Analysis of Susceptibilities, Capacities of Local Communities, Disaster Management Structures, Policies and Institutions in Pakistan: A case of Azad Jammu and Kashmir (AJK)

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ARTICLE DETAILS

ABSTRACT

Azad Jammu and Kashmir is among the major disaster-prone areas of Pakistan. Disasters largely affect people resulting in loss of economy. Therefore, disaster risk reduction mechanism at community level is essential to minimize damage. The objective of this paper is two folds. Firstly, it analyzes the institutional framework in Pakistan for disaster management and specific disaster management policies. Secondly, this paper was designed to develop an in-depth understanding of the key challenges that the communities of Azad Jammu & Kashmir, Pakistan face in the wake of constantly reoccurring disasters. This paper is based on field visits. House-hold surveys, observations, key informant interviews and group discussions were conducted to analyze the preparedness, both at community and organizational levels. The findings point out that disaster management policies and mechanisms regarding preparedness are not implemented by both federal and state authorities at local level. Further, the local communities of AJK, Pakistan are susceptible to different kind of hazards related to disasters. The paper reveals that available federal/state mechanism of disasters do not meet the needs of community. All of the stakeholders that include federal government institutions, state government institutions and local communities are not prepared. Thus, communities are continuously getting affected by natural disasters. The paper suggests that there is a dire need to improve the coordination between state and national agencies. Further, there is need to enhance community preparedness specifically in AJK, Pakistan to upgrade community’s defensive and awareness mechanism to safeguard citizens’ lives in response to seismic emergency.

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1. Introduction
Disaster is the adverse event that causes damages to humans, plants and animals (Gilbert, 1995). Disasters happen indiscriminately, rapidly and instantaneously. Disasters can both be man induced and natural. These events usually exceed bearable magnitude that results in loss of lives, properties and wealth resulting in paralyzing the life (Quarantelli, 2005). Disaster is defined as the grave disruptions of the functioning of communities triggering widespread environmental, economic, material and human fatalities. The disasters happen from the amalgamation of vulnerabilities, inadequate capacities and hazards. The disasters occur when hazards impact the vulnerable population resulting into disruption, causalities and damage. Pakistan is facing many hydro metrolological disasters reason being climate change and other environmental factors. The Hyogo Framework for Action (HFA) provided an opportunity to promote strategic and systematic approach to reducing vulnerabilities, susceptibilities and risks. Apart from innovation and education, the HFA states that all countries must use knowledge to build a culture of safety and resilience at all levels. Disaster management relies on communities’ knowledge or local population as they are the first available sources to tackle with disaster (Paton, 2007). Involving local communities in risk reduction or disaster management activities cannot be implemented easily in most countries (Hosseini et al; 2014). Many interventions by the authorities ignore local inputs in reducing vulnerabilities (Mercer, 2010). This widespread lack of coordination in community-based disaster risk management is mentioned throughout the literature as a source of failure in disaster management (Combaz, 2013). For Pakistan, enhancing local knowledge is crucial because of existing gaps in the disaster agencies response to the sudden onset of floods (Deen, 2015). This paper was designed to develop an in-depth understanding of the key challenges that the communities of Azad Jammu & Kashmir, Pakistan face in the wake of constantly reoccurring disasters. Further this paper explores the reasons behind these challenges, existing coping mechanisms and particular needs that can be identified for further external support through different organizations. The next section explains the phenomenon of natural hazards in Pakistan.

2. Literature Review
2.1 Natural Hazards in Pakistan
Pakistan is situated in hazard prone region of the world. Different disasters such as epidemics, tsunamis, landslides, droughts, glacier outbursts, floods, earthquakes and cyclones occur in Pakistan. Since 1954, Pakistan has suffered mostly from floods followed by earthquakes and storms (NDMA, 2007). The undermentioned Table gives an overview of the hazards in Pakistan.

Table 1: Major geophysical and hydro-meteorological hazards in Pakistan

| Hazard Type | Year       | No. of events | Persons killed | Affected People | Affected Villages | Damage in million rupees |
|-------------|------------|---------------|----------------|-----------------|-------------------|--------------------------|
| Earthquakes | 1990-6.1   | 1             | 15             | na              | na                | na                       |
|             | 2000-6     | 1             | 20             | 456             | na                | na                       |
|             | 2005-7.6   | 1             | 86,000         | 108,000+        | na                | na                       |
|             | 2008-6.4   | 1             | 166            | 68,200          | na                | na                       |
| Drought    | 1999-2001  | 1             | 143            | 2,200,000      | na                | na                       |
| Flood       | 1992       | 1             | 1,008          | na              | 13,207            | 69,580                   |
|             | 1995       | 1             | 391            | na              | 6,852             | 8,698                    |
|             | 2001       | 1             | 219            | na              | 50                | 450                      |
|             | 2003       | 1             | 484            | na              | 4,376             | 5,175                    |
|             | 2004       | 1             | 85             | na              | 47                | 15                       |
|             | 2005       | 1             | 39             | na              | 1,931             | na                       |
|             | 2006       | 1             | 541            | na              | 2,477             | na                       |
|             | 2007       | 1             | 386            | na              | 6,498             | na                       |
| Storms      | 1999       | 2             | 258            | 657,566         | na                | na                       |
|             | 2001       | 1             | 4              | 500             | na                | na                       |
|             | 2003       | 1             | 51             | 2,557           | na                | na                       |
|             | 2005       | 1             | 57             | na              | na                | na                       |

Note: na, data not available, Sources: Federal Flood Commission (2007), Haider (2006), CRED (2010),
How the Pakistan is responding to the natural hazards and if the communities have the ability to resist against the disaster management is still subject to a long debate. In this wake, next section will give an over-view of the institutional framework of disaster management in Pakistan to understand the disaster management policies in Pakistan till-date.

2.2 Institutional framework in Pakistan (For Disaster Management)
The Commission of National Disaster Management was established in Pakistan after the earthquake of Kashmir in 2005. The Commission is the apex and higher most decision-making body of Pakistan. Basically, NDMA was designed to act as central body to implement disaster strategies. Further, Provincial authorities had their own autonomous bodies for disaster management head by respective heads of provinces. Union councils and local governments are the lowest tiers. This third tier of government has the most important role to allocate the resources for the developmental work. They can play a vital role to advocate the needs and demands of communities from disaster risk reduction authorities and other related bodies. Up till 2014, Pakistan has faced the losses more than US$39bn only from floods (Guha-Sapir et al., 2015). Different disaster management policies, events and plans were discussed by Cheema et al (2016), Mustafa and Wrathall (2011) and Wescoat et al (2000). In addition to this, analysis of post 2005 policies on disaster show that the available approaches that are being implementing are based on short term relief and response efforts. There is very minute focus on capacity building, disaster preparedness and prevention. Legislative and regulatory gaps and weaknesses of disaster related institutions persist in term of mitigating susceptibilities and improvement livelihood (Deen, 2015; Fair et al., 2014). Keep in view these loopholes, this paper has assessed the impacts of natural disasters (flash floods, earthquakes) on vulnerable groups, especially local rural and urban communities by taking the case study of AJK, Pakistan. More specifically, this paper finds out the preparedness and adaptation approaches at the community and institutional level in rural and urban settings of AJK, Pakistan. In particular, the paper has analyzed vulnerability of local communities and the local institutions. Further, the government policies on Disaster Risk Reduction, laws and strategies on risk reduction, preparedness response and climate adaptation have been analyzed to understand where the gaps lie. The next section explains the research methodology of the paper.

Table 3: List of selected districts and union councils for the study

| Sr. No. | District          | Selected UCs             |
|---------|-------------------|--------------------------|
| 1       | Muzaffarabad      | Muzaffarabad UC + Town   |
|         |                   | HattianDupatta           |
|         |                   | Machiara                 |
| 2       | Hattian           | Leepa                    |
|         |                   | Chakhama                 |
|         |                   | Salmiah                  |
| 3       | Bagh              | UC Bagh plus Urban       |
|         |                   | Islam Nagar              |
|         |                   | Nar Sher Ali Khan        |
| 4       | Bhimber           | Patni                    |
|         |                   | Khamba                   |
|         |                   | DhandarKot               |
| 5       | Neelum            | KundalShahi              |
|         |                   | Gurez                    |
|         |                   | Dudhnail                 |

3.1 Data collection tools and application
Both qualitative and quantitative approaches were employed for data collection purposes of this study. First, a detailed questionnaire was prepared to carry out the quantitative household survey. In total, 450 households were interviewed for the purpose of this study. In order to triangulate the results, qualitative tools were applied to identify the themes, subthemes and nodes. Focus Group Discussions (FGDs) were carried out with different community groups such as teachers, shopkeepers, small traders, farmers, councilors and traders. A total of 12 FGDs
(6 each with male and female) were conducted, in 6 union councils of each of the 5 districts. In addition, 7 Key Informant Interviews (KIIs) were also conducted with district authorities, including the Local Government, municipality, health, agriculture, livestock, PHED and SDMA.

3.2 Fieldwork
Before heading out the field, a detailed assessment of the area was undertaken for the site selection, questionnaire preparation and the undertaking of existing institutional systems in place. Desk review of the following was carried out: National Disaster Risk Reduction (DRR) Policy, National Disaster Management Plan (NDMP), District Disaster Risk Management Plans, international Sendai Framework on Disaster Risk Reduction (SFDRR), assessment studies, baseline reports prepared by other agencies AJK. Following the desk review, the tools for data collection were developed. This included a high-quality questionnaire for the household survey and semi structured questions for the FGDs and the KIIs. Once a final draft of the tools was prepared, a round of pre-testing was carried out in the nearby communities of the 5 districts. This helped in removing any issues, and hence the questionnaire was finalized. Through the orientation, the enumerators were also taught the process of village selection and systematic random sampling for selecting household for each district. Once the field work was completed, data entry was processed through the SPSS and Nvivo. For quantitative data analysis, SPSS was used while nVivo was used for qualitative data analysis. The data validation features were applied through development of drop down menus to ensure accurate data entry. The information was then analyzed that refined the findings, and identified key DRM needs of AJK, presented in this study.

4. Findings
4.1 Demography
Out of the total respondents who filled the questionnaire, 56% were males and 44% were females. Most of the sample size was aged between 18 to 45. It was found that illiteracy rate amongst women was at 42.3%. Almost 75% of the women population had just completed until middle school, whereas about 7% of the men had masters degrees as well.

4.2 Status of disasters
Most of the respondents during household survey, FGDs and KIIs also asserted that heavy rains are the most common and constantly occurring hazard. Secondly, earthquake was the most frequent disaster while thirdly, land sliding was pointed out as a constant threat. The corresponding table 4 also provides a hazard index which is measured by the frequency of the disaster and the level of impact it has on the people of the area. Heavy rains have the highest index of 88.1%. Table 4 gives an over-view of the frequency of the disaster and the level of impact.

| Hazards          | Frequency |                      |                      |                      |                      | Hazard index |
|------------------|-----------|-----------------------|----------------------|----------------------|----------------------|--------------|
|                  | High%     | Medium%   | Low%     | High%     | Medium%   | Low%     |                      |
| Flood            | 11.5      | 24.2      | 1.3      | 20.8      | 12.8      | 4.9      | 21.9                 |
| Heavy Rain       | 69.4      | 22.6      | 0.7      | 37.5      | 49        | 4.7      | 88.15                |
| Hailstorm        | 21.5      | 27.5      | 0.4      | 9.8       | 30.6      | 9.3      | 26.4                 |
| Earthquakes      | 18.8      | 53.9      | 0.4      | 41        | 25.9      | 5.5      | 39.3                 |
| Land Sliding     | 36.1      | 35.8      | 0        | 24.6      | 31.5      | 14       | 48.4                 |
| Avalanches       | 8.4       | 10.2      | 3.8      | 6.7       | 12        | 5.8      | 11.75                |
| River Bank Soil erosion | 6 | 8.2 | 5.8 | 2.7 | 9.5 | 6.2 | 7.35 |
| Forest fire      | 5.8       | 8.6       | 4.7      | 4         | 6.9       | 3.8      | 7.8                  |
| Cross border firing | 2.2 | 1.1 | 1.1 | 3.1 | 0.7 | 0.7 | 3.75 |

4.3 Major impacts
This is established fact that every year, millions of people are affected by both human-caused and natural disasters. In AJK, Pakistan, it also impacts the lives of communities drastically. Out of total respondents, 21% of the respondents highlighted house damage as a major impact, followed by 18% of crops damage, and 15% resulted in loss of life from disasters.
4.4 Susceptibility and Vulnerability to disasters
This was found that communities in AJK, Pakistan are vulnerable to disasters. The major issues found were the non-availability of transportation, mobile facility, Water Sanitation, Health and Hygiene (WASH). The findings are presented below.

4.4.1 Transportation accessibility
During the FGDs and KIIs, it was found that inaccessibility of the remote areas and non-availability of transport facilities are the major issues for the vulnerability to disasters. The survey data also pointed out the same. The respondents also pointed out that inaccessibility of the surveyed households is a key issue for the region. This was found that 35.2% of the total surveyed area is accessible to every type of transport, a high percentage of 57% of the total areas are accessible only through 4x4 transport while 7.6% of the area is accessible only by foot. Figure 1 gives an over-view.

Figure 1: Mode of transportation

![Figure 1: Mode of transportation](image)

4.4.2 Telephone/Mobile facility
Respondents were asked about the presence of telephone and mobile facilities for communication. 63 percent of the respondents answered that that their areas had the telephone and mobile phone facilities. Hattian and Bagh have maximum connectivity coverage of about 90 percent. Neelam and Bhimber are the least connected areas with 32% and 33% connectivity respectively.

4.4.3 Water Sanitation, Health & Hygiene (WASH)
An inquiry was made about source of water (inside their homes or fetching from far flung places). 55.3% have water source inside whereas the remaining 44.7%, had to fetch water from other sources. Those who have their source of water inside, 50.8% have water coming in through a pipe. Those who have to fetch water from outside, 33% used spring water as the major source. Impacts of disaster on the water source.

4.5 Disaster preparedness
To check out the readiness of local communities of AJK, Pakistan against the disasters and if the local, state and national government have prepared and trained the communities to minimize the disaster risk, in-depth interviews, FGDs and surveys were designed based on indicators that include rescue and emergency services, first Aid Kits, perception about safety from future disasters, information and resource deficit during disaster, actions taken to prepare better for the disasters, disaster preparedness training, availability of safe places, knowledge of Emergency Services, first responders, coping Mechanisms, measures for disaster resilient housing, strength of the community, existence and membership of disaster committees, willingness to work for DRR Activities and role of Women in disaster preparedness. Some of the major findings are discussed below.

4.5.1 Rescue and emergency services
During in-depth Interviews, KIIs and the survey, the respondents were asked about the availability of ambulance service in the area. Almost 95% of the respondents answered that their areas did not have the requisite facility of ambulance or rescue services.
4.5.2 First Aid Kits
Further, it was found that nearly 76% of the respondents do not have any first aid kit at home. Likewise, 82 percent of those who responded that they have the kits further answered that government organizations were the main source of supply for such facilities.

4.5.3 Perception about safety from future disasters
This was found that, 41.4% strongly disagreed, and 49.9% disagreed with the statement ‘we feel safe against future disasters’. Within Districts, disagreement level was highest in the Neelam, followed by Bagh and Hattian.

4.5.4 Information and resource deficit during disaster
When asked about the lack of information and resources during the disasters, 22.1% felt there was an absence of a reliable source of Early Warning System (EWS), 19% shared that there is no safe place to move into, 14.3% considered lack of knowledge about evacuation routes as a hindrance to reducing losses in times of disasters.

Figure 3: Summarizes district-wise challenges.

![Graph showing district-wise challenges](image)

4.5.5 Measures for disaster resilient housing
Respondents were asked whether they have taken any measures to make their houses disaster resilient. Nearly 60% of the total respondents stated that they had taken some measures to make their houses resilient against disasters. Among the districts statistics revealed that only 18.7% of the District Neelam and 29.5% of District Bhimber have taken some steps to make their houses resilient. District Hattian Bala and Bagh however, were on the highest strata in this regard with a percentage of 65.5% and 47.80% respectively.

Table 5: Measures for disaster resilient housing

| Measure                          | Neelam  | Muzaffarabad | Hattian | Bagh   | Bhimber | Total  |
|----------------------------------|---------|--------------|---------|--------|---------|--------|
| Design modification              | 27.80%  | 50.00%       | 71.70%  | 83.70% | 44.16%  | 55.47% |
| Kit with essential documentation | 11.10%  | 2.60%        | 1.70%   | 7.00%  | 0.00%   | 4.48%  |
| Retrofitting                     | 38.90%  | 47.40%       | 23.20%  | 4.70%  | 50.14%  | 32.87% |
| Raised platform                  | 11.10%  | 0.00%        | 1.70%   | 2.30%  | 3.70%   | 3.76%  |
| Safety wall                      | 11.10%  | 0.00%        | 1.70%   | 0.00%  | 2.00%   | 2.96%  |
| Others                           | 0.00%   | 0.00%        | 0.00%   | 2.30%  | 0.00%   | 0.46%  |

The respondents who took measures were asked about the types of measures they have taken to make their houses resilient. About 55.4% of these respondents stated that they modified the design and structure of their houses, 32.8% retrofitted the house, 3.76% raised the platforms of their house and 2.96% constructed the safety walls. Details are given in the table 5.

4.5.6 Strength of the community
On responding the question of prime strength of the community, 35.36% of the total surveyed population stated that ‘Spirit of Self Help’ is the biggest strength of the community. 23.92% considered “youth”, while 12.44% stated that being well aware is the main strength. Figure 4 provides a district-wise breakdown.
5. Discussions & Conclusion

It can be argued that the role of government for disaster risk reduction and training the local communities to cope disasters is very minute. The implementation of government Policies both at state and national level is at loggerheads. Pakistan is developing country facing severe issues such as poverty, education, health and defense which made it very difficult to invest in Disaster Risk Reduction and related planning. Further, the available institutions didn’t have capacity to implement or recommend needed policy changes and infrastructure. Pre-2005 analysis of disaster management in Pakistan shows that management structures and policies related to DRR were occupied by upper strata of government and involvement of local community, civil society and private sectors were minimal. Though, they always provided the relief activities independently. In addition, disaster policy making was considered as much serious business to discuss at local level (Easterly, 2003). To empower communities, civil societies and privates sector to cope disasters was over looked (Cheema et al., 2014; Mustafa, 2003; Ghaus et al., 2015). In comparison with Wisner et al.’s (2004) risk reduction objectives, this can be found that institutional mechanisms and government policies were not successful to address the specific issues involving the local community and civil society. While, this has also been found that post-2005 setup of provincial and national disaster management structure have severe economic, political and social issues such as increasing urbanization, environmental degradation, increase in population and institutional hierarchy (Ahmed, 2013; Halvorson and Hamilton, 2010). The National Disaster Management Commission (NDMC), the top body, have not hold a meeting since 2015 (Wasim, 2015). From this, we can analyze the seriousness of the situation. On top of that, government of Pakistan has not established a coherent and transparent mechanism of disaster risk financing (World Bank, 2015).

If we specifically look at the case study of AJK, Pakistan, following the in-depth process of fieldwork which included household surveys, key informant interviews and focus group discussion, a clear perspective of AJK’s DRM needs has emerged. Firstly, it was found that there is a clear lack of awareness about Disaster Risk Reduction practices. It was found that there is a very little support in terms of early warning systems, evacuation plans and follow-up support system at an institutional level that adds to substandard disaster management. Further in AJK, Pakistan, there is limited understanding about DRR practices, the focus at community level remains from one emergency to another. Most of the efforts are reactive in nature, only to respond to the disaster at hand, as opposed to developing preparedness plans at times when there are no emergency situations and actually planning better in order to reduce the impacts of future disasters. In addition, weak operational mechanisms were found to be the most crucial problem. Where data exists, it is not processed into useful information that could save lives. Where rules exist, they are not followed. For example, there are building codes set out by the government but these are not being followed by the community and neither are they being enforced by any department of the government. While everyone talks about the importance of early warning systems, no institutionalized mechanism exists. Similarly, while everyone talks about the importance of carrying out a multi-hazard vulnerability assessment, it has yet to happen.
In align, most of the support for disaster response or preparedness primarily comes from donors which is generally time bound and focuses on a portion of the population. The government is rarely allocating funds to such efforts which obviously results in long run unsustainability. As discussed earlier, there is a clear lack of clarity about institutional roles: following devolution as per the 18th amendment of the constitution, there is clear overlap of roles between the National Disaster Management Authority (NDMA), the Provincial Disaster Management Authorities (PDMA) and the State Disaster Management Authority (SDMA). This is a continuous reason for confusion and substandard support for communities before, during and after disasters. Moreover, there is no ownership for disaster management plans. This was found that plans have been prepared for a number of districts through international support, it is sad to find out that no one seems to own these plans. It is not clear whether these plans are to be used and owned by the communities, NGOs or the governments directly. Due to this reason, the planning exercises have not been utilized in the right way.

In conclusion, vulnerability assessments have ability to improve the responses regarding disaster events which reduces the impact on communities and societies. The study found that current mechanism of disaster risk reduction is compromised in Pakistan and lacks the basic capacity of prediction. This is recommended to apply more sophisticated tools both at state and national levels are needed to represent the multiple dimensionalities of vulnerability and support decision making.

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