ANALYSIS OF DRR IN COMMUNITIES: A CASE STUDY OF MIRPUR, AJK

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Abstract

Disaster risk reduction strategies are essential to effective disaster management. The aim of the research study is to explore the nationwide efforts to build disaster resistant infrastructure and resilient communities in AJK, the prevailing techniques, and challenges to cope with the persistently occurring disasters in AJK and the hurdles that are impeding factors in development and implementation of emergency preparedness in AJK. The three research questions posed are addressed through qualitative data analysis. For qualitative analysis, nine interviews were conducted from multiple stakeholders and two focus group discussions were held with the local citizens of Mirpur, AJK. The broader themes and subthemes are identified. There are structural and non-structural measures which are taken to build the resilience and resistance infrastructure which are resistance construction, building codes, structural modifications, community shelters whereas the non-structural measures are education and training and the warning system. The organisation system has provided the legal and institutional framework and ensures the resource availability to carry out the response activities. In this regard, Emergency operation centre has been made alongside the warning system and the provision of relief activities to cope with the persistently occurring disasters. Similarly, the challenges faced in coping with disasters are posed by the system which is lack of financial resources, lack of trainings and lack of coordination which has great impact on the capacity of the institutions. Similarly, there are some loopholes in the institutional arrangement and setup such as non-revision of policies and weak implementation. The impeding factors are the systemic halts whereas the organisation and planning also pose obstacles in the form of outdated plans and low investment in mitigation. The research revealed that the notion of disaster risk reduction is not good in Pakistan, particularly AJK. Recommendations are made to overcome the issues and challenges posed and to cope with the persistently occurring disasters.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The purpose of this research is to study the practices for Disaster Risk Reduction (DRR) in Pakistan at the community level. In this chapter, background of the study is provided and in context of Pakistan followed by problem statement objectives and the research questions. The methodology and the scope of the study is also discussed.

1.2 Background of the Study

In the last few decades, there is surge in natural disasters which has increased not only the human fatalities but has also increased the social and economic loss (Cutter, Boruff, & Shirley, 2003; Mal, Singh, Huggel, & Grover, 2018). Alongside other crisis, governments must face natural disasters as one form of crisis as the natural disasters such as tsunamis, volcanoes, cyclones and hurricane, earthquakes etc poses countless economic loss. These natural disasters may pose severe political challenges to governments, even though they are inescapable and have no political face (Cutter, 2012; Rafiq & Blaschke, 2012; Yoon, 2012). General popular support of government and political system legitimacy may be undermining or threatened because of natural disasters. Although the government legitimacy crisis has no direct association with natural calamities, yet political order have to confront legitimacy crisis due to people's perception of them as being responsible for disaster management such as preparedness, mitigation, emergency response and recovery during and after the calamity (Cutter, 2012; Cutter et al., 2008; Rafiq & Blaschke, 2012; Shirley, Boruff, & Cutter, 2012). Its not possible for governments to completely prevent the damage and fatalities triggered by disasters and neither people expect such miracles nor blame government for unfortunate luck, however, people may have high expectations with their governments to respond to adversities in an responsible, accountable and effective way. Thus the political environment and political system entrenched in post-disaster crisis is highly affected and influenced by the up to par government response to a disaster (Cohen & Werker, 2008; Walker & Cooper, 2011). It is necessary to simplify the aims of how and what is the need of involvement of government and other organized groups in disaster risk reduction (DRR) to explain the relation amongst political economy and DRR. Various intricate arguments support the idea of managing risk privately without the immediate help from government, for instance individual's decision about location for living and selection for buying insurance products. So, the issues related to political economy and policy concerns may not rise if the individuals manage the risk entirely by

themselves solely via market mechanisms. Nonetheless, the situation in reality is completely different as evident from past experiences of complete market failures and synchronization issues in regards to disaster risk reduction (Mercer, Kelman, Lloyd, & Suchet-Pearson, 2008).

Natural disasters are obstacle in economic growth and damages the capital stock thus affecting the economic activity and macro-economy (Cavallo & Noy, 2010; McEntire, 2004). The disastrous consequences are not only reflected by economic activity or growth rate which is represented and measured ad GDP but also affects other sectors like environmental surroundings, politics, health, and human population (Albala-Bertrand 1993). Natural calamities are not compelled by polity, but they happen in that political space and does not have political immunity. Although human activities in a specific region or fault line areas cannot directly influence the rainfall patterns or seismic activity, yet the disaster mitigation, prevention, response and relief and magnitude of damages may be affected by the motivations of individuals and stakeholders. And it's no way provocative. For decades, political aspects associated with disasters are appreciated by the available literature on disaster management particularly mitigation and response (Musa et al., 2018). Moreover, many researchers scrutinized the correlation between natural calamities and electoral voting process (Cole, Healy, & Werker, 2012), rationality of macro economy (Cavallo & Noy, 2010), social conflict and inequality based on regions, ethnicity and class system (Pelling & Dill, 2010), regimes breakdown and disintegration along with varied societal policies (Albala-Bertrand 1993, 182-201), political turmoil, political subduing and social chaos (Drury & Olson, 1998), vicious civil unrest (Nel & Righarts, 2008), conflicts within a state (Brancati, 2007), and inter-states diplomatic ties (Kelman, 2006). These research studies, without any doubt, have contributed to overall understating of relevance of natural calamities with politics and economy. Nevertheless, despite vast studies, issues of political economy of disasters have remained offstage such as how and why governments respond differently to disasters and how the political legitimacy is affected by such responses in a country.

In this wake, this proposed study would analyzing the effects of enduring nationwide efforts that have been taken to ensure disaster resistant infrastructure and resilient communities against natural hazards in case of Mirpur, AJ&K, Pakistan. Further, it would analyze critical challenges and prevailing techniques to cope with persistently occurring disasters faced by the communities of AJK, Pakistan. Further, it will find out the possible hurdles that are impeding factors in development and implementation of emergency preparedness in AJK.

1.3 Pakistan's Context

Pakistan is located in South Asian region, with China on its north, Afghanistan on North West, Iran on western border, India on eastern border and Arabian Sea on south. In terms of geography, Pakistan latitude is 24° to 37° North and longitude is 62° to 75° East (Khan, 2013). Total area of Pakistan is 796,095 km^2 approximately. Pakistan is divided into five provinces (Punjab, Sindh, Khyber Pakhtunkhwa, Baluchistan, and Gilgit-Baltistan), a federal Capital territory, FATA (Federally Administered Tribal Areas) and Azad Jammu & Kashmir Territory (AJK). All the five provinces are categorized into divisions which are sub-divided into districts, preferably smaller administrative units.

In terms of physical geography, Pakistan consisted of mountains, plateau and plains. On the northern and western borders, the country has huge range of mountains. Approximately, Sixty percent of area of country is covered with mountains and home to world renowned mountain ranges such as Himalayas, Karakorum and Hindu Kush. Due to its geographic location and altitudes, Pakistan is extremely vulnerable to natural disasters and climate change. The plains of Pakistan are home to about seventy percent of population and are highly vulnerable due to frequent flooding annually. Alongside, the country is located right above the collision points of tectonic plates, due to which Pakistan has faced numerous massive earthquakes. For instance, deadly earthquakes of 2005 and 2013 with supersonic speeds caused colossal damage and are illustrations of the vulnerability of country for seismic activity. Not only the occurrence of hydro-metrological disasters have increased due to global climate change, but it has also increased the intensity as well as unpredictability of seasonal monsoon patterns owing to the increased food, energy and water security threats. Moreover, climate change is causing glaciers to melt in north of country, heat waves along coastal area and plains, gushing of tropical cyclones, variable rain patterns, concentrated rainfall and floods, droughts and famine in plains and deserts, are tremendously affecting the agriculture, livestock industry, forests (including both flora and fauna), health sector, marine environment and overall ecosystem.

In low-income countries like Pakistan, interventions to reduce disaster risk are not given due importance (Nasim et al., 2018). The reason for this distress condition is ascribed to cost and benefit imbalance where budget is diverted largely to response and relief efforts rather than mitigation or risk reduction measures (Cutter et al., 2008). Due to this, gaps in skill building and capacity issues enlarges and make it impossible for disaster management authorities to operationalize risk reduction efforts (Ainuddin, Aldrich, Routray, Ainuddin, & Achkazai, 2013). Global Climate Risk Index in 2014 ranked the countries which were affected by extreme

weathers and disasters in 2012 and amongst those countries, Pakistan was placed at number three (Kreft, Eckstein, Junghans, Kerestan, & Hagen, 2014). Comparing Pakistan's 2010 Gross domestic product (GDP) losses due to flooding to that of Japan's GDP losses after tsunami in 2011, Pakistan had to bear much greater loss (5.8 % of GDP) than that of Japan (4.6 % of GDP) as reported by (National Disaster Management Authority, 2013). Pakistan is confronting flooding every year in monsoon period after the massive 2010 floods which directly impacted about twenty million people in country. The frequent flooding every year raises a question of why the interventions have not been considered or given any attention at federal, provincial or local governments in Pakistan. Despite having many policies about disaster management, why there is no deliverance of such policies? What are the accelerators or obstacles (such as are these the structures, or policies or institutions) in the way of disaster management in Pakistan? There is a dire need to examine the overall structure of disaster management and their roles (particularly from the past few decades), in order to address the above concerns. The era after 1980's is of particular concern because majority of strategies, interventions, lawmaking, policy arrangements and frameworks with regards to disaster management authorities are evolved and the old post-colonial era frameworks were discarded. The attention was diverted to disaster management planning and policy after the 2005 deadly earthquake in Northern region in Pakistan. It was a defining point when attention was given to planning and formulating policies for human induced as well as natural disasters management. National Disaster Management Authority (NDMA) was formed as a result and provincial disaster management authorities were established in 2007. Post 2005 literature about disaster management frameworks and interventions suggests that these policies were reflexed reaction to such tremendous earthquake (Ahmed, 2013). Comparatively, not much research is available about any such events before 2005 when the policies and practices are placed after the respective aftermaths (Rahman, Khan, & Collins, 2014). It is an established fact that strategies for reducing disaster risks or DRR lowers the burden from economy while protecting lives as well as reducing the damages and further, increases the capacity for effective response and relief during the emergency (Birkmann & von Teichman, 2010). Due to non-existence of national disaster management authorities before 2005 earthquake, the government of Pakistan always adopted reactive approach rather than proactive approach of risk reduction strategies (Shaw, Mallick, & Islam, 2015). The earthquake in 2005 shifted the entire focus from reactive approach to proactive one. Nonetheless, the lack of technical abilities and financial constraints of disaster management authorities, calls for immediate focus of governments for capacity enhancement (technical and financial) of these institutions. Currently, due to restraint human resources, only specific

stakeholders are receiving training and education at National Institute of Disaster Management (Ahmed, 2013). A constructive attempt to minimize the consequences of disaster and to limit the property and live in vulnerable areas should be done via mapping and assessment of multi-risk hazards in Pakistan. Also, there are no clear attempts to scrutinize the preceding policies, structures and frameworks by disaster managements. Therefore, the focus of this study would analyzing the effects of enduring nationwide efforts that have been taken to ensure disaster resistant infrastructure and resilient communities against natural hazards in case of Mirpur, AJ&K, Pakistan. Further, it would analyze critical challenges and prevailing techniques to cope with persistently occurring disasters faced by the communities of AJK, Pakistan. Further, it will find out the possible hurdles that are impeding factors in development and implementation of emergency preparedness in AJK?

1.4 Problem Statement

The incidents of natural disasters are increasing in Pakistan, where the number of incidents as well as death toll is escalating. Although costly investments have been injected for disaster recovery and rebuilding the damages but there is lack of holistic mechanism to scrutinize whether the anticipated goal of communities rebuilding is achieved via such costly expenditures. The focus of this research is on natural disasters only but due to conflicts in technological, social and political hazards, it is difficult to recognize the difference between natural as well as other sources of hazards.

This proposed study would incorporate holistic approach to recovery from disaster both at macro and micro level and aims to contribute to the existing literature of disaster management via in-depth and comprehensive analysis of mechanism during disaster recovery phase. This proposed thesis would also provide a prospect to add up additional knowledge, information and best practices learned which may provide facilitation to advance recovery programs and enhance disaster resilience in vulnerable communities in Pakistan. Therefore, the research aims to answer three literature gaps: First, the establishment of a holistic approach for resilient disaster rescue; Second, in post-disaster scenarios, the analytical testing of framework for resilient recovery from disaster, and finally anticipating analytical evaluation of recovery efforts for a long term.

Furthermore, vulnerability caused by the social attributes is not addressed in Pakistan which is another limitation of disaster risk reduction policies. Yet at present, the number of vulnerable people in many areas is unknown and hence, ambiguity raises as to which policy measures and at what level should be adopted. As the development of disaster risk management is still at

embryonic stage, disaster risk management and its newly ratified strategies are not completely aligned and integrated with the existing public policies and proportional planning mechanisms. However, in cases of predictable hazards, the integration in both public policies and planning mechanisms is obligatory in order to ensure the well-prepared disaster reduction mechanisms to minimize the effects of looming disasters. To reduce the risks associated with future communities, understating the efficiency of adaptations is a prerequisite. Moreover, there is a need in Pakistan to clarify the unexplored relationship between vulnerability, disaster recovery and adaptations. Therefore, the research tries to answer this intellectual dilemma. The following sections elaborates the research questions and objectives designed within the wider perspective in order to fill the literature gap identified.

1.5 Research Questions

1. What are the enduring nationwide efforts that have been taken to ensure disaster resistant infrastructure and resilient communities against natural hazards?
2. What are the critical challenges and prevailing techniques to cope with persistently occurring disasters faced by the communities of AJK, Pakistan?
3. What are the possible hurdles that are impeding factors in development and implementation of emergency preparedness in AJK?

1.6 Research Objectives

The research focuses on following research objectives which are designed on the basis of above research questions:

i. To evaluate the enduring nationwide efforts that have been taken to ensure the disaster resistant infrastructure and resilient communities against natural hazards.
ii. To determine the critical challenges and prevailing techniques to cope with persistently occurring disasters faced by the communities of AJK, Pakistan
iii. To ascertain the possible hurdles that are impeding factors in development and implementation of emergency preparedness in AJK?

1.7 Significance of the Study

There is a need to conduct research in Pakistan about the policies of disaster management as well as disaster risk reduction strategies in order to overcome disasters. The overwhelming consequences of disasters will keep affecting people of Pakistan who are living in high risk and vulnerable areas if they are not well-prepared for recurring disasters. Previous researches on disaster management shows that the literature lacks research studies which focuses on implementation (both at macro and micro level) of prevention and disaster risk reduction strategies in Pakistan. Thus, the significance of this research study is justified.

Using the case study of Mirpur, Azad Jammu & Kashmir, Pakistan, this study aims to contribute to expand the knowledge and understanding of prevailing disaster risk reduction strategies, frameworks and mitigation practices in Pakistan via comprehensive analysis of such policies and practices. This study will contribute not only to the theoretical knowledge but will also aid empirically by focusing on disaster risk reduction policies and planning process in districts and provincial governments. Moreover, the study also focused on policies dimensions. To design operative and realistic policies, this study will facilitate the process with the help of providing new knowledge by investigating the existing risk reduction policy frameworks and practices. Furthermore, federal, provincial and local governments, district unions, responsible authorities, members of civil society and interest groups may get useful information from this research findings in order to further explore the improvement mechanisms for the betterment of risk reduction policy frameworks in Pakistan.

CHAPTER 2

LITERATURE REVIEW

2.1 Disasters

Disasters are from Nature and depend upon the will of God (Wijkman & Timberlake, 2019). Despite the fact, those human beings have made massive development and success in the field of IT. Such development in the IT sector has improved the level of security and safety for human beings and other living and non-living elements of the society up to a great extent. But, the abilities of human beings to control and avoid disasters are still quite low (Wijkman & Timberlake, 2019). Disasters refer to any sudden incident, accident, or situation which is not in the hand of human beings and can cause severe damages and loss towards human beings and the other elements of the society as well.

Disasters are unavoidable. Despite the entire development and advancement made by human beings in the field of IT, communication, and technology sector, the extent of disaster-based risks can mitigate only (Twigg, 2004). None of the developed countries nor the developing countries are able enough to avoid from any natural disasters. History of humanity is witnessed from various adverse natural disasters and its effects, which adversely affect the entire state and countries up to a great extent. The tsunami in Thailand and nearby (Okazumi & Nakasu 2015). The volcano activity and the Earthquake in Japan destroyed several cities of Japan and adversely affected the infrastructure of the country as well. As a result of this, the nuclear program gets effected. Through which the nuclear retroactivities get spread in the ecosystem and nearby oceans of Japan. United Nations. Scientific Committee on the Effects of Atomic Radiation.

Disaster becomes a major reason for the huge destruction of the entire society, and it can cause long term destruction towards humanity. Disasters and its relevant risk levels are not avoidable by any means. Such risks of disasters can mitigate only by effective planning and quick response regarding the implementation of safety strategies (Samuel & Siebeneck, 2019). Disasters are usually by nature and include limited intervention of human beings. Disasters can be caused due to various reasons (Roth, Eriksen, & Prior, 2017). Any environmental change can become a reason for a huge disaster in the future. Usually, the outcomes of disasters are so large that it persuades the countries, states, or societies to rely on external aid and help to cope with the massive loss caused by disasters.

2.2 Causes of Disasters

There are several factors and situations which might become the reason for any disaster in the short run or long run (Roth, Eriksen, & Prior, 2017). Some of such causes are mentioned below:

(i) Movement of Moon:

Change in the direction and movement of the Moon directly affect the waves of ocean and sea up to a great extent. Such an effect can cause floods and tsunami in the ocean, which can cause massive destruction towards society. Through such movement of Moon, a pressure rises over the water, which transferred into the air. Such low-pressure air when mix with the high-pressure air, the chances of arising tornados go up.

(ii) Increase Human Activities:

The increase in housing and commercial activities of human beings has increased the demand for wood. As a result of this, the trend of cutting trees and using forest lands is increasing day by day. This has decreased the quality of the environment and increases the environmental pollution level. This situation can increase the temperature of the society, which can cause a fire in the forest and chances of heatwaves in the society as well.

Both fires in forest and Heatwaves are considered one of the most terrible disasters of Nature. Through such disasters, high life threats arise fortress, plants, animals, and human beings of society.

(iii) Natural Activities:

Several natural activities take place in the environment and under the earth like the movement of earth plates, change in a layer of Ozone, and many others as well. Such natural activities gear up the risks of several horrible disasters like earthquakes, the burst of the volcano, tsunami, and land sliding as well. Several horrible earthquakes ad tsunami in the entire world rose due to such different natural activities.

The risks of such disasters are present everywhere. All the countries either developed or developing are facing such risks up to a great extent (Kanal, 2020). Due to the easy availability of advance IT means with high R&D base activities, developed countries are able enough to invest in several geology and weather analysis authorities. Through which, such countries become able enough to make predictions about any future disasters (Calkins, 2015). This helps

and guides such developed countries to design and implement a mitigation plan. Such mitigation plans directly help to minimize the disaster effects and its risk level as well.

2.3 Types of Disasters

Disaster is one of that situation from which every country, state, govt, and the human beings of any geographical area are being affected. Disaster is a situation in which nothing remains in the hands of human beings. In a disaster human beings make future estimations only with no authenticity. The extent of the effects brought by disasters is quite vast. Disasters not only influence the lives of human beings of society. But it affects all living and non- living items of the entire society. The intense adverse and long-lasting effects of disasters have mainly persuaded the human beings and governments of each countries to design a mitigation plan in this regard (Lee, 2016).

Disasters have become a permanent source of threat and burden for all the countries in the entire world. Several countries are trying their best to minimize the extent of threats associated with the disasters and their post effects as well. Disasters hold a strong history of massive destruction for human beings, plants, animals, and property as well. The presence of risk of disasters brings several adverse effects towards a society. It increases the fear among the people of the society and restricts the investors as well to invest in those economies and societies where the extent of disasters base risk is great. In a report of the World Trade Organization, it is stated that those countries or states which hold high risks of several natural disasters receive a less flow of foreign and local investment as compare to other countries and states where such risk of disasters is low(Pelling,(2007). The extent of the risk of disasters is quite high in developing countries in contrast to developed countries. The presence of improper planning and strategies directly limit or restrict the developing countries to take effective measures and policies to minimize the extent of such disasters. Limited abilities and resources of developing countries directly restrict such countries to reduce the risk of disasters (Sudmeier, Jaboyedoff & Jaquet, 2013). Disaster is various and type. Disasters cannot avoid by any means. Therefore, knowing various types of disasters is compulsory. Below, the various types of disasters are mentioned (Shaluf, 2007).

(i) Natural Disaster:

Natural disasters refer to all those disasters which are from God's side with no human intervention. Such disasters are predictable up to a specific extent only, and the extent to avoid

such disasters remains quite low and limited as well. It has several other subtypes as well, which are mentioned below:

- **Geographical Disasters:**

It refers to those natural disasters which rose internal and external phase of earth. It mainly refers to those disasters which arise when the earth plates move. Through which, the risks of earthquakes and volcano activities go up. Such disasters can cause massive destruction within a few seconds. The extent of destruction made by such disasters directly depends over the intensity and the period over which this Disaster arise matters a lot. Such disasters are highly unpredictable as a geologist can only predict the areas where the plates of earth can move, but the time, intensity, and time duration cannot explain or even estimated before such disasters. Geographical disasters are known as one of the most horrible and destructive disasters of the entire world.

- **Hydrological Disasters:**

It refers to those disasters which are related to water of oceans or sea. Through this, the changes arise in the waves of the ocean and sea, which cause floods and tsunami. Climate control authorities can predict such disasters by continuously controlling and monitoring the change in air and climate. The intensity of such disasters can predict, but the time duration of such disasters is usually quite long and destroy public property and human lives as well.

(ii) Technological Disasters:

It refers to those disasters which are not from Nature or God side but arise due to advancement in technology. It refers to those negative effects which arise when the extent of R&D base activities goes up in the country or state. Technological disasters include experiments of chemical reactions, more use of machines, experiments on nuclear power, and energy as well.

This Disaster also has some kinds which are mentioned below:

- **Climatological Disasters:**

It refers to climate base disasters. Through increase research base activities and chemical reactions, the intensity of the climate becomes so strong. This leads to the climate towards high temperatures. Due to which the risks of fire in the forest go up. Through such disasters, the destruction goes up to a great extent. Such disasters might be predicted quite a long time before

the occurrence of actual disasters. Effective planning and quick implementation is the ultimate success factor to mitigate and avoid such risks.

- **Metrological Disasters:**

Such disasters are environment base, and the risks of such disasters go up when the extent of commercial and research base activities goes high in a country or society. Through this, the extent of carbon dioxide and other harmful gases goes up in the environment, which increases the risks of Cyclone, Dust Storms and wave Surges, etc.

(iii) Human Disasters:

It refers to those disasters in which human intervention or involvement is primary. It refers to those disasters which arise due to adverse actions and activities perform by human beings. The scope of such disasters is usually quite vast and brings massive destruction in terms of human loss. It has some other subtype as well, which is mentioned below:

(iv) Biological Disaster:

It refers to those disasters which are related to medical sciences and arise due to the negligence of human beings and their ignorance. It mainly includes the risks of several epidemics among human beings, animals, and plants as well. Such disasters can cause massive destruction among millions of human beings, animals, and plants. The effects of such disasters can transfer from one generation to another generation as well.

All the disasters mentioned above are different from each other. The intensity, Nature, type, and volume of each Disaster are quite changing from others. Therefore, the effects of such disasters are quite changing, as well. Knowing types of disasters will help to identify the scope and extent of influence hold by such disasters.

Any dangerous activity, phenomenon or condition that has negative impact on life and property resulting in casualties, loss and damage to the property, creates adverse impact on human health and livelihood, disturbs the socio-economic conditions and damages the environment comes under the domain of disaster. Any person or things which has the ability to inflict pain and cause miseries is termed as threat. Danger posed by the natural source is termed as hazard whereas threats are human induced. The two main classifications of disasters are in terms of natural and human induced/manmade disasters. The term widely used by the media is natural disasters as their origin is traced to the natural hazards such as weather extremes, phenomenon

in geophysical positions and epidemic etc. It is important to note that nature is rarely involved in natural disasters as they are accompanied by actions of humans converting natural hazards into shape of disasters. There are two categories of natural hazards, 1) geo-hazards, and 2) hydro-meteorological hazards. There are numerous factors that contribute to the magnitude of natural hazards, for example, meteorology (changing seasons influence it), topography, hydrology, geology, biodiversity (of flora and fauna) and tidal variations (lunar and meteorological influences cause it), coastal topography (the developments in coastal localities influence it). Yet such processes do not cause harm and complement to the people's existence. But the frequency with which the natural hazards occur, they create a negative impact on the humans, environment and socio-economic conditions. The typology of hazards and threats is presented in Table 2.1.

Table 2.1 Typology of Hazards and Threats

Natural hazards Danger posed by the natural source		***Human-induced threats*** Danger posed by Human induced activities	
Geophysical Hazards	Earthquakes	***Malicious***	War
	Volcanic eruptions Tsunamis (*inc. Seiches*) Landslides Subsidence	***Malicious***	War Terrorism Arson Civil unrest Vandalism
Hydro-Meteorological Hazards	Floods ***Non-malicious*** Ineffective planning	Floods ***Non-malicious*** Ineffective planning	Floods ***Non-malicious*** Ineffective planning

2.4 Disaster Risk Reduction

During the end of the 20th century, the major concept about Natural Disaster was that they are unavoidable because there is no human intervention in occurrence, frequency, and intensity of such disasters. But during the first decade of the 21st century, several pieces of research and investigations make it clear that disasters and their risks can mitigate easily by the efforts of human beings. The efforts through such the extent of a disaster and its risk can decrease termed as Disaster Risk Reduction (Sudmeier etal, 2013).

Disaster risk reduction plays an important role in disaster risk management capacities and the abilities of a country. Disaster risk reduction mainly emphasizes minimizing the vulnerability and exposure of natural disasters to minimize the human, property, and other losses of the

society. Disaster risk reduction mainly focuses on identifying and analyzing the factors through which the extent of risks goes up. Disaster risk reduction emphasizes the investigation of the causes due to which the extent of disaster risks goes up. By having complete knowledge and information about the disaster base reasons, an effective disaster risk reduction plan might design and implement as well.

Disaster has been defined by the United Nations International Strategy for Disaster Reduction (UNISDR) as: Any activity or event that surpasses the capacity of the society to deal with the changes and disruptions occurred in terms of losses to life and property, the changes in socio-economic conditions, and danger to the environment and its negative impacts. (UNISDR, 2009).

The traditional approaches to disaster management were mostly reactive in nature, with focus on responses post event, and paying very little attention and efforts t the risk reduction both pre and post disasters. Numerous conventions took place in 1990's to emphasize on the importance of risk reduction by adopting comprehensive approach identifying the root cause that is crucial to risk management such as vulnerability, through promotion of sustainable long term strategies (DFID, 2004) and is termed as disaster risk reduction (DRR): Through DRR disaster risks are reduced by following a systematic approach where all efforts are directed towards the analysis and management of the crucial factors that contribute to disaster management such as reducing the exposure to hazards, making the people and properties less vulnerable to hazards, land and environment management and effective preparedness (UNISDR, 2009a). The decade of 1990-2000 has been declared as the International Decade for Natural Disaster Reduction by the United Nations (IDNDR; see UN Resolution A42/169/1987), with the aim of preventing and reducing the disasters risk incorporating latest technology (Giardini et al, 1999).

As top down and technocratic approach was adopted in management of disasters as concept of DRR emerged, it was highly criticized in Yokohama, Japan where mid-decade conference was held; it resulted in the consensus on incorporating communities and the NGOS as well (Wisner et al., 2004). The coordination at all levels that is local, national, regional and global level regarding the disaster risks (UNISDR, 2014) was posed in a framework provided by UNISDR which is the extension of IDNDR (UNISDR, 2009) and established in 2000. World Conference on Disaster Reduction (WCDR) was held in Kobe, Japan representing 168 countries after tsunami in Indian Ocean took place in 2004. The importance of humanitarian action was highlighted in the conference relating to risk reduction with the role of NGOs, communities, academia, CBOs in building and increasing resilience towards disasters (Innocenti and Albrito,

2011). The proceedings of WCDR paved way for the consensus on DRR adopted globally through Hyogo Framework for Action (HFA), which has laid down the key objectives and important activities related to risk reduction and is expected from all the countries. A multi hazard approach is adopted by HFA for policies, planning and programming of DRR (UNISDR, 2005). Five key priority areas have outlined in the framework of HFA which were expected to be completed in 2005-2015:

1. To ensure that DRR is implemented through strong institutional basis by making it a national and local priority.
2. Reduce disaster risk through identification, assessment and monitoring and enhancing the early warning system.
3. To promote and strengthen resilience culture and practice of safety utilizing the innovations in technology, education and spreading knowledge.
4. Risk factors are to be reduced.
5. Make response effective at all levels by strengthening the preparedness for disasters (UNISDR, 2005: 6).

There is no binding contract embodied by HFA although UNISDR monitors and reviews it. The Global Platform for Disaster Risk Reduction (GPDRR) gathers all the stakeholders including government, academia, NGOs, INGOs, UN as well as private sector; every two years (UNISDR, 2012) with the direction by the United Nations General Assembly (A/RES/62/192) of assessment of countries to review their progress and to what extent HFAs objectives are achieved and also provides platform for sharing the best practices by identifying the gaps and take relevant and necessary action. It is assessed through the progress reports whether the key priority areas of action are adopted and implemented by the signatory countries or not.

2.4.1 Drivers of Disaster Risk Reduction

The importance for addressing the issues of coordination, failures of market and social equity has been stressed for policy making in DRR. The adoption and implementation of these policies is determined by the political incentives. This section will particularly identify other factors such as political and economic factors that are considered drivers for shifting the incentive balance to DRR. The development organizations have posed framework through analysis of political economy which will be followed in this section for categorization of drivers in three headings: structures, institutions and political processes.

Structures define the country's features in all aspects considering the political economy as well which varies slowly and it is difficult to influence it in short to medium term.

Institutions represent the rule of game and are the structures of formal and informal relationships and rule which determine and govern the agent's behavior. The legally defined framework by the government and its constituent organs and legislations, political apparatus for DRR fall under formal institutions. Whereas informal institutions are defined as the governing rules and relationships taking cultural values and traditions into consideration for example for voting how the politicians arrange campaigns and following the norms to operate patronage.

Political processes are defined as the operations of rules and strategies within the games utilized by the groups and individuals for their interests advancement within the boundaries of structures and institutions. Numerous processes are adopted such as bargaining and conflict mediation through resources.

2.5 Pakistan and Natural Disasters

Pakistan has faced several disasters since its independence date. The AJK region of Pakistan is considered highly unsafe and open towards natural disasters. The relevant geographical location and structure of land in AJK play an important role in this regard. Presence of several mountains and being the location at a high distance from land, the extent of facing natural disasters goes up in this area (Ahmed & Z ,2013).

Different natural disasters like earthquakes, floods, snowfall, heavy rain, and land sliding have brought severe adverse effects towards Azad Jammu Kashmir region. Due to such disasters, this region faced several human, animal, and property losses in past decades. Reports indicate that in the past decade, the human and property loss in this region due to natural disasters is highest in contrast to all other areas of Pakistan. The extent of disaster management authorities' policies and strategies scope towards the AJK region is quite vast. Every year, this region, particularly, the Mirpur city of the AJK region, faced different natural disasters. Out of which, snowfall, land sliding, and earthquakes are quite prominent. In Pakistan, the AJK state is known as one of that state which holds high risks of several geology prone disasters. The state has suffered from various natural disasters in past. This state including its city Mirpur has faced several intense earthquakes, floods, and land sliding. Due to which, the number of human loss due to such disasters in this small state remains quite high in contrast to other cities of the country (Ghaffar & Abbas, 2010).

The location of Mirpur city and the structure of its land play an important role in increasing the risks of such natural disasters towards this city. Due to its location closer to Eurasia tectonic plate and Indian tectonic plate, any change in Eurasia and Indian plate cause earthquakes in

this city. This has gear up the need to identify, design and implement those effective plans and strategies through which the extent of risks of such disasters can reduce, minimize, and control as well (Sudmeier, Jaboyedoff & Jaquet, 2013).

Despite the effective policies, strategies, and measures adopted by the National Disaster Management Authority, the extent of natural disasters and their effect on the Mirpur region is increasing day by day. The adverse effects of the October 2005 earthquake and later on in 2019, the Mirpur region faced several human and property base loss. To minimize the extent of such natural disasters and its effects, the President of AJK and Natural Disaster Management Authority are working with a collaboration of each other to raise awareness among the resident of AJK about the natural disasters and the ways to minimize the extent of such disaster base adverse incidents as well.

2.5.1 Mirpur & Earthquake

Mirpur region is considered one of those cities of Pakistan which compulsory face one or more earthquake of various magnitudes during every year. The Earthquake during November 2019 in Mirpur was of 5.9 magnitudes and held a nearby central point from the main city of Mirpur. Due to this close location and high magnitude, several deaths and property loss are faced by the residents of Mirpur city. This Earthquake causes more than 60 causalities in Mirpur city as per the official state report published by Govt of AJK. But some of the NGO's claimed that the number of causalities was more than 100. The loss of property due to such an Earthquake was quite high. Since the 1970's to onwards, this city has faced more than 73,000 causalities due to various such earthquakes faced by this city.

The Earthquake hit by Mirpur city during November 2019 is considered the most dangerous one, which raises serious threats among the govt of AJK. After this Disaster, National Disaster Management Authority took serious actions and designs an effective plan to minimize the extent of such natural disasters in the future. This Earthquake hit the Mirpur city of AJK on 9 November at 4 pm. The center point of the Earthquake was just 10km away from the city and held a magnitude of 5.8. Upon rating scale of Earthquake, this Earthquake holds second dangerous rating. Due to the very short duration of 4 to 5 seconds, this Earthquake did not bring as much human and property loss, which anticipated from such intensity base earthquakes. Along with this, due to today's timing, the extent of loss remains low as most of the people were outside and take immediate precautionary measures.

This Earthquake brings adverse effects over the earth's plate of Pakistan. After this, the distance among the Indian and Pakistan earth plates is decreasing, which can cause any close interaction and in the result of which another adverse earthquake for this city. Due to location at the most corner of the Pakistan earth plate, this city holds high threats of any future dangerous earthquakes. To cope with this, the National Disaster Management Authority is working passionately. The authority has made collaboration with the govt of AJK & Mirpur to change the infrastructural designs of the buildings, roads, and houses. Through which, the extent of loss from such future earthquakes might decrease up to a great extent. The Earthquake of October 2005 was the first-ever major Earthquake base disaster, which became the cause of more than 46,000 causalities in the Mirpur region, and more than half of the city faces intense infrastructural damage after that. It took more than 6 to 7 years by the AJK and Mirpur govt to cope with such adverse effects of this Earthquake. The poor planning after the October 2005 earthquake, the second most dangerous Earthquake of November 2019, raise questions over the performance of NDMA and govt of AJK & Mirpur as well.

Most of the residents of Mirpur city claimed that Earthquake of November 2019 was the most horrifying and terrible in their entire life. The intensity was so strong due to the close location between the central point of the Earthquake and the city. Due to this, the sounds of earth movement can be heard easily, which increases the extent of fear and threat for all the residents of Mirpur. The majority of Mirpur residents claimed that upon the intensity and sound base, his Earthquake was quite more intense and dangerous in contrast to what they experience during the Earthquake of October 2005. Being a developing country with poor administration and limited transparency level, the extent of effective policies and implementation over such policies is quite low or limited in entire Pakistan. This poor administration restricts the NDMA as well to design and implement effective plans through which such negative effects of earthquakes can minimize in Mirpur city and other cities of AJK and KPK as well. These two regions are highly insecure in terms of facing natural disasters. It mainly happens due to the location and geographical structure of these regions. Besides the poor management, the limited financial & technological resources of Pakistan and AJK govt directly restrict the scope of NDMA and its safety measures to rescue the areas which are affected by various natural disasters or might get the effect in I future. Limited physical, human, technological, and financial resources directly restrict NDMA to make estimations about future incidents of such Nature. Due to which the extent of natural disasters, particularly earthquake base threats are increasing day by day towards Mirpur city.

2.6 Institutional Capacity for Disaster Risk Reduction

Pakistan is prone to natural disasters due to its geographic location and the prevailing political socioeconomic conditions. Yet the capacity has improved in several ways for dealing effectively with disasters. The capacity building for management of disasters through the history is presented in Table 2.2.

Table 2.2 Disaster Management Capacity Building Timeline

Year	Activity/Incident
1958	West Pakistan National Calamities (Prevention and Relief) Act and Civil Defense Act passed; Emergency relief cell in Cabinet Secretariat
2005	Massive earthquake in October; Federal Relief Commission formed; Earthquake Reconstruction and Rehabilitation Authority formed
2006	Promulgation of National Disaster Management Ordinance
2007	National Disaster Management Authority notified; National Disaster Risk Management
2008	Initiated trainings for Disaster Risk Management
2010	National Disaster Management Act passed; 18th Amendment to the Constitution of Pakistan passed
2011	National Disaster Management Plan formulated (2012-2022); Federal Ministry of Climate

In 1958 two Acts were passed in Pakistan namely West Pakistan National Calamities (Prevention and Relief) Act and the Civil Defense Act. There was no formal hosting of function of disaster management at one location till the earthquake of 2005. Although the coordination efforts were led by the Emergency Relief Cell in the Federal Cabinet Secretariat, but the response from the districts was individual based and outsourced the equipment necessary for recovery and relief from disasters. Earthquake Reconstruction and Rehabilitation Authority (ERRA) was established after the earthquake in 2005 with the aim of creating a formal and national based authority for disaster management. Another Act known as National Disaster Management Act was passed after heavy flooding in 2010. 18th Amendment to the constitution was also passed in the same year devolving the function of disaster management to the district level. The analytical work was initiated in 2005 after the World Conference for Disaster Reduction. Five priority areas have been set in this framework which provides guidelines for

policy formulation for DRR, preparedness and response to the disasters over the period of 2005-15. The researcher conducted in depth interview and FGDs relating all the five priority areas laid down by the World Conference for Disaster Reduction to understand the current level of DRR by NDMA.

2.6.1 National Disaster Management Authority (NDMA)

Pakistan can now better prepare and effectively deal with disasters as it has a strong institution in the form of National Disaster Management Authority (NDMA). NDMA is the foremost leading federal agency for management of disaster activities. The website of NDMA states that, one window operation is conducted with the cooperation of all the stakeholders involving all the concerned ministries, departments, organizations Army, NGOs and INGOs, agencies of UN; they all work together as any event of disaster arises. NDMA is considered the extension and improvement in National Calamities (Prevention and Relief) Act of 1958 and is focused on strengthening preparedness for disasters and reduce risk.

The earthquake in 2005 resulted in promulgation of National Disaster Management Ordinance in 2006 but the formal Act was passed after floods in 2010 and NDMA was established. The military played an important role in its establishment as they were already controlling Earthquake Reconstruction and Rehabilitation Authority (ERRA). The need for formal NDMA was also questioned by the people as they expressed in interviews and the reason is attributed the infrequent occurrence of disasters. However, their mindset was changed after the floods in 2010. There was continuous support of international agencies and countries owing to the damages caused and the civil society as well, stressed upon the coordination role of NDMA. There always remained a problem of competing interests, though arrangements for institutional improvements had been made and problem arises with political economy of providing relief to the people after disasters. The victims of disasters are provided with cash compensation to achieve better public relations as positive political benefits can be accrued. National Disaster Management Act, 2010 resulted in formation of several institutions mentioned in Table 2.3.

Table 2.3 Institutions Formed Under the NDMA, 2010

Entity	Chair
National Disaster Management Commission	Prime Minister, ex officio
National Disaster Management Authority	Director General
Provincial Disaster Management Authority	Director General
District Disaster Management Authority	Head of the Local Council
Local Authority	-
National Institute of Disaster Management	National Institute of Disaster Management DG, NDMA

2.7 Risk Assessment and Management in Pakistan

The rational strategy to minimize the possible losses which also gives directions to the policy makers and other agencies is the Disaster Risk Assessment and management of disasters. There is increasing importance for this strategy at all levels as emphasizes on adoption of approaches of both the structural and non-structure risk reduction. There are three stages in risk assessment of disasters which are defining and measuring the hazards, assessment of exposure and vulnerability level followed by risk assessment to identify the probable likelihood and the extent of severity of the consequences (Wilkinson and Brenes, 2014).

HFA (2005–2015) has identified the disaster risk assessment as a key component and is placed in priority area 2, encouraging the governments to conduct assessments of risks. The key stakeholders can understand the guidelines through the framework of HFA for promotion of resilience amongst the people regarding the probable hazards. The extent of severity of hazards and the anticipated consequences are taken into cognizance in process of risk assessment. The process begins with identification of hazards and exploration of the attached risks with the hazards, followed by the recommendation and adoption of measures to reduce their impact. Numerous methods are used for risk assessment which aid in calculation of exposure level to the risk and categorized into low, medium, high and risk-free zones. It is mostly conducted to search for the risks that put life and property in danger. Assessment of risks is undertaken in relativity to the land usage for multiple reasons such as residence, agriculture, commercial, industrial purpose (Cosic et al. 2011). Systematic analysis of information related to hazards is undertaken to reduce and delimit the potential damage caused by these hazards. When the risk assessment for floods is conducted, the necessary information required is related to the history

of such events and the vulnerability record of such events pre- and post-floods (Khan, 2013). There are two essential aspects that need to be taken into consideration for risk assessment. These are the zoning the hazard areas and the impacts of the hazards.it is done in prior relation to the value and type of assets present in such area. Although risk assessment is a tiring and difficult task but it aids in coping with disasters in an effective manner. The information and data requirement for risk assessment is very high which is not readily available in developing countries. Therefore, latest techniques, tools and technologies are utilized for the purpose of risk assessment by the scientists. Widely used approach in risk assessment is multi criteria approach which extracts the necessary and relevant information for taking decisions. GIS and remotes are widely used in risk assessment by the modern scientists. The process of risk assessment is initiated after adoption of proper methodology, mapping the occurrences and the consequences associated to obtain more reliable results. The data sets from other related agencies are also used in mapping the vulnerability of areas such as for floods, hydro-meteorological and geomorphological data is also obtained (Showalter and Lu 2010). The mapping of the flood vulnerability demonstrates the expected damage that might occur to the assets in flooding (Zeleňáková 2011). To generate the risk mapping for floods the two essentials are map of flood hazard and the maps of vulnerability. Flood risk relate to the 'the combination of the probability of a flood event' and of the 'flood potential adverse consequences' on health of humans, impact on environment, affecting the cultural heritage and altered economic activities post flood (Kandilioti & Makropoulos, 2012). The mapping for flood risks need the gauge data, assets information and area's topography (Zeleňáková 2011). The formula used for calculating flood risk is Risk equation formula = Hazard × Vulnerability/Capacity. Here, the hazard relates to the occurrence of flood and its frequency, vulnerability relates to the community's weakness in resisting against the flood and capacity relates to the population strength for the floods and their resilience (Kandilioti & Makropoulos, 2012). Specific tools and skills are required by the communities to build their strength in coping with disasters (Redfern et al. 2008).

GIS technology is used to specify out the areas for mapping in relation to hazards of flood, attached vulnerability and associated risk. Although GIS provides a roadmap to cope with disasters in future but also needs proper measures for mitigation and prevention to save the communities from disastrous floods (Hansson et al. 2008).

The process of disaster risk management is systematic and holistic in nature which aids in management to reduce the impact of disasters. The focus of disaster risk management process is on all the phases that is from prevention and mitigation to recovery. The flood risk

management is undertaken so that the area under flood can be reduced which is done to increase the land for habitat, reduce the flood stage and reduce the time for floods to reach their peak. The communities that are vulnerable and exposed to floods are analyzed in flood risk management, then the strategies are identified and implemented aimed at adopting measures to curtail the consequences and minimize the risk of loss and damage to a certain level that is acceptable (Jha et al. 2012). It also aims to protect the valuable assets from exposure to intensive and extreme conditions, make the communities ready to face such situations both in physical and mental capacities after the disasters have occurred.

There is a need to adopt the approach that is comprehensive in nature and has the ability to handle the aggravating effects of disasters to reduce the risk and associated losses. The basic pillars of risk reduction are deemed to be the government, the population at vulnerability and the industry of insurance (Munich Re *et al,* 2014) being the government the most important one owing to its responsibilities and roles in disaster risk management. Various functions are performed by government starting from mitigation to forecasting and generating early warning, giving emergency response and indulge in recovery activities. Disasters risks are minimized when hazard zones are identified and is mapped as well to give guidance to the concerned officials for resource planning and dispensation

The new tools and techniques have been introduced to aid in risk management and has thus made it vital to revise the concepts of hazard, vulnerability and risk and development of literature on disaster risk management. The new strategies are identified and implemented by the government and the practitioners so that effective handling of the disastrous events can be made possible. This chapter discussed the concepts of hazard, vulnerability, capacity and risk comprehensively. To support the point, real life examples were quoted. The assessment and management of vulnerability and risk has been detailed along with numerous tools and techniques of conducting it.

Pakistan has hardly stuck from the hazards of geo and hydro-meteorological disasters and is considered the center of such hazards. Hazard profile has also been discussed with special reference to Pakistan and disasters that occur more often such as earthquakes, floods, landslides, droughts, GLOF, cyclones, heat waves etc. As far as the frequency is concerned floods have occurred most often. The north and north-western region of Pakistan is marked with flash floods whereas the Indus River is characterized by river flood and more than 80% of the Pakistan population resides around the Indus river system. Pakistan is also challenged with the problem of intensified urban and coastal floods. Moreover, the frequent earthquakes of high intensities have engulfed thousands of lives where the death toll alone in Bagh-Balakot

earthquake was reported at 100,000. Awaran earthquake in 2013 also took several innocent lives. Another disaster with high frequencies is the landslides which has mainly occurred due to the interventions by humans and work on the slopes. Change in climates has also intensified accompanied with related disastrous incidents and the probability of such events in future is also very high. The situation is alarming and responsibility lies with the government to take preventive measures and integrate the disaster risk reduction strategies with other policies of development so that resilience of the communities can be enhanced.

2.8 Legal and Institutional Structure for Disaster Pakistan

In Pakistan, there is practice of dealing with disasters by adopting a reactive emergency response approach. The provisions for maintenance and restoration for order in areas hit by disasters and also their prevention and control over the relief activities is provided by the West Pakistan National Calamities (Prevention and Mitigation) Act, 1958. This legislation was response centric only till the earthquake in 2005 (NDMA 2010). There were instructions for organization of emergency response activities in the Calamity Act of 1958. It resulted in formation of relief commissions at the provincial levels. The cabinet secretariat had Emergency Relief Cell (ERC) with responsibilities to organize the response from the federal government regarding disaster. It was marked with low awareness regarding the disaster risk management for the policymakers, NGOs, media, civil society etc and the overall information of the population regarding this issue was surprisingly very low and lacked in adopting any systematic approach to deal with disasters. It resulted in repealing of this Act and the new acts adopted were The Punjab National Calamities (Prevention and Relief) Act, 1951; The Khairpur National Calamities (Prevention and Relief) Act, 1954; and The West Pakistan National Calamities (Prevention and Relief) Ordinance 1956 (Government of Pakistan 2007). The government of Pakistan did frequent legislation regarding the concern for environment and the Pakistan Environmental Protection Act, 1997 being the most prominent and important. The drawback of this Act lies in the fact it had no direct linkage to the disaster but it focused on environment sustainability and use of natural resources which was aimed at reducing the risks for disasters (Government of Pakistan 2007). This Act covered numerous aspects such as protect, conserve, rehabilitate and improve the environment, to control and prevent the pollution and promote development which is sustainable. The key features include the provision for establishing the Pakistan Environmental Protection Council with the responsibility of coordination and supervision to enforce the Act, establishing the Pakistan Environmental Protection Agency; establishing National Environmental Coordination

Committee; establishing the Provincial Sustainable Development Funds which will aid financially for the projects with the aim of designing and adopting programmes which will protect, conserve, rehabilitate and improve the environment, it will further prevent and control the pollution, the development made to achieve sustainability, efficient use of resources and also conducting researches in the field of environment (Government of Pakistan 1997). Another ordinance was promulgated in 2001 with the title of Local Government Ordinance.

New horizons were broadened by the Local Government Ordinance (LGO) as it provided for disaster management but specific to the context only (Government of Pakistan 2001). Emergency services were established by the Emergency Services Ordinance, 2002for effective dealing with emergencies and also incorporated the confrontation of threats related to the terrorism with assigned roles and responsibilities at multiple levels (Delshad, 2015). Another comprehensive policy was initiated by the government of Pakistan under the title National Disaster Management Ordinance 2006 which aimed at achieving sustainable development in all spheres such as social, economic and environmental to reduce the risks and vulnerabilities for the poor and marginalized segment. It also entailed documentation regarding the response and recovery from various disasters (Maleeha, 2012). It also provided for the establishment of different institutions at all levels that is federal, provincial and district accompanied with legal arrangements. This was the first ordinance to adopt a comprehensive approach in the history of Pakistan. It was legitimized and adopted by National Assembly in 2010 and is made part of all the policies for disaster management. This legislation aimed at incorporating all the aspects of disasters with incorporation of strategies of disaster risk reduction and sustainable planning and development, it also focused on enhancement of institutional capacity to be prepare for the disasters and immediate response and recovery. This act also provided for the institutional arrangements at all levels starting from national to community level to meet the needs. This legislation has propriety areas in Institutional Arrangements for DRM, Hazard and Vulnerability Assessment, Training, Education and Awareness, Disaster Risk Management Planning, Community and Local Level Programming, Multi hazard Early Warning System, Mainstreaming DRR into Development, Emergency Response System and Capacity Development for Post Disaster Recovery.

This policy shifted from the reactive approach to adoption of proactive approach highlighting the need for assessment of risk, prevent, mitigate and prepare for the disasters which will create a nation that will be more resilient. There are four chapters of this document. The first chapter outlines the risk assessment, preparedness and awareness which reports the insufficiency of capacity in DRR Disaster Risk Reduction. The chapter two highlights the vision of NDMA and

its emphasis on capacity development with special focus on dealing with vulnerable and marginalized communities. The third chapter summarizes the policy interventions by NDMA with special emphasis on mitigation and preparedness. Chapter four of the document contains the information on framework of implementation of NDMA which is mainstreaming the DRR incorporating the financial, monitoring and educational plans regarding the preparedness of disasters (UNISDR 2013). The disaster management policies have the objective of:

- For identification and monitoring of vulnerability and hazard trends, it is to create national capacity more integrated in nature.
- Strengthen the capacity of early warning system which is multi hazard with a base in existing system and structure and stress on the information needs for generating warnings to the people
- Strengthen the preparedness and response capacity to cope with disasters at all levels.
- Incorporate disaster risk management in the development planning considering the issues of environment and climate change.
- Promote the resilience for both structural and non-structural infrastructure.
- Strengthen all levels to enhance their capacity which aids in facilitating and providing support for implementing the policies of DRR.
- Strengthen capacity for Risk Reduction at local level with a focus on the indigenous communities and to strengthen the linkage between all levels.
- Integrate DRR into recovery and programming of reconstruction and mainstream DRR

CHAPTER 3

THEORETICAL FRAMEWORK AND METHODOLOGY

3.1 Theoretical Narrative for the Study

3.1.1 New Institutional Economics Theory

New institutional economics theory proclaims that institutions are important because they establish the structure for incentives and impediments of a society (North 1998:247). This proposes that institutions are platforms for provision of incentives which can influence decisions of actors as well as the inclinations to lessen/instigate or strengthen/lessen the risks of disasters. Thus, the creation and reversal of disaster risk reducing strategies is determined either by established institutions (including both traditional and new) or via enforcement of established rules (including both formal and informal). Therefore, this theory is referred as new institutional economic theory. In this research thesis, the existing incentive arrangement is assumed significant not only in terms of monetary value, but researcher also incorporated socio-cultural, political and figurative incentives.

North (1998:249) debated that if institutions refers to game rules, then governments and entrepreneurs refers to the players of game. This perception advocates that in relation to organizations or individuals, institutions are exogenous. Shepsle (2006) interpreted this statement as it would be imprudent to refer institutions as simply exogenous because players also set rules of the game which are basically the methods upon which players aspire to play (ibid). But to some, this argument seems abstract. Nevertheless corrupt bureaucrats may have created diverse rules if the formal institutions existed with the comprehensive regulations and laws and consequently, they may have imposed illegal tax (for instance taxes for getting permits of houses) leading to the societal detriment.

3.2 Conceptual Framework of the Study

The overall conceptual framework for this study is outlined in Figure 2.1. The concepts and theories identified in the literature is used as base for developing the conceptual framework. The following objectives of the research are explored utilizing the conceptual framework.

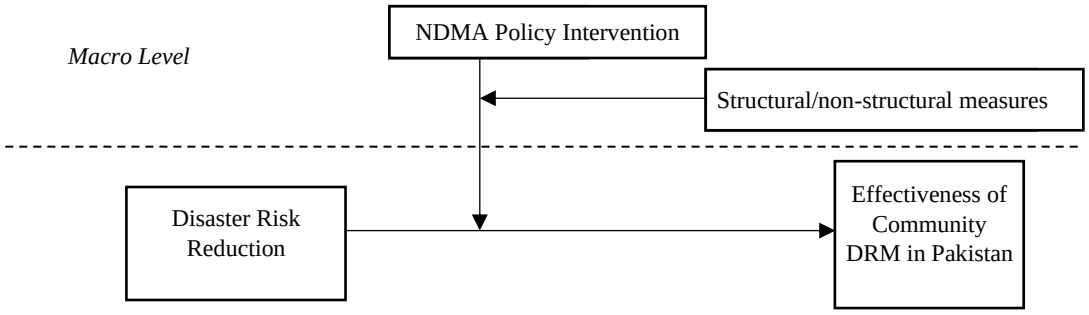
To evaluate the enduring nationwide efforts that have been taken to ensure the disaster resistant infrastructure and resilient communities against natural hazards.

To determine the critical challenges and prevailing techniques to cope with persistently occurring disasters faced by the communities of AJK, Pakistan

To ascertain the possible hurdles that are impeding factors in development and implementation of emergency preparedness in AJK?

The conceptual framework for the study is as followed:

Figure 3.0.1 Conceptual Framework of the Study



3.3 Research Methodology

As discussed in earlier sections, the objective of this thesis is two folds. Firstly, at macro-level, it would analyze the institutional framework in Pakistan for disaster management and specific disaster management policies. Secondly at micro level, this thesis was designed to develop an in-depth understanding of the key challenges that the communities of Mirpur, Azad Jammu & Kashmir, Pakistan face in the wake of constantly reoccurring disasters.

The research has used qualitative research methods to answer the research questions. Qualitative research methods were chosen for getting a very in depth understanding of the research problem. The qualitative methods are most appropriate for dealing with critical issues related to phenomenological, conventional and socio-cultural realities (Yin, 2013). Thus, complexity and context of the research inquiries is one of the main concern for the selection of qualitative research method. There are 4 major stakeholders that includes citizens (local beneficiaries), district and provincial implementers, Civil Society Organizations (CSOs) and NDMA & federal government authorities. Most of the inquiring elements are naturalistic and subjective, therefore the major part of this study was based on qualitative research methods to answer the research questions.

The data would be collected through FGDs (Micro-level) and In-depth Interviews. As the research questions asked for the involvement of all the stakeholders. Therefore, FGDs and IIs were considered as the most useful way as also confirmed by the other researchers as well. Thus keeping in view these circumstances, FGDs and IIs were designed.

3.3.1 Sampling Techniques in qualitative approach

Zikmund (2003) has argued that respondents being targeted belong to the certain relevant group germane to research areas. For this study, the target respondents were all the stakeholders mentioned earlier. As far the technique of sampling is concerned, the research was based on snow ball and purposive sampling techniques as random sampling was not found to be appropriate for this type of study. The researcher informed all the stakeholders about the objectives and aims of this research study. The rules of purposive sampling were adopted, and the researcher has selected the sample size based on his judgment. While, snowball sampling is considered as the method to accomplish research and knowledge from the association or whatsoever with the help of acquaintances. Biernacki and Waldorf (1981) has pointed out that snowball sampling is the technique that use recommendation as a tool to find relevant person with specific skills that are useful for the research and help in answering the research questions. Further it has been also pointed out that this technique is best suited when you require the information from the sources that are not available publicly and can be referred as social elites (Noy, 2008). In our case, apart from the citizens, all other three stakeholders can be rightly called social elites, therefore in-depth interviews using snowball sampling was applied and interviews were conducted with members of CSOs, office holders of NDMA and concerned political leaders.

3.3.2 Primary Data Collection

This has been discussed earlier that mode of data collection for the qualitative part was through FGDs and In-depth interviews. Following the guidelines given by Elmendorf and Luloff (2001), some of the interviews would be recorded. The schedule of the interviews would be comprised of open-ended research questions so that maximum information could be collected from the respondents. After the data collection, triangulation of the data was done for interpretation of the information. The details method of data collection is explained in the sections below.

a) **Face-to-face interviews** These interviews are also called in-depth interviews. There is no doubt and it is established fact that these interviews are probably the oldest yet the most popular form of data collection. This is referred as the best technique as it increases the data collection quality at it maximum and minimizes the no-response (Lavrakas, 2008). In this wake, Denzin and Lincoln (2009) has pointed out that in-depth interviews help to find out the answers of research questions also through the behavior of respondents, emotions and body languages etc. For this study, nine interviews would

be done from the respondents. Out of total, 3 interviews would be done with political leaders of Mirpur while 3 interviews will be conducted from CSOs members and related nonprofit organizations working in the development of DRR in Mirpur. In addition to these interviews, 4 interviews would be conducted from senior level NDMA officials.

As these key informant interviews were done with the people who actually knows about the ground situation regarding the subject matter. These experts with specific understanding and knowledge can give actual insight on the research problem and provide meaningful recommendations to provide solution to research questions.

b) **Focus Group Discussions (FGDs)** This is a form of research in which a certain specific group of citizens or respondents are asked simultaneously regarding packaging, ideas, advertisements, concepts, services and products (Edmunds, 1999; Wong, 2008). Zikmund (2003) has argued that respondents being targeted belong to the certain relevant group germane to research areas. For FGDs, the target population would be residents of Mirpur, AJ&K, Pakistan. Zikmund (2003) has argued that respondents being targeted belong to the certain relevant group germane to research areas. For this study, the target respondents would be resident of Mirpur.

Different researchers recommend different number of FGDs. For instance, Kruger (1994) has suggested minimum 3 and maximum of 12 FGDs while on the contrary, Kizinger (1994) has recommended 4 to 5 interviews if the researchers are focusing on specific population. Further, Mc Lafferty (2004) has pointed out that FGDs can be varied from 4 to 20. Keeping in view all this statistics, the present study would conduct 4 FGDs.

3.3.3 Secondary Data Collection

For this study, the important data would be collected through secondary sources as well. The secondary data collection included budgetary statements, provincial and national policy papers, minutes of meetings, working papers of NGOS, different documents, government gazettes and government acts. The researcher would go through all these materials and analyzed them. The analyzed data would be interpreted along with the other findings.

3.4 Data Analysis

Data would be analyzed and managed to answer the RQs of this study. During the firs stage, FGDs and KIIs were transcribed. After that all the data would be arranged in the systematic order to apply thematic analysis. Thematic analysis is one of the most systematic and largely used approach for qualitative analysis of the data. It actually engrosses finding out the themes and patterns of coding, cultural meaning and classification of data which are like to be most textual as align with themes and helps in the interpretation to result thematic structures to seek theoretical constructs, explanatory principles. Overarching patterns, commonalities, and relationships. Thematic analysis for this study would help the researcher to manage and reduce the huge amount of data into themes, sub-themes and important codes and nodes. Further, this helped the researcher to interpret, organize, summarize, and provide context to the available data. The basic strategy applied for thematic analysis would be coding.

CHAPTER 4

DATA COLLECTION AND FINDINGS

The study aimed to explore three broad research questions for which interviews were conducted along with the focus group discussions. This chapter presents the analysis which is based on the responses of the participants. For analysis, I have used thematic analysis as proposed by Braun & Clarke (2006). I have adopted the bottom down approach for my study as through this study I have addressed the main research questions posed. The research is focused on addressing the specified research questions. The following section provides details of the qualitative data and analysis to address main research questions.

4.1 Thematic Analysis

Thematic analysis is a research technique which is aimed at finding and developing patterns, themes in the provided qualitative data set which is collected through different techniques. The purpose of thematic analysis is to define patterns and draw conclusions on the basis if the defined themes. Novell, Norris, Moules & White (2017) argue that the various epistemologies can use thematic analysis so that different range of research questions can be addressed. Due to the flexibility in usage of thematic analysis it is easy to use for identification, analysis, organisation, description and reporting the patterns and themes in the data set. It can be used not only for small data sets but can be applied to the large data sets as there are no strict rules, and it is flexible in nature to conduct the analysis without any strict prescriptions (Braun & Clarke, 2006). Another important characteristic of this analysis method is that it aids in structuring the data and follow a systematic procedure to report the results and findings (King, 2004). This quality makes it easy for the new researchers to conduct qualitative analysis in a very systematic manner.

The research design guides the adoption for the approach to carry on the top-down or bottom-up approach with thematic analysis (Braun & Clarke, 2006). The data set is organised as per the research questions or the modules as suggested in the interview guide and themes are identified. Braun & Clarke (2006) have provided a very simple and structured approach to carry on with thematic analysis which is divided into six steps:

Step 1: Getting familiar with the data

Step 2: Generate the initial codes

Step 3: Search for themes in data

Step 4: Review the identified themes

Step 5: Define the themes

Step 6: Write Up (Discussion)

Step 1: Getting familiar with Data

Initially, it is very important for the researcher to get familiarity with the data collected. There is a need to engage with the data so that the content of the data can be understood in its true meaning which will aid in further steps. The first step involves reading the data again and again so that patterns can be identified in the data set. At this stage, notes are taken about the data set so that researcher can move on to next stage. The researcher is engaged in informal coding which will later be transformed into meaningful patterns and themes.

Data Information: This study has used the primary data for analysis which is collected through interviews and focus group discussions. The extract of each interview comprised of approximately 35 minutes and 1.5 hours for focus group discussion. There was total nine interviews conducted and two focus group discussions which makes the total extract to 52.5 hours for interviews and 3 hours for focus group discussions.

Respondents Demographics: The respondents (both for interviews and focus group discussions) belonged to age group of 30-45 years. There was total nine interviews and among which two interviews were done with politicians, three interviews from civil society organisation and NGOs, four interviews from the administration and Disaster Management Authority. The two focus group discussions were held with the citizens of Mirpur to get better understanding of the resilient community. All the stakeholders were interviewed and participated in group discussions to fulfill the research aim.

Step 2: Generate the initial codes

As the researchers get familiarity with the data, step two initiates. The initial ideas are jolted down are used to generate the initial codes. The dataset is further explored to arrange it in a meaningful manner. This brings structure and systematic order of the data. The purpose is to reduce the big data set into smaller data which is meaningful to generate codes. The systematic data obtained is

used to proceed further with analysis and assessment. In the next step the data which is irrelevant and meaningless or repetitive in nature is excluded from the data set. The excluded data is not used in the coding process. The predefined research questions and objectives are used in this research to generate codes. The generated codes answer those specific research questions and address the objectives of the research. I have adopted the same manner where predefined questions will be answered through this analysis therefore, this study is more theory driven rather than the data driven. In the data-driven approach there are no pre-defined codes and themes, and the themes are derived directly from the data and moves towards the relevance in the theory. It is used more in inductive studies.

Coding Process

First of all, the data of the interviews and group discussions is arranged in a systemic order as per the research questions. The relevant data form the given data set is extracted through repetitive reading after the transcription of the data is done. The coding is done, and relevant data is prescribed in the coding process. The codes are then compared, and modification is done to relate the research questions to the codes. The codes identified initially for the research questions are presented below:

Research Question 1:

General preparedness & readiness is done by concerned departments & district administration evolve strategy and do contingency planning with the help of land departments to handle disaster situations, blind and unforeseen disasters like earthquakes and covid-19 etc.

During this disaster whatever information which was available to us and for more information which was required for us, village wise committees were made for time being to obtain further required information, for this purpose we utilized services of different Assistant commissioners and engineers for assessment of damage and loss caused to the life and property through these village committees.

For mitigation purpose communities are made prepared for any disasters through awareness of which steps are to be taken in disasters, communities are sensitized at village and sub village level through information in this regard. we are going to establish village & sub village level committees to have better contact and coordination with our communities, which bring good change.

Timely dissemination of information from top to bottom and bottom to top is very important aspect for better coordination before and after any hazard.

Our role is coordination before and during the disaster, and provision of relief & rescue services after the disaster, and whenever there is a disaster, we try at our level to put our best efforts.

At subdivision level ACs are responsible to control and plan and coordinate with communities and have close liaison and at district level DC is coordinating and planning and executing with communities through liaison and departments.

We have rapid response teams for disasters like monsoon, floods, and earthquake.

We made triage and then we made three teams in divisional teaching hospital one for emergency, second for operations and third team for wards who looked after patients very well.

Yearly planning for all these types of disasters or emergencies are done under district administration and all concerned departments play their role at time of disasters or emergencies.

Radio is important source of communication on which our programs are aired in which awareness is created among society and important information is telecasted.

We held health sessions at all level to create awareness and impart health education for any emergency or disaster, these sessions in all respect are held separately for females and males to create resilience.

Health department representatives who is in charge of BHU and notables of the village are part of it, they regularly held meetings, discusses issues, and make plan accordingly.

We work in coordination and in a chain of command. All programs are coordinated and approved in chain of command; feedback and input system are intact. All stakeholders from top to bottom and bottom to top are taken on board. Planning phase, implementation phase, monitoring & evaluation, monthly & weekly reporting all activities are coordinated.

Integrated system of information is in place and timely disseminate the information.

Society given information and awareness about what to do in disasters. Liaison between communities & departments requires more attention.

Schools, colleges, and other public buildings have been marked as evacuation centers to be utilized in any disaster.

NRSP is a non-governmental organization, which always works in collaboration with the district administration in any disaster and we conduct training and counselling.

We have structural engineers in our department who gives guidelines and advice on construction matters to the community as mitigation measure.

Our general service officer or social sector officers gives general guideline and awareness to the public that in case of any earthquake like disaster get out of rush and crowded area.

Community is alarmed about the aftershocks and measures to be taken in such situation. This process continues in peacetime and we conduct tests of the community after training to ascertain what they gained out of awareness training

Our administration performed very well directly and indirectly assistance & support to the community and government in 2005 earthquake, 2010 flood and 2019 earthquake in Mirpur.

We made an agreement with local government of AJK and gave awareness training to government officers, tehsildars, and naib tehsildars in whole AJK.

We distributed banners, sticky notes and pamphlets in the community for creating awareness and knowledge spread for better prevention, response and rehabilitation activities.

We have made three to four committees in each union council comprising fifteen to twenty persons in each. These are called community organization (CO), meetings of such are held on monthly or fortnightly basis under arrangement of our social welfare officer in which we discuss disaster relates issues. Welfare officer gets feedback from them.

Through local support organization (LSO), we keep the community informed.

With the help of government guidelines and data, we use counselling and coaching of community as effective tool for the community.

We do meetings with community on weekly, fortnightly and monthly basis to discuss disaster risk issues of communities.

To educate people & create awareness among the society is a big task which we do frequently.

Engineers are consulted for valuable advice, so construction material is ensured in quality & quantity so that no life and property loss is there in a disaster, government has also devised SOPs and ensures building codes.

We frequently interact with public and share knowledge with them & educate them, and they listen to those who help them in time of hardships.

Before start of any type of construction, engineering services be hired at, individual level and government level so buildings are earthquake proof. Avoid vertical construction.

Community should be properly communicated & convinced that it is in their interest what is being done & told to them. Communication methodology be logical.

Basic instructions are disseminated like if earthquake jolts the earth then you must come out of mud houses, weak construction, damaged building immediately.

Like Government has asked people not to construct concrete water tanks on roofs instead install plastic tanks. People have been asked if there is no beam in column then do not construct second storey, such measures can mitigate losses.

We have made community-based policy in which we included people from community with whom we do coordination and make awareness programs with them, by doing this exercise with them lot of help from them in formulating policies is obtained at down level.

We have effectively created awareness among our people by arranging meetings with notables of villages, by sharing mobiles no of community members and creating WhatsApp groups so timely we disseminate information from top to bottom and bottom to top at district level in disasters.

Government imposed building codes, community seeks guidance and approval for such projects as a mitigation measure.

Mitigation measure in case of escalation ,evacuation plans made and departments earmarked for this purpose. We have earmarked buildings in case of evacuation.

SOPs and building codes to be followed strictly from now onwards for all types of construction.

We ensured functionality of our warehouses like how much food items, clothing and tents are available. We also have mobilized community to identify risks in their area so timely steps can be taken.

We have imparted training on disaster preparedness to students & community as early warning, if community beforehand knows what to do in disasters, minimum losses will be there in that community.

We created awareness in our community through early warning system.

Our department has identified vulnerable groups in the society, so we know exactly which people will be more vulnerable in the earthquake and we must manage resources to make them resilient,

SOPs & guidelines for all types of construction is communicated to the community through DDMA, district council and through other relevant departments for any future disaster. These instructions communicated to the community through different awareness programmes, arranging workshops & social media.

A high-level meeting was convened last month at Mirpur in collaboration with Mangla dam's authorities in which geologists were invited. The purpose of this meeting was to explore reasons behind it, and to prepare for such disasters and minimize losses in future. Survey in this regard is under process.

We have activated and made them functional the peace committees, which exists at district level & union councils. We execute government policies and create awareness through notables of these committees by regular meetings with administration, police and other stakeholders and making them functional in case of any disaster.

With the knowledge, efforts and timely steps taken, government can reduce losses to some extent. Individually one should take precautionary measures to safeguard himself against hazards.

Training and awareness sessions plays important role to reduce losses in the disasters.

Awareness has been created among people to construct houses and other infrastructure according to engineer's advice. Use of proper & as per scale material will make buildings earthquake proof to avoid further losses and damage in the disasters.

Government also introduced bylaws in which public is advised to follow those practices for safety purpose.

Secretary union councils are trained and have sufficient awareness to train and coach their respective community in their area of responsibility.

NRSP, NGO arranged workshops for communities for awareness and making them prepared for any future disaster.

Maximum awareness sessions are arranged by government and NGOs for coaching community. The more community is trained prepared the more they shall be resilient.

Research Question 2:

A meeting at commissioner office attended by researchers, senior management dealing with disasters management to discuss on disaster risk reduction measures and create awareness among people and at departments level for tackling and preparations for future disasters. These efforts create awareness in the society for tackling future disasters and risk reduction measures.

Such information is disseminated to public through campaigns, media & social media.

Through peace committees which are constituted by Police department which exists at district, subdivision & union level we arrange regular meetings and create awareness among society and keep them informed regarding disasters and measures to be taken in such emergency situations.

There are two types of sources to disseminate information. One is through direct interaction i.e., meetings, second is through media.

social media is a fast means in messages to almost each individual delivers. This means creates awareness among people and timely information is delivered.

We utilize all those available buildings in such disaster, which are good condition whether public or private.

In any disaster, emergency, or incident police will work on frontline, all departments including police work together in disasters.

Since policies and decisions are taken at government level and Police role is supportive in this regard. In any disaster, police department supports in all operations in disaster.

For each type of disaster, a dedicated/designated team should be prepared and readily available. These are trained in their respective fields like for floods swimmers, life jackets, helicopter service etc. be dedicated. Same wise for earthquake all types of machinery & tools should be readily available, rescue teams are to be fully equipped & trained with all necessary requirements.

Police department prime's responsibility is to protect lives and property of people. Police is not having resources and training to deal with such disasters, the more police is made capable and resourceful the more efficiency will be there in our department to manage the disasters in better way.

We as a public demand from government that a proper consolidated survey be conducted to ascertain reasons. Results be shared to us so that we know where we must construct our houses and where we should not so minimum damage is there in future. Government has not helped us at all in this disaster. Traders' damaged assets were not even surveyed to ascertain losses estimate.

Our demand is proper geological survey be conducted in the area to ascertain reasons and for future guidance and implementation.

In absence of the earthquake proof buildings, open areas and tents are best in disasters instead of weak and cracked buildings.

Maximum buildings have cracks, and 15% buildings are completely damaged.

People informs government channels about their problems and government also knows but departments do not fulfill their responsibility. Government needs to support its communities on humanitarian basis in the disasters.

The effects of disasters in some countries are very minimal because those countries or communities are strong financially, have resources. They follow best practices, and those nations have best arrangements, their communities are well educated as compared to us. That is why they are less effected due to disaster as compared to us.

we have made community-based policy in which we included people from community with whom we do coordination and make awareness programs with them, by doing this exercise with them lot of help from them in formulating policies is obtained at down level. Since every DDMA officer works in DC office of respective district so better coordination & planning with other departments

is done and related matters are resolved amicably. Till the time community does not know nature of disaster and no awareness created among them no mitigation can be done, to cater this aspect we have effectively created awareness among our people by arranging meetings with notables of villages, by sharing mobiles no of community members and creating WhatsApp groups so timely we disseminate information from top to bottom and bottom to top at district level in disasters.

After establishment of DDMA at district level first we made LOC plan in which all concerned department taken on board and made them responsible for their designated role as a mitigation measure in case of escalation, evacuation plans made and departments earmarked for this purpose. We have earmarked buildings in case of evacuation.

We have imparted training on disaster preparedness to students & community as early warning, if community beforehand knows what to do in disasters, minimum losses will be there in that community.

We have created pages of DDMA at district level to keep informed community through different means like messages, sharing awareness videos, through special awareness campaigns. DDMA ensures citizen participation without their participation we would not be able to do our job effectively because it is the community who gets affected in any disaster and with our guidance and assistance they are well trained as department is not having human resource to coup disasters, therefore trained community acts like a human resource for us.

Every year 8 October is observed as a day of awareness about disasters, so we start our activities related to this from 1 October until 15 October every year by different campaigns, short training sessions to the community for preparedness, rescue, relief, response, rehabilitation.

We have established community-based organizations, as we have constituted committees from every union council of the district, which comprised of 20-25 notables' persons. Out of a union council one member is selected as its chairman and we kept record of those committee members with their contact number for dissemination of information from top to bottom and bottom to top in case of any disaster. These community-based organizations help us a lot in implementation of SOPs & policies as well.

There is need of coordination in flow of information, no replication of information be there so time is saved, only authentic & reliable channel be used for dissemination of information to down level.

SOPs & guidelines for all types of construction is communicated to the community through DDMA, district council and through other relevant departments for any future disaster. These instructions communicated to the community through different awareness programmes, arranging workshops & social media.

I think there is still need of concerted efforts to strengthen our communities; we need dedicated budget to perform these roles.

school, Colleges buildings, community centers are earmarked for all types of disaster in the district, and in case of bigger disaster evacuation is done in open places and we establish tent village. Open places are safer than buildings.

No such effort by the department is done so far for such existing buildings to make accessible for disabled.

While preparing resilient community there are certain complaints or reservations which we reduce those amicably and we predefined risks at district level as mitigation measures.

Our department is active, put its best efforts, and coordinate with other departments like arranging heavy machinery and other support from Pak army.

There is very little understanding between the government and community to work together to mitigate disaster's effects which will help in minimizing the risks.

Basic instructions are disseminated like if earthquake jolts the earth then you have to come out of mud houses, weak construction, damaged building immediately.

We have provided tents, blankets to the poor in this disaster; in addition to that, we provided dry ration & grocery items to at least nine hundred families. We visited to those people who were psychological depressed in the disaster for keeping their morale high

Government carried out survey for damage assessment.

Social workers play great role they need more attention and if they are properly activated great advantage can be achieved, in addition to that social media, electronic and print media is effective tool. Our people have great potential & capacity only they need right direction by good administrators.

District administration makes decisions while sitting in their offices, and they do not ensure public participation, which is very important for making societies more resilient.

Single story buildings and having big lawn or an open place are used for evacuation purposes.

Government must seek input from professionals, media as well. Power & authorities in our state must be under check & balance system so everyone is accountable.

Our general service officer or social sector officers gives general guideline and awareness to the public that in case of any earthquake like disaster get out of rush and crowded area. They advise people in case of earthquake get out of buildings and change the area. Community is alarmed about the aftershocks and measures to be taken in such situation.

Our administration performed very well directly and indirectly assistance & support to the community and government in 2005 earthquake, 2010 flood and 2019 earthquake in Mirpur. We try our best efforts to help maximum people about the community through welfare projects, which are planned and executed keeping district administration in loop.

With the help of UNDP, we constructed ten houses, or we can say ten community shelters, which fall under category of "poverty scope card" as well and we constructed two collapsed link roads due to earthquake and those link roads were linking many villages.

Under UNDP guideline, we imparted training and awareness to the community for disaster risk reduction. Then we educated people to be hopeful and moving towards rehabilitation. Due to earthquake water was contaminated, we educated people to boil water before drinking to avoid further diseases which ultimately leads to another disaster.

We trained and focused on each educated person of the family who in turn use to make understand whole concept to all family members including women, older persons, and children.

Through community resource person's chain of command, we do promote participation. These are normally educated person of his/her area mostly teachers, lady health workers or government employee or activists may be paid or volunteers we promote citizen participation.

Our department has predefined rules under those we provide information through our Local support organization, community resource persons we disseminate information for timely and effective response.

Those NGOs facilitated people in many ways like logistical support, food & physical infrastructure. Earthquake brought many projects in the affected area. Main Road is being reconstructed on new design and safe from hazards.

if someone is injured or hit immediate information be given to concerned manager or community resource person for timely response and evacuation. We summarize steps as arrangement for food, safety of life and provision of medical support.

Our engineering department gives awareness & advises community about structures engineering for buildings houses, sheds, so they are earthquake proof buildings.

Open areas are best in case of earthquake disaster, dispensaries, schools, colleges, marriage halls, municipal committee's halls or any government halls are utilized in case of disaster.

With the help of members of committees, which we made in the community we help vulnerable groups to shift them to evacuation centers earmarked for disasters.

We tried our best to facilitate people in their safety, uplifting and improvement their life standard, their growth and rehabilitation phase.

We keep our record in a systematic manner and its durable and we can provide on request to any department for future guidance with consent of our concerned district department.

Due to time taking process our policies take more time in implementation and execution.

Community must be given coaching in befitting manner and be given first aid training and facility to prepare them for any disaster. They must be morally supported in case of disaster like provision of food, medical support, logistical support, or provision of transport to hospitals in case of serious emergencies. They must be given updated guidelines on the subject.

Open area is best in case of earthquake however, concrete and earthquake proof houses are very important. Schools are also best.

Individually one should take precautionary measures to safeguard himself against hazards. Life is given top priority in hazards and disasters. Community helps each other in disasters to save lives and property of each other. Training and awareness sessions plays important role to reduce losses in the disasters.

Awareness has been created among people to construct houses and other infrastructure according to engineer's advice. Use of proper & as per scale material will make buildings earthquake proof to avoid further losses and damage in the disasters.

Government also introduced bylaws in which public is advised to follow standard practices for safety purpose.

It advises better practices in construction and train first aid sessions. Our focus remains to disseminate information and awareness.

If there are no organized groups, we cannot withstand disasters, unity among community is very important to address the problems faced in disasters. Members of village and union council committees from all segments of the community can educate and create awareness about disaster in their families.

No concrete steps taken in this regard. There is alarming situation in the city because this city lies on fault line where frequent earthquakes can occur. This situation demands extra care, planning and measures, which are not in place as per situation. In disasters, we have to seek help of Pak army and local institutions are not effective.

listings work of compensation to affectee is in progress by administration.

Death compensation was provided to the affectee by government. NGOs made houses for the affectee whose house were collapsed or damaged badly but government did not provided any support in this regard.

Social media, which is a common tool now days, is being used for dissemination of information for early information.

Integrated system of information is in place and timely disseminate the information.

Different departments were given task to make clusters to disseminate information.

Although information system is in place and active but practically nothing has been done to provide relief to the affectee.

Planning is good at the government level, but practical work needs more attention.

The major challenge is coordination between departments and community. For better coordination, timely response and flow of information areas be divided and focal persons be nominated.

There is lack of funds and inappropriate training mechanism due to which implementation phase faces issues.

Research Question 3:

Government to provide maximum funds from annual programs and budget for mitigation purpose since our country is mostly going through one or other type of disaster so sufficient budgets be allocated for this purpose.

There is a need for identification of risk area wise so that administration knows well that which type of risks are present in a particular area & on the basis of risk identification planning be done & resources be allocated accordingly.

Allocation of funds for tackling any disaster is basic requirement, the difficulty or challenge, which we face after a disaster has hit, is allocation of funds.

To provide immediate relief and rescue to community in disaster, administration needs cash amount, which is not available at district level and through proper channel getting the bills approved from government takes time, which is a problem.

Our role is coordination with stakeholders in disasters and while doing so we come across problems like immediate provision of machinery, technological tools, instruments, which are having great importance in rescue operation but these, are not available to support immediately.

Deficiency is lack of resources in case of large-scale disaster. Capacity building is also to be enhanced at all departments to address any disaster. More trainings to be imparted.

Capacity building and allocation of resources be given due weightage. Training to rescue staff be imparted.

Resources and training are challenges.

District disaster management authority, which is headed by DC, should be provided full resources like human resources, machinery, tools and funds to fight with disaster in effectively and timely.

Training and capacity building of relevant departments be given top priority. Coordination, information flow and implementation are of great importance in all these activities.

We must seek help of Pak army and local institutions are not effective.

Planning is good at the government level, but practical work needs more attention.

Weakness is coordination between departments and community.

For better coordination, timely response and flow of information areas be divided and focal persons be nominated.

Finance, training & coordination are biggest challenges.

There is no funds and better training mechanism due to which implementation phase faces issues.

First aid arrangements be ensured at all level in the community, and mobile hospitals can play effective role in the disasters because of mobility.

Poor people cannot ensure proper construction due to less resources that is why they are compelled to compromise on standards.

Road infrastructure be improved, and communication means be better.

Since we must seek permission from district management for any project to undertake so it takes time from planning to implementation phase due to communication gaps between departments.

Today Information technology role is vital in this age so it must be given more weightage and focus.

When earthquake came in Muzaffarabad in 2005 billion of rupees were expended but not in the case of Mirpur, this indiscrimination creates problems among the community.

Municipal and district administration is not equipped with latest heavy machinery and cutting tools so that if there are people under a collapsed building they cannot be evacuated properly.

If communication breaks down then there are issues, which will hinder relief activities, communication is important aspect.

Budgets resources are minimal. At district level no authority is delegated to DDMA staff. If some workshops are to be arranged at district level their expenditure is borne by SDMA.

Human resources at district level are acute only two staff members are posted they cannot perform their role in effective manner, we just work under DC office, no authority is delegated to us independently.

We lack human resources and other necessary resources.

Our government machinery at present is not equipped with latest and heavy machinery used to remove debris in case of building collapsed in a disaster.

Institutions' role is weak, and they are burden on the state, first they must be trained to handle the situation in disasters then they should train community.

Government must arrange latest equipment and tools needed in disasters and enhance its capacity to fight against natural disasters.

Police is not having resources and training to deal with such disasters, the more police is made capable and resourceful the more efficiency will be there in our department to manage the disasters in better way.

Lack of Resources, lack of dedicated trained teams.

Although institutions are there and capable people are also employed but without resources and modern machinery & tools there is no use so, Capabilities of departments be enhanced by providing modern machinery and other necessary tools.

Step 3: Search for Themes in data

The initial codes generated in the data are further explored to search for themes in data. The codes generated in the previous step are highlighted at this step to get a list of codes. This list aids in identifying the potential themes and know that which themes are associated with each other which will be presented visually in the next step. The purpose is to combine codes and find the overarching theme and keep the codes under one theme which are relatively associated with each other and related to each other. To identify and arrange the codes, tables or graphs can also be made.

Braun & Clarke (2006) have defined theme as any pattern which has some specific characteristic in the data and relates to the research question. As per the flexibility of the process, no strict rules and regulations are there to guide the themes and patterns identification. The themes that have been identified as per their code's significance are shown in the table below along with the codes.

Table 4.4 Initial Themes

Research Question 1
General preparedness & readiness is done by concerned departments & district administration evolve strategy and do contingency planning with the help of land departments to handle disaster situations, blind and unforeseen disasters like earthquakes and covid-19 etc. During this disaster whatever information which was available to us and for more information which was required for us, village wise committees were made for time being to obtain further required information, for this purpose we utilized services of different Assistant commissioners and engineers for assessment of damage and loss caused to the life and property through these village committees. For mitigation purpose communities are made prepared for any disasters through awareness of which steps are to be taken in disasters, communities are sensitized at village and sub village level through information in this regard. We are going to establish village & sub village level committees to have better contact and coordination with our communities, which bring good change. Timely dissemination of information from top to bottom and bottom to top is very important aspect for better coordination before and after any hazard. Our role is coordination before and during the disaster, and provision of relief & rescue services after the disaster, and whenever there is a disaster, we try at our level to put our best efforts. At subdivision level ACs are responsible to control and plan and coordinate with communities and have close liaison and at district level DC is coordinating and planning and executing with communities through liaison and departments. We have rapid response teams for disasters like monsoon, floods, and earthquake. We made triage and then we made three teams in divisional teaching hospital one for emergency, second for operations and third team for wards who looked after patients very well.

Yearly planning for all these types of disasters or emergencies are done under district administration and all concerned departments play their role at time of disasters or emergencies.

Radio is important source of communication on which our programs are aired in which awareness is created among society and important information is telecasted.

We held health sessions at all level to create awareness and impart health education for any emergency or disaster, these sessions in all respect are held separately for females and males to create resilience.

Health department representatives who are in charge of BHU and notables of the village are part of it, they regularly held meetings, discusses issues, and make plan accordingly.

We work in coordination and in a chain of command. All programs are coordinated and approved in chain of command; feedback and input system are intact. All stakeholders from top to bottom and bottom to top are taken on board. Planning phase, implementation phase, monitoring & evaluation, monthly & weekly reporting all activities are coordinated.

Integrated system of information is in place and timely disseminate the information.

Society given information and awareness about what to do in disasters. Liaison between communities & departments requires more attention.

Schools, colleges, and other public buildings have been marked as evacuation centers to be utilized in any disaster.

NRSP is a non-governmental organization, which always works in collaboration with the district administration in any disaster and we conduct training and counselling.

We have structural engineers in our department who gives guidelines and advice on construction matters to the community as mitigation measure.

Our general service officer or social sector officers gives general guideline and awareness to the public that in case of any earthquake like disaster get out of rush and crowded area.

Community is alarmed about the aftershocks and measures to be taken in such situation. This process continues in peacetime and we conduct tests of the community after training to ascertain what they gained out of awareness training

Our administration performed very well directly and indirectly assistance & support to the community and government in 2005 earthquake, 2010 flood and 2019 earthquake in Mirpur.

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We distributed banners, sticky notes and pamphlets in the community for creating awareness and knowledge spread for better prevention, response and rehabilitation activities.

We have made three to four committees in each union council comprising fifteen to twenty persons in each. These are called community organization (CO), meetings of such are held on monthly or fortnightly basis under arrangement of our social welfare officer in which we discuss disaster relates issues. Welfare officer gets feedback from them.

Through local support organization (LSO), we keep the community informed.

With the help of government guidelines and data, we use counselling and coaching of community as effective tool for the community.

We do meetings with community on weekly, fortnightly and monthly basis to discuss disaster risk issues of communities.

To educate people & create awareness among the society is a big task which we do frequently.

Engineers are consulted for valuable advice, so construction material is ensured in quality & quantity so that no life and property loss is there in a disaster, government has also devised SOPs and ensures building codes.

We frequently interact with public and share knowledge with them & educate them, and they listen to those who help them in time of hardships.

Before start of any type of construction, engineering services be hired at, individual level and government level so buildings are earthquake proof. Avoid vertical construction.

Community is properly communicated & convinced that it is in their interest what is being done & told to them. Communication methodology is logical.

Basic instructions are disseminated like if earthquake jolts the earth then you must come out of mud houses, weak construction, damaged building immediately.

Like Government has asked people not to construct concrete water tanks on roofs instead install plastic tanks. People have been asked if there is no beam in column then do not construct second storey, such measures can mitigate losses.

We have made community-based policy in which we included people from community with whom we do coordination and make awareness programs with them, by doing this exercise with them lot of help from them in formulating policies is obtained at down level.

We have effectively created awareness among our people by arranging meetings with notables of villages, by sharing mobiles no of community members and creating WhatsApp groups so

timely we disseminate information from top to bottom and bottom to top at district level in disasters.

Government imposed building codes, community seeks guidance and approval for such projects as a mitigation measure.

Mitigation measure in case of escalation, evacuation plans made, and departments earmarked for this purpose. We have earmarked buildings in case of evacuation.

SOPs and building codes to be followed strictly from now onwards for all types of construction.

We ensured functionality of our warehouses like how much food items, clothing and tents are available. We also have mobilized community to identify risks in their area so timely steps can be taken.

We have imparted training on disaster preparedness to students & community as early warning, if community beforehand knows what to do in disasters, minimum losses will be there in that community.

We created awareness in our community through early warning system.

Our department has identified vulnerable groups in the society, so we know exactly which people will be more vulnerable in the earthquake and we must manage resources to make them resilient,

SOPs & guidelines for all types of construction is communicated to the community through DDMA, district council and through other relevant departments for any future disaster. These instructions communicated to the community through different awareness programmes, arranging workshops & social media.

A high-level meeting was convened last month at Mirpur in collaboration with Mangla dam's authorities in which geologists were invited. The purpose of this meeting was to explore reasons behind it, and to prepare for such disasters and minimize losses in future. Survey in this regard is under process.

We have activated and made them functional the peace committees, which exists at district level & union councils. We execute government policies and create awareness through notables of these committees by regular meetings with administration, police and other stakeholders and making them functional in case of any disaster.

With the knowledge, efforts and timely steps taken, government can reduce losses to some extent. Individually one should take precautionary measures to safeguard himself against hazards.

Training and awareness sessions plays important role to reduce losses in the disasters.

Awareness has been created among people to construct houses and other infrastructure according to engineer's advice. Use of proper & as per scale material will make buildings earthquake proof to avoid further losses and damage in the disasters.

Government also introduced bylaws in which public is advised to follow those practices for safety purpose.

Secretary union councils are trained and have sufficient awareness to train and coach their respective community in their area of responsibility.

NRSP, NGO arranged workshops for communities for awareness and making them prepared for any future disaster.

Maximum awareness sessions are arranged by government and NGOs for coaching community. The more community is trained prepared the more they shall be resilient.

Research Question 2

A meeting at commissioner office attended by researchers, senior management dealing with disasters management to discuss on disaster risk reduction measures and create awareness among people and at departments level for tackling and preparations for future disasters. These efforts create awareness in the society for tackling future disasters and risk reduction measures. Such information is disseminated to public through campaigns, media & social media.

Through peace committees which are constituted by Police department which exists at district, subdivision & union level we arrange regular meetings and create awareness among society and keep them informed regarding disasters and measures to be taken in such emergency situations.

There are two types of sources to disseminate information. One is through direct interaction i.e., meetings, second is through media.

social media is a fast means in messages to almost each individual delivers. This means creates awareness among people and timely information is delivered.

We utilize all those available buildings in such disaster, which are good condition whether public or private.

In any disaster, emergency, or incident police will work on frontline, all departments including police work together in disasters.

Since policies and decisions are taken at government level and Police role is supportive in this regard. In any disaster, police department supports in all operations in disaster.

For each type of disaster, a dedicated/designated team should be prepared and readily available. These are trained in their respective fields like for floods swimmers, life jackets, helicopter service etc. be dedicated. Same wise for earthquake all types of machinery & tools should be readily available, rescue teams are to be fully equipped & trained with all necessary requirements.

Police department prime's responsibility is to protect lives and property of people. Police is not having resources and training to deal with such disasters, the more police is made capable and resourceful the more efficiency will be there in our department to manage the disasters in better way.

We as a public demand from government that a proper consolidated survey be conducted to ascertain reasons. Results be shared to us so that we know where we must construct our houses and where we should not so minimum damage is there in future. Government has not helped us at all in this disaster. Traders' damaged assets were not even surveyed to ascertain losses estimate.

Our demand is proper geological survey be conducted in the area to ascertain reasons and for future guidance and implementation.

In absence of the earthquake proof buildings, open areas and tents are best in disasters instead of weak and cracked buildings.

Maximum buildings have cracks, and 15% buildings are completely damaged.

People informs government channels about their problems and government also knows but departments do not fulfill their responsibility. Government needs to support its communities on humanitarian basis in the disasters.

The effects of disasters in some countries are very minimal because those countries or communities are strong financially, have resources. They follow best practices, and those nations have best arrangements, their communities are well educated as compared to us. That is why they are less effected due to disaster as compared to us.

we have made community-based policy in which we included people from community with whom we do coordination and make awareness programs with them, by doing this exercise with them lot of help from them in formulating policies is obtained at down level. Since every DDMA officer works in DC office of respective district so better coordination & planning with other departments is done and related matters are resolved amicably. Till the time community does not know nature of disaster and no awareness created among them no mitigation can be done, to cater this aspect we have effectively created awareness among our people by arranging meetings with notables of villages, by sharing mobiles no of community members and creating WhatsApp groups so timely we disseminate information from top to bottom and bottom to top at district level in disasters.

After establishment of DDMA at district level first we made LOC plan in which all concerned department taken on board and made them responsible for their designated role as a mitigation measure in case of escalation, evacuation plans made and departments earmarked for this purpose. We have earmarked buildings in case of evacuation.

We have imparted training on disaster preparedness to students & community as early warning, if community beforehand knows what to do in disasters, minimum losses will be there in that community.

We have created pages of DDMA at district level to keep informed community through different means like messages, sharing awareness videos, through special awareness campaigns. DDMA ensures citizen participation without their participation we would not be able to do our job effectively because it is the community who gets affected in any disaster and with our guidance and assistance they are well trained as department is not having human resource to coup disasters, therefore trained community acts like a human resource for us.

Every year 8 October is observed as a day of awareness about disasters, so we start our activities related to this from 1 October until 15 October every year by different campaigns, short training sessions to the community for preparedness, rescue, relief, response, rehabilitation.

We have established community-based organizations, as we have constituted committees from every union council of the district, which comprised of 20-25 notables' persons. Out of a union council one member is selected as its chairman and we kept record of those committee members with their contact number for dissemination of information from top to bottom and bottom to

top in case of any disaster. These community-based organizations help us a lot in implementation of SOPs & policies as well.

There is need of coordination in flow of information, no replication of information be there so time is saved, only authentic & reliable channel be used for dissemination of information to down level.

SOPs & guidelines for all types of construction is communicated to the community through DDMA, district council and through other relevant departments for any future disaster. These instructions communicated to the community through different awareness programmes, arranging workshops & social media.

I think there is still need of concerted efforts to strengthen our communities; we need dedicated budget to perform these roles.

school, Colleges buildings, community centers are earmarked for all types of disaster in the district, and in case of bigger disaster evacuation is done in open places and we establish tent village. Open places are safer than buildings.

No such effort by the department is done so far for such existing buildings to make accessible for disabled.

While preparing resilient community there are certain complaints or reservations which we reduce those amicably and we predefined risks at district level as mitigation measures.

Our department is active, put its best efforts, and coordinate with other departments like arranging heavy machinery and other support from Pak army.

There is very little understanding between the government and community to work together to mitigate disaster's effects which will help in minimizing the risks.

Basic instructions are disseminated like if earthquake jolts the earth then you have to come out of mud houses, weak construction, damaged building immediately.

We have provided tents, blankets to the poor in this disaster; in addition to that, we provided dry ration & grocery items to at least nine hundred families. We visited to those people who were psychological depressed in the disaster for keeping their morale high

Government carried out survey for damage assessment.

Social workers play great role they need more attention and if they are properly activated great advantage can be achieved, in addition to that social media, electronic and print media is

effective tool. Our people have great potential & capacity only they need right direction by good administrators.

District administration makes decisions while sitting in their offices, and they do not ensure public participation, which is very important for making societies more resilient.

Single story buildings and having big lawn or an open place are used for evacuation purposes.

Government must seek input from professionals, media as well. Power & authorities in our state must be under check & balance system so everyone is accountable.

Our general service officer or social sector officers gives general guideline and awareness to the public that in case of any earthquake like disaster get out of rush and crowded area. They advise people in case of earthquake get out of buildings and change the area. Community is alarmed about the aftershocks and measures to be taken in such situation.

Our administration performed very well directly and indirectly assistance & support to the community and government in 2005 earthquake, 2010 flood and 2019 earthquake in Mirpur. We try our best efforts to help maximum people about the community through welfare projects, which are planned and executed keeping district administration in loop.

With the help of UNDP, we constructed ten houses, or we can say ten community shelters, which fall under category of "poverty scope card" as well and we constructed two collapsed link roads due to earthquake and those link roads were linking many villages.

Under UNDP guideline, we imparted training and awareness to the community for disaster risk reduction. Then we educated people to be hopeful and moving towards rehabilitation. Due to earthquake water was contaminated, we educated people to boil water before drinking to avoid further diseases which ultimately leads to another disaster.

We trained and focused on each educated person of the family who in turn use to make understand whole concept to all family members including women, older persons, and children. Through community resource person's chain of command, we do promote participation. These are normally educated person of his/her area mostly teachers, lady health workers or government employee or activists may be paid or volunteers we promote citizen participation.

Our department has predefined rules under those we provide information through our Local support organization, community resource persons we disseminate information for timely and effective response.

Those NGOs facilitated people in many ways like logistical support, food & physical infrastructure. Earthquake brought many projects in the affected area. Main Road is being reconstructed on new design and safe from hazards.

if someone is injured or hit immediate information be given to concerned manager or community resource person for timely response and evacuation. We summarize steps as arrangement for food, safety of life and provision of medical support.

Our engineering department gives awareness & advises community about structures engineering for buildings houses, sheds, so they are earthquake proof buildings.

Open areas are best in case of earthquake disaster, dispensaries, schools, colleges, marriage halls, municipal committee's halls or any government halls are utilized in case of disaster.

With the help of members of committees, which we made in the community we help vulnerable groups to shift them to evacuation centers earmarked for disasters.

We tried our best to facilitate people in their safety, uplifting and improvement their life standard, their growth and rehabilitation phase.

We keep our record in a systematic manner and its durable and we can provide on request to any department for future guidance with consent of our concerned district department.

Due to time taking process our policies take more time in implementation and execution.

Community must be given coaching in befitting manner and be given first aid training and facility to prepare them for any disaster. They must be morally supported in case of disaster like provision of food, medical support, logistical support, or provision of transport to hospitals in case of serious emergencies. They must be given updated guidelines on the subject.

Open area is best in case of earthquake however, concrete and earthquake proof houses are very important. Schools are also best.

Individually one should take precautionary measures to safeguard himself against hazards. Life is given top priority in hazards and disasters. Community helps each other in disasters to save lives and property of each other. Training and awareness sessions plays important role to reduce losses in the disasters.

Awareness has been created among people to construct houses and other infrastructure according to engineer's advice. Use of proper & as per scale material will make buildings earthquake proof to avoid further losses and damage in the disasters.

Government also introduced bylaws in which public is advised to follow standard practices for safety purpose.

It advises better practices in construction and train first aid sessions. Our focus remains to disseminate information and awareness.

If there are no organized groups, we cannot withstand disasters, unity among community is very important to address the problems faced in disasters. Members of village and union council committees from all segments of the community can educate and create awareness about disaster in their families.

No concrete steps taken in this regard. There is alarming situation in the city because this city lies on fault line where frequent earthquakes can occur. This situation demands extra care, planning and measures, which are not in place as per situation. In disasters, we have to seek help of Pak army and local institutions are not effective.

listings work of compensation to affectee is in progress by administration.

Death compensation was provided to the affectee by government. NGOs made houses for the affectee whose house were collapsed or damaged badly but government did not provide any support in this regard.

Social media, which is a common tool now days, is being used for dissemination of information for early information.

Integrated system of information is in place and timely disseminate the information.

Different departments were given task to make clusters to disseminate information.

Although information system is in place and active but practically nothing has been done to provide relief to the affectee.

Planning is good at the government level, but practical work needs more attention.

The major challenge is coordination between departments and community. For better coordination, timely response and flow of information areas be divided and focal persons be nominated.

There is lack of funds and inappropriate training mechanism due to which implementation phase faces issues.

Research Question 3

Government to provide maximum funds from annual programs and budget for mitigation purpose since our country is mostly going through one or other type of disaster so sufficient budgets be allocated for this purpose.

There is a need for identification of risk area wise so that administration knows well that which type of risks are present in a particular area & on the basis of risk identification planning be done & resources be allocated accordingly.

Allocation of funds for tackling any disaster is basic requirement, the difficulty or challenge, which we face after a disaster has hit, is allocation of funds.

To provide immediate relief and rescue to community in disaster, administration needs cash amount, which is not available at district level and through proper channel getting the bills approved from government takes time, which is a problem.

Our role is coordination with stakeholders in disasters and while doing so we come across problems like immediate provision of machinery, technological tools, instruments, which are having great importance in rescue operation but these, are not available to support immediately.

Deficiency is lack of resources in case of large-scale disaster. Capacity building is also to be enhanced at all departments to address any disaster. More trainings to be imparted.

Capacity building and allocation of resources be given due weightage. Training to rescue staff be imparted.

Resources and training are challenges.

District disaster management authority, which is headed by DC, should be provided full resources like human resources, machinery, tools and funds to fight with disaster in effectively and timely. Training and capacity building of relevant departments be given top priority. Coordination, information flow and implementation are of great importance in all these activities.

We must seek help of Pak army and local institutions are not effective.

Planning is good at the government level, but practical work needs more attention.

Weakness is coordination between departments and community.

For better coordination, timely response and flow of information areas be divided and focal persons be nominated.

Finance, training & coordination are biggest challenges.

There is no funds and better training mechanism due to which implementation phase faces issues.

First aid arrangements be ensured at all level in the community, and mobile hospitals can play effective role in the disasters because of mobility.

Poor people cannot ensure proper construction due to less resources that is why they are compelled to compromise on standards.

Road infrastructure be improved, and communication means be better.

Since we must seek permission from district management for any project to undertake so it takes time from planning to implementation phase due to communication gaps between departments.

Today Information technology role is vital in this age so it must be given more weightage and focus.

When earthquake came in Muzaffarabad in 2005 billion of rupees were expended but not in the case of Mirpur, this indiscrimination creates problems among the community.

Municipal and district administration is not equipped with latest heavy machinery and cutting tools so that if there are people under a collapsed building they cannot be evacuated properly.

If communication breaks down then there are issues, which will hinder relief activities, communication is important aspect.

Budgets resources are minimal. At district level no authority is delegated to DDMA staff. If some workshops are to be arranged at district level their expenditure is borne by SDMA.

Human resources at district level are acute only two staff members are posted they cannot perform their role in effective manner, we just work under DC office, no authority is delegated to us independently.

We lack human resources and other necessary resources.

Our government machinery at present is not equipped with latest and heavy machinery used to remove debris in case of building collapsed in a disaster.

Institutions' role is weak, and they are burden on the state, first they must be trained to handle the situation in disasters then they should train community.

Government must arrange latest equipment and tools needed in disasters and enhance its capacity to fight against natural disasters.

Police is not having resources and training to deal with such disasters, the more police is made capable and resourceful the more efficiency will be there in our department to manage the disasters in better way.

Lack of Resources, lack of dedicated trained teams.

Although institutions are there and capable people are also employed but without resources and modern machinery & tools there is no use so, Capabilities of departments be enhanced by providing modern machinery and other necessary tools.

Step 4 Review the Identified Themes

The patterns have been highlighted in the previous step. Now, themes are made from the identified patterns to review and refine the themes. Several overlapping patterns are combined into one theme and subthemes. In this way all the coding with meaningful patterns is converted into themes and subthemes. The next stage is to arrange the identified themes as per the research question or technique being followed in the analysis. The relevance of themes is checked under this stage and the clear relationship between the themes is also identified.

The following section presents the reviewed themes and have been arranged as per the research questions. All the themes for all research questions in a structured manner are presented below.

RQ1: What are the enduring nationwide efforts that have been taken to ensure disaster resistant infrastructure and resilient communities against natural hazards?

The first research question seeks to explore the efforts made to make the communities more resilient and ensure the disaster resistant infrastructure against the natural hazards. The measures that have been taken either by the government or the citizens are presented in the form of themes. The interview data suggested that the two main themes have been identified which are *Structural measures* and *non-Structural measures*. These themes have further subthemes which are presented in the table below:

Table 4.5: Research Question 1: Themes

Theme: Structural Measures	**Theme: Non-Structural Measures**
Sub theme 1: Resistance Construction	Sub theme 1: Education and Training
Sub theme 2: Building Codes	Sub theme 2: Warning System
Sub theme 3: Structural Modification	
Sub theme 3: Community Shelters	

RQ2: What are the critical challenges and prevailing techniques to cope with persistently occurring disasters faced by the communities of AJK, Pakistan?

The second research question explores the challenges and the techniques that are being followed to cope with the repeatedly occurring disasters. The themes for the prevailing techniques are divided into three broad categories that is before the disaster, during the disaster and after the disaster. Themes for challenges faced in coping with the disasters are presented separately. The main themes identified for prevailing techniques are *Organisational System and Emergency response.* Similarly, themes identified for the challenges are *Systemic Halts* and *Institutional Arrangement and Setup*.

Table 4.6: Research Question 2: Themes (a)

Theme: Organisational System	**Theme: Emergency Response**
Sub theme 1: Legal and Institutional Framework	Sub theme 1: Emergency Operation Centre
Sub theme 2: Resources	Sub theme 2: Warning System
	Sub theme 3: Relief

Table 7.4 Research Question 2: Themes (b)

Theme: Systemic Halts	**Theme: Institutional Arrangement and Setup**
Sub theme 1: Lack of Resources	Sub theme 1: Non-revision of policies
Sub theme 2: Lack of Trainings	Sub theme 2: Weak Implementation
Sub theme 3: Lack of Co-ordination	

RQ3: What are the possible hurdles that are impeding factors in development and implementation of emergency preparedness in AJK?

This research question investigates the factors that pose obstacles in the development and implementation of the emergency preparedness. The main themes identified are: *Organization and Planning* and *Systemic Halts.*

Table 4.8: Research Question 3: Themes

Theme: Organization and Planning	**Theme: Systemic Halts**
Sub theme 1: Outdated Plans	Sub theme 1: Lack of resources
Sub theme 2: Low investment in Mitigation	Sub theme 2: Lack of Trainings
	Sub theme 3: Lack of Co-ordination

Step 5: Define the Themes

As all themes and sub themes are reviewed in step 4, this step involves defining the identified themes. Defining the themes illustrates the mapping of the themes and the relation between themes and subthemes and subthemes of related themes. Each research question is addressed through drawing the map of its themes identified. Thematic map for all research questions is showed in the following section.

Nationwide efforts to ensure disaster resistant infrastructure and resilient communities in AJK:

The nationwide efforts aimed at ensuring the disaster resistant infrastructure and building resilient communities are highlighted. The main themes have been identified which are *Structural measures* and *non-Structural measures*. The subthemes are resistance construction, Building Codes, Structural Modification, Community Shelters, Education and Training and Warning System.

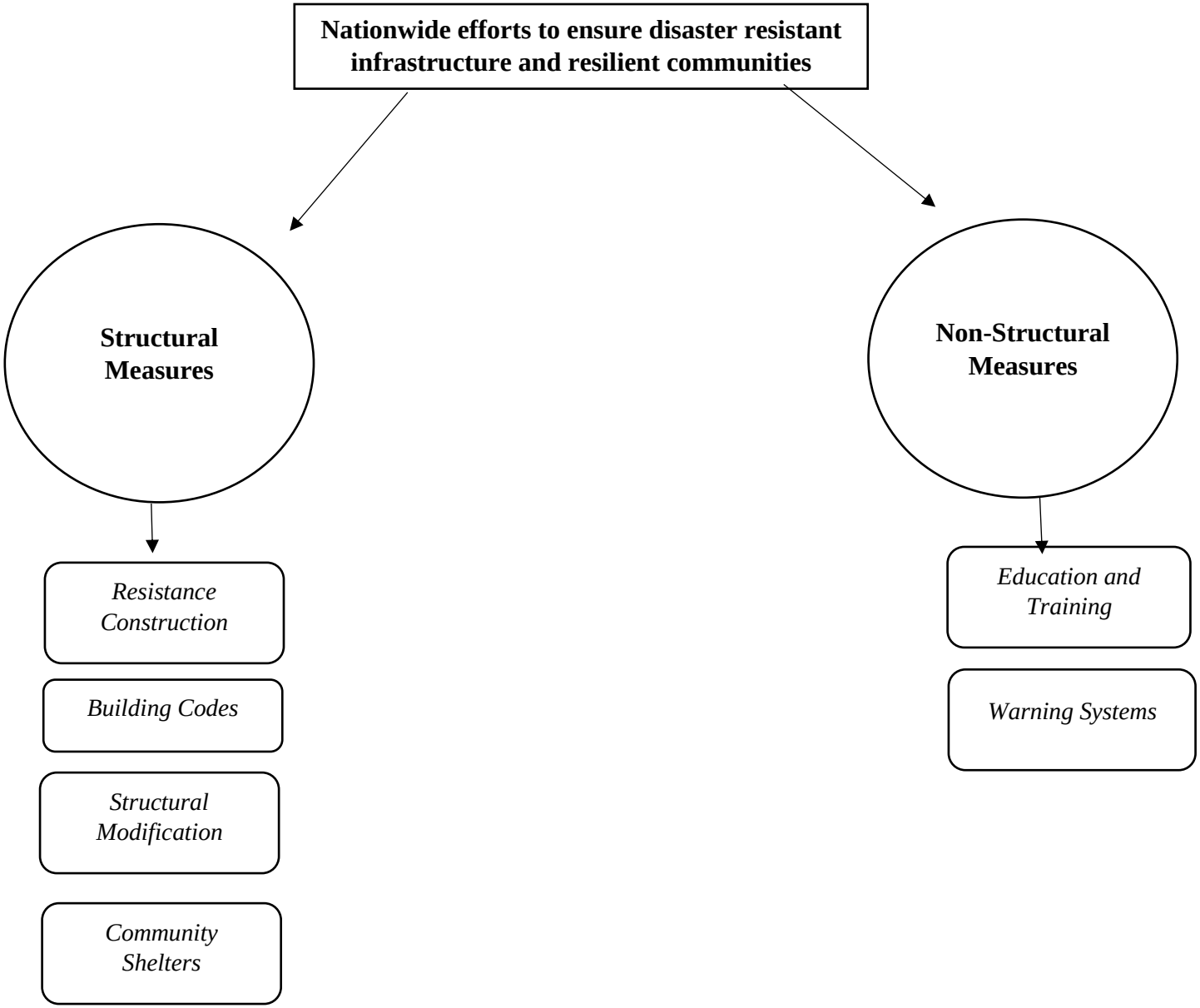

Figure 4.0.1 Thematic Map

Prevailing techniques and Challenges to cope with persistently Occurring Disasters in AJK:

The prevailing techniques to cope with persistently occurring disasters in AJK are highlighted. The main themes identified for prevailing techniques are *Organisational System, Emergency Response*. Similarly, themes identified for the challenges are *Systemic Halts* and *Institutional Arrangement and Setup*. The subthemes are Legal and Institutional Framework, Resources, Emergency Operation Centre, Warning System, Relief, Lack of Resources, Lack of Trainings, Lack of Co-ordination, Non- revision of Policies, Weak Implementation.

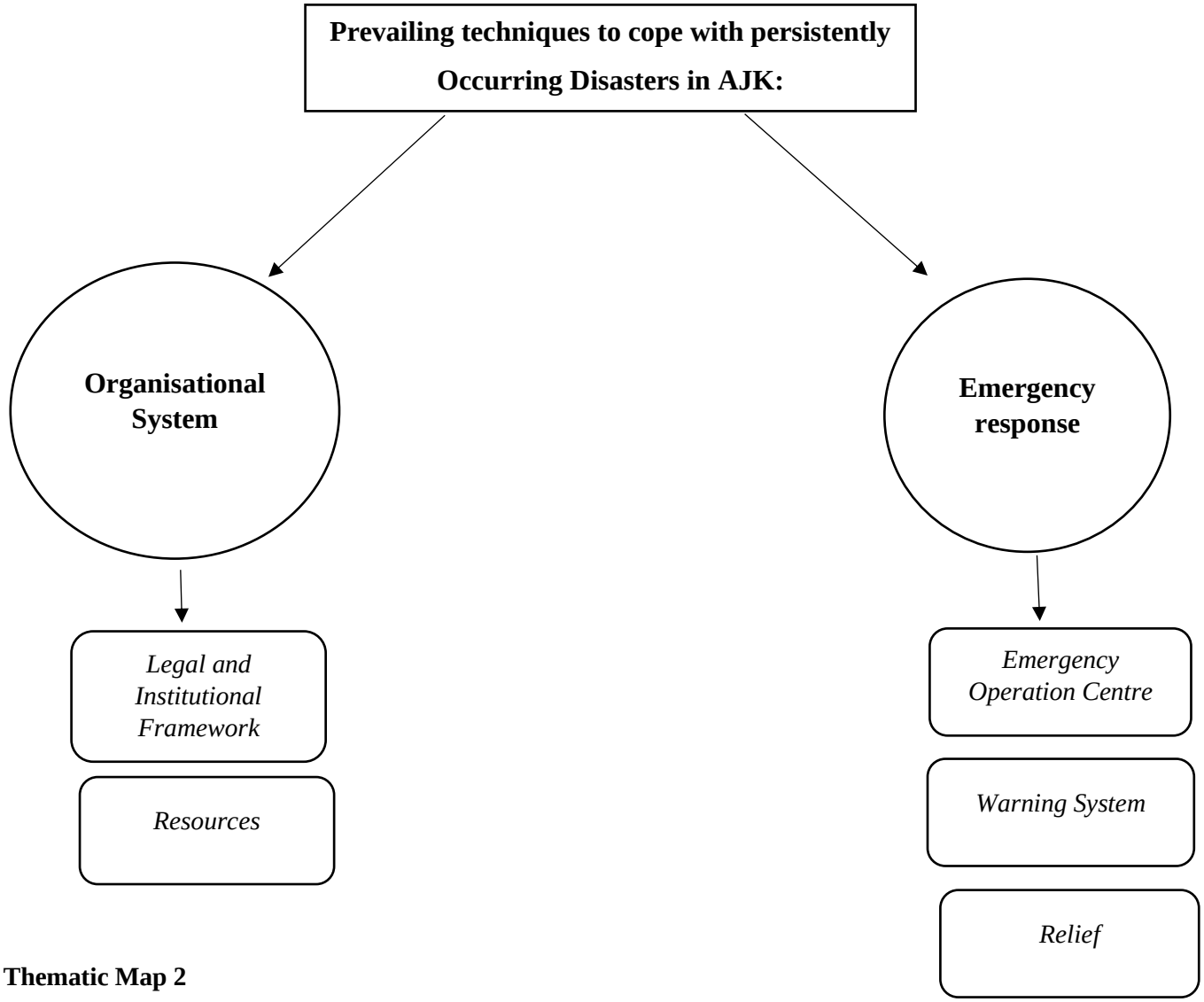

Figure 4.0.2 Thematic Map 2

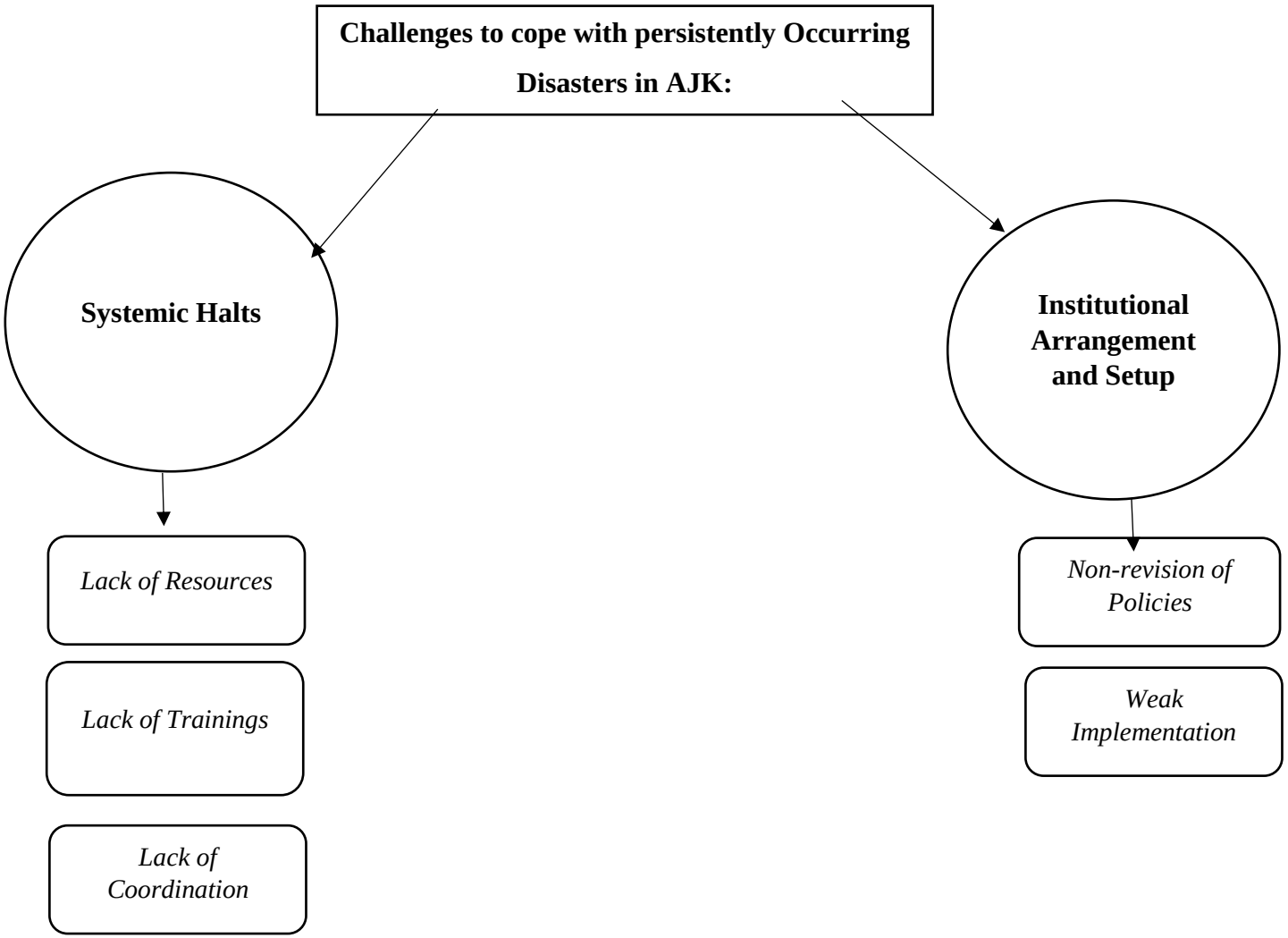

Figure 4.0.3 Thematic Map 3

Impeding factors in development and implementation of emergency preparedness in AJK:

The impeding factors in development and implementation of emergency preparedness in AJK are highlighted. The main themes identified are: *Organization and Planning* and *Systemic Halts.* The subthemes are Outdated Plans, Low investment in Mitigation, Lack of Resources, Lack of Trainings, Lack of Coordination.

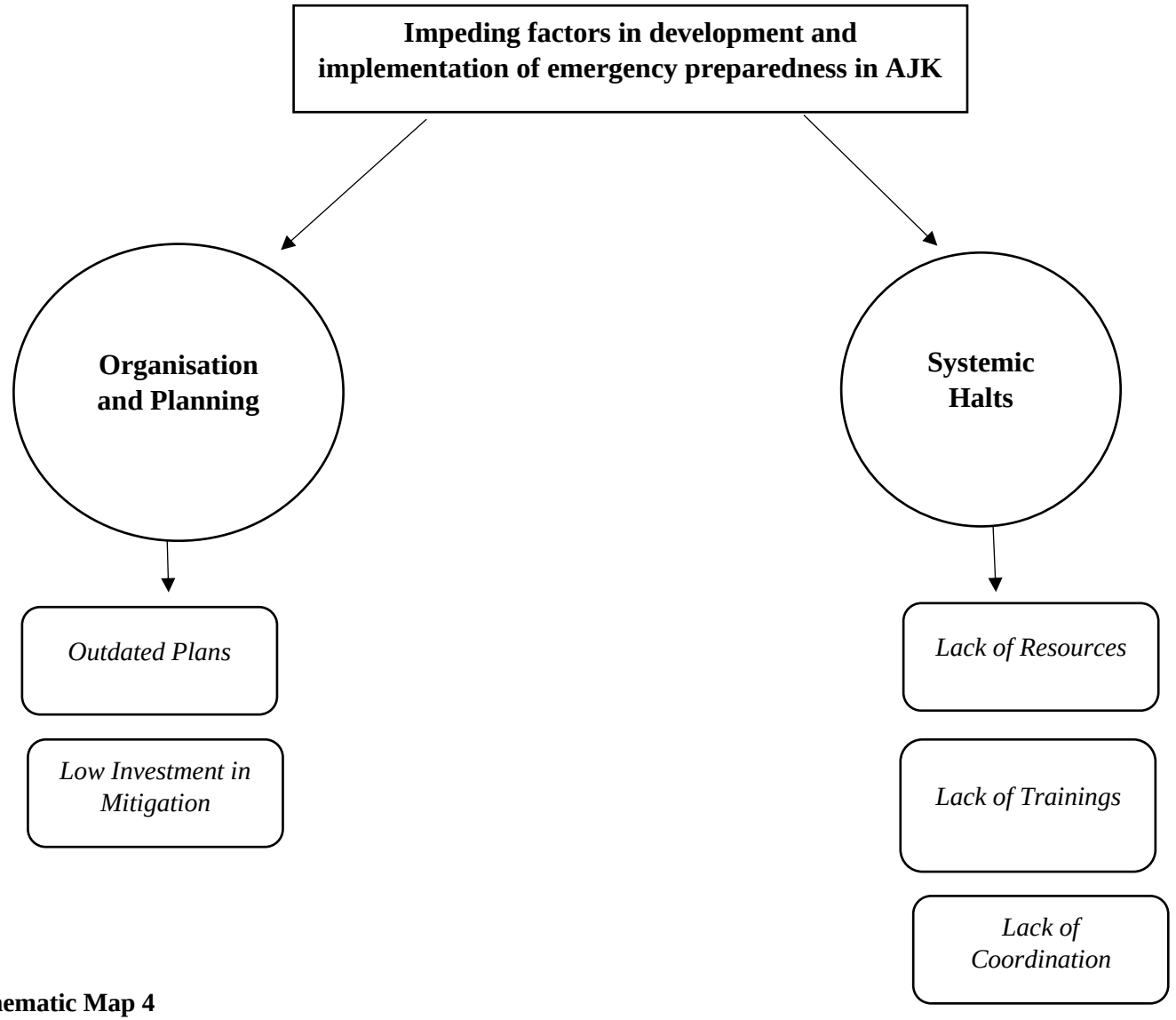

Figure 4.4 Thematic Map 4

Step 6: Write Up (Discussion)

In the final step, there is rational explanation done for all themes and subthemes with reference to the literature as well.

Theme: Structural Measures

This theme is named as structural measures as all the efforts taken under this relate to the construction, engineering and other changes related to mechanical improvement which aim to develop disaster resistant infrastructure and reduce the likelihood of disaster risk and ultimate consequences (Kelman, 2013). Structural measures to control the disaster risk are often expensive and demand high regulation and investments to decrease the vulnerability. It also needs frequent compliance, inspections, and maintenance to make the efforts worthwhile. A small county with limited resources cannot invest much in the structural measures owing to the financial constraints and the engineering expertise which are essential to effective structural efforts to reduce the disaster risks.

Subtheme 1: Resistance Construction

The resistance construction efforts are made before the construction of infrastructure or even buildings and houses for commercial and residential use. The purpose is to design and construct buildings in a way which can resist the natural hazards forces (El-Mesri & Tipple, 2010). The government does the site planning of the cities and the villages and identify the possible hazards that can struck the area and devise strategies for construction of houses and buildings to mitigate the risks which allows space for resistance construction. The laid down rules and bylaws guide this resistance construction, and the public is informed of these regulations through awareness campaigns and information dissemination. However, the resistance construction often involves expensive quality material utilized in engineered construction and is not a viable option for the poor economies. As per one of the respondents of the interviews, "*We are economically deprived and limited financial resources available with the government, it is not viable to adopt resistance construction. However, we have built the roads and riverbanks through engineered advice with the help of aid from the developed countries and the donors. Similarly, we also used building codes for construction of houses which the public abides by to some extent*".

Subtheme 2: Building Codes

The resistance construction is the most appropriate form to reduce the vulnerability, but this must be adopted by the public as well apart from the government. To ensure that the private builders construct houses with the resistance measures, the government creates the building codes and regulatory measures to guide the construction (Henderson & Ginger, 2008). Governments also pass the legislations at the state level to make the codes compulsory for everyone to be followed. These are the widely adopted measures by both the developed and developing countries. Governments take help from the engineers and geologists in risk assessment and building the codes for construction. Abiding by these codes offers a great variety of protection from the potential unfavorable consequences of the disasters. As per the response of the interview, *"We have provided the building codes and measures in the national disaster policy as a mitigating effort. People are following these codes but those with poor economic conditions specially in villages people are unable to follow these measures and hence are worst affected by the disasters such as earthquakes and floods".*

Subtheme 3: Structural Modification

The assessment techniques and risk assessment based on scientific progress has greatly aided the countries. It reveals new information related to the hazards and disasters in the risk/fault zones. There are three approaches to deal with the structures in the disaster-prone areas. The first approach is to do nothing about these structures. the second approach relates to the demolishing and reconstruction of the structures. Whereas the last approach is to modify the existing structure to cater to the accommodation of new information and reduces the vulnerability to the hazard forces (Aulia, Setianingsih & Narulita, 2019). The structural modification is also known as the retrofitting. For example, in the earthquake prone areas the structural modifications are using the sheer walls and removing the cripple walls, using the anchor bolts in the foundations and frame the anchor connections etc. Similarly, in the flood prone areas it is advised to use levees and flood walls etc. One of the interviewees from SDMA stated that *"the government has taken positive steps in structural modification of the important buildings such as hospitals along with the bridges and the roads to minimize the hazards risks and vulnerabilities. Similarly, inspection teams have also been formed to inspect the buildings and suggest on taking the modification measures to the*

buildings which are prone to the disasters. Same has been conveyed to the public as well to protect themselves from negative consequences of the disaster"

Subtheme 4: Community Shelters

Another structural measure to safeguard the lives of the people, governments build community shelters which can withstand the negative consequences of the hazards (Schilderman, 2007). These are most common in the developed countries. The community shelters work best where the early warning systems are very effective which provides ample time to the residents to travel to the shelters. Secondly, the awareness amongst the residents is very strong and they automatically move to these shelters in wake of any disasters. In most developing countries, some public sector buildings and grounds are earmarked for evacuation and is utilized as the disaster hits the area. As per the response of the interviewee from SDMA, *"We have earmarked the buildings and open areas as the evacuation centers. They are utilized to build tent villages and to provide basic facilities to the affectee in case of the disaster. Due to our limited financial resources, we cannot construct community shelters but with the aid of donors and NGOs we build shelter homes in specified areas in the recovery phase".*

Theme: Non-Structural measures

Non-structural measures to minimize the likelihood of the risk and the consequences of the disaster are made to bring change in the human behaviour without the use of engineered structures. the modification of human behaviour reduces the disaster risk and vulnerability of the poor. This relates to human's adoption to the nature and learning about the disasters. Non-structural measures are not costly as compared to structural measures and does not require the huge resources for implementation.

Subtheme 1: Education and Training

The public can safeguard themselves from the disasters or reduce the impact of disasters on them if they are well educated and trained about the disasters. Public education programs are aimed at informing the public of the hazards they are prone to and how to limit their risk through appropriate information and training (Sun, Zhang & Cheng, 2012). This measure is considered both as mitigation measure and, making the public resilient in face of the disasters. The transformed knowledge into taking precautionary measures before the disaster is considered as mitigation. To

respond to the disaster in an efficient manner through learned techniques will reflect their resilience. Through the education and training programs public are taught about the risks of the disasters and enhance their understanding regarding the risk, expected behaviour in face of disaster, precautionary measures before the disaster, preparedness for the disaster and the post disaster behaviour. In AJK there are many NGOs that are involved in conducting education and training programs for the public such as NRSP is the most active NGO in spreading awareness. Similarly, SDMA arranges seminars and have made village councils, Community organisations and respected notables of the villages are trained to educate themselves and further impart trainings in the villages. As per the respondent, "*We observe 8th October as awareness day for disaster where we conduct multiple activities, distribute brochures and enroll people for the education and training programs. Similarly, we conduct seminars in schools, colleges, and universities to sensitive our youth regarding the disasters and how they can voluntarily help us and each other in wake of disasters and build strong and resilient communities. To communicate with the females, we have voluntary female trainers who visit villages and speak directly to the women and spread awareness as women and the children are most vulnerable in wake of disasters."* Awareness amongst the public is the simplest and cheapest way to build resilience as the public who is directly affected by the disaster can better take precautionary measures if they are well educated and trained about the disasters.

Subtheme 2: Warning Systems

Warning system relates to informing the public that the disaster risk which is about to reach a threshold demands certain protective measures. The time available to the public to react to the system varies for different disasters and is dependent upon the technological capabilities of the warning system. Countries whose warning systems are well developed and equipped with latest technologies are in better position to inform their public to take protective measures in time and minimize the loss of life (Weichselgartner, 2001). Where warning systems cannot work appropriately, it is unable to warn the public about the disasters. Similarly, some disasters do not give ample time for warning such as earthquakes. In such cases, the awareness and education acts as the mitigation measure. UN has suggested four important factors for early warning system which are the knowledge about the risks the public is exposed and prone to, availability of technical monitoring and monitoring services, dissemination of information and warnings to the risks,

people's awareness and behaviour to react to warning system. It concludes that warning systems cannot act alone but are dependent upon the identification of disasters through effective detection systems and the public awareness and education. The government's response in the interview reflects that the *"Warning system is in place but is not effective as latest technology cannot be incorporated. However, with the aid of donors and expertise from other countries, warning systems are being strengthened. The information dissemination system is being standardized and different mediums are used to spread the information. However, the reliable and accurate source of information is not yet well established, and people believe the rumors. This factor is being catered for by spreading awareness and educating the public regarding the vulnerabilities to the disasters and building their resilience".*

Theme: Organisational System

The organisational system relates to the set of policies, procedures, and regulations in place which are used for the legislation, planning, organizing, and managing the activities ensuring the coordination among all the stakeholders to achieve the organisational goals and objectives. The institutions laid down their policies and procedures, rules and regulations, responsibilities, define roles, standard operating procedures for carrying out activities which enhances the efficiency and effectiveness and the capacity of the human resource which contributes to overall effectiveness of the organisation (Moe & Pathranarakul, 2006). Here the organisation system relates to the disaster management system/authority which must perform the functions such as coordination between all governmental agencies/organizations departments who are responsible for various tasks, judicious utilization of the governmental/NGO's /foreign resources, ensuring that these are not wasted and ensuring that the best anti disaster management efforts are practiced. The key objective of the organisation system is to intervene rapidly and effectively in disaster situation.

Subtheme 1: Legal and Institutional Framework

There is laid down legal and institutional framework for the disaster risk reduction in AJK. State Disaster Management Authority (SDMA) is the independent state authority and is the lead disaster risk management agency. It guides the framework for the District Disaster Management Authority (DDMA). The State Disaster Management Commission (SDMC) oversees the work of SDMA. There are three tiers in the operative framework. The topmost is the SDMC. The second tier is SDMA whereas the third tier is DDMA. There is State Emergency Operation Centre which has

been formed to bring thrust in the emergency (SDMA, 2020). SDMA brings in the resources from the public and private sector, formulates guidelines and directions for the DDMA. Similarly, a coordination framework has also been developed to cope with the disasters.

Subtheme 2: Resources

The availability of resources is effective to strengthen the organisation system. The organisational structure and the institutional framework is to ensure that the resources are available all the times. Resources relate to the financial resources, cash availability, required equipment's such as boats for areas that are flood prone, heavy machinery to remove debris for the earthquake prone areas, ambulances and vehicles for transportation, machinery for the warning systems and information management, supply of electricity and internet to effectively coordinate wit the other departments and the emergency services such as ambulances, civil defense, army etc. (Moşteanu, Faccia, & Cavaliere, 2020) One of the Interviewee's responded that "*We have meager resources, and we have to adopt very careful means to make interventions. We prioritize the areas where we need to work in and there too, we take help of the NGOs and international donors and make combined interventions for coping with the disasters occurring. Similarly, we do not have the required machinery at our disposal for emergency rescue and relief and therefore, Army is called upon in these operations. Furthermore, we spend more on the recovery and rehabilitation therefore, we are left with very less options for the preparedness and mitigation".*

Theme: Emergency Response

Governments give highest priorities to the emergency response and is the most visible part of the disaster management cycle as it highly influences the well being of affected communities. The response in the early days of the disasters reflects the pre disaster planning, mitigation, and preparedness. In other words, the pre-disaster activities at the local and national level are tested through the emergency response (Wex, Schryen, Feuerriegel, & Neumann, 2014). Similarly, the planning of the emergency response leaves huge impact on the post disaster activities, recovery, and rehabilitation phase. Therefore, it is considered the critical phase in the whole cycle of disaster management. It is a repeated cycle process with repeated assessments, planning and actions taken as per the findings of the assessment, prioritizing the target areas etc. Initial assessment is done and then the people and resources are mobilized accordingly. The proper preparedness for disaster reflects the rapid and effective mobilization.

Subtheme 1: Emergency Operation Centre

Emergency Operation centre is the nerve centre for dealing with disaster situation and covers following aspects: situation assessment & monitoring, action priorities, communication, warning, coordination of efforts, information, tasking allocation, media & public information (Chang & Li, 2007). EOC must have adequate communication facilities, arrangement for receiving, collating & assessing information & facilities for decision making, display facilitates like maps, charts showing resources available, tasks to be undertaken etc., conference, briefing, operational, meeting rooms/halls, information room (separate from EOC) for media briefings, storage space, vehicles parking, emergency power supplies etc., and should be capable to be made operational on short notice. As per the coordination framework of SDMA, there is State Emergency Operation Centre and District Emergency Centre in place. The interviewee stated that "*although the EOC are in place but due to limited resources and ineffective coordination, the efficiency of EOC is questionable. At the time of disasters, chaos occurs due to inefficient EOC and the policy direction"*

Subtheme 2: Warning System

Effectiveness of warning system is critical component in disaster dealing/management. the key requirements of warning system are capability to receive international warning, capability to initiate in-country warning, capability to transmit warning from national & other levels, capability to disseminate warning at local community level and capability to receive warning and act upon it. The warning system provides benefits only if the departments are in coordination and the resource availability is ensured. It also relates to the information management and the awareness and education amongst the public. Dissemination of accurate and reliable information to the government and then the public is essential to reap the benefits of warning system. The AJK SDMA has early warning system and the information is disseminated through social media and WhatsApp groups. Similarly, SMS portal is used to disseminate the alerts and warnings. As per the citizens response, "*there is proper information dissemination system and the government send alerts and warnings through SMS. Similarly, the community personnel have shared their numbers and the information is received through the WhatsApp groups at the local level. Likewise, radio is the wide used mean where the government frequently alarms the citizens and share awareness programs for the benefit of the people*"

Subtheme 3: Relief

Relief relates to providing the essential and timely assistance to the affected communities in disaster which is widely based on the need's assessment with the aim of contribution to speedy recovery (Perry, 2007). It incorporates delivering the specified quantity and quality goods to the affected people who are unable to arrange by themselves and provide to their families. There are three broad categories of relief which are Food, Shelter, and non-food items. In the initial stages of disaster, after the evacuation and relocation to designated area, food and shelter are essential to survive. The survey determines the needs, and the commodities are provided accordingly. Similarly, clothing, blankets, hygiene products are required which are categorized into non-food items. As per the interviewee's response, *"NGOs and International donors are very effective in providing relief. They arrange all the necessary food items, construct shelter communities and provided non-food items too to the affected people. Not only they provide relief but also invest in the recovery and rehabilitation phase. Similarly, people themselves came to AJK from different parts of the country to provide relief goods".*

Theme: Systemic Halts

The shortcomings present in the system are referred to as the systemic halts. This means that system and the setup itself is not conducive to the effective coping with persistently occurring disasters. The name of the theme was selected on the basis of the many loopholes and shortcomings in the system. It comprises of several factors which are listed in the subthemes. If all these factors are worked upon and in combination, they can create great synergy to effectively cope with the disasters and provide a conducive environment. This focuses mainly on the internal working of the system. By resolving the internal issues of the system, it enables to overcome the external obstacles and effectively cope with the disasters. The purpose of the system is to be ready and vigilant in case of any disaster happens. Not only this but the mitigation and preparedness for the disasters can be upgraded if shortcomings in the system are overcome.

Subtheme 1: Limited Financial Resources

The increasing population and the changing needs in other sectors has caused to divert the financial resources towards other sectors such as health, education etc. the demands are high as compared

to the available resources which are meager (Brodmerkel, Carpenter & Morley, 2020). Similarly, the area of AJK is very small and limited available resources due to limited functions and revenue sources. Most of the financial interventions are made in other sectors with visible results and fewer resources are reserved for the mitigation and preparedness. Therefore, the government is unable to adopt latest technology and purchase the machinery that is required in the disaster management plan such as the technology used in the warning systems, resistance construction technologies etc. The assessment cannot be done owing to the limited financial resources which poses serious threats in the disaster preparedness and mitigation, rescue and relief and recovery. In the presence of limited financial resources, the government always look towards the army for disaster recovery and their help in the rescue and relief. As per the interviewee's response, "*We have limitations in our finances, and we have to adopt very careful means to make interventions. We prioritize the areas where we need to work in and there too, we take help of the NGOs and international donors and make combined interventions for coping with the disasters occurring. Similarly, we do not have the required machinery at our disposal for emergency rescue and relief and therefore, Army is called upon in these operations. Furthermore, we spend more on the recovery and rehabilitation therefore, we are left with very less options for the preparedness and mitigation*"

Subtheme 2: Lack of Training

The capacity of the responders to deal with the disasters is essential to minimize the losses to life and property. The capacity of the practitioners in the disaster preparedness is enhanced through the training. The aim of training is to build the capacity and enhance the skills of the practitioners to effectively cope with the disasters (Alexander, 2003). It provides the practitioners with the necessary knowledge of the disaster risks, hazard profile of the area, proactive approach to deal with disasters (mitigation and preparedness), planning and need assessment, response management etc. It not only involves the disaster management authority but the related departments a swell to work collectively and coordinate well to deal with disasters. The trainings are arranged by the international authorities as well to teach the standardized procedures to the developing countries to prepare them for disasters. Incorporating the latest techniques and developments in the mitigation procedures can safeguard the lives and properties. The present disaster management system in AJK is weak as the classical measures are being followed and the contemporary practices are ignored due to the limited knowledge and the lack of trainings to learn new techniques. Lack

of trainings is also due to several factors such as the limited financial resources and the expertise etc. all the factors are correlated and cannot function at alone. As per the interviewee's respondents, *"We conduct trainings for our staff but are at done at the minimum level and only basic trainings are imparted. Further due to lack of resources we cannot afford to arrange technical trainings for our staff which also costs us in the form of loss to property and life. Many lives are lost due to the inability and incapacity of the staff in the rescue and relief operations. NGOs also impart trainings at very basic level just to create awareness and educate the public. There are some international organisations that arrange trainings but that cannot be practiced to our local situation owing to limited resources and required machinery and tools are not available".*

Subtheme 3: Lack of Coordination

For effective mitigation and preparedness and immediate response in the emergency, there is a need to have a laid down procedure for responsibilities and the main point of contact for co-ordination (Prizzia, 2008). The mutual understanding and defined roles and responsibilities amongst different departments and stakeholders involved in the disaster management plan is essential for the effective co-ordination. In the lack of coordination between the departments, there are functions which are performed unnecessarily and that too are occurred repeatedly. Similarly, information is mismanaged, and timely response cannot be provided for save lives and property in wake of disaster. The effective coordination between the government departments such as medical/health, transport, communication, and the emergency services such as police, civil defense, armed forces must be present to effectively deal with the disasters. As per the interviewee's response, "*due to the present bureaucratic behaviour in our system and authority, there is lack of coordination between us and the related departments which causes problems in effectively and timely dealing with the disasters. We are unable to coordinate effectively and there is replication in functions by us and the related departments. We also take time in information dissemination sue to approval systems which take time and hence our effectiveness is affected. Similarly, the NGOs are performing those duties which are already performed by us and in our domain, but the communication and coordination gap leads to wastage of resources through working on same function repeatedly"*

Theme: Institutional Arrangement and Setup

UNDP (2017) has defined the institutional arrangement and setup as the set of policies, procedures, and regulations in place which are used for the legislation, planning, organizing, and managing the activities ensuring the coordination among all the stakeholders to achieve the organisational goals and objectives. The institutions laid down their policies and procedures, rules and regulations, responsibilities, define roles, standard operating procedures for carrying out activities which enhances the efficiency and effectiveness and the capacity of the human resource which contributes to overall effectiveness of the organisation. The institutional arrangement and setup aids in effective policy implementation with provision of conducive environment to the practitioners to achieve the goals and effectively cope with the disasters. It correlates with other themes such as the human resource, leadership and expertise, trainings, and the availability of resources to successfully meet the objectives.

Subtheme 1: Non-Revision of Policies

The policies of any organization give direction to the people working in it and are used as the guiding principles. It is essential that organizations review their policies are procedures and update them with the changing times and needs. The organizations may grow or reduce their size and hence need the revision in policies. There are severe consequences for not revising the policies such as it increases the risks for operations, may lead to non-compliance of the new legislations introduced, brings inconsistency, and affects effectiveness (Skinner & Rampersad, 2014). On the other hand, the revision in policies keeps the organisation updated with the recent laws and regulations, technological advancement, and the best practices. Unfortunately, in AJK the policies are not revised, and mostly reactive approach is adopted as compared to being proactive. Furthermore, the SDMA disaster policy has overfocus on the institutional building and minimum focus on the mitigation and preparedness. Every year only minor changes are brought in the present policy and does not improve the policy as per the recent situations. As the focus of the world is now on mitigation practices which demands financial resources. The disaster management policy does not outline the forums for generating financial resources and the outdated practices are followed. So the non-revision of policies and using outdated methods is not very effective in managing and coping with the frequently occurring disasters. The obstacles faced and the mistakes made are not borne in the revised polices. The Disaster Risk Reduction demands that the policies

are revised and up to date technology and equipment is used in the mitigation and preparedness practices. As per the interviewee's response, "*we did not have the national disaster management policy and organisation, till we were first hit by a major disaster in 2005. We have a comprehensive policy now, but it lacks revision and Updation and hence it is difficult for us to cope with the new circumstances and new situation that arise with the persistently occurring disasters*".

Subtheme 2: Weak Implementation

To reap the benefits of the policy formulated it is essential that policy is implemented in true letter and spirit. Policy implementation depends on various factors such as adequate time and the essential resources are available or the combination of resources is ensured, the practitioners have the capacity and skills to implement the policy, the understanding and purpose of the policy objectives is well understood by all the stakeholders and they understand that the policy being implemented is in their benefit (Ahmed, 2013). The issue in the implementation of policies related to disasters is that they are not understood by the public and the stakeholders. They consider it as the burden. For instance, building codes and regulated measures are not fully ensured as the public lack the resources available to fully abide by the law. Similarly, the shortcomings and corrupt practices in the government implementation sector does not ensure that the policies are fully implemented. The punishments and penalties are not strict, and people do not follow these policies. Similarly, the weak implementation of policies is also linked with the lack of dedication and capacity. On behalf of people, it is linked with the lack of awareness and education. As per the interviewee's response, "*the policy implementation is very weak and where the people are penalized for not following the policies then they adopt negative means to get rid of the penalties and hence mitigation and preparedness measures cannot be fully implemented*"

Theme: Organisation and Planning

Planning is a process of making choice among options that appear open for future and then securing their implementation which depends on allocation of necessary resources. The process of producing a counter disaster plan should never be regarded as one in which some specialist or team acts in isolation. The planning process needs to be action oriented to involve a wide range of people & organizations and to produce a result which has the agreement and support of all those involved in the counter disaster measures / plans. Planning is always a cooperative process. The plan should

be simple, easy to understand & easy to be put in use. During the planning process, the 'legal authorization' must be included in the plan to make it a lawful instrument of the government. The planning process does not end with finalization of a plan and Updation should be a continuous process. If a plan does not receive constant attention, it may fall out of date.

Subtheme 1: Outdated Plans

The plans of any organization give direction to the people working in it and are used as the guiding principles. It is essential that organizations review their policies and procedures and update them with the changing times and needs. There are severe consequences for no Updation of plans such as it increases the risks for operations, circumstances and needs may change, brings inconsistency, and affects effectiveness (Tran, Shaw, Chantry & Norton, 2009). Unfortunately, in AJK the plans are not revised with dedication, and mostly reactive approach is adopted as compared to being proactive. Every year only minor changes are brought in the present policy and does not improve the policy as per the recent situations. The disaster management policy is not revised, and the outdated practices are followed. So, the non-revision of policies and using outdated methods is not very effective in managing and coping with the frequently occurring disasters. The Disaster Risk Reduction demands that the policies are revised and updated to meet the latest technological trends and modern equipment is used in the mitigation and preparedness practices. As per the interviewee's response, "*we did not have the national disaster management policy and organisation, till we were first hit by a major disaster in 2005. We have a comprehensive policy now, but it lacks revision and Updation and hence it is difficult for us to cope with the new circumstances and new situation that arise with the persistently occurring disasters*".

Subtheme 2: Low Investment in Mitigation

Mitigation relates to the efforts taken to reduce the disaster risk by reducing the components consequences of the disasters risk. It decreases the likelihood of the occurrence of the disaster and the negative impacts of the disasters when they occur. Every disaster leaves a different impact on the humans and hence the mitigation measures for different types of disasters are different. The mitigation measures are characterized by huge financial investments, resource availability and the political will to take mitigation efforts (Kunz, Reiner & Gold, 2014). The mitigation measures are often time consuming and socially unpalatable. It involves repetitive geological surveys, assistance from the engineers and assessments to take preventive measures and determine the course of action

to be adopted for mitigation purposes. It results in minimizing the risk and potential threat to human life and property. The developed countries tend to invest in mitigation measures and reserve greater percentage of budgets for disaster risk reduction whereas the developing countries focus more on the recovery and rehabilitation phase. The low investments in mitigation measures makes the communities vulnerable and hence great losses to life and property. Likewise, SDMA focuses less on the mitigation efforts therefore, the consequences of disasters and the negative impacts incurred are large.

Conclusion of Thematic Analysis

A detailed explanation and discussion on the broader themes and subthemes are done along with the support from the literature. All the research questions are addressed. The RQ1 is answered and the prevailing efforts to ensure the disaster resistant infrastructure and building resilient communities have been identified. There are structural and non-structural measures which are taken to build the resilience and resistance infrastructure. These measures include resistance construction, building codes, structural modifications, community shelters whereas the non-structural measures on which the government has strict stance are education and training and the warning system. It is observed that the structure of SDMA focuses more on the non-structural measures and frequently undertakes activities to promote for the non-structural efforts. The structural measures are costly for SDMA therefore, little investments are made in this area. However, the recent structural modifications in construction of bridges, roads infrastructure and building the dams follow the structural measures. Similarly, the prevailing techniques and the challenges faced to cope with the persistently occurring disasters is also addressed which is the RQ2 for this study. The organisation system has provided the legal and institutional framework and ensures the resource availability to carry out the response activities. In this regard, Emergency operation centre has been made alongside the warning system and the provision of relief activities to cope with the persistently occurring disasters. Similarly, the challenges faced in coping with disasters are posed by the system which is lack of financial resources, lack of trainings and lack of coordination which has great impact on the capacity of the institutions. Similarly, there are some loopholes in the institutional arrangement and setup such as non-revision of policies and weak implementation. RQ3 is also addressed which tends to explore the impeding factors that pose challenges in development and implementation of emergency preparedness. The impeding factors

are the systemic halts whereas the organisation and planning also pose obstacles in the form of outdated plans and low investment in mitigation.

CHAPTER 5

DISCUSSION ON DISASTER RISK REDUCTION

The traditional disaster management mainly focused on the emergency response to cope with the disasters but in the 21st century the trend has changed, and it is widely agreed that the impact of the disasters can be reduced by making effective interventions in the disaster mitigation and preparedness by making the communities resilient towards the disaster and change their attitudes and behaviours towards the disaster. To reduce the impact of the disasters the focus has shifted towards reducing the vulnerabilities and exposure to the disasters (Prasad et al., 2008). These two factors of risk can be reduced by focusing on the underlying factors of risk. With the identification of these factors, the impacts of the climate change can be reduced by maintaining the sustainable development. Disaster Risk Reduction is related to the sustainable development and is its integral part which must incorporate every aspect of society, the government, NGOs along with the private sector. Therefore, DRR stresses upon the participatory and people centered approach incorporating multiple sectors to build resilience and culture of prevention (Mercer et al., 2008). Therefore, DRR strategies revolve around avoiding the new constructions which pose risks and threats, addressing the pre-existing risks, spreading awareness regarding prevention and stress on mitigation practices. It is mostly related to the mitigation, preparedness, and response activities. The need to reduce disaster risk and prevent avoidable loss of life, injury and damage to livelihoods and infrastructure is magnified by the concerns of climate change. Climate change both undermines the resilience of DRR systems and demands changes. The following sections summarize the findings related to the political economy of DRR, Pakistan at the micro level. In comparison with Wisner et al.'s (2004) risk reduction objectives, this can be found that institutional mechanisms and government policies were not successful to address the specific issues involving the local community and civil society. While this has also been found that post-2005 setup of provincial and national disaster management structure has severe economic, political and social issues such as increasing urbanization, environmental degradation, increase in population and institutional hierarchy (Cheema, Mehmood & Imran, 2016).

DDR can create a positive impact if the top-down approach is combines with bottom-up approach including the changes in institutions, involving the community and its integration into overall

development planning and policy (Khan & Jan, 2015). DDR can be applied to all stages of disaster management cycle. In prevention, the focus is on avoiding the existing risks and the potential risks such as relocating the communities to safe places. In mitigation phase, the focus of DRR activities is to reverse or limit the negative impacts of disasters through structural and non-structural measures such as flood defenses constructions, slopes stabilization through trees plantation, building codes and regulatory measures, awareness, education, and training etc. At the preparedness phase it relates to the anticipation, response and recovery by the government and institutions which depends highly on their capacity and the available resources. It relates to installation of early warning systems, identification of the evacuation routes and preparing the emergency supplies (Medina, 2016). Preparedness is related to number of similar activities and cannot be practiced alone. Such activities include identifying and measuring the risk, spreading awareness and education, raising awareness regarding the risk for the public, strengthening of the institutional framework and strict legislation, contingency planning, incorporate multiple sectors such as health, environment etc. to integrate the DRR. Activities for reducing risk can be described as structural, for instance land use planning and implementation of building codes, and non-structural, for instance awareness raising, policymaking and legislation (Meyer, Priest & Kuhlicke, 2012). How governments, civil society, and other actors organised DRM, for example through institutional arrangements, legislation and decentralization, and mechanisms for participation and accountability is termed risk governance. It is evident that poor economies are more vulnerable and exposed to disaster risk as compared to developed economies owing to the availability of the resources and the costly structural mitigation efforts. DRR succeeds in reducing risk by building the strengths, attributes, and resources available within a community, society or organization known as their capacity (Hagelsteen & Burke, 2016). DRM activities are designed to increase the resilience of people, communities, society, and systems to resist, absorb, accommodate and to recover from and improve well-being in the face of multiple hazards (Bosher, Dainty, Carrillo and Glass, 2007). Activities for reducing and managing risks can therefore provide a way for building resilience to other risks. In addition to development, DRM should therefore be integrated across several sectors, including climate change and conflict. Awareness, identification, understanding and measurement of disaster risks are all clearly fundamental underpinnings of disaster risk management Disaster risk reduction is about decisions and choices with a role in five key areas of

decision making: risk identification, risk reduction, preparedness, financial protection and resilient construction (Birkman & Teichman, 2010).

The damages and losses caused by historical disasters are often not widely known, and because the potential damages and losses that could arise from future disasters (including infrequent but high-impact events) may not be known at all, DRM is given a low priority (Peters et al., 2019). Appropriate communication of robust risk information at the right time can raise awareness and trigger action. More resources need to be allocated and used effectively for improving resilience and disaster risk reduction. Allocation of more resources on one hand require political will and on the other hand needs strong demand by citizens to mobilize this will. Meanwhile, it is also important to build capacity of citizens in such a manner that they are able to advocate for allocation of more resources and they are able to monitor and track the budgetary allocations on regular basis. Pre-2005 analysis of disaster management in Pakistan shows that management structures and policies related to DRR were occupied by upper strata of government and involvement of local community, civil society and private sectors were minimal (Shah et al., 2019). Though, they always provided the relief activities independently. Hazard and risk information may be used to inform a broad range of activities to reduce risk, from improving building codes and designing risk reduction measures (such as flood and storm surge protection), to carrying out macro-level assessments of the risks to different types of buildings (For instance, for prioritizing investment in reconstruction and retrofitting).

In align, most of the support for disaster response or preparedness primarily comes from donors which is generally time bound and focuses on a portion of the population. The government is rarely allocating funds to such efforts which obviously results in long run unsustainability. As discussed earlier, there is a clear lack of clarity about institutional roles: following devolution as per the 18th amendment of the constitution, there is clear overlap of roles between the National Disaster Management Authority (NDMA), the Provincial Disaster Management Authorities (PDMA) and the State Disaster Management Authority (SDMA). This is a continuous reason for confusion and substandard support for communities before, during and after disasters. Moroever, there is no ownership for disaster management plans. This was found that plans have been prepared for a number of districts through international support, it is sad to find out that no one seems to own these plans. It is not clear whether these plans are to be used and owned by the communities, NGOs

or the governments directly. Due to this reason, the planning exercises have not been utilized in the right way.

It was found that there is a clear lack of awareness about Disaster Risk Reduction practices. It was found that there is a very little support in terms of early warning systems, evacuation plans and follow-up support system at an institutional level that adds to substandard disaster management (Khan & Ahmed, 2011). Further in AJK, Pakistan, there is limited understanding about DRR practices, the focus at community level remains from one emergency to another. Most of the efforts are reactive in nature, only to respond to the disaster at hand, as opposed to developing preparedness plans at times when there are no emergency situations and actually planning better in order to reduce the impacts of future disasters. In addition, weak operational mechanisms were found to be the most crucial problem. Where data exists, it is not processed into useful information that could save lives. Where rules exist, they are not followed. An understanding of the geographic area affected, along with the intensity and frequency of different hazard events, is critical for planning evacuation routes, creating shelters, and running preparedness drills. Providing a measure of the impact of different hazard events, potential number of damaged buildings, fatalities and injuries, secondary hazards makes it possible to establish detailed and realistic plans for better response to disasters, which can ultimately reduce the severity of adverse natural events (Rose, 2004).

It is found that institutional mechanisms and government policies were not successful to address the specific issues involving the local community and civil society. While this has also been found that post-2005 setup of provincial and national disaster management structure has severe economic, political and social issues such as increasing urbanization, environmental degradation, increase in population and institutional hierarchy. government of Pakistan has not established a coherent and transparent mechanism of disaster risk financing. Disaster risk analysis was born out of the financial and insurance sector's need to quantify the risk of comparatively rare high-impact natural hazard events (Buttenheim, 2010). As governments increasingly seek to manage their sovereign financial risk or support programs that manage individual financial risks (e.g., micro-insurance or household earthquake insurance).

Risk assessment can play a critical role in impact modelling before an event strikes (in the days leading up to a cyclone, for example), or it can provide initial and rapid estimates of human, physical, and economic loss in an event's immediate aftermath. Moreover, risk information for

resilient reconstruction needs to be available before an event occurs, since after the event there is rarely time to collect the information needed to inform resilient design and land-use plans (Aven, 2016). If those exposed to hazards are unaware of the risks they face, it is difficult to see how or why households, businesses or governments would invest in reducing their risk levels. However, while risk awareness may be a precondition, the importance people attach to managing their risks can only be understood in the context of the full range of social, economic, territorial and environmental constraints and opportunities they face. Vulnerability assessments have ability to improve the responses regarding disaster events which reduces the impact on communities and societies. The study found that current mechanism of disaster risk reduction is compromised in Pakistan and lacks the basic capacity of prediction (Shahzada et al., 2011). This is recommended to apply more sophisticated tools both at state and national levels are needed to represent the multiple dimensionalities of vulnerability and support decision making.

It is observed that the structure of SDMA focuses more on the non-structural measures and frequently undertakes activities to promote for the non-structural efforts. The structural measures are costly for SDMA therefore, little investments are made in this area. However, the recent structural modifications in construction of bridges, roads infrastructure and building the dams follow the structural measures. The organisation system has provided the legal and institutional framework and ensures the resource availability to carry out the response activities. In this regard, Emergency operation centre has been made alongside the warning system and the provision of relief activities to cope with the persistently occurring disasters. Similarly, the challenges faced in coping with disasters are posed by the system which is lack of financial resources, lack of trainings and lack of coordination which has great impact on the capacity of the institutions. Similarly, there are some loopholes in the institutional arrangement and setup such as non-revision of policies and weak implementation. The impeding factors are the systemic halts whereas the organisation and planning also pose obstacles in the form of outdated plans and low investment in mitigation.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

The aim of the research study was to explore the nationwide efforts to build disaster resistant infrastructure and resilient communities in AJK, the prevailing techniques, and challenges to cope with the persistently occurring disasters in AJK and the hurdles that are impeding factors in development and implementation of emergency preparedness in AJK. The qualitative study was conducted to address the three research questions. For this purpose, nine interviews and two focus group discussions were held.

The broader themes for the research questions were identified. There are structural and non-structural measures which are taken to build the resilience and resistance infrastructure. These measures include resistance construction, building codes, structural modifications, community shelters whereas the non-structural measures on which the government has strict stance are education and training and the warning system. It is observed that the structure of SDMA focuses more on the non-structural measures and frequently undertakes activities to promote for the non-structural efforts. The structural measures are costly for SDMA therefore, little investments are made in this area. However, the recent structural modifications in construction of bridges, roads infrastructure and building the dams follow the structural measures. The organisation system has provided the legal and institutional framework and ensures the resource availability to carry out the response activities. In this regard, Emergency operation centre has been made alongside the warning system and the provision of relief activities to cope with the persistently occurring disasters. Similarly, the challenges faced in coping with disasters are posed by the system which is lack of financial resources, lack of trainings and lack of coordination which has great impact on the capacity of the institutions. Similarly, there are some loopholes in the institutional arrangement and setup such as non-revision of policies and weak implementation. The impeding factors are the systemic halts whereas the organisation and planning also pose obstacles in the form of outdated plans and low investment in mitigation.

The significance of the study lies in its investigation of the prevailing techniques and issues and challenges to disaster risk reduction in AJK. federal, provincial and local governments, district

unions, responsible authorities, members of civil society and interest groups may get useful information from this research findings in order to further explore the improvement mechanisms for the betterment of risk reduction policy frameworks in Pakistan This study also provides room for the future research where the deeper investigation of each theme can be done. Furthermore, the research is limited to one district Mirpur only so the results cannot be generalized. Therefore, a detailed research can be conducted across all the districts for generalizing the results.

Recommendations

Based on the findings and conclusion of the study, the following recommendations are made.

To ensure disaster resistant infrastructure and build resilient communities:

- Quarterly and yearly reviews and revision of laws and rules relating to constructions and buildings and make it compulsory to abide by the building codes and disaster related safety measures, guidelines of NDMA, SDMA and DDMAs in respect of new constructions and structural modification in the existing buildings and homes.
- Conduct safety audits of all the buildings in the area whether residential or commercial for resilience against the impending disasters. Ensure that the buildings are safe by adopting the retrofitting of safety measures. Necessary amendments shall be made to existing rules and regulations to make the retrofitting obligatory.
- Offer incentives and subsidies or the financial aid and the soft loans from the financial institutions to encourage the retrofit in the existing buildings.
- Formulate policies for effective land management and land use including site planning to accommodate the housing needs and expansion of the settlements, relocation as per the vulnerability to disasters assessment reports.
- Sensitize people dwelling in the vulnerable and disaster-prone areas and spread awareness through necessary measures to adopt safe procedures in construction.
- Provide technical and engineering services to construct disaster resistant infrastructures and homes.

To cope with the persistently occurring disasters:

- New technologies can be used for risk assessment and the expertise from the international organisations can be used. Similarly, scientific studies (engineering services and geological surveys) can be conducted, and safety standards can be set in the fault line and risky areas.
- Effectively use the early warning system by ensuring all the requirements and equipment needed for effective warning system. Collaborate all the efforts towards early warning and timely disseminate the information to the public.
- Strengthen the coordination between all the government agencies and departments to negate the repetition of activities and functions and minimize the wastage of resources.
- Build close linkage with the related departments and agencies for efficient rescue and relief activities.
- Take all the stakeholders on board including the NGOs and the donors in the mitigation and preparedness activities to pool and divert the resources towards a targeted programme and take measures accordingly.
- Revise and update the plans as per the circumstantial changes and situations. It will be done effectively if there is proper system for performance monitoring, assessment, evaluation and review system for continual improvement.
- Ensure the resource availability for the Emergency Operation Centre by using online databases, display maps and keep record of the hazard prone areas, conduct risk and vulnerability assessment in wake of disaster for emergency response, timely manage and disseminate information and define the roles and responsibilities to mobilize the human resource and the equipment.
- Arrange trainings for the practitioners to build their skills and capacity. In this regard, take trainings from international agencies to adopt the latest trends and modern practices to cope with disasters.

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Appendix A

Schedule Interview Guide

Opening		
0.1. What types of structural mitigation measures at district level are introduced by your department to build resilience against future hazards like flood, earthquake, land sliding etc.?		
Indicator	**Specifying questions**	**Neutral questions**
	0.2. What were the main projects that your administration has implemented? 0.3. What are the main priorities for your administration? 0.4. what are difference measures that have been taken? 0.5 What type of actions are taken by your department at for improved preparedness in case of future hazards?	- Is there anything else? - What do you mean when you are saying….? - And then? - What else? - What other factors can you think of?

Module 1 : Information		
1.1. What type of information are placed in public facilities for improved preparedness in case an early warning is given? Name the facilities?		
Indicator	**Follow-up questions**	**Specifying questions**
Information of public facilities	1.3. What type of information has been provided to village DRR committees and ERTs for timely and effective response in case of disaster? 1.4. What type of sources have been used for timely and reliable information dissemination up to community level about potential disaster?	1.2. Do you promote Citizen Participation and information dissemination in your locality? 1.5. By how far do you think the benefits outweigh the cost (or reverse)?

	1.6. Anything else you want to tell?	

Module 2: Measures for resilient societies		
What type of measures your department has taken to make the local communities more resilient?		
Indicator	**Follow-up questions**	**Specifying questions**
Measures for resilient societies	2.1 What type of DRR measures communities and department has taken jointly to reduce future losses? 2.2 Do you coordinate with the communities for DRR activities? 2.3 What role of community do your department perceive in DRR?	2.4 What are the coordination mechanisms? 2.5 What kind of support your department provides to the communities to perform these roles 2.6 Anything else you want to tell?

Module 3: Evacuation		
3.1 What type of buildings or places communities can use as safe evacuation centers in case of disasters?		
Indicator	**Follow-up questions**	**Specifying questions**
Evacuation	3.2. Are these safe evacuation centers or buildings accessible to vulnerable people like PWDs, women, children and older persons?	3.3. What efforts have been made by your department to make these evacuation centers accessible for vulnerable groups? 3.4. Who is responsible to identify its buildings located at different locations, as evacuation centers to cater emergency shelter needs of the villagers during large scale emergency?

Module 4: DRR POLICY		
4.1. Is there any DRR policy or strategy at state and your department level?		
Indicator	**Follow-up questions**	**Specifying questions**
DRR policy	4.1 How do you rate the effectiveness existing government DRR strategies and policies at district level? 4.4 How do you mainstream the DRR interventions in your sectoral programs? 4.8 What is the contribution of your department in implementation of National Disaster Management Plan? 4.10 Who is responsible to support communities to plan in case of any future disaster? 4.11 What are your strengths and weaknesses for effective implementation of disaster risk management strategy?	4.2 How your department did implemented these policies or strategies 4.3 Which actors usually participate in these meetings? 4.5 Do your department maintain segregated data of your interventions? 4.6 How do you rate this contribution? 4.7 If not satisfactory, what are the reasons? 4.9 Do you perceive any role of local community in disaster risk reduction? 4.12 And what is their role? 4.13 What appropriate policies and actions you recommend to reduce the disaster risk?

Module 5: BUDGETARY ALLOCATION		
5.1. Does your department have specific budget allocation for DRR activities?		
Indicator	**Follow-up questions**	**Specifying questions**
level of Citizen Participation	5.2 What percentage share of DRR budget to the total budget? What is the utilization status of this budget? 5.5 Does your department coordinate with other stakeholders related to DRR activities? 5.6 Please tell me about some strengths and weaknesses of your departments regarding mainstreaming and implementation of DRR programmes?	5.3. Who are these stakeholders and what are the outcome of this coordination? 5.4. What are the challenges faced by your department in implementation of DRR programmes?

Appendix B

Focus Group Discussion

Questions for Discussion

Just to get started can you tell me what type of disasters have your community experienced in last 10 years?

What were the major causes for these disasters?

What were the impacts of this disaster on local community?

Probes:

a. Can you tell us about the impacts these disaster had on human life?

b. Can you tell us more about the extent of life losses and injuries resulted from these

c. What were the impacts of these disasters on property?

Please tell us the impacts of disaster on livelihood?

Please tell us about what types of mitigation measures at government, community and individual level are needed to reduce the impact of the future disaster you mentioned?

(Explain the meanings of mitigation. Mitigation means to reduce the severity of the human and material damage caused by the disaster. Mitigation measure are taken today as proactive measures for future disasters)

Probes:

a) What physical structures do you think can protect your communities?
b) What kind of modifications are needed to improve construction practices
c) Besides safe and protective construction, what non-structural measures are needed?

Do you know of any mechanism for receiving support from Government in case of disaster? Can you cite an example of you getting support from Government in a recent disaster that hit your community and also tell us how much are you satisfied with level of support you received?

In order to be well prepared for future disasters like earthquakes, floods and sliding, did you receive any community training(s) from the government?

Please tell us how much do you consider preparing for a disaster is an important activity?

What types of DRR activities your community can implement?

What capacity in terms of human resource or material resource is present in your community that can be beneficial in responding to localized hazards?

Is there a need for having an organized group within the community to plan for and respond to disasters? What are the gaps that this group can fill?

Can you identify particular triggering points (risks) in your community that can increase the effects of disaster?

Explanation: In some countries/communities the effects of disasters are very nominal as compared to us.

Probe:
Why it happens so?

What actions are needed for disaster preparedness?(what is current status)

Probe:

- Household
- community level