



A Study On Socio-Economic Effects Of Flood 2014 In Kashmir Valley

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ABSTRACT

Floods have serious implications on land and people. They disrupt the ecological balance, hamper the economic development, affect the social fabric of the society, create chaos, damage the infrastructure, put constraints on the movement of people and create displacement of millions of people. In 2014, Kashmir Valley witnessed the worst flood in the last 100 years. It was induced by heavy rainfall due to combined effects of western disturbances and Indian summer monsoon during September 04-10, 2014. The impact of the flood is still felt in the Kashmir Valley, which has changed the perception of the people of the valley regarding floods. The flood had enormous impact on environment, economy, society, political set up and all the aspects of life. The present study analyses the impact of the 2014 flood in Kashmir valley and its aftermath. It analyses the physical and social vulnerability of different districts regarding floods and analyses the variability of the impact. The study is based on primary as well as secondary sources of data, and in this paper we are going to analyze the causes of the flood and its impact on Kashmir, economically as well as socially.

Keywords: Flood hazard Index, Disaster, Flood, Livestock, Economic Losses, Disasters, Flood, Unprecedented, Devastation, Inundated, Prevention, Preparedness, Recovery.

I. INTRODUCTION

The Union territory of Jammu and Kashmir is very different from the other parts of the country in terms of climate, social setting, topography, economy and strategic location. Jammu and Kashmir is spread over an area of 42,241 square kilometres and is split into two regions namely Jammu and Kashmir. Both the summer and winter capital cities of the state (Srinagar and Jammu) figure in Seismic zone IV and V (Draft Jammu and Kashmir State Disaster Management Policy, 2011).

Natural hazards such as landslide, earthquake, flood, tsunami, forest fire, mud flow and volcanic eruption often cause disruption of physical and cultural environment (Mallinis et al., 2011). Amongst all these natural hazards occurring in the world, floods are considered as the most devastating, frequent and widespread (Sanyal and Lu, 2004). In India, floods are recurrent phenomena mostly in Bihar, Uttar Pradesh, Assam, Odisha and Jammu and Kashmir (Kashmir valley) states. Heavy downpour during monsoonal months (June to September) causes floods in the flood prone areas of these states (Mohapatra and Singh, 2003).

Disasters like floods create havoc and inundate places which degrade the environment and have a profound impact on the economy. The period from 2010-2019 marked the costliest in the modern record for global natural disasters on a nominal and inflation-adjusted basis. Total direct economic damage and losses tallied USD2.98 trillion. This was USD1.1 trillion higher than the previous decade (2000-2009); USD1.8 trillion. Asia-Pacific (APAC) accounted for USD1.3 trillion – or 44 percent of the decadal total as catastrophic earthquake, tsunami, inland flood, and tropical cyclone events were recorded (Aon, 2020). Most of the people affected by disasters (2000-2019) – over 90% - were affected by climate-related events including extreme weather like floods. 25 million people are displaced every year by climate and weather (United Nations Office for Disaster Risk Reduction, 2020). South Asia is heavily at risk. A rise of more than 2°C will increase coastal flooding in Bangladesh, with the attendant risk that salt water will infiltrate drinking water. Mumbai, Kolkata, Karachi, Chittagong, Colombo, and other coastal cities will be endangered. The scale, intensity and magnitude of disasters is expected to be unprecedented. More frequent droughts will affect water availability and crop yields; higher temperatures will bring more heat waves; and warmer oceans will produce more intensive storms. The effects of floods on developing nations can be summarized into three categories. First, the consequences for human health include death, physical injury, disease transmission, malnutrition, shock, degeneration of morale and loss of motivation. Secondly, the consequences for agriculture include loss of crops, food stocks, seeds, stored products and agricultural wages, damage to farmed land, death or dispersion of livestock and rising commodity prices. Thirdly, the impact on settlement and the economy comprises damage to housing, buildings and infrastructure, loss of household effects, depreciation of property, reduced output, loss of business income and rising prices. Though these are also the consequences of floods in industrialized nations, in the Third World lack of resources creates some distinctive and particularly serious outcomes. The Kashmir valley is one of the most flood hazard-prone Himalayan region. From the literature review, it is observed that the valley witnessed significant flooding during 879 AD, 1841, 1893, 1903, 1929, 1948, 1950, 1957, 1959, 1992, 1996, 2002, 2006, 2010 and 2014 (Bhatt et al., 2016). Historical records testify the occurrence of sixty-four flood events from the early seventh century to 1950 CE. Due to its geographic, climatic and geological setup, the Kashmir Valley is vulnerable to all

types of the hazards. The historical records reveal that the Kashmir Himalayan region has suffered heavy casualties and loss of property due to the recurrent floods, earthquakes, avalanches and other hydro-meteorological disasters (Lawrence 1895). The 2014 flood in Jammu and Kashmir hampered the societal set up, affected the economy, degraded the environment and ecological balance, led to water pollution and soil erosion and the overall socioeconomic development. Jammu and Kashmir witnessed heavy and continuous rain from 3rd September to 7th September 2014 during last stage of southwest monsoon which resulted into unprecedented widespread flooding and landslides across the region. It was the worst flood in over 100 years in the Kashmir valley which can be termed as 'The Great Flood' due to its enormous impact on environment, economy and society. In September 2014, the northwest of India and northeast Pakistan experienced incessant rains, which were particularly intense in the mountain region of Jammu and Kashmir. Massive floods and debris flows caused catastrophic damage in areas located along the main water courses (Kumar and Acharya, 2016). The situation was especially dramatic in the Kashmir valley, where the Jhelum river flooded most of the inhabited land and crop fields, covering a surface of almost 853 km² (Romshoo et al., 2018). The 2014 flood was more devastating as compared to other floods in recent times.

The present study attempts to analyse the socio-economic impact of The Great Flood of 2014 in Kashmir valley. It analyses the differences in the amount of damage across the different districts and whether the impact depended on the type of houses and their vulnerability. The study also evaluates the social vulnerability in different districts regarding the 2014 flood in Kashmir valley.

II. REVIEW OF LITERATURE

Ishfaq Hussain Malik and S. Najmul Islam Hashmi, 2021 have conducted a study on "The Great Flood and its Aftermath in Kashmir Valley: Impact, Consequences and Vulnerability Assessment". In this study they revealed that the people suffered badly due to the deluge and the flood had a long time impact on environment, economy and the lives of people. The flood did not only result in destroyed infrastructure and damaged property, but also had an adverse social impact on citizens affected by the disaster. The long term effects of flooding on psychological health may perhaps be even more important than illness or injury. The impact of 2014 flood Kashmir flood on physical and mental health was extensive. It resulted into the loss of lives, emotional consequences, stress, panic and anxiety. The stress of dealing with a traumatic event can exacerbate pre-existing health conditions and lead to a variety of illnesses that continue to impact lives long after flood waters have receded. Making repairs, cleaning up, and dealing with insurance claims can be stressful. If there is a lack of support during the recovery process, stress levels may increase further. Being evacuated from home and losing personal possessions undermine people's sense of place as well as their sense of attachment and self-identity. Flood victims frequently reported feeling isolated and

depressed, which created social tension and psychological distress among the population of Kashmir.

Sangram Kishor Patel, et al. 2020 conducted a study on “A review of disasters in Jammu and Kashmir, and Ladakh region in India”. In their study they revealed that India has always been a disaster-prone country, with multiple states afflicted by different types of disasters. The impact of these disasters is exacerbated when an area is prone to multiple types of disasters. This study attempts to understand the impact of natural and man-made disasters on the people of Jammu and Kashmir (J&K) and Ladakh region in India as well as it also examines the resilience mechanisms adopted by the people, and identifies measures taken by the government in response to these disasters. To understand these disasters’ dynamics, we conducted both offline and online desk reviews for this study. The review suggests that J&K and Ladakh region is afflicted not only by multiple natural disasters such as floods, earthquakes, avalanches, and landslides but also by the terrorism and violence, which has caused unparalleled death and destruction. These natural and man-made disasters have adversely affected most aspects of life and development in the region. To mitigate the risks, effective disaster risk reduction and management systems, early warning systems and infrastructure need to be strengthened. In addition, community engagement needs to be enhanced with the goal of addressing the grievances of the population and engaging them in the design and implementation of sustainable development programs.

S. Shakeel 2018 attempts to analyses the causes, consequences of floods in Kashmir. In the study area, flood is current 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.

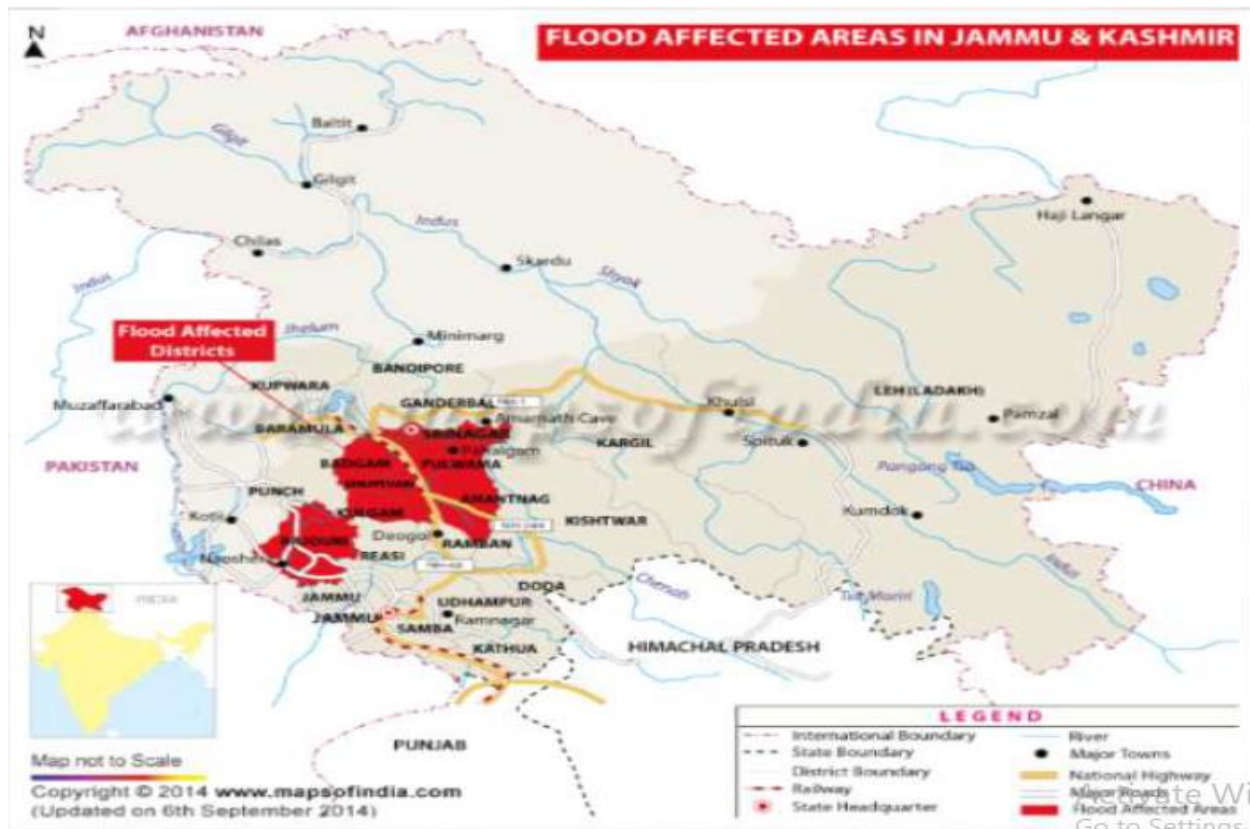
Dr. G. M. Dar 2015 has conducted a study on “Kashmir Floods 2014: Realities versus Possibilities”. In this study the author says that Jammu and Kashmir has been witnessing floods and other natural disasters from times immemorial. There have been many events on account of floods especially in the Kashmir Valley on account of its bowl shaped topography which makes it one among the most vulnerable regions of the country. The state of Jammu and Kashmir witnessed one of the worst floods in its history on 7th of September 2014 leaving life paralysed especially in the capital city of Srinagar and adjoining areas. Considered to be an unprecedented event ,the Flood fury inflicted a loss of more than one lakh crore rupees as per the official estimates. The hardships were further aggravated due to communication breakdown and as such a poor response initially. However, the need felt

was to have a robust response mechanism to deal with such disasters in future in order to save life and property. Flood Early Warning System needs to be strengthened all across the region to ensure timely warnings and forecasts. Prioritisation of both the structural as well as non- structural measures needs to be made on both short and long term basis. Despite some big initiatives like the World Bank funded Jhelum Tawi Flood Recovery Project (JTFRP) or the PMDP, need to strengthen the Institutional Mechanism at various levels remains of paramount importance.

III. 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).

Figure- Flood affected areas in Jammu and Kashmir



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.

IV. 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.

V. 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.

(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 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 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 2).

Figure-2 Submerged SKIMS Medical College, Bemina



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 3).

Figure-3 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.

(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

(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.) 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 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 been 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

It is evident that Kashmir has a long history of floods in view of its topography and drainage with only one exit at Uri. The State has witnessed unprecedented floods in 2014 which has been termed as the Extreme of Extremes. Against the carrying capacity of around 40,000 cusecs, the river along with the FSC was overloaded with around 120,000 cusecs of water which in simple terms means filling 3 buckets of water in one bucket of the same capacity. The impact of 2014 flood in Kashmir valley was massive. It disrupted the normal functioning of the society, degraded the environment, damaged thousands of houses in every district, hampered the economy seriously, created panic among people, shattered the lives, led to poverty, imposed many diseases on people and had overall grave socio-economic implications. The people suffered badly due to the deluge and the flood had a long time impact on environment, economy and the lives of people. The flood did not only result in destroyed infrastructure and damaged property, but also had an adverse social impact on citizens affected by the disaster. The long term effects of flooding on psychological health may perhaps be even more important than illness or injury. The impact of 2014 flood in Kashmir on physical and mental health was extensive. It resulted in the loss of lives, emotional consequences, stress, panic and anxiety. The stress of dealing with a traumatic event can exacerbate pre-existing health conditions and lead to a variety of illnesses that continue to impact lives long after flood waters have receded. Making repairs, cleaning up, and dealing with insurance claims can be stressful. If there is a lack of support during the

recovery process, stress levels may increase further. Being evacuated from home and losing personal possessions undermine people's sense of place as well as their sense of attachment and self-identity. Flood victims frequently reported feeling isolated and depressed, which created social tension and psychological distress among the population of Kashmir. The political stability of Kashmir valley is key for the proper management of resources and framing of disaster management policies so that the impact of floods could be reduced and millions of lives could be saved. The government must create the taskforce for Rehabilitation and Reconstruction Authority to coordinate 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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