

# Pakistan's Catastrophic 2022 Flood: A challenge for National Food Security

## 1. Introduction:

### Thesis Statement:

Pakistan has been facing enormous challenges for its National Food security due to catastrophic 2022 Flood. Flood causes destruction of crops and food storages which ultimately lead towards threat to food security. However, Flood damages can be controlled by taking preventive measures.

2. What is National Food security and how it is linked with Flood

3. Causes of catastrophic flood in Pakistan

a) Climate change has rised the intensity of rains

b) Lack of <sup>water</sup> storage ~~capit~~ capacity

c) Deforestation and its negative impacts on environment

d) Illegal construction in the course of rivers and water channels

4. How Flood poses challenge for National Food security

- a) Crops destruction due to flood
- b) Destruction of food stock & live stock
- c) Massive immigration and lack of resources.
- d) Increase in food demand compels government to import food.
- e) Agriculture land also damaged by flood - Future threat.
- f) Infrastructure destruction slows down rehabilitation process

5- How flood destruction can be controlled.

~~of construction of dams and water~~

~~flow~~

~~(d) construction~~

Case study of Japan.

6) How flood control can mitigate challenges for National food security.

a) Dams constructed for flood control can also help in irrigation

b) Forestation can provide food.

c) Removal of illegal construction will provide more place for Agriculture.

7- Conclusion:

Pakistan, the world's 7th most populous country is grappling with one of the worst climate induced governance and humanitarian crisis. The country has received twice as much rain than the thirty-year average this year, totaling 390.7 millimeters. It has damaged almost one third country, killed more than 1600 people and affected more than 33 million people. This showcases the havoc which this flood has caused to Pakistan.

There are several reasons behind these floods but major are, climate change has raised the intensity of rains, lack of storage capacity, deforestation and its negative impact on environment and illegal construction in the course of rivers and water channels. Floods not only destroys infrastructure but it also poses threat to food security. Flood effect food security by destroying crops, food stock and live stock, it also causes massive immigration and lack of resources. This also increases food demand and compels government to import more food. Moreover it also affect agricultural land and infrastructure which

that slowdown the rehabilitation process and causes future threat to national food security. These effect can be mitigated by controlling flood and for this purpose Japan can be seen as case study. These preventive measure not only help in control of flood but also help in food security by providing water, which will be stored in dam, for irrigation. Forestration can provide more food and ~~it~~ removal of illegal construction will provide more land for agriculture. In a nutshell, Pakistan has been facing enormous challenges for its national food security due to catastrophic 2022 Flood. Flood causes destruction of crops and food stores which ultimately lead towards threat to food security. However, flood damages can be controlled by taking preventive measures.

"Based on the 1996 World Food Summit, food security is defined when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. (The World Bank). According to The World Bank there are four major dimensions of food security: Physical availability of food, Economic and physical access to food, Food utilization and stability of the other three dimensions over time. As flood affects all these dimension, directly or indirectly, therefore it is a challenge for National food security of a country, especially for the countries like Pakistan that are already facing shortage of food. According to the state bank of Pakistan (a report in 2019), Pakistan despite being ranked at 8th in producing wheat, 10th in rice, 5th in sugarcane, and 4th in milk production, nearly 37% of households in Pakistan are food insecure.

There are several causes of flood in Pakistan, ~~but~~ chief among them is

that climate change has raised the intensity of rains. Pakistan observes monsoon rains every year, but due to climate change its intensity has raised alarmingly. The monsoon season, in Pakistan, starts from July and lasts till September and it brings rainfall with it, but in 2022 it caused record breaking rainfall in Pakistan. According to Pakistan Meteorological Department, Pakistan has received nearly twice as much rain than the 30-year average this year, totaling 390.7 millimeters. This shows how climate change has raised rains which ultimately causes flood in Pakistan.

Along with raised intensity of rains, Pakistan does not have sufficient water storage capacity. The number of artificial leaks and dams is limited in Pakistan due to which it cannot store excessive amount of water. As dams and artificial leaks are good sources to store rain water and the water come from river, but Pakistan has not paid heed to construct enough dams. Therefore, along with rain water, breakage of dam walls and leak banks caused flood

in 2022. According to Balochistan Provincial Disaster Management Authority (PDMA), 7 dams have broken due to rains in Balochistan, while many dams have been filled with water. This alarming situation shows how lack of water storage capacity causes floods in Pakistan.

As Pakistan has limited water, deforestation and its negative impacts on environment causes change in weather pattern and results in flood like menace. Forests control environment by absorbing  $\text{CO}_2$ , releasing  $\text{O}_2$ , releasing water through evaporation and avoiding soil erosion, but deforestation disturbs all these things and affects the environment. Pakistan has only 5.7% forest on its land which is already well below the recommended amount of 25% due to which deforestation causes severe effects on Pakistan. According to Global Forest Watch, "In 2010, Pakistan had 648 kha of tree cover, extending over 0.74% of its land area. In 2021, it lost 63.2 ha of tree cover equivalent of to 23.8 kt of  $\text{CO}_2$  emission. This illustrates how ~~dangerous~~ deforestation is dangerously affecting Pakistan.

In addition to deforestation, there is illegal construction in the river bed and

water channels which increases the flood destruction. The illegal construction in the river bed and water channels disturbs the flow of water and compel it to change its course which results in floods. Pakistan is India's low riparian country and receives 78% of India's water inflow, whenever, there is low water level in Indian rivers he minimizes the water flow in Pakistan. This results in people construct their hotels or houses in these area, but with the rise in flow rivers again follow the bed and cause destruction.

According to office of Commissioner of Malakand, "about 30 hotels at Kalam, Bahrain, ~~Malakand~~ Madain and Fizagat mostly built on River SWAT's beds were destroyed and other 50 damaged by flash floods at unprecedented velocity. By this, it is evident how illegal construction results in flood.

This flood not only results in infrastructure destruction, but also ~~pose~~ poses challenge for national food security. Flood affects food security in several ways, chief among them is crops destruction due to flood. Pakistan is an agricultural state, agriculture contributes almost 24 per cent of its GDP, therefore, crop destruction not only disturbs food availability



but also affects people's purchasing power which causes threat to food security. According to Food and Agriculture Organization of the United Nations "almost 4.4 million acres crops area affected by flood". ~~It~~ It is evident by this figure how flood affects crops and ultimately food security.

Along with crops destruction flood also causes destruction of food stock and live stock, ~~which results is~~ which raises challenge for national food security. ~~Monsoon rains, specifically this year, are unexpected that people can not take preventive measures and~~

As live stock contribute 57% in Agriculture sector and 12% in Pakistan's GDP, these ~~are~~, their death affects ~~cause~~ food security.

30 to 35 million people are directly linked with live stock sector and provide meat and milk to whole country. According to Food and Agriculture Organization (FAO) of the United Nations 872 K live stock perished due to flood. By this it is clear how flood poses threat to national food security of Pakistan.

In addition to this destruction

Flood also causes massive immigration of people from affected areas which affects their access to food, and other resources. Due to 2022 flood almost one third country was under water and along with infrastructure destruction there was also water borne diseases which compelled the people to ~~left~~ <sup>leave</sup> their areas and move towards dry lands, this massive immigration <sup>has</sup> affected their access to food and resulted in threat to food security.

According to Federal Ministry for planning, Development and Reforms almost 33 million people were affected with the 2022 flood. This massive number of affectedees shows how flood affects people access to food and results in a threat to food security.

This crop destruction and massive immigration put burden on government and compel it to import more food items. As Pakistan is already facing economic downfall it's not easy for Pakistan to import more food. Pakistan is an import based economy and its import bill is more than 80 billion dollars, but due to foreign reserves depletion Pakistan currently has only 4.8 billion dollars in its state bank reserves, therefore, Pakistan can not afford more import due to which Pakistan is facing food insecurity. In this situation

~~in~~ Flood also causes infrastructure destruction which results in slowdown of rehabilitation process and exacerbates people sufferings. Infrastructure like roads, bridges and underpasses, are also badly affected by flood and separates the flooded area from the rest of country, ~~making~~ <sup>makes</sup> it difficult for government to approach these areas and start rehabilitation process. According to UN office for the coordination of Humanitarian Affairs (OCHA)

"3500 km of roads and 149 bridges destroyed in Pakistan due to 2022 Flood." This illustrates how flood has damaged the governance process in Pakistan.

• Aforementioned catastrophe can be minimized by controlling flood, for this Japan can be observed as case study. Flood has been a key issue in Japan's policy history due to its distinctive hydrological, climatological and meteorological conditions. Just like the River Indus, Japan's Shinano-gawa river has also been a source of feeding agricultural land. However, during extreme rains the overflowing of the river poses an extreme threat. After each disaster the Executive Extreme Flood Control Operations Authority formulates new approaches, strategies and designs to analyse flood frequency to mitigate the

socio-economic and food security risks. Various structural measures including food supplies stockpiling, construction of dams, erosion and sediment control channels are put in place. This has drastically reduced the number of flood victims and flooded areas. In Japan, the following three methods are used to control flood water; Constant volume Discharge Method, Constant Rate and Discharge Model, and Natural Control Method.

Japan has also constructed and designed underground discharge channels. The Metropolitan Area Outer Underground Discharge Channel also known as G-Cans- is the world's largest underground flood water diversion system and was completed in 2009.

The G-Cans system drains are linked by long underground tunnels, through which excess water from heavy rainfall moves and is subsequently collected and released in reservoirs. These canals and ditches divert water away from populated areas and safeguard the urban and rural settlements from flooding. In Japan, dam planning coupled with flood forecasting and 'Extreme Flood Control Operations' have greatly mitigated the damage caused by floods. Pakistan should learn from the Japanese climate-resilient rehabilitation programs to combat displacement

Flood damages are putting more burden on Pakistan. According to Ahsan Iqbal, Minister for Planning, Development and Reform, Pakistan's wheat import is up by 2345% in the first two months of the 2023 fiscal year and Pakistan is expected to import 800,000 tons of wheat. This alarming figures, illustrate the havoc which flood has caused to Pakistan.

Along this catastrophe flood also causes future threats to Pakistan by damaging agricultural land. Agriculture contributes 24% of Pakistan's GDP, therefore, floods poses great threat to national food security by damaging its agricultural lands. Almost one-third country is under water and due to lack of resources Pakistan government is unable to remove this water due to which this land would not be ready for next season crop, wheat which is major contributor to food. According to Federal minister for planning, Development and Reform, Ahsan Iqbal, "45% of cotton crop has been destroyed, making it difficult to plant wheat or other staple crops, thus inflicting a heavy damage on the arable land in Pakistan". This shows how flood is a challenge for national food security of Pakistan.

and food economy security challenges.

These flood control measures will also help Pakistan to ensure National Food security. Being an agrarian country, Pakistan needs a proper irrigation mechanism, therefore construction of dams will also provide Pakistan enough water for irrigation. In this way, Pakistan can provide water to those areas where rains are not abundant like Thal desert, through canals from dams.

Hence dams can help Pakistan to control flood and provide water for irrigation.

Dam water can ~~help~~ be used in forestation which not only helps in improvement of environment but also provides sufficient food. Forestation, Afforestation miyawaki Forest are techniques which can be used to increase green belt of Pakistan. Moreover, it also improves soil health and reduce land erosion and results in more agriculture production. Hence, forestation will be useful for Pakistan.

The 2022 flood disaster has shown that the majority of the damages that were caused by the flood waters were due to unregulated construction, and below-par urban and rural planning. Therefore,

accountability measures should be put in place; there is a need to empower local bodies to combat illegal construction along the river beds and canals. On the other hand, this free space can be used to plant forest or for agriculture. As this land is more fertile than the other <sup>land</sup>, due to previous flow of rivers, hence, it can increase agriculture production.

In a nutshell, 2022 flood has caused enormous challenges for Pakistan's national food security. As this flood is mainly caused by human made catastrophe to the climate, therefore it can be controlled or at least minimized. For this purpose dams ~~can be used~~ <sup>are good option</sup> and along this a lot of other methods can be adopted. But Pakistan has to ~~to~~ take immediate actions otherwise it will face food insecurity. The good thing is that Pakistan has already started this process like miywaki forests in Lahore.