FLOOD MANAGEMENT IN PAKISTAN – A CASE STUDY OF FLOOD 2010

Abdul Rauf Iqbal

Introduction

Pakistan continues to suffer from natural hazards that threaten to affect the lives and livelihood of its citizens. Due to its unique geo-climatic conditions, Pakistan is one of the most disaster prone countries in the world and undergoes natural disasters including floods, earthquakes, landslides, cyclones, and drought. According to a study, over 40% of landmass of Pakistan is vulnerable to earthquakes, 6% to cyclone, 60% to floods and 25% of the Barani land under cultivation is vulnerable to drought.¹

Pakistan is one of the countries with the highest annual average number of people physically exposed to floods, which occur normally due to storm systems that originate from Bay of Bengal during the monsoon from July to September. The storms originating from Bay of Bengal passing over lower Central India and Rajputana, enter Pakistan and continue towards North into Kashmir. The mountain ranges in the extreme north of Pakistan provide a perennial source of inflow into the rivers. Floods particularly hit Punjab and Sindh while hill torrents tend to affect the hilly areas of Khyber Pakhtunkha, Balochistan and the Gilgit Baltistan. Sind, Kabul and Swat are three hazard prone rivers, and due to climatic and ecological condition, Pakistan constantly receives flooding every year. However, when floods exceed normal flooding level,
they take dangerous turns. Floods have caused extensive deaths and huge losses to the national economy.

According to official sources, floods in Pakistan during the decade 1991 to 2001 caused an estimated damage of over Pak Rs 78,000 million to property.\textsuperscript{2} But 2010 flood have broken all past records. Latest Government estimates put the number of people directly affected by the floods at 20 million, and the number continues to rise.\textsuperscript{3} Assessments to establish the degree to which affected populations are in need of immediate humanitarian assistance continue. The official death toll has risen to 1,603, with 2,366 people reported as injured.\textsuperscript{4} Over 1,237,360 houses are now reported to have been either damaged or destroyed.\textsuperscript{5} In the above backdrop, this paper aims at highlighting the history of disaster management in Pakistan, an analytical view of disaster response of flood 2010 and finally the suggested response.

**Disaster Management in Pakistan – A History**

In 1950, Pakistan witnessed first but severe flood disaster that claimed 2910 lives and affected more than 10,000 villages.\textsuperscript{6} Since then, floods, drought, cyclones, earthquakes and landslides have been striking with regular intervals but none of the successive governments could ever devise a comprehensive strategy for disaster management.

The need for a flood control programme in the then East Pakistan (Bangladesh) was realized only in the late 60s that subsequently led to the incorporation of the programme in the Fourth Five-Year Plan (1970-75) but efforts in this direction
remained insignificant. Three years later, the Emergency Relief Cell prepared a draft National Disaster Plan in 1974, which intended to deal with various components of disaster management. The Plan was to establish procedures, organizational set-up, fix primary responsibilities and support functions of implementing agencies and standard procedures for the monitoring of disaster operations. However, it has never been finalized and implemented.

At the federal level, the Emergency Relief Cell (ERC) in the Cabinet Division serves as the focal point during emergencies. At the provincial level, the ERC coordinates with provincial relief departments and relief commissioners who are responsible for effective distribution of relief items in respective provinces. The Cell is also responsible for dealing with institutional donors and receives grants, donations and funds for distribution through the Prime Minister’s Disaster Relief Fund.

**National Disaster Management Authority (NDMA)**

October 2005 earthquake highlighted the potential of natural disasters in Pakistan that could threaten human life and infrastructure on large scale, as well as pose an impediment to sustained economic growth and social development. The earthquake of 2005 caused direct economic losses of USD 5.2 billion which amounted to 20% of national budget. Similarly, 14 major floods since 1947 have caused direct damages to the tune of USD 6 billion approximately, apart from huge indirect economic losses. A reactive emergency response approach was the predominant way of dealing with disasters in Pakistan till end 2006.
Realizing the importance of disaster risk reduction for sustainable social, economic and environmental development, the Government of Pakistan felt the need for establishing appropriate policy, legal and institutional arrangements, and for initiating strategies and programmes to minimize risks and vulnerabilities. To fulfil this need and in pursuance of Resolutions passed by the Provincial Assemblies under Section 144 of the Constitution, the National Disaster Management Ordinance was promulgated in December 2006, wherein a comprehensive system of disaster management, envisaging legal and institutional arrangements at the Federal, Provincial and local levels have been envisaged. As required under the Ordinance, the National Disaster Management Commission (NDMC) has been established under the Chairmanship of the Prime Minister, as the apex policy making body at the federal level in the field of the disaster management.

As required under the Ordinance, National Disaster Management Authority (NDMA) was notified on 18th of January, 2007 as the executive arm of the NDMC. It acts as the lead Agency at the federal level to coordinate and implement whole spectrum of disaster management activities. Being an intricate and time sensitive affair, disaster management is required to be done as a One Window Operation through the NDMA to ensure better coordination and optimum utilization of resources, as envisaged under the Ordinance.

**Flood Management Strategy**

Since floods are almost a routine annual feature in the monsoon season in the areas lying along the rivers and their basins,
the government has a two-pronged flood management strategy: structural and non-structural measures.\textsuperscript{9} 

Structural measures include constructions of embankments, spurs, dikes dispersion, delay action dams, bypass structures and channelization of flood waters. While the non-structural measures aim at improving flood forecasting system through effective data collection and dissemination system, real time rain fall and river flow data collection, weather radar prediction, modern system of transmission of flood forecasts and improved early flood warning system including based on effective flood forecasts, early flood warning is issued, reliable interaction between all related flood control and relief agencies and timely warning and evacuation arrangements by provincial relief departments and district administrations.

**Floods in Pakistan**

Hazards, by definition, occur only where and when natural extremes and social systems interact, and that is the case in Pakistan.\textsuperscript{10} The human impact of natural disasters in Pakistan can be judged by the World Disasters Report which states that 6,037 people were killed and 8,989,631 affected from 1993 to 2002.\textsuperscript{11} Floods in Pakistan are caused by heavy concentrated monsoon rains which are sometimes augmented by snowmelt flows. Monsoon depressions originate in the Bay of Bengal (India) and often result in heavy downpour. Additional contribution is made by weather systems from Arabian Sea Seasonal Low), and Mediterranean Sea (Westerly Wave) producing destructive floods in one or more of the main
rivers of the Indus System. While flash floods occur due to cloud bursts and hill torrent flows etc. Temporary natural dams as a result of landslide or glacier movement also sometimes cause floods.

Following table represents the flood history of Pakistan:\[12\]:-

**Historical Flood Damages in Pakistan**

<table>
<thead>
<tr>
<th>Year</th>
<th>Value of Property Damaged (Rs in million)</th>
<th>Human Lives Lost</th>
<th>Villages affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>11,282.00</td>
<td>2,190</td>
<td>10,000</td>
</tr>
<tr>
<td>1956</td>
<td>7,356.00</td>
<td>160</td>
<td>11,609</td>
</tr>
<tr>
<td>1957</td>
<td>6,958.00</td>
<td>83</td>
<td>4,498</td>
</tr>
<tr>
<td>1973</td>
<td>118,684.00</td>
<td>474</td>
<td>719</td>
</tr>
<tr>
<td>1976</td>
<td>80,504.00</td>
<td>425</td>
<td>18,390</td>
</tr>
<tr>
<td>1978</td>
<td>51,489.00</td>
<td>393</td>
<td>9,199</td>
</tr>
<tr>
<td>1988</td>
<td>25,630.00</td>
<td>508</td>
<td>1,000</td>
</tr>
<tr>
<td>1992</td>
<td>69,580.00</td>
<td>1,008</td>
<td>13,208</td>
</tr>
<tr>
<td>1995</td>
<td>8,698.00</td>
<td>591</td>
<td>6,852</td>
</tr>
<tr>
<td>2001</td>
<td>450.00</td>
<td>219</td>
<td>50</td>
</tr>
<tr>
<td>2003</td>
<td>5,175.00</td>
<td>484</td>
<td>4,376</td>
</tr>
<tr>
<td>2004</td>
<td>15.00</td>
<td>85</td>
<td>47</td>
</tr>
<tr>
<td>2005</td>
<td>Not reported</td>
<td>59</td>
<td>1,931</td>
</tr>
<tr>
<td>2006</td>
<td>Not reported</td>
<td>523</td>
<td>2,477</td>
</tr>
<tr>
<td>2007</td>
<td>Not reported</td>
<td>586</td>
<td>6,498</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>385,785.00</strong></td>
<td><strong>7,806</strong></td>
<td><strong>99,854</strong></td>
</tr>
</tbody>
</table>
Flood 2010

The 2010 Pakistan floods began in July 2010 following heavy monsoon rains in the Khyber Pakhtunkhwa, Sindh, Punjab and Balochistan regions of Pakistan. Present estimates indicate that over 2,000 people have died and over a million homes have been destroyed since the flooding began. The UN estimates that more than 21 million people are injured or homeless as a result of the flooding, exceeding the combined total of individuals affected by the 2004 Indian Ocean tsunami, the 2005 Kashmir earthquake and the 2010 Haiti earthquake. At one point, approximately one-fifth of Pakistan’s total land area was underwater due to the flooding. The story does not end here but the coming days are more critical as millions of people in Punjab and Sindh have lost their homes and are facing hunger and illness unless they get vital help. Beyond the human suffering and loss of lives, the floods have inflicted tremendous damage to property and infrastructure, including roads, railway lines, communication links and energy supply lines. Power plants and some gas fields have had to be closed down, leaving millions without power.

Disaster Response of Floods 2010

Due to frequent occurrence of disasters induced by natural hazards, NDMA has failed to develop system across the country to handle disaster at national level. Earthquake 2005 was fast onset disaster, all damages are natural and one can not criticize government or any authority because in fast onset disaster damage to life and property can not be minimized by any mean. But floods
2010 was slow onset disaster in which damage to life and property can be attributed to NDMA and the government of Pakistan. Because in slow onset disaster damages can be minimized if a country has disaster management system in place (like early warning system, hazard assessment, risk calculation etc). Further, political differences amongst federal and provincial governments and breeching of channels by the landlords added insult to the injury by making the floods, a complex disaster. At the time, when poor management policy of NDMA and the government left the entire country under water, civil society came upfront to manage the aftereffects of flood. They, along with their international counterparts, assisted by UN and Non Governmental Organizations (NGOs), help the flood-affected people by providing them food, medicine and shelter. Thus, the second and third wave of losses was timely managed by the civil society which clearly speaks that the government’s management component is missing.

**Shortcoming in Management**

Flood damages to immoveable property can not be minimized by any mean but one can minimize the risk of a potential hazard in pre-flood period through proper system and technology. Unfortunately, successive governments of Pakistan are responsible for irrecoverable damage to the ‘food basket’ of Indus Basin. Because this damage can be minimized if the government of Pakistan has built dams which are best instrument of flood control. Swat and Kabul Rivers generate flood because their water is unchecked or free in flow. Technically speaking, both rivers must
have dams for control over its water and flow but due to poor planning of the government and its concerned institutions, floods have devastated Pakistan. Also, NDMA is responsible for damages to life and immovable property. Because flood is slow onset disaster not a fast onset disaster, which give enough time to the authorities for preparation and mitigation. If NDMA has effective ‘national disaster management strategy’ in place which includes countrywide early warning system, emergency management plan, hydro meteorological hazards assessment, structural / non-structural measures, environmental impact assessment, environmental degradation assessment and forecast, damages can be minimized. But due to lack of technical management and planning, the whole country was exposed to floods which resulted in damages to life and property of people.

**Suggested Response**

According to Patrick McCully, Executive Director of International Rivers, there are vital global lessons to learn from the ongoing flood catastrophe in Pakistan. The main lesson is that mismanagement of river systems for the benefit of short-term gain, such as along the Indus, has major long-term costs. Some other valuable lessons include:-

- The pre-flood planning seems to be absent. There is an immediate need to build water reservoirs which would hold the excessive water. This would help Pakistan in two ways; frequency and level of floods
can be controlled and water can be utilized for agriculture and hydro power.

- NDMA has emerged as merely a policy organ which lacks the administrative capability. There is a need for capacity building of it.

- Political differences and lack of coordination between federation and provinces have added insult to injury in flood situation. A coordinated approach was absent and it has been felt that political parties are exploiting the floods card for their personal gains. Synchronized federal approach for disaster management is the need of hour.

- Breaching of water channels by the landlords have changed the course of flood causing numerous losses to life and property. Judicial inquiry against the *breachers* must be carried out to control the human factor of the disaster.

- The rise in the planet temperature has reached a tipping point and people are now in a scary new era of extreme weather. Therefore, every effort should be made to cut greenhouse gas pollution.

- Stop weather disasters to become catastrophes. It means increasing the resilience of infrastructure, economies and communities. Greater resilience in Pakistan would include better emergency warning and evacuation systems, better flood protection for
key infrastructure and plans to help communities recover once the waters recede.

Conclusion

Devastating floods 2010 have caused a huge loose to the people and economy of Pakistan and it has also posed serious questions on the mismanagement and governance issues of the country. Since floods have become almost annual phenomena, there is an immediate need to relook the flood management strategy of Pakistan.

It is also evident from the study that huge flaws in disaster response system of Pakistan have aggravated the situation and resultantly country suffered a historical damage both in term of lives and property. In this backdrop, a serious heed must be paid to enhance the administrative capability of NDMA and empower it for managing the future disasters at the war footing. It is to be remembered that only quality of the response can reduce the consequences of any disaster.

End Notes

1 Sardar Muhammad Qaddafi, “Flood Mitigation Strategy, Plan and Measures for Pakistan”, available online at http://reporter.aaj.tv/u/qaddy/
4 Sibtain Moledina, “Pakistan Selab (Flood) Report”, 14 to 23 September 2010.
5 Ibid.
8 Ibid.