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## Causes and Effect of Kashmir Flood

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**Abstract:** September 2014 unprecedented floods in Jammu & Kashmir tell the tale of human misery not witnessed by this state in over 100 years. The devastation caused by the flood is colossal. It claimed over three hundred human lives and destroyed everything that came to its way-residential houses, schools, colleges, hospitals, paddy fields, orchards, government establishments and businesses et-cetera. It has rendered thousands of people homeless and jobless. Today in this paper we are going to analyse the causes of the flood and its impact on Kashmir, economically as well as socially.

**Keywords:** Kashmir Flood, Causes of the Flood, Disaster Management.

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### I. INTRODUCTION

On the 6th of September, 2014, Jammu and Kashmir witnessed massive floods that left thousands stranded inside their submerged houses. By the evening of the first day of colossal flooding, 2500 villages across Kashmir had been affected, 160 people had died and dozens of houses were destroyed. The floods worsened over the next few days due to incessant rains and overflowing flood channels. By 19th, September, the death toll had climbed to 277 (official) with the numbers still on the rise as bodies were still being recovered from different areas of Kashmir; many people were still missing. By 25th, September it climbed to 285 (official) and crossed 300 (according to other sources) by the end of the month. One can hardly see the majestic Chinars, the fragrant pine trees and the luxuriant weeping willows that provided harbor to those buffeted by the fates? The enchanting beauty of Mughal gardens, refreshing springs, and Breath-taking waterfalls bemoan the state of the torn apart land, the Polluted streams, and the suffering people.

The situation was worsened as nearly all the major hospitals were adversely affected and rendered defunct. Nearly 10 days after the floods, three major hospitals in the city still remained closed for patients while 2 partially resumed their services to some patients (outpatient care only). As the waters refused to recede quickly, there have been major concerns regarding the outbreak of epidemics due to the stagnant water. The next few months are going to be very important for the people of Kashmir as the damage is assessed and rebuilding, rehabilitation and reconstruction efforts are initiated.

### II. SEVERITY OF THE FLOOD

Jammu and Kashmir is a mid-size state situated in the northern part of India. According to the 2011 state census, there are 6,651 villages, 104 urban areas and 8 urban agglomerations in the state. These villages and towns are distributed in 22 districts and 82 sub-districts. The population of the state was recorded at 1.25 crores or 12.25 million. The floods directly affected more than 2,600 villages in the state and submerged 30 per cent of the urban areas. Out of the 2,600 villages, almost 400 villages were completely submerged and 2,225 partially submerged with more than 300 villages completely cut off (inaccessible). In the urban areas, the water levels rose up to 20 feet whereas many villages were cut off due to the destruction of the only bridges and roads leading into these villages. The continuous bad weather made rescue operations almost impossible for the first few days and the government struggled to make an appearance to help the people (Figures 1-7).

In terms of districts, 10 out of the 22 districts were badly hit with the districts in South Kashmir experiencing severe devastation. Anantnag, Kulgam, Shopian, and Pulwama (all South Kashmir) districts were completely inundated and rendered

inaccessible. More than 5 million people were severely affected by the catastrophic event while electricity and communication were completely shut down making it nearly impossible to coordinate, evacuate and rescue.

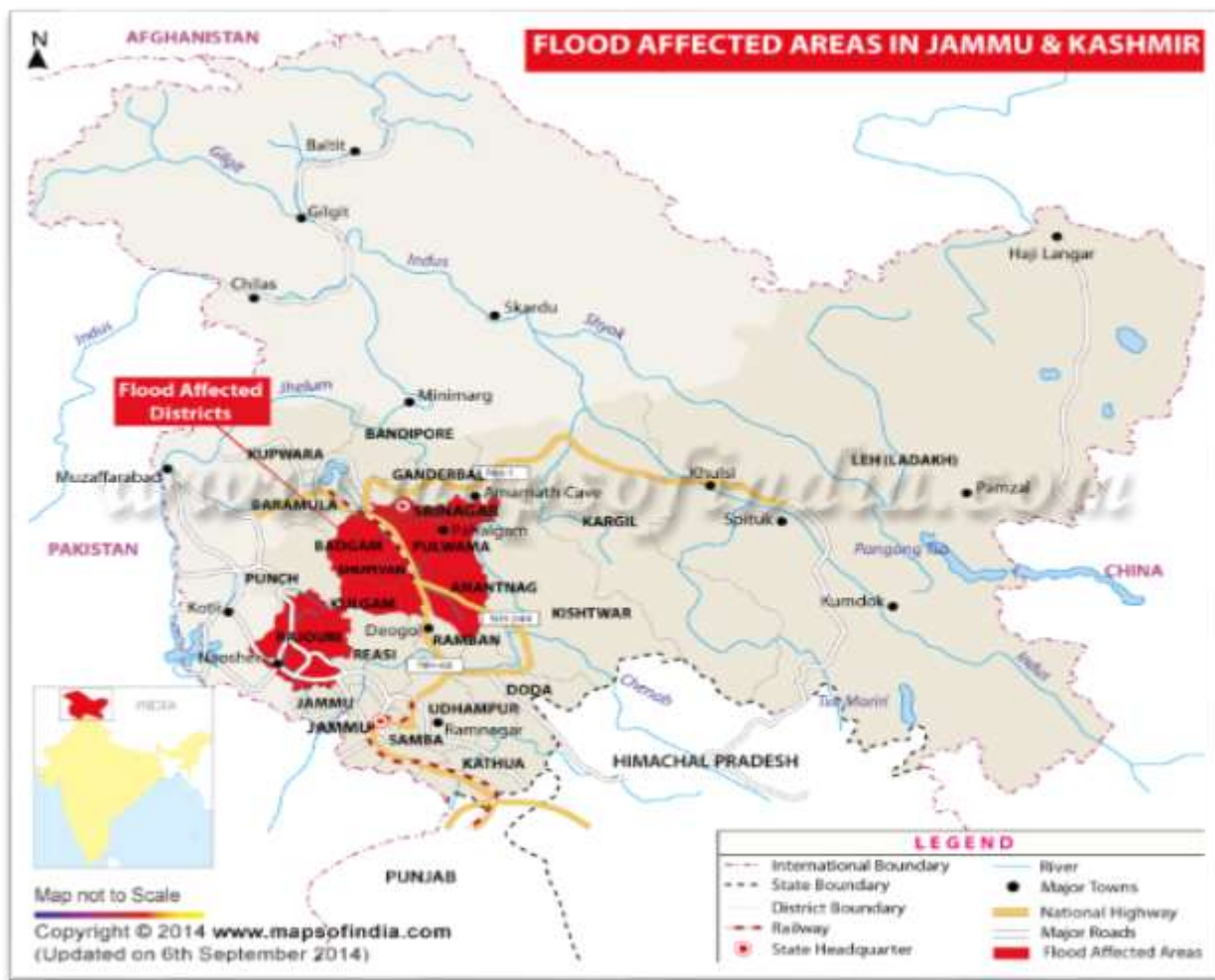


Figure: 1  
Flood affected areas in Jammu and Kashmir



Figure: 2  
Lal Bhag Chowk



Figure: 3  
Bridge Near Sangam



**Figure: 4**  
Jawaher Chowk



**Figure: 5**  
Srinagar Railway Station



**Figure: 6**  
Search Operation of Dead Bodies



**Figure: 7**  
Survival First

### III. REASON FOR OCCURRENCE

According to the Centre for Science and Environment (CSE), India, the floods in Kashmir follow a recognizable pattern of heavy rainfalls that was previously seen in other parts of India: Mumbai (2005), Leh (2010) and Uttarakhand (2013). The meteorological (MET) department confirmed that they had issued a warning regarding heavy rainfall and urged people to move to higher ground, a warning that most people did not heed and the state government did not do anything about. This warning should have been given more weight considering the recent floods in Uttarakhand. To be more precise as to what caused the floods, CSE indicated that the floods were caused by a combination of intense rain, mismanagement, unplanned urbanization and a lack of preparedness. Local scientists, Humayum Rashid and Gowhar Naseem, had indicated in 2008 that there was a breakdown of the natural discharge system in the valley that could prevent water from flowing out of the valley. In their paper from the 12th World Lake Conference, the scientists argued that the natural discharge system had collapsed due to the degradation of the network of lakes.

Incessant rains for two or three days would raise flood threat in Jhelum River in 2008 while as such rains wouldn't be a risk two to three decades back.

#### **IV. IMPACT OF FLOOD**

Floods are the most common natural disaster known to man and, sometimes, can be devastating, as the tsunami in South-East Asia in December 2004 depicted. The impact of floods on people and their environment may vary depending upon the vulnerability of the population to and type and intensity of the flood. The negative implications of the floods can include loss of life and property, loss of livelihood, decreased purchasing and production power, mass migration, psychological effects on people and political instability. The floods in Jammu and Kashmir were no different, causing tremendous devastation and loss of life, property, livelihood in addition to affecting the healthcare system adversely, which could lead to severe health issues in the population and more fatalities in the following days. According to a controlled study in Bristol floods of 1969, it was reported that there was a 50% increase in deaths in the flooded population in the year after the flood. Few other studies also reported a delayed increase in mortality after floods.

##### **IV. i. Impact on Health**

As of 21st September 2014, the official death toll had already climbed to 285 and was expected to rise following further evacuation and assessment of affected areas. The initial deaths were caused by houses collapsing; people unable to escape the water and boats rescuing the stranded people capsizing. As the rescue efforts began, dead bodies were recovered from flood waters. It is also estimated that patients who lost their supply of essential life support drugs may also have been at risk. The toll is estimated to rise as evacuation and assessment of flooded areas is complete. The devastating effect on the healthcare delivery system of the state was probably the biggest casualty of the flood event. Out of the five major hospitals in Kashmir, situated in Srinagar, four were completely shut down due to the floods as floodwaters entered the hospital premises and even submerged several floors. Patients in these hospitals were evacuated early and shifted to the functional hospitals in the city, mainly the Sheri-Kashmir-Institute-of-Medical-Sciences (SKIMS) - which is a large tertiary care teaching hospital in the J&K. Even as the only functional hospital of the city, SKIMS faced immense pressure from the lack of staff. Some patients were shifted to 50-bedded Gupkar Nursing Home and 30 bedded Maternity Hospital Sanatnagar.

Government Medical College Srinagar - the prestigious seat of learning (also known as Mecca of Medicine in J&K) was inundated by flood waters and remained so for nearly three weeks. Shri MaharajaHari Singh (SMHS) hospital, one of the large premier hospitals of the state was completely defunct for over two weeks as the hospital beds, medical and diagnostic equipment and hospital transport were endured useless due to the floodwaters. On the day of the flood, the patients from SMHS were evacuated and taken to other non-affected hospitals in boats while some stayed trapped in the floors above. It will be months before the hospital that used to cater to thousands of patients every day will be fully functional again (Figure 8).

The Lalla Ded Maternity Hospital, GB Pant Hospital (valley's lone pediatric hospital), Bone and Joint Hospital, SKIMS Medical College, Bemina were all severely affected by the flood water and were forced to shut down. As Bone and Joint and SMHS hospitals reopened partially (outpatient services only) almost two weeks after the floods, other hospitals would take much longer to be fully functional again – requiring incessant cleaning, and fumigation before reopening (Figures 9).



Figure: 8 Submerged SKIMS Medical College, Bemina



Figure: 9 Tertiary care Lalla Ded Maternity Hospital, Srinagar

Most of the diagnostic equipment including MRI, CT Scan, Ultrasound, Radiotherapy equipment, Ventilators, Colour Doppler, ERCP machine, Oxygen Concentrator plants, PCR, Auto analysers and other laboratory equipment, Operating Room tables, Autoclaves, power generators and blood banks have been destroyed in the floods. As the funds from the government and aid from non-governmental sources pour in, it can easily take months before new machinery is ordered and installed for use again. Due to the submerging of main hospitals and markets in the valley, there was a heavy shortage of medical supplies. People were badly affected, especially those with chronic diseases, such as, diabetes (those who need regular medication such as insulin). As the supply of medicines lingered between short to non-existent, medicinal supplies in the form of aid were sent from outside the state, which, however, due to the inaccessible roads could not find its way to most people and remained local to some evacuation camps established to house the rescued

Due to the severity of the floods and the equally inadequate rescue operations, many dead bodies of those killed by the flood and carcasses of animals marooned by the floodwaters floated in the waters that covered a sizeable area of the valley. In addition to that, poor hygiene and sanitation, lack of medical supplies, lack of drinking water and defunct hospitals have added to the possibility of epidemics spreading in the aftermath of the flood event. According to the World Health Organization (WHO), floods can lead to the spread of cholera, typhoid, measles, Hepatitis A and E, leptospirosis, Acute Respiratory Infections (ARIs), Acute Diarrheal Disease (ADD), under extreme conditions.

Major epidemic breakouts were recorded in Sudan floods, 1980 - major diarrheal outbreak, Mozambique floods, 2000 – diarrhoea outbreak, and West Bengal floods, 1998 - large cholera epidemic. While the corpses floating in the water make it unsuitable for consumption, there is no suitable evidence that such corpses are linked with epidemic outbreaks. However, it is the sewage and drainage outflow into flood water that is highly linked with epidemics. Moreover, if the water is allowed to stagnate for too long, the risk of vector-borne diseases such as malaria increases. The areas of Srinagar marooned in the flood waters have been declared as hotspots for the outbreak of communicable diseases by the health department and people have been advised to be cautious while dealing with water and food items. Filth and rubbish surfacing from receding floods festering in streets are seen all around. There is an ominous stench in the air. Poisonous mud smeared in streets and pavements is getting dry and creating dust with particles of chemicals, biological debris and harmful substances like cement, asbestos and other matter. Buildings affected by floods have developed fungus on walls. Post-Traumatic Stress Disorder (PTSD) is on the rise in Kashmir after the worst ever flood hit the state. Psychiatrists in Srinagar say that there has been a remarkable increase in the number of patients who were suffering from “early symptoms” of PTSD. There are patients who are witness to the ordeal caused by the floods. Though it takes around three months for a person to fully develop the symptoms, psychiatrists are trying their best to treat the disorder before it takes a more alarming shape. During 2005, Snowstorm in Waltengo Nar village of Anantnag district, trauma affected the mental health of people for several months. Children suffered more. The impact of the disaster on children is mediated by personal experience, developmental competency, parental reaction and the level of disaster response. Children show a higher level of intrusion and avoidance during the aftermath. Social cooperation and extra care by parents towards children is essential to overcome the trauma. The number of patients with psychiatric diseases as a consequence of floods needs continuous assessment and proper documentation. The real picture will emerge only after community based genuine research is conducted as the patients reporting to hospitals and private clinics depict the tip of the iceberg.

#### **IV. ii. Impact on Economy**

The devastating impact of the flood is most conspicuously visible in the economic dent born the valley. In the initial estimates by Associated Chambers of Commerce and Industry of India (ASSOCHAM), there was an initial immediate loss of around 5,700 crores INR or \$92 million. These were only the initial figures and did not take into account the loss of financial wealth through lack of productivity, loss of livelihood and devastation of much of the private property. As days passed with unrelenting waters refusing to recede, the magnitude of the damage seemed to be under-reported or at least under - estimated. As it became clear that the state would take years and even decades to come to terms with the devastation caused by the marauding waters, experts of the coin started, for the first time, to realize the magnitude of the economic dent that had been left in place post the flood event. Former president of Federation of Chamber of Commerce, Kashmir, estimated an economic loss greater than 15 billion dollars, which is greater than the respective GDPs of almost 80 countries around the globe.

The government of J&K on 29 September 2014 termed Kashmir floods as an international disaster. “This was not a disaster of national but international ramifications,” Chief Secretary, Khanday MI said. He said this was a classic case of urban flooding and would be studied worldwide. Kashmir was hit by one of the worst floods in a century in which thousands were rendered homeless. Kashmir had suffered losses in excess of 1 trillion (100,000 crore INR). Across the State, 125000 families have been affected due to floods. “According to a rough estimate, the housing sector in Kashmir has suffered losses over 30,000 crore INR while the business sector had suffered losses worth more than 70,000 crore INR”

He also stated that 5642 villages were affected across the State with 2489 in Kashmir valley, 3153 in Jammu division and 800 villages remained sub-merged for over two weeks. Giving details of the damages the Chief Secretary said more than 350000 structures – mostly residential houses – have been damaged in the floods, which were the worst in the state over the past 112 years. "More than 83,000 'concrete' houses have been fully damaged while 96,089 such houses have suffered partial damage. Similarly, 21,162 'kucha (non-concrete)' houses have been fully damaged while 54,264 such houses have been partially damaged". "The crop losses have been to the tune of 5611 crore INR including 1568 crore INR losses to the horticulture sector," adding 6.5 lakh hectares of land has been affected by the deluge. "Over 10,000 milk animals and 33,000 sheep and goat perished in the floods". Tourism infrastructure and government residential colonies have suffered losses to the tune of 5,000 crore INR

#### **IV. iii. Social Impact**

As the catastrophe has left thousands of people homeless and without their livelihood, it is understood that there are going to be numerous people set up in make shift camps around the valley. As the harsh winter approach, when the mercury often drops below zero, people are going to miss their concrete houses badly (not to say they don't already). With more than a hundred thousand people without work, a societal turmoil is already a resounding possibility.

Due to the closure of Jammu-Srinagar highway - considered the life of the state in terms of connectivity with the rest of the country – for more than two weeks, there was a dire scarcity of essential commodities including food and medicines. With some of the places still inaccessible by road, it is going to take time to get such supplies to these areas. Markets in the affected areas were almost entirely destroyed in terms of physical structures or the goods they carried.

#### **IV. iv. Educational Impact**

The floods have adversely affected the education infrastructure in almost all the flood-ravaged districts and some schools need to be rebuilt as they have collapsed or suffered extensive damage, whereas others need major repairs. The deluge has completely destroyed thousands of school buildings while thousands of others have been partially damaged, rendering them unfit for schooling. According to official figures, out of 11526 primary and middle school buildings, 1986 have collapsed while 2685 were partially damaged. As per the departmental survey, 2397 students enrolled in different primary and middle schools have been left without buildings.” The private schools have also reported the heavy loss to the infrastructure of more than 1500 school buildings”. Another 450 schools in private sector have suffered extensive damage.

### **V. LIFE AFTER FLOOD**

As pumps are in place to clear out the remaining deposits of water around the city and a colossal cleaning operation has been commissioned, people have who suffered the brunt of the massive floods have been placed in makeshift tents until further action is taken in regard to a more permanent accommodation option. Healthcare delivery institutions are slowly being pushed towards being fully functional and it may be months before this is realized. Meanwhile, people continue to support each other as aid pours in from different parts of the world. Considering the magnitude of the disaster, it is safe to say that it may take decades and billions of dollars to reconstruct what has been damaged and rehabilitate those who have badly affected. The next few years are going to be crucial as people will struggle through possible epidemics, poverty, and hunger in the hope of things getting better.

### **VI. CONCLUSION**

The government must create the taskforce for Rehabilitation and Reconstruction Authority to co-ordinate the rebuilding programme. Taking full advantage of scientific advances particularly in MET Sciences, Information Technology and rebuilding the cities/towns is an inescapable necessity. Community based research is required to measure the morbidity due to psychiatric diseases as a consequence of floods. Similarly, the impact of the disaster on the mental health of children and young adults should be a priority. Serious efforts are required to make disaster preparedness an important agenda of governance.

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