



Pakistan's Floods and their Devastating Impacts on People

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ABSTRACT

Flood is the most destructive amongst all the natural catastrophes in Pakistan. Pakistan has been hits by floods almost every year in the recent history but the current flash floods caused by torrential monsoon rains are worst of all. The heavy monsoon rains cause runoff in rivers and streams leading to drowning of dry parts of country. Climate change is worsening the situation every coming year. In this year, 3.5 million acres of crops were destroyed and nearly 800,000 cattle were lost in Pakistan. People lost their homes, employment and have to face health issues as well. Moreover, floods lead to destruction of buildings and roads highly impacting the country's economy. It is the need of the hour to take proper measures to prevent country's economy from further drowning. In this paper, we have discussed the impact of flood on lives of people in detail. Some suggestions have also been made for prevention and mitigation of floods in future.

Key words: Flood disasters, Economy, Agriculture.

INTRODUCTION

Natural catastrophes damage livelihoods, regular services, and health care by interfering with the economy and destroying infrastructure. Droughts, cyclones, landslides, earthquakes, and floods are all significant natural hazards in the current world situation, with floods being the most devastating due to their enormous participation in human mortality, economic losses, and social harm to society as a whole (World Bank, 2012). Infrastructure could widely collapse as a result of floods. With 6.8 million deaths in the 20th century, they were the main source of natural disaster mortality globally. Asia is the region most hit by floods, with approximately 50% of flood-related fatalities in the past 25 years occurring there (Jonkman & Kelman, 2005). Urbanization, changes in land use, a lack of regulations, the increasing concentration of the poor and reduced preparedness measures all contribute to the likelihood that floods and their effects will become more frequent and devastating in the future (Berz, 2000). According to the Emergency Event Database 2017, more than 60% of the world's population was impacted by flood disasters in 2017, affecting about 96 million people. Pakistan, India, Bangladesh, and China were designated as the "supermarket of catastrophes" in Asia as the floods in

that region of Southeast Asian and South Asian nations have been more intense and frequent in the last few decades (Vuren et al., 2005; James 2008; Hirabayashi et al., 2013).

In the 2010 and 2014 editions of the climate risk index, Pakistan was ranked 1st and 5th respectively (Jamshed et al., 2019). In Pakistan, flooding is now a frequent occurrence. According to estimates, flood occurrences between 1970 and 2016 claimed the lives of 13,000 individuals, affected 80 million people, and resulted in US\$ 21 billion in economic losses (EM-DAT, 2017). Climate change has made floods more frequent and intense, making the management practices difficult for flood management authorities of Pakistan (NDMA, 2012).

An estimated 14–20 million people were directly impacted by the floods in Pakistan in 2010 and more than 1,700 people were reported dead. In addition to the destruction of at least 436 medical facilities, about 1.1 million houses suffered damage (Frega et al, 2012). In 46 out of the country's 135 districts, the flooding resulted in \$9.7 billion in damage and flood lasted nearly six months in some places. The effects on agriculture crops, animal shelters, livestock, private seed inventories, agricultural machinery, fertilizers, forestry and fisheries in rural areas were really devastating (FAO, 2012). There were significant losses to the infrastructure, including 2.9 million

million homes that were damaged of which 1.9 million were completely destroyed, and a loss of 80% of food supplies was reported (Polastro et al., 2011). These floods mostly impacted the underprivileged rural people, resulted in widespread population displacement, claimed thousands of lives, and destroyed millions of hectares of cropland (Nadeem et al., 2014). The rural population, especially those living in poor nations, is more vulnerable to floods because of inadequate flood mitigation adaptable infrastructure and a lack of resources (Abbas et al., 2015).

Due to the effects of global warming on the hydrological cycle, flood threats are expected to worsen in many areas in the future. Heavy precipitation events over various land areas are predicted to become more frequent and intense, according to the Intergovernmental Panel on Climate Change (IPCC). In addition, the IPCC's most recent assessment report predicts that the frequency and severity of extremely high sea levels will rise (IPCC, 2013). Additionally, it is anticipated that some places would see an increase in the risk of river flooding while others will see a decrease (Hirabayashi et al., 2013; Winsemius et al., 2016).

The recent Pakistani floods (2022) are proof of IPCC report. These are much worse as compared to 2010 floods. Villages have been washed away by Pakistan's devastating flood recently, which was brought on by torrential monsoon rains. Almost one-third portion of the country is hit by the flood (CNN, 2022). 116 districts have been impacted by flooding and heavy rain, with 72 of those districts having been formally designated as "calamity stricken" by the government. 400 or so children were among the 1,200 fatalities. Numerous homes have been demolished, and more than 6.4 million people, including an estimated 3.4 million children, are in need of humanitarian aid and at a heightened risk of waterborne illnesses, drowning, and hunger. Pakistan's Balochistan and Sindh provinces, as well as Punjab and Khyber Pakhtunkhwa, have suffered the worst damage, which is most noticeable in southern and central Pakistan (UNICEF, 2022). Almost half million people displaced by flood are living in relief camps established by government and 650,000 of them are pregnant women that are at high risk of contracting diseases (Aljazeera, 2022). At a time when Pakistan's economy is also getting worse as a result of rising costs for essential goods, the massive loss of livestock and crops would also have a detrimental effect on livelihoods as well as on overall food security.

The negative effects of flooding, such as economic losses and human casualties, can be reduced by implementing considerable mitigation measures on a community-based or individual basis (Few 2003; Wisner et al., 2004; Islam et al., 2012). Local adaptation capacities can be strengthened and vulnerability can be reduced through the government's considerable policy initiatives and flood mitigation choices (Ahmad & Afzal, 2019). In this article we will discuss the socio-economic impact of flood on effected people and the strategies that can be adopted by people and government to control and manage floods.

Socio-economic impacts of flood on people:

Numerous political and socio-economic effects of flooding lead to a wide range of intricate issues. Some of

the issues include population displacement, damage to the infrastructure, such as ruined roads, crops, loss of livestock and destruction of health facilities. Theron (2007) stated that these destructions eventually lead to a food crisis. It is impossible to overstate the impact of the flood on man because it affects every aspect of his life. The physical surroundings of man, his health, and agricultural goods are all included in this (Theron, 2007).

Impact on infrastructure

The effects of flooding on homes and households can be severe. Floodwaters that move quickly have the power to destroy entire slums, whereas water that rises slowly causes damage to structures. Depending on its size and speed, a flood can harm any kind of structure, including bridges, automobiles, buildings, sewerage systems, roads, and canals. The ongoing political and development processes are slowed down by these destructions (Theron, 2007).

More than 160 bridges have collapsed recently due to flooding in Pakistan, and 3,200 miles (5,000 km) of roads and highways have been demolished. Additionally, it has resulted in the partial demolition of 730,000 homes while completely destroyed 370,000 of them (UNICEF, 2022).

Impact on drinking water

Water pollution is another effect of floods. The disruption of the water delivery arrangements would make it more difficult for a home to acquire safe, clean drinking water. A study conducted by Shah et al. (2020) found that the majority of government water delivery schemes (pipelines) failed to provide clean drinking water and adequate monitoring mechanisms were lacking to ensure the quality of the water supplied. These pipelines were frequently regarded to pose a serious hazard to human health, especially during times of flooding when drinking water might be more easily contaminated, raising the health concerns.

The most impacted districts by the Pakistan flood of 2022 would likely suffer significant WASH infrastructure damage, according to preliminary data from the provinces. Estimates range from 20% to 30% of water systems being damaged in Balochistan, Khyber Pakhtunkhwa, and up to 50% in the hardest-hit regions of Sindh and Punjab provinces (UNICEF, 2022). There is now a significant risk of water-borne, fatal diseases like cholera, dengue, and malaria spreading quickly. Communities are increasingly using open defecation due to a lack of safe drinking water, which puts them at a high risk of catching diseases.

Impact on food availability

Floods may reduce the availability of basic foods. Additionally, the damaged roadways will make it harder to access food. The availability of food will be further impacted by increases in food market prices. Reduced employment prospects will have an impact on household incomes, which will result in less food being consumed because of limited availability or higher prices (Sayed & González, 2014). As a result, diet quality will decline and there will be a general food shortage.

Impact on agriculture

Pakistan is a developing agro-industrial nation in south Asia. Its annual GDP growth rate is 5.5% on average.

Nearly 43% of Pakistan's workforce is employed in the agriculture sector, which is essential to both rural and urban residents and generates 20% of the country's GDP (MoF, 2015). In the 2010 flood disaster, crops on 0.42 million hectares of land in Punjab, 0.30 million hectares in Sindh, 0.05 million hectares in KPK, 0.05 million hectares in Baluchistan, and 0.01 million hectares in Azad Jammu & Kashmir were impacted. A total of 0.84 million hectares of crops were impacted in 2010. Only Sindh's 0.88 million hectares of cropland were impacted by the flood of 2011 in total. Flooding in 2012 destroyed 0.47 million hectares of Punjab and Sindh's cropland. A total of 0.42 million hectares of crops in Punjab, Sindh, and Baluchistan were devastated by flooding in 2013. In the same way, 0.98 million hectares of Punjab's cropland was impacted by flooding in 2014. (Rehman et al., 2016). According to data from recent flooding in Pakistan, 3.5 million acres of crops were destroyed and nearly 800,000 cattle were lost (UNICEF, 2022). Loss of agricultural products will have a terrible impact on the economy and result in a catastrophic food crisis.

Impact on health

Health facilities are public resources that are essential to provide healthcare in communities at risk for disaster. One of the major negative effects of a flood disaster is the disruption of health services either to structural damage to them directly or due to indirect effects on accessibility and support systems (logistics, communications, and/or power) (Roukema, 2008). Contaminated flood waters can encourage the spread of diarrheal disease, harming children's health (Sajid & Bevis, 2021). Other than diarrhea many other health problems may arise including dengue, respiratory disorders, cholera, malaria and snake bites. Snake bites were thought to be more deadly than respiratory and diarrheal illnesses during the Bangladeshi monsoon rains of 2007 (Dewan, 2015).

According to the early reports from the 2022 floods in Pakistan, there has been substantial damage to public health facilities and the loss of important pharmaceuticals. This includes 501 health facilities in Sindh (including 88 that have been completely destroyed) and 244 in Balochistan. Cold rooms for vaccines have been destroyed, and floods have washed vaccines away. Before the floods occurred, these districts were among those with the worst health indicators. 63 percent of respondents in a recent quick survey in Balochistan cited lack of access to drinking water as their top issue. Access to clean water, improved sanitation, and hygiene education are essential for displaced people, many of whom won't be able to go home for weeks. People who use open defecation and drink contaminated water pose a serious risk of disease epidemics. In the government-run relief camps that have been established across the nation, diarrhoea, skin conditions, and eye diseases are on the rise. One of the most affected provinces, Sindh, recorded more than 90,000 cases of diarrhea in a day (Aljazeera, 2022).

Impact on women

Discrimination against women, particularly during floods, is a problem in less economically developed countries (LEDCs) like Pakistan. Despite the fact that most of these camps are devoid of the most basic human

requirements, displaced women are forced to remain there constantly (Macfarquhar, 2010). The safety and security of young females was not adequate in more than 66 percent of the camps during 2010 floods. Women had to stay in these camps 24 hours a day and carry out all necessary tasks, including using the restroom and caring for nursing mothers' children. Unfortunately, these women must remain in this awful setting, yet forced modifications have always led to stories of suffering (United Nations, 2010). In addition to having trouble with defecation, these women also had to deal with appalling attitudes from their community, including rape attempts, sexual harassment, domestic abuse, and honour killings. A few of them—22 in August and 6 in September 2010—became so desperate as a result of this society's hostility toward them that they killed themselves (Bukhari & Rizvi, 2015).

Suggestions for control and management of floods Prevention and mitigation

An increase in worldwide floods is widely considered to be a contributing element of overall climatic changes. Therefore, it will be necessary for all nations to work together internationally to reduce their frequency. Pakistan must participate actively and meaningfully in global climate change negotiations and enhance its commitment given its high risk of flooding. The NDMA was amalgamated with the Pakistani government's Climate Change Ministry, which was established in 2010. Floods are happening more frequently in Pakistan as a result of the extensive deforestation that has taken place there. Forests are a major source of biodiversity and help in controlling the detrimental effects of climate change, protect people's livelihoods and minimize flood damage (Yaqub et al., 2015). The capacity of forest eco-systems to retain water is diminished by forest degradation in the upper catchment area used to harvest lumber and fuel wood (Financial Times, 2010). Therefore, government should take steps to stop deforestation and should start tree plantation drives.

The socioeconomic structure in rural Pakistan, where resources are controlled by local elites like landowners and tribal chiefs, is another significant element weakening the power of the populace. In Pakistan, there is a high concentration of land ownership, and poor communities are frequently forced to cultivate farmland, which is less profitable and situated in more disaster-prone places (Sabates et al., 2008). Landlords and government agents were accused of working together during the 2010 floods to direct floodwaters away from the properties of rural elites and towards the lands of common people. Government should assure the protection of poor rural people and make policies to distribute resources justly among rich and poor.

Advanced warning systems and access to weather forecasts are required, along with an improved institutional structure, to overcome mitigation and adaptation barriers. In the event of flooding, boosting household adaptive ability is necessary to increase numerous sources of income and enough access to financial resources for local impacted households. Implementing and developing local level general mitigation techniques within the community is a requirement for decreasing the cost of mitigation. Only through forging strong alliances and joint ventures with other stakeholders including the community, the corporate

sector, and the government will these measures be able to function as intended (Ahmad & Afzal, 2020).

Avoidance and Response

In Pakistan, there is a higher level of preparedness for floods than for other natural disasters. Emergency situations are continuously monitored by the Ministry of the Interior's National Crisis Management Cell. It collaborates with all other security authorities, including the province Crisis Management Cells, to give information in case of an emergency. Due to a lack of competence and technical knowledge in flood management, this authority is unable to operate effectively and efficiently as it is clear by the devastation caused by recent floods in Pakistan. It is urgently necessary to expand this authority's capacity through the employment of more modern technologies and the recruiting of knowledgeable, technically sound personnel. Due to its better communications, transportation, and human resource capabilities, only the Pakistani Army actually possesses a high level of effective relocation, rescue, and fast response capacity. The primary operational focal points during disasters, the DDMA's, highlighted their reliance on the military and NGOs for rescue operations. Currently, the majority of District authorities are unable to carry out the preparations in even moderate emergencies (Sayed & González, 2014). To lessen the public's susceptibility to flood disasters, concerted action must be taken immediately.

Enhancing the coping mechanisms

Individually and collectively, those who are more vulnerable to flooding create their own tools, resources, and coping mechanisms. However, each of these systems has potential costs that can be monetary, social, or both. Even though they are aware of what to do, an evaluation of a Bangladeshi preparedness program reveals that those who are most at risk have little to no extra money to invest in protective measures against flooding (Alam et al., 2007). When assets that serve as a buffer are destroyed, people may be more at risk of the next flood. The most effective programmes for boosting coping and adaptability capacities right away are those that actively help communities and their local organisations (World Bank, 2006).

Government should install more modern systems to predict floods and warning people in order to save people from flood destructions. For disaster relief efforts, it is necessary to have on hand the basic necessities including food, animal feed, first-aid supplies, emergency medications, materials for makeshift shelter, etc. In the event of a flood emergency, it is the management authorities' responsibility to set up safe spots for temporary shelter and to inform the population about those areas so that they can leave the threatened areas (Yaquab et al., 2015).

Educating the vulnerable people:

Education is essential for lowering local residents' vulnerability to floods and their health hazards. As a higher perceived risk is substantially connected with the likelihood of taking preventative actions, governments should invest in communication methods to raise risk perception among the population. As educated people are more likely to take precautionary measures seriously

therefore education is crucial for successful communication of flood risks (Shao, 2017). Women with higher levels of education are more likely to comprehend and apply the advice offered by disaster management organizations. Furthermore, because undereducated people are comparatively more susceptible than their educated counterparts, the policy should make an extra effort to address their requirements in addition to expanding access to education. Poor, uneducated women should receive priority in initiatives aiming at reducing vulnerability since they are more vulnerable to catastrophes (Shah et al., 2020).

Cooperation amongst Federal and Provincial Organizations

The horizontal coordination between these federal and provincial organizations needs to be improved, just like the vertical links between the NDMA, PDMA's, and DDMA's. Given that different agencies are responsible for different aspects of the agenda of reducing the disaster risk, which includes early warning, prevention, mitigation, and response, there should be more formal and frequent coordination between them. Increased coordination between the many disaster risk reduction initiatives would result from having one entity oversee the whole national agenda for reduction of disaster risk (Sayed & González, 2014).

Construction of Dams

The Government of Pakistan is urged to build additional dams and finish the present projects as quickly as possible. The construction of the Kalabagh Dam must be prioritised, and a sound choice must be made with the cooperation of all political parties. Pakistan is currently experiencing an energy crisis, making the construction of Kalabagh Dam capable of producing 3600MW energy even more crucial. The development of this dam as well as other new dams will increase irrigation resources, generate more hydropower, and reduce flooding. Indirect advantages include increased industrial and food production, increased employment opportunities, and improved agricultural output (Yaquab et al., 2015). It would be advantageous in two ways, including irrigation purpose for the production of crops and to reduce the risk of flooding, which occurs almost every year. Given that the country is based on agriculture, these are the only options to help Pakistan's economy to survive.

Conclusion

Ever since it was founded, Pakistan has experienced flooding. Typically, from July through September, Pakistan has high precipitation due to the summer monsoons that originate in the Bay of Bengal and arrive from the north-eastern side. In the southern part of Sindh province during these months, summer monsoons that originate in the Arabian Sea also produce rains. For the most portion of the country, this season brings showers of varying intensities. Heavy precipitation during these months causes flooding in various parts of the country. The intensity of these floods has increased over the years. In this paper we have discussed the impact of these floods on economic and social life of effected people. It affects the health facilities, surroundings and employment of man. It

will be accurate to say that a flood can completely destroy a simple household. The 2010 floods were considered to be the most devastating floods in the history effecting 10% of the country's population. The infrastructure and farmlands were badly damaged trembling the country's economy. But it seems that government has not learnt its lesson. Recent floods are proof of inability of government to cope with flooding. Government took some important steps to prevent and control floods but those were not enough to save people from devastation. To avoid and also to limit the terrible effects of flood by offering alternative solutions to the current problems, it is advisable to concentrate on the technical skills and practical expertise of the disaster management authority. Pakistan needs to have access to the most recent technologies i.e GIS, remote sensing, and satellite imaging for weather forecast. Moreover government should make policies to stop deforestation and encourage people to plant trees as vegetation and plant have ability of rain water retention help to reduce abrupt water flow from river basins. Government should ask people to build houses away from river banks. There should be policies to educate people on how to prevent flood damages. Construction new of dams is the most important solution to control floods. So, keeping aside all the political issues, government should take all the political parties in confidence and start new projects as quickly as possible. Climate change is constant phenomena therefore; people and government should make joint efforts to protect themselves and country from future destruction.

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