



**FORMAN
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**FLOODS 2022: ALL
PAKISTAN PRC PANEL
DISCUSSION
& STUDENT ESSAYS**



Forman Christian College

(A Chartered University)

FCCU was founded in 1864 with a vision to impart quality education to the people of this region and to contribute to their academic, economic and social development. From the premises of a small college, FCCU has grown into an academically robust university that offers a wide range of opportunities to its students to grow and reach their full potential. FCCU welcomes students from all backgrounds and all regions of Pakistan and abroad to a university where they live, grow and learn, meet some of the greatest thinkers in their chosen disciplines and make lifelong friendships- a place they can truly call home.

Our mission is to impart, create and disseminate knowledge and to develop informed, ethical and responsible citizens who are prepared and committed to learn, lead and serve; people who exemplify the FCCU motto,

“By love serve one another”.



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Population Research Center

Population Research Center (PRC) at the Forman Christian College (A Chartered University) was established in 2019 to conduct, promote, and strengthen inter-disciplinary population studies research and teaching in Pakistan. PRC is an independent Center that was collaboratively created by the Departments of Economics, Geography, Statistics and Sociology and is part of the Faculty of Social Sciences.

In unison with the motto of FCCU “by love serve one another”, the mission of PRC is to serve the people in the true spirit of inclusion and democracy as the premier teaching and research institute of Population Studies in Pakistan. The main purpose of the Center includes providing advanced training to students in Population Studies, generating and disseminating research on population growth and its impact, spreading awareness on population related issues and evaluating existing policies and initiatives to counter the population problem in Pakistan and collaborating with national and international institutions for training and research.



Disclaimer:

This booklet is based on the proceedings and material of two events organized by the Population Research Center (PRC), Forman Christian College (A Chartered University), Lahore. The first event mentioned in section one is the collaborative Panel Discussion on “Devastation by Floods in Provinces: Relief and Rehabilitation Activities & Imminent Challenges”. This collaborative panel discussion was organized in collaboration with the Population Council (PC), Pakistan, Population Research Center (PRC), Institute of Business Administration (IBA), Karachi, Population Research Center (PRC), Balochistan University of Information Technology, Engineering and Management Sciences (BUIITEMS) and Population Research Center (PRC), University of Peshawar (UOP), supported by United Nations Population Fund (UNFPA). The information in this section is purely based on the presentations of guest speakers.

The second section titled “PRC Research Essay Competition” consists on the student essays (top ten) from the research essay competition organized by the PRC, FCCU for baccalaureate students, funded by the Office of Research, Innovation and Commercialization (ORIC), FCCU. The main theme of the essay competition was “Floods 2022 in Pakistan”.

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The side images on the cover page are taken from the flood relief activities organized by Rotaract club, and Forman Islamic Society, FCCU.

The central image refers to displaced people wade through a flooded area in Peshawar, Pakistan. The country’s flooded southern Sindh province braced on Sunday for a fresh deluge. Photograph: Anadolu Agency/Getty Images. Downloaded via <https://www.theguardian.com/world/2022/aug/28/pakistans-south-braces-for-deluge-as-death-toll-from-floods-tops-1000>

CONTENTS

Section one: Collaborative Panel Discussion	7
Inaugural Address - Dr. Jonathan Addleton (<i>Rector, FCCU</i>)	12
Welcome Address - Ms. Khizra Nasir & Dr. M. Vaqas Ali (PRC, FCCU)	15
Welcome Address – Ms. Samia Ali Shah, Project Director, Population Council	19
Guest Speaker Presentations	21
Dr. Ghulam Muhammad Arif, <i>President, Population Association of Pakistan (PAP)</i>	21
Ms. Afia Salam, <i>Member, National Climate Change Council</i>	26
Ms. Maria Hassan, <i>Assistant Professor, Institute of Business Administration, Karachi</i>	36
Mr. Mumtaz Ali, <i>District Support Manager, PPHI District Pashin</i>	42
Concluding Remarks - Dr. Muhammad Vaqas Ali	46
Section two: PRC Research Essay Competition “2022 floods in Pakistan: Challenges & Solutions”	47
Public health issues related to 2022 floods and possible solutions - <i>Mahnoor Butt</i>	49
Long and short-term economic challenges in the aftermath of the 2022 floods and possible solutions - <i>Muhammad Afiq</i>	55
Long and short-term Economic challenges in the aftermath of the 2022 floods and possible solutions - <i>Umme Abeha</i>	60
Disaster Risk Reduction (DRR): Lessons learned from 2022 floods and way forward - <i>Irfan Ul Haq</i>	67
Public health issues related to 2022 floods and possible solutions - <i>Esha Riaz</i>	72
Internal displacement and migration due to the 2022 flood - <i>Rafi Ul Shan</i>	77
Public Health Issues related to 2022 Floods and Possible Solutions - <i>Tahreem Munir</i>	85
Public Health Issues related to 2022 floods and related solutions - <i>Iqra Haroon Mazari</i>	90
Disaster Risk Reduction (DRR): Lessons learned from 2022 and way forward - <i>Mariam Ajmal</i>	94
Public Health Issues Related to 2022 floods and Possible Solutions - <i>Ayesha Hassan Khan</i>	98
PRC Research Essay Competition Ceremony	102

**SECTION ONE: Collaborative Panel Discussion on “Devastation by Floods in Provinces:
Relief and Rehabilitation Activities & Imminent Challenges”**

The Population Research Center (PRC) at the Forman Christian College (A Chartered University) in collaboration with the Population Council (PC), Pakistan, Population Research Center (PRC), Institute of Business Administration (IBA), Karachi, Population Research Center (PRC), University of Peshawar (UOP) and Population Research Center (PRC), Balochistan University of Information Technology, Engineering and Management Sciences (BUIITEMS) organized and hosted a collaborative panel discussion on 9th December 2022 via zoom from 3:00 PM – 5:45 PM. The event was supported by the United Nations Population Fund (UNFPA).

ORGANIZED BY



The Population Council (PC), Pakistan



*Population Research Center (PRC),
FCCU*



*Population Research Center (PRC),
BUIITEMS*



*Population Research Center (PRC),
IBA, Karachi*



University Of Peshawar

*Population Research Center (PRC),
UOP*

SUPPORTED BY



The United Nations Population Fund (UNFPA)

CHIEF GUESTS



Dr. Jonathan Addleton
Rector, FCCU



Ms. Samia Ali Shah
Project Director,
Population Council (PC),
Pakistan

GUEST SPEAKERS



Dr. G. M. Arif
President Population
Association of Pakistan (PAP)



Ms. Afia Salam
Member, National Climate Change
Council



Ms. Maria Hassan
Assistant Professor, IBA Krachi



Mr. Mumtaz Ali
District Support Manager, PPHI
District Pashin

ORGANIZING/MANAGEMENT TEAM



***Dr. Sikandar Hayat
Dean Social Sciences,
Advisory Board Member, PRC, FCCU***



***Dr. M. Vaqas Ali
Assistant Professor, Department of
Sociology,
Director PRC, FCCU***



***Dr. Jawad Tariq
Assistant Professor, Department of
Sociology,
Coordinator, PRC, FCCU***



***Ms. Syeda Zain Fatima Shamsi
Administrative Assistant, PRC
FCCU***



***Ms. Khizra Nasir
Research Assistant, PRC FCCU***



***Ms. Shanze Ahmed
Student Assistant, PRC, FCCU***



***Mr. Lutf Ullah Khan
Student Management Committee Member***

Population Research Center (PRC)'s Collaborative Panel Discussion Agenda Date: December 9th, 2022 Time: 3:00 PM – 6:00 PM			
I.T Check			Time/Duration
PRC, FCCU		Greetings & Welcome note	3:00 – 3:05 PM
Recitation of Holy Quran			3:05 – 3:10 PM
Recitation of Holy Bible			
Dr. Jonathan Addleton (Rector, FCCU)		Inaugural Address	3:10 – 3:15 PM
Ms. Khizra Nasir (Research Assistant, PRC) Dr. M. Vaqas Ali (Director, PRC)		Welcome Address	3:15 – 3:25 PM
SESSION 1			
Ms. Samia Ali Shah (Project Director, Population Council, Pakistan)		Welcome Address	3:25 – 3:30 PM
Speaker (Designation)	Speaker Nominated by (Institute/Department)	Topic	
Dr. G. M. Arif (President, PAP)	The Population Council (PC), Pakistan		3:30 – 3:50 PM
Ms. Afia Salam	The Population Council (PC), Pakistan		3:50 – 4:25 PM
Ms. Maria Hassan (Assistant Professor, the Academic Director Writing Centre, and Research Associate, PRC, IBA.)	Population Research Center (PRC), Institute of Business Administration (IBA), Karachi	Devastation by floods in Sindh: Relief and rehabilitation activities in Sindh and imminent challenges	4:30 – 4:55 PM
Mr. Mumtaz Ali, (District Support Manager, PPHI District Pishin)	Population Research Center (PRC), Balochistan University of Information Technology, Engineering and Management Sciences (BUIITEMS)	Devastation by floods in Baluchistan: Relief and rehabilitation activities in Baluchistan and imminent challenges	4:55 – 5:15 PM
Q/A Session			5:15 – 5:25 PM
Concluding Remarks & Thank you Note			5:25 – 5:30 PM

Inaugural Address
Dr. Jonathan Addleton
(Rector, FCCU)

“Thank you. It is an honor to be here today and I appreciate the opportunity to participate in this event. Let me also thank UNFPA, the Population Council and of course Forman's own Population Research Center for hosting this program. Thank you, too, to Dr. Sikandar, Dr. Vaqas and others for making this event possible.

Let me start with a few short remarks on this interesting subject, one that I have followed for much of my prior career as a USAID officer which on occasion involved a combination of disaster mitigation, relief and reconstruction including in Pakistan.

Given that the floods of 2022 were part of a disaster that affected all four provinces of Pakistan, it is also appropriate that we have representation from all four provinces at today's discussion, whether in person or via Zoom. In addition, the floods of 2022 rank as the worst natural disaster that Pakistan has faced since the earthquake in northern Pakistan in 2005 and the flooding that last covered much of the country five years later, in 2010.

All these events were truly devastating. As natural disasters often do, they also brought the country together in a common cause. However, in contrast to the 2005 earthquake and the 2010 floods, the most recent disaster attracted less international interest and attention, no doubt partly because of a range of other catastrophes facing the planet right now including war in Ukraine and economic uncertainty and upheaval in many countries.

That said, one of the interesting aspects of the recent floods in Pakistan has been a conscious effort, both in Pakistan and beyond, to link the flooding to global warming, noting that the long-term impacts of this warming that are affecting the climate are now being played out in catastrophic ways -- and that it may get even worse in the years to come.

The human aspects have also understandably drawn a lot of attention. During the summer, those of us living in Pakistan tracked and followed events with special interest and concern. We saw some of those videos played on social media, many of them gripping, moving and at times horrifying. Of course, the coverage now has been reduced and the challenges faced by people across Pakistan as a result of the floods are now getting much less space in the media.

In that sense, holding this symposium now is absolutely appropriate, reflecting the reality that the ordeal has not ended -- on the contrary, in important ways it has just begun, at least in terms of dealing with the aftermath of flooding and the reconstruction work that inevitably follows. Huge sections of Pakistan -- as large an area as many entire countries -- were under water; and as I understand it, some of these areas are still under water. In that sense, it is important for us to be talking about the consequences as well as the huge challenges that Pakistan continues to face. It is also worth noting that while the international reaction to the floods might have been muted to some extent, the domestic reaction was significant and continues to be played out in a variety of positive ways including on the Forman campus. In this regard, let me give a quick "shout out" to both the FCCU Rotaract Club and Islamic Society which joined together to raise funds and provide immediate flood relief. Forman as an institution also raised funds, both on campus and among our foreign supporters via Friends of Forman in the United States.

This effort involved individual contributions as well, including students, staff and faculty who independently and on their own contributed. Often people wonder -- what difference does one individual make? But in this situation, the combined efforts of many individuals did have a positive impact. In some cases, this involved people on this campus purchasing supplies and joining with local groups affected by the floods to deliver them. In the case of Forman, those efforts included relief outreach in Swat and Nowshera, both in KPK.

Indirectly, the floods also affected members of our Forman community including our students. For example, our Financial Aid office has mentioned to me that they received letters from approximately 60 students who normally might have been able to cover their school fees but have not been able to do so because of the devastation of the floods in their home village or town, in some cases involving a crop destroyed, a job lost or a livelihood threatened.

Part of the support raised on campus and among our international supporters is being used to address such concerns. Realistically, it is difficult for some students and their families to pay their tuition when their families are suffering and are now in the process of rebuilding or resettling. In particular, we want to avoid situations in which students have to disrupt their education and possibly drop out because of this natural disaster. So education, too, is one of the long-term concerns that needs to be addressed in the aftermath of any natural disaster including flooding.

Reflecting on the impact of the recent flooding, I also can't help but recall the relief and reconstruction efforts that USAID was involved in back in 2005 and 2006, my own role commencing in March 2006 when I arrived as USAID Mission Director to lead the USAID reconstruction effort, in partnership with other international donors as well as Pakistan's Earthquake Relief and Reconstruction Agency (ERRA) headed by General Nadeem. In that regard, I also note with appreciation that an official from the Punjab Disaster Management Authority (PDMA) is here today and welcomes their participation as well as their past efforts to address disaster concerns.

Looking back, I do think that Pakistan did a commendable job in responding to the 2005 earthquake, with reconstruction work in terms of rebuilding schools and health facilities continuing for years afterwards. Usually, when natural disasters occur, you hear about the failures, not the successes. The fact that there was not much coverage about the failures related to assistance provided in the aftermath of the 2005 earthquake suggests that this effort met with at least a measure of success, a measure of success that I hope will be repeated with respect to the reconstruction work going on in flood-affected areas of Pakistan right now.

Of course, cooperation and coordination among all the groups and communities involved is also essential. Following the 2005 earthquake, the motto at the time was "*Build Back Better*". Hopefully, a similar path will be followed this time around.

Against that backdrop, let me again thank the organizers of this important event. I am truly appreciative that Forman Christian College (A Chartered University) is able to engage in discussions like this. I also welcome and thank all the participants, both in-person and on Zoom. Again, many thanks and I am sure that this event will be successful".

Welcome Address: Devastation caused by the 2022 Floods in Pakistan and impending challenges and sustainable solutions

Ms. Khizra Nasir

Research Assistant, PRC, FCCU

Dr. M. Vaqas Ali

Director, PRC, FCCU

“It is our distinct honor to welcome our esteemed speakers especially Dr. Jonathan Addleton, Dr. Zeba Sathar, Dr. Ghulam Muhammad Arif, and our guests who have taken time and joined us from all over Pakistan. We would like to acknowledge our partners, the UNFPA, the Population Council and the PRCs at UOP, BUTIMS and IBA in making this event possible.

The topic of today's virtual collaborative panel discussion “Devastation caused by the 2022 Floods in Pakistan and impending challenges and sustainable solutions” is of grave and continuing importance for Pakistan. FCCU is honored to host this event as this is the first collaborative event organized by the four PRCs as the 2022 floods have wreaked havoc all across Pakistan and there is little awareness across the provinces as to the extent of destruction and the emergent challenge in the wake of this disaster. Sadly, the 2022 floods represent one chain of events that continues to threaten Pakistan.

According to the Global Climate Risk Index, Pakistan is the eighth most-vulnerable nation in the world. The recent 2022 flood represents the fourth major flood that Pakistan has faced in the last three decades (which include the 1992, 1993 and 2010 Floods). Millions of people living in the vicinity of flood plains, the ocean or in the northern regions prone to landslides and seismic activity are vulnerable to the threat of floods. Unfortunately, regions which have been identified as highly vulnerable to flooding have the lowest income and education levels and have limited access to clean and drinking water. However, the destruction caused by the 2022 floods is unprecedented. In terms of scale, the monetary damage caused by the 2022 floods stands at an estimated 18 billion dollars which is almost twice the monetary damage caused by the 2010 floods (which stood at around 10 billion dollars).

One-third of the territory of Pakistan was submerged. A total of 33 million people were affected due to 2022 floods. Southern and Central Pakistan have been most affected, particularly the Balochistan and Sindh provinces. Balochistan has received 5.1 times its 30-year average rainfall as of 27 August, while Sindh's average rainfall is 5.7 times its 30-year average rainfall.

According to the National Disaster Management Authority (NDMA), more than 2 million houses are affected while nearly 7.6 hundred thousand houses are destroyed with the damage of 1.3 million houses. From these affected and damaged houses, eighty-nine percent are in Sindh, where over 6.8 hundred thousand houses were destroyed and over 1.1 million houses were damaged.

The flood has also ravaged public infrastructure in flood affected areas. Nearly 13,000 km of roads have been damaged or destroyed, and around 410 bridges have collapsed. 40 percent of the damaged roads were located in Sindh, followed by 24 percent in KPK, 22 percent in Baluchistan and 16 percent in Punjab.

The resulting number of human fatalities and injuries was enormous. 1700 people lost their lives due to the floods. More than half of these were women and children (the number stands at 340 women and 640 children). A total of 12,800 people were injured, out of which, almost 27 percent were women and 31 percent were children. An estimated 4 percent of the disaster affected population is pregnant, and an estimated 15 percent are likely to experience pregnancy-related complications. According to the United Nations High Commissioner for Refugees (UNHCR), nearly 800,000 refugees live in districts notified as 'calamity hit' by the Government of Pakistan, including 2,10,000 in Peshawar, Khyber Pakhtunkhwa, 170,000 in Quetta, Balochistan, 77,700 in Nowshera, Khyber Pakhtunkhwa and 71,500 in Karachi, Sindh.

As a result of the floods, over 3.5 million children have been deprived of education. Data indicates that more than 22,000 schools have been damaged in Sindh, Balochistan, Punjab and Khyber Pakhtunkhwa, and over 5,500 other schools are currently housing refugees.

Over 1,460 health facilities have been affected by the heavy rains and floods. The health sector reports that access to health facilities, healthcare workers, and essential medicines and medical supplies remains limited. Early disease surveillance indicated that tens of thousands of people have been affected by diarrhea, malaria, acute respiratory infections, skin and eye infections and typhoid. Initial reports have been received of rise in dengue cases in refugee villages in Khyber

Pakhtunkhwa, while an outbreak of Acute Watery Diarrhea (AWD) has reportedly affected 45 districts in Balochistan, Sindh, Punjab, Khyber Pakhtunkhwa, and Islamabad Capital Territory.

The ravages of the floods have also debilitated the agriculture and livestock sector which was a major source of sustenance in the affected areas. Over 1.2 million hectares of agricultural land in Sindh has been damaged, while in Balochistan, 61 percent of livestock keepers in assessed districts have already reported symptoms of transboundary animal diseases. Nearly 50 percent of affected households in assessed districts of Balochistan earn their livelihoods by keeping livestock. 36 percent reported losing at least one livestock asset, 46 percent reported damage to livestock shelters, and 29 percent reported a loss of animal feed stock. NDMA reports indicate that around 5,00,000 livestock have been lost due to the rains and floods. More than 1.1 million livestock has reportedly been killed, including some 500,000 livestock in Balochistan, 428,000 livestock in Sindh and over 205,100 livestock in Punjab.

The loss of arable land and livestock will not only deprive thousands of households of income and sustenance in the flood-affected areas but its tremors will be felt across the country as food insecurity is likely to rise. Inflation rates are likely to soar and the trade deficit is likely to increase in 2023. In the agriculture sector, rice, cotton, and sugarcane together faced a direct loss of USD 1.30 billion. Trade deficit is estimated to rise up to \$4 billion this year and the additional impact on the current account deficit is also estimated in the range of \$4 billion to \$5 billion.

The Government of Pakistan (GOP), the provincial governments, agencies, local and international NGOs/departments and volunteer groups have been playing their part to help the flood-affected people by providing shelter, relief packages (which mainly include clothes, dry food, medication and other necessary items), and cash etc. However, Pakistan's faltering economy simply lacks the funds needed to implement a comprehensive and cohesive nationwide flood relief and rehabilitation which will inevitably exacerbate the country's dependency on foreign aid and foreign capital. According to the revised flood response plan 2022-2023, to overcome the damage caused by floods of 2022, Pakistan would require foreign funding in the neighborhood of \$USD 5 hundred million in 2022 and \$USD 3.5 hundred million in 2023.

In dealing with the aftermath of the 2022 floods we must also contend with the imminent threat of floods in the future. Rising sea levels and changing rainfall patterns are expected to make floods more frequent and intense over the coming decades. Furthermore, Pakistan has the 5th highest population growth rate in the world and as the population increases so does the risk of rural settlements and urban expansion into areas that are at high risk of flooding. Therefore, a long-term strategy of slowing population growth by encouraging smaller families should be pursued in parallel with flood risk prevention strategies and climate action initiatives.

In the past years, the State has been working towards developing a comprehensive policy framework Disaster Risk Management, Disaster Risk prevention, Climate Action and Population Control however, effective policy implementation is still limited. Despite these policies and laws, there is a lack of coordination between the institutions/authorities responsible for disaster management and reduction and population management, and academia, despite the fact that universities, research organizations, and the scientific community are consistently working on these issues. Most often, overlapping research has been observed, leading to a wastage of crucial time and resources. Strong connections, free exchange of scientific knowledge, and joint action plans are necessary in the formulation of concerted efforts towards DRM, DRR and Population Management in Pakistan.

In this regard, Population Research Center (PRC), Forman Christian College (A Chartered University) in collaboration with the Population Council (PC), Pakistan, Population Research Center (PRC), Institute of Business Administration (IBA), Karachi, Population Research Center (PRC), University of Peshawar (UOP) and Population Research Center (PRC), Balochistan University of Information Technology, Engineering and Management Sciences (BUIITEMS) has organized this collaborative virtual panel discussion on “Devastation caused by the 2022 floods in Pakistan and impending challenges and sustainable solutions”.

We are fortunate that we have been able to gather national and provincial level experts from the four provinces Punjab, Sindh, Balochistan and Khyber Pakhtunkhwa to discuss and evaluate the devastation by floods in these four provinces and to discuss relief and rehabilitation activities and imminent challenges.

Thank you!”

Welcome Address

Ms. Samia Ali Shah

Project Director, Population Council (PC), Pakistan

“Thank you so much. Dr. Addleton, Rector, FCC University, directors of the four Population Research Centers, honorable guest speakers and participants, I would like to thank all of you for being here and of course for organizing this first joint webinar by the four Population Research Centers in Pakistan.

I would like to say that the Population Council (PC) is very proud of its association with the Population Research Centers. It has been a collaborative effort supported by the UNFPA, FCCU, BUIITEMS, IBA and Peshawar University. This collaboration is very important in setting up these institutions which we hope would revive the trend of demographic research and training of new demographers in Pakistan. So, congratulations to all the four PRCs’ for arranging this event and a special thanks to Dr. Vaqas Ali for leading this whole initiative.

Dr. Addleton and Professor Vaqas have already touched upon the key issues that will be discussed today at this webinar. But I would really like to highlight just a couple of points. When these floods, or rather, monsoons occurred, the Population Council carried out an analysis based on PDHS, Census data and estimations of vulnerable populations (the most effective districts of populations). We are one of the most vulnerable countries but we are the least contributors to carbon emissions in the world. So, in that sense, while the consumption patterns of developed countries are affecting climate change in developing countries like Pakistan, it is yet again the poorest section of countries like Pakistan, which get affected more than any other. So the profile that emerged from that data analysis was that (i) most of the vulnerable populations which have been affected live in rural populations. (ii) They are mostly in the poverty zones, identified in all four provinces, they are poor, and they live in Kacha houses, which were either destroyed or damaged. As they are poor, their ability to rebuild those structures gets compromised. Then there are rural poor, and then women, and among women, the most vulnerable are the pregnant women. It is quite interesting to note that most women affected in the worst districts were women who had the highest unmet need and had at least five children already. Some of them

gave birth and we heard all those sort of harrowing stories of women giving birth literally on the streets and in trucks during the floods.

So, a very important point is the linkage between climate change and population as comes in when you talk about adaptation and resilience. We need to make our population resilient and adaptable. I think Dr. Vaqas just touched upon it that this rapid population basically is affecting our overall human development indicators. So sustainable population has to be one of the key factors because we will be affected by climate change, and we need to manage it. Family planning has to be considered a part of and has to be built into the resilience and adaptation strategies being developed for disaster management. So that is how this linkage between population and climate change is very important. Family planning needs to be understood as a tool for mitigating the vulnerabilities of the impacts that climate change is having in Pakistan.

Since, we are Population Council and this webinar is by Population Research Centers so the population is really the key denominator here. It needs to be looked at and configured when you talk about climate change, resilience and adaptation. So I am really looking forward to listening to all the experts. With that, I will thank all of you and I am very much looking forward to hearing from all the experts.

Thank you so much”.

GUEST SPEAKERS PRESENTATIONS

Floods in Pakistan: Significance of population in framing national disaster management and resilience policies

Dr. Ghulam Muhammad Arif

President, Population Association of Pakistan (PAP)

“Dr. Jonathan Addleton, Dr. Vaqas Ali, Dr. Afia Salam, our colleagues from all four PRCs and students, Assalam o Alaikum. I am really thankful to PRCs, particularly FCCU PRC and the Population Council, Pakistan for giving me this opportunity to share my views on population, mainly on resilience policies. I must say in the beginning that climate change has not been my area of research during the last four decades. What I did some work in the past was on resilience and disaster and on viable adaptation strategies in Pakistan. I think Dr. Vaqas, Ms. Saima Shah and Dr. Addleton have given a good background so I don't need to go into detail of all these things. My discussion will be mainly on resilience, population will be the main focus and about the resilience policies or how we can make people and communities stronger to resist the risk like flood 2022.

According to the Population Council (PC) estimates, 39 districts are severely affected by the flood: 16 in Sindh, 17 in Balochistan, 3 in KP and 3 in Punjab. The other issues about the impact of floods on Poverty are noticeable. If you have gone through the DAWN, there are issues related to hunger and food security as well. Because of this COVID-19 and the flood situation, there is a danger of not only poverty but hunger as well. It means we are facing a lot of challenges in terms of loss of agriculture, livestock, poverty, food insecurity, hunger and damage to property and houses, as well.

There are four important factors that turn a hazard into a disaster and these four points have also been stated briefly by our speakers. One issue is climate change like the heavy monsoon which has badly affected the whole social and economic situation in Pakistan. The other is the mismanagement of Water Resources and natural drainage system and inadequate or nonexistent early warning system in Sindh and Balochistan. The third factor which Dr. Vaqas and Ms. Samia

Shah have also pointed out is the exponential increase in population in Pakistan. Population itself may not be the key factor, but many things which are associated with the population growth and high population. They have affected the whole system and had an impact in the flood prone areas in terms of housing settlements and the many other challenges which are associated with high population growth. The growth of cities and towns leading to rural communities settling in river basins has also been a major contributory factor to the flood. So, it is not only that we have a heavy monsoon but bad governance is also an obstacle. Negligence in terms of managing the water resources, social factors particularly high population growth, urbanization and the settlement pattern in rural areas one way or another have contributed to this disaster which we have faced just two to three months back.

Resilience is the ultimate and desirable outcome for effective flood risk management. If you go through the literature, I have picked up here two definitions of flood resilience systems. The first one is that a flood-resilient system shows the capacity to resist floods, particularly flood defenses, the capacity to absorb and recover from floods and the capacity to adapt and transform. So, when you have a resistance capacity, absorbing capacity, adaptation capacity and also utilizing the opportunities, then we can say that system is resilient and the population and people have the capacity to face this risk and minimize the damage that comes from this risk as Dr. Addleton has also said in his remarks.

The other thing which is the base for my discussion for today is a community flood resilience framework. This framework is based on five capitals: financial capital, human capital, natural capital, physical capital and social capital. What this whole framework tells us is that these five forms of capital demonstrate the capacity for communities to avoid the creation of new risks, reduce existing risks, prepare for future risks and improve their response to, and recovery from, a flood event. Basically, what this framework emphasizes is a holistic approach and not only just addressing one thing or another. If you want to develop an effective system, then our communities should be flood resilient. For flood resilience, communities and the people in those communities must have these five types of capitals: financial, human, natural, physical and social. The students and other colleagues who have some interest, can find many things in the literature on these lines.

Briefly about the international experience, just considering this definition of resilience. The Netherlands is a good example you can find in literature in terms of flood defenses or avoiding flood risk, it has a good system in place. England is quite important in terms of special planning. Bangladesh is good in early warning systems and quick evacuation of the people. In Indonesia, the governance and legal part is quite strong. But I think after looking through these experiences, it is also common to find in the literature that there is no concrete one size fits all solution for achieving full resilience. There is no framework anywhere that we can pick and apply to the situation in Pakistan. Rather the advice is that the governance strategies or the resilience strategies should be specified and tailored to physical circumstances as well as institutional and social contexts. It means what we have faced is unique and we need to develop our strategies and a resilient system to avoid this type of disaster in the future.

But unfortunately, you may have seen this Washington Post report that refers to a recent UN report which shows that Pakistan has a narrow window to boost climate resilience. That may be one of the reasons that Pakistan is very actively looking for international support. I think it is debatable how much we can depend on the international community without strengthening our own system and our own people and developing their capacity to resist this type of disaster in the future. Anyhow, a common perception is that the window of opportunity for Pakistan is quite narrow.

More needs to be done at the community level. After looking through the literature, the main message is that there is a need to do something more at the community level. When we talk about the community level, then we are also talking about the people and the population. It means that unless we develop some strategies to enhance the capacity of communities and people, it would be difficult just to get support from the international and maybe the regional level.

Here two things are important at the community level. First is the restructuring of the local governance system and unfortunately, you can see that the local governments are very weak in Pakistan. What we have experienced in Sindh and Balochistan is that without strong local governments, it is not possible to avoid disasters, reduce vulnerability at the community level and build safe havens. Community level organizations that work at the grassroots level are very important in this regard.

The main takeaway from a discussion on these five types of key capitals is that Pakistan needs to increase the resilience of people. What is the resilience of people? How can we increase it? Again, referring back to the comments made by Dr. Vaqas, Dr. Addleton and Ms. Saima Shah, it is reducing poverty, improving basic education and health facilities, raising awareness, providing more opportunities of work and upward mobility and building climate proof housing which can withstand the impacts of natural disaster. We can fit these things into the five capitals which we have discussed earlier. It means by taking on a holistic approach focusing on the population and looking at the major problems which these populations are facing, we can make the people resilient and then they can address the issues at the local level.

Another important feature of a resilient system is that the development plans of cities, towns and villages should boost natural capital, which is part of the five capitals which we have discussed. It means that our infrastructure should be compatible with nature and should not hamper the natural flow of rivers and hill torrents. We should learn to live with nature. We have seen many examples of unplanned development leading to loss of life and property. One recent example was observed in Islamabad where two people lost their lives during this Monsoon. The reason was that in one sector of the city, houses had been built on the "old Nala", or an artificial water channel. With the onset of heavy rains during this Monsoon the excess rainwater was channeled through the "Nala", flooding the houses that were built in it and sadly leading to the deaths of a woman and child. This example illustrates how our housing patterns can expose even the population living in the urban centers like Islamabad, to the threat of floods and other natural calamities. So, on one hand, building a disaster resilient society entails making communities and people stronger and addressing the economic, social, and demographic issues, while on the other hand, developing and strengthening the natural capital is also a crucial factor.

I have done research on migration for the last thirty or forty years. I have also read Dr. Addleton's book on the subject with great interest when I was doing my PhD. From a migration perspective, there is a growing need to encourage mobility in the provinces of Sindh and Baluchistan especially in the flood prone areas. I have written somewhere that migration enhances the adaptive capacity of households. This is very common in KPK, central Punjab and the mountainous areas of Pakistan, but not in Sindh and Balochistan. Currently many families are pushed into climate induced forced migration in Sindh and Baluchistan, but we need to increase

the mobility of the population in these provinces, so that the people living in backward areas and especially disaster prone areas are able to migrate voluntarily. This morning I was in a seminar organized by the NIPS and evidence was shown that participation from Sindh and Baluchistan in international migration is quite low. We need to look into this, as I have given recommendations to the Ministry of Manpower several times to establish more offices in Sindh and Balochistan, so that people can have a greater opportunity to move to the cities and to move abroad to improve their wellbeing.

Finally, I can conclude by saying that when I was preparing my presentation today, I saw the article written by the former finance minister, Dr. Miftah Ismail who has given six factors for economic growth and poverty reduction. When I considered these six points, I came to the conclusion that if we can achieve these objectives not only will we be able to foster sustained economic development and reduce poverty, but we will also make our population more resilient in the process. These factors are as follows: (i) effective water management to counter climate change, (ii) controlling high population growth, (iii) empowering local governments; starting from union council and going to the Metropolitan level (iv) 'live within means', granted international support would be needed but we need to depend on our own resources more, (v) enhance agriculture productivity, and (vi) improve education and health facilities. We can add here 'to also encourage population mobility in Sindh and Balochistan.' With these factors, I hope that the population can become resilient enough to counter the negative consequences of climate change so we can deal with these types of disasters better in the future.

Thank you very much for this opportunity and for listening to me”.

Flood in Pakistan: DRM: Disaster Risk Management & DRR: Disaster Risk Reduction

Ms. Afia Salam

Member, National Climate Change Council

“The topic I want to discuss is floods in Pakistan, Disaster Risk Management (DRM) and Disaster Risk Reduction (DRR). I think more needs to be said for disaster risk reduction as we find ourselves coping with such huge damages after a disaster hits us that risk management sometimes slips way down. The concept note for the event prompting this discussion has already covered many things on this topic.

What is important to note is that Pakistan has never really slipped out of the top 10 bracket of the Global Vulnerability Index of countries vulnerability to Climate Change over the last decade and a half. This clearly indicates that we have known about the threat level for Pakistan. But, if you see across the board, there is no conversation within our society corresponding to this threat.

This is across the board; within our academia, within our governance, in the media! A country which is in the top 10 bracket should have been talking a lot more, and doing a lot more about the kind of threats it faces and taking action at a much higher level with greater acceleration and with a greater sense of urgency. This has clearly not happened.

You can just look around to see what we have been hit by this time (2022 floods) and you can tell that we have not been prepared. It is actually the lack of preparedness that puts us in the top 10 bracket. This is why I want to focus on Disaster Risk Reduction. We do talk a lot about disaster management, but management should not have to be done if we reduce the risks earlier, or there may be only a minimal need for management, if the necessary steps to reduce the risks have been taken.

There are some points that I want to make about the climate change threats that Pakistan faces. We are at the number eight on the vulnerability index. This means there are seven countries which are more vulnerable than Pakistan. However, most of those countries which are above us on the scale are single-threat countries. Bangladesh is threatened with sea level rise. The small island nations which are higher than us on the scale are also threatened with sea level rise and

there are predictions of them being completely wiped off the face of the earth. But we are a multi-threat country.

The multi-threats we face include glacial melt because of the rise in temperature. This is very important to keep in mind because this impacts not just the glaciers, but the melt also swells our rivers as we witnessed in Swat and parts of Khyber Pakhtunkhwa. We saw that in floods in 2022 but have seen the same in 2010. The swell in the river volume was Nature's doing. Damage to property was a repeat of the 2010 disaster and clearly points to a lack of disaster preparedness by allowing for the infrastructure to be built in exactly the same location as before.

Meteorological reports clearly indicate that temperature rise is heating up Pakistan. Pakistan's temperature has risen by 1.5 degrees already. There are predictions that this is going to go higher. There was intense heat just before the floods in May and June in 2022. Immediately after the winter, summer came and we did not have spring. The summer was also an intensely hot summer.

We are a country with very large water bodies. We have the world's largest dams. We have a continuous irrigation system. We have also got some very large lakes. These make very good optics when we put them in tourism and school books. Those large dams are actually the places from where huge volumes of water vapor rise up into the atmosphere. If it is going up it is obviously going to come down somewhere as rainfall.

In 2022 we had a double jeopardy when there was more than normal rainfall falling in eight different geographical locations. Balochistan has never been an area that receives the monsoon; South Punjab also normally receives a dying-out monsoon season. But this time the two systems collided over these areas and that is where most of the rain fell.

It is very important to understand the distinction between this year's floods and the previous floods. This year, there was no flood in the Indus River. It did not even break its banks. The breaches that inundated the large swathes of land were more in the poorly maintained, or inadequately constructed water channels and drains.

We did not have a riverine flood, we had an alluvial flood which came from the hill torrent in Balochistan as well as in South Punjab. The rain in the Koh-e-Sulaiman came down the *Rod Koi* channels and the hill torrents of Balochistan. They came down the path which has been the path

of the water but had been dry for a while. That is where the intervention of climate change in the 2022 floods ended. Nothing else was due to climate change. The disaster, the deaths, the destruction, the infrastructure damage, the livestock losses and the life losses were because we were sitting in the path of those rivers.

Obviously, the wrath of Nature is difficult to withstand; unless humans take measures to be prepared and that is something that I would like to focus on; the lack of preparedness that we have displayed.

If the road networks had adequate culverts under them, they would not have been washed away. Many dams in Balochistan have been wiped out which means that there was something wrong with the quality of construction, which again is a human element that has got nothing to do with nature or with climate.

So, the poor quality of construction, the poor engineering, and all those things are combined to exacerbate the damage which was done because we had settlements in the path of the rivers, in the waterways, in the catchment areas and in the basin. This is something that has happened over and over again. In 2010, the river flooded. The damage was done because of the obstructions in the path of the river, which included infrastructure, settlements, villages etc.

We have had transmission towers and roads running through the riverbed. The riverbed obviously swells to accommodate the excess water that comes in during the season. It shrinks to a smaller size during the off season, when people think it is okay for them to go in, encroach on the river bed and live in it.

We are an agrarian country and across the world if you look at the great civilizations that have been nurtured by rivers, the people living alongside rivers actually pray for floods. Floods are what bring prosperity and fertility, but only if people are living in sync with Nature. Those people were used to taking the benefit from the floods, to grow crops, harvest them before the time the waters began crashing down. They did not live in the path of the water.

Glacial melt also is a natural phenomenon. Glacial melt with greater volume is happening because of the temperature rise. But a greater threat is of GLOF, Glacial Lake Outburst Floods due to the increasing temperature. These two points are connected to each other. We are exacerbating the problem by increasing human activity in those very fragile ecological areas.

There is a lot of construction going on there. There is a lot of heavy traffic that is passing there which is speeding up the rate of the glacial melt.

Then we have these block events which are glacial lake outbursts which not just wash away your infrastructure as they did this time, they also take away the arable and cultivable land. Already there is very little land available in Gilgit Baltistan. If we start encroaching on nature, we cannot withstand its force when it strikes back.

In Sindh, we have the phenomenon of sea intrusion which is like a trailer to the sea level rise which will happen due to global warming and the melting of the polar ice caps. Sea intrusion is already happening because of lack of fresh water being allowed to come downstream so it doesn't flush the creeks, which were the riverine creeks. Now the sea water has intruded and it has completely laid to waste thousands and thousands of acres of riverine forests, riverine agricultural land, and it has turned the subsoil water brackish. We have also lost arable land over there.

Desertification is also included among the multiple threats Pakistan is facing, because Pakistan is losing the cultivability of the land. High temperatures also generate strong winds, which is taking away the topsoil and that is rendering vast tracts useless for cultivation, which impacts our food security.

Urban heat has already been experienced in Karachi in 2015, when in three days more than 1500 people died just because of the heat. This is not a natural phenomenon. Karachi is now a concrete jungle, with very little green cover to balance the constructed environment. This is also happening to our other cities where rampant construction is taking place and denuding the natural environment. These implications have already been experienced. The numbers are already in. Infrastructure damage, loss of habitat and so forth are the implications.

Dr. Arif spoke about migration before me. Sindh has always had an economic migration. People move from Tharparkar and other areas to places where cultivation is being done. Then they return after the harvest because that's the source of livelihood and they are also able to bring back rains to last them till the next crop cycle. But migration is not as simple as that and it is not always positive.

I just spoke about sea intrusion. There are people who had to migrate out of the Indus Delta from a thriving and prosperous community that used to reside over there. They used to have these big game reserves, they used to be traders of red rice pre-partition. Big boats used to take them down the coast of India all the way to Surat with grains and fruits for trading.

Now, only 150,000 people are living there and they are also struggling to survive. They are in the bind of crushing poverty. Those who were agrarian farmers have now become daily wage workers. The fisher folk are seeing the species dying out because it cannot bear the salinity and change in their habitat.

Also, because the land is being eaten away by the sea, there is no place for them to go back to. So climate-induced migration is something different and we must make that distinction, as economic migration or seasonal migration have been the norm in Sindh and this needs to be seen in a different context.

When this migration happens where a community cannot go back to the place it actually belongs to but is going to a place where resources are available, those resources are already being used by a community settled there and this gives rise to a resource competition. There is also social strife because nobody wants anybody from outside to come and take their resources. Even the already-settled communities are not very rich. They are also just getting by. All these issues are a threat to social stability.

Now, there are more implications because of floods. There is an increase in poverty. What is interesting is that nobody is looking at the situation of the people who were not below the poverty line, but who have now gone below the poverty line. They are not within any existing list of people who were provided some assistance through the Benazir income support program, which was renamed as Ehsaas. So, they are nowhere. They are in the worst situation because those who are at the bottom of the pyramid have been registered. They have received some cash transfers but people who were just okay, not very well off, who probably owned their house, nothing palatial, just a house that was their own which has now completely crumbled. So, they have nothing. They do not have any recourse for any kind of monetary help or any other help that the government or any other agencies may offer. We have to also look at bringing them into that mainstream registration process so they are able to at least put their lives back in order.

As a result of an increase in poverty, now we see more children out of school. There are more girl brides. Due to the lack of nutrition, there are more neonatal births and then increasingly low birth weight of the babies being born. The mothers health is already compromised, as multiple births have made their situation worse .

This increases the vulnerability of a large segment of the population because we know of the growing instances of not just malnutrition, but stunting which is irreversible. There is research being conducted on incidences of fetal stunting because of the contaminated water that the mother is drinking. You cannot feed them a highly nutritious diet after their birth and expect that they will be okay. No! They remain stunted.

While we sort of glorify the fact that 60% of the population consists of youth, what kind of youth are we going to produce if we do not take care of the most vulnerable of our population, which these children are. We must look at that. Then there is a definite decrease in the resilience and adaptive capacity, because of the large outlay of resources needed to provide that. The numbers of the 2022 floods are mind boggling.

Even in the international community, donor fatigue is setting in because they do not have the capacity to keep giving to Pakistan, after every few years. If we keep making the same mistakes, and keep building settlements in the pathway of the rivers, as a comparison of Swat in 2010 and 2022 prove: the hotel in the middle of the river just collapsed like a house of cards and a repetition of such images doesn't really build any donor confidence.

We must set our own house in order. Mental health issues, even at the best of times, in the best of the social setup, in these segments of our population are not paid any attention. But these kinds of disasters scar people for life. We met children in camps who are scared of the sound of crashing water. Will they be able to overcome that fear? How will they be able to cope with it if they have to go back? If they are from the fishing community? If they have to go back to living on the water or near the water? How will that childhood trauma impact their functionality?

There is less access to help in educational institutions. Here, if you look at it with a gendered lens on, the first segment of the population that falls under the danger zone whenever there are constraints are the women and the girls. If a family falls below the poverty line and can afford to send only some of their children to school, they send their sons and not their daughters.

As far as risk reduction is concerned, we need long term climate modeling. Right now, we have an excellent MET department. They are very capable people and their capacity with the right scientific instruments has increased. But what are our universities doing? How many students are going into the science of climate modeling, especially long-term modeling for a country that is already under threat? Our academia needs to focus on this.

Vulnerability mapping is essential if we are going into the phase of reconstruction and rehabilitation. I know it is a very difficult choice because we want to help the people who have been out in the open for so many months now. The rains started in the north just after May but in Balochistan and Sindh, the disasters hit us in July and August. People are still sitting on the roadside in the open or maybe with just a sheet of plastic over their head in tents even after so many months.

We cannot allow them to go back and live in the same zone, which is now an established disaster zone. Earlier only river Indus and its tributaries were looked at in the context of floods. Now we know that even the torrents coming from Koh-e-Sulaiman have proven to be deadly.

If we cannot allow them to go there, which seems like an easy and dictatorial thing to say, then where else do they go? You cannot just throw them away from that area without making adequate provisions for them living a life of dignity in an alternate place. There needs to be options for livelihood. There needs to be everything else that my colleagues have mentioned: health facilities, educational facilities and safe havens. So all of these things are very important.

We also need to have these multi sectoral committees of disaster responders because this time the response was late as the government organization that had been formed to provide resources was very slow to respond. It were the local people, local philanthropists, students, social workers who were the first responders.

This is why it is important to allow these organizations, these bodies and informal segments of population to function because they know the people, they know the community, they know the needs, and they know how to take care of them, more than any outsider coming with a top down solution or just throwing some ration packs at them. That is not a solution. It has not worked. It will not work ever again.

These are just some of the things I am going to share regarding on ground implementation. It is important to get the vulnerability mapping done and to relocate people out of those hazardous areas and all the other areas. We should remember that in the context of climate change, unless and until we have those long-term climate models, we will keep getting hit by unpredictability. The most difficult proposition in the context of climate change is unpredictability.

Everybody was thinking, “Okay the flood comes in river Indus”, “we will do this”, “we will move here,” Well, river Indus did not flood. The highest volume of water that passed from the Indus River into the sea was 6 lakh cusecs, twice, whereas in 2010, we were worried about the 12 lakh cusecs compromising the integrity of the Sukkur barrage.

We must also realize that there need to be drills, like in the *GLOF model*. Pakistan has implemented GLOF 1 in Gilgit Baltistan as well as in Chitral. The GLOF II with the help of UNDP through the Green Climate Fund is being implemented. That entire model needs to be picked up and implemented in all the vulnerable areas of the country where there are designated safe spaces with a stockpile of supplies like tents, dry rations, blankets and medicines. The community drills should be happening continuously, so they know how to reach those areas in times of disaster.

Next, survival skills training is a must. Half the country's population (mostly women) does not know how to swim and we are a flood prone country. They also need survival skills and know how to use tire tubes and drums to float away to a safe space. They need to know how to save their documents, their property documents and identity documents because ultimately, when they lose these, they lose any right to claim any kind of help.

They need to know the use of essential items like batteries, they need to have charged cell phones. We have the highest tele density. That is one way we got to know about the disaster well before it strikes. We did not get to know about it from official sources or the media. It was the people who had cell phones and who were using social media who told us where people were affected and in which areas. We also need plastic sheets, rubber boats, gear ropes and solar plates, and to train children to send out signals.

If you look at the model of Bangladesh, they have become totally disaster proof. When they were part of Pakistan they were being hit by disaster again and again. A lot of resources had to be

spent to save them. Now you do not hear of those things because they have climate proofed their whole country. So, it is not rocket science. It is not something that people from Mars can come and do for us. It is us and we know this can be done and this must be done.

This is disaster risk management. These are the things we have to work towards. The vulnerable population or the disaster hit population may need to be relocated. They will need compensation.

Then we have to get into reconstruction. Which material is going to be used in reconstruction is a big question mark. The same kind of material which cannot bear moisture standing at its foundations for a long time and it crumbles cannot, should not be used again. Where to rebuild? What kind of material should be there? Other than the floods, we have to look at the rising heat. What kind of material is making such housing become more and more vulnerable. Cement absorbs heat and it dissipates it very slowly.

We need to take a step back and look at the older ways because they were better than the modern ways that we suddenly fell in love with as part of the aspiration to 'look' modern and part of the prosperous world. We have examples of mud constructions, which have been standing for over hundreds of years. Our older houses and big havelis are all in very hot areas. The big houses of the sardars in Balochistan are in sync with the environment, they use the material that repels heat. They used the material that keeps them warm in the winters as winters are very harsh. So we need to build back better, but with indigenous knowledge, by making it better. We do not necessarily have to import and impose. The solutions will not work in the climate that we live in.

Then we talk about climate justice in front of the rest of the world. Let's take a look at how just we are within our own country and who is the beneficiary of the disbursement of benefits, monetary and otherwise. If somebody has lost a document, they don't exist. If somebody is not in the list of the ultra-poor they are not poor in the eyes of the authorities and will not be helped. The reality is that they have become poor because they have lost everything in the floods. Hence, a large population of people will not be the beneficiaries of any kind of disbursement, which is not fair.

People need crop insurance. They need housing insurance. They need soft loans, the kind which we ask from the rest of the world. We keep begging our friends to give us soft loans on easy terms, meaning; payable after many years, not like the IFCs. We ask our friendly countries to

give us loans which are payable on easy terms. Our devastated farmers need loans for at least two to three crop cycles to be able to get their land ready for cultivation.

Six months have passed, the water is still standing at least in parts of Sindh and the soil quality has deteriorated. In southern Punjab, in parts of Balochistan where the hill torrents came, they have taken the top quartile layer of the soil away. So, what will make those farmers stand up on their own feet? At least two to three crop cycles from which they can save and then pay back loans. But if they are given loans now in just a yearly cycle, they will never be able to get out of crushing poverty.

Such pro-poor recommendations are very important. We need to take a complete relook at the way we approach development. As far as climate change adaptation is concerned, we do not have an adaptation plan for Pakistan, just yet. We do have a Climate Change Act., KP and Balochistan do not have a climate change policy. Sindh has completed its policies and they are with the CM for signing. Punjab also has it.

However, unless and until some things are set down in an order of priority, how do you start implementing them? I think the provinces which do not have the policy, need to work in tandem with somebody who's making an implementation mechanism as well as an adaptation plan at the lowest governance level. Because we are talking about the absence of District Disaster Management Authority (DDMA) and National Disaster Management Authority (NDMA) etc., where are the DDMA in 2022 floods? Unless and until you have DDMA's, functional local body systems, representative local body systems, the people who are bearing the brunt will never be able to get the benefit that they deserve.

Thank you!"

Devastation by floods in Sindh: Relief and rehabilitation activities in Sindh and imminent challenges

Ms. Maria Hassan

Assistant Professor, Institute of Business Administration, Karachi

“Assalam o Alaikum everyone and thank you for giving me this opportunity. My worthy colleagues have been very thorough in terms of giving an overview of what the situation has been, how and where we have landed and what we should be prepared for. I would like to start by giving an overview of the situation of Sindh especially in contrast with the rest of the provinces. Then, I would like to focus on the key areas that need attention. One of the key aspects of my presentation would be dividing it into areas that need specific attention in terms of immediate effect and then also what needs to be done in the long term.

First, I would like to explain how every part of the country was affected by these disastrous floods. How Sindh was worst hit in terms of loss, damage and in terms of need. I picked the data (figure 1) from the World Bank report about the damage in terms of deaths, displacement, number of districts affected, number of houses and livestock damaged.

We can see (figure 1 & 2) that there are areas which are worst hit and not worst hit by flood. Overall, it has been an unbelievably tough situation for Sindh and the people of Sindh. It would not be wrong to say that the number of cities in terms of percentage and the devastation in Sindh certainly outnumbered the rest of the provinces. Similarly, in terms of housing, there are partially and fully damaged houses which are devastating. Hence, Sindh is in the worst possible shape.

The same is happening in terms of all the other indicators; the total number of deaths, total affected population or in terms of injuries. Although in terms of total, there is a slight difference when it comes to the government data; National Disaster Management Authority (NDMA), Provincial Disaster Management Authority (PDMA) and District Disaster Management Authority (DDMA). The data from the independent sources such as from Al-khidmat foundation shows that the devastation was far worse than what has been shown in the government data. That is probably one area for us to consider when we are thinking of how to manage this, how to

deal with this, and how to move ahead, we need to have numbers to display. Just misquoting numbers or misrepresentation would not help us in any way, rather it would backfire.

DEVASTATION BY FLOODS IN SINDH

TABLE 1. DAMAGE, LOSS, AND NEEDS BY REGION

Region	Damage		Loss		Needs	
	(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 ²	587	2,731	14	67	975	4,540
Special Regions ³	7	32	11	49	10	48
Grand Total	3,202	14,906	3,272	15,233	3,493	16,261

Figure 1: Devastation by floods in Sindh



Figure 2: Devastation by floods in Sindh

In addition, the crop area has been affected and damaged the most, as the data (figure 2) shows how far the numbers are as a comparison between ‘what the actual area was’ and ‘the area damaged’. This takes us to the basic fact that if the province is in a position to move ahead then it should immediately work on the crop area (agricultural land). An overall damaged situation has been presented (figure 2) by various agencies and organizations including the UN and by national agencies as well.

Now, I would like to focus on the relief and rehab part including what needs to be done? Who will be the key stakeholders? How and when and in what manner can they give their input and contribution? According to my humble suggestion, the key contributors in relief and rehab work include the government, international bodies, the local NGOs and donors. Regarding the flood of 2022, the earlier speakers have already mentioned the damage control and response to disaster. The response to the disaster in this situation of the government bodies and the responsible departments was very late. I think it is well argued that the devastation could have been improved or have been less disastrous if the response of the designated departments and government bodies had been in place and proactive. Even if they were not proactive, they could have just started tackling this as early as possible which unfortunately did not happen and added to the calamity in different (imaginable/unimaginable) ways. In this particular situation (floods 2022), the NGOs have done phenomenal work in Sindh; particularly local NGOs, I would not mind naming a few such as Al-khidmat foundation and JDC foundation. Their way of mobilization of the communities for donation collection and for fund selection was dispersed and commendable. We definitely hope that the same would have been an approach that the government organizations could take into consideration.

In terms of relief and Rehab, in 2010 and then later, international bodies have come all the way and have helped us. Unfortunately, in this situation, it will be impossible for the Government of Pakistan to be able to do something successfully without the help of international bodies. The point of consideration for us is what kind of engagement, networking, confidence building we need to have and need to develop so that they come forward and help us, not only in terms of monetary relief but also in terms of infrastructure development, contingency planning and long-term risk management. It is something that the government should consider both at the provincial and the federal level. If we are seeking help from international stakeholders, we should also rely on our own capacity building in every way possible rather than just focusing and relying on monetary help that comes to us in such situations. I would rather skip talking about donors because that is self-explanatory such as we need to start not really from scratch but somewhere very close to that. We will need funds and for that probably we will have to negotiate not only within the country but also around the world. These donors would be very important stakeholders when it comes to the relief and rehabilitation.

Now, what needs to be done while moving ahead? One of my focuses would be policy and implementation. So, when we say that of all the flood affected areas within the country, Sindh was the worst hit, one of the points we need to understand is that probably somewhere the state of infrastructure of the province has to be blamed and that is what should be a key consideration for anyone who is aspiring to work in this direction.

I have sub-categorized the key considerations for policy makers and the organizations, whether it is at the level of bureaucracy or at the district level. First, I would like to explain what needs to be done and considered for long-term improvement in the situation. One of the very first considerations is capacity building. There are several areas where we need to work in terms of capacity building, starting with forecasting not only on field and stakeholders but also in terms of R&D. This is where I am referring to the researchers, the labs, and other organizations such as NGOs and think tanks who are involved in some academic and non-academic research. Their work could bring knowledge and understanding with sensibility and is going to be very useful if utilized and implemented properly. Capacity building refers to the field forces of disaster management and the ability of dealing with such a disaster. Reserve forces are a must and least of what is known publicly. There must be such provision training at various levels and also having those teams who will just go in the field.

Secondly, another major area for consideration should be the management of funds. Not only when donations come to us but what happens with them. What happens when all this donation has been utilized? My argument on funds management is that there should be a robust system that overlooks and monitors every aspect of the funds; acquisition, allocation, accountability, and auditing. So next time when such a situation hits us, we would not just be hoping for the same thing; loads of funds due to a lot of mismanagement.

The third consideration is that Sindh needs to rethink its infrastructure. There is a dire need for infrastructure which means that there are areas and aspects that need to be updated and just thinking of modification would not really be a good idea. The government will have to consider how all of this can be re-thought and reconsidered, whether it will be worth it to invest any further energy or resources, finance or if it is high time that it needs to be redesigned.

Next is the structural modifications at different levels. In terms of housing, one of the previous speakers did mention what has happened in terms of housing over the years. How the building

materials have changed and how it impacted houses when the floods occurred. The work can be done on the provision of housing. To allow a housing society, one should look into investors who have money or any grand considerations from the government on the environmental cost of it, and whether it will be feasible for the government to allow such an option.

With reference to agricultural management, the focus should be on what needs to be done for the loss and also in terms of what ways could be adopted that can help us get most of the agricultural land or the provisions that we have.

Water management for dams may sound very fancy but is it worth spending a huge amount of money on dams? What about canals? How can they be helpful? Many of you would know that the system in Balochistan is in bad shape. I just wanted to indicate how there have been solutions that are very close to the infrastructure and how gradually we have just discarded them. The point to consider is whether it was worth it or not? And how can we introduce and incorporate newer and better ways of learning from the rest of the world? Also, how we can go back to the basics and see if there was something good in our own systems and reintroduce them. The point here is specifically in reference to coastal management. I am a Karachiite, and Karachi is considered to be one of the most fragile and vulnerable cities in the country when it comes to a tsunami. We should investigate why that has happened to mangroves. Where have they gone and how it would affect us in the long term? A theory indicates that by 2050, Karachi would probably be sinking or would have already sunk by then.

The last point in terms of long term is reforestation, not just mangroves but in general. Reforesting is something that we have to consider in terms of combating carbon footprints. Also, considering how it can help us with soil erosion and how that, in turn, could have some safety net when it comes to situations such as flooding.

I will quickly move to the short-term possibilities. In Sindh, I believe we certainly need to have a very efficient emergency response setup that could help us reduce risk. Now, as the 2022 floods have taken place, there is a lot that needs to be done there.

Safe relocation is something that the government of Sindh and provincial disaster management should consider. People just cannot continue to live in such conditions with all the threats just around them all the time. Health Management is needed for whatever health hazards people are

facing. How they need to be dealt with in every way possible whether it is in terms of camps or in terms of some other rapid response services. Social and economic rehab would also be a long-term goal but it is one of the short-term considerations specifically with reference to those who have lost their jobs and have lost their employment, not only in the agricultural sector but also elsewhere and whatever social costs they are bearing. I just wanted to add a point about how women especially are suffering in such situations in the camps. What kind of additional risks they are facing and what can be done to combat that. Condolence money is some monetary provisions which could be considered whether it is Benazir Income support or a revised or an improved version of it or some other option but that is certainly needed.

I would like to sum it up by focusing on what needs to be done immediately, such as the provision of food. What the government can do is work in terms of enabling and facilitating donors and NGOs in whatever good work that they are trying to do, in addition to what the government is doing itself. That is because what we hear from the field is not a rosy picture, especially for those who are trying to help them for the health rapid response mechanism in field hospitals epidemic management. These are the things that the government needs to consider immediately. For housing, temporary housing and sustainable housing initiatives should be taken, rethinking agriculture. I mentioned earlier as well that this is typically in terms of how we do agricultural practices such as water management for agriculture, crop management; everything can be revisited. My point for agriculture is damage control and then restoration of agricultural land so that economic rehab can also be initiated as early as possible. That is it from my side. Thank you very much to all of you for patiently listening.

Thank you!'

*Devastation by floods in Balochistan: Relief and Rehabilitation Activities in
Balochistan and imminent Challenges*

Mr. Mumtaz Ali

District Support Manager, PPHI District Pashin

“Assalam o Alaikum! And thank you very much to the PRC FFCU, the Population Council and especially Dr. Zubair from BUIITEMS for giving me a chance to speak. I think all of our participants have spoken a lot and they have given many figures so I will try to cover some important points which need to be discussed. I was in Sohbatpur, Jaffarabad in 2010, when there was a flood. I was with my team on the ground. I was also part of the relief efforts in the disasters that occurred in 2010. I have also tried my level best to make some proposals and work for the vulnerable communities. Recently, the flood (2022) occurred in July and August in some districts of Balochistan and throughout Pakistan.

Since I was on the ground, I may be able to brief about the actual ground realities and what happened, what had to be done and what we should do in the next floods. When I compare the situation of the recent floods with the 2008 floods, overall, I find that we are in a similar situation and are facing the same difficulties, if not more. I thought we may have learned something from the disasters we have faced earlier, but I do not think we have learned anything. The recent flood has adversely affected people in Balochistan and we have data which can also be downloaded from many other resources. As you know, there was extreme monsoon rainfall this year, which started in the first week of July in 2022 and continued till August. It has caused widespread flooding in Pakistan, particularly Balochistan, which has led to the loss of precious lives and extensive damage to infrastructure in the flood affected areas. Being an employee of People’s Primary Healthcare Initiative (PPHI) and as someone who has been connected to the health sector, I just want to put a few important things before you.

First, I would like to share some figures with you which show the considerable flood relief efforts the PPHI has organized from July 2022 to till date, to provide basic healthcare to flood victims. In total, we arranged some 708 medical camps in Balochistan and 1, 80,000 people have been served in these camps in Balochistan during the floods.

Summary of Medical Camps in Flash Flood/ Monsoon Affected Areas of Balochistan						
From : 21 July 2022 To: Till Date				PPHI- Balochistan		
S.No	Districts	Medical Camps Arranged	MCOPD Total	Children	Female	Male
1	Awaran	2	644	231	290	123
2	Barkhan	1	178	43	54	81
3	Chagai	1	286	75	161	50
4	Dera Bugti	53	3,754	1,947	873	1,334
5	Gwadar	1	200	60	90	50
6	Mannai	3	1,023	359	476	188
7	Jaffarabad	25	7,394	2,591	2,101	2,532
8	Jhal Magai	51	7,403	3,223	2,643	2,607
9	Kacchi	36	23,221	2,568	6,302	4,242
10	Kalat	23	21,254	3,803	4,830	2,521
11	Kech	3	780	254	356	170
12	Kharan	4	1,032	264	424	344
13	Khuzdar	16	4,181	1,301	1,547	1,353
14	Killa Saifullah	7	988	121	124	121
15	Kohlu	12	2,082	798	600	684
16	Lasbela	63	7,223	2,089	2,670	2,464

Figure 3: Medical relief in Flood Affected Areas

S.No	Districts	Medical Camps Arranged	MCOPD Total	Children	Female	Male
16	Lasbela	63	7,223	2,089	2,670	2,464
17	Ioralai	14	4,420	1,675	1,926	809
18	Mastung	9	3,781	1,256	1,726	799
19	Naseerabad	123	37,092	12,544	12,481	12,499
20	Nushki	12	2,721	567	1,516	638
21	Panjgur	2	2,067	605	1,150	312
22	Pishin	6	2,236	647	1,072	517
23	Quetta	16	9,148	3,244	3,496	2,308
24	Shobat Pur	182	46,347	16,657	14,712	12,792
25	Sibi	35	5,200	1,690	1,760	1,750
26	Surab	4	759	211	300	248
27	Washuk	2	483	120	222	141
28	Dukki	6	1,572	427	727	427
29	Killa Abdullah	32	4,856	1,163	2,626	1,067
30	Musakhail	4	862	239	299	324
Grand Total		708	180,536	58,974	67,821	53,987

Figure 4: Medical relief in Flood Affected Areas

District	# of Health camps in the month	Age group	Overall Health reach							
			Male	Female	Under 5 Children	TGs	PWD	Total		Total
								Refugee	Host	
Pishin	138	< 5	2143	2485	69	8	24	2805	1899	4705
		5 to 14	2333	3055	0	0	4	2910	2478	5388
		15-49	3332	7427	0	0	2	6576	4182	10759
		50 and >	1790	1987	0	0	0	2201	1576	3777
Sub-Total	138		9598	14954	69	8	30	14492	10135	24629
Killa Abdullah	133	< 5	1733	1615	38	0	0	1554	1832	3386
		5 to 14	1442	2443	0	0	0	1855	2030	3885
		15-49	1546	7364	0	0	0	3899	5011	8910
		50 and >	904	1408	0	0	0	1050	1262	2312
Sub-Total	133		5625	12830	38	0	0	8358	10135	18493
Chaman	143	< 5	2737	2932	0	0	0	1931	3738	5669
		5 to 14	3409	4562	0	0	8	2490	5481	7971
		15-49	1759	10439	0	1	25	3604	8594	12199
		50 and >	802	1672	0	0	1	802	1672	2474
Sub-Total	143		8707	19605	0	1	34	8827	19485	28313
Grand total	414		23930	47389	107	9	64	31677	39755	71435

Figure 5: Consolidated Report of Camps 30th November, 2022

And after that, in Pishin, Killa Abdullah and Chaman (figure 5), where we had Afghan refugees, a scattered population and the infrastructure in these districts was also badly damaged early on during the first flood in July. These are some figures showing PPHI's efforts to support the people during the flood.

There are many things I have noticed in the aftermath of the disaster. The first main thing is the psychological support which the people, whose lives have been upturned by the devastation of the floods, need a lot of. There are many organizations that give their inputs during the disaster and after the disaster but mostly they miss out the need for psychological support. Usually, the need for psychological support to the flood victims is often ignored in our relief programs. Then there is the case of emergency health support. Initially people need immediate emergency health support, and many victims end up losing their lives or suffering from lifelong disabilities and other health related issues because they did not receive emergency care. People in Balochistan are already living in very deplorable conditions. If you leave Quetta, the people in other districts are surviving in a condition of vulnerability. Especially, the females and children, who are most vulnerable as they do not have access to anything; they do not have access to health facilities, they do not have access to education, and they do not have access to their rights. Even before these disasters or what you might call in 'normal conditions', they are the most vulnerable segment of the population, as you know the MMR rate and the IMR rate of Balochistan is very high. This is the main question, what we are doing for the mother and child health in Balochistan. In most of the districts of Balochistan women do not have access to proper labor rooms and proper hospitals or health facilities. So, in disasters, these vulnerable groups suffer a lot.

Family Planning is another pertinent issue. There are many people who want to avail family planning facilities, but we lack the resources to serve them. Nutrition and food security is also very important. During and before the disaster, we had many people facing problems related to food security and nutrition in Balochistan and the situation is getting worse now. Even before the disaster a sizable portion of Baluchistan's population were already in a state of emergency because of lack of access to food, water and basic amenities and rights, now they have become more vulnerable. It is very important to make policies that provide relief to these vulnerable people. It has already been discussed that the important thing is not acquiring a lot of resources

during and after the flood but how these resources are expended. Are we using them to help the vulnerable segments of our society or not? If yes, then how? What help are we providing them and how are we helping them achieve self-sustainability? The thing is that we usually address problems in a temporary manner to address immediate needs, but we do not think about the sustainability plans. We do not make plans for the future on how to overcome such needs and to reduce the risk of future floods and disasters. Furthermore, I have also observed in Balochistan, that the distribution of facilities that we are providing to communities gets politicized. They often go to the people who have good connections with the government or other departments. This exacerbates the problems for the vulnerable people as essential services do not reach them and they in turn become more vulnerable. This compounds the challenges we face while reaching out to vulnerable segments of the population in times of disasters. So, we have to plan better for the future. We need to make plans that are focused on issues and needs of the people, what are their actual needs and how we can sustainably address them in the future.

Thank you!”

Concluding Remarks

Dr. Muhammad Vaqas Ali

Director, PRC, FCCU

“I think it would be a good time to conclude this session. I would like to thank all our worthy guests who were here and who listened to all our presentations for two and a half hours. I'd like to thank very much our worthy presenters who shared this unique information with us and I hope that this information leads to new research and new policy dialogues. I would specifically like to thank Dr. Johnathan Addleton, Dr. Zeba Sathar, Dr. G. M Arif and Ms. Afia for their initial remarks. With this, I would like to inform all of you that a video of these proceedings will be available on YouTube. I thank you all for joining us and hopefully we'll see you in our next session.

Thank you!”

SECTION TWO: PRC Research Essay Competition

“2022 floods in Pakistan: Challenges & Solutions”

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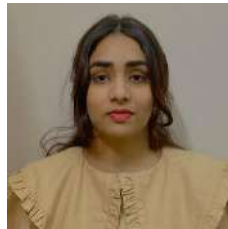
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Public health issues related to 2022 floods and possible solutions

Mahnoor Butt

Pakistan's relationship with the yearly monsoon season has been weaved into history, culture, and even poetry. However, the 2022 monsoon season, labeled "a monsoon on steroids," has accumulated more water in a few days than the 30-year average, an unprecedented disaster on an unimaginable scale. According to satellite images from the European Space Agency, over one-third of the country remains underwater, mostly in central and southern Pakistan, due to the onslaught of torrential rain and glacial melt, with the water showing no signs of stopping (Agency, 2022). According to UNICEF, more than 6 million Pakistanis are in dire need of humanitarian aid, and some 3,000,000 Pakistani children are at risk (UNICEF, 2022). Most recently, the World Health Organization has warned that millions of Pakistanis who have been severely affected by floods are now at risk of disease, infection, and significant health risks.

With the incidence of morbidity rapidly increasing amongst flood victims and multiple provinces declaring a health emergency, Pakistan's healthcare system is struggling to cope with an influx of diarrhea, cholera, and measles, amongst many others. Multiple Pakistani provinces have reported thousands of patients visiting make-shift health facilities in flood-ravaged areas, reporting problems such as respiratory problems, eye infections, and typhoid.

A situation report from UNICEF has detailed how the increased collection of stagnant floodwaters has accelerated the spread of waterborne diseases, leading to the sharp rise of malaria and dengue fever. (UNICEF, 2022). One in 10 patients has been treated for malaria in the province of Sindh, while one in every five health checkups has been for acute diarrhea. (UNICEF, 2022). Authorities have reported 132,485 cases of respiratory illness, 49,420 cases of malaria, and 149,551 patients with diarrhea (Ilyas, 2022). Due to prolonged exposure to contaminated water and humid conditions, skin infections have also been rapidly spreading, with a reported 142,739 patients with skin infections reporting to health camps (Ilyas, 2022).

Women and children trapped in these flood-ravaged areas are particularly vulnerable. Even before the onslaught of these floods, approximately half the children living in these provinces already suffered from physical and cognitive developmental issues along with severe malnourishment and weakened immune systems (UNICEF, 2022). The National Nutrition Survey states that 1 in 9, that is, a total of 1.6 million children, require urgent treatments for

acute malnutrition, especially in the worst affected areas of Sindh and Balochistan, which may be attributed to the immense food scarcity plaguing flood-destroyed rural areas (UNICEF, 2022). These widespread health conditions in these rural areas have made children highly susceptible to diseases such as cholera, malaria, and typhoid. Furthermore, excessive flood waters have catalyzed the spread of diarrheal disease, negatively impacting the health of young children. Damage to public health facilities and destroyed infrastructure has disrupted routine immunization services and put newborn children, who are missing crucial vaccines, at significant risk for diseases such as polio and measles.

Another demographic affected by are women, who are significantly struggling in flood-affected areas. According to the United Nations Population Fund, there are 650,000 pregnant women in Pakistan's flood-affected areas, with up to 73,000 women due to give birth next month (UNFPA, 2022). The primary concern is that many of these women will no longer have access to maternal healthcare services due to the widespread flooding. Availability of prenatal care, regular checkups, and necessary medicines has become nearly impossible for pregnant women. Extreme damage to infrastructure and boats becoming the only source of transportation in the afflicted areas has further compromised access to health facilities. According to a UN report, more than 1000 health facilities in Sindh and 198 in Balochistan have either been damaged or destroyed; damage to roads and bridges has made accessing health facilities difficult, leaving these pregnant women feeling helpless (UNFPA, 2022). The extreme food scarcity in these rural areas and men holding the first right to any food rations sent to the camps have also led to a rise in malnourished mothers, who may, in turn, give birth to low-weight malnourished newborns. A lack of provision of menstrual hygiene products has created further health issues for women in these flood affected areas, such as increased urinary tract infections and poor reproductive health (Time, 2022).

Another pertinent issue that has accelerated the rise of health issues is the lack of safe drinking water and poor hygiene conditions. It has been reported that over 5 million people no longer have access to safe drinking water sources, leading to dehydration, diarrhea, and poor hygiene conditions (UNICEF, 2022). With over 6 million people no longer having home sanitation facilities and places to defecate, these unsafe conditions have created an environment ripe for mosquitoes and insects, leading to the spread of skin infections, stomach flu, dengue, and a

variety of other diseases and infections (UNICEF, 2022). The lack of shelter has also increased the risk of serious life-threatening diseases like malaria, dysentery, and diarrhea. Being forced to live in outdoor shelters and defecate out in the open has put flood victims at even greater risk, with the stagnant water drawing out venomous snakes and spiders. As of now, there have been 101 snake bites and 550 dog bite cases reported post flooding. (Ilyas, 2022).

With our public health system on the verge of collapse, it is imperative to look into long-term solutions that can help Pakistan rebuild all it has lost and begin to apply preventative measures that can help mitigate any further problems in the aftermath of these floods. It is estimated that over 10,000 hospitals have been damaged or destroyed due to these floods, and over 10% of health facilities in 15 districts have been fully or partially damaged (Dawn, 2022). Thus, the scale of rebuilding required is immense. The government must now prioritize rebuilding hospitals in the most significant flood-affected areas to ensure those suffering from these life-threatening illnesses have someplace to seek refuge and treatment while ensuring proper surveillance of all communicable diseases to prevent any further spread.

Currently, 4210 medical camps have been set up to treat the flood-affected (WHO, 2022). However, ensuring the upkeep and maintenance of these health camps is critical. The camps must be adequately provided with all required supplies, such as; painkillers, antibiotics, bandages, antiseptics, disinfectants, and IV drips. Alongside setting up more mobile health clinics, provision of mosquito nets, hygiene kits, and water purification tablets must continue. Healthcare for flood victims also calls for rehabilitative health services, especially in the form of mental health support and counseling, due to the severity of trauma every one of these flood affected victims has endured. Immediate steps regarding the disposal and disinfecting of stagnant water must also be taken to control the spread of waterborne diseases. State institutions must begin to develop programs and frameworks that allow for proper accounting and documentation of what supplies are required in which areas and at what frequencies. Only once we are entirely aware of our requirements can we begin to appeal for more aid.

Medical practitioners must be trained for prompt emergency response in conditions like floods to ensure maximum help is provided in minimum amounts of time. Competent doctors and nurses, alongside hardworking volunteers, must be assigned to these camps and routinely relieved of their duty to prevent burnout or exhaustion. Higher educational institutes, especially

medical universities, could step up and begin to include mandatory community service as part of their curriculums to not only motivate students to do their part in helping rebuild Pakistan and save lives and provide their students with hands-on practical experience.

According to the Global Climate Index, Pakistan is the eighth most vulnerable country in the world to extreme weather and melting glaciers caused by rising temperatures that can be attributed to global warming (Index, 2021). These floods have displayed a new level of climate-lead catastrophe despite the fact that Pakistan's carbon footprint is less than 1% of global emissions (Index, 2021). It is now up to the government and foreign ambassadors to step up and demand that richer countries now have a responsibility to help the nation and provide compensation due to their significant role in accelerating climate change which has, in turn, destroyed the lives of millions of innocent Pakistanis alongside developing stricter laws and regulations to protect Pakistan against climate change.

With unprecedented disasters being blamed on climate change and our economy already in crisis now, the government must continue its appeal for some measure of help from the global community and foreign agencies, for example, debt relief, greater loans from international agencies, and significant humanitarian aid. While the Asian Developmental bank has promised 2.5 billion to assist in the rebuilding of the flood-affected areas and the UN has revised its humanitarian aid plan to 81 million, alongside securing foreign aid, it is essential that the state monitor how and where this aid is being distributed with immense care. In a country plagued by corruption scandals and misuse of donations, it is imperative that all aid and resources being provided are being rightfully consumed only for the benefit of the 33 million victims of these catastrophic floods (Arab, 2022).

However, although these foreign donation campaigns and fundraising have helped provide initial relief, they are not sustainable. These interventions alone cannot tackle the mass destruction and medical needs of the entire flood-affected population in the coming months. Pakistan's government has been widely criticized for ignoring the urgency of climate change and for not building enough preventative measures such as establishing early warning systems and comprehensive evacuation protocols, which should now be made a priority in all districts to help mitigate damage and save lives. We must learn from our mistakes and implement a structured

approach to reconstruct the recovery of our health system to ensure that the rebuilt public system is more robust, efficient, and resilient to future disasters.

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Long and short-term economic challenges in the aftermath of the 2022 floods and possible solutions

Muhammad Afiq

Flooding in Pakistan has caused havoc for the people affected as one-third of Pakistan is submerged underwater. Over 33 million people have been displaced and 1730 people have lost their lives (World Bank Group, 2022). According to the Global Climate Risk Index, Pakistan is responsible for less than 1% of the world's emissions into the atmosphere. The United States is responsible for 24.5 percent, China for 16.5 percent, and the European Union for 15 percent. Despite this, Pakistan is the eighth most vulnerable country to the climate issue. Currently, 10 million children are in acute need of life-saving assistance and are in higher danger of waterborne infections, drowning, and starvation (Devastating Floods in Pakistan, UNICEF).

The assessment estimates total damages to exceed USD 14.9 billion, and total economic losses to reach about USD 15.2 billion, estimated needs for rehabilitation and reconstruction in a resilient way are at least USD 16.3 billion, according to the World Bank assessment report on flooding in Pakistan. According to a report 12,718 km of roads, 390 bridges, and over 1.8 million homes have been destroyed (Malik, 2022). Hamid Meer in an interview with CNBC said that nearly 10 dams in Balochistan were destroyed.

Pakistan being an agrarian country faced more damage to agricultural land and crops than any other sector. Agriculture sector contributes 18.9% to GDP and employs around 42.3% of the labor force according to the economic survey Pakistan 2020-2021 and was expected to contribute 24% this year. Wheat, cotton (5th largest exporter), and vegetables are the most hit crops. According to a UN report, 8 Lakh farm animals & 2 million acres of crops and orchards have been destroyed.

The loss of crops and the agricultural sector will have a long-lasting impact on Pakistan's economy as 80% of Sindh's crops have been destroyed due to floods. Punjab is also affected by floods in terms of the agriculture sector. According to the World Bank, Pakistan sustained 3.7 billion dollars in damages to the agriculture and livestock sector. Pakistan's agriculture sector was expected to contribute 24% to GDP but as Sindh contributes 35% of total Pakistan's cotton production from which 30% was destroyed, we can have a cotton shortage in the coming months.

Due to the cotton shortage, Pakistan's textile sector will have a setback because it depends on domestic cotton production and textile production will decrease. Roughly 70% of the onion harvest, along with rice and corn, has been destroyed, according to Pakistan's climate change minister, Sherry Rehman. Pakistan is the fourth largest rice exporter in the world, with markets in Africa and China.

Pakistan being an agrarian economy will have to import cotton bales to match its production. Pakistan was already facing economic meltdown and political instability which was contributing to the depreciation of PKR and the current account deficit was increasing day by day. If Pakistan imports cotton, it will increase the import bill and the trade deficit will increase as we won't have much to export. Textile exports alone contribute significantly to the country's foreign exchange reserves. Cotton, wheat, and vegetables will now have to be imported to fulfill domestic demand, putting additional strain on the country's low foreign reserves. Pakistan will have to arrange dollars for the trade as Pakistan is short on dollars. To overcome this issue, we can trade with countries in their currency so that we can overcome the dollar shortage.

Rural families have lost their families, homes, savings, land, and farm animals. Their purchasing power & production power has decreased and for some it's none. There is not much to eat, not much to trade, and domestic needs can't be fulfilled. Its short impact on the economy is that inflation has gone beyond the sky in Pakistan, and if the issue is not addressed, we will have long-term economic losses. To overcome this issue, the Pakistani government needs to compensate them for their losses and help them to plant crops again. So, we can have more products in the upcoming years. Through international aid and interest-free loans, we can help them revive their farms, crops, and lands and it will lead to an increase in their purchasing and production power as well as economic growth.

Due to hundreds of acres of land washed with floods, between 80 to 90 percent of crops have been destroyed. Inflation in Pakistan is projected to increase by 30%. Pakistan was hit with high prices of all time of some vegetables, potatoes, onions, and tomatoes which increased inflation high in the short term. Basic commodities were out of reach and flood-hit areas were highly affected. This issue can leave a strain on the economy if not dealt with, trade with India can prove to be beneficial for both countries and thus the prices of such commodities will decrease. PDNA Human Impact assessment highlights that the national poverty rate will increase from

3.7% to 4%. It will potentially push 8.4 to 9.1 million people below the poverty line.

Multidimensional poverty can potentially increase by 5.9%. Around 2 million households are at risk of being pushed into non-monetary poverty due to floods.

Infrastructure and housing were also destroyed during the floods. According to the World Bank report, housing suffered significant damages at USD 5.6 billion. The train track across Pakistan is heavily affected and currently, train operation is not mobilized across the country. Pakistan needs to build its infrastructure and is seeking international aid to rebuild flood-affected areas.

The people who were displaced by floods and their houses were swept away in floods demanded their homes to be rebuilt because it was not their doing.

GDP growth for the year 2022 was expected at 5% as Pakistan was already dealing with the economic meltdown and political instability, but after recent floods, the GDP growth is now expected to be 2%. Economic growth is contributed by many factors, the basic 4 factors are land, labor, capital, and entrepreneur. All the factors are negatively impacted due to recent floods in Pakistan. For example, the land where crops and vegetables were cultivated, and industries/factories were situated are washed away by floods. Labor is hardly hit and is now facing serious job issues, health issues, and housing issues. The factories which made capital (machinery) are either closed or sustained damages due to flooding. The entrepreneurs/business which owns such lands, industries, and factories are facing severe issues like the cost of raw material, labor, and electricity cost is very high due to rising inflation and infrastructure have sustained high damages. If we had built dams before time this thing would never have happened.

To overcome such challenges and revive economic growth, we need to build a roadmap, devise a national plan, and start acting upon it. To build anything, firstly we need to have money (a source of income for development). To have the revenue to start development projects we need to improve our taxation system. There are thousands of acres of government land, which is of no use. The government can rent it out to industries and can facilitate them to open new factories and can generate a revenue stream. We can tax them as well as get rent from them and it will also contribute to economic growth.

We can finance the infrastructure projects and other development projects in flood-affected areas on BOT (Build-operate-Transfer) modules. For example, if we must build a state-of-the-art railway station or track, we will use BOT. The public entity or government appoints a private

entity to fund, develop, and run a publicly owned facility for a defined length of time, after which the facility is returned to the public entity. During the operation time, the private firm normally recovers its investment plus a return. With this approach, we will be able to do a project without worrying about financing and it's a practical approach rather than any other module.

When a project starts, skilled or unskilled labor is used, thus the people who lost their jobs and lands or were laid off due to floods can earn a livelihood. The income they will receive will later be used by them; they will go into the market and buy goods and services, which will lead to economic prosperity. In the long term when the project will be returned to the government, the government can easily make that project its source of income. According to the World Bank, given Pakistan's limited fiscal resources, substantial foreign assistance and private investment are required for a comprehensive and resilient recovery."

For farmers who want to start their businesses again, the government must provide them with interest-free loans. Even If the government decreases its interest rate and provides loans to people, it can change a lot of scenarios. For instance, 10 people took interest-free loans, and 6 out of 10 were successful in starting a business and their business is accelerating at a good pace. The 6 people will hire more labor as their business grow, and the people hired will receive income, which they will use to buy basic commodities, and ultimately will contribute to economic growth. The same should be applied to other sectors such as the agricultural, food, and industrial sectors. When economic growth will start picking up pace it will decrease inflation as production will increase and purchasing power parity will increase. Also, the aid received from foreign countries should be spent on development projects. Hence from all this, things can get normal, and people can start living normal lives.

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Long and short-term Economic challenges in the aftermath of the 2022 floods and possible solutions

Umme Abeha

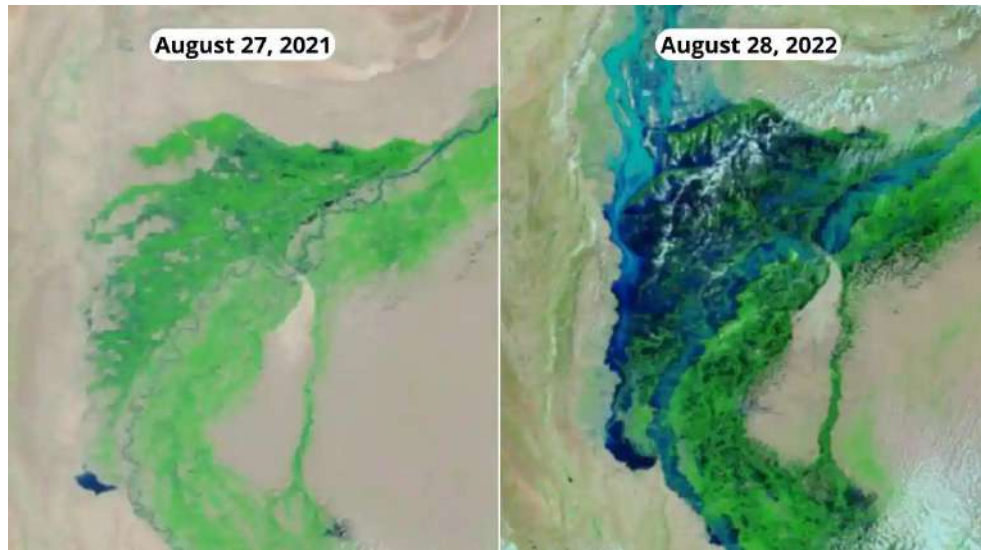


Figure 1: Pakistan 2022 Floods. (2022). Wikipedia. <https://2022 Pakistan Floods - August 27, 2021 vs. August 27, 2022 in Sindh Source:>

[https://worldview.earthdata.nasa.gov/Corrected Reflectance \(Bands 7-2-1\) Aqua / MODIS](https://worldview.earthdata.nasa.gov/Corrected Reflectance (Bands 7-2-1) Aqua / MODIS).

Pakistan is literally and figuratively under deep water. This year it appears that Pakistan has entered what Adam Tooze called a ‘poly-crisis’, with various overlapping crises-political, economic, and climate-related. Unprecedented monsoon rain triggered one of Pakistan’s worst floods in decades. According to PMD, in August alone we received 243% above average rainfall and particularly in Sindh 784% more than normal average making it the wettest August since 1961. Monsoon rains continued to affect one-third of Pakistan by causing floods, flash floods, landslides, and severe weather-related incidents. Pakistan has the largest number of glaciers that are melting due to climate change. Other factors have also contributed to tipping the scale of devastation. These include deforestation and government failures to make adaptive changes since the last major flooding event in 2010. Almost thirty million people have become homeless, thousands have died and thousands have been displaced. Infrastructure has perished and one-third of the country is completely at the mercy of the government or other humanitarian aid. Climate calamity hit the country at a time when the economy was already in a

tailspin as the government struggled with soaring inflation, a load of debts, a weakening rupee, and a balance of payments crisis. Quoting Finance Minister Miftah Ismail, ‘the path to solvency was narrow; it has gotten narrower.’ We will have to face natural disasters-induced economic challenges.

This was not Pakistan’s first encounter with floods. According to the Federal flood commission, Pakistan has witnessed 28 super riverine floods in its 75-year history. We do not have proper policies and pre-disaster management plans and continue to suffer after every few years. Corona has already disturbed the economy badly. The rupee is trading at half of what it was traded in 2017. And now floods have shackled down the country’s finances.

Early estimated flood-related economic losses are almost \$30bn. Natural disasters bring fiscal crises, the balance of payments crises, terms of trade shocks, currency crises, banking crises, and hyperinflation along them. Macroeconomic crises slow the accumulation of human, financial, and physical capital, weakening the ability of poor people to escape poverty (World Development Report, 2000). Inflation may rise even higher as the country begins to fix flood-related losses to the economy. According to the World Bank, the national poverty rate in Pakistan is expected to increase by 2.5 to 4.0 percentage points. Flood-hit Pakistan needs at least three years of fiscal belt-tightening and energy reforms backed by a stable political system before it can reach the trajectory of 5-6 percent annual economic growth.

The government has reduced its budgeted economic growth target of 5% to just 2% and even this growth projection is optimistic in the light of total economic losses. One percentage point loss in GDP growth in Pakistan results in one million job losses. This means that during the current fiscal year (till June 2023), the number of jobless people in Pakistan will rise by an additional 3m. Floods have caused a significant loss to poverty reduction efforts. The affected areas were already lagging in terms of socio-economic and educational indicators. Natural disasters can have devastating long-term impacts because they can impede the accumulation of physical and human capital stock (Relief Web, n.d.). In a study after massive floods in Bangladesh, the impact of extreme weather events on wages was evaluated (Relief Web, n.d.). People migrate to not affected areas. With the excess of labor, overall wages go down. Banerjee found that agricultural wages declined by 5 percent in flood-prone areas and by 14 percent in severely exposed areas during "extreme" floods (Relief Web, n.d.).

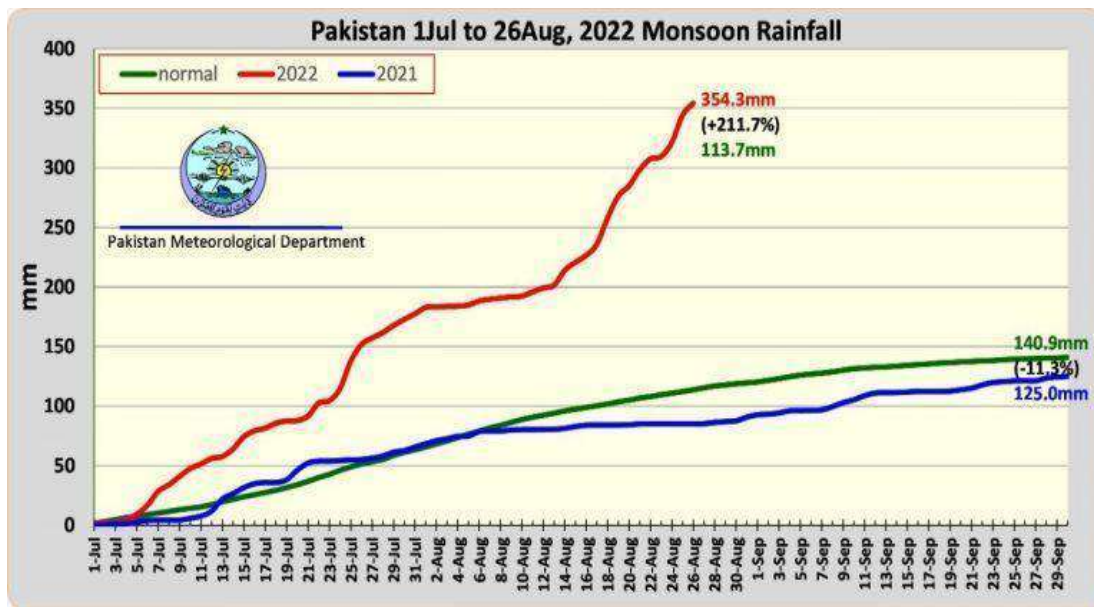


Figure 2: Pakistan Monsoon Rainfall. (2022).

Source: Pakistan Meteorological Department, Government of Pakistan.

<https://www.pmd.gov.pk>.

The government estimates that the floods would slow down the growth of the agriculture sector to just 1.8% against the pre-flood estimate of 3.9%. The Ministry of Food Security has revealed that the recent flash floods have damaged 40 percent of crops in the country, with cotton alone suffering a loss of Rs. 2.29 trillion (). Pakistan exports 5.6% worth \$3.41bn of the world’s total cotton export (“Flood Related Loss to Cotton Crop Alone Almost Touches Rs. 2.3 Trillion,” 2022). Our textile sector is integral to economic development. Rice and other crops have also gotten badly affected by floods (“Flood Related Loss to Cotton Crop Alone Almost Touches Rs. 2.3 Trillion,” 2022). The government and the SBP need to ensure that the farmlands damaged by

the floods are reclaimed, and farmers start re-cultivating major and minor crops as soon as possible (“Flood Related Loss to Cotton Crop Alone Almost Touches Rs. 2.3 Trillion,” 2022).

The ravaging floods have caused the displacement of millions of people and destroyed more than half a million houses across the country. It’s a big economic challenge for the government to provide them with basic needs and settle them again in their areas while setting the environment for them to be financially independent.

Floods cause the salinization of groundwater and surface water sources, jeopardizing the supply of drinking water and the capacity to produce crops and displacing populations. Due to excessive loss in crops, food insecurity arises. It will increase the imports of crops thus increasing the current account deficit.

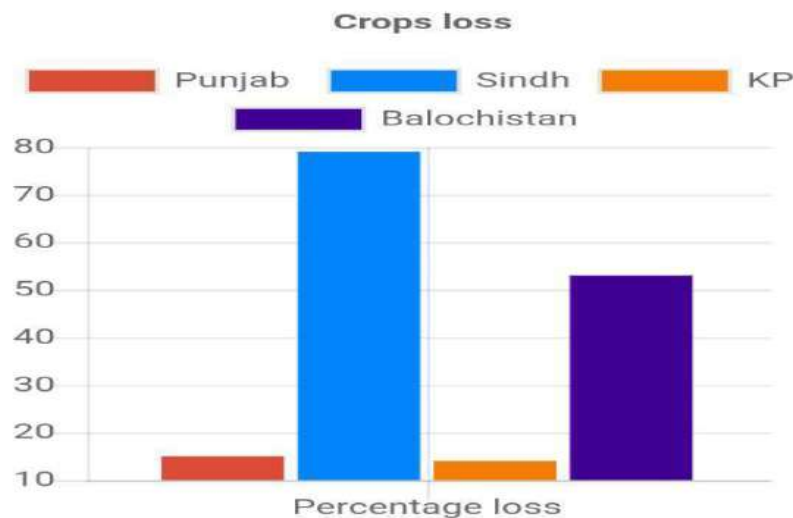


Figure 3: Crop loss due to flood 2022 in Pakistan

Floods inflict major health issues. Flood areas are prone to water-borne diseases and viral fevers. It is an additional burden on the economy to establish health camps and provide life-saving medicines to patients with chronic diseases. Doctors with the help of students and the general public can help by arranging camps and medicines.

Over 5000 km of roads and bridges are swept away by floodwaters across the country. Multiple dams breached (DAWN.COM, 2022). According to the government’s estimates, it will need \$7-14bn per year, every year until 2050, for adaptation and to build climate-resilient infrastructure

(DAWN.COM, 2022). Recovering and rebuilding the communication network is a great challenge for Pakistan's economy (DAWN.COM, 2022).

To make people stand on their own feet, it's high time for the government to support small businesses. It will generate jobs locally and decrease the overall economic pressure. Real GDP growth is expected to slow to 2.0% in the fiscal year 2023 but recover to 3.2% by the fiscal year 2024, supported by the recovery of the affected areas, agricultural production, increased exports, and lower global inflationary pressures.

More than 72, 7000 cattle have died. Most of the flood-affected people's source of income was farming or livestock. Both got badly affected by floods leaving them at the mercy of others. Post-flood estimate of growth in the livestock sector is just 2% against the pre-flood estimate of 3.7%. The government needs to devise a strategy for livestock owners to find enough resources and expertise to accelerate the breeding of cattle heads.

The ability to achieve sustainable recovery after a disastrous calamity remains an uphill task for an economy like Pakistan, owing to inefficiencies of the systems and the ineffectiveness of the policies in such economies (Hasan, 2012). The task of the policymaker is to implement the combination of macroeconomic measures that results in the lowest cost in forgone output and affords the greatest protection to the living standards of poor people (Elin Spegel, 2022). A key element of a poverty-sensitive response is the right composition of revenue-raising measures and fiscal cuts (Hasan, 2012). Policies should be made for encouraging people to start small businesses. Data suggest that the human capital of poor people, particularly poor children, can deteriorate (Hasan, 2012). The damage can be irreversible, affecting the ability of these children to escape poverty when they reach adulthood (Hasan, 2012).

A poverty-sensitive response to the crisis should steer toward:

- Public-friendly policies
- Preventing permanent reversals in the accumulation of human and physical capital.
- Averting self-defeating behaviour, such as criminal activity, prostitution, suicides, and exploitative forms of child labor.

Another most demanding issue is to actively engage in policy advice and to develop politically feasible pathways toward achieving a global climate Treaty (BRETSCHEGER, 2014). There is

also an expectancy of floods in 2023. Pakistan needs to do pre-disaster preparation and rehabilitate the affected masses. Early actions can save the country from big damages and disaster risks. The government is considering requesting the IMF to offer a free-of-conditions loan facility (BRETSCHGER, 2014). The Asian Development Bank is willing to offer a \$1.5bn long-term loan. Getting international aid will cost us some price (BRETSCHGER, 2014). Pakistan will have to readjust some of its current geostrategic policies.

Pakistan is in a poly-crisis state. The economy was already in a tailspin and then floods have more shackled it down. The biggest economic challenges are stabilizing the rupee, reducing inflation, providing jobs and rehabilitating the affected areas. Recovering from damages will take years. The solution lies in a stable and trustworthy government that could devise long-term policies for the betterment of citizens (Elin Spegel, 2022). Tax laws should be strict. Trade deficit should be reduced to a great level. There is a need to encourage local businesses and unite as a nation. It is high time for Pakistan's government to consider the floods a national issue and devise strategy before another calamity hits the country.

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Disaster Risk Reduction (DRR): Lessons learned from 2022 floods and way forward

Irfan Ul Haq

It is strategic to saddle abstract forces with material outcomes in the aftermath of any untoward situation. The benefit reaped by absolving oneself is astronomical while the self-inflicted wounds owing to the recalcitrance portrayed in admission of incompetence is inordinately apocalyptic. Pakistan has disproportionately braved the brunt of torrential rainfalls of biblical proportions yet attempted to exonerate itself through frail substantiations. Regardless, nations which do accord requisite appreciation to their obvious and obliterated shortcomings orchestrate conditions conducive to proliferation of their resilience in face of any proceeding accident. It has been, however, substantiated by reports of World Weather Attribution that the disastrous magnitude of rainfalls in Pakistan was caused by Climate Change (Nizamani, 2022). Nevertheless, the ability of Pakistan to mitigate the effects of these natural events is called into question. Nature has eventuated its task of manifesting wrath but the resilience of a nation is critical to survival of its people.

So, the rudimentary prelude for Disaster Risk Reductions stems from the acceptance of incapability of an executive apparatus. Moreover, it is worth underscoring that the ostensibly abrupt national incapacitation of Pakistan in face of unabated rainfalls is a reprehensible outcome of decades of indifference and disregard on the part of the state. Thus, there are multi-faceted problems germinating from the submerged national landscape which engender substantial hectors and lessons for a potentially consequential future. Among them are economic, demographical, international and geographical lessons and the solutions for their adequate resolution.

In the economic field, Pakistan has been battered by dwindled finances and fragility of immediate revenue generating mechanisms. The loss caused by the floods has been calibrated, according to the reports by Al-Jazeera, to stand at \$40 billion which is tantamount to 10th percent of Pakistan's GDP (Khan, 2022). The hard-earned infrastructures of financially frail masses along with the national crops have been ubiquitously destroyed with ensuing economic cost for Pakistan ("Devastating Floods in Pakistan," n.d.). According to National Flood Response Coordination Centre (NFRCC), destruction of crops across 8.25 million acres has exacerbated

the economic situation of country in wake of the concerned rebellious floods (National Command Operation Center, n.d.).

This has led the country to articulate clamours for its deteriorating economic conditions globally. The scant amount of resources being injected in the National Disaster Management Authority and its provincial counterpart bears ample testimony to the fact. As a result, the lesson to be learnt lies at the impoverished heart of the problem which is to establish vibrant financial institutions and economically cater to the existing ones which are blatantly bereft of adequate money. The inadvertent brunt of these economic costs is braced by citizens in the preceding years. To substantiate, efforts are underway by the Ministry of planning to reduce the Public Sector Development Programme (PSDP) from Rs.800 billion to Rs.500 billion. In successive years, Pakistan will spend further less than its contemporarily available meagre budget amounts. This teaches a lesson of how reactive actions siphons off states from their own revenues when the culpably ignored avenues of preventive and pragmatic planning remain out of focus for responsible authorities and citizens.

The projected Gross Domestic Product of Pakistan is estimated -by Ministry of Finance- to dwindle to 5%, the prognostication of International Monetary Fund further lowers the threshold at 3.5%. Consequently, the per capita income of a country also remains prone to decline which causes exorbitant concern for national economic outlook. So, the way forward lies in the proactive charting of domestic courses on which the nation must tread to attain the bare minimum economic support through its (own) state exchequer in face of any cataclysmic event. Further, establishment of local bodies must be considered as regional centres of economy are not only adequately remunerative but they provide immediate resources. Along with, establishing grassroots level bodies for fund collection will cultivate trust among natives and legitimise the position of these “community assistance” centres. Consequently, masses will contribute to these people-centric bodies with alacrity and strengthen their resilience in face of any climatic disaster.

In demographical domain, unabated population and the asymmetrical proportion of state resources paints a clarion portrayal of approaching conflagration. The problem must be attributed to the ineptitude of successive governments as receding sand of management from lubricated palms of state has caused population to be swelled at such exorbitant magnitude. The presence of hundreds of millions with little to no regulation on their migration patterns must rattle the

conscience of concerned authorities. Consequently, the irretrievable loss of resources owing to the rising graph of population creates concrete impediments in a way of providing relief to masses. Country remains inhabited exponentially thus eclipsing the chances for further accommodation.

The lesson learned by floods against this backdrop is the imperative urgency to curtail the unfettered population explosion. Had the spiral of population abated retroactively, the statistics of victims would have been decreased. Although being cognisant of crucial revenue generated by population, the loss braved by majority of impoverished citizens in wake of flooding of 2022 forces the latter argument to weigh stronger. So, the responsibility must be shouldered by United Nations Fund for Population Activities and Pakistani authorities to robust the edifice of population control so that the loss of current proportion must be sliced in proceeding cataclysms.

In the international realm, the abstract dream of “bilateral cooperation” shattered due to the empirical realities in face of national flood assistance appeals. The false consciousness of “external saviours” diminished with the dawn of compelling evidence suggesting the blatant indifference by the world in face of an inundated Pakistan. According to the World Health Organization, the USA has provided Pakistan with \$56 Million of aid. This amount pales into glaring insignificance in face of the magnitude of disaster. Moreover, according to Voice of America China has provided \$59 million of aid for floods in which \$17 million are injected by Chinese Civil Society. The ceremonialism of these charities underline the indifference of countries based on their national interests.

The strategic and economic utility of any country inadvertently persuades its global counterparts to assist it in times of despair. Parenthetically, Pakistan must learn the lesson that the world is tainted by its domestic concerns and any attempt to rely on foreign assistance decouples the country from prudence. Resultantly, *the way forward* lies in accentuating the urgency to enhance domestic productivity and strategic utility through means of technology and education. The intellectual development of a nation is the harbinger of its global alliances. The nation must embark on a journey to build staunch foreign associations by capitalising on national “utility” in the international arena. The concept by Henry Kissinger of “*Co-evolution*” must be kept as a benchmark for developing regional and global alliances (Thomas & Rafferty, 2022). The solution to epochal disasters lies within domestic enclaves of Pakistan but to generate

“deliberate” assistance from foreign quarters -on the pretext of the state utility- must be the way forwards for policy makers (Nizamani, 2022). Nevertheless, this must not generate fragments of complacency within executive quarters. This suggestion must catalyse and stimulate foreign office in its pursuits for the eventration of pragmatic anticipations in national interest.

In geographical landscape, Pakistan stands inexcusably ignorant as the modus operandi of public settlements is blatantly unregulated. For instance, the predominant factor in germinating cataclysm stems from the deliberate reluctance of successive governments to rein in elite encroachments on rural lands. The culpably imprudent impunity manifested in actions of these land encroachers causes hector for displaced masses and national geography. The result of these contemptible and criminal activities is displayed in the form of formation of millions of informal settlements which are prone to any approaching natural disaster. To establish this, according to Pakistan Slum Developers Map and United Nations Office for Disaster Risk Reduction around 12 million out of Karachi’s 16 million population resides in informal settlements. These statistics pave the way for unregulated constructions which are reprehensibly neglected owing to their unofficial status and are bereft of adequate material infrastructure. So, it goes without saying that why Karachi bore the most brunt of national floods and what lessons Pakistan needs to learn. The way forward lies in institutionalizing construction and introducing geographical maneuvering for state subsistence. The concerned dormant authorities must awake from their strategic hibernation and proactively protect the national landscape from future cataclysms.

To encapsulate, Pakistan has accentuated its certain interests on expense of its other crucial arenas which needs to be ameliorated at breakneck pace. It is never too late albeit it is not, arguably, too early to galvanise resources and strategies to uplift the drowning nation. Pakistan has amalgamation of aforementioned repentances which are adequate to capitalise upon and build a vibrant future. Developed countries have learned from their former follies to build resilient residences and there stands no hindrance in the way of Pakistan to reciprocate those strategies. So, it constitutes an impending emergency for the nation to embark on a cart of concerted efforts in an attempt to reach the pragmatically orchestrated destination of desires.

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Public health issues related to 2022 floods and possible solutions

Esha Riaz

Torrential monsoon rains elicited the most unprecedented level of flooding in Pakistan's recent history, submerging larger parts of the country, washing away houses, destroying infrastructure & health care institutes, and leading to severe disruptions in the life of millions of people. The floods have killed more than 1,500 people and injured more than 12,000, over 116 districts have been affected, of which 84 have been declared 'affected', one million homes were damaged, over 600,000 people were left homeless, and 700,000 livestock were destroyed. This catastrophic flood imposed serious challenges on the country which are not limited to the massive death toll, food shortage, water contamination, and economical challenges but the healthcare issues have also mounted in the affected areas and now there's a severe need to be concerned about these issues and immediately address them. During the flood the most common things to be seen are outbreaks and epidemics affecting a larger population and society faces several complications amidst flood like acute injuries, disrupted health care, infectious diseases, malnutrition, reproductive health, and the least addressed issue in Pakistan, mental health and psychological traumas following the catastrophic event. So why do we need to address such health issues and is there anything we can do to tackle these as a nation?

Pakistan is one of the most flood-stricken nations in the world, as the country faced the devastating situation of monsoon flooding, at least 1000 people have died reported by the National Disaster Management Authority (NDMA) (Ochani et al., 2022). Pakistan normally receives two or three monsoon cycles per year but this year the country went through more than eight cycles causing severe damage to the health of people living in flood-struck areas. The main reason for this disrupted monsoon cycle is claimed to be climate change, which is impacting many countries globally but the impact is severe for Pakistan, an underdeveloped country, and if this continues the country might continue having such torrential rains and floods and the damage might be more severe (Iqbal et al., 2022). Addressing the issues imposed by the flood is essential to raise awareness and before suggesting solutions, understanding the nature of a problem is crucial for the implications of effective healthcare programs.

The ensuing widespread destruction in Pakistan lead to the birth of waterborne diseases as clean water is not available in such areas and the affected population is prone to severe acute diarrhea,

flood water is home to mosquitos, and due to lack of protection against mosquito bites there's reportedly an increase in malaria and dengue patients, according to a research a total of 149,551 people have been reported with diarrheal illnesses, more than 100.000 with skin diseases, additionally the authorities also recorded more than 40,000 people with malaria (Ochani et al., 2022), especially in camps where the sanitary facilities and water purity is impaired. Most of the people in such areas depend on livestock for food but the arisen problem of food shortage, aggravated prices, and limited resources made people more vulnerable to malnutrition (WHO), according to UNICEF more than 10 million teenagers need immediate, lifesaving provisions, in addition to this by mid-January a numerous amount of 4 million children were still residing in flood affected areas surviving for well-being. Pregnant and menstruating women are also in a very alarming and dreadful condition as there's unavailability to supplements, menstrual hygiene products, hygienic washrooms, and sanitary pads for menstruating girls, moreover, pregnant women don't have access to healthcare centers like clinics and hospitals due to the huge damage done to the roadways and communication systems making them vulnerable to morbidity and mortality (Ahmad & Afzal, 2021).

The outbreaks of diseases in the affected areas include typhoid fever, and respiratory diseases by being immersed in and inhaling flood water, a person might also develop respiratory tract infection resulting in pneumonia, eye diseases, and leptospirosis through being in contact with rodent urine. An increased rate of snake bites has been observed with 101 snake bite cases in the affected areas as the wildlife is also left homeless seeking refuge in shelters (Geddes, 2022). In addition to developing contagious diseases, vaccination treatments for certain diseases like polio and COVID-19 become unavailable in these damaged areas due to a lack of facilities and sanitary infrastructures making people susceptible and prone to increased chances of developing them. Additionally, Stocks of medical supplies have been washed away or are severely depleted, transport infrastructure has been severely damaged, and access to essential medical services has become extremely difficult.

The masked challenge of such a vast and destructive situation is the impact on mental health, people may suffer from post-traumatic stress disorder, anxiety, grief, and depression, and even reportedly there has been noticed a behavioral change in children amidst the flood (Shah et al., 2022). Following the flooding, authorities have reported a significant increase in mental trauma

patients (Ochani et al., 2022). In children, psychological vulnerability has been noticed due to emotional distress, loss of guardian, and damage to the home, and physical vulnerability due to poor diet and proximity to disaster-prone areas (Iqbal et al., 2022). The massive emotional damage to the afflicted person can make them vulnerable to psychological constructs which trigger people with medical illnesses like stress causing increased blood pressure and can be hazardous for patients with cardiovascular diseases, research concerned about the flood in Florida in 2004 showed an increase in heart attack patients after the distressing experience with the flood (Geddes, 2022).

To prevent such issues, forecasting early warning through the use of digital media should be employed by the authorities for the immediate and safe evacuation of people, the era we live in digital media holds immense power, thus, making use of such benefits we must vacate people from the affected place to avoid deaths and injuries, moreover, the animals could also be protected in this way by their owners. Flood forecasting and warning systems and emergency planning by the Department of Climate Change and other federal agencies should be improved to provide information and reporting on the occurrence and severity of future floods. In post-flood societies, expanding information and flood emergency planning are essential to prepare communities in the right direction. There should be measurements done to control the infectious outbreaks, and factors like unavailability of habitable shelter facilities, exposure to disease vectors, and lack of health services should be assessed to make efficient policies, this can be done through the re-establishment of houses, buildings, and especially hospitals as soon as possible, this will help people with the prevention of many contagious diseases. There should be immediate actions to chlorinate the contaminated water, thus, ensuring the incessant facility of safe drinking water reduces the risk of waterborne diseases. Sufficient drugs should be made available to the affected people like antimalarial drugs, mosquito repellents, vaccines, and rehydration fluids in health centers, enough resources and food should be supplied in affected areas for proper nutrition, both the quality and quantity of food matter. Authorities should promote hygienic practices and ensure sanitizers and soaps are available.

The government's priority should be relocating displaced victims and giving them a safe and hygienic place to live. Regarding the situation, everyone should come forward to help with the availability of resources, humanitarian actors, non-governmental organizations, corporations, and

influential individuals, mutual understanding and collaboration are needed for the operational and immediate measurements. Calling for preventative and rehabilitative health services is essential for the treatment of health issues including psychological problems, especially anxiety, and stress, the medical team must include clinical psychologists and therapists, this issue should not be considered non-essential, for this purpose school buildings, gathering halls and community centers can be used for such services (Shah et al., 2022). In addition to all these measures, authorities must prevent such severe situations in the future, official guidelines should be established to prevent flood problems efficiently and there is a dire need for adequate surveillance of water during monsoon to make safe evacuation possible (Shah et al., 2022).

To conclude, an appropriate understanding of flood risk can persuade society to immediately implement precautionary measures. Having a safe place and environment to live is a human right, we cannot prevent natural disasters but we certainly can reduce their impacts and severity by proper measures and awareness. What caused the catastrophe and what happened isn't something we can change but what is going to happen is in our hands, we must come forward as a nation and address health issues as a priority by providing proper resources including food, clean water, sanitary pads, required drugs, and medications. The imposed challenges of the massive monsoon flooding have strong aftereffects on the economic development, territorial advancement, agriculture, infrastructure, and the well-being of the afflicted population, both physical and psychological, and all of these factors are interlinked and intertwined with each other, we can't condone one factor and focus other. Hence critical arrangements from all cases of organizations are intensely required.

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Internal displacement and migration due to the 2022 flood

Rafi Ul Shan

Outline

- Pakistan is bearing the brunt of the climate crisis for no reason
- Consequences of floods 2022 as internal displacement and its hazards for the people
- To a larger extent the international community is responsible for the current crisis but we are responsible too
- Internal displacement of refugees while Pakistan is already struck by the heavy debt crisis
- Challenges for Pakistan in the internal migration of displaced flood victims
- The United Nations should play a prominent role to avoid any future consequences
- Strategy or framework that needs to follow to complete the process of rehabilitation
 - Raise awareness in the international forum to assist Pakistan to get out of the crisis as it is not the fight of Pakistan alone
 - Utilized the foreign monetary support in the right place and the right amount
 - Maintain a transparent and monitored delivery system
 - The locals and government should assist the working organizations in flood-hit areas.

We can't stop natural catastrophes, but we can protect ourselves by taking pre-disaster measures. With adequate disaster preparedness, so many lives would not be lost. On June 15, 2022, Pakistan was struck by a devastating flood caused by heavier-than-normal monsoon rains, human-induced global warming, and glaciers melting followed by a period of a severe heat wave. Unfortunately, it's a bitter reality that someone made a mistake at one point while others elsewhere faced dire consequences.

Flooding has resultantly induced internal displacement in Pakistan. Social conflicts, human rights violations, and natural disasters have always caused migration within and outside Pakistan's provinces. In this case, flooding caused by natural disasters has displaced half a million people, threatening Pakistan's food safety. Alexandra Bilak, director of the Internal Displacement Monitoring Center (IDMC), reports that the spectrum of the displacement could be substantially higher, with the number of houses destroyed or damaged, estimated at over a million including 3,17,390 homes that have been annihilated and 7,34,181 are comparatively damaged. (Record-Breaking Rainfall Triggers Displacement of Half a Million People, Threatens Food Security in Pakistan, n.d.).

It is important to mention here that Pakistan contributes less than 1% to global carbon emissions, yet Pakistan's geography is very vulnerable to the fluctuations of climate change (*Entcheva, n.d.*). Since June 2022, at least 1730 people have died, of which 792 have died in Sindh province, 336 in Balochistan, and 308 in Khyber Pakhtunkhwa. The National Disaster Management Authority (NDMA) claims that nearly 12,865 people were injured in all provinces of Pakistan. More than 33 million people have been affected, including 14.5 million in Sindh and one million in Balochistan. Estimates show that 2.2 million homes and more than one million livestock heads have been lost, and more than 13 thousand kilometers of roads and 440 bridges have been affected. (OCHA, 2022).

Undoubtedly, the recent flood has caused irreparable damage to Pakistan. As reported by Ali Haider Sehriyani, the flood was not as traumatic as its eventuality. "We lose 3-4 children daily to malaria, diarrhea, dengue fever, and skin diseases. The alleviation camp lacks medicine and other required medical equipment to save our children." On a larger extent, the world community can be held responsible for such a loss but it is not the entire case. The responsibility for such incorrigible damage lies upon the shoulders of our government as well. The poor policy of our

government and the lack of an effective system led to elevated loss (loss of life and economic loss). The indifferent attitude of the concerned authority and the absence of timely measures ultimately lead to huge losses on both humanitarian and economic fronts.

The absence of an underground water storage system results in rainwater runoff on the surface, resulting in a flood and washing out everything. The lack of multiple channels that can canalize the rainwater to move out of the populated area can save the populated zone, Lucky if few exist still a number of them get filled with garbage and waste products of industries and household effluent. As the calamity gets settled, it takes a prolonged period to rejuvenate its disastrous impacts on the socio-economic sector.

It is undeniably a major summon for Pakistan to settle the refugees (millions in number) and provide them with an ideal home environment (food, water, health, and education facilities) far from the home town. Approximately 7,602 schools are used to put up ectopic people: they are not being used for continued access to education and child protection. Stagnant rainwater and flooding of some schools hampered damage assessment and restoration of entire schools and learning centers. (Pakistan Floods: Education Sector Factsheet (as of 20 October 2022) - Pakistan, Relief Web). Before the 2022 floods, Pakistan was facing a huge crisis. Such as, the country was struggling hard to lessen the gap in the current account deficit since it was barely recovered from the aftershock of the pandemic (COVID-19). The flood afflicts the agricultural land (considered the backbone of Pakistan's economy) and adversely affects the industry, external trade, and the service sector.

Prominent factors such as the settlement of refugee camps for the million displaced people, the provision of food, water, and health facilities, and the regeneration of the lost agricultural land to restore agriculture and amongst others are the notable antecedents that need to be addressed on a priority basis.

In addition, the analysis of the current economic progress of Pakistan does not give an optimistic picture of the economy. Its growth rate is quite slow. Analysis of the recent March 2022 economic report shows that the government debt is around PKR 53.5 trillion, equal to 80.2% of Pakistan's Gross Domestic Product (GDP) (Pakistan's Debt Mounts to Rs53.5tr, 2022). There is no doubt that, with the current weak economic situation, it will not be easy for Pakistan to manage the settlement of millions of refugees without the international community's help.

Moreover, it has been studied that almost 15% of agriculture has been wiped out due to recent floods. Hence, this is the primary goal of getting enough food from the limited resources available. Officials say the floods have affected nearly 15 percent of Pakistan's rice and 40 percent of cotton crops. (Entcheva, n.d). An ideal framework that can estimate the damage, loss, and needs would provide a guideline for the government as it helps to channel the particular amount of relief funds for a particular community considering the requirements. The mitigation of damage caused by recent floods exceeds the resources available to Pakistan, so friends and partners should help Pakistan rebuild sustainably and resiliently.

The story of the devastation of the floods of 2022 is not new as Pakistan has been affected and caused heaps of destruction in date back history. Recent floods in the past have caused unprecedented socioeconomic devastation. It has shattered nearly 20 million people by wiping out their assets, livelihoods, infrastructure, and togetherness. The loss of thousands of people, the displacement of millions of people, and the irreparable damage to infrastructure have caused massive damage to the country. Population Council, an American-based health agency, reports that the floods have affected about 6,10,000 pregnant women, including 130,000 who need adequate access to medical care, and about 2,000 per day who give birth in a filthy environment. (Pregnant Women Struggle to Find Care after Pakistan's Floods, n.d.). IDMC claims that the livelihood of sexual minorities has also been affected due to internal displacement. (A Gender Perspective on Internal Displacement, n.d.). Thousands of older people are not getting the help they need and are calling on governments and humanitarian partners to establish that older people are counseled and their requirements met. Here is the key arraignment from a rapid elderly needs assessment conducted by Help Age International from September 21 to 26 in Sindh, Balochistan, and Khyber Pakhtunkhwa provinces: 69% of elderly people surveyed said that they do not have shelter, 63% do not have difficulty accessing toilets and bathrooms 60% of them said that they do not have enough food. Most (48%) of them claim that they cannot access health services. But this is not a problem for a single age group, it is the same phenomenon for everyone there, (Entcheva, 2022). It is the need of time that the United Nations should take strong measures to prevent any future upheavals, unfortunately, the responsible community is still silent.

In addition to the Pakistani government, the efforts of a group (United Nations agencies, the Asian Development Bank (ADB), USAID, the UK Department for international development, and the European Union), along with the support of the World Bank and United Nations Development Program (UNDP), are playing an important role in recovery and reconstruction process of destructed areas. Under the auspices of the above-mentioned international group following revivals steps can be undertaken for flood-struck people. For instance, the restoration of jobs and livelihood for the displaced people, the recovery and reconstruction of critical infrastructure, and the estimation of the damage, loss, and needs to provide a framework for the government to channel a fixed amount of relief funds for a particular group considering the urgency and need (OCHA, 2022).

Considering the above-mentioned adverse situation, the government should follow a unique strategy of rehabilitation. The process of rehabilitation of displaced refugees can be carried out in the following steps. First and foremost, it is a dire need to mobilize the international community to assist displaced people. Secondly, they have to acknowledge that Pakistan has become a victim of climate disasters and is facing the consequences of someone else's wrongful acts. Relief funds from the foreign community should be widely used to provide shelter, drinking water, food, and medical facilities.

On August 19, 2022, the Pakistani government launched a flood relief program worth PKR 37.2 billion for one and a half million affected people. By the end of August 2022, the Pakistani government along with the collaboration of the United Nation has jointly launched a Pakistan flood response plan for 2022 which outlined the basic needs of humans and an action plan to meet those necessities. A group of organizations (the Asian Development Bank, the United Nations, and the World Bank) assisted the Pakistani government in conducting a post-disaster needs assessment to produce an initial estimation of damage, loss, and reconstruction requirements (OCHA, 2022).

After collecting the estimated amount of funding for assisting refugees, here comes the crucial step of financing the displaced people by considering their requirements. Strategically formulate the list to prioritize the most wretched one. Recovery along with rejuvenation plans must itemize the immediate needs of affected populations. The estimation of the damage, loss, and needs would provide a basic framework for government officials to a fixed amount of relief for the

affected groups. It would assist in recovering and reconstructing infrastructure for the displaced people while ensuring a sufficient transfer of money according to the demands.

The final step of rehabilitation or the recovery framework demands the insurance of the utilization of the collected money to utilize in the right place transparently and efficiently. To carry out the process of deliverance in a transparent manner, sincere efforts of our government along with the coordination of the Provincial Disaster Management Authority is mandatory. So, in short, an efficient, fair, and transparent distribution system led by the government along with coordination of local and international communities can ensure ultimate and initial transparency and put the right amount in the right place. It is also necessary for the government to provide security to cooperative organizations such as IOM so that they can work safely. The locals of flood-hit areas should also cooperate with them since several cases have been reported about security issues to national or international organizations while working in the field.

Unquestionably, with the mutual support and coordination of the foreign community with Pakistan's government, many displaced populations can be settled back with better providence of livelihood, shelter, and a better future ahead.

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Public Health Issues related to 2022 Floods and Possible Solutions

Tahreem Munir

The recent floods have been the worst natural disaster the country has seen in its history. A concerning percentage of Pakistan has been devastated, with the United Nations Satellite Center (UNOSAT) estimating the figure to be around 9% or 7500 hectares (Donmez, 2022). The cause of the flooding has been attributed to climate change factors. United Nations Secretary, Antonio Guterres, called the catastrophic downpour, “monsoon on steroids' ". Despite Pakistan's carbon footprint only amounting to 1%, the country has had to contend with severe heat waves, melting glaciers, and extreme flooding. It is estimated that the South Asian country received 200% more rain than average.

Over thirty-three million people have been affected causing public health officials to be distressed over the increasing risks of skin infections, and mosquito-borne and vector-borne diseases due to exposure to contaminated, stagnant water. This research essay, therefore, aims to look at the public health issues that have arisen and the viable solutions that could aid in the rehabilitation of flood victims and reduce future risks in case of climate emergencies.

September 2022 surveys show large-scale destruction that has not only ruined rural livelihood but also severely impacted Pakistan’s agricultural import prospects as well. The catastrophe has caused over 1290 deaths: the destruction of 1,468,019 homes and the loss of 736,459 animals. Overall, the damages amount to a loss of ten billion dollars (Sarkar, 2022) when the country is already facing economic difficulties. The affected rural areas already suffer from socio-economic inequities, especially in the education and health department. As such, the public health situation is dire.

The heavy rains have also inflicted considerable damage to the already underdeveloped infrastructure in the flooded areas. Around half the villages in northwestern Khyber Pakhtunkhwa are inaccessible due to the submersion of roads and bridges. In some cases, medical teams have had to swim to victims to provide help. Destruction of already existing health facilities, and a shortage of healthcare workers, and medical supplies only add to the country’s public health challenges.

The floods have also unraveled the nationwide polio vaccination campaigns and destroyed almost 900 medical facilities in the wake of their destruction, leaving millions helpless (Bhamani, 2022). Immunization efforts (for polio and other diseases) have become inaccessible for many afflicted, causing risks of mortality and morbidity to reach an all-time high, especially for children. Damage and erosion of infrastructure have left roads impassable leading to delays in medical help. Due to the destruction of property, the displaced residents have no choice but to live in makeshift shelters near stagnant water - the optimum breeding ground for malaria and dengue.

Health officials have reported a dangerous rise in mosquito-transmitted diseases. A total of 49,420 cases of malaria have been reported (Ochani et al., 2022). There has also been an alarming increase in other febrile illnesses as well. Authorities have recorded another 132,485 cases of respiratory illnesses and 149,551 diarrheal cases (Ochani et al., 2022), primarily among children, due to typhoid and cholera (Robinson, 2022).

Furthermore, as flood waters start to recede, the humidity and prolonged contact with contaminated water has led to a surge in numerous skin infections. Bacterial and fungal infections are prevalent in such situations. However, due to the overburdened medical testing laboratories, many suspect skin infection cases go untested. Therefore, there is insufficient research at present to know the extent and variety of contagious skin illnesses in flood-affected districts. However, going over hydro meteorological natural disasters in other countries and the subsequent consequences provides helpful insight on what to expect. Ujjain reviewed a report from Taiwan that analyzed over two hundred flood situations over a duration of 10 years and found that "...skin and eye problems were reported to have emerged in a subacute phase after the decline of gastroenteritis" (2022). In light of this, there is the added threat of comorbidity of diseases which may cause a rise in mortality rates.

Pakistan has to bear the brunt of a climate change disaster that it had a negligible role in contributing to. The country is unjustly paying the price for other nations' irresponsible environmental policies. Planning Minister, Ahsan Iqbal, rightfully requests that the rich nations pay for the damages which, as previously mentioned, have caused the country a substantial financial loss (Sarkar, 2022). Both the world and the Pakistani public have responded. This essay

will now look upon the aid provided and attempt to highlight solutions that could improve the situation.

The World Health Organization (WHO) has set up mobile medical camps in place of the damaged healthcare facilities that could provide relief to the victims. Pakistan too has joined this effort with organizations like “Transparent Hands” offering free medical treatments, tests, consultations, and medicines to those in need for free. The public can aid their efforts by donating as little as two hundred rupees. Distributing water purification tablets would also help combat cholera and gastroenteritis. WHO has already provided more than 1.7 million tablets to make early detection of infectious diseases (Sarkar, 2022).

Despite all this, compared to the 2010 floods, international relief efforts have been relatively slow. More flood victims could be helped if overseas relief efforts launched by non-profit organizations like “CARE” are coordinated with local flood relief forces. It would be possible to cover larger areas and locate what supplies are needed, rather than there being a surplus of certain items and a deficiency in others. As mosquito-borne diseases are rampant, mosquito nets and repellent lotions are essential in makeshift shelters as basic precautions. Given the current situation, contaminated water or humidity can be avoided but the risk of infections can be reduced through the use of antifungals (such as ketoconazole) and hand sanitizers that are at least 70% alcohol. Antibiotics are necessary for the treatment of both vector and water-borne diseases, so it is crucial that they remain well-stocked. These needs can be met through donations and aid and with there being challenges in resource unavailability (medical staff and camps), prevention is the best measure.

To avoid malnutrition and starvation, dry foods like powdered milk, chickpeas, and biscuits will be immensely helpful as they are less likely to go bad in damp conditions. Pregnant mothers would also require baby formula, clothes, and diapers. Menstrual hygiene products and sanitary kits are required. As the women there may not be familiar with the typical menstrual products found in stores, clean-cut strips of cloth could be sent so hygiene-related issues do not arise. Pakistani athlete, Noreena Shams, has supplied sanitary kits using donations of \$1.5 million, to over 7000 women in Khyber Pakhtunkhwa (Sarkar, 2022).

However, the responsibility for the rehabilitation and care of flood victims cannot be displaced entirely onto the public, nor can we completely depend on international aid. The Government

needs to act - now and for the future. Pakistan is among the top ten countries that are impacted by climate change. Thus, it is likely that natural disasters like this will occur again. The Government and the responsible institutions need to make sure that there is sufficient provision for malaria and dengue outbreak prevention supplies and that the medical camps are well-supplied with rehydration fluids and antimalarial medications. Purification of the contaminated water could be carried out through chlorination (Ochani et al., 2022). From now on, there should be mandatory training of hospital staff for prompt response in case of natural disasters. Government should also work on strengthening Early Warning Systems (EES) so people can be evacuated on time so there is less spread of diseases.

Most importantly, there need to be public awareness campaigns, especially in areas in which floods are now likely due to rainfall. People need to know what to do in cases of emergency situations, the importance of taking precautions to avoid diseases, and basic first aid in case they are injured or contracted a disease. Once polio vaccination campaigns are restored, they should also provide tetanus and typhoid vaccinations as they both last for over two years. In addition, Family Planning Awareness Programs remain as relevant as ever in Pakistan. It is difficult to keep families of over five together under the same roof of shelters as they are not designed to be expansive. It also makes issues of relocation more complex as when the time comes for these displaced families to move back into their reconstructed homes, it will be hard to provide any standardized-sized housing for such large households. Caring for so many children is also difficult for the parents, causing them to not provide adequate care for all equally.

The first step when it comes to countering climate change disasters is to reduce emissions of greenhouse gasses and move towards more sustainable methods but that is not the case when it comes to Pakistan which already has a negligible carbon footprint. Therefore, what Pakistan can do is research and strengthen its policy-making so that when such catastrophes occur again in the future, the country is well-prepared to care for the sick and injured. This requires being well-stocked with medical supplies during monsoon season and launching polio, typhoid, and tetanus vaccination programs in advance so that as many people as possible are immunized. The role of researchers here is especially important as they can identify the core issues and their solutions and aid the Government in legislative procedures so we may in the future avoid as much damage as we can.

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Public Health Issues related to 2022 floods and related solutions

Iqra Haroon Mazari

The year 2022 can no doubt be called an unfortunate year for Pakistan and her citizens due to the destructive floods that hit the country in the middle of the year. Since then people have witnessed devastating effects due to the flood. The government has revealed that 33 million people are badly affected due to this catastrophe since June 2022 (Malteser International, 2022). Hundreds of people lost their lives and millions became homeless. Unfortunately, their suffering continues as many of them are facing health issues. WHO reports that millions of people need help regarding their health concerns even now when the water has almost receded (UN News, 2022). We can see that the flood was destructive but its aftermath is even more unfortunate for the affected public.

These people are forced to live on the roadsides and their situation is devastating when it comes to basic health facilities. They are not getting clean water for drinking, and many issues are arising. Men, women, and children are equally affected by diseases like cholera, loose motions, and many other digestive issues. Another unfortunate result that these floods have brought with them is the outbreak of malaria in 32 districts due to the persistent water flow (UN news, 2022). These problems do not end here. A whole new generation will come into the world born with prenatal issues as their mothers were pregnant during these natural disasters. Even during that time, people were trying to save themselves but many died as a result of hypothermia. They did not die immediately but because their wounds did not get a chance to be healed because of the bacteria present in the flowing water. This leads to the next point that many bacterial infections were spread among the flood victims such as diarrhea. There are a number of other diseases that commonly occur in flood camps including typhoid fever, pneumonia as well as skin and eye-related diseases. These are due to the reason that people have stayed in the contaminated water for a long time. These diseases are very common to spread and even kill people due to the lack of medical help in the affected area. This leads us to the next point that even though people are sick and attacked by so many diseases, there is no or very little medical assistance provided. In the flood's donation campaign, we saw food bags were being distributed but what about medicines? Very limited attention was paid to this department which further worsened the situation of these

poor people. Another factor that plays an important role is that almost 900 health facilities have been affected as the result of these floods, with 180 being completely destroyed (UN news, 2022). Unfortunately due to this natural catastrophe, both humans and animals have suffered. When humans lost their homes, animals were equally homeless but this further increased the difficulties for humans because many dangerous and poisonous creatures floated with the flood water and harmed human lives. It has been found out that 153 flood victims had suffered due to snakebites and one of them had to lose her life as no first aid was provided to her immediately. Even though the food was being provided by donations through NGOs and government bodies, malnutrition is still one of the major health concerns that affected the physical well-being of people. Young children who were breastfed were majorly affected and as well the health of pregnant women was at stake because they were not eating healthy, fresh food which leads to abnormalities and complications and childbirth and even causes stillbirth in many cases. Another important matter relating to flood victims' health was not given much importance is the cleanliness of private parts which leads to many bad infections in men and women. Obviously, in flood relief campaigns, people tend to provide food and clothes but very few think about the ladies/gents' razors, hair removal creams, and sanitary products. These are also significant matters that need to be catered and necessary things should be provided to people. Yet another devastating effect of floods is that it has affected the immunization campaigns going on (WHO). Polio, TB and Covid campaigns were still in process and people were hit by another natural disaster increasing the difficulty for people and the government alike. In Sindh and Balochistan, millions of kids were at risk of malnutrition and floods acted as fuel to already existing fires (WHO). These floods acted as another case of Severe Acute Malnutrition (SAM). Winters are starting and the intensity of these problems might increase because flu, fever and infectious illnesses spread easily. All the points discussed above are about physical health but we should not either forget or ignore the mental stress these people have gone through. The psychological trauma must be really difficult to handle and might lead to post-traumatic stress disorder in many people but we are not sure about that yet as this event is still going on and extensive studies are to be conducted in this regard.

Solutions:

Looking at the problems, we can derive possible solutions. First of all, shifting the maximum number of people to a better place where they are safe from contaminated water. Unfortunately, people are forced to live on the roadside, where they should be provided with clean drinking water through tankers, etc. Government must take necessary steps for the rebuilding of homes and try to provide them with a safe environment. Regular medical camps should be arranged for these people. As time is passing, the flood victims are no longer in the news headlines and people are forgetting which should not be the case. There should be enough awareness among the privileged people about flood victims so they keep helping the victims just like in the initial days. All the diseases that outbreak as the result of the flood must be stopped through proper medications and vaccinations in the cases that were possible. The flood-affected people should be given awareness as well because most of them belong to rural areas and are not educated so they should be told the effects of staying in contaminated water for long period, how they should not eat food that was affected by the contaminated water, how they should keep themselves protected of mosquitos etc. Sanitary pads should be provided. Not only physical but mental health-related campaigns should be arranged, and support groups should be started for these people so they do not consider themselves alone in these difficult times. Another important point here comes from the government and people of Pakistan to help their brothers in need in the maximum capacity.

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Disaster Risk Reduction (DRR): Lessons learned from 2022 and the way forward

Mariam Ajmal

Pakistan is the land of countless possibilities with its advantageous location and quintessential soil. Its natural resources make it stand out, not to mention its breathtaking landscapes and changing seasons that encapsulate its true essence. Historically, it holds great importance and has always been connected to its innate roots. With that fall natural calamities of course. Its geographical location puts it in a tough spot with respect to natural disasters such as earthquakes and floods. Such disasters take millions in their wrath and spare no one. Credible buildings, fertile crop fields, solid-built homes, and roads get destroyed in a matter of seconds. Not to mention the precious lives that are lost in this catastrophe.

One must learn to take certain measures to minimize the likelihood of such catastrophic events. To prevent natural disasters in Pakistan such as floods, multiple dams should be constructed to prevent water from overflowing. The country does not have a sufficient number of dams for the reservation of water which results in severe floods every few years, the most recent being the devastating 2022 floods which hit over 33 million inhabitants claiming thousands of lives and disrupting acres of land (Ochani, 2022). Another crucial lesson to be learned by Pakistani people is to not establish buildings and hotels on highlands near streams as there are more risks involved. When floods hit, the foundations of such establishments weaken swiftly, leading to their complete destruction by the streams nearby. What was most overlooked before the occurrence of the recent floods in Pakistan was the limited self-awareness citizens had regarding it in their region. The government ignored all signs of a natural calamity by not providing proper sewerage systems to its people. Every other area had either a clogged sewer or an unsupervised drainage system. Such blatant negligence by the assigned officials amassed and contributed to one of the deadliest large-scale floods in not only Pakistan but the whole world leaving fifteen percent of the country's population affected. Furthermore, the state failed to improve the conditions of its poverty-stricken localities leaving millions without a roof over their heads and no place to turn to. Not only did this lead those entire communities to wash away in the merciless waters, but also indelibly shattered the little faith they had in the system. In those areas, finding a single functional hospital or a rescue setup was a task in itself. If one was in need of any sort of

medical assistance, he or she needed to first travel to the nearest developed city in search of a hospital instead of getting treated in their own localities, hence more hospitals must be built. No warnings of natural disasters were given to the common people by the government prior to the occurrence of such events unlike in other countries where people are made fully aware of the situation they might be in, so they could make arrangements to protect themselves in any way they could.

The lessons learned from the current floods are multitudinous and require our immediate attention hence certain disaster risk reduction measures should be taken to prevent further tribulations in the country. In the numerous efforts to decrease the possibility of floods, first of all, awareness must be raised among Pakistani people so that they understand the dangers associated with floods and acquire the skills to protect themselves in such circumstances. Once consciousness is developed in the individuals, necessary precautionary measures are easier to take as a whole. Furthermore, the construction level of Pakistani foundations should be thoroughly examined, and improvements should be made to it as most of the buildings and homes fail to withstand even the slightest of mishaps. Consequently, better materials and tools shall be used in construction, keeping in mind the possibilities of natural calamities in the state. The government should also allocate a certain budget for natural emergencies so that they do not have to approach world powers for help, much like this year. Deforestation should also be strongly discouraged, and people should be motivated to plant trees that could alleviate the chances of floods or completely eradicate them by acting as barriers against the heavy flowing waters. Moreover, the trend of establishing double or triple-story hotels and restaurants near fast-flowing streams should be abolished in the northern areas of Pakistan and heavy fines shall be imposed for doing so, as these businesses profit from tourism without taking into account the well-being of their customers. The owners of such businesses should acknowledge the hold that climate change has on our environment and make improvements in their sectors to ensure the safety of their people, their land, and the wildlife that is inhabited there. The glaciers in the northern areas of Pakistan are melting at an increased rate than in previous years due to the rise in heat temperatures in the country. The Middle Eastern regions are currently the most affected victims of global warming, yet no such preventative measures are being taken to recover from this alarming situation. The shortage of trees and the increase in surface area and water during the monsoon season paves way for floods to easily take over acres of land hence initiatives shall

be taken by the government and the common people to plant more and more trees and to go against having them cut for commercial purposes. The streams, canals, and rivers also tend to overflow during the monsoon rains therefore special attention shall be given to their activities in rainy seasons. Another important risk factor can be the health hazards that come into being after contaminated water from the streams and canals adds up into rivers leaving thousands sick with water-borne diseases such as dengue, diarrhea, typhoid fever, cholera, and many more (Ochani, 2022). Vaccinations should be provided to each citizen affected by flood-related diseases and proper care of sanitation and hygiene should be followed by each and every individual (Warriach, 2011). Flood relief programs should be active in fighting for their causes and performing their duties with pure dedication and intent so that the flood victims can get the best possible treatment for their physical and mental suffering. Their mental health should diligently be taken into account as this is something that is not really focused upon in Pakistani society (Warraich, 2011). NGOs should also be set up in different localities of the country so that every individual can benefit from them equally. Whenever disaster strikes, it should unite the nation so that no one has to endure the afflictions brought with it alone. Pakistan has had a lot of experience with floods, be it the 1992 floods, the 2010 floods, or of course the recent ones but it has failed to upgrade the standards of its structures which have previously cost the nation a lot of precious lives. New innovations should be made in the field of technology as well which could lead the country to success in fighting natural disasters. The world has undoubtedly progressed and advanced in the field of science and technology which is why the west is way ahead of us in all fields of life today therefore Pakistan must follow in its footsteps if it wishes to head toward betterment. Institutions should be inaugurated for scientific research and technological purposes that could help benefit mankind in its battle with natural disasters. For building houses, a scheme should be implemented which would require houses to have a certain elevation level beyond which rainwater could not pass through hence lowering the chances of flood risks. To prevent water from standing outside houses, seepage systems should be installed in streets and lanes so that water does not accumulate in certain places, causing chaos among people. Every house should have a built-in basement that could be of their advantage in such situations. One can think of many solutions for tackling flood-related problems but for that resources must be available and not everybody has them, therefore, the situation of every person is different from the others. A law should be established to provide the needful people of Pakistan with adequate funds so

that nobody must live in tents or face homelessness. When floods appear without any warnings, those people are most affected in the wreckage, so it only makes sense that they are properly taken care of.

Apart from that, it should be noted that if a natural calamity befalls, it is bound to happen no matter what preparations we make for it. Disasters are natural but how to face them is the real question. Japan's demeanor, when met with disastrous earthquakes, is truly something to take inspiration from as they come back even stronger and more foresighted with every tribulation. Much like them, Pakistan is also met with natural disasters more frequently than other nations but that has never stopped them from learning and gaining a new perspective on things. Great nations learn from their mistakes and do not let history repeat them. Pakistan has had its fair share of hardships but that must now be put to an end by its people.

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Public Health Issues Related to 2022 floods and possible Solutions

Ayesha Hassan Khan

The devastation caused by the unprecedented level of monsoon flooding in Pakistan has left more than one third of the country still grappling with the effects of the worst humanitarian crises it has witnessed in the past decade. What is most concerning is how the country is faced with a threat that looms large: The elevation of the public health crisis to enormous proportions. According to a UN official, the immediate death and destruction caused by the flooding is to be followed by a second-wave, that of illnesses and subsequent fatalities as a result of a surge in the flood-borne diseases, including dengue, malaria, diarrhea, and skin diseases (“Pakistan’s Flood Crisis Is Particularly Tough on Poor Women. Here’s Why,” 2022). Moreover, the health crisis is compounded by the food crisis, posing a greater risk to the lives of millions in the flood ravaged areas of the country.

To fully comprehend the gravity of the situation, pertaining to the health crisis at hand, let us take a look at the fragile healthcare system that operates in Pakistan. It is crucial to note that most of these flood-affected regions, especially the southern provinces which have been labeled ‘calamity stricken’, have been poorly resourced in terms of healthcare, including hospitals, dispensaries, and other healthcare units. It comes as no surprise that these areas have been the most vulnerable to the devastation caused by the floods. Coupled with a lack of healthcare access, the infrastructure, too, has been poor, which has caused a considerable delay in the provision of relief assistance, further risking the lives of millions.

In Sindh alone, the situation is appalling. As per latest statistics, 59 health facilities in the province are reported as ‘fully damaged’, especially in impoverished districts, while 461 remain ‘partially damaged’. The situation in districts, such as Khairpur, Dadu and Mirpurkhaas is far worse, as they have remained submerged for nearly two months. Moreover, with no appropriate drainage mechanism in place, the floodwater is expected to remain stagnant, and according to government officials, may require at least 3-4 months to recede. Not only does this threaten to expose the lives of millions of displaced to wide-spreading diseases, it also highlights the debilitated condition of the infrastructure already in place, and thus, deluged by the heavy flooding. As a result, many in the flood ravaged areas have resorted to make-shift health

facilities, which, although inadequate, have been their best bet (“Catastrophic Floods: Understanding the Gravity of Pakistan’s Health and Food Crises,” n.d.).

This presents another set of worrying health challenges. Cases of malaria and dengue are on a rise as the stagnant water provides breeding ground for mosquitoes. In Sindh, over the course of the past 4 months, around 350, 000 were suspected of having malaria. The number of other water-borne diseases, particularly skin-related, have also witnessed a surge, with over 770, 000 people in Sindh having reported a skin-related disease (“PAKISTAN: 2022 Monsoon Floods,” 2022). Moreover, according to statistics, because of a lack of sanitation facilities, the practice of open defecation has increased from one-fifth (before the floods) to over one-third, making the condition of these areas all the more unhygienic and uninhabitable. There seems to be little to no consolation from neighboring flood-affected regions: Limited access to healthcare facilities, workers, and medical supplies remains prevalent.

One of the immediate horrors that struck these flood-ravaged areas has been the wiping out of crops and livestock. According to the report by the International Rescue Committee, an estimated 4 million acres of crops have been completely damaged, with 800, 000 livestock having perished. Since a majority of the severely impacted areas were dependent on agricultural produce and livestock, millions have been pushed to the verge of hunger. What seems to be a far greater cause for concern has been the threat of acute malnutrition in children, since half of the children living in the current flood-affected areas were already experiencing stunted growth, both physical and cognitive. As of recent statistics, more than 1 in 9 children under the age of five have been diagnosed with acute malnutrition by health professionals since September, with a total of more than 2630 of 22000 children in flood- affected regions professionally diagnosed (“PAKISTAN: 2022 Monsoon Floods,” 2022). It is important to point out that this is just the official number of cases of acute malnutrition reported; the number of unofficial cases may quite possibly be greater, as is estimated by the National Nutrition Survey.

The hazards are great for all the millions affected, however, women and children in particular remain the most vulnerable in such times of crisis. Majority of the affected and displaced women belong to rural areas, with many already experiencing poor health conditions, leaving many exposed to severe hunger, and infectious diseases. Conservative norms dominating these areas compound such challenges, as women are often prevented from visiting “male health workers

without a male relative or chaperone, meaning that these flood-displaced women are unable to access medical care”.

Women's health, especially their reproductive health, remains an overwhelming concern. According to official statistics published in September, among the millions severely affected, there are at least 650, 000 pregnant women and girls, with 73, 000 expected to deliver within a month's time, necessitating immediate access to maternal health services, which, if not provided timely, can result in serious health complications (Khan, 2022). Not only does an expecting woman need medical assistance during childbirth, the postpartum period is as crucial for both the mother and child's health. Menstruating women and girls, too, are at the mercy of poor hygiene conditions, little to no privacy, and lack of sanitary products (necessity for women), risking serious infection (Khan, 2022).

Immediate disaster relief campaigns have sprung up on various social media platforms, especially on Twitter, with various hashtags bringing attention to the devastation caused by the horrifying scale of flooding in one third of Pakistan and calling for donations worldwide. Although citizens have geared up to provide relief to millions affected, the sluggish response of the state has been under intense scrutiny. Moreover, much of the blame lands on the incompetence of provincial governments of Sindh and Balochistan. The damage control response, too, is not very promising, and much of the relief efforts have been orchestrated by small, non-profit organizations, especially in terms of providing basic necessities to those stuck in the flood-ravaged areas. It is encouraging to see local authorities beginning the process of early rehabilitation, with the aim of facilitating the return of displaced populations.

While the possibility of finding consistent, long-term solutions and their implementation seems improbable at this point in time, damage control is our best bet, however, considering the gravity of the situation at hand, such efforts may not suffice for long (“Catastrophic Floods: Understanding the Gravity of Pakistan's Health and Food Crises,” n.d.).

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Transcribed, compiled and edited by the *Population Research Center (PRC), FCCU* team

Proofread by:

Dr. Hafiz Rizwan Ahmed

Assistant professor, Department of Economics,

Departmental Representative, PRC

&

Mr. Faizan Hashmi & Ms. Khadeeja Batool

Writing Center, FCCU

PRC Website:

<https://www.fccollege.edu.pk/populationresearchcenter/>

PRC Mailing Address:

Office # 104, 105, Hamid Saeed Faculty Block (F Block), Forman Christian College (A Chartered University), Ferozpur Road, Lahore – 54600. E-mail: prc@fccollege.edu.pk, **Phone:** +92 (42) 99231581-88 Ext: 864

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Website:

<https://www.fccollege.edu.pk/office-of-research-innovation-and-commercialization-oric/>

ORIC Mailing Address:

Office # 26, Armacost Science Building, Forman Christian College (A Chartered University), Ferozpur Road, Lahore – 54600. Email: oric@fccollege.edu.pk, Phone: 99231581-8. Ext: 531, 504.



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