PARTICIPATORY DEVELOPMENT INITIATIVES [PDI]

Oxfam Novib

lead

A Situation Analysis of Urban Disaster Risk Management in Pakistan

Based on Case Studies of Six Major Cities

LEAD Pakistan

11/22/2013

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List of Abbreviations

AHD	Action for Humanitarian Development
BHU	Basic Health Unit
BCS	Balochistan Conservation Strategy
CBDRM	Community Based Disaster Risk Management
CDO	Civil Defence Organization
CFW	Cash For Work
CPDM	Disaster Preparedness and Management
CDGK	City District Government Karachi
DCMC	District Crisis Management Cell
DDMA	District Disaster Management Authorities
DMCs	Disaster Management Committees
DMP	Disaster Management Plan
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DRMP	Disaster Risk Management Plan
EIA	Environment Impact Assessment
ECP	Election Commission of Pakistan
EPA	Environment Protection Agency
ERPs	Emergency Response Procedues
ERTs	Emergency Response Teams
EWS	Early Warning System
FAO	Food and Agricultural Organization
FDA	Faisalabad Development Authority
GHG	Green House Gases
GOB	Government of Balochistan
GLOF	Glacial Lake Outburst Flood
HFA	Hyogo Framework for Action
HH	Household
HUSAR	Heavy Urban Search and Rescue
ISWM	Integrated Solid Waste Management
IUCN	International Union for Conservation of Nature
LGSAT	Local Government Self Assessment Tool
LCO	Life Care Organization
KANNUP	Karachi Nuclear Power Plant
KDA	Karachi Development Authority
KPK	Khyber Pakhtunkhwa
KSDP	Karachi Strategic Development Plan
iMMAP	Information Management and Mine Action Programs
JICA	Japan International Cooperation Agency
NADRA	National Database and Registration Authority
NDMA	National Disaster Management Authority
NDMA	National Disaster Management Act
NDP	National Drainage Programme
NDMC	National Disaster Management Commission
NDMO	National Disaster Management Ordinance
NDRMF	National Disaster Risk Management Framework
NGO	Non-Governmental Organization

ON	Oxfam Novib
P & DD	Planning and Development Department
PBS	Pakistan Bureau of Statistics
PCGIP	Punjab Cities Governance Improvement Project
PDA	Peshawar Development Authority
PDI	Participatory Development Initiative
PDMA	Provincial Disaster Management Authority
PID's	Provincial Irrigation and Power Departments
PMD	Pakistan Meteorological Department
PRCS	Pakistan Red Crescent Society
PSLM	Pakistan Social and Living Standard Measurement Survey
QDA	Quetta Development Authority
RMI	Rehman Medical Institute
SCOPE	Society for Conversation and Protection of Environment
SDPI	Sustainable Development Policy Institute
SUPARCO	Space and Upper Atmosphere Research Commission
TMA	Tehsil Municipal Administration
WASA	Water and Sanitation Agency
WAPDA	Water and Power Development Authority
WWF	World Wide Fund for Nature
UNHCR	United Nations High Commissioner for Refugees
UNISDR	United Nations International Strategy for Disaster Reduction
URC	Urban Resource Centre
UU	Urban Unit

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Executive Summary

This study has been undertaken by LEAD Pakistan in collaboration with Participatory Development Initiative (PDI) and with the support of Oxfam Novib (ON). The purpose of the Study was to develop a situation analysis of Urban Disaster Risk Management (DRM) with reference to achieving the objectives of the Hyogo Framework for Action (HFA) in selected urban areas of Pakistan. Being a pioneering initiative, major cities – with a wide regional representation – were chosen for this purpose. They were: Karachi, Quetta, Faisalabad, Rawalpindi, Peshawar and Gilgit. To begin with, HFA was studied and analyzed for its applicability to Pakistan resulting in some basic research tools for the study including a questionnaire and a checklist. These were used to garner the necessary information through visits to these urban centers - essentially based on interviews with key informants. They belonged to government agencies like NDMA, PMD, PDMAs, P&DDs, DDMAs, DCO Offices, City Development Authorities, selected civil society representatives and researchers. Besides, some useful documents related to the various cities, not available online, were also collected during this field work. Prior to the field work, desk research for the appropriate background and relevant information was carried out. All this information was collated and analyzed under HFA framework to try to discern common and specific patterns for these cities thereby to establish the state of Urban DRM in Pakistan.

While each of these cities has unique features, especially in terms of hazard profiles, given the nearly similar administrative set up in all of them, there are strong commonalities when it comes to how disaster risk is being managed. With Pakistan being one of the most vulnerable and disaster prone countries in the world, especially with respect to the increased frequency of extreme events in the most likely climate change scenarios, the picture that emerges is quite alarming. The main findings from this research and analysis include a general lack of awareness and sensitization about DRM, especially at the communities' level; working in the reactive rather than proactive mode with a focus on disaster response and recovery instead of prevention and mitigation; absence of regular funding and budgeting at the district/city level; ambiguity in operational mechanisms with lack of clarity in the definition of roles; lack of coordination between various government outfits; little or no participation of communities or their representatives in making and implementing DMPs; poor enforcement of building codes; impact of terrorism in some of the selected cities that detracts from DRM measures; absence – at least on a regular basis – of multi-risk assessments to feed into DMPs; and non-optimal use of info furnished by PMD to make an effective EWS. There is a need to build a whole culture of resilience that requires working at multiple levels from awareness raising through media to incorporating DRM in school curricula; better coordination between the relevant government agencies; updating and enforcement of building codes; CBDRM trainings, regular multi-hazard risk assessments feeding into DMPs with community participation. With the revival of local bodies including city district governments, there is an excellent window of opportunity for status assessment, sensitization and capacity building of these governments, especially through the use of HFA tools like LGSAT that can be easily adapted for local/city governments.

1 Purpose and Methodology of the Study

1.1 Purpose

This study, ***Situation Analysis of Urban Disaster Risk Management in Pakistan***: ***Based on Brief Case Studies of Six Major Cities*** has been undertaken by LEAD Pakistan in collaboration with Participatory Development Initiative (PDI) and with the support of Oxfam Novib (ON). LEAD Pakistan was selected to conduct the study, using various socio-technical approaches to develop this situation analysis of Urban Disaster Risk Management with reference to achieving the objectives of the Hyogo Framework for Action in selected urban areas of Pakistan. More significantly, this is expected to form the basis for PDI and ON to develop Urban Disaster Risk Management framework/s in future and measure the progress on Hyogo Framework for Action (HFA) in Pakistan.

The specific objectives of the study have been:

- To review the nature and scale of past urban disasters in key urban settlements in Pakistan;
- To identify potential threats in key urban settlements in light of climatic changes;
- To assess the existing level of preparedness in key urban settlements in Pakistan;
- To understand the role of different agencies or institutions engaged in disaster management in the specified urban settlements,;
- To review the urban contingency plans and urban disaster management policy frameworks;
- To develop strategic objectives and indicators for future initiatives with urban communities that contribute to HFA priorities for action;
- Share effective models, lessons learnt and best practices in Urban DRM lead by different institutions and actors; and
- Provide recommendations for Advocacy Strategy for Urban Disaster Risk Management.

1.2 Methodology and Approach

1.2.1 Pre-Inception

LEAD Pakistan agreed to conduct the study, using various socio-technical approaches to develop a situation analysis of Urban Disaster Risk Management with reference to achieving Hyogo Framework for Action in selected urban areas of Pakistan. More significantly, this would form the basis for PDI and ON to develop Urban Disaster Risk Management framework/s in future and measure the progress on Hyogo Framework for Action (HFA) in Pakistan.

Proposed study was to identify and analyze the related issues by conducting;

1. Hazard Profiling
   1.1. Define Urban Areas with categorization of Urban Poor and Urban Rich

1.2. Review the nature and scale of past urban disasters in selected urban areas
1.3. Identify potential threats in key urban settlements in light of Climate and Human Induced Disasters

2. Stakeholder Analysis
   2.1. Understand the role of different agencies or institutions engaged in disaster management in the specified urban settlements
   2.2. Review the capacity of key stakeholders
3. Intervention Strategy Analysis
   3.1. Assess the existing level of preparedness in selected urban settlements
   3.2. Analyze effective models, lessons learnt and best practices in Urban DRM lead by different institutions and actors at International Level
   3.3. Review the urban contingency plans and urban disaster management policy frameworks

This study was expected to develop strategic objectives and indicators for initiatives, which could form the basis for action oriented measures. This was supposed to have been carried out through the following methodology:

1. Inception: It includes meetings with the client, stakeholder mapping, identification of primary and secondary knowledge portals and information repositories.
2. Secondary Research: Review of the Hyogo Framework for Action, its priority areas, progress, and the dynamics of the target areas. Review of existing research, concepts and best practices, regionally and internationally, that will serve as the basis for developing indicators to measure resilience and preparedness of urban communities in context of HFA priorities for action. Secondary data will be obtained from a number of sources such as National Disaster Management Authority (NDMA), Provincial and District Disaster Management Authorities, local governments, existing research studies, case studies and national statistics.
3. Primary Research: On the basis of Secondary research, LEAD Pakistan will conduct at least 1 exposure visit per selected city to collect information at Meso and Micro level. LEAD's National Alliance for Climate Action (NACA), which is a partnership of more than 100 community based organizations across Pakistan, will facilitate LEAD Pakistan in these activities. For the planned study, LEAD will select 6 cities (preferably Karachi, Faisalabad, Rawalpindi, Peshawar, Quetta and Gilgit) focusing on two highly populated, two medium populated and two low populated cities from all provinces to ensure provincial representation. This will give allow us to give a holistic understanding of how to improve disaster management in different cities with varying demographics.
4. Report Development: The draft report of the study will represent research findings, their analysis of the situation, the conclusions they draw and recommendations. The project team leader will seek the input from experts and the PDI team on the draft reports and incorporate it in the final reports.

1.2.1 Inception and Post Inception Work

The project kicked off by mobilizing a team of desk and field researchers under a senior LEAD staff with access to external expertise on DRR-M.

Some initial desk research and review was carried out followed by an inception workshop attended by the team members facilitated by an external expert on DRR-M. This provided the essential clarity and a more purposeful understanding to the team members who are mostly new to this theme. While these inception discussions delved into the essentials of the project design and implementation, two key principles that were decided to underpin the implementation strategy are:

1. Given the time and budget constraints in the project, especially for meaningful field work required to carry an extensive study, the project should focus on existing data and info available through the Net as well as with some of the concerned departments. The field work should be focused on answering some basic questions as well as on validating the secondary research data.
2. In order to link this study to international best practices and the existing frameworks thereof, it was also decided that the project would identify and use a suitable existing framework for carrying out the planned study.

Based on the dual considerations that it provided an excellent ready-made framework created by the global expertise on DRR-M – with its localization being eminently suitable for Urban DRR – as well as to contribute to standardized global knowledge in this area, the project team decided to use the frameworks and tools developed under the Hyogo Framework of Action (HFA) and adapt them to the current study. This was also in consonance with the understanding of using HFA. It also has the advantage of in-built international best practices for its relevant tools are based on them.

These considerations led to the study and analysis of HFA instruments and tools. An analysis of HFA's 'Priority for Action' and Core Indicators was carried out to see their scope of applicability – international, national, provincial, local – in the context of Pakistan. The result of this exercise is available in annex 1. Based on this analysis a questionnaire was developed for field work to be carried out in the selected cities (see annex 2). However, this was not meant to be a survey questionnaire but a kind of information guide – within the framework of HFA - for the field staff to gather all the relevant information. A complementing checklist to the questionnaire was also developed (see annex 3) for the field staff to ensure that they had collected all the necessary data for the study and analysis of a particular city.

While the project was conceived to be a pioneering exercise, it was decided to test this notion through intensive search and exploration of the available information. And if there was some previous work done in this area, the project would at least try to link with it if not exactly to build on it. In the event, it turned out that indeed some similar work had been done. The two most important of these initiatives have been the Pakistan Emergency Situation Analysis (PESA) carried out by iMMAP under a USAID project in 2012-13. Similarly

a progress report on the 'Resilient Cities Initiative' launched by UN-HABITAT in Pakistan in 2011 under which a situation analysis for 31 mid to small cities was carried out using LGSAT tool has also been referred to and used in our analysis. The recommendations from these two initiatives that we found germane to our study have also been included in this report.

2 Pakistan and Disaster Risk Reduction: An Overview

2.1 Introduction

Despite Pakistan's vulnerability to a variety of natural and manmade disasters for reasons varying from topography to population density and poverty[1], disaster management in the country has historically been reactive rather than proactive. The most accurate way of describing disaster management and response in Pakistan is as emergency relief, with most institutions ascribing to the 'Emergency Response Paradigm'[2]school of thought, basing actions on post disaster scenarios. This chapter will explore Pakistan's history in DRR in terms of legislation, governance and institutional arrangements, as well as touching briefly upon what the future looks like in terms of DRR.

2.2 Disaster Management in Pakistan Pre 2005

The Punjab National Calamities (Prevention and Relief) Act, 1951, Khairpur National Calamities (Prevention and Relief) Act, 1954, and the West Pakistan National Calamities (Prevention and Relief) Ordinance were repealed by the 1958 'Calamity Act'[3] of Pakistan. Although by name this act is referred to in several documents as a 'National' act, it was formulated by the Government of Punjab, and throughout the document, the use of the word 'Government' refers to the Punjab Government. This act was to provide for the maintenance and restoration of order in areas affected by certain calamities that are described in the act, and for the prevention and control of and relief against them. Although prevention is stated to be a priority area under the act, there is little or no evidence within the rest of the document of any prescribed action or measures to achieve this. Once an area is declared to be a 'calamity affected area', a Relief Commissioner is appointed for the province or for part of the affected province. This Relief Commissioner is responsible for the

[1]Memon N. Disasters in South Asia: a regional perspective. Pakistan Institute of Labour Education and Research (PILER), Karachi, Pakistan; 2012

[2] Asian Development Bank. Pakistan Floods 2010: preliminary damage and need assessment. Islamabad, Pakistan; 2010.

[3]National Disaster Management Authority (NDMA).NDMA Annual Report 2010; 2011. Available from: 〈www.ndma.gov.pk〉 [accessed 5/11/2013]

execution of emergency relief activities and any activities relating to this, including the restoration of order.

The various calamity acts and ordinances were supplemented by Emergency Relief Cells in each province, which were characterized by their overlapping roles and responsibilities. In the Punjab in 1975 a dedicated department, the Relief and Crisis Management Department was established, but with no clear mandate on how to operate within the parameters of the act. An Emergency Relief Cell was created within the cabinet division in 1971 and was held responsible for disaster relief at the national level. The role of this Emergency Relief Cell at the Federal level was to provide funding and resources to the corresponding bodies at provincial levels.

Floods in particular are a recurring hazard in the country and for this reason, in 1960 following a major flood and in anticipation of more, a flood control programme was launched which made its way into the Fourth Five Year Plan of Pakistan [4]. This was followed by a National Disaster Plan in 1974 by the afore mentioned Federal Emergency Relief Cell, which was a pioneering plan in terms of envisaged procedures, organizational structures, responding agencies and procedures for monitoring of relief agencies. Unfortunately, this plan was never implemented. A similar effort was made when the Pakistan Emergency Service Ordinance and the Pakistan Emergency and Fire Code were formulated in 2002, following a fire in the 17 storey Shaheed-I- Millat Secretariat in Islamabad which mandated a new federal Pakistan Emergency Fire Council and a Rescue and Fire Service. These too never materialized.

What is worth a mention here is the role played by the Pakistan army in relief and emergency activities in the case of a disaster in Pakistan. This can seriously bring into question the use and efficiency of the agencies that are mandated and dedicated to the same task that is being performed by the military forces, which do not even have a formal wing dedicated to this service.

[4] Govt. of Pakistan. "List of Five-Year Plans for the National Economy of Pakistan". *Planning Commission Government of Pakistan*..

2.3 Disaster Management Post 2005

2005 was a turning point for disaster management in Pakistan. Not only was this the year when Pakistan became a signatory to the Hyogo Framework for Action (HFA), indicating a shift toward more comprehensive disaster management that is proactive as well as being reactive, but also was the year when the country was struck by a devastating earthquake whereby damage and casualties over an area of 30,000 km2 in the then N-W.F.P. province of Pakistan and parts of Pakistan-administered Kashmir occurred[5]. The sheer scale of this disaster highlighted Pakistan's vulnerability to disasters and further enforced the commitment to better DRR practices, resulting in the promulgation of the National Disaster Management Ordinance (NDMO) in 2006[6]. The ordinance provided legal and constitutional arrangements for disaster management at federal, provincial and district levels. The NDMO provided the National Disaster Management Commission (NDMC) as the apex body for managing disasters, with the National Disaster Management Authority (NDMA) as its administrative arm. The National Disaster Management Authority will deal with the 'entire spectrum of disaster management in the country'.

Under consultation with UN agencies and NGO's, the Government of Pakistan in 2007 established a national framework for disaster risk management known as the National Disaster Risk Management Framework (NDRMF) which identified nine priority areas for a five year action plan, ranging from institutions and legal arrangements to early warning systems and training, as well as identifying institutions responsible for disaster management in the country[7]. However, due to overlapping roles and responsibilities of the actors in the disaster management spectrum, disaster management remained disorganized.

[5] Dr. A. Naeem, Dr. Qaisar Ali, Muhammad Javed, Zakir Hussain, Amjad Naseer, Syed Muhammad Ali, Irshad Ahmed, and Muhammad Ashraf . "Pakistan: A Summary Report on the Muzzafarabad Earthquake", *Earthquake Engineering Center at the Department of Civil Engineering, N-W.F.P. University of Engineering and Technology, Peshawar, Pakistan*

[6] Government of Pakistan. National Disaster Management Ordinance 2006. Islamabad, Pakistan; 2006

[7] For example, the Federal Flood Commission, Provincial Irrigation departments, the Water and Power Development Authority, the Dams Safety Council, Civil Defence, the Pakistan Red Crescent Society, the Emergency Relief Cell, fire services, the National Crises Management Cell (NCMC), the Pakistan Meteorology Department, the Space and Upper Atmospheric Research Commission, the Earthquake Reconstruction and Rehabilitation Authority, the armed forces, the police and the National Volunteer Movement.

In December, 2010, the NDMO was converted into an Act of the Parliament as the National Disaster Management Act (NDMA) 2010, with retrospective effect from August 2007. The three tier hierarchical framework sets out the National Disaster Management Commission headed by the Prime Minister as being at the top of the hierarchy and responsible for national disaster policymaking in the country. The National Disaster Management Authority is the focal point for the coordination and implementation of disaster management policies in the country. The second tier consists of the Provincial Disaster Management Commissions and at the third tier, Provincial Disaster Management Authorities and District Disaster Management Authorities, which are responsible for drawing up Disaster Management plans at their administrative level[8].

A test of the National Disaster Management Act occurred in the same year that it was formed: this was the year that Pakistan was ravaged by floods[9] that caused immense losses to the infrastructure and economy of the country. According to the data provided by the Pakistani Government, the floods directly affected upto 20 million people mostly by destruction of property, livelihood and infrastructure with a death toll of around 2000 people [10]. The way this disaster was managed mimicked the response at the time of the 2005 earthquake, when there were no legal and institutional frameworks for DRR in the country and relief activities were carried out in an ad hoc basis. Very little had changed on ground except for the addition of another tier of bureaucratic strata.

Urban disasters have not wholly been ignored in this process. The NDMA in 2010 established two Heavy Urban Search and Rescue (HUSAR) teams in Karachi, as well as conducting capacity building on hospital disaster preparedness and urban search and rescue. In most urban areas, Tehsil Municipal Boards, District Commisioners Offices, Police Departments and Fire Brigades and the Development Authorities of the cities are responsible for emergency relief, rehabilitation and evacuation. Rescue 1122 plays an important role in the Punjab in emergency relief, especially in its urban cities.

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[8] Zubair Ahmed, Disaster risks and disaster management policies and practices in Pakistan: A critical analysis of Disaster Management Act 2010 of Pakistan, International Journal of Disaster Risk Reduction, Volume 4, June 2013, Pages 15-20, ISSN 2212-4209, http://dx.doi.org/10.1016/j.ijdrr.2013.03.003.

[9] N. Memon, Climate change and natural disasters in Pakistan (second ed.)Strengthening Participatory Organization (SPO), Islamabad (2012

[10] Singapore Red Cross (15 September 2010). "Pakistan Floods:The Deluge of Disaster – Facts & Figures as of 15 September 2010". Retrieved 7th November 2013.

2.4 Disaster Management Today

2013 has been yet another landmark year in the disaster management arena in Pakistan. In February of this year, the National Disaster Risk Reduction Policy of Pakistan was formulated to 'advocate an approach to disaster management that focuses on reducing risks'[11]. Although this policy is thorough and comprehensive, its implementation is still a question mark, especially in its failure to create institutional synergies and assignment of responsibilities to various layers of governance and actors in the field. This means that the plague of overlapping duties and responsibilities of departments is carried forward yet again.

[11] Government of Pakistan, National Disaster Risk Reduction Policy, 2013 , National Disaster Management Authority. (available from www.ndma.gov.pk and accessed on 7th November 2013)

3 Urban Situation of Pakistan: A Disaster in the Making?

Pakistan's urban growth rate is fastest in South Asia. Due to continuously high growth rate of urban population its percentage went up from 18% in 1951 to 28% in 1981 and to 32.52% in 1998. Currently, 37% of Pakistan's population is estimated to be living in urban[12] centers. On average, the population growth rate of urban areas is 1.5 times faster than that of rural areas[13]. By 2030, over half of Pakistan's population will live in cities[14]. The primary reason for urbanization is industrialization – which mostly takes place in urban areas – and also, in general, because urban wages exceed rural wages, not to say that there are more employment opportunities in the cities both in the industrial as well as services sectors. In addition better access to services accelerates this process. So, the urbanization is a consequence of structural transformation of an economy - the transition from agriculture to industry[15].

Sindh is the most urbanized province of Pakistan primarily because of the population of metropolis Karachi, which itself accounts for 33 percent of the total population of the province. Presently, about 50 percent of the population of Sindh resides in the urban areas. It is interesting to note that by excluding the population of Karachi, the level of urbanization in Sindh declines to 28 percent; whereas urban areas in Punjab constitute as much as 32 percent of the entire population of Punjab. The share of urban population is 17 percent in Khyber Pakhtunkhwa (KPK) and 25 percent in Balochistan. Islamabad, being a capital city, accounts nearly up to 67 percent of urban population[16] of the Islamabad Capital Territory.

[12] Haider, Irteza. "Urban Development in Pakistan." 2006. Web. 12 Nov, 2013
[13] Ibid.
[14] Ibid.
[15] Altaf, Anjum. "Urbanization: The Big Picture" *THE SOUTH ASIAN IDEA*. 2013. Web. 13 Nov. 2013
[16] Dr.Arshad Zaman and Iffat Ara, Rising Urbanization in Pakistan Some Facts and Suggestions The Journal, Sept. 2002".

Area	1981	1998	Growth Rate	
	% urban	% urban	Rural	Urban
PAKISTAN	29.1%	33.3%	2.34	3.52
NWFP (KPK)	15.1%	16.9%	2.69	3.51
PUNJAB	27.6%	31.3%	2.32	3.40
SINDH	43.4%	48.8%	2.20	3.51
BALOCHISTAN	15.5%	23.9%	1.85	5.12
ISLAMABAD	60.1%	65.7%	4.26	5.76

Source: Population Census Organization, Government of Pakistan

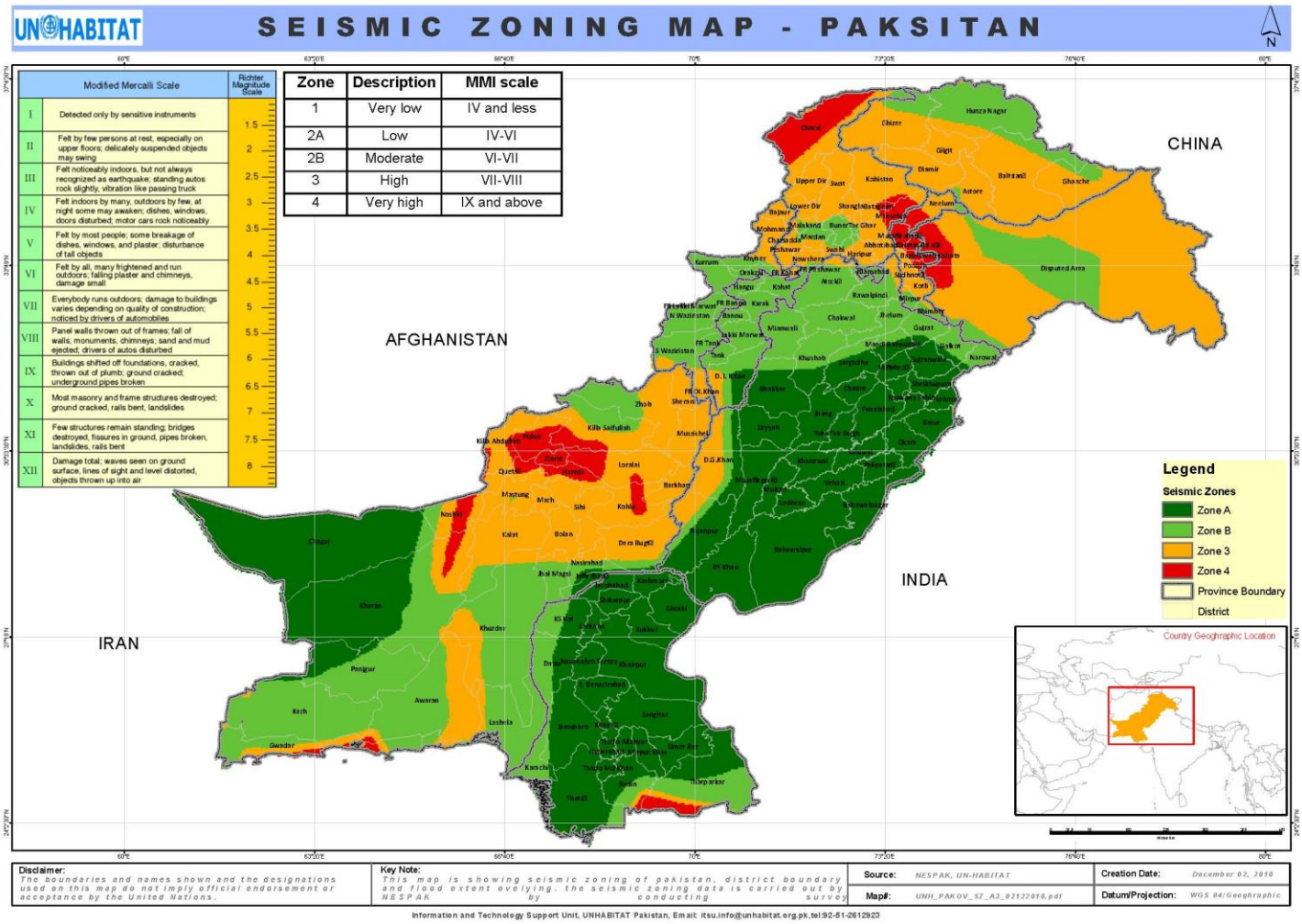
Pakistan is the most urbanized country in South Asia. The importance of cities to the socio-economic growth of the country is set to rise in the perceivable future as significant numbers of Pakistan's youth migrate from rural areas to cities in search for employment[17]. However, in Pakistan, the urban sprawl is spreading at a fast clip. *Waste littered streets, gridlocked roads, violence infested neighborhoods, entrepreneurship deprived markets and disillusioned youth regrettably characterize what is urban in Pakistan*[18].

While the urban dwellers live through the jumble we call cities, the leadership (political as well as bureaucratic) still seems to be largely ignorant and unconcerned about what is needed to reverse these trends. Most specifically, there is no clearly articulated policy or even a vision pertaining to economic geography of small and intermediate cities in Pakistan and the information data base related to non-metropolitan urban centers is also extremely deficient. Large urban centers such as Karachi and Lahore dominate the policy discussion.

This calls for a comprehensive and an effective urban planning to ensure universal provision of basic municipal and health services, safe and clean delivery of water, control of the spread of slums, the minimization of pollution and prevention against natural and human induced disasters. Well managed cities and planned urbanization sustain the national development objective; it provides market demand, generates employment and remittances for the rural economy hence, implying a virtuous cycle. Therefore the policy makers, researchers and administration need to identify and redress the problems pertinent to urbanization prevailing since independence, but more seriously over the past two decades during which the urban population has ballooned.

[17] Aslam, Khan. "Integrating Urban Datasets: The Path to Effective Socio-Economic Planning in Urban Pakistan." Feb. 2012.
[18] HAIDER, MURTAZA. "The Accidental Cities." *Dawn News* 2013: Print

This is given further urgency due to significant changes in the environment and weather patterns. While the effects of climate change, due to Green House Gases (GHG) have resulted in uncertain monsoons and flash floods causing great damage in some of the urban centers, especially in 2010, a potential disaster of far greater scale menacingly lurks over these cities. Given that many important cities in Pakistan are situated in, or perilously close to, seismically active zones, vulnerable to high and very high intensity earthquakes, and with building codes hardly – at least not effectively - enforced, we are living at the edge of a dark precipice of death and destruction.



Source: UN Habitat

4 Case Study 1: Peshawar

4.1 Introduction

Peshawar currently enjoys the status of being the oldest living city in South Asia, boasting a recorded history that goes as far back as 539 BC, according to recent discoveries in an excavation by the Khyber Pukhtunkhwa Government[1920].As well as its deep rooted urban history, Peshawar is characterized by its strong links with Afghanistan, sharing a largely permeable border with the neighboring country, which has contributed to its cultural diversity, as well as adding an additional layer of complexity to its rapidly accelerating rate of urbanization. The population of the city has always been fluid, with most of the longer term or 'host' population being migrants themselves, growing to outnumber the indigenous 'hindko' speaking community[21]. Recent disasters, both man-made and natural, have led to large scale internal displacement of populations in the province, most of whom flock to Peshawar for refuge. Additionally, there is a considerable flux of wealthier people moving from Peshawar to the capital, Islamabad, due to growing insecurity.

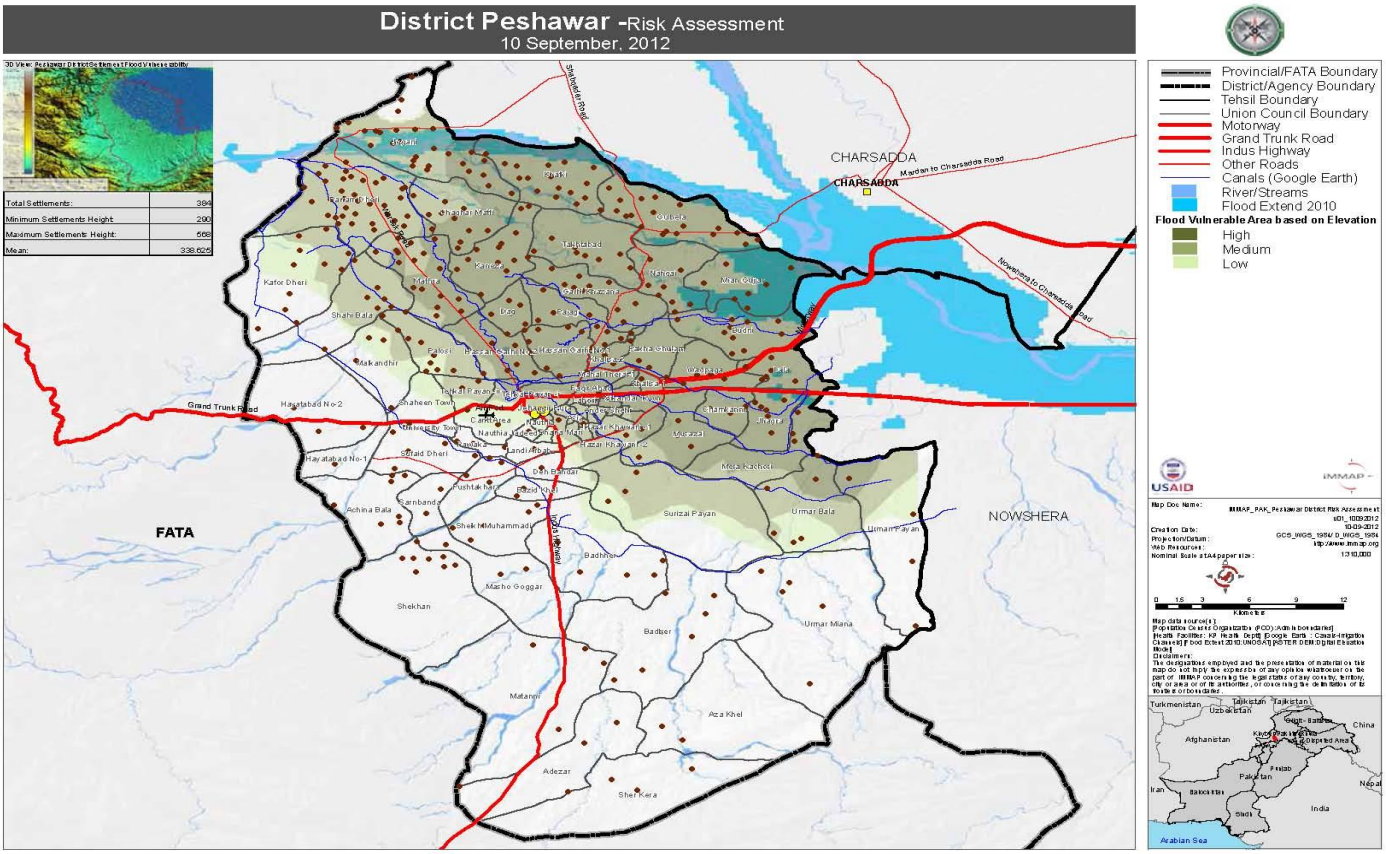
Under the Local Governments Ordinance of 2001[22], Peshawar was officially declared a city district and divided into four sub towns. Each town consists of a group of Union Councils, 92 in total. Other than these sub towns, like many other cities the Cantonment of Peshawar is an important urban settlement, as well as newer and more affluent housing schemes such as Hayatabad and Regi Lalmah. The population of Peshawar is difficult to gauge, with the last census being held in 1998. However, it is suggested that the population was 3.3 million in 2012[23], almost doubled from the 1.7 million it was in 1998. The city has no agreed

[19] Associated Press of Pakistan, Archeologists to discover exact profile of Peshawar-oldest living city of South Asia- by Adeel Salman (accessed 7/11/2013)
[20]Government of Khyber Pukhtunkhwa, Department Sports, Culture, Tourism. Youth Affairs / Archaeology & Museums Department (www.khyberpukhtunkhwa.gov.pk)
[21] Irina Morsel and Ashley Jackson, Sanctuary in the city? Peshawar Case Study. HPG Working Paper, May 2013
[22]The Local Government Ordinance of Pakistan in 2001 provided for the devolution of Government to District Administrations
[23]Izhar-ESC-Lalazar (2012) 'Draft Landuse Plan – District Peshawar' (unpublished draft prepared for the Department of Housing, Government of Khyber-Pakhtunkhwa), from Irina Morsel and Ashley Jackson, Sanctuary in the city? Peshawar Case Study. HPG Working Paper, May 2013

boundaries, with Town I and III considered administratively as urban, whilst the remaining two make up most of 'rural' Peshawar: the slum areas[24].

4.2 Disaster Profile

Peshawar is vulnerable to many different types of disasters, ranging from man made to natural, and even socio-natural disasters [25]. This vulnerability arises from a combination of Peshawar's demographic features and socio-economic conditions, its governance, and its geographical and seismological positioning. Primary research and a literature review of published and grey literature allowed us to define the key disasters Peshawar is prone to: Flood, Wind Storm, Earthquakes, Urban Fire, Epidemics and Disease, and Terrorism.



Source; iMMAP, Pakistan 2012-13.

[24]Immap 2012 and Interview at University of Peshawar Centre for Disaster Preparedness and Management.
[25]Interview with Centre for Disaster Preparedness and Management, Interview with Urban Policy Unit Peshawar

4.2.1 Flood

Peshawar is situated in a small valley, surrounded on the south by the river Bara, on the north by the river Budhni, a subsidiary of the Kabul River, and on the west by the Khyber Hills. This makes Peshawar extremely vulnerable to riverine flooding, especially in the area known as 'Camp'[26] due to its proximity with the subsidiary of the Kabul River, as well as increasing urban settlements on low lying areas.

Peshawar is in the path of the 'Western Disturbance', as well as like the rest of Pakistan, visited by the Monsoon. The city is susceptible to flash floods, which are an almost yearly occurrence [27]. According to an interview conducted at the Centre for Disaster Preparedness and Management, Hayatabad is the most susceptible to flash flood due to its proximity to the Bara river, whose catchment area is also very large and causes water to flow out into other areas such as Palozai and Warsak Road. The interviewee also pointed out the distinct link between vulnerability to disaster and poverty, with the exception of Hayatabad, most areas that are prone to flash flood are the slum areas of 'rural' Peshawar, that lack formal drainage and infrastructure. This was further elaborated by an interview at the Urban Policy Unit in Peshawar, who explained that the first phase of Hayatabad (out of a total of four), was built with no drainage system whatsoever. Although this was remedied in the next three phases, Phase I of Hayatabad is still prone to flash flood.

Although urban flooding can be linked to both flash floods and riverine flood, in the case of Peshawar, where there is a very weak drainage and sewerage system, it is a hazard in its own right and distinct from other kinds of flooding. Because there is very little urban soil for drainage, water from rainfall or even from household use cannot be drained and stagnates upon roads and pedestrian pathways limiting activity.

[26] Ibid

[27] Khyber Pukhtunwa Disaster Management Authority, Government of Pakistan

4.2.2 Wind Storms

In 2012 there were 4 deaths and 25 casualties during a wind storm[28] in the city. This is a recurring hazard, but in recent times is increasing in its impact due to unsafe urban planning practices such as unsafe buildings, as well as the use of billboards throughout the city that cause serious damage during such an event. [29]

4.2.3 Earthquakes

The Khyber Pukhtunkhwa province is located largely on the Iranian Plateau and the Eurasian Plates, making it prone to seismic activity. Although there are building codes for the entire country, that are enforced by the Peshawar Development Authority (PDA)[30] in the city of Peshawar, the implementation of these building codes is minimal , especially in slum areas. According to the Centre for Disaster Preparedness and Management, public buildings in particular were mandated by the Peshawar Development Authority to be built to be resistant to earthquakes of up to 9 on the Richter scale, but in practice this is rarely enforced.

4.2.4 Urban Fire, Terrorism and Epidemics

Instances of terrorism in the city of Peshawar that are increasingly frequent have been observed to be the underlying cause of a lack of adaptive capacity within the people and institutions of the city, as well as leading to a variety of other disasters such as mass casualties and urban fire[31]. This was observed in the case of the Meena Bazaar bombing in October 2009, where 137 deaths were recorded as well as over 200 casualties[32]. Other than direct damages due to the attack, closely built, old and wooden structures as well as open markets and tents in the area led to the rapid spread of fire, which caused extensive damages to property and life. Urban fire and terrorism remain a threat to Peshawar largely

[28]The News, 'Four killed as dust storm hits Peshawar'. News article by Javed Aziz Khan, 2012 (accessed on 7/11/2013)
[29]Interviewee from Centre for Disaster Preparedness and Management.
[30]Interviewee from UPU
[31]ibid
[32] Ismail Khan (28 October 2009). "Bomb Kills Scores in Pakistan as Clinton Arrives". *The New York Times*. Retrieved 28 October 2009

due to closely built human settlements and unpreserved ancient buildings that are not fire proof, as well as a lack of fire safety practices, as observed by participants of the interviews.

Peshawar has recently been struck by two major epidemics, one of which is dengue. This can be attributed, according to interviewees, to stagnating water due to poor drainage as well as rising temperatures that provide a productive environment for the larvae. Additionally, the congo virus has also been reported in various parts of Peshawar after the recent Eid celebration, where waste from sacrificial animals was inadequately disposed of or thrown on the streets, resulting in the disease.

Environmental disasters are also imminent. Other than rampant air and noise pollution from vehicles, Peshawar is also home to industries such as cement, ghee, soap and marble. Effluents from these industries which have been proven to be higher than permissible levels[33] are discharged into the Bara and Kabul rivers, where they not only contaminate drinking water but also percolate into the soil and contaminate groundwater aquifers.

4.3 Institutional and Administrative Setup

4.3.1 Urban Planning

The Local Government Ordinance of 2001 called for the abolition of the Peshawar Municipal Corporation (PMC). This led to the devolution of responsibility for urban planning and development to different towns under the various Town Municipal Authorities (TMAs). In Peshawar, seven TMAs for each the four towns, the Cantonment and rural/peri urban areas were set up. Additionally, the Peshawar Development Authority (PDA) which is a separate, semi-private entity that generates its own funds, is responsible for Hayatabad and other large housing schemes on the outskirts of the city. In May 2012 the KP Local Government Act was passed, abolishing the TMAs and reviving the Peshawar Municipal Corporation, with overall jurisdiction over the four towns of Peshawar. There are significant overlaps between the responsibilities of the municipal entities such as the Provincial Housing Authority, the

[33]F.K Bangash, M. Fida and Fazeelat, Appraisal of Effluents of Some selected Industries of Hayatabad Industrial Estates, Peshawar, University of Peshawar, Department of Chemistry. Jour. Chem.Soc.Pak. Vol 28, No.1, 2008

City District Government, the TMAs and the PDA. The Provincial Planning and Development Department plays a supervisory role, restricted due to a lack of funds and capacity[34].

4.3.2 Disaster Management

Throughout Pakistan, the National Disaster Management Ordinance led to the establishment of a Provincial Disaster Management Commission and a Provincial Disaster Management Authority. The KP Government achieved this in 2008. Before this, the Provincial Relief Commissionerate had been responsible for DRR activities. The functions of the Relief Commissionerate have now been taken over by the PDMAs[35]. The DDMAs are responsible for Disaster Management at the district level, while at the local level, government line departments are engaged when needed for relief activities.

4.4 Stakeholder Analysis

Important stakeholders in terms of disasters, their impacts and management include Government, Private Sector, Academia and Civil Society. The indirect impacts of disasters are felt throughout all tiers of society, but in particular, as verified by interviews, in Peshawar the unplanned urban sprawl in the form of slums lacking infrastructure and basic services mean that the most vulnerable in the city are the poorest. One of the red lights in terms of Peshawar's disaster management is the lack of will of the Government to incorporate the needs of the poorest segments of the city into their development plans[36].

According to an interview with the Urban Policy Unit of Peshawar, a new master plan for Peshawar is in the process of development; however, there is no evidence of the incorporation of the concerns of the poorer segments of society into these plans. The

[34]Shehbaz (2012) Defining a Comprehensive City Boundary: Peshawar City: Consultancy Services for the Establishment of City Wide Water and Sanitation Utility in Peshawar, USAID Co-Operative Agreement No. 391-A-00-09-0112800, 27 February
[35]KP PDMA, www.pdma.gov.pk
[36]There have been several unsuccessful attempts to implement master plans or development plans for Peshawar since the partition of Pakistan. The first of these was developed in the 1950s, another with the help of UNDP in 1986 and a third in the late 1990s.

presence of refugees and internally displaced persons in the outskirts of the city, some of whom are still living in camps lacking basic facilities such as water and sanitation are too large in number to be ignored. Funding for this plan (which does not exist on paper as yet) is ambiguous; the issue that arises is that funding for development plans comes from external sources, which could have serious implications for the sustainability of these plans, if and when they are developed. Similarly, although building codes do exist, and are evidently in use in areas such as Hayatabad[37] for private housing, their enforcement remains a question mark, especially in commercial areas and the unplanned expansion along the outskirts of the city, and the slum areas. The enforcement of building codes comes under the mandate of the Peshawar Development Authority (PDA), which may bring into question the role of the Provincial Disaster Management Authority and the District Disaster Management Authority, as their role is meant to cover preparedness and mitigation of disasters of which building codes are an integral part in an urban landscape. Similarly, Line departments of the government such as irrigation, food, agriculture etc. are all designated responsibilities in DRR, that overlap with the responsibilities of the various disaster management authorities. While the distribution of duties remains ambiguous, effective implementation of plans becomes impossible (provided that these plans do exist).

The role of the private sector is highlighted in the Hyogo Framework for Action, Priority Area 4, ' Reducing the Underlying Risk Factors'[38]. The whole society, including the private sector, is impacted by disasters and play a role in recovery [39]. In Peshawar, many urban disasters take place in or impact commercial areas, including affluent shopping areas such as the University Town area as well as others such as Qissa Khawani Bazaar and Meena Bazaar. As well as national brands, these areas are also host to many small scale vendors and shop owners, some of whom are encroached on paths and roadsides. Out of necessity, the private sector in Peshawar is involved in disaster relief, such as the Rehman Medical Institute(RMI)[40], but their role is limited to emergency response activities, and they are not involved in planning for disaster management, or indeed in any other planning for the city.

For building the resilience of any society, the role of academia is crucial. Academic institutions form the links between research, international best practice, and on ground

[37] Interview with CPDM
[38] Hyogo Framework for Action, 2005
[39] Private Sector Activities in Disaster Risk Reduction, Good Practices and Lessons Learnt, Bonn, 2008 , United Nations
[40] Interviews with stakeholders

activities. The most common dimensions addressed by academic institutions (in order of occurrence) are resource management, enabling and sustaining a public health response, and information capacity management[41]. Peshawar is home to many academic institutions, and of interest to this study, the University of Peshawar has recently developed the Centre for Disaster Preparedness and Management (CPDM) in 2008. Although the interviewee from CPDM indicated that he has been involved in workshops related to the HFA, these are usually initiated by international NGOs and other agencies, and there is no evidence of the PDMA, DDMA or NDMA engaging them for input into District and Provincial Disaster Management Plans.

Whilst urban areas are commonly defined according to population size and the presence of municipal committees[42] , the process of urbanization itself is commonly understood to be a shift in employment trends to non-agricultural employment[43] and is associated with industrialization. In Peshawar, despite being classified as an urban area, the agriculture sector employs the highest percentage of the population at 26.6%, followed by 8.9% in wholesale and retail businesses, 5.8% in transport and communications and 5.5% in manufacturing, according to the latest available official statistics from 2007 [44]. Only 12% of the women of Peshawar are employed[45]. For obvious reasons, communities that are highly dependent upon agriculture for sustenance and employment are extremely vulnerable to disasters, and Peshawar is no exception. Added to this is the fact that because of the low rates of female employment, it is the womenfolk who are at home when disasters strike, and are therefore the custodians of household assets, responsible for the rescue and evacuation of the elderly and children who are in the house[46]. Despite this, there is little effort to train women on evacuation and disaster risk reduction, when in fact they may be the single most effective group in saving lives during a disaster. NGOs and other non profit

1 [41] Dunlop AL, Logue KM, Beltran G, Isakov AP 2011**,** Role of academic institutions in community disaster response since september 11, 2001.Disaster Med Public Health Prep. 2011 Oct;5(3):218-26. doi: 10.1001/dmp.2011.75.Emory Preparedness and Emergency Response Research Center, Emory University, USA

[42] Demographic Yearbook 2005, Definition of 'Urban'

[43]

[44] iMMAP 2012 from Irina Morsel and Ashley Jackson, Sanctuary in the city? Peshawar Case Study. HPG Working Paper, May 2013

[45] Ibid

[46] Interviewee from CDPM

organizations, as well as individual philanthropists play an important role in relief and recovery. They are also involved in carrying out risk assessments and hazard mapping at a small scale, either for their own relief activities, or are contracted by government agencies or International NGOs for their planning.

Whilst Disaster Management Plans call for the formation of Disaster Management Teams and Emergency Response Teams (ERTs), at whose core are community members, in practice, these teams do not exist in a formal sense. While interviewees stated that focal points from DCO offices do make announcements through loudspeakers at mosques when a disaster is approaching, there is no formal mechanism for early warning to communities.

4.5 Conclusion

Peshawar's character as a city that is constantly in a state of flux, and home to a variety of refugees and displaced persons make it a particularly interesting study in terms of urban planning and urban disaster risk reduction.

What can be inferred from the results of the interviews is broadly that while bureaucratically, there are departments and agencies in the city that are designated to work within certain parameters of disaster prevention and management, the focus remains on emergency relief rather than on preparing for future disasters. Planning appears to be the exclusive domain of, and exclusionary on the part of, the Government, with no inter or intra consultation, leading to no clear cut roles and responsibilities.

5 Case Study 2: Quetta

5.1 Introduction

Quetta is located in a bowl-shaped valley surrounded by mountains. It is surrounded by Ziarat and Killa Abdullah in the east and west respectively. Pishin is in the north and Mastung district lies in the south. The Quetta District constitutes three administrative units, namely, (i) Quetta City; mainly an urban area, the largest in the province, (ii) Quetta Sadar (rural surroundings of Quetta City in its east, north and west) and (iii) Panjpai tehsil; a rural area sandwiched between Quetta City in the east, Mastung district in the south and Afghanistan in the west[47].

According to the 1998 Census, the Quetta city population is 0.56 millions, which is 75% of the total district population[48]. The process of outsiders' settlement has turned Quetta into an over-populated city. This city now has a population of about 800,000[49]. Quetta is the capital of Balochistan, and though the smallest of the provincial capitals but certainly not in importance.

There are two industrial estates in Quetta. The first one, a mini industrial estate, is located at Sirki road. The other one is located at Sariab by-pass, 13 Km away from Quetta, which was established in 1986-87. All the required utilities are available in the industrial estates[50].

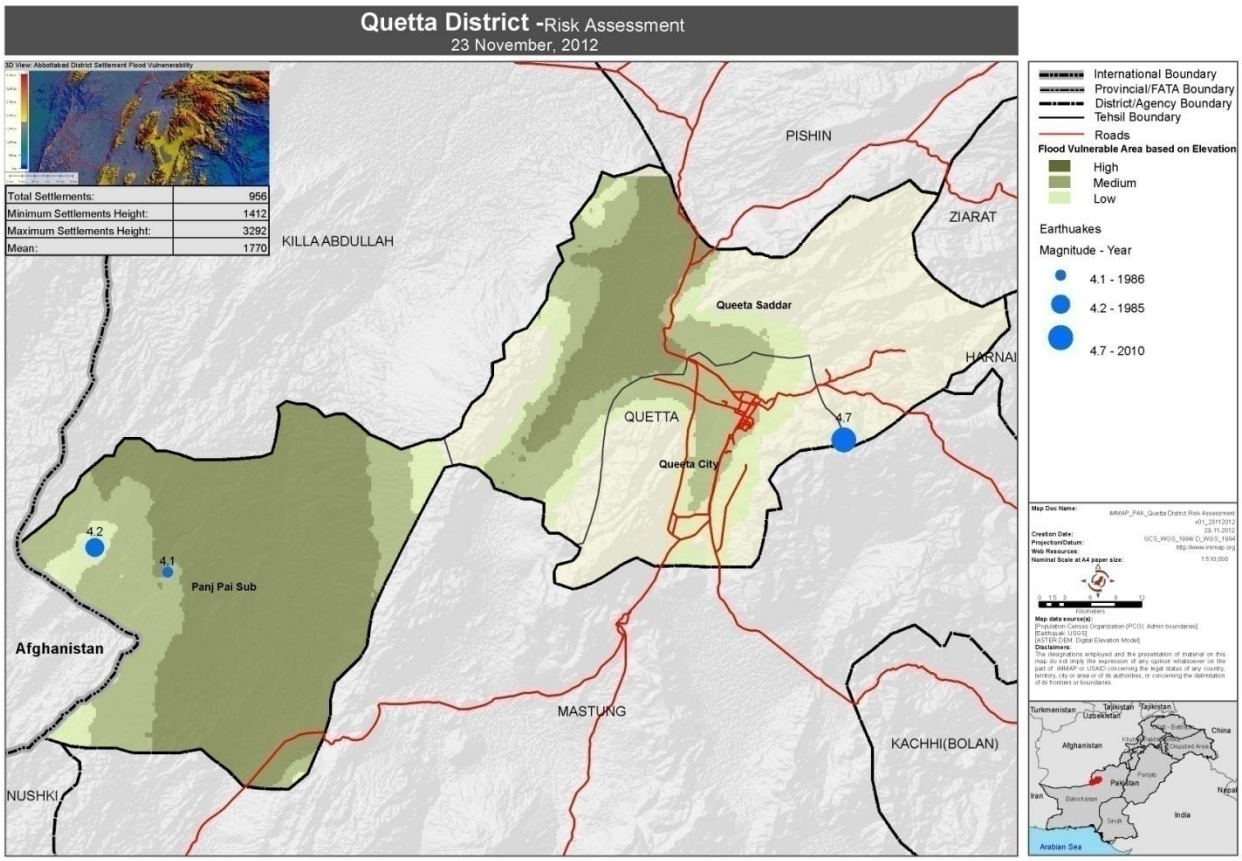
The positive characteristics of the city are its culture, natural resources (including agriculture, watersheds, forests, rangelands, protected area and a range of economic mineral deposits of coal and gas). Negative attributes – from an environmental perspective - are that it is an over-populated city with an intense shortage of drinking water. Urban development is fast-paced, however, is unplanned. Economic development is also fast, but it lacks catering to the environmental considerations. Due to internal migration, slums are also growing at a fast pace. Building codes and regulations have not been seriously

[47] Quetta District Government (2011). Quetta - Integrated District Development Vision. IUCN Pakistan, Quetta, Pakistan.
[48] IMMAP. *Pakistan Emergency Situational Analysis: A Profile of District Quetta* Rep. ., 2013. Print.
[49] Projections of 1998 Census.
[50] IMMAP. *Pakistan Emergency Situational Analysis: A Profile of District Quetta*. Rep. ., 2013. Print.

observed. Environmental issues, such as safe disposal of solid waste and sewage as well as traffic congestion and air pollution remain a big challenge[51].

5.2 Disaster Profile

Quetta is an arid city, mostly mountainous and prone to multi (man-made and natural) hazards. Quetta has been traditionally vulnerable to natural disasters due to its unique geo-climatic conditions. Earthquakes, floods, droughts, cyclones, and landslides have been recurrent phenomena. Drinking water is scarce and groundwater is depleting fast due to over-exploitation by the increasing population. Besides, terrorism, target killings, and sectarian violence have severely disrupted life in the city. Main hazards are earthquakes, droughts, water and floods.



Source; iMMAP, Pakistan 2012-13

[51] Quetta District Government (2011). Quetta - Integrated District Development Vision. IUCN Pakistan, Quetta, Pakistan.

5.2.1 Earthquake:

Quetta is heavily prone to earthquakes. In the 1935 earthquake, about 35,000 people died which constituted more than 50% of the population at that time. This ranks as one of the deadliest earthquakes that hit South Asia. In 1945 another earthquake of magnitude 8.6 on the Richter scale hit Balochistan causing great damage in Quetta and other districts of the province. In 1997 once again Quetta suffered due to a massive earthquake of magnitude 7.1 on the Richter scale[52]. Historical records indicate earlier occurrence of similar emergency and disaster situations.

The vulnerability to earthquake is higher than other hazards in this region. Geographically, the city lies in the active seismic region; therefore, occurrence of earthquakes is quite persistent in the city.

5.2.2 Drought:

Drought is a persistent climate induced hazard which has caused great suffering in the region. During 1998-2004, the province of Balochistan faced its worst drought – at least since the creation of Pakistan.

Quetta, the capital of the province, was also greatly affected by it due to shortage and price hike in foods items[53].Quetta city faces food insecurity due to deficiency in food items like pulses, milk and chicken products, which are procured from other parts of the country. Climate change has affected the natural resources, people and economy of the area. The period required for producing quality fruits; apples and cherries, is less than it used to be in the past. Snowfall, rainfall and temperatures have also been affected, resulting in longer and more intense drought periods[54]. However Quetta city, relatively has a lower drought severity as compared to the other cities of Balochistan. It is because greater precipitation (rainfall, snow etc) in the town as compared to other cities.

[52] Ibid.
[53] Ibid.

5.2.3 Water:

The ever-growing scarcity of drinking water in Quetta city is one of the most serious issues. Quetta is mainly dependent on the underground water reservoirs except for about 3 MGD water supplies from Wali Tangi Dam, Spin Karez for the cantonment area. Furthermore, there is no perennial river in the district. Hanna stream is one of the major sources of drinking and irrigation water in the city.

Quetta City lies in an arid region where water resources are expected to be limited. Furthermore rapid rate of urbanization in and around the city has radically reduced the restoration capacity of underground water reservoirs. The local groundwater resources cannot sustain even the existing population, agriculture, industry in the city for long[55].

5.2.4 Floods:

As far as the Quetta city is concerned, seasonal floods pose a low to medium risk. According to PDMA Balochistan, in 2007, 2010 and 2011 floods, Quetta was at medium risk among the districts of the province and no loss of life and damages were reported[56]. However due to heavy rains and poor drainage system in the city, urban flooding is not an uncommon issue.

5.3 Institutional and Administrative Setup

5.3.1 Urban Planning

Quetta Development Authority (QDA) was established in 1978 by the Government of Balochistan. *The jurisdiction of the Authority extends over Quetta Tehsil including Quetta Municipal Corporation limits and all such other areas which the Government may notify from time to time for development purpose*[57]. The QDA was established to cater the multi dimensional needs of the new Capital. The main objective of QDA was to cater *housing requirements, organized planning, master planning, major improvement, decongestion and environment protection*[58].

[55] ibid.

[56] Interview with PDMA, Balochistan, Quetta, 2013.

[57] " *Government of Balochistan*. Web. 19 Nov. 2013. <http://www.balochistan.gov.pk/index.php?option=com_content>.

[58] ibid

Furthermore, in the year 2008 Government of Baluchistan established Urban Planning & Development Department. Its purpose is to lessen the population pressure over congested cities such as Quetta. Beside it numerous developments schemes and are under consideration to beautify the urban areas of Balochistan[59].

5.3.2 Disaster Management

A District Disaster Management Authority (DDMA) has been formed with membership of various stakeholders (DCO office, PDMA, Army, Rescue and members from NGO's). Depending on the availability of findings from donors it makes Disaster Risk Management Plan (DRMP) at the district level, assign duties to different stakeholders and then implement the plan to reduce the adverse impacts of natural and man-made hazards[60].

Like other cities, the Pakistan Meteorological Department (PMD), Quetta is also responsible for dispatching information through an early warning system during the monsoon periods. Alerts about after-shocks are also dispatched to relevant stakeholders after major earth quakes[61].

District Crisis Management Cell (DCMC) is established in Quetta city by district government. DCMC stores are located at different points in the district which provide equipment for emergency situations[62].

5.4 Stakeholder Analysis:

Many government departments are working on disaster and risk management, post disaster recovery and rescue and risk reductions.

The role of PDMA and DDMA is also very limited mainly due to resource constraints. PDMA and DDMA make plans but plans are never implemented properly. Furthermore there is lack of adequate and reliable data due to which plan is not being implemented properly. According to an interview in PDMA: Major investments in the public sector have been allocated primarily to roads and other infrastructure with very little or no investment on

[59] "Urban Planning and Development." *Government of Balochistan*. Web. 19 Nov. 2013. <http://www.balochistan.gov.pk/index.php?option=com_content>.
[60] IMMAP. *Pakistan Emergency Situational Analysis: A Profile of District Quetta*. Rep. 2013. Print.
[61] Interview with PMD, Quetta., 2013
[62] IMMAP. *Pakistan Emergency Situational Analysis: A Profile of District Quetta*. Rep.2013. Print.

natural resources and social sectors[63]. Disaster Management Plans are primarily dependent on donor funding. A reprioritization needs to be made for future investment.

The Government of Balochistan (GOB) has developed the Balochistan Conservation Strategy (BCS), with the technical assistance and support of IUCN, and approved the same in 2000 for implementation. The BCS aims at the wellbeing of the people and ecosystems in Balochistan. It provides a framework and a strategy for the protection of environment, conservation and sustainable use of the natural resources in the province of Balochistan and also incorporate DRR-M is its implementation[64]. However is not being implemented properly due to limited commitment from the concerned departments, hence its aims are not being fulfilled as desired[65].

Apart from government departments, NGO's and civil society organizations are also working on disaster management. There are volunteers in the district who are trained on disaster management and are working on disaster risk reduction in the community with different local organizations and non-government organizations e.g Catholic Relief Services, Relief International. Furthermore there are about 80 INGOs / NGOs[66] in the city, some of which (UNHCR, Catholic Relief Services, Relief International (Jahangir Khan) and Save the Children) are contributing to disaster management. The NGOs and other voluntary organizations play a crucial role in disaster management. Being an important partner in disaster risk management, they contribute in mobilizing communities and develop local level capacities in early warning, disaster preparedness and response[67].

Similarly UN-HABITAT undertook a fairly comprehensive analysis of disaster management in Quetta, specifically with respect to Hyogo Framework for Action. The study seeks to assess risks, raise awareness among provincial and local government authorities, peer learning and knowledge sharing[68]. The main strategic components are (*i) Build on the on-going urban risk reduction*

[63] Interview with PDMA, Quetta, 2013.
[64] Quetta District Government (2011). Quetta - Integrated District Development Vision. IUCN Pakistan, Quetta, Pakistan.
[65] Interview with Environment Department, Quetta.
[66] ibid
[67] ibid
[68] UN-HABITAT. "A Resilient Cities Initiative; URBAN RISK REDUCTION Guidance to the Provincial and Local Government Authorities." Web. 19 Nov. 2013.

initiatives of UN-Habitat Pakistan (ii) Apply the Local Government Self Assessment Tool (LGSAT) to cities signed for the Resilient Cities campaign; and (iii) Engage the provincial and Local Government authorities in DRR activities[69]. According to this study, Quetta has been given 1.5 points (out of 5) with regard to coordination and partnership among the departments and communities. It has been mainly due to the absence of Local Government for the last few years when the study was conducted[70].

5.5 Conclusion

Quetta is an interesting case study for urban disaster risk reduction both because of its vulnerability to multiple hazards and influx of large number of migrants.

It can be inferred from the key informant interviews that the current availability of water resources is deteriorating day by day. It can be predicted that if the additional resources are not developed, the availability of water will reduce further, exacerbating an already alarming situation. Therefore, alternative sources for water availability should be explored forthwith.

There is a lack of adequate and reliable data; compounded by the absence of databases and information management systems at the district level. Like other cities the coordination/consultations between the departments is also lacking and division of labor between the departments is vague. A reliable information base with all relevant data is imperative for an effective intervention, a role that should be assigned on an urgent basis. Developing and implementing of proper development plans is also the need of the day.

[69] ibid
[70] ibid

6 Case Study 3: Faisalabad

6.1 Introduction

The city of Faisalabad is situated in the center of the lower Rachana Doab (the area between Chenab and Ravi rivers). Faisalabad is a densely populated industrial city sharing borders with 7 Districts i.e. Jhang, Toba Tek Singh, Okara, Sahiwal, Chiniot, Hafizabad and Sheikhupura. Faisalabad is a divisional headquarters and the division comprises of the districts of Faisalabad, Jhang, Chiniot and Toba Tek Singh. The city covers an area of 5,856 square kilometers. According to projections of 1998 census city population is 2,873,144 in 2012 which is 39% of district population (7,310,691). The population growth rate is 3.2%[71].

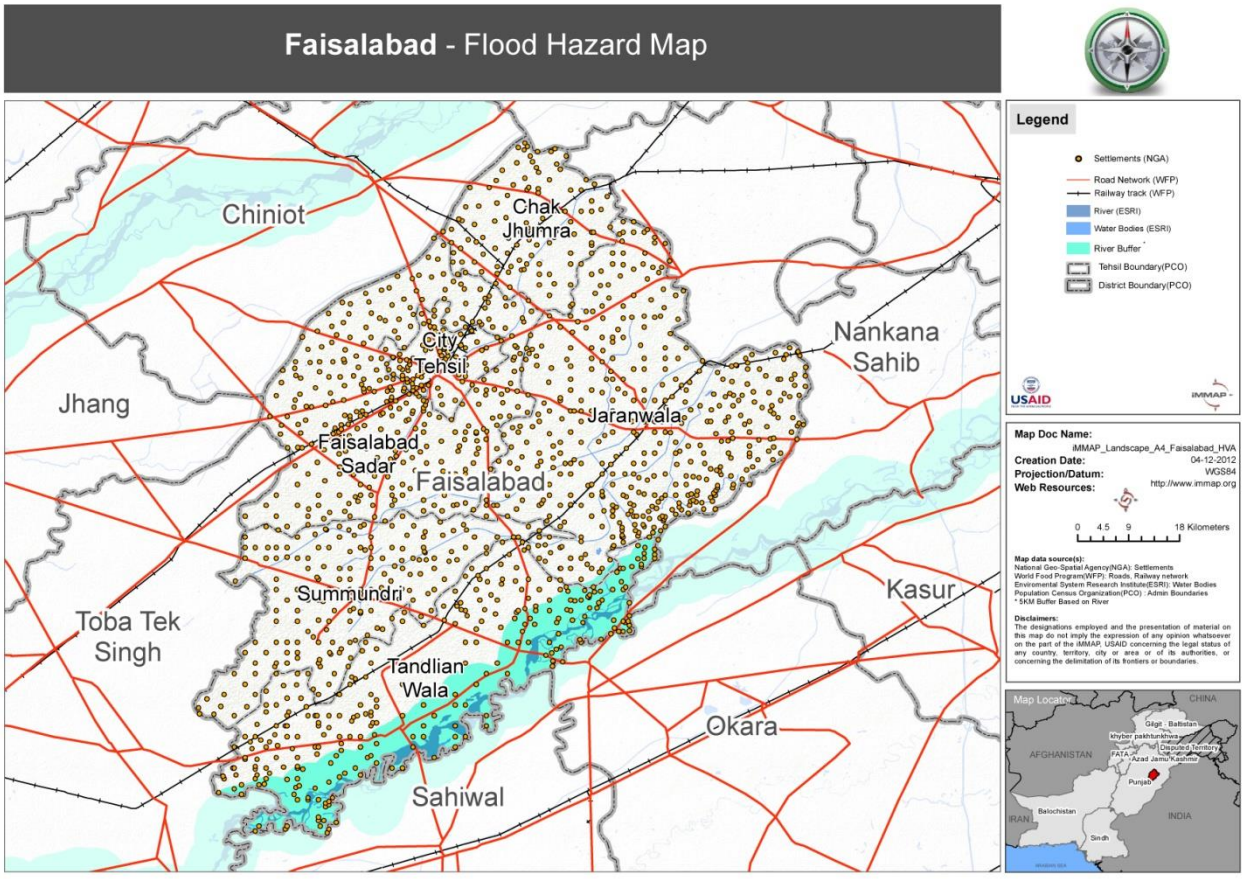
Initially, Faisalabad only served as an agricultural market; but now it has grown into a metropolitan city, which enjoys third position in the country. Faisalabad is known as Manchester of Pakistan because of the large textile industry situated here. The textile industry of Faisalabad constitutes more than 60% of the textile exports of Pakistan[72]. The Faisalabad region also contributes significantly in the agriculture sector of the country because its climate is suitable for production of various food items including the *Kharif crops of maize, rice, sugarcane, cotton and bajra and Rabi crops of wheat, barley, Gram and barseen*[73]. The city is 3rd behind Karachi and Lahore in contribution to national GDP. Faisalabad's GDP is projected to rise to $37 billion in 2025 from $14 billion (as of now) at a growth rate of 5.7%, higher than the growth rates of 5.5% and 5.6% predicted for Karachi and Lahore respectively[74].

6.2 Disaster Profile

Faisalabad city has no history of major disasters in the recent past. The Ravi River flows along the eastern, and the Chenab River along the western, boundary of the city. No other river passes around the city. There have been only minor floods (which occurred due to the overflow in river Ravi during the monsoons) and breaches in canals, which didn't incur any

[71] IMMAP. *Pakistan Emergency Situational Analysis: A Profile of District Faisalabad*. Rep. 2013. Print.
[72] FAISALABAD, CITY DISTRICT GOVERNMENT. "PRE-EMPTING POVERTY AND PROMOTING PROSPERITY." , Nov. 2006. Web. 12 Nov, 2013.
[73] Government of Punjab, Department of Health (DoH). "Three Years Rolling Plan 2010-2013 District Faisalabad." , 2012. Web. 12 Nov, 2013.
[74] IMMAP. *Pakistan Emergency Situational Analysis: A Profile of District Faisalabad*. Rep , 2013. Print

significant human or property loss. Although the district has no history of major disasters, National Disaster management Authority (NDMA) declared Faisalabad to be a disaster prone district[75] for 2012. It may be due to the high probability of floods in the suburbs of the city.



Source; iMMAP, Pakistan 2012-13

Faisalabad, apparently, is not prone to major hazards; however after secondary research and interviews with key stakeholders it can be inferred that Faisalabad is at medium risk to multi hazards. Hazards to which Faisalabad is most vulnerable are Water & Sanitation, Health Hazards and Urban Floods.

6.3 Water & Sanitation

Being a large city with high population density, Faisalabad is facing water and sanitation issues mainly due to the energy crisis that has worsened in Pakistan over the last six years or so. The drinking water for the city comes from Chiniot through pumping and similarly sanitation and rain water expelled out to through open drains which again depends on

[75] Interview with PDMA, Faisalabad.

pumping (electricity) [76]. A hike in electricity prices or load shedding is a threat for drinking and sanitary water. More over connections for drinking water are sufficient to supply about 50% of the population and many customers have ceased to pay bills because of the poor quality of service due to which WASA is facing financial constraints as well[77]. There is no alternative available in supplying drinking water, as ground water is brackish (exception part of Jaranwala Town and most of Tandlianwala Town)[78]. If the reservoir at Chiniot is affected then it would be a disaster for nearly 1.5 million (half) of residents of Faisalabad.

Similarly Faisalabad is facing serious sanitation issues. Most of black water from toilets is discharged to household septic tanks, from which effluent is also discharged to open drains due to which sanitation problem is exacerbating in addition to its dependence on electricity[79].

6.4 Health Hazards

Due to over-population, unplanned industrialization and lack of water treatment plants, Faisalabad is facing solid waste management and pollution problems. Faisalabad produced 1,200 tons of solid waste every day, out of which the Solid Waste Management Department could treat only 70 per cent[80]. Furthermore there is no attempt to implement proper land filling and dumped waste is open to the elements. This causes particularly serious insect and odour problems during rains[81]. Skin and respiratory diseases are widespread. Unsafe drinking water, sharing of used syringes is exposing people to many life threatening ailments[82]. Industries are directly expelling their wastes into River Ravi & Chenab. Hospitals are not prepared in case of spread of any epidemics, outbreaks of waterborne diseases which may be caused due to healthy hazards.

[76] Interview with Water and Sanitation Agency, Faisalabad. 2013
[77] FAISALABAD, CITY DISTRICT GOVERNMENT. "PRE-EMPTING POVERTY AND PROMOTING PROSPERITY.", Nov. 2006. Web. 13 Non, 2013.
[78] Interview with WASA, Faisalabad, 2013.
[79] FAISALABAD, CITY DISTRICT GOVERNMENT. "PRE-EMPTING POVERTY AND PROMOTING PROSPERITY.", Nov. 2006. Web.
[80] "Dawn News." *Dawn.com*. , n.d. Web. 12 Nov. 2013. <http://dawn.com/news/947969/faisalabad-eyes-solid-waste-power>.
[81] FAISALABAD, CITY DISTRICT GOVERNMENT. "PRE-EMPTING POVERTY AND PROMOTING PROSPERITY", Nov. 2006. Web.
[82] IMMAP. *Pakistan Emergency Situational Analysis: A Profile of District Faisalabad*. Rep. 2013. Print.

6.5 Urban Floods:

Faisalabad due to its dense population and built environment faces the risk of water accumulation in the population centers which can lead to the spread of epidemics apart from seriously disrupting life in the city. Rain drains are also dependent on energy to expel out the rain water so drains cannot sustain heavy rains.

6.6 Institutional and Administrative Setup

6.6.1 Urban Planning

The Urban Unit (UU), Punjab was established in 2006 as a Project Management Unit of the Planning and Development Department (P & D), Government of the Punjab. The organization employs highly qualified and experienced professionals. The fields of operations mainly include Urban Planning, Urban Transport, Urban Water and Sanitation and Solid Waste Management[83]. Since its inception, UU has initiated many useful and quality interventions in Faisalabad.

Faisalabad Development Authority (FDA) is a body responsible for monitoring planned developments activities Faisalabad. The body also acts as a regulatory authority for supervising the construction of houses, commercial developments and residential areas in the city[84].

6.6.2 Disaster Management

The Provincial Disaster Management Authority of Punjab was established as an overarching authority to coordinate disaster response of different stakeholders. It coordinates and monitors the implementation of national as well as provincial plan and develops a coordination group comprising of key personnel from Government departments, military, civil response agencies such as Punjab Emergency Services, donors, United Nations Organizations, media and other related humanitarian organizations[85]. As in other cities, the Faisalabad office of the Pakistan Meteorological Department (PMD) is also responsible for sharing information through an early warning system during the monsoon period.

[83] Welcome to The Urban Unit." *Urban Unit*. Web. 19 Nov. 2013. <http://www.urbanunit.gov.pk/>.
[84]" *Faisalabad Development Authority*. Web. 19 Nov. 2013. http://www.fda.gov.pk/.
[85] PDMA. "Punjab Disaster Responce Plan." PDMA, Punjab, 2012. Web.

6.7 Stakeholder Analysis

Many government departments are working on disaster and risk management, post disaster recovery and rescue and risk reductions, however like other cities their exact roles are ambiguous and there is a lack of capacity in these departments to cope with potential disasters.

The city district government has realized the Solid Waste Management Problem and implemented an Integrated Solid Waste Management (ISWM) Project. It has initiated door to door waste collection, efficient waste transportation system and storage capacity, properly managed dump site and merit based selection of the staff[86]. There is also a well organized Water and Sanitation Agency (WASA) which deals with water supply and sanitation. However due to hike in energy prices and subsequent lack of funds, this department is heavily dependent on donor funds for its sustainability and proper functioning[87].

The Pakistan Meteorological Department (PMD) disseminates the information on the flood situation from 15 June to 30 September every year. In case an anomaly is observed in the weather patterns during the monsoon season, a warning is dispatched to all the relevant stakeholders such as PDMA which then informs all the relevant departments to remain on high alert. An early warning can substantially reduce the loss of lives, properties, and livelihoods, however its early warnings usually do not reach the vulnerable communities and people in general are not aware about this useful information.

Faisalabad is not the provincial capital itself which places it in a comparative disadvantageous position to have a voice in provincial plans. If Faisalabad itself would have been the provincial headquarter, things could have been much better because currently its District Disaster Management Authority (DDMA) office is not functional[88].

Currently, Urban Unit, under Punjab Cities Governance Project (PCGIP), has initiated some much needed interventions for Urban Management. The project is being implemented by the

[86] IMMAP. *Pakistan Emergency Situational Analysis: A Profile of District Faisalabad*. Rep. 2013. Print.
[87] Interview with Urban Unit Staff, Faisalabad. 2013.
[88] Interview with Urban Unit Staff, Faisalabad. 2013.

Govt. of the Punjab, with the financial assistance of World Bank. The project is focused on strengthening of systems and improvement in governance for enhanced service delivery[89].

NGO's like Flame Foundation, Anjuman Samaji Behbood, Taamir Welfare Organisation, Harmony Foundations have been active for the last 15-20 years and are specifically working on humanitarian assistance and post disasters scenario[90].

6.8 Conclusion

Being the 3rd largest city of the country and an alarming situation of water and sanitation in it makes the Faisalabad an important case study for urban disaster risk reduction. Emphasis should be on alternatives to the current water supply. There is merely one source of water supply and damage to that would be a serious threat to the survival of city.

Furthermore, it can be inferred from the interviews that there is no proper division of labor between the departments with a role in Urban Disaster Management, and especially after the establishment of Rescue 1122, no department feels the responsibility of rescue in post-disaster scenario. Implementation of pre-disaster plans is completely missing[91]. Due to lack of prioritization and limited resources - there is neither capacity nor a sense of urgency to boot – there are no plans or even coherent thinking about the disasters that could occur in future.

Because Faisalabad is not itself the provincial capital, like some other cities in this study, it is at a comparative disadvantage with them. The PDMA doesn't have a direct presence and the DDMA/DDMU is not very active.

[89] "*PUNJAB CITIES GOVERNANCE IMPROVEMENT PROJECT (PCGIP)*. Web. 19 Nov. 2013. <http://pcgip.urbanunit.gov.pk/>.

[90] IMMAP. *Pakistan Emergency Situational Analysis: A Profile of District Faisalabad*. Rep. 2013. Print.

[91] Interview with FDA, Faisalabad, 2013.

7 Case Study 4: Karachi

7.1 Introduction

Karachi, the capital of Sindh province has a land area of 3,640 km² and is located on the Arabian Sea coast in the extreme south of Pakistan. Its population according to 1998 census is 9.8 million in which urban population is 9.3 million (95%). Karachi has an estimated growth rate of 3.75% per annum, which means that the population will double itself in 18.82 years from 1998. Karachi has expanded exponentially both in terms of growth in population and in urban sprawl most specifically. The *katchi abadis* have grown at twice the rate of the planned areas. In 1998, nearly 50% of the population or 700,152 households lived in *katchi abadis.* This population has now increased to 61% or 1.2 million households[92]. Currently unlike majority of the other districts in Sindh, district Karachi is urban by its characteristics, only 5 per cent of the population resides in rural areas as compared to the 95 per cent that resides in the urban areas[93].

In 2001, under the devolution plan, five districts of Karachi were merged to form the city district of Karachi. However in 2011 City District Government of Karachi was again dissolved into five constituent districts, namely: Karachi East, Karachi West, Karachi Central, Karachi South and District Malir. These districts form the Karachi Division now. There are also six military cantonments which are administered by the Pakistan Army[94].

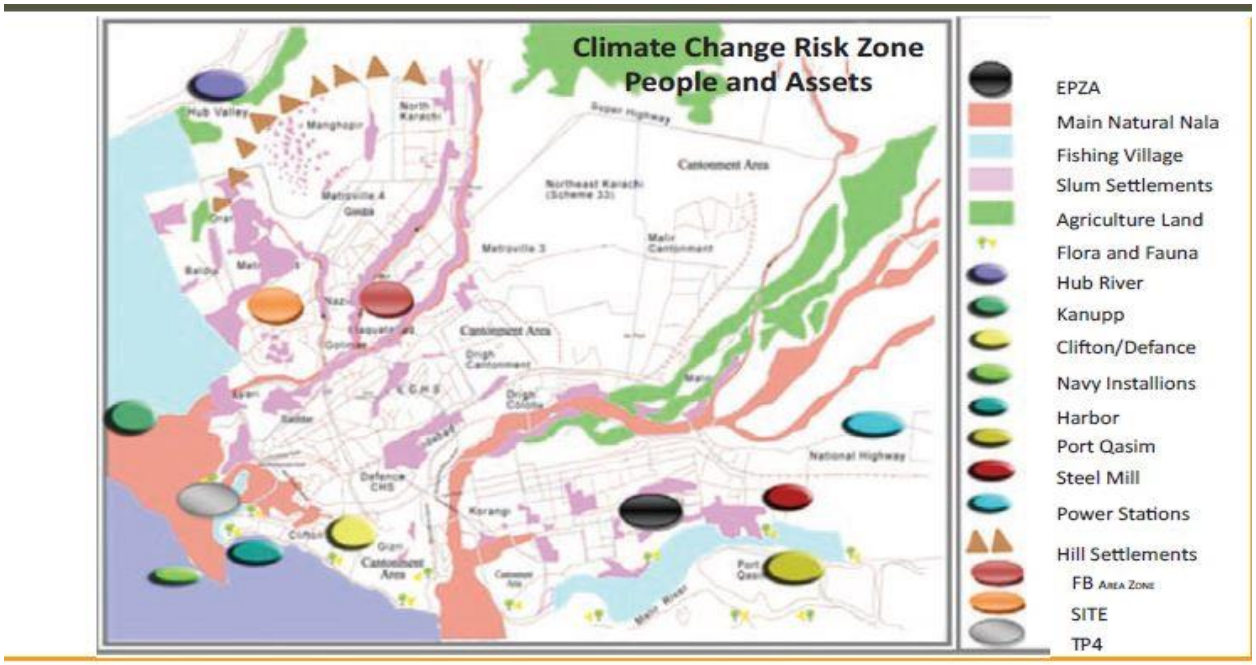
Karachi is the commercial hub and gateway of Pakistan. It is the biggest city of Pakistan and plays a significant role in the economy, politics and culture of Pakistan. Its seaport contributes to 95 per cent of Pakistan's foreign trade. Karachi contributes to 30 percent of Pakistan's industrial production too[95]. Furthermore, nearly 90 percent of the country's head offices of banks, financial institutions and multinational companies are located in Karachi[96].

[92] Hasan, Arif. *Participatory Development: The Story of the Orangi Pilot Project Reasearch and Training Institute and the Urban Resource Centre, Karachi, Pakistan*. Karachi: Oxford, 2010. Print..
[93] IMMAP. *Pakistan Emergency Situational Analysis: A Profile of District Karachi*. Rep. 2013. Print.
[94] Shehri-Citizens for a Better Environment. *Karachi City Climate Change*. Rep. 2012. Web.
[95] ibid
[96] Shehri-Citizens for a Better Environment. *Karachi City Climate Change*. Rep. 2012. Web.

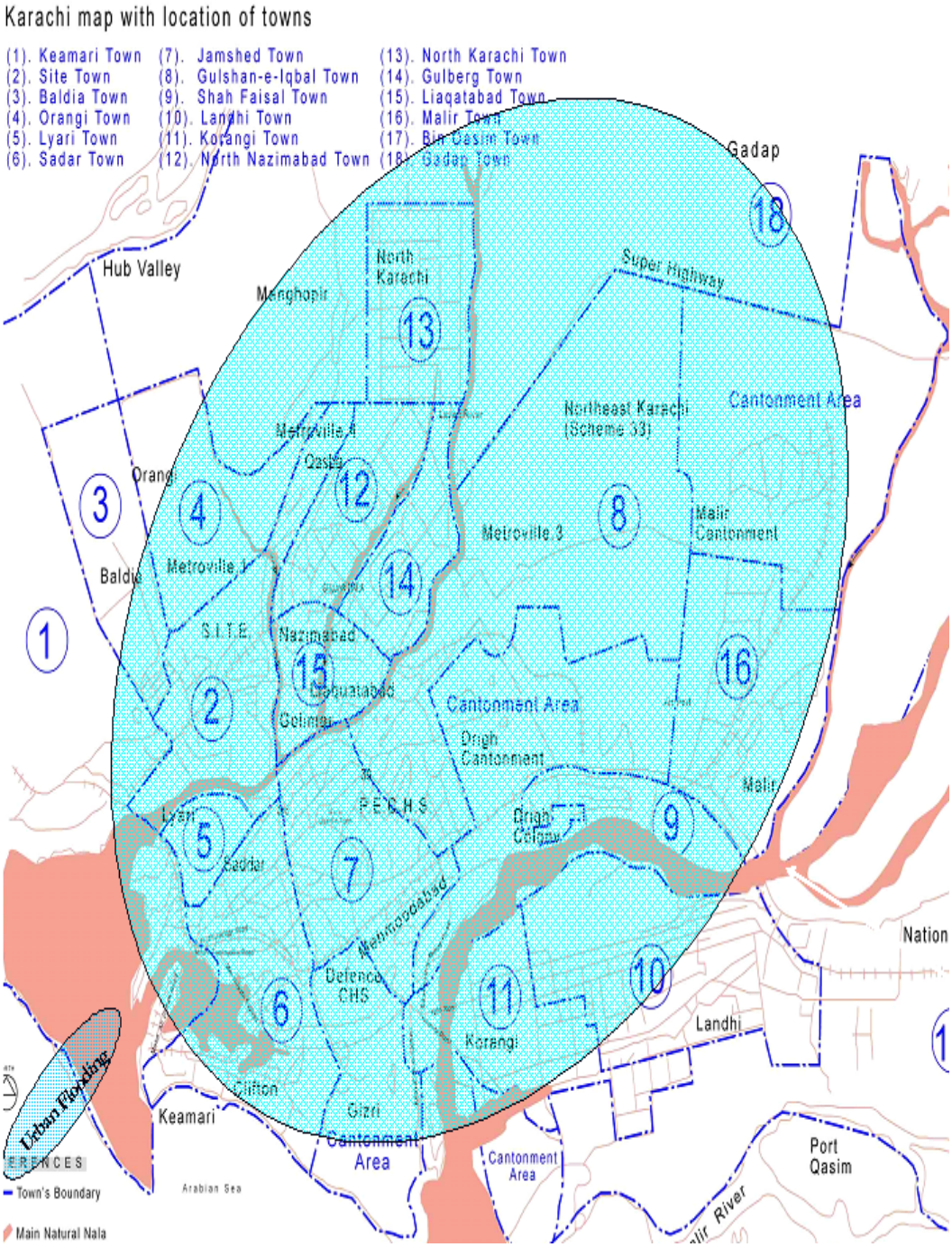
7.2 Disaster Profile:

Karachi remains at risk from natural disasters (earthquakes, tsunami waves, and the cyclonic storms) as well as from human-induced disasters (water safety, industrial accidents and terrorist activities). Civil unrest leading to conflict is also among those human-induced hazards which are adversely affecting the population of Karachi.

After secondary research and meetings with key stakeholders it is inferred that five hazards to which Karachi is most vulnerable are Earthquake & Tsunami, Rain & Flash Flooding, Nuclear Discharge, Health Hazards, Sea level rise & Cyclones.



Source: Shehri-Citizens for a Better Environment, 2012



(Source: Cyclone Contingency Plan for Karachi City 2008,NDMA)

7.2.1 Earthquake & Tsunami:

District Karachi is vulnerable to earthquake hazard. *A geological tectonic line runs under Karachi through Khirthar Hills / Mountains to north-west of Sindh and Thar desert, due to*

which Karachi has risk of a major earthquake in the future[97]. Karachi has been affected in the past by earthquakes, mostly of low and moderate intensity; however few had high intensity as well, which also generated tsunami waves in 1819, 1943, 1945 and 1956, causing much destruction of life and property along the coastal areas of Pakistan[98]. A big earthquake measuring 7.8 on the Richter scale jolted Karachi on 15th April, 2013[99]. The reason Karachi escaped major destruction was that its epicenter was about a thousand km away near the border between Pakistan and Afghanistan.

In case of major earthquake, the significance of disaster would be huge because Karachi is the economic hub of Pakistan. In urban areas, most of the buildings are not able to tolerate strong earthquake shocks. In the city very few buildings are constructed following the building codes. Environment Impact Assessment (EIA) and risk assessment of the vulnerable schools and hospitals have not been carried out by the Environment department and district disaster management authority respectively[100].

7.2.2 Rain & Flash Flooding:

Karachi, due to its large and dense population faces the risk of water accumulation in the population centers. Urban floods – due to excessive rains - have adversely affected Karachi's city population. In 1966 and 1977, it has led to considerable damage[101]. Karachi is a densely populated area that is why rain floods of even a small scale can adversely affect the communication, transportation and public infrastructure networks.

Currently considerable human settlements (especially slums and *katch abadis*) are prone to fluvial, storm and water flooding risk. Other than the 'Malir River Embankment', there is no provision for flood defences. Drainage system is such that it cannot accommodate prolonged rains and drains get blocked due to clogging[102]. Moreover sensitive national installations and significant human settlements (especially fishing communities) are exposed to tidal flooding.

[97] Disaster Risk Management Plan Sindh Province, Nov 2008, pp. 34.
[98] The Nation, "Dawn News." *Dawn.com*. , n.d. Web. 12 Nov. 2013" http://www.nation.com.pk/pakistan-news-newspaper-daily-english-online/international/16-Apr-2013/7-8-magnitude-earthquake-shakes-karachi-quetta-new-delhi-other-asian-cities, retrieved on 9/5/2013
[99] ibid
[100] IMMAP, *Pakistan Emergency Situational Analysis: A Profile of District Karachi*. Rep., 2013. Print.
[101] ibid
[102] Interview with PDMA, Karachi, 2013.

7.2.3 Nuclear Discharge:

Karachi Nuclear Power Plant (KANUPP) at Paradise Point has greatly increased the threat of potential disaster losses in case of a tsunami hitting the coast. KANUPP is barely 20 km away from the 15 million people inhabiting the fast growing coastal city of Karachi. This could ominously provide a setting for the rerun of the 2011 disaster at Fukushima Daiichi in Japan[103] with far graver consequences, both because of the much higher population of Karachi as well as its greater vulnerability with a vast and largely unprotected urban sprawl.

Furthermore, the operation of a nuclear power plant necessarily involves exposure of workers and the surrounding environment and population to radioactivity[104]. Albeit being a significant potential threat, the issue of nuclear waste disposal, however, has attracted meager public attention in Karachi and public interest litigation, possibly because its impacts are not short term.

7.2.4 Health Hazards:

The Hub River source, a rain fed source is a major water supply source for Karachi (5 million population served)[105]. There is no water conservation, waste, water recycling or rain water harvesting practices being implemented in the city[106]. Ground water table is lowering and aquifers are on potential threat due to human activities such as sand extraction. Currently a significant number of various industries are working in Karachi, which discharges their effluents of about *72 million gallons daily*[107] in addition to air pollution.

7.2.5 Sea Level Rise & Cyclones:

Karachi is also vulnerable to threatening tropical cyclones. Cyclones originate in the Arabian Sea and may strike Karachi with brutality and heavy rainfall. During the period 1946-2004, about 50 cyclonic storms developed in the northern Arabian Sea, out of which four hit the coastal belt near Karachi with disastrous repercussions of heavy downpours, flash-floods, loss of life and property[108]. The cylone of 1999 seriously impacted Thatta and Badin districts of Sindh and affected 0.6 million people and caused loss of 202 lives[109]. Although in the

[103] http://en.wikipedia.org/wiki/Fukushima_Daiichi_nuclear_disaster; accessed on 11 November, 2013
[104] ibid
[105] Shehri-Citizens for a Better Environment. *Karachi City Climate Change*. Rep. 2012. Web.
[106] Interview with EPA, Karachi.
[107] Shehri-Citizens for a Better Environment. *Karachi City Climate Change*. Rep. 2012. Web.
[108] IMMAP. *Pakistan Emergency Situational Analysis: A Profile of District Karachi*. Rep. : , 2013. Print.
[109] Shehri-Citizens for a Better Environment. *Karachi City Climate Change*. Rep. , 2012. Web.

recent years cyclones tend to recur frequently, they have not directly hit the Karachi's coast, which as a result, has not been badly affected.

Sensitive national installations and myriad human settlements (fishing communities) are prone to tidal flooding. Biodiversity impacts/ wetlands and tidal zones, loss/alteration of flora/fauna – possible salt water intrusion[110]. Karachi is also vulnerable to threatening tropical cyclones. Cyclones originate in the Arabian Sea and may strike Karachi with brutality and heavy rainfall. Cyclones are potential threat especially for the people living on coasts.

7.3 Institutional and Administrative Setup

7.3.1 Urban Planning

While the Urban Policy and Strategic Planning Unit – working under the Planning and Development Department, Government of Sindh – has the overall brief for urban policy throughout the province, it is Karachi Development Authority (KDA) which is the premier agency that carries out the planning and development work in the metropolis. It was established in 1957 primarily to develop Karachi under long term master plans. Prior to KDA, Karachi improvement Trust had the responsibility to implement master plans. KDA further evolved and changed into City District Government Karachi (CDGK) after devolution and the Local Government Ordinance of 2001[111].

A very active civil society initiative is the Urban Resource Centre (URC) which is a Karachi-based NGO founded by a group of teachers, professionals, students, activists and community organizations specifically from low-income settlements. According to Arif Hassan, its founder, *"URC was set up in response to the recognition that the planning process for Karachi did not serve the interests of low- and lower-middle-income groups, small businesses and informal sector operators and was also creating adverse environmental and socioeconomic impacts"*[112]. It has successfully challenged numerous government policies that are ineffective, *over-expensive and anti-poor*[113] and has also promoted effective alternatives.

[110] Ibid.
[111] Karachi Strategic Development Plan 2020; CDGK, 2006.
[112] Hassan, Arif. "Environment and Urbanization." *The Urban Resource Centre, Karachi*. SAGE, 2007. Web. 18 Nov. 2013. <http://eau.sagepub.com/content/19/1/275.full.pdf html>
[113] ibid

7.3.2 Disaster Management

The National Disaster Management Ordinance led to the establishment of a Provincial Disaster Authority (PDMA). PDMA Sindh office, located at Clifton, formulates the disaster risk management policy of the province and coordinates and monitors the implementation of national plan as well as the provincial plan. District Disaster Management Authority also works on same agenda but at the local level of the district. Both the departments also promote general education and awareness regarding disaster risk management in the province[114].

The Pakistan Meteorological Department (PMD), Karachi collects the data every 6 hours, analyzes it and then disseminates the forecasts to all relevant departments (essentially DCO Office and PDMA) and the media. The forecasted information is also updated (twice in a day) on its website. It includes detailed information of areas in which are threatened by natural hazards (floods, cyclones, typhoons, rains, storms). PMD Karachi has recently installed the National Seismic Monitoring Network and Tsunami Warning Centre at the Meteorological Complex in Karachi, in a bid to give authorities adequate warning in case of a tsunami. A cyclone early warning system (EWS) is also being put in place by setting up a number of automatic weather stations installed along the coast of Karachi[115].

7.4 Stakeholder Analysis

Ample government departments are workings on disaster and risk management, post disaster recovery and rescue and risk reductions, however their exact roles are ambiguous and there is lack of capacity in these departments to cope potential disaster. The PDMA's plan is developed after detailed consultations with all relevant departments (DCO Office, PMD, Army and Navy, Rescue Teams), however plans are dependent on donor funding that is why they are not reviewed regularly as prescribed, neither are they implemented.

PMD's have fairly sophisticated information; they can even tell that in which area of the city how much rain is expected at what time. They dispatch early warnings to PDMA and other relevant departments. However, most of the people are not aware about this or do not trust the information; hence they lose lives and property[116]. Union council is also very helpful in

[114] IMMAP. *Pakistan Emergency Situational Analysis: A Profile of District Karachi*. Rep. 2013. Print.
[115] ibid
[116] Interview with PMD, Karachi, 2013

risk assessment process. They keep all records of the town/union council and even provide maps of the relevant union council[117].

In 2006, the CDGK has formulated the Karachi Strategic Development Plan 2020 (KSDP 2020), which includes comprehensive framework and development direction for future pattern of the city over the next 13 years and beyond. However its objective does not seems to be achieved. Since 1923, five master plans were formulated, but none of them was backed with legal cover, resulting in urban sprawl, wide spread katchi abadis and slums and poor infrastructure which has restrained Karachi to develop[118].

Myriad of community based organizations and civil societies are also working in post disaster scenario in their respective areas. Active people from the community are part of these organizations which also facilitate the humanitarian organization work at the grass root level. These include Insan Dost Welfare Association, Rifa Developlment organization and Insaf Welfare Trust and Society for Conversation and Protection of Environment (SCOPE), Participatory Development Initiative (PDI), Action for Humanitarian Development (AHD), Life Care Organization (LCO). Advocacy seminars and trainings regarding disaster risk reduction (DRR) have been initiated by the NGOs for the mobilization of vulnerable communities against hazards (urban floods, rainfalls etc)[119]. However outreach of these organizations is very limited and very few organizations are working on disaster risk reduction (DRR).

Law Enforcement agencies are also crucial stakeholders in relief activities. Army and Rangers assist the affected communities in evacuation and first aid. Rescue 1122 (which has a coordinating role) has information of available resources. For example, it has information on which government department has how much cranes, stairs, and trucks and hence acts as an information disseminator about resources in post disaster scenario[120].

Academia in URC has also significant role in development of Karachi in general and specifically in pre disaster mitigation measures. It has world class academics like Arif

[117] ibid
[118] Interview with PDMA, Karachi.
[119] ibid
[120] Interview with Rescue 1122

Hassan, who publish evidence based research which eventually alters government inefficient plans.

7.5 Conclusion

Disaster in Karachi would be terrible for the whole country, because Karachi is largest in population and has highest contribution to GDP of the country. In terms of urban disaster risk reduction Karachi is the most important city.

From interviews and the desk research that our team carried out, it appears there are no Disaster Management Committees (DMCs) and Emergency Response Teams (ERTs) in the vulnerable communities of the district. DMCs and ERTs are supposed to have representation from 'vulnerable communities' and should include Union Counselors, religious leaders, other community leaders, representative of youth and women etc. DMC and ERT members are trained (on DRR and first aid etc.) and are first to respond to any emergency situation[121]. DMCs and ERTs should be initiated at community level.

Soft interventions which include trainings, workshops, seminars, awareness campaigns pertinent to land use planning, flood risks and building codes should be carried out as these measures are not properly implemented by the concerned departments. It makes the people vulnerable to different hazards e.g., floods, cyclones earthquakes etc. There is a dire need for such interventions. However, rather than an ad hoc one-time project, there should be a regular budget head for such activities.

Building codes should be up scaled up to 9.0 on the Richter Scale (in case of Karachi) and should be implemented effectively[122].

[121] IMMAP. *Pakistan Emergency Situational Analysis: A Profile of District Karachi*. Rep, 2013. Print.
[122] Interview with PDMA, Karachi,2013.

8 Case Study 5: Rawalpindi

8.1 Introduction

As well as being the fourth largest city following Karachi, Lahore and Faisalabad[123], Rawalpindi is of particular interest in the study of burgeoning urban centers in Pakistan because of its designation as the headquarters of the Pakistan Armed Forces, as well as the impacts that the creation of the capital of the country, Islamabad, in its close proximity and as its 'Twin City' have had on its demographics and administration.

Rawalpindi boasts an urban background that stretches as far back as 1000 BC, with the discovery of ancient artifacts within a close radius of the city, including those that suggest the presence of urban economic activity and social life[124]. In the more recent past, the colonization of the subcontinent led to the city becoming the permanent garrison of the British Army, in 1851. What this meant for the city in terms of urban development and planning was that the army retained control over the city and cantonments and their boards were mostly responsible for city administration, with governing bodies playing a side role. Rawalpindi was declared a municipality in 1867. Post independence, in 1947, Rawalpindi retained its military power, and also became host to a deluge of migrants from what was then declared 'India'- this included Muhajirs, Kashmiris and Pathans, leaving the indigenous 'Potoharis' of the city somewhat of a minority. In 1959, when Islamabad was being built as the capital city of the country, Rawalpindi played the role of interim capital , resulting in major government offices moving in to its vicinity, as well as becoming the hub of political activity. The rest, as they say, is history.

The City District of Rawalpindi consists of eight autonomous tehsils[125]. The city of Rawalpindi itself is divided into two tehsils, Rawal(Northern Rawalpindi) and Potohar (Southern Rawalpindi). In the 2005 local bodies election of Pakistan, the Tehsil Municipal

[123] Statistics Division, Government of Pakistan
[124] Dutt, Nalinaksha (1998). *Buddhist Sects in India*.MotilalBanarsidass Publ. ISBN 9788120804289
[125] Gujar Khan, Potohar, Taxila Tehsil, Rawal, KallarSyedan, Kahuta, KotliSattian, Murree

Administration (TMA) was divided into Rawal Town Administration and Potohar Town Administration, which has led to some conflict over resource allocation and governance[126].

8.2 Disaster Profile

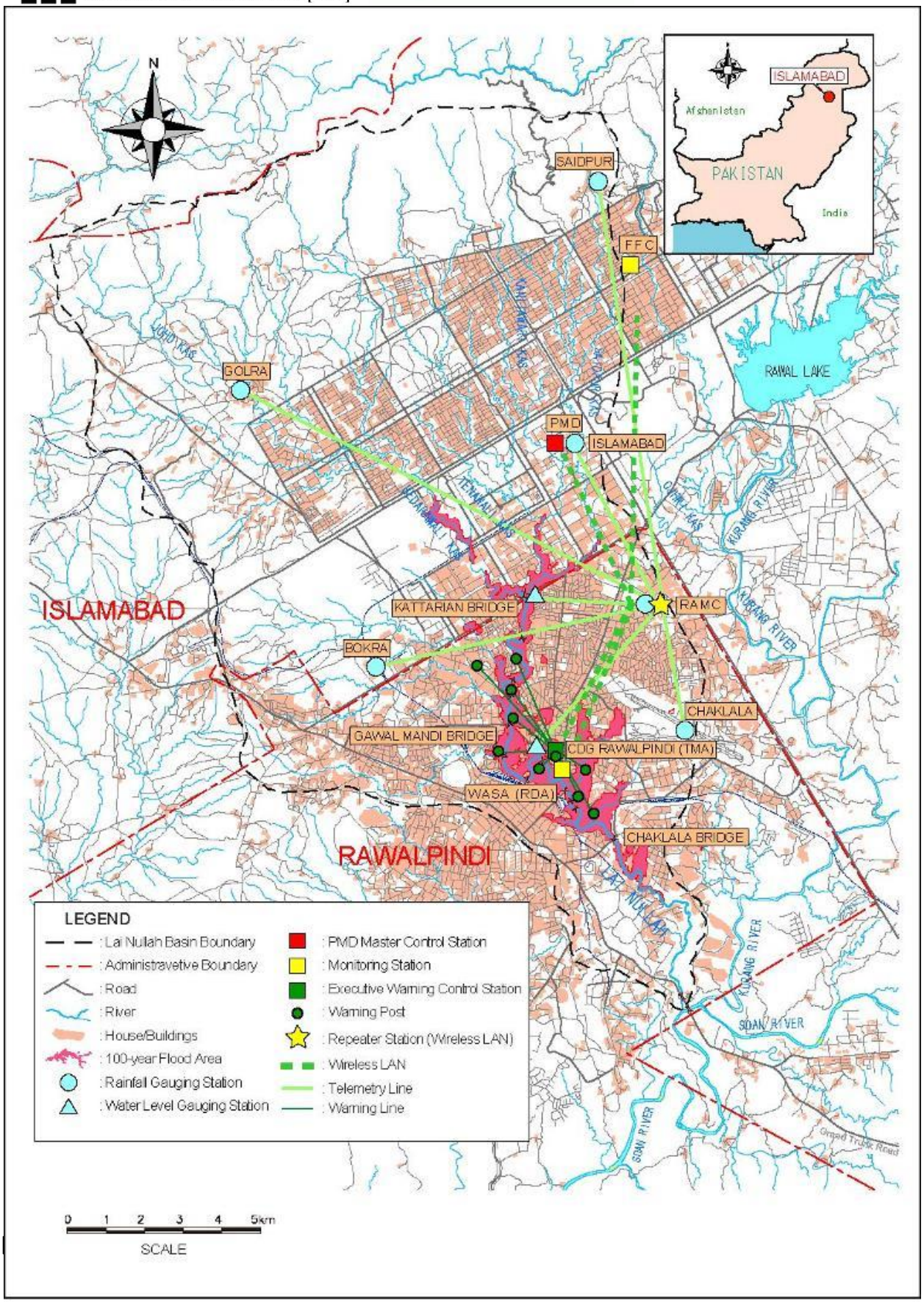
According to interviews with the Pakistan Meteorological Department and the Rawalpindi Water and Sanitation Agency, one of the most significant threats to the city of Rawalpindi lies in its main drainage; the 'Nullah Lai'. In its literal translation, a nullah is a watercourse/riverbed or a ravine. However, if linguistical nuances are taken into account, 'nullah' is rarely used to describe a body of water in positive undertones, and in keeping with this, although the Lai Nullah is a rain water fed natural stream that flows through the city of Rawalpindi, and was rumored to historically be a source of drinking water in the past, it is now used as a dump for the urban waste of Rawalpindi. This has meant that as well as the risk to the population from the flooding of the Lai during the monsoon season, the environmental hazards associated with it are also extreme[127].Rawalpindi is also susceptible, and has been impacted by earthquakes, due to its proximity to the faultline that underlies Islamabad[128], as well as being impacted by the various hazards such as epidemics and urban fire, resulting from the governance issues and political unrest in the country.

[126] Daily Times 2006 'Row between Rawal and Potohar towns intensifies': accessed 12/11/2013
[127]Iftikhar Abbas , H.M. Rafique , Muhammad A. Sohl , AttiaFalak , ShahidMahmood , Muhammad Imran , Yousef Al-Zaghayer , Adulrehman Al-Awadi& Asif Mahmood , Desalination and Water Treatment (2013): Spatio-temporal analysis of groundwater regime within Rawalpindi Municipal Jurisdiction, Pakistan, Desalination and Water Treatment, DOI:10.1080/19443994.2013.786658
[128]Interview with Water and Sanitation Agency.

PARTICIPATORY
DEVELOPMENT INITIATIVES [PDI]

Oxfam Novib

lead



8.2.1 Nullah Lai related Hazards

The Lai Nullah enters Rawalpindi from the Southwest, and runs through the city before draining into the Soan River [129] in the South. The river has six major tributaries, three originating in the foothills of the higher plain area of Islamabad, flowing down through the lower lying city of Rawalpindi where another three tributaries join it. The catchment area of the Nullah is 234.8km^2 which includes both Rawalpindi and Islamabad[130].

A study of the Nullah Lai by the Pakistan Meteorological Department suggests that the catchment area is made up of almost 40% of residential areas. Due to heavy encroachment, the exact boundaries of the Nullah are difficult to identify. This, coupled with yearly rainfall in the monsoon season has meant that Rawalpindi is particularly vulnerable to flooding. Over a 59 year period from 1944 to 2002, A total of 19 floods event occurred during

the 59 year period from 1944 to 2002, of which the flood of July 2001 was the largest[131], and considered a national disaster.On the 23rd of July, 2001, rainfall depth of 620 mm was recorded in 10 hours from 0600 to 1600 hours, causing flooding and damages of more than USD 0.25 billion to infrastructure, public and private property[132]. According to interviews with the Pakistan Meterological Department, the reasons for the flood, as well as being natural, are also man made. This is largely because of the encroachment on the banks of the Nullah, against which no action is taken by the concerned authorities. This is a direct result of the absence of zoning laws in the city. Interviews with the Water and Sanitation Agency also suggest that these floods are as much a consequence of poor planning and governance as they are of torrential rainfall.

[129]Iftikhar Abbas , H.M. Rafique , Muhammad A. Sohl , AttiaFalak , ShahidMahmood , Muhammad Imran , Yousef Al-Zaghayer , Adulrehman Al-Awadi& Asif Mahmood , Desalination and Water Treatment (2013): Spatio-temporal analysis of groundwater regime within Rawalpindi Municipal Jurisdiction, Pakistan, Desalination and Water Treatment, DOI:10.1080/19443994.2013.786658

[130]SadiaKanwal, ShaziaIram, Iftikhar Ahmad, WASTEWATER AND SOIL QUALITY ASSESSMENT OF NULLAH LAI OF PAKISTAN, National Agricultural Research Council Pakistan.

[131]Interviewee from WASA

[132] Bashir Ahmad, Muhammad ShumailKaleem, Mohsin Jamil Butt, Zakir Hussain Dahri HYDROLOGICAL MODELLING AND FLOOD HAZARD MAPPING OF NULLAH LAI, Pakistan Agricultural Research Council (PARC), Islamabad, Pakistan, Pakistan Poverty Alleviation Fund, Islamabad, Pakistan, and Department of Meteorology, COMSATS, Islamabad, Pakistan, Proc. Pakistan Acad. Sci. 47(4):215-226.2010

Another important hazard associated with the Nullah relates to environmental degradation. According to a recent study[133] only 35% of Rawalpindi's waste water is collected and disposed of by the Rawalpindi Water and Sanitation Agency. The remainder is disposed of into open drains, which ultimately find their way into the Nullah Lai, leading to ground water contamination and soil quality degradation, among other issues. Industrial waste, and its disposal, of which there is no formal mechanism in Rawalpindi, also exacerbates the problem.

8.2.2 Earthquakes

Rawalpindi is the 'twin city' of Islamabad. Therefore, according to interviews, due to Islamabads location on the fault line of Rawat, Rawalpindi is also impacted by earthquakes that regularly shake Islamabad. The vulnerability of Rawalpindi to these earthquakes is further heightened by two factors, according to interviews with the Water and Sanitation Agency. The first of these stems from Rawalpindis history. Because it is such an old city, architecture, especially in the commercial areas, is not very secure as well as being densely concentrated, some of which are only accessible through narrow pathways. This is coupled with the issue surrounding building codes. According to interviews, whether or not these building codes are enforced is a trivial matter, compared to the real problem, which is that in Pakistan, the building codes that have been developed at a National Level are outdated and work on a mechanism that is not internationally recognized since 2009, since it does not provide sufficient safety to inhabitants of buildings. While the distance of Rawalpindi from the faultline, as compared to Islamabad, is high, the poor building code enforcement still means that there is extreme vulnerability.

8.2.3 Other hazards

As is the case with many of the other cities of Pakistan, Rawalpindi has also seen its fair share of socio-political instability. A very recent example of this was the incident on the 15th of November during a religious procession, where, due to religious differences, fighting broke out that resulted in fire in parts of the commercial areas of the city[134]. This, and many other incidences have generally led to urban fire, which can again be attributed to poor building practices. As pointed out by the interviewee at WASA, buildings in Rawalpindi are

[133]SadiaKanwal, ShaziaIram, Iftikhar Ahmad, WASTEWATER AND SOIL QUALITY ASSESSMENT OF NULLAH LAI OF PAKISTAN, National Agricultural Research Council Pakistan. 2012
[134]The News International, 15th November 2013

required to have fire safety systems in place, but in practice, this is rarely enforced. Fire, whether due to arson or as a result of violence in the city, is a recurring hazard in Rawalpindi.

Dengue has impacted both rural and urban Pakistan. However, it is suggested that the occurrence of dengue, a vector borne endemic, are much higher in urban areas than rural[135]. In Rawalpindi, dengue is a yearly hazard, and in 2013 in September it was noted to have increased drastically in its occurrence. This has led to a number of campaigns being led by the Rawalpindi Development Authority to raise awareness about preventing the illness.

8.3 Institutional and Administrative Arrangements

8.3.1 Urban Planning

The City District of Rawalpindi consists of seven autonomous tehsils, of which Rawalpindi City, the study area, consists of two towns, Rawal and Potohar[136]. A City District differs from a regular district administratively in that in a City District, the duties of a Tehsil Municipal Authority are undertaken by the Town Municipal Authority. Such is the case in Rawalpind, where the Town Municipal Authorities for Potohar Town and Rawal Town are responsible for their urban development and planning matters. Additionally, the Cantonment of Rawalpindi and an onslaught of privately owned gated townships on the outskirts of Rawalpindi[137] play an important role in development and planning of the areas falling under their jurisdiction.

There has been many an attempt to define master plans for Rawalpindi. The first attempt to do so was for the period of 1968 to 1969: although a plan was formulated, it was never implemented[138]. A similar attempt was made to create a long term plan from 1996 to 2016, which again failed to be implemented[139]. The current 'Rawalpindi Development and Strategic plan', although formulated, was put on hold until the master planning guidelines were prepared by the Punjab Urban Unit. From documents on the Rawalpindi Development Authority website concerning this plan, the following entities are stated as having the

[135] Prevalence of undifferentiated fever in adults of Rawalpindi having primary dengue fever Humaira Zafar,1 Abbas Hayyat,2 Naeem Akhtar,3 Syeda Fatima Rizwan4, Vol. 63, No. 6, June 2013, Journal of Pakistan Medical Association
[136] Rawalpindi City District Government, www.rawalpindi.gov.pk accessed 12th November 2013
[137] Bahria Town, Pakistan Town, Muslim Town etc
[138] Rawalpindi Development Authority, www.rda.gov.pk
[139] ibis

responsibility for 'growth of city and building control'; firstly the Rawalpindi Development Authority, then the Cantonment Board, Rawal Town Administration, Potohar Town Administration, and the Housing and Planning Department.

8.3.2 Disaster Management

In terms of institutional arrangements for Disaster Management, Rawalpindi does not differ from the standard throughout Pakistan[140]. Some factors that may impact DRM in Rawalpindi are firstly that the 'Rescue 1122' service of the Punjab plays a crucial role in emergency relief in the city, as well as the army, due to the presence of the military base within the city. Lastly, due to the importance of the Lai Nullah in the disaster spectrum in Rawalpindi, the Pakistan Meteorological Department has been running a flood risk management project in the area since 2007, with financial assistance from the Japan International Cooperation Agency[141]. This Project focuses on flood preparedness in the Lai Basin and includes early warning systems and hazard mapping[142].

8.4 Stakeholder Analysis

As is the case with all the cities studied for this research exercise, important stakeholders in Rawalpindi can be categorized into the following groups, all of whom are directly or indirectly impacted by/contribute to these disasters: Government, Private Sector, Academia and Civil Society. In the case of Rawalpindi, it is important to identify the two most crucial groups who are the most at risk from disaster, particularly flooding of the Lai Nullah. These are the households that have encroached upon the banks of the Lai Nullah, as well as commercial areas nearby who are at a direct risk from flooding, such as was the case in 2001 when the famous 'murree road' of Rawalpindi, somewhat of a commercial hub, was also immersed in water following a heavy downpour of rainfall[143].

Encroachment on the banks of the Nullah Lai is a problem that has many far reaching consequences, and many actors have been involved in the failure of limiting this encroachment. According to interviews with WASA, although zoning laws exist, these are

[140]Please see Chapter 3 'Disaster Management in Pakistan'.
[141]Pakistan Meteorological Department www.pmd.org.pk

[142]Interview with PMD
[143]Interviewee from WASA

rarely implemented[144]. The Zoning Laws developed by the Rawalpindi Development Authority define clearly 'Flood Plains' and 'Environmentally Sensitive Areas' in its 'Special Areas Zones' section[145], however, considering the Lai Nullahs very specific hazard to the communities living near it, there are no specific guidelines or rules mentioned within this to ban construction in these areas, although there are guidelines for safe construction. According to interviews with the Pakistan Met Department as well as the Water and Sanitation Agency, it is difficult to dissuade people from living on the banks of the Nullah. Encroachment, according to the Pakistan Met Department, is so high that it is even difficult to identify the boundaries of the nullah. The reasons for this encroachment vary from cheaper land rates to a simple lack of housing space in the rest of the city.

While master plans have been developed for Rawalpindi in the past, and continue to be developed to date by the Rawalpindi Development Authority, there are many institutions that have overlapping roles in terms of disaster management- Provincial Irrigation and Power Departments (PIDs) are responsible for flood forecasting and mitigation, the Water and Power Development Authority (WAPDA) is involved in flood forecasting process, Provincial and District relief organizations and departments as well as the army, Federal Flood Forecasting Division and Emergency Relief cell are all meant to address all stages of disaster management i.e. pre flood, during flood and post flood[146]. The District Disaster Management Authority and the Punjab Provincial Disaster Management Authority play a coordinating role, rather than implementing prevention and preparedness strategies. Their role is mostly limited to relief and rescue operations, whilst a majority of preparedness activities are left to the RDA to weave into their master plans.

An important stakeholder in Rawalpindi, which plays one of the most crucial roles in disaster preparedness, is the Pakistan Meteorological Department through its Japan International Cooperation Agency (JICA) funded project, is responsible for flood warnings to vulnerable populations. Whilst this has been a largely efficient project, it is uncertain whether this initiative will continue when the duration of the project and therefore the funding from JICA ends.

[144]It is important to note here that for interviewees from almost all the cities, zoning laws were considered in terms of administration and billing, rather than in terms of hazard and disaster. Understanding of what zoning laws are is poor.
[145]Building and Zoning Regulations, 2007 – Rawalpindi Development Authority (RDA)
[146]Ahmed Kamal, PAKISTAN: LAI NULLAH BASIN FLOOD PROBLEM ISLAMABAD – RAWALPINDI CITIES, WMO/GWP Associated Programme on Flood Management

According to interviews with WASA, the Rawalpindi Development Authority draws up yearly Monsoon Contingency Plans for the city which are developed in consultation with stakeholders, particularly the private sector. These plans are mostly concerned with evacuation activities and the delegation of responsibilities of various government line departments if and when a disaster should occur. There is no focus in these plans on how to build resilience against these disasters; rather, these yearly plans focus on how to react when the disaster hits. Although there is evidence of the involvement of various line departments and institutions in these plans, the problem of overlapping responsibilities persists.

In terms of the lack of implementation of building codes, zoning laws and fire safety systems within households and commercial areas, civil society, private sector and the government are equally to blame. The government does not enforce its rules, that exist on paper, and civil society and the private sector do not demonstrate the will to implement these rules. This issue mainly arises due to a lack of awareness; until it is understood why these laws came into being, there will be no will to implement them.

Academically, the Lai Nullah basin is an area that has been studied extensively by national and private universities. As a part of this research, much information was found relating to GIS, surveys and climate change, relating to the Lai Nullah. However, there is little evidence of the involvement of academia, or of these studies, in the development of disaster management plans. Because of this, the soundness of the plans can be brought into question.

8.5 Conclusion

Among the cities under study, Rawalpindi comes closest to becoming disaster resilient – at least theoretically. Not only are monsoon contingency plans drawn up yearly, the Pakistan Meteorological Department has a unit dedicated to monitoring the biggest hazard to the city; the Lai Nullah. Additionally, the army plays a large role in disaster relief within the city, particularly in the case of flood relief[147]. The proximity of the city to the capital, i.e. Islamabad, means that the involvement of the Capital Development Authority, especially in

[147]Ahmed Kamal, PAKISTAN: LAI NULLAH BASIN FLOOD PROBLEM ISLAMABAD – RAWALPINDI CITIES, WMO/GWP Associated Programme on Flood Management

issues pertaining to the Nullah Lai, which begins in sector H8 in Islamabad[148], is unavoidable. However, the situation the ground is not as rosy as it appears on paper. Encroachment, grey areas that are not recognized on paper, and the lack of defined activities greatly constrain effective disaster management in the city. What has also been observed is that while master plans have been developed for Rawalpindi, and to some extent integrate DRR concerns, the funding for the development and implementation of these plans comes from non-government funds. The sustainability of these plans can thus be questioned.

[148]Interview with WASA

9 Case Study 6: Gilgit

9.1 Introduction

Gilgit has held significance for the subcontinent, as well as for Pakistan for two reasons- firstly that it was an important city along the 'silk route'[149] and becoming the portal for goods travelling inwards from other countries. Another reason for its significance is that in the north of the country, Gilgit is the sole political entity, and much of the region is administratively looked after by the city administration.

Previously known as the 'Northern Areas', the province of Gilgit-Baltistan was only recently made into a province. Within this province, the capital city of Gilgit is a tehsil of the Gilgit District[150]. The city of Gilgit can be further divided into six physical and administrative areas i.e. The Town Nucleus, Kunandas Plateau, Danyor Plain (+ Gujar Das), Jutial, Basin and Transitional Belt[151]. The city stretches along the North and South banks of the Gilgit River with the North bank being home to the commercial areas and administrative buildings and is known as the Kunandas, largely because it is fed from the Kunandas nullah.

Gilgit is a unique city for a variety of reasons, first and foremost of which is its rocky mountain terrain. The city is located within the massive Karakorum Range of Pakistan, and the city itself is in a valley. According to local vocabulary, Gilgit literally means where three mountain ranges meet[152]. For these reasons, the city is remote from the rest of Pakistan. Travelling to Gilgit is often marred by landslides, and in recent times, violence and insurgency, causing the previously booming tourism industry to collapse. The inaccessibility of the city may mean that in many ways, administration is autonomous from the federal and other provinces. The city is also in close proximity to China, who is involved in the construction of better trade routes, which link it to the Pakistani and Iranian ports and strengthen its trade. Additionally, in a Sunni dominated country like Pakistan, Gilgit is one of the few cities with a shia dominant population. In recent times, sectarianism and its consequences have wrought havoc upon the normally peaceful area.

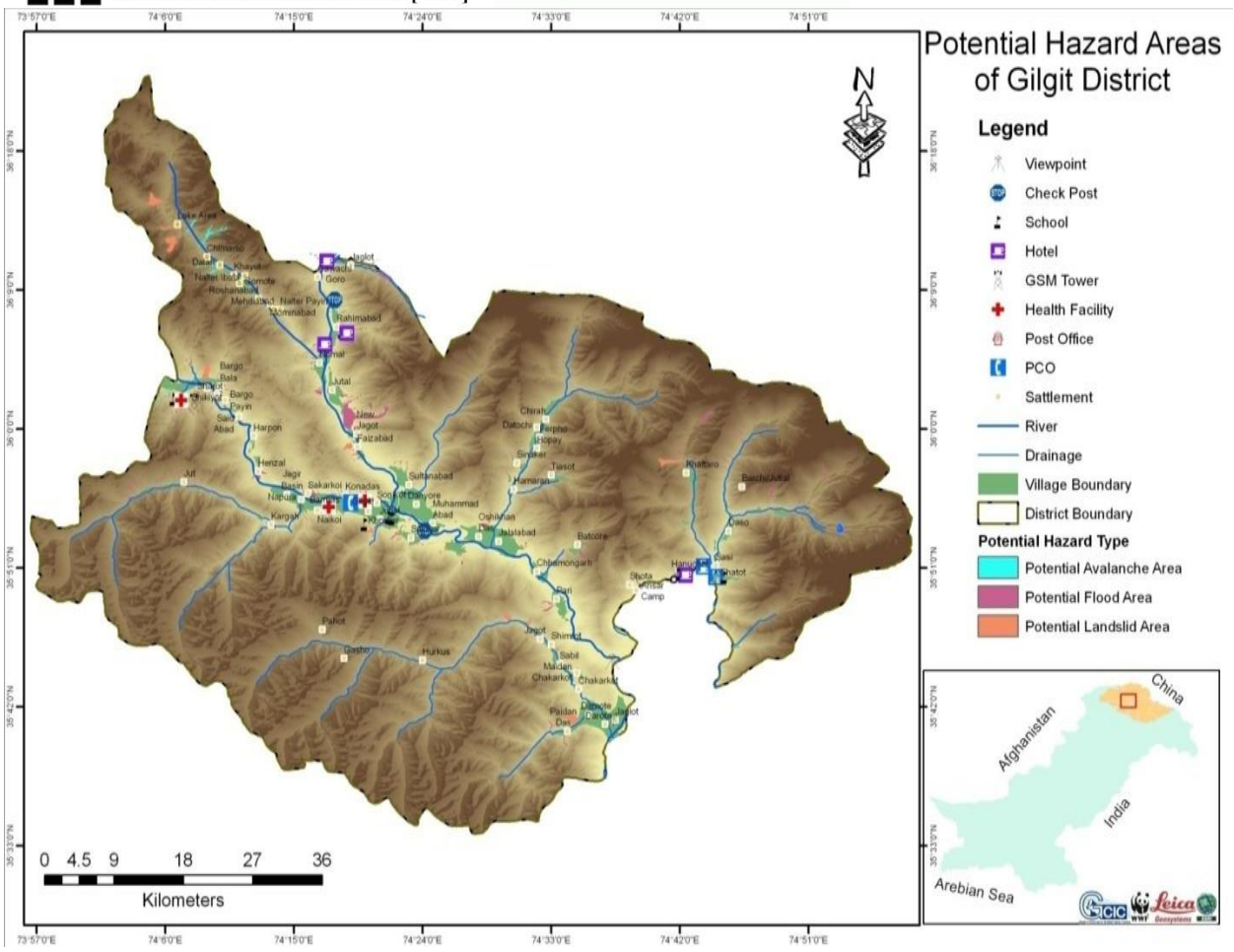
[149] UN Habitat 'Gilgit', 2011
[150] Government of Gilgit Baltistan, www.gilgitbaltistan.gov.pk
[151] Gilgit Baltistan Master Plan, 1977
[152] UN Habitat Gilgit, 2011

What makes Gilgit a relevant urban city to study in terms of disaster management is that for up to 8 months out of 12, the weather is that of winter. Ice and water related disasters are frequent in the area for this reason, and it is these harsh conditions that bring the city to a standstill in cold months, making it inaccessible due to road blocks, as well as with most people retiring to their homes for the duration of the winter. The difficult terrain of the area has also meant that settlements are scattered- households traditionally are constructed in 'khots'[153], either at the base of mountains or near river bunks for ease of access to water as well as access to natural resources such as wood for fuel[154]. The scattered nature of these settlements mean that social networks in these areas are weak, especially in the winter months, as well as inaccessibility, which add to the losses caused by disaster.

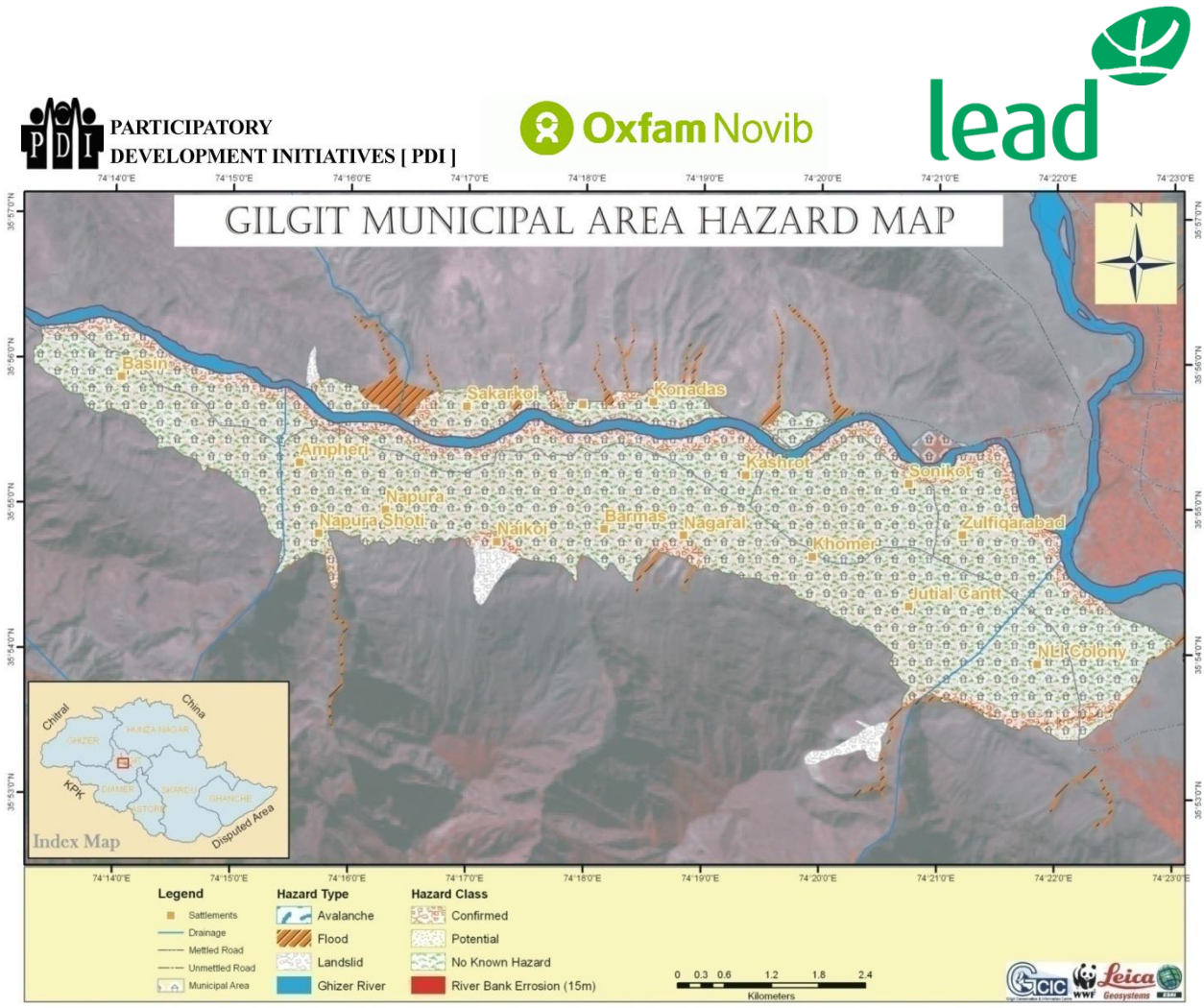
9.2 Disaster Profile

The geography of the city of Gilgit makes it extremely vulnerable to a range of disasters. Bounded by mountain ranges on all sides, as well as having two rivers, Gilgit and the Hunza River flowing through the city, coupled with extreme temperatures, mean that Gilgit is vulnerable to land sliding and floods. Historically, Gilgit has also experienced many earthquakes, and due to weak building codes, is expected to be impacted by more in the future.

[153] In local language, 'clusters'
[154] UN Habitat Urban Observatory 'Gilgit' 2011



Source: WWF, 2012-13



Source: WWF, 2012-13

9.2.1 Floods

Gilgit city is no stranger to floods. According to a report by PESA[155], Gilgit city was destroyed completely by floods in 1841, when the river Indus was blocked by a landslide, effectively turning the city into a lake. In more recent history, the region of Gilgit Baltistan, and the city of Gilgit in particular, is vulnerable to three main types of flood; flash flood, riverine flood and Glacial Lake Outburst Flood (GLOF). Because the district is the watershed for most of the country, floods in Gilgit have consequences throughout Pakistan.

Gilgit lacks significant rainfall, averaging in 120 to 240 millimeters (4.7 to 9.4 in) annually[156], almost all of which occurs during the monsoon season between July and September. This torrential rainfall is the reason that flash floods are a recurring hazard for

[155] Pakistan Emergency Situation Analysis (PESA), A profile of District Gilgit, USAID and IMMAP, 2012
[156] ibis

Gilgit, which has insufficient drainage to absolve itself of excess storm water[157]. The city also lacks a sewage system, so households commonly dispose of their solid waste in excavated pits beneath their houses, not only putting their lives at further risk from floods and earthquakes due to poor foundations, but also increasing the risk of contamination of water from the waste. The main supply of piped water to households in Gilgit is from the river, as well as for irrigation, therefore the contamination of this water has dire consequences.

The River Gilgit flows through Gilgit City, as does the River Hunza. During the summer months, due to snow melt higher up north, coupled with torrential monsoon rain, the risk of riverine flood in the city is very high.

Glacial Lake Outburst Floods (GLOF) is a type of outburst flood occurring when water dammed by a glacier is released due to melting of the ice, water pressure, erosion, avalanches or earthquakes[158]. Most of the water utilized in Gilgit comes from glaciers, with the northern regions of Pakistan having the largest glaciers outside the Polar Region. Gilgit City is surrounded by these glaciers, following the age old pattern of settling where fresh water is readily available. The risk of GLOF in the city, especially due to the impacts of climate change such as increased precipitation and varying temperatures, is very high[159].

9.2.2 Landslides and Avalanches

The southern slopes of Gilgit receive much rainfall, and therefore are abundant in trees such as deodar, pine, poplar and willow[160]. The northern slopes do not receive as much rainfall and therefore are naturally quite bare. Unfortunately, deforestation in the entire province of Gilgit-Baltistan is rampant, due to increasing urbanization as well as the high price of wood in markets, according to interviews. While deforestation can contribute to flooding, the main threat posed is the danger of landslides and soil erosion[161].

Another factor that adds to the danger of landslides and avalanches is that while mean temperatures in Gilgit are always cold, sunlight is very strong and can cause rapidly melting

[157]Interview with Pakistan Red Crescent Society, Gilgit Baltistan.
[158] UN Chronicle: Global Warming Triggers Glacial Lake Outburst Flood threat, accessed 12/11/2013
[159] UNDP ' Reducing Risks and Vulnerabilities from Glacial Lake Outburst Floods', inception report, 2011
[160]ibis
[161]UN Habitat Urban Observatory 'Gilgit' 2011

snow in the winter months, leading to avalanche[162]. This frequently disrupts travel routes to and from the city, causing losses in trade.

9.2.3 Earthquakes and others

The seismic map of the region prepared by Pakistan Meteorological Department, Geophysical Centre, Quetta, indicates that Gilgit lies in a very active seismic zone and the seismic factor in this zone has been evaluated as "Zone of noticeable seismic danger". During the earthquake of 2005, losses of over 16.33 million rupees were reported in the GB province[163].

Gilgit is a unique city because it is one of the few cities in Pakistan with a non-sunni majority. In recent times, due to political unrest throughout the country, Gilgit city centre becomes strife with sectarian tension, particularly the two mosques of Shia and Sunni sects that face each other.

9.3 Institutional Arrangements

9.3.1 Urban Planning

Gilgit city is administrated by the elected Town Nazim and the Naib Nazim. However the administration of the city is under the Town Municipal Authority, headed by the Town Municipal Officer. The various responsibilities of the TMO include solid waste management, water supply, sanitation, civic law enforcement, maintenance of roads and infrastructure.

The Gilgit Development Authority is responsible for urban planning and reports to the Gilgit Baltistan Planning and Development Department. The Gilgit Development Authority is a key stakeholder in relation to disaster management since it is involved in preparing five year and other provincial development plans.

Other than this, the various government line departments relating to food, agriculture, irrigation etcetera are contributors to planning for the city.

9.3.2 Disaster Management

Like the other cities in Pakistan, the Gilgit District Disaster Management Authority is responsible for DRR in the district, and reports to the Provincial Disaster Management

[162] ibis
[163] Pakistan Emergency Situation Analysis: A Profile of District Gilgit; 2012

Authority of Gilgit Baltistan. According to interviews with the Gilgit District Disaster Management Authority, the following departments were consulted for the formulation of Urban DRR plans: Gilgit Development Authority, GBPWD (Public Works Department), CDO (Civil Defence Organization), Municipal Committee, P & D Department, Environment Protection Agency, Education Department and District Administration(Collector & record Keeper), Forestry Department, Health Dept. & Agriculture Department, and among the non-government organizations IUCN, WWF, FOCUS (AKDN) & PRCS. All of these organizations play an important role in disaster management in Gilgit city.

9.4 Stakeholder Analysis

Although Gilgit has, for a variety of geographical and socio economic reasons, the potential to become a hotbed for disasters and their impacts, it has managed to become an example of best practice for urban DRR in Pakistan. This is not to say that disaster management in the city is perfect; however, in terms of coordination between government line departments, non-government organizations and the community, Gilgit city sets an example that other cities would be hard pressed to follow. Although the DDMA of Gilgit has only recently been set up, with most of the office materials being provided by non profits such as the Agha Khan Development Network, the DDMA prepares Disaster Management Plan on an annual basis. In addition, they also develop separate Contingency Plans (Monsoon rains etc) which are prepared on-spot when needed. They do prioritize areas based on their vulnerability to hazards[164].

In the case of a disaster, their standard procedure starts with calls to 1122 (Rescue), PRCS (Pakistan Red Crescent Society) and FOCUS and 150 volunteers in Gilgit District under DDMA's command, who assist in relief activities and coordination. They have also nominated Counselor, Lumberdar and Imam as supervisors in certain areas where there are insufficient volunteers available. The DDMA has demonstrated an exemplary inclusive approach to disaster management, involving communities in their efforts as well as consulting a wide range of government and non government organizations in their disaster planning processes. Additionally, according to the interview with DDMA, trainings at a school level are carried out from time to time to teach children about the basics of responding to and

[164] Interviews with DDMA

preventing a disaster (although this is disputed by an interview with the education department, who stated that the Punjab Curriculum is followed in Gilgit which has no mention of disaster or training for disaster in it).

A key stakeholder for disaster relief in Gilgit is the Pakistan Red Crescent Society (PRCS). The PRCS sees its role as more of a 'post' disaster one. Their activities e.g. training of volunteers are based on providing emergency relief and recovery. The PRCS has 8000 volunteers throughout the province, of which 200 are at the Gilgit City level[165]. Their main activities, according to the interviewer, are the provision of psycho social support, food and non-food items and search and rescue trainings for volunteers and others. Although the interviewee stated confidence in the direction disaster management was heading towards in Gilgit city, a concern was stated about the lack of motivation of government officlas in local administration towards achieving sustainable disaster management goals, for reasons that may be political or a simple lack of interest. There was also some concern that the Government has no system to check on duplication of project activities in the city and no mechanism for coordination of NGOs is in place.

One of the biggest hazards to the city, according to PRCS is that there is no sewerage and sanitation system and the common practice is the excavation of a deep pit below the foundation of homes where the waste is disposed of. In case of a natural disaster like earthquake, the probabilities of their survival are very low. Although building codes do exist, according to the DDMA, only 4 buildings in all of Gilgit have applied these codes.

The Gilgit Education department holds the key to training and preparedness of young children with reference to disaster. Currently, they are working with USAID under EDIP for "School Safety Strategy" so as to prepare a document on safe school guidelines for the people of these hazard-prone areas[166]. Although the department does carry out trainings for school children, these are usually project based and depend on external sources of funding, putting into question their sustainability.

The Environment Protection Agency for Gilgit Baltistan (GB-EPA)is an attached department of the Ministry of Climate Change and has been established to provide for the protection,

[165] Interview with PRCS
[166] Interview with education department

conservation, rehabilitation and improvement of environment, for the prevention and control of pollution, and promotion of sustainable development. Zoning and building codes, environmental assessment, quality of raw material and inspection of construction site is done by AD (Legal Enforcement)from their department in Gilgit[167]. Following interviews with both the EPA and the Gilgit Development Authority, it was revealed that both are involved in the development of master plans or land use plans, however, neither show evidence of involving each other in developing these plans. As was the case with the projects in the education department and the DDMA, a huge chunk of the funding for these initiatives comes from external sources. In the long term, when the funding runs out, there has been no effort to generate plans with sustainable sources of funding.

[167] Interview with EPA

10 Conclusions, Lessons Learnt and Recommendations

10.1 Conclusions and Main Findings

Based on the interviews with key informants in various cities – including some documentation provided by them - as well as the literature available through the Internet, some of the key findings that emerged are the following. :

1. First and foremost, especially from the communities point of view, and in the bigger cities – possibly with the exception of Gilgit in this set – there is very little awareness of DRM. One of the reasons is that cities like Faisalabad and Rawalpindi haven't faced a major disaster in the recent past. For cities like Peshawar, Karachi and to somewhat lesser extent, Quetta, the major problem is terrorism, at least in the public perception. On the other hand, as stated earlier in this report (Urban Situation of Pakistan), most of these cities have a high risk for potential disasters. Added to this is the fact that apart from the staff at NDMA, and to a lesser extent, the PDMAs, there is little or no awareness of HFA, even at the level of DDMAs. While this may not be such a serious issue if all the necessary measures are adopted, but that is also not the case. HFA provides an excellent, comprehensive, and yet an easy to comprehend common-sense framework for understanding. For our purpose, in particular, the Local Government Self Assessment Tool (LGSAT) is especially suited for not only finding the status of preparedness for a city, but also acts as a check list to guide what was needed to be done.

2. The second most important finding that starkly comes out through this study is that we are still stuck in the emergency response paradigm. It is a reactive management of disaster. Prevention and mitigation are not a priority. This will require the inculcation of a whole new culture of disaster preparedness and management, which needs to be built by working at different levels – from policy and legal frameworks, to risk assessments and planning and percolating down to the communities and educational institutions.

3. In general, operational mechanisms are ambiguous in terms of definition of roles within and between organizations working in DRR-M. This generally results in a lack of coordination between different government departments exacerbated by poor information flow. This sometimes also results in overlapping responsibilities.

4. There is no focused attention on data and information management, barring possibly PMD.

5. There is general awareness about Climate change and people and organizations have started to incorporate measures as a response to this. However, a coordinated mechanism does not exist and people in many cases are unable to develop a response to the increasing impacts of climate change.

6. Multi-hazard vulnerability assessment has not been done for most of the cities included in this study.

7. There is a lot of ambiguity about whether the Development Plan for the city exists or not. This is especially true for smaller cities like Gilgit.

8. Funding for plans is mostly external and not assured through the government budgets. For example, the Disaster Management Plans (DMP) by PDMAs have been funded by UNDP through a one-time project.

9. While city district governments are responsible for the DRM at the local level, the provincial governments have not devolved their powers yet and disseminate funds without consultation with districts. As a result, very little, if any allocation, goes under this head at the local level.

10. In Gilgit, meetings are held between the government and NGOs to plan for hazards and upcoming disasters. In no other city that we studied this happens on a regular basis. However, this is still not something based on sound institutional footing and is critically dependent on the approachability of concerned government officials.

11. Cities are home to more manmade hazards than they are to natural ones, though admittedly, a major natural hazard can cause a great calamity. For the moment, people in cities like Peshawar, Karachi and Quetta are too concerned about terrorism to think about other disasters.

12. Surprisingly, NDMA and PDMAs work in completely different spheres from one another. What impact has the 18th amendment had on relationships between different tiers of DMAs is still not very clear and a matter of debate if not confusion.

13. There is no clarity between donors, NDMA and PDMA about who the DMPs are directed towards.

14. The line departments that are responsible for the repair of critical infrastructure are not generally prepared to do so; neither are there plans to protect it in face of major disasters.

15. In major cities that this study was conducted, building codes do exist despite being obsolete However, even these are poorly enforced or not enforced at all in many areas. It is mandatory for government buildings to be resistant to earthquakes measuring 9 on the Richter scale but this is not applied to private building. As a result only a few private buildings in Gilgit are earthquake resistant

16. While the Met Department is equipped with sophisticated equipment that forms the basis of fairly reliable and accurate Early Warning System (EWS) with 'Advisories' and 'Alerts', there are no set mechanisms for broadcasting them to communities. In Gilgit, however, there are plans to share the alerts on rainfall etc. in Urdu at the local level by the international NGOs.

17. The Forest department in Gilgit is responsible for resilience, especially in terms of protecting critical infrastructure. DMPs and ERTs need to be set up, despite being prescribed by the plans they are not implemented.

18. Almost invariably, the DCO office has DDMUs and DDMA focal persons. In many cases the Civil Defense focal points are now the DDMA focal points.

19. Interestingly, from experience in previous disasters, the most successful DM mechanisms do not include formal institutions. The biggest assistance is from volunteers.

20. 1122 department in Karachi has an inventory of logistics i.e. who has fire trucks, ladders etc (which departments have them). This is a good example of cross departmental coordination which generally doesn't exist.

21. ERPs as a part of disaster management have not been developed at all. Disaster response is always on an ad hoc basis.

22. In Gilgit there is evidence of informal training for rescue and evacuation. Hazard watch groups are formed who get training from the PMD and their roles are defined as well. If resources are not being allocated for proper disaster management, it is unrealistic to expect resources to be allocated to soft interventions. Should focus on macro interventions in our recommendations, followed by the micro ones.

10.2 Lessons Learnt

During the course of the discussions with the informants, some of the lessons learnt that emerged from their own side are the following. They pertain to the post-disaster situation in the areas which recently experienced disasters, especially the 2010 floods. Many of them were common to all the cities, while a few of these were specific to a single city, most particularly Gilgit.

1. Strong coordination is required between all the government departments, stakeholders, NGOs and iNGOs in disaster situations. (All)

2. The DDMA at the local level should provide NOC to the NGOs and other organizations for intervention to overcome duplication and redundancy, as well as to prevent any potential law and order situation. (All, but most particularly Gilgit).

3. A strong assessment team should be constituted with the help of personnel from reputed NGOs so that transparent assessment may be ensured on ground. On the basis of fair assessment, transparent relief and rehabilitation work can be carried out by the government for the genuine affectees . (All)

4. The DDMA and other partner organizations need to have an early warning system in place to minimize the losses of lives and movable properties. In this regard, Union Councils – when fully functional - at the community level can play a vital role if properly managed. (All)

5. Voluntarism must be promoted by using the local scouts and volunteers because in an emergency situation maximum manpower has to be mobilized. (All)

6. Every government department, specially the departments which cater to emergency services or have major responsibilities during disaster situation, should have sufficient storage of fuel for disaster emergencies, as in flood 2010 as all the organizations were facing shortage of fuel in the because of the blockage of KKH. This greatly hampered relief and rehabilitation efforts during the floods. (Gilgit)

7. Constitution of clusters during the disaster may be ensured to pool resources in an efficient manner in the establishment of IDP Camps. (All)

8. The Health Office, Civil Supply Department and the Utility Stores Corporation must ensure dumping of essential commodities and medicine to the far-flung area in case of blockade of road access to the valleys due to floods. (Gilgit)

9. One of the areas which need to be strengthened is community based awareness sessions on DRM activities and small level Community Based DRM (CBDRM) teams may be constituted to deal with any immediate emergency situation at the community level. (All)

10.3 Recommendations:

10.3.1 HFA's Ten Essential Areas

Some of our recommendations follow directly from the findings listed above, but before we list them, we would like to focus on HFA's ten essential areas and the attendant recommendations – one for each of them. They form the basis for international best practices to be relevant for local governments. Listed are these recommendations which underpin HFA's Local Government Self Assessment Tool (LGSAT) and can be applied with little change to the cities in Pakistan.

HFA Priority 1 – Make Disaster Risk Reduction a Priority

1. Have competent and accountable urban and local governance in place, including **mechanisms** for disaster risk reduction, based on a participatory dialogue between city **governments and civil society** to identify risks, and apply risk reduction and preparedness

2. Have an assigned city **budget** for disaster risk reduction, with provisions for finance and technical cooperation enabling low-income families to reduce risks in their housing and environment, and to strengthen resilience through effective social safety nets

3. Have proactive policies and strategies to **provide safe land for low-income citizens**

HFA Priority 2 – Know the Risks and Take Action

4. Have a **comprehensive risk assessment** constantly updated and used as basis for urban development plans and early warning system, and easily available and understood by the public

HFA Priority 3 – Build Understanding and Awareness

5. Have **education programmes** on disaster risk reduction in place in schools and local communities

HFA Priority 4 – Reduce Risk

6. Invest to reduce the deficit of risk-reducing infrastructure, such as flood **drainage in high risk areas, and put in place management systems with local communities to ensure their maintenance.**

7. Make risk compliant **building regulations and land use planning norms** appropriate to the needs and possibilities of low income citizens and apply them as an instrument to improve the safety of the built environment

8. Have all **schools and health facilities** and other **critical facilities** assessed and upgraded as necessary to withstand major hazards, and develop plans for recovering and **protecting heritage** buildings and sites

9. Have plans and regulations in place to protect **ecosystems and natural buffers** to mitigate floods, storm surges and other hazards, and ensure that **climate change adaptation initiatives** builds on risk reduction practices

HFA Priority 5 – Be Prepared and Ready to Act

10. Have **early warning and emergency management** capacities in place, with locally owned preparedness plans known and regular public drills

10.3.2 Other Recommendations

1. Media need to be involved in raising awareness not only about disasters but disaster risk reduction and management as well. May be a special communication project – underpinned by a media campaign – needs to be designed to create the necessary awareness and sensitization about this very important aspect of urban living under the cloud of increasing frequency of extreme events induced by climate change.

2. With the revival of local bodies, including city district governments about to be elected in the coming months in all the provinces, there is an excellent window of opportunity for working with them, both at the level of awareness and sensitization as well as training and capacity building to seed a process of institutional DRM at the local/city level.

3. The Government has to provide dedicated staff and resources for urban risk management at the Tehsil (sub-district) level, especially for coordination and information management.

4. In order to do a meaningful DRM, all the necessary data should be collected, collated and analyzed periodically. This would include a whole range of data from an inventory of critical infrastructure to rescue instruments and relief supplies; and multiple risk assessments to mitigation measures – if undertaken – that need to be tracked for progress.

5. Multi-hazard vulnerability assessment and mapping should be carried out immediately. The assessment and mapping should be done together with the local government and local stakeholders so as to develop local tools for mitigation and emergency response.

6. DRR plans for each city should be prepared and need to be integrated with other relevant plans, like land use and development plans. At the moment such integration doesn't exist at all.

7. Safety assessment of educational and health facilities should be carried out immediately and where required the unsafe buildings should be demolished or repaired.

8. Regular updating of safety regulations including building codes and implementation be forced by concerned departments. Commercial licenses be awarded on fulfillment of safety measures.

9. Building codes need to be revised in the light of latest standards that have been developed with better protection against hazards, especially earthquakes. These standards have been adopted and are followed in other parts of the world. But more importantly, whatever in the form of such codes that exist or have to be revised, need to be enforced.

10. Insurance and financial services for risk transfer need to be developed to facilitate urban risk management.

11. Community trainings are being carried out in some places – especially in Gilgit - but there needs to be a volunteer citizens' group that should be trained for preparedness, and in times of emergency, to volunteer for emergency services. Previously Pakistan had Civil Defense Service and active Boy and Girl scouts but in the recent times these voluntary public service groups have dwindled to near extinction.

12. Urban risk management should be immediately linked with urban management and project planning. More specifically, and in concrete terms, PC-I should have a note related to DRR.

13. Key elements of DRR-M should be incorporated in school curricula. Given that it takes time to do so (design and approval of the curriculum, development of new text books and their publication) work on it should start on an urgent basis.

14. The Meteorological Department, which is almost the sole custodian and manager of Early Warning Systems (EWS,) needs to be strengthened for EWS to be more effective.

15. Apart from these soft components, investment needs to be made on disaster resilient infrastructure like:

    - Hospitals with necessary facilities and life saving equipment;
    - Well equipped Search & Rescue facility;

- Provision of street lights and WASH facilities to residents;
- Emergency Coordination Centre with necessary equipment and facilities; and
- Repair, and if possible, retrofitting of critical buildings.

11 Annexures

11.1 Annex 1: HFA Core Indicators and their Scope of Applicability for Pakistan

Priority for Action 1: Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.	**Scope (of Applicability)**
Core indicator 1.1 National policy and legal framework for disaster risk reduction exists with decentralized responsibilities and capacities at all levels.	**National (but with decentralized responsibilities and capacities)**
Core indicator 1.2 Dedicated and adequate resources are available to implement disaster risk reduction plans and activities at all administrative levels	**National/Provincial/Local**
Core indicator 1.3 Community Participation and decentralisation is ensured through the delegation of authority and resources to local levels	**Local**[i]
Core indicator 1.4 A national multi sectoral platform for disaster risk reduction is functioning.	**National**
Priority for action 2: Identify, assess and monitor disaster risks and enhance early warning	
Core indicator 2.1 National and local risk assessments based on hazard data and	**National/Provincial/Local**

vulnerability information are available and include risk assessments for key sectors.	
Core indicator 2.2 Systems are in place to monitor, archive and disseminate data on key hazards and vulnerabilities	**National/Provincial/Local**
Core indicator 2.3 Early warning systems are in place for all major hazards, with outreach to communities.	**Local**
Core indicator 2.4 National and local risk assessments take account of regional / trans boundary risks, with a view to regional cooperation on risk reduction.	**International**
Priority for action 3 Use knowledge, innovation and education to build a culture of safety and resilience at all levels	
Core indicator 3.1 Relevant information on disasters is available and accessible at all levels, to all stakeholders (through networks, development of information sharing systems etc)	**National/ProvinciaL/local**
Core indicator 3.2 School curricula , education material and relevant trainings include disaster risk reduction and recovery concepts and practices.	**Provincial**
Core indicator 3.3 Research methods and tools for multi-risk assessments and cost benefit analysis are developed and strenghtened.	**National/Provincial/Local**
Core indicator 3.4 Countrywide public awareness strategy exists to stimulate a culture of disaster resilience, with outreach to urban and rural communities	**National/Provincial/Local**
Priority for action 4 Reduce the underlying risk factors	
Core indicator 4.1 Disaster risk reduction is an integral objective of environment related policies and plans, including for land use natural resource management and adaptation to climate change.	**Provincial/Local**
Core indicator 4.2 Social development policies and plans are being implemented to reduce the vulnerability of populations most at risk.	**Provincial/Local**
Core indicator 4.3 Economic and productive sectoral policies	**National**

and plans have been implemented to reduce the vulnerability of economic activities	
Core indicator 4.4 Planning and management of human settlements incorporate disaster risk reduction elements, including enforcement of building codes.	**Provincial/Local**
Core indicator 4.5 Disaster risk reduction measures are integrated into post disaster recovery and rehabilitation processes	**Provincial/Local**
Core indicator 4.6 Procedures are in place to assess the disaster risk impacts of major development projects, especially infrastructure.	**Provincial**
Priority for action 5 Strengthen disaster preparedness for effective response at all levels	
Core indicator 5.1 Strong policy, technical and institutional capacities and mechanisms for disaster risk management, with a disaster risk reduction perspective are in place.	**National**
Core indicator 5.2 Disaster preparedness plans and contingency plans are in place at all administrative levels, and regular training drills and rehearsals are held to test and develop disaster response programmes.	**National/Provincial/Local**
Core indicator 5.3 Financial reserves and contingency mechanisms are in place to support effective response and recovery when required.	**National/Provincial/Local**
Core indicator 5.4 Procedures are in place to exchange relevant information during hazard events and disasters, and to undertake post-event reviews	**National/Provincial/Local**

11.2 Annex 2: Questionnaire's for City Stakeholders.

Priority for action 1: Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.

[Type text]

1. Are there provincial/city level DRR plans?
2. If no city level plans, are there any district level plans?
3. If yes, who was consulted in the formation of these plans?
4. Which departments are involved in the development of these plans (for urban cities)?
5. Is there a budget for the implementation of DRR plans?

6. What percentage of the total budget is allocated to DRR activities (provincial/district/city)?
7. Are there any non-governmental (business, civil society) streams of funding/support for DRR?
8. Do the budgets filter down to the local level and is there a delegation of authority to the local level?
9. How is community participation ensured (if at all) in DRR activities/these plans?
Priority for action 2: Identify, assess and monitor disaster risks and enhance early warning
10. Are risk assessments conducted?

11. What sector(s) is assessed during these risk assessments?
12. If yes, who conducts them?
13. Are these risk assessments used to inform plans and policies?
14. What sources of information are used?

15. Based on these risk assessments, are areas prioritized for interventions according to their vulnerability? On what basis are these areas prioritized?
16. Do the disaster management plans, if any, include communication and dissemination plans?
17. How is the authenticity of data collected verified?
18. Does an early warning system exist?
19. What hazards does it cover?

20. How is it disseminated to the communities?
Priority for action 3: Use knowledge, innovation and education to build a culture of safety and resilience at all levels
21. How do citizens know about disaster related information (dangers associated with various disasters, their frequency etc)?
22. Is there an information sharing mechanism between departments about disasters?
23. Is there a central repository of information relating to potential hazards that is easily accessible?

24. Have DRR concerns been integrated into school curricula?
25. If not, are there any plans to do so?
26. Are we conducting multi-risk assessments?
27. Are there tools to do so?
28. How often are these assessments carried out?

29. What steps have been taken to sensitize citizens regarding disaster resilience?

30. Have any campaigns for promoting public awareness of potential disasters been carried out?

Priority for action 4: Reduce the underlying risk factors

31. Do environment policies and plans take into account DRR?

32. Are DRR concerns linked to climate change? Have we tried to look at DRR through the lens of climate change impacts?

33. Do the EIA checklists specifically list DRR considerations?

34. Do development policies and plans take into account vulnerability to disaster of their target areas?

35. Is there a specific focus for the poorest sections of the population in terms of their vulnerability to disaster?

36. What specific DRR/DRM measures are taken for planning and management of human settlements?

37. Are there any building codes against earthquakes and floods/other disasters?

Priority for action 5: Strengthen disaster preparedness for effective response at all levels

38. Are post disaster developments inclusive of prospective DRM elements?

39. Are gender considerations taken into account during relief and recovery phase?

11.3 Annex 3: Information Checklist for Cities

Hazard Mapping, Risk Assessments and DRR-M Planning

1. What important hazards does the city face?
2. Has a multiple hazard mapping been carried out?
3. Has there been a multiple risk assessment (MRA) for the city? If it is only for a single hazard, which one is it for?
4. Has this risk assessment been fed into a DRR/M Plan? So is there a DRR/M plan for the city?
5. What was the process followed in chalking out this Plan? *(Needs explanation)*
6. Which agencies and institutions were consulted to make this Plan?
7. Have CSOs and community representatives also involved in this process? If not, how is it communicated to them ? *(please don't confuse it with an early warning system)*
8. How is this Plan funded? Are there specific budget allocations?
9. What percentage of the city/district budget is allocated to the Plan?
10. What's the frequency of risk assessments?

Some Longer Term Issues in Disaster Reduction and Management

11. Are there zoning laws for the city?
12. To what level (of effectiveness) are they enforced? *(Needs explanation)*
13. Which agency oversees the compliance of these laws?
14. Are there building codes, and if so, for what disasters? (like earthquake, fire, flood, storm etc.)
15. If so, how effectively are they enforced? *(Needs explanation)*
16. Does the city have a drainage system?
17. Are there storm drains for flooding and heavy rainfall emergencies?
18. What if any measures are there to handle epidemics?
19. Are there any measures in place for food and water security in case of extended droughts, disruption of food or water supplies?
20. What kind of fire safety system exists for the city?
21. Are there any special measures to handle large scale casualties, say from accidents and terrorist attacks?
22. Are there areas in the city that are especially vulnerable to disasters? *(Needs explanation – what kind of areas and to what hazards, are they inhabited by lower income groups etc.?)*
23. Is there a specific focus for the poorest sections of the population in terms of their vulnerability to disaster?
24. Are DRR concerns linked to climate change? Has there been an attempt to look at DRR through the lens of climate change impacts?
25. What specific DRR/DRM measures are taken for planning and management of human settlements?

26. Is there a development plan for the city? If so, what's the time period (for the plan)?
27. Does the development plan have a DRR/M component?
28. If so, have projects been conceived under it or budget allocated?
29. What percentage of the total budget does the above cover?

Early Warning and Disaster Preparation

30. Is there an early warning system against disasters – more specifically for floods, cyclones, high velocity winds and other disruptive weather patterns?
31. How does it – the early warning system – work? *(systems, procedures etc.)*
32. Have children or school students been sensitized against potential hazards?
33. Have there been drills for disaster preparation and evacuation, especially in schools?

Post Disaster Rescue, Relief, Recovery and Reconstruction

34. Are post disaster developments inclusive of prospective DRM elements?

35. Are gender considerations taken into account during relief and recovery phase? *(needs some explanation)*

[i] **In the context of Pakistan 'local' encapsulates district and sub-district (tehsil and union council) levels**