Monitoring & Evaluation Matrix For Disaster Risk Reduction In Rural Settlements Of Punjab- An Analysis Of Economic & Land Use Enclaves

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ABSTRACT

The floods have occurred at a very high frequency in last decade in province Punjab which has the largest number of population in Pakistan. The man-introduced hazards have brought about heavy impacts on the losses caused by natural disasters. In addition to the effect of climate change the mechanical activities have posed in huge threats to livelihood, the public infrastructure, and the general economic conditions of population in the country. Analytic valuation establishes the fact that risk assessments must be carried out by institutional mechanisms in a relevant orderly manner. In context of flood disaster in Punjab evaluation of risk was confined to certain levels within upper layers of hierarchy in the past. However, the suggestive discussion for devolution of authorities to deal with disaster has been analysed in this paper, with study of the planned and unplanned improvements (including reviewed and revised community assets) that occurred since the 2010 flood event, an updated hierarchy has to be asserted at various levels for smart control in pre-disaster as well as post–disaster times. In order to improve capacity building of the institutions factors like better deliberation, mitigation, and preparedness are required. The level of vulnerability of a community to any prospective disaster will determine the required capacity of institutions for mitigation of flood induced disasters.

1.1. INTRODUCTION

In Pakistan, the fields of urban and rural spatial planning are administered by diverse departments at various public sector offices. At the provincial level, the structural framework of urban development is dynamic to a great extent. “Ministry of Housing, Urban Development
and Public Health”, “Department of Planning and Development (P&D)”, “Department of Local Government and Community Development (LG&CD)”, and “Pakistan Housing and Town Planning Agency (PHATA)” had supervised this project under several ministries and institutions. Spatial Planning at all levels in this project whether district or local level been done by different authorities like “Development Authorities (DAs)”, “Cantonment Boards (CBs)”, “City District Governments (CDGs)”, “Town/Tehsil Municipal Administrations (TMAs)” and “Union Councils (UCs)/Village Councils (VCs)” (CKDN, 2013). The territory controlled by Army forces are under the authoritative power of Cantonment Boards.

Given that cities are facing increasingly frequent and devastating flood disasters, it is now widely accepted that "spatial planning" is needed to address such threats. Diffident interventions, also known as luxurious amenities (Wong et al. 2014), are considered essential to the reduction of the vulnerability of the population to floods, e.g.: risk zoning, proactive land use planning, building policies and good standards of adequate facilities in metropolitan and rural areas (Revi et al. 2014).

In this paper, spatial planning framework in Punjab will be discussed with a particular emphasis on rural areas susceptible to floods. The role of local authorities in land use planning in Punjab in minimizing the vulnerability of flood-affected areas is studied and analysed through documentations and discussions with local planning officers and communities. In addition, triggers for a lack of urban planning to reduce flood vulnerabilities have been investigated.

Institutions, whether or not specifically designed to address floods or flood-related disaster risks, can have a range of impacts on the vulnerability of family and community. (Figure 1). The impact of institutionalized competencies and activities (inner box of Figure 1) on the disaster cycle (outer ring of Figure 1) is regulated by environmental and social resilience, and also flood event characteristics in this framework (middle box of Figure 1). The following are some instances of typical institutions (outer box of Figure 1). It is possible that the pathways themselves are complicated. By adjusting runoff, retention periods, and river-flow regimes, finances for investments in structural processes and controlling regulatory procedures with emphasize given to land-uses in the basin, for example, would change the characteristics of floods in terms of onsets, durations, and peak flows. Other paths change the distribution of involuntary risks, either through altering the probabilities of experience or the capabilities of various actions to prevent, adapt with, or respond to floods.

The utmost significant channels in certain locations are determined by socioeconomic growth, political structures, and the individual event occurring like flood. Making them understand, at minimum in part, is critical way for assessing institutional performance in this context. A cloudburst, a period of extended rainfall, snowmelt, glacial lake outburst, or dam failure are examples of hydro climatic triggering events (Dixit, 2003). In hilly locations, landslides are widespread, producing temporary obstructions and breakdowns, as well as scouring, deposition, and large debris flows. Although many institutional concerns are identical, the parties involved might have quite diverse preventive measures and technological challenges.
Figure 1: Institutions modify vulnerabilities and hence risks of flood-related disasters through several pathways.
Source: Author’s construct (Literature Review & Lebel et al’s 2006)

Land use planning laws pertain to a method of controlling the type and severity of land use in a green area. The result is a map (along with a table) depicting particular areas where specialized or hybrid uses may be permitted.

All the legislations applicable to at the federal and provincial levels do not concern when it comes to significant impact on the development, with the exception of Punjab Local Government Ordinance PLGO 2001. The functions and responsibilities in each of these departments have been derived on the basis of specialised responsibilities as in case of Finance, Health, Education, Sports and Social Welfare Departments. These functions include: the preparation and execution of plans, land management planning processes and land use and building regulations. PLGO 2001 also supports implementation of architectural regulations, use of zones and related developmental issues. Ahmad & Anjum (2012) argued that the multiplicity of agencies with various regulatory structures and undefined obligations and tasks for planning tasks hampered the phase of spatial planning and its execution at the local level.
1.2 RISK MAPPING WITH REFERENCE TO FLOOD HAZARD

Methods like Spatial Planning which directs land utilization development and zoning with reference to flood vulnerability and risk mapping are executed. The vulnerability of an area to floods is shown in maps/drawings which depict the various features of flooding as well as possible dangerous sites such as buildings, infrastructure, and public facilities and this process of risk mapping is effective in risk assessment. In Punjab, as well as the whole country, the vulnerability of an area to flood is single valued function and is performed at district level only, which categorizes districts as "strong", "medium", and "low" and "very low".

It does not have any details on the various risk components. These vulnerability and threat maps are arranged in order to keep this in mind the fact that restricted pointers do not reflect those factors to measure the vulnerability of its impact and henceforth its potential consequences in any further detail form.

1.3 ROLE OF LOCAL GOVERNMENT IN RURAL DEVELOPMENT PLANNING

In Punjab, Central District Government CDG, Tehsil Muncipal Authority TMAs and Union Councils UCs are three levels of the local government structure. District governments shall be accountable for: strategic planning approval; Land Use, Zoning areas; Development schemes & housing; Beautify river strategies and enforcement of building and land use regulations. Within this system, TMAs play an important role in spatial planning and rural development. TMA provides infrastructure services and proposals (land use proposals, reclassification plans, zoning areas), and exercises authority over land use development, subdivision in land, and housing systems for its extent of jurisdiction.

TMA has responsibility for the provision of ground infrastructural services. Rural Union Councils (UCs) are designated Village Councils (VCs). UCs/VC perhaps are amongst the lowermost level within each tehsil in this system and is split into UCs. It is for the Union Councils to gather and manage socioeconomic details, to coordinate spatial planning with the TMA, to draft legislation and guidelines and to coordinate enforcement with planning officers. At the same time, VCs will inform TMAs about any activities related to the land use planning. (GoP, 2001).

This framework had abolished distinction between rural and urban areas and applies very same rules and legislation to all of the jurisdictions of any district, which obfuscates planning and development phase. (Anjum & Ahmed, 2012).

The fact that is also important for the TMAs is to practice authority over land development use, with emphasize on the availability of proper infrastructure in communities of rural areas. Evidently, the establishment of amenities in various rural communities has still not been established, and the distribution of facilities and the relevance of legislation remain restricted to municipal areas of the Tehsil.
1.4 EVALUATING IMPACT OF SPATIAL PLANNING IN REDUCING VULNERABILITIES DUE TO FLOODING

Minimizing vulnerabilities any size of population to disasters like floods includes a cooperative effort from the authorities. It is widely recognized that the application of spatial planning throughout disaster mitigation will create community resilience. Risk and hazard assessment, land usage management, regulations regarding built spaces and guidelines are key strategies for reducing the vulnerability of flood-prone regions. Municipalities have a key contribution to make in establishing policies for planning land areas for effective use and implementing them to strengthen resilience. The later part of study assesses the validity of various methods of space planning to reduce flood vulnerabilities. (Cutter et al., 2012).

1.5 EXECUTION OF MONITORING & EVALUATION MATRIX FOR DISASTER RISK REDUCTION IN RURAL SETTLEMENTS OF PUNJAB

Proceedings and collaborations are unproductive without accomplishment. In this regard, the two national flood management plans (primarily for flood risk mitigation) have resulted in the successful completion of number of flood resilient structures, however the area of study focus was very limited with special review of reasons of delays in execution of plans. The implementation of non-structural forms lags behind that of structural remedies within the designs. When the scope of the plan was curtailed in the case of NFMP-II in the late 1990s due to financial constraints, non-structural programmes such as institution capacity building were dropped at the outset (Ministry of Water and Power, 2002). In terms of structural interventions, the implementation has been somewhat better, with 6,700 km of protective embankments (for containment of floodwaters) installed till 2006.

In the country, there are 6,700 km of protective embankments (for flood containment) reinforced by 1,360 spurs (FFC, 2007) protecting the entire principal river lengths principal rivers in low-land areas. Also the delays usually affect projects of rehabilitation, likewise the effort to repair flood damage from 1988, which was 50 percent delayed (APFM, 2005). Certain by-laws, described by the Punjab Land Preservation Act of 1900, could not been able to prevent urban developers from encroaching on flood plains. As a result of these facts, the level of execution of mitigation plans and procedures is assessed inadequate. The executed research methodology by taking contextual data and relevant quantitative interpretation the findings as narrated in conclusion of this paper certainly correspond to high need of capacity building of institutions for dealing with flood as disastrous phenomena. Moreover, this has typical implications that the proper land use planning policies through solid implementation will establish sustainable quality in these areas.

The projects planned and executed by related to flood resilience and flood preparedness as well as reassurances/ responses like modernization of forecasting flood impacts and warning systems) by gaining and installing 07 weather radars deliberately to best strategic sites to improve flood warning system in the country by employing real time warnings related to flood with meteorological data acquisition beyond international boundaries. International institutions such as the World Meteorological Organization (WMO) have praised recent pre-
cyclone warnings made with respect to cyclone Gonu and then Yemyin (both in June 2007). (NDMA, 2007). There were some loopholes at the implementation stages are of a social and political nature, such as party-political pressure to change programmes in the interests of the powerful (Mustafa, 1998; WCDR, 2005), and will be addressed with further internal improvements.

1.6 APPRAISAL /ASSESSMENT OF EFFECTIVITY OF DISASTER MANAGEMENT PLANS

To limit the risk of flooding, the institution must be capable of self-evaluation. A meeting which was arranged before and after flood with all stakeholders involving government agencies and this proved to be a very beneficial practise in Pakistan for the previous few years (FFC, 2007). This practice helped in identifying the gaps and flaws in planning, their execution & implementation, and infrastructure development. Other types of evaluation available within individual organisations (Army, WAPDA, Flood Forecasting Division, FFC, District administration, and so on) were in line with governmental as an overall culture of institutions. With the recent emergence of electronic media in Pakistan (private TV channels and the internet), the inadequacies of any institution are unlikely to be hidden. Following the 1992 flood event, the evaluation procedure resulted in a large-scale flood upgrade. (Rehman & Kamal, 2007)

The protocol has defined the roles and accountabilities of each organisation and its stakeholders that are effected directly & indirectly by the flooding catastrophe. Similarly, foreign bodies monitor the institution's operations. A few instances are the WMO's praise letter (NDMA, 2007) to Pakistan's Meteorological Department regarding early warnings and (OCHA, 2006) reports. As a result, the evaluation matrix are exercised very well.

1.7 RESULTS & FINDINGS

Through an enhanced assessment framework, it was discovered that these phases responses and preparedness both when performed satisfactorily (S), whereas mitigation and rehabilitation fared poorly (N.S.) (Lebel et al. 2006). Henceforth the performance of selected institutions has been established for future monitoring and evaluation of stakeholders involved in disaster risk management in flood hit areas of Punjab. These factors are narrated in terms of each function and resultant depicts that the harmonization function is acceptable at satisfactory position, while the implementation and evaluation parts are on average level. These findings as narrated in Table 1 establish the need of improving situational and correlational variables to enhance the level of ‘deliberation, implementation and evaluation ‘to a standardized workable level. However, the suggestive discussion for devolution of authorities to deal with disaster of the planned and unplanned improvements (including reviewed and revised community assets) that occurred for flood event, an updated hierarchy has to be asserted at various levels for smart control in pre-disaster as well as post –disaster times.

<table>
<thead>
<tr>
<th>Function/Phase</th>
<th>Mitigation</th>
<th>Prepared.</th>
<th>Response</th>
<th>Rehab.</th>
<th>Overall</th>
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The overall performance of any institution in regard of flood management / control may be described as average (A). Despite the fact that there isn’t any equivalent study available or could be establish to compare the results, the study of (APFM, 2005) on the stage of execution and implementation of integrated flood management (IFM) concepts in 17 participating nations gave some light on Pakistan's flood institution. Pakistan is graded lowest (Level-I) by APFM, indicating that the Pakistan flood management institution is based on "unplanned measures to flood management." The results of the APFM study (about IFM) and the current study, which demonstrates unsatisfactory results for the function of discussion, as well as the phases of rehabilitation and mitigation, are in agreement.

1.8 CONCLUSIONS

The capacity of various institutions for mitigating flood hit areas in Punjab, Pakistan has been analyzed in this paper, and inadequacies and strengths of certain institutions have been studied. The basic objective of this Framework is to make sure that the government should be fully equipped to systematically generate, capture and disseminate knowledge through developing a unified monitoring and evaluation framework as a way to strengthen the overall impact and effectiveness of its programmes. Moreover, the purpose of this Framework document is to provide guidance and build a sensitive approach for the implementing. The framework provides detailed matrices, including the Detailed Results Matrix (DRM) and Project Monitoring Matrix (PMM) that build on the overall log frame and will be used to elaborate what to monitor, and how to track performance to aid all relevant stakeholders and implementing partners.

Various factors are required in order to improve capacity building of the institutions such as enhanced deliberation, mitigation, and preparedness. The level of vulnerability of a community to any prospective disaster will determine the required capacity of institutions for mitigation of flood induced disasters.

The findings of this study will be used as a guide for architects, designers, planners and decision-makers involved in flood risk assessment and management. The way forward is to evolve and recommend practical strategies for identifying gaps and prioritising the course of actions for flood mitigation.

REFERENCES


