

An Assessment of 2014 Flood Hazard Causes for Efficient Mitigation Strategies in Kashmir

S. Shakeel

Research Scholar, Department of Geography, Kashmir University

ABSTRACT

This paper attempts to analyses the causes, consequences of floods in Kashmir. In the study area, flood is a recurrent phenomenon due to its physiographic disposition. The, major causes of floods in the study area are the torrential rainfall and heavy melting of snow, ice and glaciers in the upper catchment area of Jhelum river. Beside these, there are some intensifying factors such as encroachment over the channel limits and lack of flood embankment measures in the upper catchment area. During summer season the discharge increases and in effect the excess water overflow the natural levees and causes great damages to life and property of the area. Therefore, this study attempts to find out the major causes of flood hazard and suggest mitigation strategies for ameliorating its adverse consequences.

I INTRODUCTION

Floods are common and mostly natural disasters. When rivers overflow their banks they cause damage to lives, property, infrastructure and crops. Floods usually are local, short-lived events that can happen suddenly and sometimes with little or no warning. They usually are caused by intense storms that produce more runoff than an area can store or a stream can carry within its normal channel. Rivers can also flood its surroundings when the dams fail, when ice or a landslide temporarily block the course of the river channel, or when snow melts rapidly. In a broader sense, normally drylands can be flooded by high lake levels, by high tides, or by waves driven ashore by strong winds. Small streams are subject to floods (very rapid increases in runoff), which may last from a few minutes to a few hours. On larger streams, floods usually last from several hours to a few days. A series of storms might keep a river above flood stage (the water level at which a river overflows its banks) for several weeks.

The valley of Kashmir has a long history of natural hazards and disasters like floods, famines, fires, earthquakes, wind storms, earthquakes and lands. Floods are common in the Himalayas, but the kind and destruction witnessed during September 2014 was un-parallel in recent history. Houses collapsed like pack of cards and the roads and bridges swept away in the turbulent flood water. The Jhelum water that was used to be provider of life suddenly became a monstrously destructive force against the human life and the infrastructure that cohabit its backyard since millennia. Most people of Kashmir have no idea of devastating floods of 1902, when the city of Srinagar situated

mainly on right bank of river Jhelum was submerged for two years, take a toll of life and property. The people and the successive Government, learnt the lessons from the major floods of 1928, 1957, 1959 and 1973 etc.; continuously acted against the nature, be it the forest, water bodies, streams or embankments.

The 2014 floods fulfill every criterion for being categorized as the extreme of the extreme flood. The high discharge levels of 2014 extreme flood were frightened making the people fear for high human loss and total destruction of Srinagar city. The another reason being the high water levels of Jhelum persisted above the low lying areas for more than week. The fragile dike (bunds) were permeable at some places so that the water leaked through them. These dikes were found permeable in certain areas of Pampore down to Chattabal at Srinagar city.

II CAUSE OF FLOODS IN JAMMU AND KASHMIR

2.1 Physical causes

A. Glacial melting:

Glacial melting due to global warming is the main cause of floods. The major glaciers in the high mountains are receding at an alarming rate. Glacier in Jammu and Kashmir is receding at a faster rate compared to other glacial regions in the world. In Kolhai Glacier of Kashmir situated at Pahalgam is the main source of drinking water and irrigation in valley, during the same period this glacier has receded to about 18% in last 40 years. Climate change is likely to effect a number of sectors, particularly agriculture horticulture and hydro power capacity. Recently, Kashmir valley has witnessed drastic decrease in the snowfall. The reduction of snowfall together with fast receding Glacier has resulted in water scarcity for irrigation and hydropower generation in the last few decades.

B. Heavy Rainfall.

a) The heavy rainfall has caused flash flooding with localized damage across Jammu and Kashmir. This has mainly cause the excessive snow melt in the upper regions of the valley. The average annual rainfall is around 1,000 mm but some areas are accepted to receive more than 2350 mm rain in just four days.

b) Normally September is not a rainy season in Kashmir. But during year 2014 heavy rains were received because of interaction between the western disturbances and monsoon currents and its effects seen in all three regions of Kashmir. The weather in Kashmir valley is mainly influenced by the western disturbances originated from the Caspian sea.

C. Landslides

The Himalayas are well known for the occurrence of snow avalanches particularly western Himalayas i.e: the snowy regions of Jammu And Kashmir, Himachal Pradesh and western U.P. In Jammu And Kashmir high reaches of Gurez valley, Kagril and Ladakh and some of the major roads are highly vulnerable to the landslides.



2.2 Anthropogenic causes

A. Shrinkage of wet lands:

The flood vulnerability scenario in the Jehlum basin has worsened during the last few decades as most of the wetland that used to act as sponge during flooding have been urbanized and converted into concrete landscape in the entire Kashmir valley. Most of the wetlands and water bodies are fighting a losing battle for their survival. The functionality of wetlands have strong linkage with the hydrological cycle has got adversely effected due to their encroachments and seasonal changes in the precipitation and run off attributed to the climate change. In and around Srinagar only 20 wetlands have lost due to urban colonies during the last few decades, particularly in the south of the Srinagar city. Shrinkage of wetlands in Kashmir valley due to urbanization on flood plains and siltation of water courses has degraded the ability of our environment to absorb excessive rain water and this increased the vulnerability of river Jehlum basin to flooding which is manifested in the frequent flash floods and water logging observed in the flood plains of the Jehlum.

B. Deforestation:

Deforestation in the catchment area is also one of the intensifying factors. Deforestation causes an increase in run off and an associated decrease in channel capacity due to sediment deposition. It has been suggested that the felling of forest stands and the consequent reduction in evapo-transpiration alone could significantly increase flood volume. Therefore, forests play a definite and major role in down stream flooding even where the cutting does not disturb the soil infiltration capacity. This is clear from the fact that, The people in Kashmir valley are continuously encroaching the floodplain by making fields, constructing houses, and shops etc. Which result in the narrowing of river channels. In flood time this narrow channel cannot accommodate such a large amount of water, eventually a heavy discharge is converted into flood.

III CONSEQUENCES OF FLOODS 2014

The impact caused by the recent floods in the valley of Kashmir are varied. Some of the destruction caused is immediately apparent while some subtly threaten existing structures and the true damage is not seen until some latter time. The large scale impact was found on the agriculture sector in which varied types of crops suffered and got damaged fully. The manufacturing sector as well as the tertiary sector like trade, transportation, communication and services have been adversely affected.

The 2014 Kashmir floods fulfills every criterion for being categorized as the extreme of the extreme floods. The Jehlum water that used to be the provider of life suddenly became a monstrously destructive force against the human life and the infrastructure that cohabit its backyards since millennia. From historical knowledge, this event was unique relative to earlier recorded floods on the Jehlum with almost 1,00000 cusecs of water gushing down in the Jhelum at Sangam compared to about 80,000 cusecs recorded during the 1928 floods.

In the midnight the August 6, 2010 Leh in Ladakh region of J&K received heavy downpour followed by sudden burst, within a span of about two hours, it recorded a rainfall of 14 inches. As many as 234 people were killed and 800 were injured and many went missing. The recent floods have claimed the death of about more than 500 people and rendered thousands of people homeless.

The recent floods damaged most of public and private sector in infrastructure including hospitals and schools, thousands of small business establishments that were built over generations have gone. The floods in the valley have also damaged about 272 bridges, 306 foot bridges and 242 approaches to bridges and road infrastructure. The 300 Km long Jammu and Kashmir national Highway was closed for traffic.

Srinagar city : (Floods 2014)

- There was a record rainfall of 400mm, 225 mm on a single day combined with cloud bursts in the catchments in the south Kashmir which raised the flood level of Jhelum at sangam to 37 ft (danger level 21) breaking all the previous records. This resulted in the abrupt increase in the flood level at Ram MunshiBagh which touched 29 ft (danger level 18), resulting in the out flanking of the wall at the gate.
- The first casualty was Barzalla when a breach occurred in Doodganganallah near bone and joint hospital on 4th September as the bank reportedly had been tampered with. This was followed by a series of breaches in Jhelum at sempora, army convey ground Pandrathan, Sonawar, Rajbagh and in supplementary flood channel at Rambagh – all of them due to tempering of embankments. River started overflowing near Danjibhai building, JK bank, poloview and abiguzar. Due to the out –flanking of a wall at the Ram Munshibagh gate, the Jhelum started overflowing into the dal lake.
- This was compounded by the cloud bursts in sindh basin and a heavy discharge in sindhnallah which joins the Jhelum at Shadipora causing an afflux and restricting the free flow into the Wullar lake which had the requisite detention capacity at that point of time. The flood inflow was more than the combined carrying capacity of Jhelum and flood channel despite the breach at Kandizal. Tempering and encroachment of Jhelum and flood channel embankments both by the government and the inhabitants.
- Railway track where precipitation got stored on the upstream and its subsequent exit through the openings which may not have adequate water ways.
- Floating logs of a band saw installed in the bed of ZontiKhul which blocked the flow resulting in the overflowing of its banks and submergence of Bishamber Nagar and adjacent areas.
- Beautification of river banks in the city which may have caused encroachment in its section, thus reducing its carrying capacity.



Overflowing of the right bank of ZontiKhul results in the submergence of Bishambarnag and adjancet areas. By 7th of September the whole city was submerged, having take the heaviest toll of life and property in the history of Kashmir.

Flood Mitigation Strategies

After a thorough study it is concluded that the hilly areas like J&K the main cause of floods are melting of glaciers, shrinkage of water bodies, heavy rainfall and large scale landslides. Flood devastations has lead to eruption of various problems and hindrances which people will have to meet too in any how and governing bodies must have to swiftly and energetically to take care and think for the rehabilitation and reconstruction, welfare, improvement of the affected areas. Only with the help of co-operation provided by the people, “Govt.” and “NGO’s” and other agencies can secure the adequate use of preventive strategies the two broad mitigation measures which needed to be addressed includes:

Structural Measures:

- a) *Water Shed Management:* Timely cleaning, de-silting and deepening of natural water reservoir and drainage channels (both urban and rural) must be taken up.
- b) *Reservoirs:* The entire natural water storage place should be cleaned on a regular basis. Encroachments on tanks and ponds or natural drainage channel share to be removed well before the onset of monsoon.
- c) *Natural water retention Basins:* Construction and protection of all the flood protection embankments, ring bunds and other bunds. Dams and levees can also be constructed which can be used as temporarily storing space which reduced the chances of lower plains getting flooded.
- d) *Buildings on elevated area:* The buildings in flood prone areas should be constructed on an elevated area and if necessary on stilts and platform.

Non Structural Measures:

- a) *Flood Plain Zoning:* Flood plain zoning, which places restrictions on the use of land on flood plains, can reduce the cost of flood damage. Local governments may pass laws that prevent uncontrolled building or development on flood plains to limit flood risks and to protect nearby property. Landowners in areas that adopt local ordinances or laws to limit development on flood plains can purchase flood insurance to help cover the cost of damage from floods.

REFERENCES

1. Dar ,G. M Disaster Management – present status and future strategies with special references to J&K Indus instt. Of Management public Administation and Rural development J&K 2008.
2. Disaster relief Memorandum for central Assisstance 2012. Department of Disaster Management, Government of Uttrakhand.
3. Draft J&K Disaster Management Policy Published by “Govt. of Jammu and Kashmir 2013”.
4. Goswami , B.N.V Venigopal, D. Sengupta ,M.S Madhusoodanan and P.K Xavier 2006.
5. Greater Kashmir Sept. 22, 2014 Monday. “the 2014 Kashmir Floods” by ShakeelahmadRamshoo.
6. Jammu and Kashmir Economics survey 2013-2014.
7. K M Vandana and Sri Ram (2014) flash floods in Jammu and Kashmir ISJRO-International Journal of Scientific Research and Development vol 2 PP146-148.
8. Ruheela Hassan (2014) disasters in Kashmir. Impact and Response IOSR (journal of Humities and Social Science) vol 19, issue 7 (July 2014) PP32
9. The Daily Greater Kashmir November 11, 2014.