

## Questionnaire

### **Basic Information of the Respondent**

Name: \_\_\_\_\_ Age \_\_\_\_\_ District: \_\_\_\_\_

Sex: \_\_\_\_\_ Education: \_\_\_\_\_

Occupation: \_\_\_\_\_

### **“The frequency of disasters is increasing in our region.”**

- i. Strongly agree
- ii. Moderately agree
- iii. Neutral
- iv. Moderately disagree
- v. completely disagree

### **Q.1. Rank the hazard to which you are more vulnerable in your area?**

- i. Earth Quake
- ii. Flood
- iii. Cyclone
- iv. Land sliding
- v. Epidemics (dengue etc.)
- vi. Fire
- vii. All natural hazards

### **Q. 2. Is Early Warning System in place? Yes No (If Yes then)**

- i. Mosque announcement

- ii. Local community
- iii. Sirens
- iv. Police
- v. PDMA
- vi. DDMU
- vii. DC Office
- viii. On all public places.

**Q.3. In case of disaster, whom you are going to contact?**

- i. Rescue 1122
- ii. Fire Brigade/ TMA
- iii. Civil Defense
- iv. DDMU
- v. PDMA
- vi. DC Office
- vii. Local Government Administration

**Q. 4. What are the things you think you need to do at household level to be better prepared in case a disaster occurs in the community? (You can tick more than one item)**

- i. Have valuable documents and items easily available
- ii. Move items to a safe place in advance
- iii. Place items on high shelves
- iv. Keep a store of emergency items during monsoon
- v. Attain disaster knowledge
- vi. Don't know
- vii. Other, specify\_\_\_\_\_

**Q.5. Which are the things you should know to be better prepared in case a disaster might occur in the community? (You can tick more than one items)**

- i. Where to get correct warning information
- ii. The evacuation routes
- iii. Where the safe places are

- iv. Where to go for help
- v. Don't know

**Q.6. What type of challenges vulnerable groups faced.**

Their issues were not translated into actions

- i. Family members were not involved
- ii. Stakeholders were not aware of their needs

**Q. 7. Any evacuation plan exists in your area?**

- i. Yes
- ii. No
- iii. Don't Know

**Q.8. Do you think disaster risk in your area (Swat) is more than the rest of districts?**

- i. Yes
- ii. No
- iii. Don't Know

**Q.9. Any Training Conducted on Disaster Risk Reduction/Management**

- i. Yes
- ii. No
- iii. Don't Know

**Q.10. who will provide this training, by the government or by NGO?**

- i. Yes
- ii. No
- iii. Don't Know

**Q. 11. Do know that your house is safe from natural hazards.**

- i. Yes
- ii. No
- iii. Don't Know



**Q. 12. If yes, what type of measures you have taken to keep your house safe?**

- i. Proper design
- ii. Better material
- iii. It is on safe place
- iv. Followed building codes
- v. Retrofitting
- vi. Raised platform
- vii. Safety wall

**Q. 13. Have you followed any engineering advice while building your house (earth quake resilient structure)?**

- i. Yes
- ii. No
- iii. Don't know

**Q. 14. Any reinforcement in your house foundation/ wall?**

- i. Yes
- ii. No
- iii. Don't Know

**Q. 15. Do you know during emergency how to evacuate to safer areas?**

- i. Yes
- ii. No
- iii. Don't Know

**Q. 16. What are the practices normally community adopt after disaster occur (best practices any three)?**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**Thanks for providing the information. If you have any question regarding this research so you can ask please.**