

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

**Narmeen Fayyaz Leghari
Dr. Aneel Salman**

(2022)

About the Authors

Narmeen Fayyaz Leghari is a Non Resident Researcher at IPRI and her areas of expertise are Political Economy, International Relations and Macroeconomics.

Dr. Aneel Salman is Behavioral Economist from the Rensselaer Polytechnic Institute in Troy, New York, USA. Currently he is the Chair Economic Security at Islamabad Policy Research Institute-IPRI. His areas of research expertise include climate change, behavioral, energy and development economics, institutional governance, international trade, and public policy.

About IPRI

The Islamabad Policy Research Institute (IPRI) is one of the oldest non-partisan think tanks on all facets of National Security, including international relations & law fare, strategic studies, governance & public policy and economic security in Pakistan.

Table of Contents

Executive Summary 3
Introduction..... 4
Mapping the Devastation Caused by the Floods..... 5
What are the factors contributing to Food Economic Insecurity? 8
Strategies and recouping policies Pakistan can implement by following the Japanese rehabilitation model 9
Policy Recommendations..... 10
Conclusion 11

List of Figures

Figure 1: The countries with the highest vulnerability to climate change 4
Figure 2: Estimated number of homes destroyed in August 2022 in Pakistan 6
Figure 3: Flood situation map Crop Losses..... 7
Figure 4: Pakistan: Monsoon 2022..... 8

Executive Summary

The policy brief analyses the challenges floods have posed to the national food security. The catastrophic monsoon floods have caused an approximate US\$ 30 billion flood damage and economic losses¹. The study examines the toll floods have taken on one third of the country's food production along with mapping out the devastation incurred. The study propagates how climate induced disasters are impacting countries like Pakistan and will call for 'climate justice'. Moreover, the study also looks into climate-smart models followed by countries like Japan to mitigate natural disasters like floods, and how Pakistan can replicate those practices. The study highlights the importance of building a sustainable society by strengthening disaster resilience. Thus, the study advocates the need to devise inclusive and futuristic policies to efficiently deal with food and economic insecurity.

¹ Ministry of Planning, D. & S. I. 'P. block P.-S. (2022, October 28). *Flood damages & economic losses are estimates over USD 30 billion and reconstruction needs over USD 16 billion*. Ministry of Planning, Development & Special Initiatives. Retrieved November 13, 2022, from https://www.pc.gov.pk/web/press/get_press/837

Introduction

Today, Pakistan, the world's fifth most populous country is grappling with one of the worst climate-induced governance and humanitarian crisis. The monsoon season of 2022 has battered the country stretching from South Punjab to Sindh and Baluchistan. One-third of the country was under water. Over 16,000 people have died and more than 33 million have been impacted. For Pakistan, climatic challenges are immense. Pakistan is ranked one of the most vulnerable countries in terms of climatic disasters according to the Global Climate Risk Index 2021 despite emitting less than one percent of global carbon footprints. Pakistan's flooding is an historic example of climate justice it showcases how industrialized countries have played their role in altering the climate and making climate catastrophe a harsh reality for the countries like Pakistan. Hence, Pakistan's 2022 floods is not only a 'natural disaster' rather it is the result of the industrialized countries wrongdoings for which they must bear financial responsibility. The COP 27 Conference historic decision served as a vital milestone for Pakistan's climate-justice case. Led by Prime Minister Shehbaz Sharif, Pakistan welcomed the decision to establish a loss and damage fund to address the damage caused by climate-induced disasters. The dedicated "Fund for Loss and Damage" serves as a vital landmark for the developing countries, such as Pakistan. It calls for the industrialized countries to compensate developing countries for a crisis they did not cause. Thus, bringing the climate-justice debate at the forefront of global issues in recognizing the urgency to act on loss and damage. The image below shows United States, Gulf Countries followed by Bahrain and Singapore CO2 emission per person are much higher as compared to Pakistan which contributes less than 1%. It is essential for the developed countries to not only assist vulnerable countries like Pakistan but to re-visit their approach towards decreasing their carbon footprints with regards to the Paris Agreement.

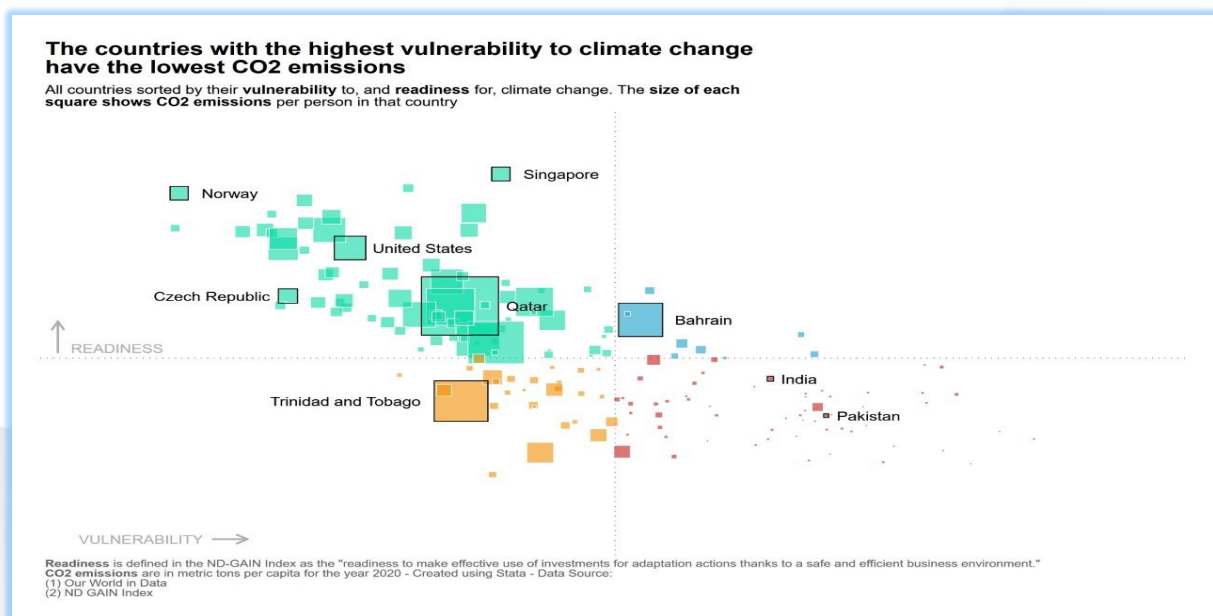


Figure 1: The countries with the highest vulnerability to climate change have the lowest CO2 emissions [OC]. reddit. (2022, September). Retrieved November 14, 2022, from https://www.reddit.com/r/dataisbeautiful/comments/xlc7s0/the_countries_with_the_highest_vulnerability_to/?utm_source=share&utm_medium=web2x&context=3

Mapping the Devastation Caused by the Floods

As the devastating floods add to the cascading economic crisis, another disaster with global implication looms: a major food crisis. Already Pakistan's ranking on the global human development index is quite low and may fall even further. According to the Human Development Index (HDI) 2020 report Pakistan is currently ranked at 154 out of 189 countries.² A national food crisis is forthcoming; the only question is how the state is preparing to deal with it? What contingency plan does the state have for future climatic disasters? More than 50 million people have been internally displaced coupled with the cost of rehabilitation and reconstruction amounting to at least US \$16.3 billion.³ Climatic challenges have ravaged the country and has led to a national food security challenge for the state.

The devastating impact of 2022's Floods in Pakistan has become apparent. Having received more than 67% of average rainfall coupled with hill torrents has resulted in large swathes of pastures under water, crops and wheat reserves washed away & homes and livelihoods destroyed. The rehabilitation process has become a monumental challenge for Pakistan as the most vulnerable section of the society predominantly farmers and unskilled labour have been dislodged. The estimated cost of rehabilitation are at least USD 16.3 billion.⁴ Coupled with a shortage of food supplies Pakistan is suffering from the after-effects of the catastrophic flooding with significant increase in food prices and food inflation expected to be around 36 percent by the end of 2022.⁵

² Khan, S., & Siddiqui, J. (2022). *Why Pakistan Is Drowning*. United States Institute of Peace. Retrieved 22 September 2022, from <https://www.usip.org/publications/2022/09/why-pakistan-drowning>.

³ Ministry of Planning, D. & S. I. 'P. block P.-S. (2022, October 28). *Flood damages & economic losses are estimates over USD 30 billion and reconstruction needs over USD 16 billion*. Ministry of Planning, Development & Special Initiatives. Retrieved November 13, 2022, from https://www.pc.gov.pk/web/press/get_press/837

⁴ Ministry of Planning, D. & S. I. 'P. block P.-S. (2022, October 28). *Flood damages & economic losses are estimates over USD 30 billion and reconstruction needs over USD 16 billion*. Ministry of Planning, Development & Special Initiatives. Retrieved November 13, 2022, from https://www.pc.gov.pk/web/press/get_press/837

⁵ Trading Economics. (2022). *Pakistan Food Inflation October 2022 data - 2011-2021 historical - November forecast*. Pakistan Food Inflation - October 2022 Data - 2011-2021 Historical - November Forecast. Retrieved November 14, 2022, from <https://tradingeconomics.com/pakistan/food-inflation#:~:text=Food%20Inflation%20in%20Pakistan%20averaged,percent%20in%20September%20of%202015>.

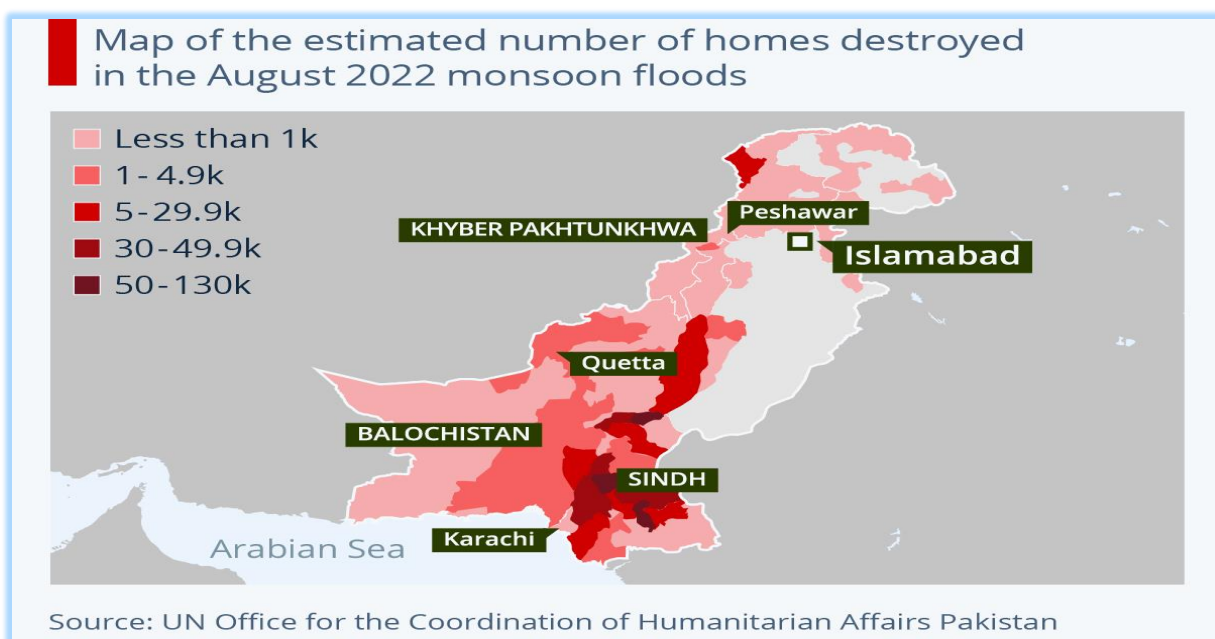


Figure 2: Estimated number of homes destroyed in August 2022 in Pakistan

One-third of the country and more than 30 million people have been severely impacted by the 2022 flooding.⁶ Flood-hit Pakistan's food imports have surged up to 65% during the first two months of the 2023 Fiscal Year.⁷ Approximately 800,000 livestock animals having perished; a critical source of nourishment and livelihoods for rural communities. In addition to that, 2 million acres of crops and orchards have been destroyed; the situation is further exacerbated by the severe damage caused to the infrastructure with nearly 3,500 km of roads and 149 bridges destroyed.⁸ The toll the 2022 Floods have taken on Pakistan's economic and food security is definitive now.

⁶ United Nations Office for the Coordination of Humanitarian Affairs (OCHA). (2022). *Pakistan 2022 Floods Response Plan: 01 Sep 2022 - 28 Feb 2023 (Issued 30 Aug 2022) | Food Security Cluster*. Focluster.org. Retrieved 22 September 2022, from <https://fscluster.org/pakistan/document/pakistan-2022-floods-response-plan-01>.

⁷ Dilawar, I., & Mangi, F. (2022). *Deadly Floods Inundate Farms in Pakistan, Flushing Away Crops*. Bloomberg.com. Retrieved 22 September 2022, from <https://www.bloomberg.com/news/articles/2022-08-31/deadly-floods-inundate-farms-in-pakistan-flushing-away-crops?>.

⁸ Kugelman, M. (2022). *Pakistan's Flood Crisis Could Become a Food Crisis*. Foreign Policy. Retrieved 22 September 2022, from <https://foreignpolicy.com/2022/09/08/pakistan-floods-food-security-crisis/>.

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

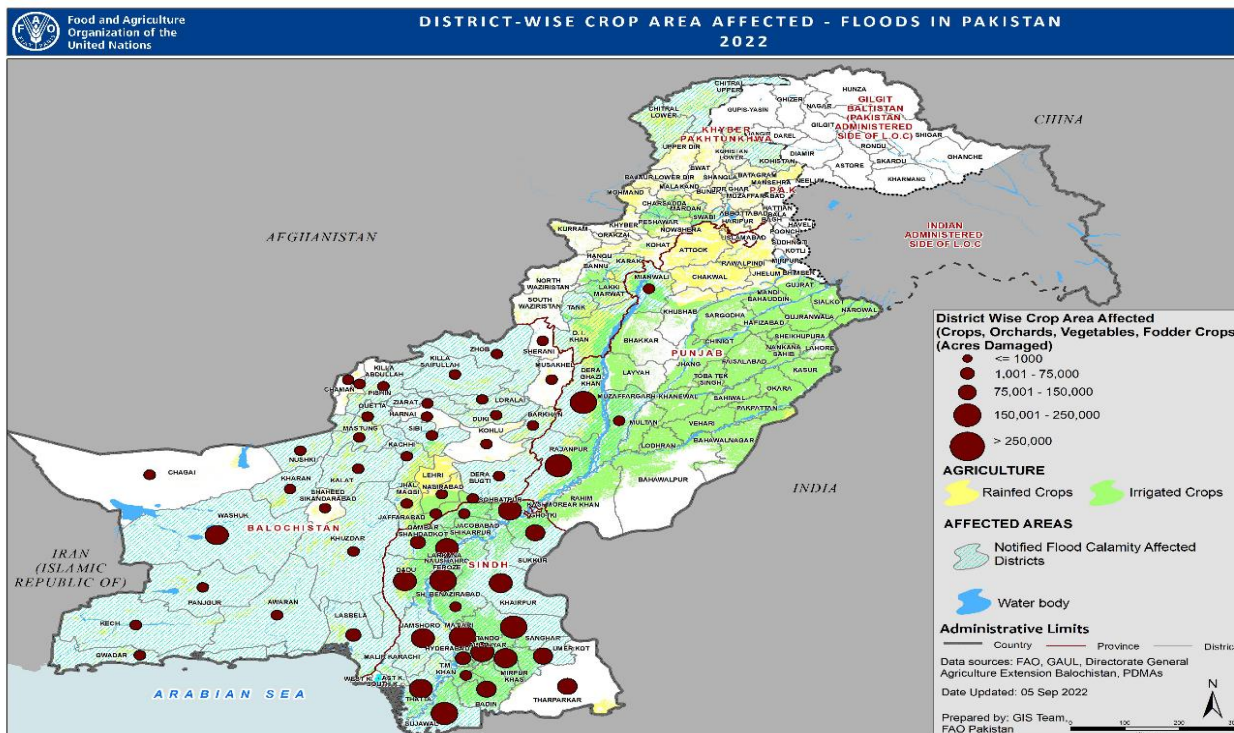


Figure 3: Flood situation map Crop Losses - Pakistan 5 September, 2022 | Food Security Cluster. *Fscluster.org. (2022). Retrieved 22 September 2022, from <https://fscluster.org/pakistan/document/flood-situation-map-crop-losses-pakistan-1>.*

The damage caused to crops and food supply chain could make Pakistan more dependent on food commodity imports. The impact has been particularly severe in Sindh and Balochistan provinces. The national food deficit is expected to increase the current account deficit by \$4.4 billion (1% of GDP) – assuming no counter-measures are taken, while around 30% of the CPI (Consumer Price Index) basket is expected to rise.⁹

It has been estimated 65 percent of Pakistan's main rotational crops including 10-15 percent of its rice production has been destroyed by flash floods. Pakistan produces and supplies 5% of world's cotton demand and it is 4th largest rice exporter.¹⁰ Hence, Pakistan's low cotton and rice production will further add to the global and national food insecurity. As stated by the Federal Minister for Planning, Development and Reform, Ahsan Iqbal, 45 percent 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.¹¹ Pakistan faces a shortfall of 2.6 metric tons of wheat

⁹ Economic Times (2022) *Floods to cause USD 4 billion loss to Pakistan's economy: Report*. *The Economic Times*. Available at: <https://economictimes.com/news/international/world-news/floods-to-cause-usd-4-bn-loss-to-pakistans-economy-report/articleshow/93821119.cms?from=mdr> (Accessed: November 25, 2022).

¹⁰ Viglione, D., Chandrasekhar, A., Dunne, D., Zagoruichyk, A., & Tandon, A. (2022). *Cropped, 7 September 2022: Pakistan floods; China's food security; 100 days to COP15 - Carbon Brief*. Carbon Brief. Retrieved 22 September

¹¹ Ministry of Planning, D. & S. I. 'P. block P.-S. (2022, October 28). *Flood damages & economic losses are estimates over USD 30 billion and reconstruction needs over USD 16 billion*. Ministry of Planning, Development & Special Initiatives. Retrieved November 13, 2022, from https://www.pc.gov.pk/web/press/get_press/837

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

“even before the floods”.¹² Sowing next year's staple crops like wheat “will be another challenge” for the country to surmount. Pakistan's wheat import is up by 2,435 percent in the first two months of the 2023 fiscal year and Pakistan is expected to import 800,000 tons of wheat.¹³ While on the other hand, Pakistan will be importing palm oil worth 157.79 billion rupees which is 68.67 percent higher than last year, in addition to importing 13,000 tons of tomatoes and onions.

What are the factors contributing to Food Economic Insecurity?

Pakistan is suffering from its worst humanitarian and climate-change crisis. The country has received nearly twice as much rain than the 30-year average this year, totaling 390.7 millimeters. Flood disasters have and will become more frequent with catastrophic socio-economic consequences on food production. Literature produced on climate change claims that the frequency of floods can further increase vulnerabilities of countries like Pakistan with regards to food economic insecurity.¹⁴ It is essential to dissect and address these factors to formulate contingency policies for the future.

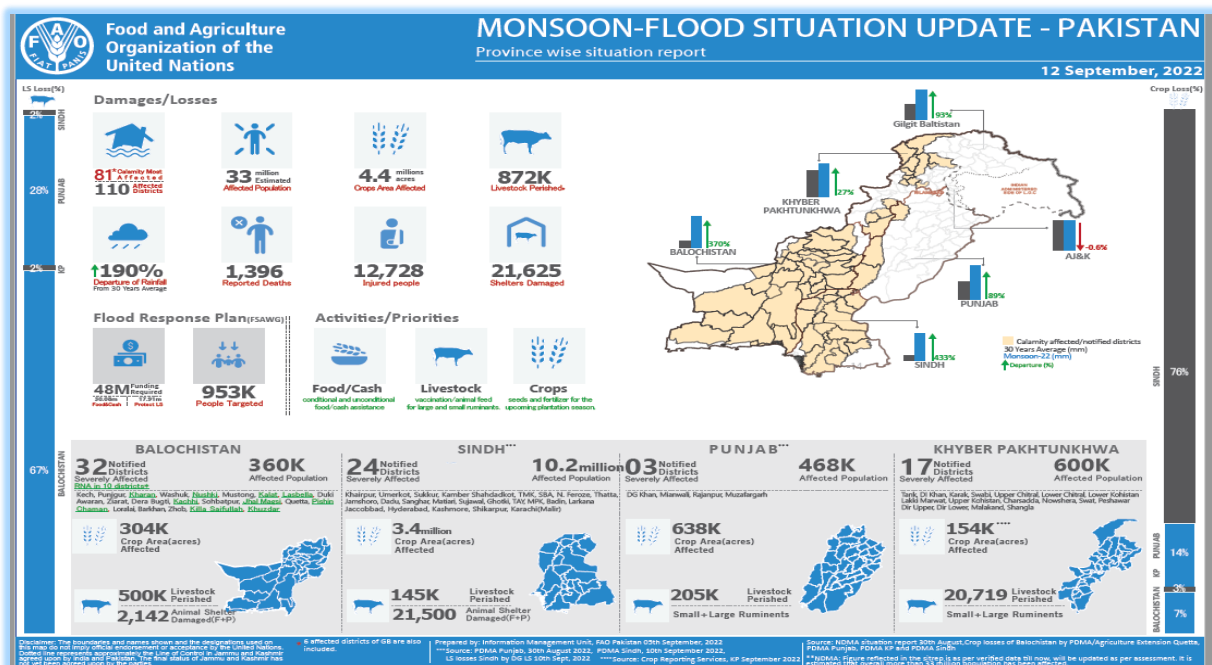


Figure 4: Pakistan: Monsoon 2022, Situation Update Dashboard 12th September, 2022 | Security Cluster. *Fscluster.org*. (2022). Retrieved 22 September 2022, from <https://fscluster.org/pakistan/document/pakistan-monsoon-2022-situation-update-2>

Food

¹² Khan, S., & Siddiqui, J. (2022). *Why Pakistan Is Drowning*. United States Institute of Peace. Retrieved 22 September 2022, from <https://www.usip.org/publications/2022/09/why-pakistan-drowning>.

¹³ Kugelman, M. (2022). *Pakistan's Flood Crisis Could Become a Food Crisis*. Foreign Policy. Retrieved 22 September 2022, from <https://foreignpolicy.com/2022/09/08/pakistan-floods-food-security-crisis/>.

¹⁴ Koike, T. (2021). Evolution of Japan's flood control planning and policy in response to climate change risks and social changes. *Water Policy*, 23(S1), 77-84. <https://doi.org/10.2166/wp.2021.287>

Despite having more than 40% of arable land years of mismanagement of resources, lack of a futuristic vision by governing authorities in the past, and poor check and balances has led to food economic insecurity in Pakistan.¹⁵ Another important factor is a lot of agriculture land has been converted into real estate sector coupled with massive illegal construction along the river beds and canals in KPK, South Punjab, Sindh and Balochistan that has made Pakistan more prone to flash floods. This showcases the lack of capacity of local governments to combat illegal construction which has in-return now led to a full blown food security crisis.

Despite being placed at the pinnacle of climate triggered crisis, Pakistan is already in forest deficit. Trees stabilize the soil during extreme rains and restrict sediment deposit. As compared to the global average of 31 percent of area to be forested Pakistan stands at only 5 percent; placing Pakistan's farming land at a danger and more prone to floods.¹⁶ Moreover, the lack of an accountability mechanism in the agro-forest industry has led to higher deforestation rates than average. If strict accountability measures are not put in place, the increasing rate of deforestation will make Pakistan more susceptible to severe flooding.

It has been widely debated that for some, Pakistan did not address its weak governance system and invested in climate-resilient infrastructure while for others, Pakistan could not have mitigated the devastation caused by this massive flooding. But the truth lies somewhere in the middle of mismanagement and climate change that has fuelled the crisis, hitting the poorest and middle classes the hardest.

Hence, it is imperative to adopt an inclusive and holistic approach to tackle these challenges and to assist the food insecurity and rehabilitation process of the most vulnerable strata of the Pakistani population. This can only be done by investing in climate-smart economy and by addressing the key policymaking gaps in food economic security responses.

Strategies and recouping policies Pakistan can implement by following the Japanese rehabilitation model

Floods 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 agriculture land.¹⁷ However, during extreme rains the overflowing of the river poses an extreme threat. Historically, Japan has experienced severe flood damage with the most recent one in 2018. After each disaster the 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

¹⁵ Trading Economics. (2022). *Pakistan - arable land (% of land area)2022 data 2023 forecast 1961-2020 historical*. Pakistan - Arable Land (% Of Land Area) - 2022 Data 2023 Forecast 1961-2020 Historical. Retrieved November 14, 2022, from <https://tradingeconomics.com/pakistan/arable-land-percent-of-land-area-wb-data.html>

¹⁶ Kurtzer, J. (2022). *Pakistan's Deadly Floods Pose Urgent Questions on Preparedness and Response*. Csis.org. Retrieved 22 September 2022, from <https://www.csis.org/analysis/pakistans-deadly-floods-pose-urgent-questions-preparedness-and-response>.

¹⁷ Koike, T. (2021). Evolution of Japan's flood control planning and policy in response to climate change risks and social changes. *Water Policy*, 23(S1), 77-84. <https://doi.org/10.2166/wp.2021.287>

channels are put in place.¹⁸ 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 & 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 2009.¹⁹ 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 and food economic security challenges.

Policy Recommendations

- Pakistan has contributed less than 0.5% of global emissions yet is among top ten countries severely impacted by climate change. Hence, the 2022 calamitous floods highlight Pakistan's case of 'climate justice' and the responsibility the 'North' has to bear.
- Pakistan is no stranger to climatic disasters or floods and experiences the monsoon season every year. The policymakers along with the non-state actors should focus on the economics of flooding and should map out a national food security framework.
- It is vital that Pakistan replicates and implements best global strategies and strengthens its climate-resilient policy framework. For this, it is pertinent to harness the international support according to the Paris Agreement, which was signed in 2015.
- A National Food security policy should be implemented and developed for future climatic disasters. Emphasis should be laid on increasing domestic production along with importation of food and stockpiling, to combat future food security challenges.
- There is a need to focus on internal structural weaknesses and develop a national consensus on climate-change. Climate-resilience response mechanisms should be developed and approaches like natural disaster forecasts, water and food security contingency policies should be formulated by engaging with all stakeholders across the board.
- Framework and contingency plans need to be put in place and emphasis should be drawn on 'Climate-Smart Agriculture' practices. For this, it is essential to educate the masses and adopt an inside-out approach to address the gaps in Pakistan's agriculture sector.
- 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. 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.

¹⁸ Nakamura, R., & Shimatani, Y. (2021). Extreme-flood control operation of dams in Japan. *Journal Of Hydrology: Regional Studies*, 35, 100821. <https://doi.org/10.1016/j.ejrh.2021.100821>

¹⁹ *Rain Rain Go Away: Flood Management in Tokyo*. Consulate General of Japan in New York - Japan Information Center. (2022). Retrieved 22 September 2022, from <https://www.ny.us.emb-japan.go.jp/japaninfo/winter2016/04.html>.

Conclusion

Pakistan has a long way to go towards recovering from the current crises and preparing for future disasters. The 2022 floods should serve as a wake-up call for the government agencies and non-state actors to not only work towards 'climate justice' but also to develop climate-resilient response mechanisms with assistance from the international community. Focus should be laid on adopting and implementing futuristic policies to efficiently deal with food and economic insecurity.