



Current capacities, preparedness and needs of local institutions in dealing with disaster risk reduction in Khyber Pakhtunkhwa, Pakistan



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ABSTRACT

Local institutions could play an essential role in providing first-hand rescue and support to communities in reducing the impacts and vulnerability to natural disasters such as floods. Keeping in view the importance of local institutions, Pakistan has established disaster management authorities at a national and provincial level to collaborate with local institutions in dealing with natural disasters. However, little is known about the current level of preparedness and capacity of local institutions and capacity building gaps in managing disasters at the local scale. In order to fill this gap, this study conducted 40 key informants from 19 institutions working at local level to identify the current capacities, preparedness, and gaps in disaster management cycle of local institutions in Khyber Pakhtunkhwa province, Pakistan using five indicators of disaster preparedness pillar. The descriptive study statistics are used to explore the study objectives. The study findings revealed that the majority of the local institutions were underprepared in terms of awareness and training, human resources, financial resources, infrastructure and equipment, and coordination. The results further indicated that the existing preparedness capacity gaps could be bridged through capacity building training, technical support and financial capacity and infrastructure building. Additionally, to achieve a higher level of disaster preparedness, the government should establish direct linkages among all institutions which are actively involved and engaged in DRR/DRM especially local institutions. Thus it is very important for local institutions to adopt a proactive approach and engage in preparedness activities and strengthen the existing governance system to manage disaster risks in Pakistan and policymakers should focus more on addressing challenges that could restrict effective preparedness to deal with disaster risks through relevant policy mechanism and consult with all other stakeholders been involved.

1. Introduction

Every year more than 700 natural disasters occur across the globe affecting human lives, disrupting communities and their livelihoods. Particularly, the developing countries are highly vulnerable to natural disasters due to their low adaptive capacity and inadequate infrastructure to deal with these disasters [1]. For instance, the Asian countries are exposed to multiple natural hazards ranging from intense tropical cyclones and tsunamis in parts of China, Vietnam, and the

Philippine, to floods and earthquakes and landslides in Bangladesh, Nepal, India, and Pakistan. Earthquake (2005) and super-flood (2010) in Pakistan, tsunami (2011) in Japan, Typhoon Haiyan (2013) in East Asian countries are some of the examples of natural hazards that hurt millions of people across Asia [2].

Pakistan, the focus of this study, is among one of the disaster-prone countries from natural hazards since last two decades [3–6], due to its geophysical location and climatic conditions [7]. The country is ranked 16th among 170 nations based on climate change vulnerability index

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[8] and ranked 7th among 180 nations based on Global Climate Risk Index [9]. Flood is one of the disasters that frequently occur in Pakistan mainly in monsoon season in the downstream Indus river basin and lead to severe losses in term of human lives and damages to infrastructure and agriculture [3,10]. Flood in 2010 was the worst flood in the country's history, that affected 24 million people, damaged more than 2 million hectares of standing crops and caused a total economic loss of 10 billion US dollars [3–5,11]. The sensitivity of the population to flood is due to limited resources, low adaptive capacity and inadequate institutional arrangements at national as well as at the provincial level [40].

Many disasters occurred as a result of human mismanagement and exploitation [12] and required more efforts to deal with it. Apart from the type of disaster risks, preparedness is obligatory to reduce the negative impacts in the shape of injuries, property damage and other losses [13]. In recognition of devastating disaster impacts, the importance of disaster risk reduction is widely acknowledged by the researchers and policymakers [14]. They further stressed upon interdisciplinary approaches which are essential in resourcing proper risk reduction efforts [15]. In disaster situations, local institutions are the first responder and responsible for ensuring effective, sustainable disaster risk reduction measures [16]. Thus the role of local institutions is very crucial to integrate the disaster preparedness into their scope of activities as the local institutions are in a better position to deliver services [17].

Role of government and public institutions is crucial to reduce the damages due to natural disasters. Through proper planning and institution and providing adequate infrastructure and resources, the adaptive capacity of local communities to natural disasters could be enhanced. Keeping in view the important of local institutions, Government of Pakistan has established National Disaster Management Authority (NDMA) at national level followed by Provincial Disaster Management Authorities (PDMA) at the provincial level and District Disaster Management Authorities (DDMA) at the district level to deal with various kinds of natural disasters including floods [41]. Further, there are many other local public institutions such as health, planning and development, social welfare that are equally important in dealing (directly or indirectly) with natural disasters. The local institutions that are already active at the local level may support NDMA and PDMA in implementing their disaster management and recovery plans. However, before that, it is highly important to understand the current level of institutional and infrastructure capacity and preparedness of PDMA and other local institutions [41]. Since the disaster preparedness involves the proactive actions taken to get better recovery. A higher level of preparedness will lead to more appropriate responses [18]. Therefore it is imperative to identify the current capacities, challenges and do more researches on how these disaster management institutions can be more empowered and effective governance can be built and ensured at the local level to deal with disaster risks effectively.

To design effective DRR policies, it is essential to understand the gaps in an existing system including their priority needs. It is evident from the disaster management literature that the local government plays an essential role in introducing, managing and implementation of different disaster management initiatives [19,20]. The majority of the empirical studies focused on individual or community level preparedness [13] however the role of local institutions in dealing with disaster management initiatives are still understudied in the developing countries [21]. Such studies are very important to examine the preparedness level role of local institutions in dealing with disaster risks, and findings can be used further used to design policies that strategically target the specific local disaster management institutions.

Keeping view the research gap, this study is intended to highlight the potential gaps and formulate strategies to enhance the effectiveness of DRR in Pakistan. Specifically, this study has two objectives; 1) to assess the current preparedness level of the local institutions by using five preparedness indicators, i.e., awareness and training, human

resources, financial resources, financial resources, infrastructure and equipment, and coordination; and 2) to identify the capacity building needs of the local institutions to bridge the observed gaps.

2. Research methodology

2.1. Study area

The study was conducted in the Khyber Pakhtunkhwa (KP) province to assess the preparedness level of the local institutions in dealing with disaster management and identify the priority needs to bridge the capacity gaps. The KP province is one of the densely populated regions with a total population around 15 million covering 10.17 million hectares. The province is vulnerable to different climate induced disasters which includes floods, cyclones, and excessive heavy rains. The province alone experienced eight disastrous floods in more than two decades, of which flood in 2010 was the unforgettable and most disastrous affected 24 out of 25 districts in the whole province [3,4]. It is pertinent to mention that households who have better access to livelihood assets such as land, equipments, house are better off in dealing with disaster risks compared with the one who do not [22]. In the KP province, agriculture is the primary source of livelihood for the rural mass covering 41% of the total farming area compared with the 60% across the whole country [42,43]. Furthermore, the majority of the agricultural lands are dependent on excessive rainfall, and water scarcity is recorded high in the past few decades. With regards to institutional support, it is important to highlight that the majority of the institutions who were involved in disaster management activities had received financial support (aid) from the national and international actors (Non-governmental organizations) to support communities with hydrological disaster (e.g., flood). Unfortunately, the focus on most of these institutions remains on emergency response paradigm (ERP) instead of mitigation efforts. It implies that mostly these organizations were active only at the time of disaster and do not play any role in supporting or enhancing communities' adaptive capacity to deal with these disasters [23]. Studying the preparedness level of the disaster management institutions can reveal the preparedness capacity gaps in the existing institutional setup that can be relevant and useful to increase the resilience in response to disaster risks. Based on the extensive literature review and empirical studies on disaster management and preparedness, this study has chosen five preparedness pillars (Table 2) and analyzed the pattern of inter relationship of institutions in disaster risk management.

2.2. Data collection

The primary data collection was done between May to August 2016. This study used a multi stage sampling technique to select respondents from local institutions. In the first stage, KP province was selected purposely. In the second stage, sorting and finalization of the local institutions was done in consultation with director KP-PDMA and in this stage total of 19 institutions were finalized that are already working with PDMA or have potential to collaborate in disaster risk reduction action plans. In the third stage, each institutions is contacted for the allocation and availability of relevant key informants nominated by the head of the institution for the interviews. In the fourth and last stage, about 40 face to face interviews were conducted by visiting all the institutions one by one. A primary survey questionnaire was used to collect information on the selected preparedness indicators i.e. information on awareness and training; human resources; financial resources; infrastructure and equipment; and coordination. Table 1 provides the list of relevant institutions along with their level and areas of functioning, gender, age, education and number of key informant interviews conducted within respective institutions

Table 1
Institutions mapping, their services and characteristics of the key informants¹.

Institutions	Services	Gender	Age	Education	Designation	KI
Provincial Disaster Management Authority	Advisory role in mitigation, preparedness, and response; Formulation of DRM policies and plans	Male	48	Masters	Deputy Director	01
		Male	44	Masters	Asst. Director	01
		Male	40	Masters	Asst. Director	01
		Female	39	Masters	Deputy Director	01
Planning & Development	Strategic planning and development plans, socio-economic impacts analysis, monitoring and evaluation of development schemes	Male	49	M.Phil	Deputy Director	01
		Male	44	Masters	Deputy Director	01
Finance Department	Resource management, financial regulations, and administration of treasuries	Male	52	Masters	Deputy Director	01
		Male	55	Masters	Deputy Director	01
Social Welfare	Voluntary efforts, safety nets, resource mobilization, rehabilitation of vulnerable groups, social awareness, relief work and poverty alleviation	Female	37	M.Phil	Deputy Director	01
Public Health Engineering Department	Provision of clean drinking water, sewerage system, testing, and research hygiene related schemes	Male	33	Masters	Master Trainer	01
		Male	50	Masters	Executive Engineer	01
Education Directorate	Education reforms	Male	52	Masters	Sub Divisional Officer	01
		Male	35	PhD	Asst. Director	01
Civil Defense	Emergency services, civilian support during natural and human-induced disasters, First-aid services maintain and uplift standard of morale	Female	33	M.Phil	Deputy Director	01
		Male	35	Masters	Deputy. Director	01
Irrigation	Irrigation water services	Male	28	Bachelors	Instructor	01
		FEMALE	37	Masters	Asst. Director	01
Agriculture	Land leveling, soil and water conservation and water resource development	Male	35	Masters	Asst. Director	01
		Female	34	M.Phil	Deputy Director	01
Soil Conservation	Conservation of agricultural lands through inlet and outlet structures	Male	38	PhD	Deputy Director	01
		Male	33	Bachelors	Inspector	01
Communications and Works Department	Construction and development work	Male	30	Masters	Inspector	01
		FEMALE	28	M.Phil	Deputy Director	01
Urban Policy Unit	Urban DRR and policies	Male	32	Masters	Deputy Director	01
		Male	41	Masters	Director	01
Rescue 1122	Emergency services, Relief work	Male	37	Masters	Deputy Director	01
		Male	35	Masters	Asst. Director	01
Meteorological Department	Meteorological information, Early warning	Male	27	Bachelors	Instructor	01
		Male	52	Masters	Asst. Director	01
Special Development Unit	Development Projects	Male	48	PhD	Senior Meteorologist	01
		Male	39	Masters	Director	01
Local Government-WSSP	Public services delivery	FEMALE	35	Masters	Program officer	01
		Male	33	PhD	Manager	01
Peshawar Development Authority	Planning and designing, infrastructure development	FEMALE	25	Bachelors	Officer	01
		Male	55	Masters	Director	01
District Authorities-DDMA/AC	Policy advice, preparedness, city planning, Formulation of DRM policies and plans for natural hazards at the district level	Male	52	Masters	Deputy Director	01
		Male	38	Masters	Deputy Director	01
Town Municipal Administration	Water supply and Sanitation services	Male	41	Masters	Asst. Director	01
		Male	38	Masters	Deputy Director	01
Total sample		Male	35	Masters	Tehsil Municipal Officer	01

2.3. Data analysis

Collected data was analyzed to assess the preparedness level of local institutions to deal with flood and other disasters. Based on the literature review as presented in Table 2, this study used five key indicators to assess the preparedness level of the local institutions in dealing with flood disasters. These indicators include awareness and training, human resources, financial resources, Infrastructure and equipment and coordination. To assess each key indicator, different sub-indicators are assessed using key-informant survey. Afterwards, descriptive statistics, and cross-tabulations are used to explore the study findings.

3. Results

It is pertinent to understand the disaster capacity development process through which an individual, institution and local communities put their efforts to obtain, and strengthen their capabilities to achieve their set goals by using administrative directives to implement certain measures or strategies, relevant policies, and adaptive capacities to deal with the negative impacts of catastrophic disasters. The main purpose of disaster preparedness is to strengthen the efforts, competencies, and skills that could be derived from the DRR efforts.¹ To address the three

research questions, the study results are presented (Table 3) under the following themes: 1) awareness and training; 2) Human resources; 3) Financial resources; 4) Infrastructure and equipment; and 5) Coordination.

3.1. Awareness and training

Our study findings revealed that preparedness level of the disaster management institution in terms of awareness and training varied enormously in the Khyber Pakhtunkhwa province. Overall, 90% of the total key informants had knowledge regarding natural disasters, Further, they were aware of the types of disasters which includes floods, land degradation/erosion, landslides, and earthquake. The key informants further revealed the different types of risks associated with natural disasters in shape of human losses and injuries, economic losses through damage to livestock, crops and assets and physiological disorders including stress and depression mainly associated with human and financial losses. In order to get responses on key information sources, the majority of the key informants reported internet (66% average response), electronic media (58%), Friends/ colleagues and co-workers (42%) and print media (40%) as the key information source of their information and knowledge on disaster and its types. Other indicators related to training showed that 60% of the total key informants had attended Disaster Risk Reduction and Management related training in the last five years, and the majority (78% on average) of the key

¹ <https://www.preparecenter.org/topics/capacity-building-disaster-risk-management>

Table 2
Preparedness of the Disaster Management institutions in KP province, Pakistan.

S.No	Preparedness Indicators	Sub Indicators	Sources
1	Awareness and training	<ul style="list-style-type: none"> ● Knowledge regarding natural disasters ● Risks associated with disasters ● Type of disasters ● Sources of information regarding disasters ● DRR/DRM related training attended in last 5 years ● Staff trained on DRR/DRM 	<p>[24,25] [24,26] [24] [46] [45,46] [27]</p>
2	Human resource	<ul style="list-style-type: none"> ● Staff available to cater DRR/DRM 	[25,28]
3	Financial resources	<ul style="list-style-type: none"> ● Funds allocated for capacity building under DRR/DRM 	[29–31]
4	Infrastructure and equipment	<ul style="list-style-type: none"> ● Availability of DRR/DRM tools ● Identification of safe place for IDPs ● Contingency plan 	<p>[46] [16,32–36]</p>
5	Coordination	<ul style="list-style-type: none"> ● Coordination mechanism 	[29,30,37,38]

Table 3
Average response on Preparedness pillars by the key informants.
Sources: Field survey, 2016

S.No	Preparedness Pillars	Indicators	Average response
1	Awareness and Training	Knowledge regarding natural disasters DRR related training attended in last 5 years Sources of information regarding disasters	90% 60% 66% (internet) 58% (electronic media) 42% (Friends/ colleagues and co-workers) 40% (print media)
2	Human resources	Staff trained on DRR/DRM	22%
3	Financial resources	Staff available for DRR/DRM	22%
4	Infrastructure and equipment	DRR/DRM funds available	5%
		DRR/DRM tools at the office	27%
		Safe place identify for IDPs	45%
		Contingency plan	40%
5	Coordination	Coordination mechanism	83%

informants reported that their staff members were not trained on Disaster Risk Reduction/Management.

3.2. Human resources

The second indicator for assessing preparedness level of the disaster management institutions involves relevant staff available in the respective institutions to deal with Disaster Risk Reduction. It is worth mentioning here that human resources in general and expert and trained personnel in particular play a crucial role during and after the disaster. The survey findings revealed that the majority (78% on average) of the key informants reported that their respective institutions were lacking staff available for Disaster Risk Reduction.

3.3. Financial resources

The third indicator used in the current study to assess the preparedness level of the disaster management institutions in the KP province was the availability of financial resources which is an important attribute to know the financial capacity of the Disaster Risk Reduction and management institutions. The study findings revealed the fact that majority (95% on average) of the key informants from the sampled institutions had not received any financial assistance from the government specified for Disaster Risk Reduction and Management which is an alarming sign and required more attention.

3.4. Infrastructure and equipment

The fourth indicator used in the current study is infrastructure and equipment which play a crucial role in assessing the preparedness level of the disaster management institutions. Under this indicator, the questions were asked regarding equipment or tools available for DRR,

identification of appropriate places for internally displaced persons (IDPs) and departmental contingency plan. The findings of this study revealed that 73% (on average response) of the sample key informants reported that their respective institutions didn't have any emergency toolkits such as food, water, first aid kits, sanitation and personal hygiene items, tools or supplies to secure houses and medication supplies etc, 55% (on average) reported that their respective department did not identify an appropriate safe place for the IDPs settlement, and 60% of the total key informants reported that their respective institutions lacked contingency plan to deal with disaster risks.

3.5. Coordination

The last indicator used in the current study to assess the preparedness level of the disaster management institutions is coordination which is an important attribute and needs more efforts to strengthen in response to disaster risks at different levels. The key informants were asked whether their respective institutions had coordination mechanism or not. The study findings revealed that 83% (on average) of the total key informants reported that their institutions had an effective coordination mechanism for effective rescue and relief operations during and after the disaster situation.

4. Discussion

In order to assess the preparedness level of the institutions involved in DRR/DRM, awareness and training are an important attribute to deal with disaster risks and their management in order to fully utilize the institutional resources to support disaster risk management plans aiming to reduce adverse impacts of disasters on humans and their livelihoods [44]. Under awareness and training indicators, the key informants were asked the key questions related to disasters, its types,

risks, and information sources. The majority of the key informants identified floods, landslides, land degradation, drought and extreme weather conditions as key natural disasters in the province. Further, they sampled key informants reported that risks associated with natural disasters including human losses and injuries, economic losses through damage to livestock, crops and assets and physiological disorders including stress and depression mainly associated with human and financial losses.

The study results highlighted that internet, electronic media, social circle including friends and relatives and print media were the main information source disseminating knowledge regarding disasters, its types, and risk associated. Analysis of the awareness and training preparedness indicators used in this study also shows that the key informants who reported that they didn't receive any DRR/DRM training in the last five years were from Education, Planning and Development, Peshawar Development Authority, Irrigation, and Special Development Unit. While the key informants from Provincial Disaster Management Authority, Rescue 1122, Public Health and Engineering Department, Water and Sanitation Services Peshawar, Meteorology, Communications and Works, Soil Conservation, Social Welfare, and District Disaster Management Authority had received capacity building training on different themes related to DRR/DRM. This implies that those institution staffs that were not capacitate on DRR/DRM in the last five years were either not involved directly nor might not consider relevant by offering capacity building programs on DRR/DRM.

Further, the key informant reported that majority of the staff in their respective institutions were not trained on DRR/DRM. In addition, the staffs lacked the capacity to serve vulnerable communities during and after disasters while a low percentage of the key informants were satisfied with the training attended by their respective staffs and their level of preparedness to deal with disaster risks. Experience is an important attribute to which actors and entities operate in a timely manner and adapt the preventive measures to their particular context based on their professional experience. This implies that staff with a better experience in planning and response will deal more effectively with disaster risks by reviewing the context of appropriate measures, best practices, lesson learned, avoid duplication of efforts and implement policies and activities that suits the local context compared with the one with no relevant professional experience in such fields Further, relevant capacity building training in the field of DRR/DRM is another crucial aspect of disaster preparedness.

The role of disaster management training is to build the capacity of the relief workers, and the local institution's staff at all levels before and thereafter the catastrophes [27]. Apart from the lack of management support, there are many factors which lead to failure of training. For instance, irrelevant and improper training conducted and who is supposed to be involved [39]. This implies that the training needs assessment is very crucial before conducting any capacity building training for the disaster management staff. Thus, it is pertinent to capacitate those who are engaged or implement preparedness plan and those who are responsible for carrying rescue and relief operation [27]. This will help institutions to overcome critical challenges in the form of well trained human resources. The analysis second preparedness indicator i.e. human resources findings show that human resources involve the process of equipping individuals or groups with the clear understanding of skills, knowledge, access to information and training that allows them to perform efficiently during and after the flood disaster.

The majority of the key informants reported that their respective institutions including Social Welfare, Irrigation, Finance, Communications and Works, Agriculture, Meteorology, Special Development Unit and Peshawar development Authority, lacked specialized staff in Disaster Risk Reduction and Management, while few other institutions include the Provincial Disaster Management Authority, Education Directorate, Rescue 1122, Water and Sanitation Services Peshawar, and Tehsil Municipal Authority had sufficient trained human resources equipped with Disaster Risk Reduction and

Management knowledge. In agreement with our study results, Islam [28] reported that proactive disaster risk reduction efforts requires more time and human resources for integration of disaster risk management (flood) and advises the vulnerable inhabitants in flood prone areas before, during and after any disaster to lessen the losses and property damages [45].

Disaster preparedness requires sufficient funds allocation under different heads and these funds are important to strengthen the capacity of the local disaster management institutions as they prepare, mitigate, and respond to the dire needs of the inhabitants during and after the disaster [24]. Lack of financial resources in disaster risk management is often quoted as an excuse. The majority of the key informants revealed the fact that institutions including Peshawar Development Authority, Finance, Communications and Works, Planning and Development, Rescue 1122, Water and Sanitation Services Peshawar, Tehsil Municipal Authority, Special Development Unit, Soil Conservation, Agriculture, Irrigation, Civil Defense, and Public Health and Engineering Department lacked funds for Disaster Risk Reduction and Management. Only two institutions including the Provincial Disaster Management Authority and Social Welfare had annual funds to pursue activities through their contingency budget lines. However, the allocated budget is only sufficient for small-scale activities and might not be able to meet the requirements at a large level during the time of disaster. In line with our study findings, Jackson [31] reported that it is essential to develop efficient and innovative financial strategies to support the local institutions and partnerships through direct access of the DRM funds available at the local level to deal with disaster risks.

The analysis of infrastructure and equipment is another important factor in assessing the preparedness of Disaster Management institutions. Under this (Infrastructure and equipments) preparedness indicators, the key informants reported that more than three-fourth percentage of the total key informants belonging to Finance, Social Welfare, Public Health Engineering Department, Irrigation, Agriculture, Soil Conservation, Communication and Works, Meteorology, Special Development Unit, Peshawar Development Authority, and Tehsil Municipal Authority institutions lacked emergency toolkits such as food, water, first aid kits, sanitation and personal hygiene items, tools or supplies to secure houses and medication supplies etc. On the other hand, key informants from Provincial Disaster Management Authority, Planning and Development, Education Directorate, Civil Defense, Rescue 1122, Water and Sanitation Services Peshawar, and District Disaster Management Authority were equipped with DRR/DRM tools to safeguard the people lives and property during and after disaster but still room is available for the further improvement and needs to strengthen further.

Similarly, identification of the safe places for the resettlement of IDPs is another important attribute of infrastructure and equipment preparedness indicator which needs more attention and resources. It is essential for the disaster management institutions to identify safe places which are away from disaster risk sources. Also, such institutions should provide and maintain the basic life necessities especially for the women, children and elderly people. The majority of the key informants reported that their respective institutions did not identify an appropriate safe place for the IDPs settlement due to the fact that it does not come under their institutional scope of work. Secondly, institutions lacked adequate funds to establish and maintained such IDPs camps with the provision of all necessary facilities like food, shelter, water, health, and education.

Contingency planning is another important attribute of infrastructure and equipment preparedness indicator used in this study. Contingency planning is a management tool to identify the problems and take proactive actions during humanitarian crises as a result of catastrophes [16]. It is important to mention here that contingency planning leads the local institutions to track the actual needs and available resources (human and material) that could be required immediately in a disaster situation. For example availability of medicines,

clean drinking water, food, emergency shelter, and other essential resources which play a crucial role in rescue and search etc., that required immediate deployment in any emergency situation [16]. Almost half of the total key informants from the sample institutions didn't have a contingency plan to deal with uncertainties. These institutions were from Social Welfare, Civil Defense, Irrigation, Public Health Engineering Department, Education, Soil Conservation, Meteorology, and Peshawar Development Authority. Only few institutions such as Provincial Disaster Management Authority, Planning and Development, Finance, Agriculture, Communications and Works, Rescue 1122, SDU, Water and Sanitation Services Peshawar, District Disaster Management Authority, and Tehsil Municipal Authority had specified departmental contingency plan for emergency preparedness or response, but key informants complained that majority of the institutions staffs might not aware of such plans and hence. In line with our findings of a contingency plan, Alexander [34] reported an emergency plan as a set of coordinated protocols dealing with catastrophic events whether expected or unpleasant, in the future. Further, Alexander [35] was of the view that every emergency is unique in nature but the provision of favorable and common ground between them will make it easier predictions, early warning, forecasting, and planning. Therefore, it is important to put more emphasis on emergency preparedness, and efficient planning process to handle, overcome, and recover from catastrophic emergencies.

The last and the fifth preparedness indicator for disaster management institutions preparedness concerns coordination. The effective coordination mechanism is important in all sectors of life, especially during and after the emergency when different Non-Governmental (NGOs) and Governmental institutions carried out their relief activities for the affected people. The findings of this study revealed the fact that majority of the disaster management institutions had a coordination mechanism within and outside the institutions for effective rescue and relief operations. However, only 13% of the total key informants from Social Welfare, Education Directorate, Civil Defense, and Meteorology didn't have an effective coordination mechanism due to lack of interest towards Disaster Risk Reduction and Management measures. In the current scenario, Disaster Risk Management does not seem effective in the current setup due to lack of power given under the current Khyber Pakhtunkhwa province government setup. Hence, one could say that a number of missing links and weak interaction is persistent in a current institutional setup where only a few are actively engaged or involved and the rest are silent or not playing their role in DRM due to lack of information or resources

5. Capacity building needs of the local institutions

We have asked the key informants to identify or rank different capacity building needs to bridge the preparedness capacity gaps at the institutional level. After consultation with key informants, the prominent needs were identified to consider enhancing the institutional preparedness in dealing with Disaster Risk Reduction and Management. Such capacity building needs are briefly explained below;

5.1. Capacity building training

The first priority area that needs focus in capacity building training that was the weakest component in most of the Disaster Risk Management institutions at different scales. The future Disaster Risk Reduction and Management capacity building training are required to focus and bring a clear understanding of Disaster Risk Vulnerability, capacity; exposure to persons and property, hazard characteristics. This knowledge is beneficial for pre-disaster risk assessment, prevention, execution of preparedness for effective and timely response to disasters and mitigation. In order to achieve this at the local level, the authorities should work on some key priority areas in order to understand Disaster Risk Reduction and Management in the future for the relevant disaster

management authorities and institutions. In the case of a natural disaster, the local authorities' responsibility is to ensure proper data collection, analysis, and effective management and its timely dissemination, taking into account the needs, as appropriate. Similarly, the assessment of disaster risks vulnerability, hazard characteristics, exposure, capacity, and their possible negative effects experienced at the community level by strengthening baselines. Moreover, risk mapping is also an important tool and should be developed and disseminate periodically among different stakeholders (including decision makers at the national level, common people, and communities) by using geospatial technology to get authentic and updated information. Many efforts are required to create awareness and build the knowledge of disaster management institution officials, civic society, affected communities, and private sector through lessons learned, best practices, training to build their capacity on Disaster Risk Reduction and Management, and share experiences. Similarly, some more specific training conducted in the future to build and strengthen the technical and scientific capacity of the disaster management institutions. The existing knowledge should consolidate to evaluate disaster risks, vulnerabilities, and exposure to flood disaster. There should be proper training on how to incorporate disaster risk knowledge (prevention, mitigation, and preparedness), in education at all levels.

5.2. Technical support

The second most important component to enhance the preparedness capacity of the Disaster Management institutions reported by the respondents is the provision of technical support which includes disaster preparedness (management aspect only) including contingency and response plans, guidelines and putting in place a robust coordination mechanism. This could be achieved through the provision of an advanced level of technical support to the disaster management institution authorities and other government departments to develop required plans, guidelines, and strengthen a coordination platform. The Disaster Risk Governance plays an important role in effective and efficient management in combating disaster risks at the government and community level. It is true in the sense that within and across all sectors, clear plans, competence level, effective coordination, and ensure active participation of relevant stakeholders, are needed.

Further, it is necessary to foster collaboration and partnership across mechanisms and institutions for the implementation of instruments relevant to Disaster Risk Reduction and Management. These instruments need also be to develop to enhance the capacity building of relevant government departments and disaster management authorities. These strategies include mainstreaming and integrating Disaster Risk Reduction and Management within and across all sectors further development, local frameworks of laws, regulations, and public policies. However, Disaster Risk Reduction and Management strategies and plans should be developed and implemented on the basis of different timescales, targets, indicators for preventing the creation and reduction of existing risk due to natural disasters and emphasize to strengthen economic, social and environmental resilience. On one side, it encourages assigning the roles and responsibilities to community representatives within the institutional structure, process, and decision making development plans and laws to support their implementation. On the other side, it promotes strong coordination mechanism among different stakeholders at the gross root level such as local platforms for Disaster Risk Reduction and Management and an elected focal point for implementing Disaster Risk Reduction and Management framework.

5.3. Financial capacity and infrastructure building

The third most important priority area identified through key informant survey was to improve the financial capacity and infrastructure building of the Disaster Management institutions so that they may have enough resources and infrastructure to respond to natural disasters.

This could be done in an individual capacity or help mobilize resources from other humanitarian actors. However, for larger scale impact and replication humanitarian actors will need to advocate strongly with the authorities to allocate appropriate funding to the departments for Disaster Risk Reduction and Management related activities. In general, different Disaster Risk Reduction and Management measures such as Investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the resilience of persons, communities and their assets, as well as the environment and are cost-effective and instrumental to save lives, prevent and reduce losses and ensure effective recovery and rehabilitation. It is necessary to allocate resources such as finance as appropriate, Disaster Risk Reduction and Management strategies, policies and laws in all relevant sectors. Secondly, the disaster resilience should promote the adoption of structural, non-structural measures, and integration of disaster risk assessment into land use planning through urban planning, guidelines, and follow-up tools, and land degradation assessments. However, mainstreaming of disasters risk mapping and management into the advanced level planning of areas which is prone to flood disasters through identification of safe places for human settlement. Building codes, standards, rehabilitation, and reconstruction at the gross root level making more applicable through appropriate approaches.

6. Conclusion and policy implication

The primary focus of this research is to provide an overview of the existing situation of the current capacities and priority needs of the local institutions in DRR. The study assessed the preparedness level of the local institutions by using five main preparedness pillars, which are further analyzed on the basis of selected indicators used under each preparedness pillar. The study results are evident of different gaps at the institutional level in understanding and implementing DRR approaches at the local level. Overall majority of the local institutions were underprepared to deal with disaster risks in the KP province. The findings exposed some important areas under awareness and training preparedness pillar which were quite high including knowledge regarding natural disasters and sources of information, but some of which the majority of the local institutions were underprepared i.e., staff trained on DRR/DRM. It is pertinent to mention that availability of specialized staff on DRR/DRM plays an important role during and after the disaster. In this case, a significant improvement is required to strengthen human resources by having designated staff that have expertise in the field of DRR/DRM. Preparedness pillar such as financial resources were found below the average as majority of the sample respondents stated that there is no specific fund available under DRR/DRM, which showed the dire need to provide enough funds at the institution level to deal with disaster emergencies. Further, all the respective line government departments dealing with DRR should identify appropriate places which are away from the flood-prone areas such as government school buildings, hospitals, IDPs camps, empty buildings, etc. and should mark clearly to meet the urgent needs of most vulnerable people (infants, women, disabled people and the elderly). Another important thing which requires attention that lack of exit strategy in planning may force people to rely on humanitarian aids for their survival instead of dealing with their vulnerabilities.

The highest response on coordination preparedness pillar showed majority of the local institutions had strong coordination mechanism in place in at the institutional level in order to coordinate rescue and relief services during and after the disaster. This study identified capacity building needs of the local institutions in dealing with DRR/DRM and could be bridge the preparedness capacity gaps through capacity building training, technical support and financial capacity and infrastructure building. In summary, this study emphasized to strengthen the preparedness level of the local institutions in dealing with DRR/DRM in the KP province of Pakistan. To achieve a higher level of disaster preparedness, the government should establish direct linkages among all

the institutions which are actively involved and engaged in DRR/DRM especially local institutions. Thus it is very important for the local institutions to adopt proactive approach and engage in preparedness activities and strengthen the existing governance system to manage disaster risks in Pakistan and policy makers should focus more on addressing main challenges that could restrict effective preparedness to deal with disaster risks through relevant policy mechanism and consult with all other stakeholders been involved.

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