

Epic Tragedy: Jammu & Kashmir Floods: A Clarion Call

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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 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. The destruction around has left the entire society traumatized. The signs of history, art, culture, heritage, architecture and pristine natural beauty stand ruined. Hundreds of educational institutions suffered a colossal damage. Six large hospitals in the capital city were inundated in the floods. Fourteen neonates have died at the G B Pant Children Hospital after the water entered the building. This was a disaster of international ramifications - a classic case on urban flooding and need to be studied worldwide. Kashmir suffered losses in excess of one trillion INR. Across the State, 125,000 families have been affected, 5642 villages were affected across the State and 800 villages remained sub-merged for over two weeks. More than 350000 structures - mostly residential houses - have been damaged. State government has projected a 44000 crore INR for relief and rehabilitation. Government must create Taskforce for Rehabilitation and also a Reconstruction Authority to co-ordinate the rebuilding programme. Kashmir needs technological innovation that will enable people to produce more welfare without tampering with nature and history of living in this 'Paradise on Earth'. There is a need for an Eco-sensitive Development in the Fragile Himalayan Environment. Health effects like PTSD in population are an emerging issue that will need attention of public health authorities. Community based research is required to measure the morbidity due to psychiatric diseases as a consequence of floods. Similarly the impact of 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.

Keywords: Disaster; Climate change; Floods; Deluge; Paradise; Healthcare; Humanitarian emergency; PTSD; Environment; Public health

Description

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 [1]. 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 [2]. 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 breathtaking 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) [3]. As the waters refused to recede quickly, there have been major concerns regarding outbreak of epidemics due to the stagnant water [4]. 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.

Severity of the Floods

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 [5].

The floods directly affected more than 2,600 villages in the state and submerged 30 percent 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 destruction of the only bridges and roads leading into these villages [6]. Continuous bad weather made rescue operations almost impossible for the first few days and the government struggled to make appearance to help the people (Figures 1-9).

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 [7].

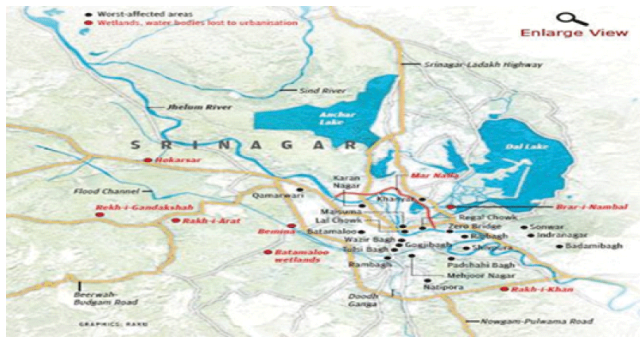


Figure 1: Jammu & Kashmir - worst affected areas



Figure 2: A Glimpse of Devastation caused by floods



Figure 3: Udhanpur Panchari Village (Jammu Province of J&K) wiped out in 1 minute



Figure 4: Deluged Paradise



Figure 5: Flood ravage in Kashmir



Figure 6: Search operations to locate dead bodies



Figure 7: Shattered dreams and debris of the houses



Figure 8: Survival first



Figure 9: Rescuing a female patient using local technology

What Caused the Flood?

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) [8]. 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 [9].

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 [10]. 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 [11].

Urban flooding in India has been on the rise since 2005. The map depicts worst floods of the past decade and their extent

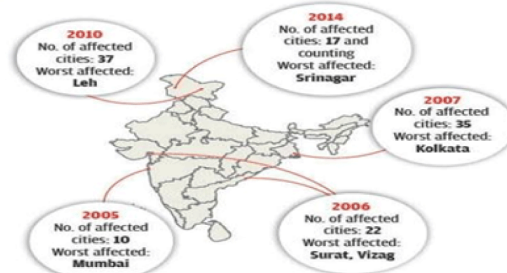


Figure 10: Urban flooding in India

The flood inundation levels recorded in the floodplains of the Jhelum were the highest in the archived hydrological history of Kashmir with vast areas in Kashmir province inundated, many of these areas remained under floodwaters for about two weeks and some low lying areas of capital city Srinagar for more than 4 weeks. In south Kashmir, several villages and cultivated lands were washed away by the floodwaters of the turbulent mountainous tributaries of the Jhelum. The Jhelum was flowing almost 1m above its embankments in the stretch from Sangam to Kakapora for a distance of about 25 km on 6-7 September 2014. The river got swollen attaining a width of more than 2 km at certain places in South Kashmir. Out of the 1760 sq. km. of floodplains, 912 sq. km were flooded in the Jhelum basin during the 2014 flooding. The inadequate carrying capacity of the river Jhelum in its length from Sangam to Khandanyar is greatly responsible for floods. Just upstream of Srinagar at Padshahibagh, a flood spill channel with the original capacity of 17,000 cusecs (now reduced to less than 5,000 cusecs) takes off to by-pass the Srinagar city. Therefore, floods can be caused by Jhelum in Srinagar, when the discharge of river through the city exceeds 35,000 cusecs. The drainage capacity of the main Jhelum and the flood spill channel is inadequate to carrying the enormous discharge of floodwater measuring more than 120,000

cusecs. Experts believe that the cumulative effect of the heavy rainfall event, the massive reckless urbanization of the floodplains along both sides of the Jhelum since 1972, loss of wetlands, and the reduced drainage capacity of Jhelum due to the siltation from the catchment are responsible for devastating deluge.

Odisha's super cyclone in 1999, Cyclone Hudhud of 12 October 2014 striking Odisha and Andhra Pradesh, Uttarakhand downpour in 2013, January-February 2005 snow storm of South Kashmir, October 8, 2005 devastating earthquake in Kashmir, flash floods of August 6, 2010 in Leh, torrential rains in Mumbai in 2005 and now J&K floods constitute eight clear weather related events in just fifteen years, each causing massive devastation and human misery. Exploitation of natural resources, human greed and unplanned urban development has started showing its effect on climate change. (Figure 10).

Impact of the 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 [12]. 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.

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 [13]. 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 [14]. 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 Maharaja

Hari 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 rendered 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 11) [15].



Figure 11: Premier Teaching SMHS Hospital (Post floods)



Figure 12: Submerged SKIMS Medical College, Bemina



Figure 13: Tertiary care Lalla Ded Maternity Hospital, Srinagar (inundated)

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 12 and 13) [16].

Most of the diagnostic equipment including MRI, CT Scan, Ultrasound, Radiotherapy equipment, Ventilators, Colour Doppler, ERCP machine, Oxygen Concentrator plants, PCR, Autoanalysers 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 [17].

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 [18].

Impact on Health

Due to 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 [19]. 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 - diarrhea 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, risk of vector-borne diseases such as malaria increases [4].

The areas of Srinagar marooned in the flood waters have been declared as hotspots for 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 is 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 disaster on children is mediated by personal experience, developmental competency, parental reaction and the level of disaster response. Children show higher level of intrusion and avoidance during the aftermath. Social cooperation and extra care by parents towards children is essential to overcome the trauma [20]. 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.

Economic Impact

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 [21]. 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 [22].

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 on 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” [23].

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 milch animals and 33,000 sheep and got perished in the floods". Tourism infrastructure and government residential colonies have suffered losses to the tune of 5,000 crore INR [24,25].

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.

Impact on Education

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 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 heavy loss to infrastructure of more than 1500 school buildings" [26]. Another 450 schools in private sector have suffered extensive damage.

Comparison with Other Floods

The flood in Kashmir was similar to the recent floods in Uttarakhand (2013) and Leh (2010) as all three flood events were caused by the initial incessant rains and were attributed to climate change. There was a similar pattern of quick collection of water on the ground after incessant rains that lead to flash floods. Where the pattern of cause and occurrence was similar, the damage and destruction vastly varied.

Uttarakhand floods caused a financial loss of \$1 billion and more than 1000 people lost their lives [27]. Leh, comparatively much less populated than Uttarakhand and Kashmir, saw a financial loss of \$50 million and more than 250 people lost their lives [28]. In Kashmir, the state government, after final assessment of losses (both private and public) reported a financial loss of nearly \$16.2 billion whereas 285 people were reported dead in the floods with several people missing [29].

Life after Floods

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.

Climate Change: A Reality

The deluge raises many questions about environmental degradation and climate change. Unplanned growth of cities and towns of Kashmir within and outside the flood basins has to be regulated and no growth is to be allowed within the river basin. Illegal mushrooming of houses within the river basin of Jhelum and Doodganga have been major contributing factors for overflow of river waters. It has obstructed the flow, swelled the river water and pushed the waters over the embankment and also forced the breach. Settlement near Kursoo Raj Bagh, from the mouth of flood spill channel to the Zero Bridge, has been primarily responsible for the breach, overflow and devastating flooding.

According to WHO (World Health Organization), unmitigated climate change will lead to significant increases in illness and death brought on by environmental changes [30]. Climate change is considered the greatest global health threat of the 21st Century. The effects of climate change on health have begun to be well established. Little attention has been paid to the health systems that must adapt to deliver services that can respond to changing disease patterns and health needs of people [31]. Climate change will have far-reaching effects on how we build, organise, and manage health systems as complex institutions [32]. Developed economies have established surveillance and early-warning systems and planning tools, but developing nations lag far behind.

Rebuilding the Paradise

The worstn - ever flood of 7 September 2014 that deluged Kashmir has given rise to enormous challenges both to the government and people. Aftermath of natural calamity particularly rehabilitation of hundreds of thousands needs coordinated efforts, comprehensive planning and professional management which includes making residential areas habitable, restoration of basic civic facilities, focus on health care delivery system and educational institutions and above all providing shelter to homeless and means of livelihood to those who lost everything because of this major disaster. Wisdom need to be summoned to overcome the crisis [20]. The epic tragedy offers a unique window of opportunity for real-time design of policy. There are many interpretive models of a smart city mostly anchored on innovation in design including use of information and communication technology for efficiency in energy management, adoption of green energy and practices that make growth sustainable. In essence: efficiency and harmony with nature. Government should emulate

cities that were rebuilt post disasters. Greensburg in Kansas which was flattened by a mile-wide F5 tornado in 2007 chose the green, smart route to rebuild the city. Fukushima which was bludgeoned by an earthquake, measuring 9 on the Richter, and tsunami is being rebuilt with new concepts. A sound and dependable weather forecasting (Doppler radars) and other modern systems should be a top priority. The Asian Development Bank, the World Bank, and the Global Facility for Disaster Reduction and Recovery (GFDRR) of the World Bank can be approached for help and to quantify the need for financial resources in recovery and rehabilitation. It is not only about money. It is also about building our own capacities in disaster risk management and in post disaster reconstruction [20].

Through the centuries, earthquakes, fires, floods and war have levelled many of the world's great cities. There have been historic disasters like the US cities Galveston, Texas; Dayton, Ohio; St. Louis, Missouri; Anchorage, Alaska; Greensburg, Kansas 2007; and Antigua, Guatemala, 1541; Lisbon, 1755; Hungarian city Miskolc, 1878 flood; Saint-Pierre, Maritine, 1902; San Francisco, 1906; Tokyo, 1923; Berlin, 1943-45; Hiroshima, Japan 1945; Mostar, Bosnia, Brisbane experienced major flooding in 1893 and 1974 ; 1992-95; Beirut, 1975-90; New Orleans 2005; Port-au-Prince, Haiti, 2010; Santiago, Chili, 2010; Australia, beginning in December 2010; Japan Tsunami, 2011 and City of Evans, Colorado, 2013's devastating floods. But Cities were destroyed and completely rebuilt and built better.

The safety of all standing and surviving structures should be measured before people start moving back into them. The government and private stakeholders have to ensure that the safety measures are in place to avoid any further damage to property and loss of human life. The process of reconstruction should essentially focus on partial or complete relocation and reconstructing the essential infrastructure including housing. Rebuilding can pave a safe way by reducing vulnerabilities that previously existed, by beginning the process of development in a more sustainable mode, by setting in place systems, technologies and processes that improve the quality of life and are in sync with the regional environmental conditions. For a more sustainable and equitable development in the fragile Himalayan environment, and for improved quality of life and reduced levels of vulnerability eco-sensitive approach is crucial.

Learning from Adversity

Floods threatened the lives of more than 50 percent of residents of Srinagar city. According to experts nearly 600,000 people are estimated to go jobless for next six months after the September floods wreaked havoc with the economic sectors in the Valley. Similarly, in Agriculture and Horticulture suffered huge losses. 5000 band-saw machines across valley making wooden boxes for fruits and other agriculture products were hit, 90000 animals died affecting around 200,000 youth in these sectors. State has already 8,00,000 unemployed people registered in valley and the floods will at least add more 600,000 youth. The floods have created vacuum in the employment sectors [32,33].

The impact of deluge is of monumental proportions. There are huge economic, social and psychological costs. When a 2000-year old Srinagar with all its historical and modern-day moorings is inundated, an approach that surmounts the normal methods of recovery and reconstruction is absolutely essential. The state response to this catastrophe has to be prompt, robust and dynamic. State government has projected 44,000 crore INR relief and reconstruction plan [20].

The catastrophe of such magnitude is a humanitarian crisis that needs very strong response from the government, NGO's, civil society and international aid agencies. Government must create the taskforce for Rehabilitation and Reconstruction Authority to co-ordinate the rebuilding programme. To pursue development with concern for the fragile Himalayan environment is essential. Eco-sensitive development is more sustainable and equitable. Taking full advantage of scientific advances particularly in MET Sciences, Information Technology and rebuilding the cities/towns is an inescapable necessity. Emergency preparedness is absolutely essential. There is need to rejuvenate small and medium towns in Kashmir. Innovative and robust administrative system is required to meet the challenges of the deluge. Through the centuries, earthquakes, fires, floods and war have levelled many of the world's great cities. There have been historic disasters like the U.S. cities Galveston, Texas; Dayton, Ohio; St. Louis, Missouri; Anchorage, Alaska; Greensburg, Kansas 2007; and Antigua, Guatemala, 1541; Lisbon, 1755; Hungarian city Miskolc, 1878 flood; Saint-Pierre, Maritine, 1902; San Francisco, 1906; Tokyo, 1923; Berlin, 1943-45; Hiroshima, Japan 1945; Mostar, Bosnia, Brisbane experienced major flooding in 1893 and 1974 ; 1992-95; Beirut, 1975-90; New Orleans 2005; Port-au-Prince, Haiti, 2010; Santiago, Chili, 2010; Australia, beginning in December 2010; Japan Tsunami, 2011 and City of Evans, Colorado, 2013's devastating floods. But Cities Were Destroyed and Completely Rebuilt [20].

The state of Jammu and Kashmir is exposed to natural disasters including floods, cyclones and earthquakes which are major threats to its economy. Of late, there have been floods in 1950, 1954, 1957 and 1959 and out of these the floods that hit Kashmir during 1957 and 1959 were two floods of greatest magnitude recorded in Kashmir. In the past, all boats in Dal, Wullar lakes and other water bodies would be commandeered with the owners given premium compensation whether they were actually used or not. They would be attached to different police stations to remain available on call and a good number of them would be loaded on the trucks and kept in readiness in control rooms for deployment. Sand bags were procured in large numbers to plug the breaches. There would be a daily press briefing by the top officials of the government, which would also create a feeling of readiness for people of low lying areas that they might have to evacuate any time. People witnessed buildings tumbling down, bridges collapsing and carcasses of animals floating around and dashed to electric poles and trees. Water gushing into residential colonies turned them into the ghost towns with no sign of life but only occasional cries of birds which could be heard from far off places, giving an impression as if there was no life. Disaster management occupies an important place in the policy framework as it is the poor and underprivileged who are most affected on account of calamities and disasters [20].

Conclusion

As recovery efforts begin in areas ravaged by floods, rebuilding may seem like an impossible task right now. But rebuilding will happen. Why we pretend the next storm won't happen—and flush billions in disaster relief down the drain. Government must create the taskforce for Rehabilitation and Reconstruction Authority to co-ordinate the rebuilding programme. 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 breathtaking waterfalls bemoan the state of the torn apart land, the polluted streams, and the suffering people. To pursue development with concern for the fragile

Himalayan environment is essential. Eco-sensitive development is more sustainable and equitable. 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 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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