Flash Floods 2022 in Pakistan: Mapping Responses and Challenges

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Abstract

The unprecedented flash floods of 2022 in Pakistan affected nearly 33 million people, cost over 1700 lives, and pushed another nine million into extreme poverty. The flash floods also severely damaged housing, livelihood, critical health, education, communication infrastructure, and other sectors of Pakistan's economy. The destruction amid the 2022 flash floods has highlighted the need for a comprehensive climate security framework that addresses the complex and interrelated challenges posed by climate change. Such a framework requires a coordinated and sustained effort to address the underlying drivers of vulnerability and build resilience to climate-induced threats, thereby promoting the country's long-term stability and security. This research paper critically appraises the 2022 flash floods in Pakistan by viewing them through climate security and human security paradigms. This study further identifies key institutional responses to the 2022 flash floods, assesses the damage and infrastructure needs, and attempts to critically analyze how securitizing climate change can mitigate future climate-induced risks. It also highlights the challenges in addressing floods' immediate and long-term impacts and suggests that investing in infrastructure, disaster preparedness, and institutional capacity building is essential for building resilience against future climate change impacts.

Keywords: Flash floods 2022, Pakistan, COP27, Climate Change, Human Security, Securitization, Capacity-building.

Introduction:

Flash Floods 2022 marks the biggest climate disaster in Pakistan's history, affecting 33 million people, which makes up one-third of the country (CNN,Reuters, 2022). During floods, approximately 1700 casualties were reported, with another 12,800 injured, comprising nearly 4,000 children (Pakistan Flood Response, 2022), along with damage to key health and education infrastructures. Pakistan received ten times (Magramo, 2022) more than the average rainfall in the monsoon season of 2022, causing massive flash flooding across the country.

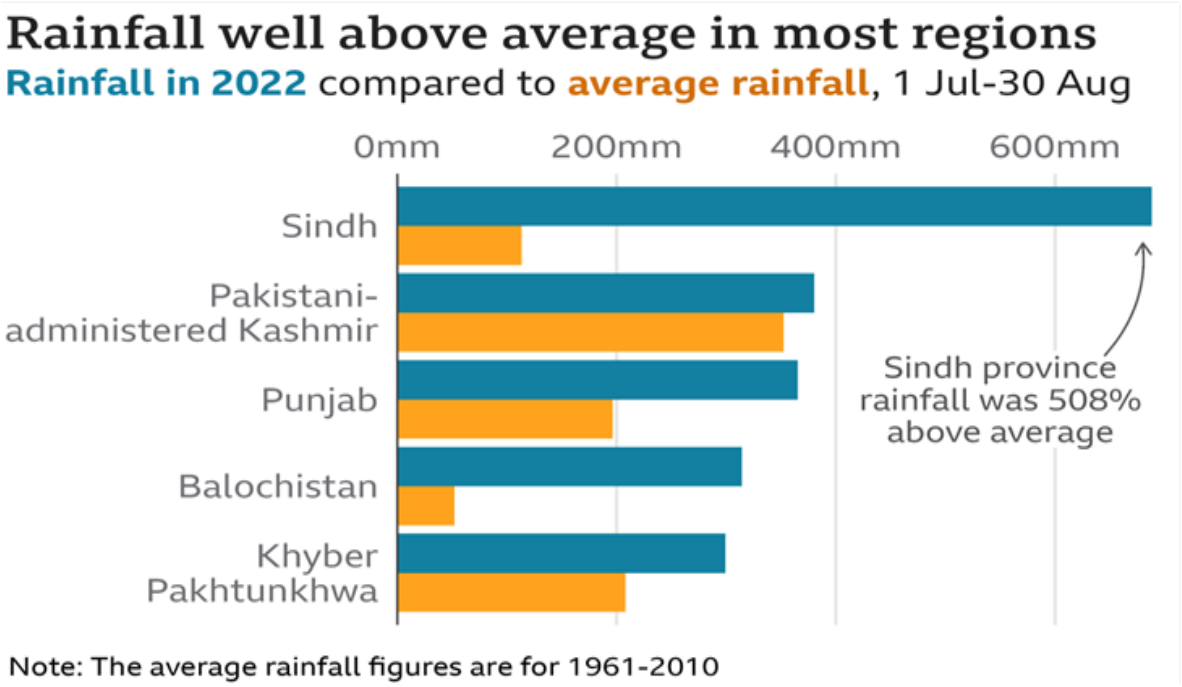


Figure 1: Above Average Rainfall in most regions of Pakistan

Source: Pakistan Meteorological Department

The 84 districts—32 in Baluchistan, 23 in Sindh, and 17 in Khyber Pakhtunkhwa—were designated as "calamity hit" by the Pakistani government (Revised Pakistan 2022;Floods Response Plan, 2022). Pakistan's infrastructure and economy suffered significant damage because of the 2022 flash floods. In addition to more than 13,000 kilometers of roads, approximately 3,000 kilometers of railroad tracks, 439 bridges, and 4.4 million acres of agricultural land, the UNDP reports that "at least two million homes were destroyed and damaged." In addition, more than a million animals perished, and many people were dependent on humanitarian aid since they were unable to resume their normal lives due to the standing water in some locations (*Pakistan Floods*, 2023).

Due to the damage to agricultural fields, crops, and cattle, the flash floods that occurred in 2022 caused a considerable food crisis in Pakistan. The destruction of 4,410 million acres of agricultural land and 0.8 million animals caused a standstill in employment, livelihoods, and revenue related

to agriculture in the country (Pakistan Flood, 2022). This also caused a decline in the country's export of key agricultural products such as cotton and sugar cane (Pakistan Flood, 2022). An analysis of acute food insecurity using the Integrated Phase Classification (IPC) revealed that between July and November 2022, 955,000 people in the flood-affected regions of Baluchistan experienced food insecurity (IPC Phase 3 and Phase 4). Additionally, approximately 594,000 people in the districts of Nushki, Gwadar, Pishin, Pangur, Zhob, and Washuk were completely impacted by the floods, and approximately 362,600 people in the districts of Kech, Karan, and Loralai were partially affected by the floods (IPC, 2021).

The United Nations Children's Fund (UNICEF) reports that the disastrous floods resulted in the deaths of 615 children and left approximately 10 million children in need of emergency help to save their lives. Given that Pakistan was already suffering from a significant problem of malnutrition among children, this made the issue even worse. According to the United Nations Children's Fund (UNICEF), over half of the children suffer from stunted growth, 16.1% of the children suffer from wasting, and 4.4% of the children suffer from severe wasting (UNICEF, 2023.).

In addition, the flooding caused by flash floods has had a significant impact on the nation's healthcare system. Because of the floods that occurred in 2022, thirteen percent of healthcare facilities were damaged, which resulted in disruptions to a wide range of health services. These services included primary healthcare, which included Rural Health Centers and Basic Health Units, as well as secondary healthcare, including Tehsil and District Headquarters and Civil Hospitals. The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) indicated that more than one-fifth of the facilities that were damaged were destroyed as a result of the disaster (Pakistan Flood, 2022).

Moreover, the flash floods brought a greater risk of an epidemic of diseases that are transmitted by waterborne and vector-borne vectors, to around 5 million people, including children, according to estimates. Moreover, it also introduced a significant risk of outbreaks of infectious diseases such as cholera, diarrhea, typhoid, gastroenteritis, dengue, and malaria in places that have been devastatingly affected by floods due to the lack of safe drinking water in those locations (Administrator, n.d.). Pregnant and breastfeeding women also experienced adverse health effects as a result of the floods. This is caused by a substantial scarcity of experienced attendants during delivery, as well as a lack of pre-and post-natal care. There were around 650,000 pregnant women in the areas of Pakistan that were impacted by the floods, and it is estimated that 73,000 of them gave birth just before the floods took place (UN, 2022).

In this context, this paper critically examines the 2022 flash floods in Pakistan through the dual lens of climate security and human security. Drawing on the theoretical insights of the Copenhagen School and the concept of securitization, it contends that environmental threats, when reframed as security concerns, can prompt urgent and more integrated policy responses. The study assesses the extent of damage across key sectors, analyzes institutional and international responses, and

assesses the systemic and policy gaps that hinder effective disaster management. Given this, the research aims to answer the pertinent questions: How did the 2022 flash floods in Pakistan expose gaps in climate and human security in the country's institutional framework, and what institutional and policy responses are necessary to build a comprehensive climate security framework and long-term resilience against future climate calamities?

Theorizing Climate Change and Human Security through the Copenhagen School of Thought:

The Copenhagen School of thought proposed by Barry Buzan, along with Ole Wæver and Jaap de Wilde helps us to analyze the 2022 flash floods, which considers the inferences of expanding the security agenda and deals, particularly with environmental challenges. This view claims that the counter-effects of climate change can be avoided if security is redefined from a human security perspective. Natural disasters often lead to human insecurity, threatening a country's national security. The flash floods of 2022 raised various new human security challenges for Pakistan, such as massive internal displacement, food insecurity, livelihood losses, malnutrition, and the spreading of infectious diseases. In this respect, the Copenhagen School of thought maintains that sustainable development appears at the top of the policy agendas when climate change is considered a human security threat. Therefore, policymakers need to incorporate measures to address flash floods and climate change in national security strategies to ensure the protection of citizens and the resilience of communities and the nation.

The National Security Policy (Leeza, 2022) of Pakistan introduced in 2022 has introduced a "comprehensive national security" framework that exemplifies the spirit of the Comprehensive Security Framework as put forward by Copenhagen School (Buzan et al., 1998). This policy has broadened Pakistan's security framework by identifying the political, economic, societal, and environmental sectors as key areas of national security while preserving the importance of military and defense. This attempt of NSP to broaden the traditional security paradigm is clear evidence that harsh climate events such as floods threaten state security. However, given the unprecedented damage caused by the 2022 flash floods, there is a great need for continued action to broaden the NSP by integrating climate security more vociferously within Pakistan's existing national security framework.

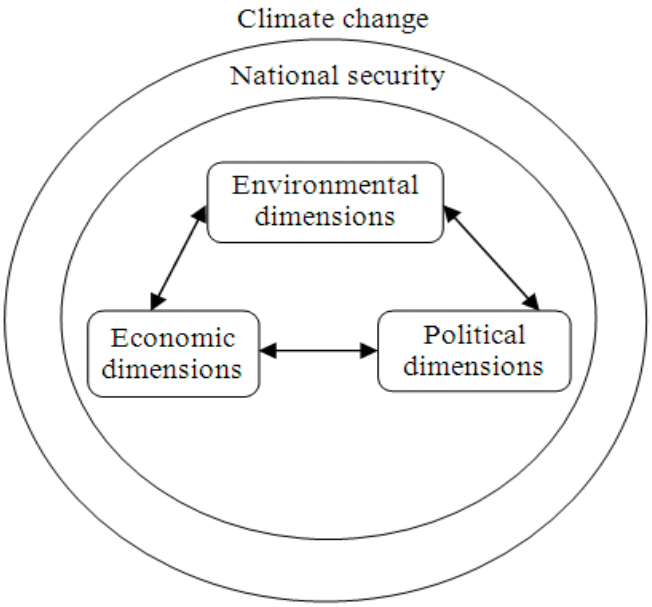


Figure 2: Relationship between climate change and national security dimensions

Pakistan Flash Floods 2022: Challenges and Responses

Despite contributing less than one percent of the total carbon emissions in the atmosphere, Pakistan has faced the most severe climate calamity in 2022 (Dewan, 2022). One of the root causes of flash floods is the occurrence of unprecedented heat waves. In April and May of 2022, temperatures at or over 40 degrees Celsius were recorded for extended periods in most of Pakistan's cities. A high temperature of 51 degrees Celsius was recorded at Jacobabad during May. These heatwaves were not typical; rather, they were the worst heatwaves on the globe, as stated by Malik Amin Aslam, who served as the country's minister for climate change in the past (Mallapaty, 2022). Pakistan was the place with the hottest place on the planet. In the three weeks since the beginning of the monsoon rain in July, the country received sixty percent of its normal rainfall due to the extraordinary heatwaves.

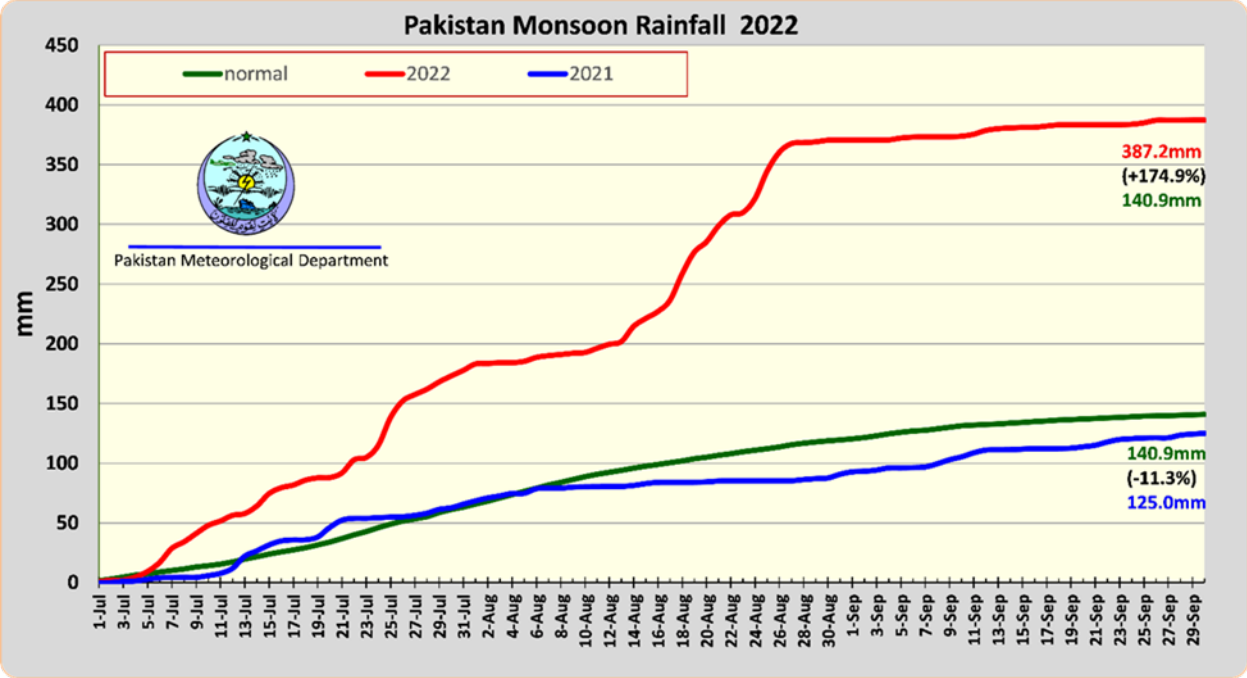


Figure 3: Pakistan Monsoon Rainfall 2022

Source: Pakistan Monsoon 2022 Rainfall Report, Pakistan Meteorological Department

The Pakistani government established the Ministry of Climate Change in 2019, marking the beginning of the country's second national communication about climate change. While Pakistan is working on a strategy that seeks to conserve energy, improve energy efficiency, and optimize fuel mix to support global efforts to reduce greenhouse gas emissions, the National Climate Change Policy identifies that the more pressing task for Pakistan is to prepare itself for climate change adaptation. This is also the case while the country is working on the strategy. Moreover, Pakistan sent its Nationally Determined Contribution to the UNFCCC in 2016, and it ratified the Paris Agreement on November 10, 2016 (Bank, 2021).

Despite such efforts, the flash floods of 2022 inflicted immense damage on various sectors of Pakistan, as discussed below:

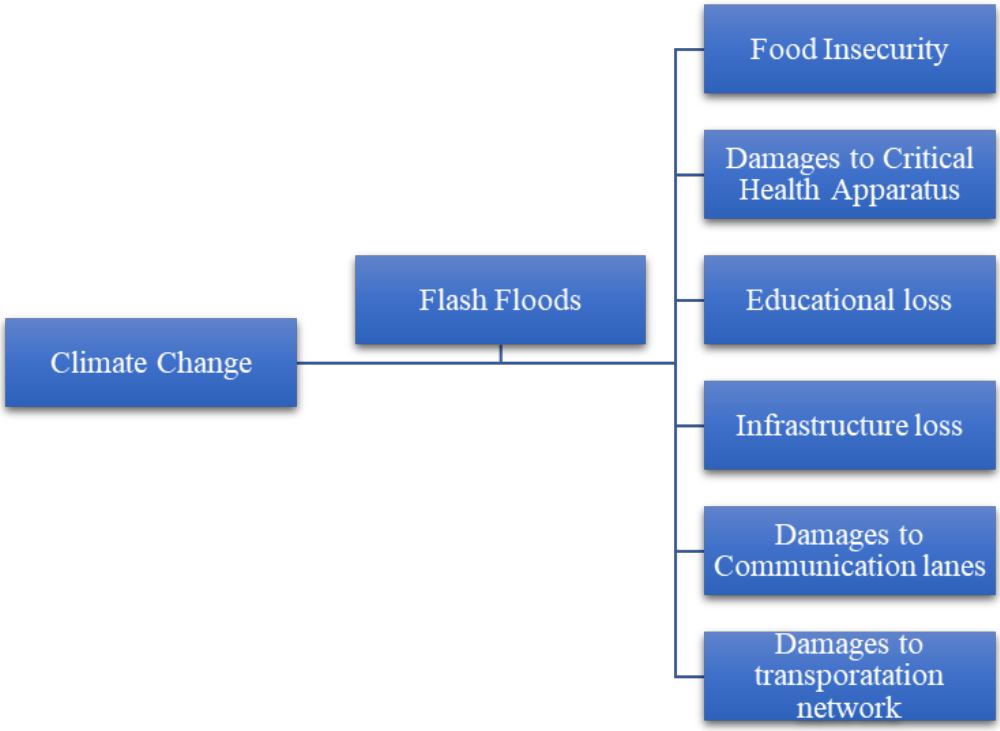


Figure 4: Sector-wise Impact of Flash Floods 2022 in Pakistan

Food insecurity:

The floods also resulted in the loss of more than 719,000 cattle, which accounts for a significant portion of the majority of households that were impacted. Several regions in Baluchistan, KPK, Punjab, and Sindh rely heavily on livestock as a primary source of nutrition, and animal products are the primary source of food consumed daily. The floods also swept away over 2 million acres of agricultural areas and orchards. Of this total, 178,186 acres are in the province of Punjab, 304,475 acres are located in the province of Baluchistan, and around 1.54 million acres are located in the province of Sindh (OCHA, 2022).

It is estimated by the Pakistan Food Security and Agriculture Working Group (FSAWG) that more than one thousand animal shelters were devastated, and the devastation of approximately two million acres of land has resulted in food insecurity throughout the country. Between July and November 2022, the Integrated Phase Classification (IPC) analysis of acute food insecurity reported that 955,000 people in the flood-affected areas of Baluchistan were food insecure (IPC Phase 3 and Phase 4). Additionally, approximately 594,000 people in the districts of Nushki, Gwadar, Pishin, Pangur, Zhob, and Washuk were completely affected by the floods, and approximately 362,600 people in the districts of Kech, Karan, and Loralai were partially affected by the floods (IPC, 2021). UNOSAT estimates that there are around 1.1 million people who are in a situation where they are in danger of experiencing a food and livelihood crisis (IPC3), a

humanitarian emergency (IPC4), or a situation that threatens their food security owing to a lack of support (OCHA, 2023).

Table 1: Damages, Loss, and Needs in Productive Sectors

	Damage		**Loss**		**Needs**	
Productive Sectors	(Billion PKR)	(Million US$)	(Billion PKR)	(Million US$)	(Billion PKR)	(Million US$)
Agriculture, Food, Livestock, and Fisheries	800	3725	1986	9244	854	3,976
Water Resources and Irrigation	153	711	-	-	168	782
Commerce and Industries	40	186	758	3527	-	-
Finance and Markets	1	3	90	417	-	-
Tourism	2	10	20	93	0.4	2
Grand Total	**996**	**4635**	**2853**	**13,281**	**1,022**	**4,760**

Source: *PAKISTAN FLASH FLOODS 2022; Post Disaster Needs Assessment*

Damages to Critical Infrastructure:

- **Damages to Housing:**

The National Disaster Management Authority (NDMA) estimates that the 2022 flash floods demolished over 287,000 houses. In contrast, over 662,000 homes were damaged partially, and nearly 23,000 people were reported to be internally displaced.

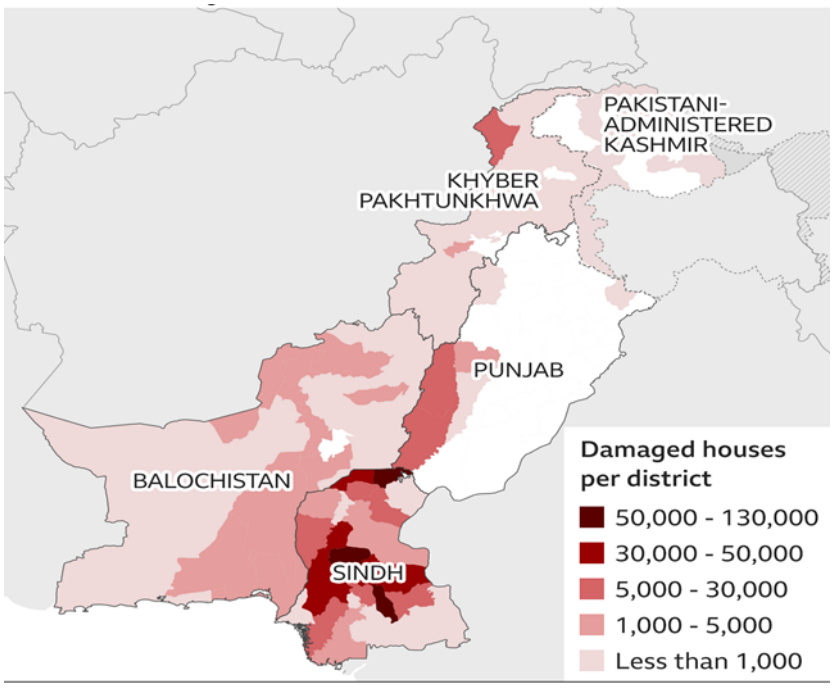


Figure 2: Damages Houses per district of Pakistan

Source: UN OCHA

- **Damages to Health Apparatus:**

Moreover, the 2022 flash floods also severely damaged the health apparatus of Pakistan. The health challenges are expected to intensify as the flooding has damaged the health facilities in the flood-affected areas; for example, in eight districts of Baluchistan, only 103 health facilities were reportedly damaged. Adding to the impeded access to healthcare, the demand for health services amounts to a rise as there is a surge in the number of cases of Malaria, Acute Watery Diarrhea (AWD), respiratory tract infections (RTI), and skin infections. Furthermore, the unavailability of drinking supply systems in flood-affected areas reduces access to clean and safe water, largely increasing the risk of waterborne diseases such as diarrhea, cholera, typhoid, gastroenteritis, and dengue.

Table 2: Damage, Loss, and Needs Assessment in Social Sectors

	Damage		**Loss**		**Needs**	
Social Sectors	(Billion PKR)	(Million US$)	(Billion PKR)	(Million US$)	(Billion PKR)	(Million US$)
Housing	1200	5586	137	636	592	2757
Health	23	109	7	34	40	188

Education	120	559	47	219	197	918
Culture and Heritage	1	6	1	7	2	9
Grand Total	**1345**	**6261**	**193**	**896**	**832**	**3872**

Source: *PAKISTAN FLASH FLOODS 2022; Post Disaster Needs Assessment*

Damages to the Transportation and Communication networks:

Besides the humanitarian costs, these massive inundations severely damaged the country's infrastructure. Floodwater, followed by debris flows, blocked the bridges, rail, and road networks across the country, restricting travel access to the flood-hit areas. Since June, a reported 3,500 kilometers of roads and 149 bridges have been damaged by the flash floods, which also impeded the movement of people from flood-hit areas to safe places and the delivery of humanitarian aid to them, thus creating havoc. Moreover, the flooding also caused technical faults in the fiber optic network, resulting in internet outages in Pakistan's Northern and Central areas.

Table 3: Damages, Loss, and Needs in Infrastructure Sectors

	Damage		**Loss**		**Needs**	
Infrastructure Sectors	(Billion PKR)	(Million US$)	(Billion PKR)	(Million US$)	(Billion PKR)	(Million US$)
Transportation and Communications	701	3264	60	281	1073	4994
Energy	19	88	1	3	25	117
WASH, Municipal Services, and Community Infrastructure	123	575	24	112	70	327
Grand Total	**843**	**3927**	**85**	**396**	**1168**	**5437**

Source: *PAKISTAN FLASH FLOODS 2022; Post Disaster Needs Assessment*

Total Damage:

A burden that has never been seen before has been placed on Pakistan's already-shattered economy because of the flash floods that occurred in 2022. It was anticipated that the total economic damage would amount to US$14.9 billion, and the entire loss would amount to PKR 3.3 trillion (US$15.2 billion), whereas the total needs amounted to US$16.3 billion. (*Pakistan Floods 2022: Post-Disaster Needs Assessment (PDNA) | United Nations Development Programme*, n.d.). The housing industry suffered the greatest damage, amounting to US$5.6 billion; agriculture, livestock, food, and fisheries suffered a loss of US$3.7 billion; and the transportation and communications sector suffered a US$3.3 billion loss. With a total of US$5.0 billion, the transport

and communications sectors had the highest requirements for rebuilding and recovery. This was followed by the sectors of agriculture, food, livestock, and fisheries, which required US$4.0 billion, and the housing sector, which required US$2.8 billion. The provinces of Sindh and Baluchistan were responsible for around fifty percent and fifteen percent of the requirements for recovery and reconstruction, respectively (Psakistan Flood*, 2022*).

Table 4: ***Sector-wise Total Damages, Loss, and Needs***

	Damage		**Loss**		**Needs**	
Sectors	(Billion PKR)	(Million US$)	(Billion PKR)	(Million US$)	(Billion PKR)	(Million US$)
Social Sector	1345	6261	193	896	832	3,872
Infrastructure Sector	843	3927	85	396	1168	5437
Productive Sector	996	4635	2853	13,281	1022	4760
Cross-Cutting Sector	18	83	142	660	471	2192
Grand Total	**3202**	**14906**	**3272**	**15,233**	**3,493**	**16,261**

Source: *PAKISTAN FLASH FLOODS 2022; Post Disaster Needs Assessment*

Critical Appraisal of the Past Measures:

In seventy-five years of its history, Pakistan has experienced floods, notably in 1950, 1956, 1957, 1973, 1976, 1978, 1988, 1992, 2010, 2011, 2012, 2014, and 2022. These floods have mainly affected the river basins in Punjab and Sindh provinces. Most of the population of Pakistan is inhabited across the Indus River and its tributaries, which is a highly prone area to acute flooding during the monsoon season. Moreover, natural calamities such as earthquakes are frequent in the northern and western mountainous regions.

According to the Federal Flood Commission (Annual Report 2020, 2021), Pakistan has a history of super floods; the country has experienced a major flood approximately every three years, which is a huge challenge to its economic growth. The table below indicates the number of losses due to floods in Pakistan's history.

Table 5: Major Floods Witnessed in the History of Pakistan

Sr. No.	**Year**	**Direct Losses (US $ million)**	**Lives Lost (No)**	**Affected Villages (No)**	**Flooded Area sq. km**
1.	1950	488	2,190	10,000	17,920
2.	1955	378	679	6,945	20,480
3.	1956	318	160	11,609	74,406
4.	1957	301	83	4,498	16,003

5.	1959	234	88	3,902	10,424
6.	1973	5,134	474	9,719	41,472
7.	1975	684	126	8,628	34,931
8.	1976	3,485	425	18,390	81,920
9.	1977	338	848	2,185	4,657
10.	1978	2,227	393	9,199	30,597
11.	1981	299	82	2,071	4,191
12.	1983	135	39	643	1,882
13.	1984	75	42	251	1,093
14.	1988	858	508	100	6,144
15.	1992	3,010	1,008	13,208	38,758
16.	1994	843	431	1,622	5,568
17.	1995	376	591	6,852	16,686
18.	2010	10,000	1,985	17,553	160,000
19.	2011	3,730	516	38,700	27,581
20.	2012	2,640	571	14,159	4,746
21.	2013	2,000	333	8,297	4,483
22.	2014	440	367	4,065	9,779
23.	2015	170	238	4,634	2,877
24.	2016	6	153	43	-
25.	2017	-	172	-	-
26.	2018	-	88	-	-
27.	2019	-	235	-	-
28.	2020	-	409	-	-
	Total	38,169	13,262	197,273	616,558

Source: Economic Survey of Pakistan

Before 2022, the floods caused over 13,000 human losses, and the country suffered a collective financial loss of US$ 38 billion. Some 197,273 villages were reportedly destroyed, and a total area of 616,558 sq. km was affected due to the past major flood events. The 2010 floods alone cost roughly $43 billion in economic damages (*Flood Loss Estimates Rise to $43bn*, 2010).

Table 6: ***Region-wise Damage, Losses, and Needs due to 2022 Flash Floods***

	Damage		Loss		Needs	
Region	**(Billion PKR)**	**(Million US$)**	**(Billion PKR)**	**(Million US$)**	**(Billion PKR)**	**(Million US$)**
Balochistan	349	1,625	541	2,516	491	2,286
Khyber Pakhtunkhwa	201	935	141	658	168	780
Punjab	111	515	122	566	160	746
Sindh	1,948	9,068	2,444	11,376	1,688	7,860
Cross-Provincial[12]	587	2,731	14	67	975	4,540
Special Regions[13]	7	32	11	49	10	48
Grand Total	**3,202**	**14,906**	**3,272**	**15,233**	**3,493**	**16,261**

*(*Pakistan Floods 2022: Post-Disaster Needs Assessment (PDNA) | United Nations Development Programme*, n.d.)*

According to experts, the absence of a disaster management system for countering floods is the prime cause of why the country is experiencing the constant episodes of floods that affect every area, from the social infrastructure to the housing sector, communication and transportation networks, education and health sector, irrigation, sanitation and water supply and the energy sectors. Disaster management in Pakistan is more about preparedness than response. Nevertheless, according to an official estimate, the economic sector of Pakistan will continue to suffer a fiscal loss of around $800 million per year (Khan, 2013). These economic costs will continue to increase as the frequency of climate-related catastrophic events rises.

Responses to Flash Floods 2022: A Critical Appraisal

The intensity and scale of the flash floods in 2022 demand the government to formulate a well-defined strategy to effectively work on the humanitarian response to recovery by giving precedence to the safety of people and curtailing the damage produced by floods. Some of the major responses are discussed in this paper.

1- National Responses:

The 2022 flash floods left one-third of Pakistan underwater. After nearly 1,500 deaths and 500,000 displaced persons, the Pakistani government proclaimed a state of national emergency. The nation's turbulent political climate exacerbated the devastating floods' effects. The rivalry between the present government and the former government (the PTI) plus the already deteriorating state of the institutions resulted in a delayed reaction to the current predicament.

- **NDMA Responses**:

Numerous warnings were sent by the NDMA, which had already disseminated reports

before the monsoon and throughout the monsoon. However, the government was unable to swiftly take the necessary actions. According to data obtained on the website of the NDMA, relief activities for flood victims were already starting on July 5, 2022. However, by that time, 38 people had been killed, 69 had been injured, 1235 animals had been damaged, and 110 houses had been swept away across the provinces of Baluchistan, Azad Jammu and Kashmir (AJ&K), Gilgit Baltistan (GB), Khyber Pakhtunkhwa (KP), Islamabad Capital Territory (ICT), Sindh and Punjab,

- **Social Response:**

Approximately 1,500 food parcels comprising vital food items were provided by humanitarian partners to families in the afflicted districts of Jhal Magsi, Kechi, and Lasbela in the province of Baluchistan. Additionally, 51 kitchen sets were distributed in the district of Nushki, while relief supplies and cash grants of PKR 20,000 per home were distributed to 105 households in the city of Quetta (*Pakistan*, 2022a). Additionally, ration bags were distributed to 800 people situated in the districts of Lasbela. In the Kemari-Karachi District of Sindh, an NGO partner supplied clean drinking water and 360 meals that were cooked. There have been around 3,470 deliveries of prepared meals and bottles of clean drinking water in the province of Punjab. Partners in humanitarian work, in close collaboration with the Department of Agriculture and Livestock, analyzed to determine whether or not it was necessary to assist in the form of veterinary supplies.

- **Political Response:**

On the other hand, the relief activities that were carried out by the government of Pakistan primarily recognized the primary needs as part of the immediate flood response. These needs included health, food security, sanitation, water and hygiene, agriculture and livestock, and shelter and nonfood items (NFI). Shehbaz Sharif, the Prime Minister of Pakistan, announced on August 5, 2022, that he would be providing affected individuals with a package of $22.7 million to support them and establish a relief fund to gather donations from the general public. People in Sindh and Baluchistan provinces who were impacted by the floods received about 53,000 tents, 85,510 food packs, 66,758 mosquito nets, 25,941 tarpaulins, and other relief goods by the 11th of August, 2022. These relief supplies were provided by the NDMA and the PDMA (Flood Situation Report, 2023.). The government initiated yet another flood relief funding scheme on August 19, 2022, with a total of PKR 37.2 billion allocated to 1.5 million families that needed assistance.

The 2022 Pakistan Floods Response Plan (FRP) was jointly presented by the Government of Pakistan and the United Nations on August 30. This event took place in conjunction with the United Nations. The primary humanitarian requirements of those who were impacted by the flood were highlighted in this strategy, which provided an action plan to react to the immediate needs of those communities. On October 4, 2022, a revised FRP was released, which mandated the allocation of $816 million to meet the most pressing requirements of 9.5 million people (FRP, 2022). The UN and its partners, in coordination with national and local authorities, such as the Pakistan Meteorological Department and the Federal Flood Commission, monitored the impacts

of additional weather events to provide support for the government's response to the humanitarian situation. This was done because additional weather events may increase the need for humanitarian assistance.

2- International Responses and Support

The planning minister of Pakistan, Ahsan Iqbal, expressed that a reasonable estimate of the damage caused due to flash floods was $10 billion. Norway, the United Nations' Central Emergency Response Fund (CERF), and the World Health Organization's Contingency Fund for Emergencies, from sixteen Member States, responded to Pakistan's appeal. One of the promised contributors, Germany, declared a fund of US$ 7 million. Still, Pakistan received just $160 million, 60 times less than the total estimate of the losses.

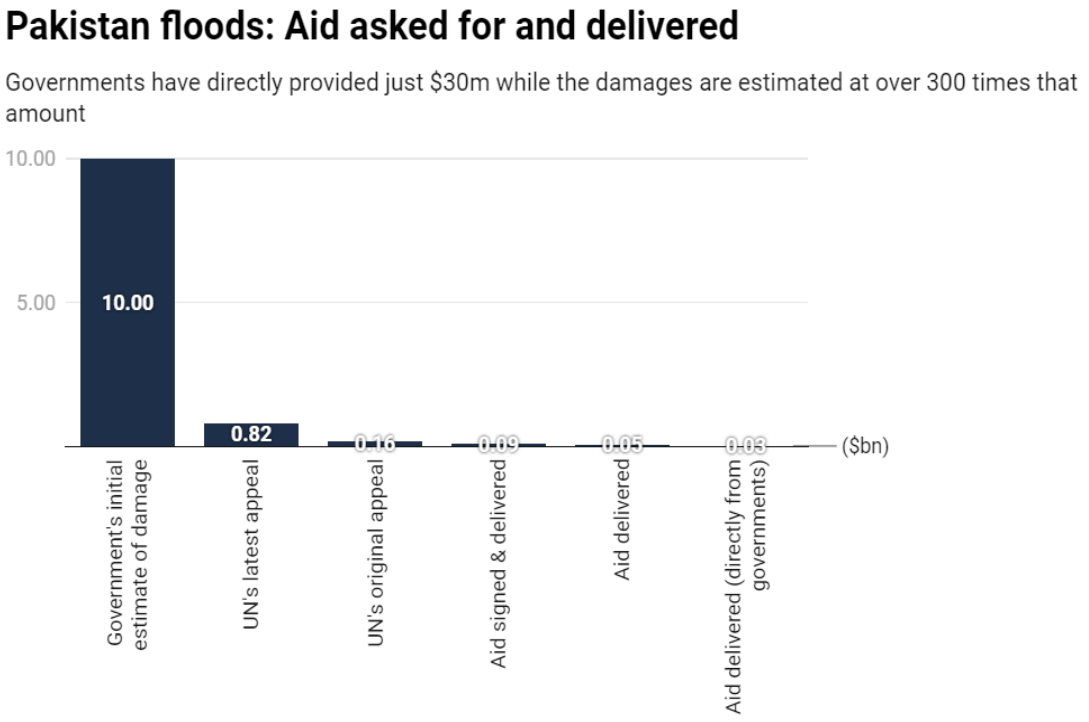


Figure 3: Pakistan Floods: Aid asked for and delivered

Source: Pakistan's government, United Nations

Responses from States

During the 2022 flash floods in Pakistan, the world community came together to assist and encourage the impacted regions. Pakistan received financial help from several nations, including China, Saudi Arabia, and the United Arab Emirates.

Responses from IGOs

The rehabilitation and reconstruction process commenced with vital support from a core team of the EU, ADB, and UN Agencies facilitated by the United Nations Development Programme and the World Bank. National and international experts from 17 sectors collaborated with federal and provincial ministries, departments, and agencies to collect information from the 94 disaster-affected districts. Multisector recovery planning was conducted to establish the Disaster Recovery Framework for resource prioritization and targeting. It constitutes the preliminary phase of a people-centric, inclusive, and climate-resilient recovery. The UN additionally allocated emergency financing and assistance via its Office for the Coordination of Humanitarian Affairs (OCHA). The EU extended assistance via its Civil Protection Mechanism, which involved the deployment of specialists and resources to facilitate the relief operations. The global community also endorsed sustained recovery initiatives in the impacted regions. The World Bank extended a $500 million loan to facilitate the reconstruction of infrastructure, encompassing roads and bridges, and to enhance disaster preparedness in the nation (*Pakistan*, 2022c). The Asian Development Bank extended a $1 billion loan to facilitate the restoration and rehabilitation of areas impacted by flooding.

Responses from NGOs:

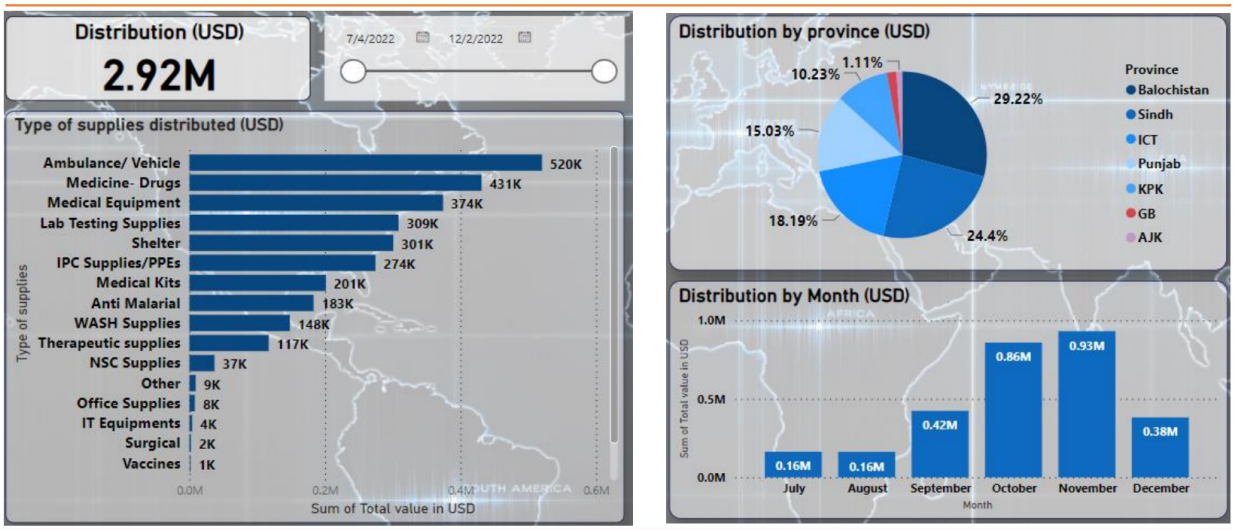
Humanitarian organizations and NGOs were also instrumental in assisting the populations that were impacted by the disaster. Those who were impacted by the floods received assistance in the form of food, water, shelter, and medical supplies from an assortment of organizations, including Oxfam, Save the Children, and Islamic Relief. Additionally, these organizations offered psychosocial support to survivors to assist them in coping with the trauma caused by the accident. In addition to providing immediate assistance, international humanitarian reactions can be observed in several different areas about human necessity and security.

- ***Support for Food Security***

Large tracts of key crops, including tomatoes, onions, and chickpeas, were devastated as a result of flash floods that followed them. These floods occurred in the Punjab region. Shahzad Cheema, the secretary of the Lahore Market Committee, stated that the floods have caused the destruction of eighty percent of Pakistan's tomato crop and that the supply of onions has also been seriously disrupted. According to the facts provided by the Pakistan Bureau of Statistics, the cost of tomatoes and onions has climbed by forty percent since that time. As a consequence of this, the food chain was disrupted, which led to a significant amount of inflammation developing. According to the administration, the region of Punjab, which is considered to be the agricultural core of the country, has experienced an estimated flooding of between 500,000 and 1 million hectares of food crops. The floods resulted in the loss of between 200,000 and 300,000 tonnes of rice, as shown by the figures. As a consequence of this, the food chain was disrupted, which led to a significant amount of inflammation developing (Crush, 2022).

- ***Health and Medical Support***

In Sindh's Keamari-Karachi District, an NGO partner established medical sites to provide basic health services by reaching at least 1,930 people, while in Baluchistan's Jhal Magsi and Lasbela districts, contingency stocks were used to provide medications and supplies like blankets and mosquito nets to affected individuals (Crush, 2022). To prevent the spread of diseases and lessen health problems, female health professionals also held health awareness programs in every district of Sindh. As shown below, WHO assisted based on the areas affected by flooding in each of the impacted provinces and regions.



- *Figure 4:* ***Distribution of Health and Medical Support during 2022 Floods***

Source: World Health Organization (WHO) – Situation report on the flooding in Pakistan, December 2, 2022

- ***Rehabilitation of flood victims***

The government of Pakistan, working with the international community, took several required steps to address the problems caused by the devastating disaster, which put the welfare of the victims at considerable risk. These include coordinating with the Departments of Women's Development and Social Welfare to guarantee accessible and functional GBV referral pathways; creating new District Child Protection Units while fortifying the ones that already exist; deploying child protection units to identify and respond to children who are at risk; evaluating the loss of civil documentation; analyzing secondary health data to determine the impact on GBV response; offering direct psychosocial support and recreational activities in Temporary Learning Centers in displacement camps; and supplying supplies for mothers and newborns in the affected areas.

Geneva Conference 2023

During the Geneva Conference held on January 9, 2023, international donors pledged more than $9 billion in aid to facilitate Pakistan's recovery from the catastrophic 2022 flash floods, exceeding its external financing objectives and establishing a novel fundraising paradigm for impoverished nations to address climate-related disasters. The government of Pakistan and the UN co-hosted a summit in Geneva, attended by politicians and officials from around 40 countries, together with international financial institutions and individual donors. Of the projected $16.3 billion recovery expenditure, over $9 billion was committed by bilateral and multilateral partners, including a $2 billion contribution from the World Bank, $4.2 billion from the Islamic Development Bank, and $1 billion from Saudi Arabia, alongside contributions from China, the European Union, France, and the United States (Farge et al., 2023).

COP27 Sharm-El-Sheikh Egypt

Pakistan embraced a fund created to address losses and damages resulting from climatic disasters. The unanimous agreement achieved at COP27 in Sharm-El-Sheikh, Egypt, represents a significant triumph, especially for the Group of 77 and China, as developing nations advocated for such a fund for the past three decades. The catastrophic climate change-induced floods in Pakistan earlier this year resulted in losses and damages exceeding USD 30 billion, hence redirecting attention to this urgent matter (Office, 2022).

Lessons from Flash Floods 2022:

In the aftermath of the 2010 floods, which affected around 20 million individuals, the government of Pakistan implemented essential measures to enhance disaster risk management and formulate sustainable policies, including the National Disaster Management Plan and National Flood Protection Plan IV. Nonetheless, with the recent occurrence of the 2022 flash floods, numerous institutional and systemic obstacles remained, including insufficient implementation and funding for plans, inadequate land use planning, and restricted absorptive capacity for risk assessment in infrastructure expenditures.

Institutional and Systemic Challenges

- At the onset of the 2022 monsoon season, the NDMA initiated an extensive Monsoon Contingency Planning Exercise including key federal and provincial partners, as well as the international community. Nevertheless, Pakistan's institutions and processes were ill-equipped to address the unparalleled climate disaster.
- The flash floods of 2022 also exposed the inherent institutional and systemic challenges, such as the lack of an infrastructure maintenance system, poor urban planning, poor water resource management, structural inequalities, bad governance, and limited disaster risk reduction capacity.

- Simultaneous shocks, such as natural disasters, skyrocketing inflation, fiscal challenges, and an energy crisis, further compound the impacts of this climate-induced disaster, undermining the effectiveness of recovery.

Economic Challenges

As a result of growing costs on a worldwide scale, Pakistan's economy was confronted with a multitude of economic issues before the flash floods that occurred in 2022. These challenges included very significant deficits in both the fiscal and current accounts. This scenario has been further exacerbated by the recent incident of the 2022 flash floods, which has resulted in the prices on the market once again skyrocketing, the trade imbalance continuing to rise, and revenues continuing to drop, all of which are indicators of weak economic growth (*Pakistan Floods 2022: Post-Disaster Needs Assessment (PDNA) | United Nations Development Programme*, n.d.).

In addition, the destruction of essential infrastructure, such as roads and bridges, has resulted in the emergence of a multitude of transportation issues that are anticipated to disrupt the supply and further slowdown economic growth. It is anticipated that the value contributed by the service sector will decrease by 0.6 percent of the GDP in FY22. However, the entire reduction in GDP that may be attributed to the direct impact of flash floods is around 2.2 percent of the GDP for the fiscal year 22 (*Pakistan*, 2022b, p. 30).

Development Challenges

The human and socio-economic development issues that Pakistan has been compounded by the risk multiplier impact of climate change, which is a factor that makes Pakistan extremely sensitive to climate change. It is estimated that Pakistan is one of the 10 countries that are most negatively impacted by climate change (Pakistan Floods, 2022). Furthermore, according to the ND-Gain Index, Pakistan is ranked as the 35th most susceptible country and the 146th most ready country to address the impacts of climate change (GAIN Index, 2023.).

Challenges to Health Facilities

The 2022 floods compromised around 13 percent of the nation's health facilities, disrupting health service delivery from community-level entities, such as Rural Health Centers and Basic Health Units, to secondary-level institutions, including District and Tehsil Headquarters and Civil Hospitals. The delays in health service delivery are anticipated to exacerbate health inequities for vulnerable populations due to impeded access to vaccines, maternity and child health services, routine treatment for chronic conditions, and increased healthcare costs.

Actionable Policy Measures:

The disastrous multi-sectoral impacts of climate change in the form of the 2022 flash floods have demonstrated the incapacity of the Federal, Provincial, and Local governments to counter a large-scale climate catastrophe. The following recommendations are made as a way forward to this catastrophe and to limit the impacts of future climate-induced disasters.

- The government shall increase efforts to reform and improve Pakistan's disaster management institutions and systems. Early warning systems and defensive infrastructure must be installed to reduce the risks of abrupt, disastrous inundations.
- Government bodies responsible for the preparation, disaster management, and reconstruction at the federal, provincial, and district levels shall have clear roles and responsibilities, and their adaptive capacity shall be strengthened with greater human, technical, and financial resources.
- The existing disaster risk management system shall be upgraded, and the current procedures must be reevaluated for better future disaster mitigation.
- Provincial Disaster Management Authorities shall be made more effective by investing in properly equipped and well-trained staff.
- The government shall invest more in water infrastructure, sustainable water management, and drainage systems.
- Detailed and appropriately effective contingency plans shall bolster the preparedness and increase the response in case of future climate-induced calamities in Pakistan.
- Much work is needed to be done on climate change adaptation and mitigation in Pakistan, and the country shall make considerable efforts to implement Goal 13 of the SDGs, i.e., the Climate Action. In this regard, shifting modes of production from conventional to green technology must be considered.

Conclusion:

The 2022 flash floods in Pakistan highlighted the country's deep-rooted vulnerabilities in the face of climate change. The scale of destruction—impacting over 33 million people—exposed not only the fragility of infrastructure but also the shortcomings in disaster preparedness, public health systems, food security mechanisms, and institutional response capacity. Underrepresented communities, particularly women and children, bore the brunt of the devastation, with millions of lives lost and essential services severely disrupted.

While the national response, supported by international partners such as the United Nations and the European Union, played a crucial role in providing immediate relief, much of it was reactive and fell short of addressing long-term needs. The floods underscored the urgent necessity of shifting from temporary emergency responses to a more forward-looking and sustainable approach that strengthens the country's resilience against future climate disasters.

To strengthen resilience against future climate-induced disasters, Pakistan must institutionalize climate adaptation policies, and mainstream climate risk into national development planning. This includes improving early warning systems, investing in climate-resilient infrastructure, and strengthening coordination among federal, provincial, and local authorities. Above all, it should

recognize climate change not simply as an environmental issue, but as a pressing matter of national and human security. Securitizing climate change and human security can help generate the political urgency and collective action needed to protect vulnerable communities and build a more secure, climate-resilient future for all.

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