Climate Change and its Impacts on Sustainable Development Goals: A Case Study of 2022 Floods in Pakistan

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DEDICATION

Dedicated to those hands which are behind my every success, my Father Sarfraz Ali and my Mother Musarrat Shaheen. I also want to dedicate my work to my late brother Najam Sarfraz who always wanted to see me touching the pinnacle of esteem.

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ABSTRACT

Climate Change is the most disregarded yet most crucial subject of the 21st century. First world industrialized countries do not realize the impact climate change has on the third world countries like Pakistan. The greenhouse gases are depleting the ozone layer at a rapid pace, while the debate on whether global warming is a real issue or not is still undergoing. The impacts of climate change have wreaked havoc on Pakistan in the year 2022, devastating most of the rural area of Sindh Province, KPK, Punjab and Baluchistan. This thesis analyzes and sheds light on the devastation caused by the 2022 flooding on Pakistan as an overarching climate disaster on Human Sustainable Development thus creating concern in international relations. Furthermore, solutions and recommendations for building a resilient socio-economic infrastructure ensuring the Sustainable Human Development have also been provided in this paper. The sources used to conduct research included secondary sources that is literature available at hand. The literature ranged from books, to journal articles and newspaper articles as well. The theory that has been taken for this thesis is the "Green Theory" by Rachel Carson. This theory lays emphasis on and addresses the human environment relationship. It also attempts to strike a balance between the preservation and protection of the natural world and the satisfaction of human requirements. The year 2022 was a catastrophic year for Pakistan in terms of climate impacts. There was considerable rainfall, cataclysmic flooding, and ghastly landslides throughout the monsoon period. As a result, millions of individuals were impacted from these natural disasters. People lost their homes and livelihood and the economy of Pakistan suffered a loss in the form of billions of dollars. This is an evidence to the first world countries as to how much of a reality is climate change.

Key words: *Climate Change, Sustainable Development Goals, 2022 flooding in Pakistan, Green Theory, Cataclysmic, Livelihood.*

CHAPTER ONE: INTRODUCTION

The forecasts of future climate change have become the reality of today. Mother Nature is paying back in a vicious manner. She is now showing us the glimpse of what humanity has been inflicting upon her for centuries. And for states maneuvering in international arena the grounds of fear have changed as non-traditional security threats have gained the key position in this novel battle. In the past states were more concerned with those of the threats coming from other states on traditional grounds but the dawn of 21st century opened a new Pandora box due to the unbridled potential of state's actions against environment[1].

It is observed that the impacts of one state distorting the climate protocols are not confined to its territorial borders but it will cause a horrific implication for those states having developing socio-economic infrastructure. This study will primarily deduce a core concept from various case studies hence proving that climate change is becoming a cornerstone and fulcrum of modern day and future International Relations[2]. While highlighting the connection of climatic destruction with a socio-economic conditions of people in the country this study in its core will highlight the domain of nontraditional security threats (climate change) to states. It will show how these looming issues with respect to environment will alter the international relations[3]. Discussing the dark realities will not only destroy the human resource but also starts a new war of blame game and the demand of

[1] Penny, Christopher K. "Greening the security council: climate change as an emerging "threat to international peace and security"." *International Environmental Agreements: Politics, Law and Economics* 7 (2007): 35-71.
[2] Spadaro, Paola Andrea. "Climate change, environmental terrorism, eco-terrorism and emerging threats." *Journal of Strategic Security* 13, no. 4 (2020): 58-80.
[3] Caney, Simon. "Climate change." In *The Routledge handbook of global ethics*, pp. 384-398. Routledge, 2015.

reparations for one's colossal loss due to the act of others. And who knows; that it may shift towards something really horrid[4].

Background

Climate catastrophes, abrupt rise in global temperature, seasonal shift resulting in the distortion of the entire food cycle, melting ice caps, rise of sea level, flooding, storms, and droughts are some of the horrific threats associated with environmental change[5]. The change, which is not confined to single state or actor but the scale of this issue is trans-continental and international thus leaving no individual safe. States are now facing more dangers from non-traditional realm than that of the traditional one involving the hostile acts of other state. The act of one state in destroying environment is not only confined to their own borders. The reach is beyond hence creating the overarching threat for states with low economic and social profile[6].

With more than 33 million people affected, 1730 lives lost and the staggering loss of around USD 14.9 billion to the GDP, Pakistan faced its worst environmental blow ever in 2022 flooding. The most effected sectors are agriculture, housing infrastructure, transportation and communication with most of the damage inflicted in Sindh. Sindh faced 70 percent of the overall damages followed by Baluchistan and others respectively i.e. Punjab and KP. As far as the main variable of this study poverty is concerned it is feared to rise by 4.0 percentage in a multidimensional way. This means around 9.1 million more people will be pushed below the

[4] Berrang-Ford, Lea, James D. Ford, and Jaclyn Paterson. "Are we adapting to climate change?." *Global environmental change* 21, no. 1 (2011): 25-33.
[5] Berrang-Ford, Lea, James D. Ford, and Jaclyn Paterson. "Are we adapting to climate change?." *Global environmental change* 21, no. 1 (2011): 25-33.
[6] Caron, David D. "When law makes climate change worse: rethinking the law of baselines in light of a rising sea level." *Ecology LQ* 17 (1990): 621.

poverty line[7]. Adding to the already fragile conditions of Pakistan's economy, the current flooding is inflicting its adverse effects for country's output. The trickledown effect of this calamity will not confine to just agriculture sector but to industrial, import-export, livestock, small businesses, and services sector is also facing a hard time striving. The prospective blow of this current flooding is looming around 2.2 percent of fiscal year 2022 Gross Domestic Product[8].

This study is crucial in the terms as it shows the correlation among climatic destruction and human sustainable development which is also a core goal of United Nations. In classical IR the governments are always focused towards the issues pertaining to the traditional realm of security. But recent climate related disasters gave a lesson that something reliable must be done in order to curtail these looming threats[9]. The governments are now laying some plans to build a better future for effected people but it is not possible for third world countries like Pakistan, Bhutan, Bangladesh, Afghanistan and some other states of sub-tropical regions to pursue all this on their own. In this regard international community must come in to help these states in building more resilient social, physical and management infrastructure thus mobilizing the domestic and international funds in a more focused way[10].

Taking the example of Pakistan, although there is no doubt that this flooding shook the core of Pakistan but it can also be taken as a lesson and a blessing in disguise hence building the ruined areas in a better and sustainable way. PDNA provided a proper ground work for the

[7] Devi, Sharmila. "Pakistan floods: Impact on food security and health systems." *The Lancet* 400, no. 10355 (2022): 799-800.
[8] Bhutta, Zulfiqar A., Shereen Zulfiqar Bhutta, Shabina Raza, and Ali Tauqeer Sheikh. "Addressing the human costs and consequences of the Pakistan flood disaster." *The Lancet* 400, no. 10360 (2022): 1287-1289.
[9] O'Brien, Geoff, Phil O'keefe, Joanne Rose, and Ben Wisner. "Climate change and disaster management." *Disasters* 30, no. 1 (2006): 64-80.
[10] Adger, W. Neil, Saleemul Huq, Katrina Brown, Declan Conway, and Mike Hulme. "Adaptation to climate change in the developing world." *Progress in development studies* 3, no. 3 (2003): 179-195.

rehabilitation of affected people, recovery of infrastructure, building more efficient disaster management system, competent governance structure and to manage the macroeconomics imbalances[11]. The framework provides a resilient recovery roadmap with its core focus on those areas which are effected the most. There is a great emphasis on the adherence to all major and minor international frameworks pertaining to environmental change such as UNFCCC, Kyoto Protocol, Paris Accords and Earth Summit[12].

These frameworks are also important in order to deduce a hypothesis of this study as they prove that states are now showing their concerns to climate related ills. Majority of the states are part of these frameworks but irony is that only few of them are adhering to their principles and yet they are affected because of the grave reason that nearly all of the major actors are violators. As a gist, it is important to meet the millennium development goals and all 17 sustainable development goals because every act of humans is in direct relation with the environment and ruining that would not be a wise option[13].

Literature Gap/Rationale

The literature review shows that environmental change and its associated ills is an emerging debate among the scholars of International Relations. In the past this problem was just confined to environmental science but now after knowing that it can inflict a colossal damage to socio-economic infrastructure of a larger population and state this has become the issue of high stakes.

[11] Rasul, Ghulam, and Bashir Ahmad. "Climate change in Pakistan." *Pakistan Meteorological Department* (2012).
[12] Knox, John H. "Linking human rights and climate change at the United Nations." *Harv. Envtl. L. Rev.* 33 (2009): 477.
[13] Robinson, John, Mike Bradley, Peter Busby, Denis Connor, Anne Murray, Bruce Sampson, and Wayne Soper. "Climate change and sustainable development: Realizing the opportunity." *AMBIO: A Journal of the Human Environment* 35, no. 1 (2006): 2-8.

Hence various states are involved and the acts of one state are causing their implications beyond borders so pertaining this, it is creating an aggravation in international relations[14]. Most of the studies carried out in this regard are way too general thus defining only the process and reasons for climate change. Hence no study in present is showing, what would be a new fulcrum of swiftly evolutionary International Relations.

A lot of novel researches on this domain highlighted various gaps which can be filled such as the alternative options for farmers while mitigating and adapting to climate threats, alternative sources of energy which may reduce climate damage, the actions governments must take to reduce carbon emission and a lot more[15]. Nevertheless, a lot of other debates are also present but again they are general in their nature. This research by taking the 2022 flooding of Pakistan as a case study will fill a major gap in this field. It will analyze the impact of climate change on human sustainable development by taking two main factors of Poverty and Food Insecurities thus starting a new blame game and fuss in international relations.

The main rational of this study will be to dig deeper in the domain of this non-traditional security threats and to analyze the correlation among these two variables i.e. 2022 flooding as an independent and Human Sustainable Development by taking Poverty and Food Insecurities as a dependent variable. The study will subsequently provide the possible remedies and recommendations which is the need of time. Methodologically, most of the researches regarding this issue are carried out in natural sciences and they employed the tools from quantitative and experimental research methodology. This research will employ the tools from non-experimental

[14] Underdal, Arild. "Climate change and international relations (after Kyoto)." *Annual Review of Political Science* 20 (2017): 169-188.
[15] Sprinz, Detlef, and Urs Luterbacher. "International relations and global climate change." (1996).

and qualitative research design as to provide an exotic blend of both fields thus not confining this study to just to causation but its implications for Human Sustainable Development.

Problem Statement

Environment is not the heritage of some individual or a country and damage to it is causing staggering issues for whole world. It must also be considered as the core domain in international relations because of its borderless nature. A lot of studies which were carried out primarily view this whole process through its periphery but the problem was in its core. Environment is common to all and one state damaging it means that all have to pay for it. Climate change is causing a serious implication for Human Sustainable development and it is not exaggeration in saying that this factor is the sole one playing its major role in downgrading the socio-economic conditions of people.

The literature review shows some of the studies carried out in this regard which are also not focused but in Pakistan this whole area left unexplored and neglected primarily in the domain of International relations despite of its core relevance with non-traditional realm. This research will be streamlined towards the impact of climate change on Human Sustainable Development by taking two main variables of Poverty and Food Insecurities in to an account. It will highlight that how this distortion in socio-economic conditions and Human Resource would start a new war of blame game in quarrel in international relations.

The literature review also highlights that there is no study in the field of International Relations which shows that the climate change is becoming and will be a core fulcrum of IR in future[16]. When this IR emerged, its corner stone was religion. People fought in the name of religion

[16] Luterbacher, Urs, and Detlef F. Sprinz, eds. *International relations and global climate change*. MIT Press, 2001.

and states were formed on religious grounds. 30 years' war is the best example that how religion remained a fulcrum of international relations for so long[17]. Then afterwards, alongside religion land acquisition and empire building took the position of pivot in IR and states competed with each other in the field of classical imperialism. In the similar way five Atlantic Powers colonized nearly the whole world[18]. Succeeding to this ideological competition and military might took the place and while passing through economic might and cultural imperialism this is the point when affairs between states will primarily base on climate related implications[19].

Ranging from the diplomatic bargains all the way to conflicts and even conflict resolution would be done considering the environmental leverage other can provide. Future wars would be for clean water, clean air, and clean energy and due to the reason of one state becoming the reason of climate destruction. When similar minded states make cartel to counter the opposing political and socio-economic structures; the states will now make groups against those states who are the main reason of climate change and distortion. And just as the concept of democratization the new concept may sound as "Climatization".

Hypothesis

The drastic climate change and the flooding of 2022 in Pakistan will be having its serious concerns for human sustainable development and socioeconomic conditions of affected population thus creating fuss in international relations.

[17] Asch, Ronald G. *The Thirty Years War*. Macmillan Publishers Limited, 1997.
[18] Semmel, Bernard. *The rise of free trade imperialism: Classical political economy the empire of free trade and imperialism 1750-1850*. Cambridge University Press, 2004.
[19] Gems, Gerald R. "Sports, war, and ideological imperialism." *Peace Review* 11, no. 4 (1999): 573-578.

Research Questions

- What are the implications of 2022 flooding in Pakistan on poverty and food insecurity hence deteriorating human sustainable development?
- How deteriorating human sustainable development in Pakistan will create fuss in its international relations?
- What are the measure taken by international frameworks to mitigate the impact of climate change on human sustainable development?
- How this grave predicament can be catered at national and international level?

Objectives

- To figure out and analyze the implications of 2022 flooding in Pakistan as an overarching climate disaster on Human Sustainable Development thus creating controversy in international relations.
- To provide solutions and recommendations for building a resilient socio-economic infrastructure hence ensuring the Sustainable Human Development thus reducing the increasing strain among states.

Significance of Study

The study at hand has both theoretical and practical significance attached to it. On theoretical grounds it aims to analyze the correlation of severe climate disasters such as 2022 flooding in Pakistan and human sustainable development. It opens a new domain which was visible yet invisible from the eyes of international relation theorists. Taking the case study of Pakistan

provides us with the most recent phenomenon which ravaged the whole country hence highlighting the potential of non-traditional security threats.

Moreover, this exotic blend of two fields opens a new door of knowledge to look in while providing solutions to the most horrific problems to humanity. Nevertheless, on practical grounds this study retains even more significance because it is the time when governments have to change their focus towards the non-traditional threats. They are proving to be a real problem which are not confine to some single state or individual. So this study provides those possible measures and recommendations which can be very helpful while building a more resilient socio-economic and disaster management infrastructure.

CHAPTER TWO: LITERATURE REVIEW/THEORETICAL FRAMEWORK

The awareness on climate change is now a days reaching high levels across the globe. In first World most of the news include some part highlighting the importance of this grave predicament and its associated ills. Scientists have cautioned a long time ago regarding the dangers of climate change and how it's going to effect the social affairs of people around the globe. During corona times this topic was almost forgotten by states and people but some of the theorists and scientists put emphasis on the gravity of this subject. They have mentioned the connection between number of ills and diseases and climatic change. They have stressed that the danger pertaining the environmental change is far worse than some pandemic thus inflicting the wide scale and global implications. Seasonal shift, distortion in wind's pattern, extreme weather conditions, cyclones, droughts, famines, flooding, food scarcity and safe drinking water are some of those issues which are even threatening the existence of mankind[20].

Nevertheless, one of the major component of this debate is the impact of this drastic climate shift over political and socioeconomic instability. This impact will change the whole living style of humans on earth thus erecting deep dead situations for them. Since the environmental change has been considered as the deadliest factor but most of the recent conferences are failed to take proper measures such as the recent conference of parties held in Madrid. The climate change effected the countries in a wide way and there are various reasons behind it but the most important

[20] McNutt, Marcia. "Climate change impacts." *Science* 341, no. 6145 (2013): 435-435.

out of them is the anthropogenic activities[21]. The role of human is the most crucial in the distortion of environment or we can say that the parasite in host planet earth is human kind. It is the sole factor primarily responsible for this drastic change hence deteriorating the socio-economic activities. We can take this whole process as a vicious cycle in which the anthropogenic activities cause drastic climate change and following the loop this environmental shift impacts the core affairs of humans at ground level. Such as the excessive use of fossil fuels have caused a huge emission of carbon dioxide becoming the reason for extreme global warming[22].

Direct and Indirect Implications of Climate Change

It is for sure that the direct implications of environmental change are extreme climate conditions. The rising global temperatures, melting ice capes thus resulting in the rising levels of seas, and due to this rise in sea levels more heat is trapped in water hence instigating more predicaments. Some of the other factors which are in direct result of climate change are droughts, hurricanes, famines, storms, heatwaves, wildfires and vicious frequent flooding[23]. As it is already mentioned that this change comes in the form of vicious cycle and these direct implications have their indirect concerns such as human health, large scale displacement caused by violent flooding, deterioration of exotic biodiversity, destruction of habitable lands and the bludgeoning of agrarian fields[24].

Public health, is one of the most affected areas by environmental change. The diseases caused by widespread environmental calamity is unbearable, the flooding not only destroy lands

[21] Changnon, Stanley A., Roger A. Pielke Jr, David Changnon, Richard T. Sylves, and Roger Pulwarty. "Human factors explain the increased losses from weather and climate extremes." *Bulletin of the American Meteorological Society* 81, no. 3 (2000): 437-442.
[22] ibid
[23] Abbott, Patrick L., and Claire Samson. *Natural disasters*. New York: McGraw-Hill, 2008.
[24] Bosello, Francesco, Roberto Roson, and Richard SJ Tol. "Economy-wide estimates of the implications of climate change: Sea level rise." *Environmental and Resource Economics* 37 (2007): 549-571.

and fields but also become a reason for many deadly diseases. Moreover, the socioeconomic condition of affected region also becomes the problem of an overarching scale. It is one of the most crucial areas as all other things are associated with it. The health of people, their livelihood, standard of living and the quality of food and water they consume solitarily depends upon this factor[25].

History of Climate Change

The history of climate change is as old as the inception of humans on the planet earth. The use of wood to get fire and emission of carbon through it was having its minute impact on climate. But at that time it was in proportionality with the healing process of planet. The main part of this nightmare dates back to the invention of steam engine by British ironmonger Thomas Newcomen at the dawn of industrial revolution. This new invention which on the one side boosted the economic and social growth of humans by its massive use at industrial level and then in transportation, this invention came up with a dark side as well[26]. The wide range use of coal as the major fuel stabbed the earth to its core. The emission of carbon and other toxic fumes was that much massive that it way too exceeded the sustainable proportionality of planet hence creating a huge difference in deteriorating and healing process.

One such factor instigating the environmental distortion was the rising population. In 1800, the population of world first time touched one billion adding a huge factor in already deteriorating climatic conditions. Meanwhile, the temperature of planet started rising at an exponential rate.

[25] Thakur, S. B., and A. Bajagain. "Impacts of climate change on livelihood and its adaptation needs." *Journal of Agriculture and Environment* 20 (2019): 173-185.
[26] Edwards, Paul N. "History of climate modeling." *Wiley Interdisciplinary Reviews: Climate Change* 2, no. 1 (2011): 128-139.

Joseph Fourier, the French physicist wrote a book in this regard in which he mentioned that the atmosphere of world is changing which is helping the light of sun to pass quickly while making its exit difficult[27]. He argued in his study that this is because of the presence of toxic fumes in our atmosphere which do not allows the repassing of sun rays when converted in to non-luminous heat, also called as infra-red radiations. It is important to mention here that the mixture of water vapors and various other gasses such as nitrogen and carbon create a blanket around the globe which is even more necessary for the plants than a cloth to man. This mixture creates greenhouse effect but the excessive presence of carbon in atmosphere will become a reason for the rise of global temperature by few degrees hence resulting in climatic destruction. This situation got push when in 1886, Motorwagan started the production of automobiles at a massive level which makes every car holder a responsible for the deterioration of environment[28].

Opposing view on main stream perspective on Climate Change

Alongside this a new group of scientists emerged who basically supported the use of fossil fuels because they thought the rise of carbon in atmosphere will help creating natural greenhouse effect hence helping increasing the production of crops. Some of these scientists are Svante Arrhenius, and Knut Angstorm. They believed that this emission of carbon would be beneficial for the future generations. Others argued that CO2 absorbs the part of infrared spectrum thus maintaining the global heat at balance[29].

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[27] Steiger, Robert, and Marius Mayer. "Snowmaking and climate change." *Mountain research and development* 28, no. 3 (2008): 292-298.

[28] Linden, Eugene. *The winds of change: Climate, weather, and the destruction of civilizations*. Simon and Schuster, 2006.

[29] Jylhä, Kirsti M., Pontus Strimling, and Jens Rydgren. "Climate change denial among radical right-wing supporters." *Sustainability* 12, no. 23 (2020): 10226.

While arguing they have just analyzed one part while leaving the other forgotten. They mentioned that the carbon emission would create natural greenhouse effect but did not realize that it will also rise the global temperature which is not suitable for the humanity[30]. Like wisely, the other also mentioned that CO2 absorbs the heat of earth but neglected the part that this heat is still in the atmosphere and not going out which makes it more dangerous as it at first hand allows the sun rays to enter atmosphere in an easier way by helping in ozone depletion and secondly it traps the inner heat while causing more problem.

The Population Bomb

During 1930s the population of earth increased to two billion. The yearly emission of carbon by industries and fossil fuel burning reached one billion tons. In late 1938, an English scholar did research and collected data from 147 weather stations around the world and thus in conclusion rejected the calendar effect which was given by Svante Arrhenius. The later proposed global warming as beneficial and argued that it helps delaying the return of ice ages.

The succeeding years saw an exponential rise in carbon levels. Many scholars and scientists such as US researcher Gilbert Plass, an oceanographer Roger Revelle and the chemist Hans Suess showed the prospective figures in which they predicted the rise of global temperature by 3-4C. Revelle also warned that our oceans are limited in the sense of carbon absorption and if pace will remain same, the atmosphere of planet earth would soon be flushed with carbon hence reproducing

[30] Dunlap, Riley E., and Aaron M. McCright. "14 Climate change denial: sources, actors and strategies." *Routledge handbook of climate change and society* (2010): 240.

catastrophic ills after that. In this regard, Charles David in 1958 also conducted research hence unequivocally proving the rise of carbon levels in atmosphere[31].

In the Lime Light

In 1960, it is for the first time when the advisory committee of US President warned that greenhouse effect and global warming is the "real concern". First conference on environmental change organized by United Nations in Stockholm mentioned only one agendum highlighting the pollution caused by dangerous chemical and nuclear testing. This all was done due to the overshadowing cold war at that time. As the world population reached four billion, an American scientist Wallace Broecher put the issue of global warming in public domain by writing his several research papers. Soon, the world population reached five billion in 1987 raising this issue in lime light hence highlighting the dangers associated with it[32]. The carbon emission reached six billion tons a year by that time and this marked the time when world saw the end of cold war and the concerns related to drastic climatic shift became the debate in international relations.

Organizations and Protocols

Although not a concrete step but Montreal Protocol restricted the use of dangerous chemicals which are responsible for the ozone depletion. In 1988 Intergovernmental Panel on Climate Change is formed to assess the damages caused by human activities. Succeeding this, a lot of other steps were taken down such as the speech of UK PM at United Nations in which she warned by saying that "We are seeing a vast increase in the amount of carbon dioxide reaching the

[31] Lam, David. "How the world survived the population bomb: Lessons from 50 years of extraordinary demographic history." *Demography* 48, no. 4 (2011): 1231-1262.
[32] Seddon, Nathalie, Alison Smith, Pete Smith, Isabel Key, Alexandre Chausson, Cécile Girardin, Jo House, Shilpi Srivastava, and Beth Turner. "Getting the message right on nature-based solutions to climate change." *Global change biology* 27, no. 8 (2021): 1518-1546.

atmosphere. The result is that change in future is likely to be more fundamental and more widespread than anything we have known hitherto." She also called the global powers and all states to formulate a concrete treaty in this regard[33].

As the emission of carbon reached six billion tons by that time the IPCC concluded its first report in which it is reiterated that the temperature of earth has increased by 0.3-0.6C over the previous century. In 1992 the Earth Summit was conducted in Rio de Janeiro in which states agreed to curtail their carbon emission under United Framework Convention on Climate Change. This convention later on extended to a formation of Kyoto Protocol which after so many issues came in to force in February 2005. In this protocol seven types of gasses were mentioned which are Carbon Dioxide, Methane, Nitrous Oxide, Hydrofluorocarbons, Perfluorocarbons, Sulfur Hexafluoride and Nitrogen Tri-fluoride. All party nations to this protocol pledged to reduce the emission by average 5% by 2012. By 2013 and onwards the several reports of IPCC have mentioned the humans as the sole major reason in the carbon emission and global warming[34].

Human Sustainable Development and Climate Change

During a worldwide action taken on the sustainable development goals till 2030, the agenda also incorporated the climate change as the major component. Nations pledged to take serious and immediate action in order to stop the planet from degradation. The sustainable development is not possible without catering the grave issue of environmental change as all of the other things are either directly or indirectly linked with this factor. The socioeconomic conditions are indirectly

[33] Carter, Neil. "The politics of climate change in the UK." *Wiley Interdisciplinary Reviews: Climate Change* 5, no. 3 (2014): 423-433.

[34] Houghton, John Theodore, Geoffrey J. Jenkins, and Jim J. Ephraums. "Climate change: the IPCC scientific assessment." *American Scientist;(United States)* 80, no. 6 (1990).

related to this crucial factor. The living standard of humans cannot be raised and their insecurities cannot be diminished without addressing this issue[35]. The rising sea levels, acidification of fresh water reservoirs, melting ice sheets, droughts, diseases, famines, storms and vicious flooding are some of the hurdles which are caused by environmental shift and are responsible for creating hindrance in Human Sustainable Development hence increasing poverty and other social disorders[36].

According to Dessler and Parosn in "The Science and Politics of Global Climate Change," the widely acknowledged and supported upper limit for CO2 content in the air is 350 parts per million (ppm) (to include policymakers, scientists and environmentalists). Policymakers, scientists, and economists may find common ground in the "Stern Report" (IPCC) on the topic. The second, improved edition of "Dessler and Parsons" is a great resource for context on this complicated topic. All of the writers have strong credentials that support their work, but Parsons in particular gets universal praise. Their explanations reflect their first-hand expertise of the scientific and policy intersection, which they both retain.

The study of climatic change as a result of greenhouse gas emissions is an important and complex topic, one on which scientists often have differing opinions. Yet, the writers state: "We would expect to hear strong contrasting opinions about what to do about climate change" due to the seriousness of the threats associated with climate change and the importance of fossil fuels in our global economy. According to their notification, "the quantity and intensity of contradicting

[35] Robinson, John B., and Deborah Herbert. "Integrating climate change and sustainable development." *International Journal of Global Environmental Issues* 1, no. 2 (2001): 130-149.
[36] ibid

statements produced regarding climate change is exceptional," especially considering the significant implications of the subject.[37]

The political ramifications of global warming are becoming more apparent, as Christopher Booker shows in "The Real Global Warming Disaster," and this has the potential to disrupt our daily routines. The book debunks the urban legend that multinational institutions like the United Nations' Intergovernmental Panel on Climate Change (IPCC) are being manipulated by a small group of wealthy climate scientists who are pushing a global warming agenda for their own financial benefit.[38]

The authors of the study "Impact of Climate Change on Agriculture: Empirical Evidence from Arid Region," Shakoor Usman et. Al., have speculated that the agro-based economy of Pakistan is facing serious threats from climate change. Changing weather patterns, especially in terms of precipitation and temperature, pose a significant risk to the agricultural economy. Using cross-sectional data collected from a well-structured questionnaire, the research tracked how local farmers were affected by climate change. We used a Ricardian strategy to examine the connections between the dry region's climate and NFR (NFR). Heat waves have a devastating effect on the region's agricultural output, according to the research. Additionally, it was anticipated that when rainfall increased, income would also rise. The overall effect of warming is more detrimental than the beneficial effect of precipitation.[39]

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[37] Andrew E. Dessler, Edward A. Parson, and School of Law and School of Natural Resources and the Environment Edward A Parson, *The Science and Politics of Global Climate Change: A Guide to the Debate* (Cambridge: Cambridge University Press, 2006).

[38] Christopher Booker, *The Real Global Warming Disaster: Is the Obsession with 'climate Change' Turning Out to be the Most Costly Scientific Blunder in History?* (London: A&C Black, 2010).

[39] Usman Shakoor et al., "Impact of Climate Change on Agriculture: Empirical Evidence from Arid Region," *Pakistan Journal of Agricultural Sciences* 48, no. 4 (2011): 1.

At the moment, the prospect of glaciers melting and the resulting increase in sea level is receiving a lot of attention. Glaciers may be melting due to the increasing global temperature, which is relieving pressure on the Earth. As a result, the planet may rebound, perhaps triggering earthquakes. The fact that sea levels are rising is a well-established fact. Coastal communities are particularly vulnerable to the various negative effects of sea level rise, such as flooding, property damage, human casualties, altered ground surface water levels, and ruined agricultural and infrastructure. The United Nations Environment Programme (UNEP) has identified Pakistan as one of the nation's most at risk from the effects of a rising sea level. With the current rate of sea level rise, which is between 1 and 2 millimeters per year, the coast of Pakistan will see a 50-millimeter increase in sea level in the next half-century (5cm).[40]

According to "Climate Change and South Asia: What Makes the Region Most Vulnerable?" authors A.K.M. Nazrul Islam, Salma Sultan, and Afroz, climate change is happening. South Asia is projected to be one of the world's most severely impacted regions by climate change, mainly because of its poor socio-economic development indices. This area is home to around 1.5 billion people, a significant portion of the world's impoverished. Because they depend on farming for a livelihood, they are susceptible to natural disasters including droughts, floods, storms, cyclones, and unpredictable monsoons. A worsening of the situation due to rapid industrialization has raised the possibility of a mass exodus to nearby less developed cities. Consequently, multi-tiered grand strategies must be developed and implemented immediately to address the threat of climate change. Building regional collaboration is essential for achieving this goal.[41]

[40] Mumtaz, 12.

[41] Islam, A.K.M. Nazrul & Sultan, Salma & Afroz, "*Climate Change and South Asia: What Makes the Region Most Vulnerable?*," MPRA Paper 21875, University Library of Munich, Germany, 2009.

Pakistan ranks 135th in the world for its contribution to total greenhouse gas emissions, which is a meager 0.43 percent. The hazardous consequences of climate change are already having an impact on Pakistan and will continue to do so in the future. Pakistan is ranked twelfth in the world due to its climate change and migration problems. Here are a few of the most significant effects: Thermostat Increase The world's average temperature rose 0.76◦ Celsius in the twentieth century, and 0.6◦ Celsius in the first decade of this century alone. Because of its geographical position, Pakistan has a typically intense climate, with predicted higher-than-average temperature increases compared to the rest of the world. A spike in solar radiation of 0.5 to 0.7% across the southern half of the nation and an increase in coastal mean temperature of 0.6 to 1 degree Celsius have also been seen.

It has been observed that the projected rise in temperature in Pakistan is anticipated to surpass the average worldwide increase. The PMD found average yearly mean temperature variations in Pakistan from 1960s-2000s and this rise in temperature is threatening the ecosystem. Similarly, in several regions of the nation, cloud cover is decreasing by 3-5% as sunlight hours increase, which might lead to temperature rises. Quetta has an annual high temperature of 0.057◦ Celsius, whilst Peshawar had a maximum of 0.019◦ Celsius. Islamabad has a wide range of temperatures, from 2 ◦ Celsius in January to 40 ◦ Celsius in June.[42]

A common issue to humanity is climate change, according to Ghulam Rasul's work "An Analysis of Knowledge Gaps in Climate Change Research" published in the Pakistan Journal of Meteorology. To lessen its impact, it will need a concerted effort from many countries and civilizations. In order to tackle climate-related issues on a national basis, scientists will benefit

[42] Muhammad Mumtaz, "National Climate Change Policy of Pakistan: An Analysis," (master's thesis, National Defence University, Islamabad,), 12.

from exchanging experiences via such collaborative endeavors. "The Task Force on Climate Change" is a supreme body that the prime minister of Pakistan has named. The Prime Minister chairs its regular meetings, which occur every three months and every six months.

Organization of climate change research, formation of research groups, identification of knowledge gaps, and collection of research findings for policy managers' use are all required tasks. Even while every company is competent enough to do the job, they most definitely don't get adequate training on cutting-edge methods. Additionally, the government has mandated that universities investigate various aspects of climate change; nevertheless, out of sixty universities, only one grants a Master of Science degree in meteorology.[43]

Water sensitivities and the impact of environmental issues on Pakistan's agro-based economy have been the subject of "Understanding Pakistan's Water Security Nexus" by Danish Mustafa, Majed Akhter, and Natalie Nasrallah, who argue that these factors contribute to political instability in the country. Increasing efficiency while decreasing inputs ought to lead to a resolution of the water shortage. The government makes the crucial choice to spend more cash to control water needs and provide everyone with excellent water services as water shortages worsen. The threshold shouldn't be water stress. Improving water management should be the end goal of the water sector's efforts to promote environmental sustainability and justice via increased economic efficiency. It will be a slow process, but the water sector has to undergo the right institutional changes to get it started.[44]

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[43] Ghulam Rasul, "An Analysis of Knowledge Gaps in Climate Change Research," *Pakistan Journal of Meteorology* 7, no. 13 (2011): 1.

[44]Daanish Mustafa, Majed Akhter, and Natalie Nasralla, *Understanding Pakistan's Water-Security Nexus*, (Washington DC: The United States Institute of Peace, 2013), https://www.usip.org/publications/2013/05/understanding-pakistans-water-security-nexus.

According to Asim Sajjad Akhtar, the Pakistan floods of 2022 were one of the worst natural disasters in recent memory, and they supposedly sparked a renewed sense of urgency to address the sources of human-caused climate change by reducing emissions. However, neither Western governments nor multinational firms have made a firm commitment to decreasing emissions significantly, providing enough climate and debt funding, or moving away from non-renewable energy sources. At the same time as they uphold colonial-era logics of expropriation and unequal development, the mechanisms of capital accumulation in postcolonial settings like Pakistan are decimating ecosystems that were already delicate.

An alternative hegemonic vision to the prevailing paradigm of growth is urgently needed in light of Pakistan's rapidly expanding population and the growing regressive nature of mainstream politics. With a particular emphasis on the floods that hit Pakistan in 2022, this Commentary challenges the concept of climate justice in order to engage the global political economy in dialogue with post-colonial demographic, ecological, and economic changes. among argue that the lessons learned from Pakistan's situation may be applied more generally to postcolonial South Asia and sub-Saharan Africa. These areas have among of the world's youngest populations and are also among the most at-risk from the effects of climate change.[45]

Considering the many ways in which nations have contributed to environmental deterioration, Kelly McManus argues in "The Principle of Common but Differentiated Responsibility and the UNFCC Climatic Special Features" that states have both shared and differentiated responsibilities. Developed governments embrace their responsibilities in the pursuit

[45] Aasim Sajjad Akhtar, "Climate Breakdown in Pakistan: (Post) Colonial Capitalism on the Global Periphery," *Journal of Contemporary Asia* 52 (December 2023): 1, doi:10.1080/00472336.2023.2279952.

of sustainable development on the global stage for several reasons, such as social pressures and the resources at their disposal.[46]

According to Rajmani Lavanya's "The Principle of Common but Differentiated Responsibility and the Balance of Commitments Under the Climate Regime," states should safeguard the climate for the benefit of future generations' development, taking into consideration their individual capacities and shared but varied responsibilities. Similarly, industrialized nations need to lead the battle against climate change.[47]

As per Mark Nevitt's " Is Climate Change a Threat to International Peace and Security?" the world's stability is in grave danger from climate change. According to a critical evaluation of the literature, the current climate protection systems are inadequate when nations face the very real danger of climate change to their own survival. On the other hand, climate change has the potential to elevate the dispute to the same level as those handled by the UN Security Council (UNSC). The requirements of Article 39 of the United Nations Charter on the topic are, therefore, met by climate change and the many issues it presents. If a governing body on the topic is ever needed, including climate change—which is addressed in Chapter VII of the UNSC—will aid in understanding the problem holistically and provide a solid foundation. The United States Security Council remains the most practical and generally accepted venue for addressing the persistent environmental

[46] Kelly McManus, *The principle of 'common but differentiated responsibility' and the UNFCCC*, (Washington DC: Climatico Analysis, 2018), http://climaticoanalysis.org/.

[47] Lavanya Rajamani, "The Principle of Common but Differentiated Responsibility and the Balance of Commitments under the Climate Regime," *Review of European Community and International Environmental Law* 9, no. 2 (December 2002): 121, doi:10.1111/1467-9388.00243.

deterioration on a global scale, notwithstanding the objections of emerging and least developed nations.[48]

In their article titled "Climate Change as a Threat," Caitlin Werrell and Francesco Femia from the Center for Climate and Security discuss the impact of climate change on Syria prior to the escalation of social and political tensions, which eventually led to a complex war. Cooperation in conflict resolution may be prompted by the anticipated impact of climate change, after the Arab Spring in Libya and potential water-security measures for enhancing climate resilience (s). All parts of the globe, including the Arab world, are seeing rapid transformations in population, economy, and politics. The governments there are working hard to provide the groundwork for future institutional growth. The fact that it is all taking place amid a period of extraordinary climate change just adds to the difficulty of establishing a solid basis.[49]

In "The Challenge of Understanding Accumulation," Stephan Lewandowsky, a professor at the School of Experimental Psychology and Cabot Institute at the University of Bristol in Australia, argues that while scientists' physical understanding of climate change has strengthened, the general public's understanding of the topic has strayed significantly from what is found in scientific literature. Obviously, social scientists should be the ones who do 90% of the study on climate change on a worldwide scale. Understanding the widening gap between popular perception and scientific fact surely necessitates the social sciences. The media's misguided efforts to "balance" scientific understanding with political strategists' claims, as well as the well acknowledged initiatives by influential groups to cast doubt on the reality of climate change, are

[48] Mark Nevitt, "Is Climate Change a Threat to International Peace and Security?," *Michigan Journal of International Law* 42, no. 3 (2021): 1, https://doi.org/10.36642/mjil.42.3.climate.
[49] Caitlin E. Werrell and Francesco Femia, "Climate Change, the Erosion of State Sovereignty, and World Order," *The Brown Journal of World Affairs* 22, no. 2 (Summer 2016): 1, https://www.jstor.org/stable/26534704.

just a few of the causes that contribute to this chasm. Climate change also calls into question our most fundamental assumptions.[50]

According to Le Dinh Tinh's "Climate Change: Just as Dangerous for South East Asia," the Southeast Asian area is in grave danger due to the lack of climate change policies. Polities in Asia aren't really struggling with the question of how to peacefully address the increasing dangers posed by climate change. Can Southeast Asian republics, with their limited resources, weather the storm of climate change and protect their already-fragile economies? The global gross domestic product is falling by 1.6% as a result of this move, or over $1.2 trillion. The fact that climate change may be a logical consequence of the rising probability of transnational conflict is a similarly unsettling issue. States may get embroiled in disputes over the acquisition of natural resources in response to the catastrophic pressures of climate change.[51]

According to a report by Arctic Risk, the high climate risk index score of 87.83, which shows susceptibility to long term climate risks, shows that Pakistan is still dealing with significant repercussions. Despite its geographical remoteness. Pakistan ranks 128 out of 166 nations on the SDG index, highlighting the difficulty of balancing environmental risks with sdg aspirations. According to the 2023 sustainable development report, Pakistan ranks 18th in the world for catastrophe, risk and 37th for social vulnerability. All made worse by the fact that arctic warming is occurring at a rate 4 times faster than the world average.

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[50] Stephan Lewandowsky, "The Challenge of Understanding Accumulation," *Shaping Tomorrows World*, May 5, 2018, https://www.shapingtomorrowsworld.org/dynamicsys.html.

[51] Tinh Dinh Le, "*Climate Change: Just As Dangerous for South East Asia*," (Commentaries No. 104/2013), *S. Rajaratnam School of International Studies*, June 25, 2013, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2283797.

Flooding, scorching heat and drought are some of the negative weather patterns that Pakistan is experiencing as a result of the melting arctic ice and changed jet streams. Flash floods and human lives are being threatened by climate change in Pakistan. A country situated at the Third Pole that is home to more than 7,000 glaciers. This situation is reminiscent to that in India. Important, sustainable development goals (SDGs) including health, gender, equality, and education, are impeded by these disturbances. Extreme weather events are putting pressure on Pakistan's infrastructure, human capital, and quality of life, all of which are crucial to the country's economic development and long term sustainability goals. Unpredictable weather patterns, impede infrastructure development, which in turn disrupts agriculture and leads to water and food shortages.

As a result of population displacement and educational disruptions, climate induced catastrophes hinder the development of human capital. In order to create successful plans that combine economic growth with sustainable and resilient development, Pakistan must first comprehend the worldwide effects of arctic changes. This would enable the country to meet the emerging climatic issues head on.[52]

It is anticipated that climate change would lead to human migration across international boundaries, since there is a connection between the two. According to the IPCC, climate change is the single most important factor driving human migration. More than 250 million people would be living in hotspots in Pakistan and Bangladesh by the year 2050, putting them in the path of extreme weather events. There is a great deal of room for migration-induced population redistribution, even though most people will need to adjust to survive. Developing nations and

[52] Arctic Risk, *Climate Crisis In Pakistan - Polar Insights*, (London: The Arctic Risk Platform, 2023), https://arcticrisk.org/insights/insights-pakistan/.

those on the list of the most vulnerable are understandably worried about the high likelihood of population displacement or forced migration. The migratory crisis is a direct result of climate change, which Pakistan has already experienced during the devastating floods of 2010 and 2011. Twenty million people were forced to flee their homes after the devastating floods of 2010 inundated a fifth of Pakistan.[53]

The article "United Nations Framework Convention on Climate Change: Impacts, Vulnerabilities and Adaptation in Developing Countries" from the Munich Personal Archive discusses how different developing nations are addressing the effects of climate change on their agricultural industries. Its goal is to provide popular examples from the area to assist rural center communities in adapting to climate change. The authors urge readers to prepare for the inevitable climate change by constructing agricultural systems that are resilient, adaptable, and productive. Given the uncertainty surrounding the possible implications of climate change, such as variations in average temperature and rainfall, it is unclear how well these adaptation measures would handle changes in agro-practices. Given that the majority of Pakistanis live in rural areas, it is critical that academic institutions and government agencies undertake more comprehensive investigations along these lines.[54]

In "UNDP Climatic Change Country Profiles; Pakistan," C. McSweeney, M. New, and G. Lizcano explore the current and future climate patterns in Pakistan and highlight the impact of climate change on the country's varied landscape. Depending on the terrain, Pakistan experiences varying average temperatures throughout the year. The southern and eastern regions, which are

[53] Mumtaz, 12.
[54] UNFCCC, *Climate Change: Impacts, Vulnerabilities and Adaptation in Developing Countries*, (Bonn: United Nations Framework Convention on Climate Change (UNFCCC), 2017), https://tools.niehs.nih.gov/cchhl/index.cfm/main/detail?reference_id=2377.

lower in elevation, experience warmer temperatures, while the northern regions, encompassing the Himalayas, experience the coldest temperatures (below zero degrees). Although Pakistan typically gets a meager 20 to 30 millimeters of rain per month, the northern Himalayan areas may receive as much as 200 millimeters.[55]

Pakistan has a serious fresh water shortage, according to the "Final Report on Climate Change" produced by the Task Force of Planning Commission, Government of Pakistan. Compared to 2003, when it was 1200 m^3/year, Pakistan's per capita river water in 1951 was 5,650 m^3/year. As the population continues to rise, it is projected that it will continue to fall until it reaches a concerning 800 m^3/year in 2026. Reduced water availability in Pakistan is predicted to lead to food shortages and heightened tensions between neighboring provinces and the federal government. Being a lower riparian country, Pakistan relies on nature and other nations for its water needs. India may try to further decrease the river flows in response to its own increasing water demand and water stress circumstances, which might escalate into a war. In the future, Afghanistan may also experience similar issues.[56]

While outlining the most important future impacts and vulnerabilities of climate change, the "IPCC Sixth Assessment Report: Climate Change— 2021" notes that most of the world's sandy coastlines have shrunk during the last century, with the steady and gradual rise in sea levels being a major contributor to this trend. Among the last thousand years, the most significant increase in global temperature occurred in the twentieth century. The most recent ten years have been the hottest of this century, according to the data recorded by experts. The National Institute of

[55] C. McSweeney, M. New, and G. Lizcano, "UNDP Climate Change Country Profiles," UNDP, last modified February 17, 2017, https://www.undp.org/publications/undp-climate-change-country-profiles.
[56] *"Final Report on Climate Change"* by Planning Commission, Government of Pakistan Task Force.

Oceanography has recorded a steady increase in sea level along the Pakistani coast, amounting to around 1.2 mm each year, since 1960.[57]

Theoretical Framework

Green theory is a critical framework that has been advocated by a variety of intellectuals, including Rachel Carson. Aldo Leopold, Arne Naess and others affiliated with green party movements across the globe. Eco politics, green theory or green political theory is a conceptual framework that places significant emphasis on grassroots democracy, social justice, and ecological sustainability. It addresses the human environment relationship and attempts to strike a balance between the preservation of the natural world and the satisfaction of human requirements. The constituents of green theory can be classified into four overarching principles;

Ecological Integrity

This principle exerts that humans ought to coexist with the environment in a manner that preserves the health and vitality of ecosystem. It advocates for the recognition of the rights of non-human species, the conservation of natural resources, and the preservation of biodiversity.

Social Justice

Green theory prioritizes social justice by defining fairness and equity. Its principles encompass the eradication of social disparities pertaining to resources, income, ethnicity, and gender among others. This element emphasizes the notion that environmental concerns are intricately linked to more extensive societal matters.

[57] IPCC, *Sixth Assessment Report — IPCC 58th Session*, (Interlaken: Intergovernmental Panel on Climate Change (IPCC), 2023), https://www.ipcc.ch/assessment-report/ar6/.

Sustainability

A fundamental principle of green theory is sustainability. This statement underscores the criticality of addressing current human necessities while safeguarding the capacity of future generations to do the same. This entails advocating for responsible consumption, implementing sustainable agricultural practices, and transitioning to renewable energy sources.

Grassroots democracy

The green theory advocates for facilitating local communities' participation in environmental policy-making and decentralizing decision-making processes by endorsing direct citizen participation in governance. It guarantees that decisions are formulated with the prospectus of individuals most impacted by them.

Green theory incorporates these principles into a holistic framework for policy-making and governance, promoting a more harmonious and equitable link between humans and the environment. It requires societies to undergo a profound transformation in their operational frameworks, prioritizing equitable wealth distribution and sustainability in both the political and economic domains.

The social fabric of the communities impacted by the Pakistani floods was probably profoundly altered. Equal and equal sharing of environmental benefits and costs is essential. Tenet of green theory, social justice premise. Poorer neighborhoods probably took a worse hit from the floods since they don't have the means to recover as quickly from natural catastrophes. Improving resource access, offering financial aid, and including these groups and decision-making processes are all examples of policies that may be put in place to help these communities. This would be a

step in the right direction toward protecting the most vulnerable from climate changes, negative effects. Meeting current human needs without jeopardizing future generations' ability to do the same is central to green theories, tenet of sustainability.

The floods may have caused disruptions to some biological processes, degradation of ecosystems and loss of biodiversity. The restoration and conservation of damaged ecosystems may be achieved by the application of policies that uphold ecological integrity. Use sustainable land management approaches, promote forestry efforts and facilitate wetland restoration. Furthermore, implementing these strategies will enhance environmental wellbeing and bolster the resilience of ecosystems against potential future flood events.

The floods in Pakistan have brought to light the critical importance of long term planning for the nation's growth. A few examples of what this may include are pushing for more responsible consumerism, fostering more sustainable farming techniques, and switching to renewable energy, to mitigate the effects of climate change on Pakistan. For example, the country may find renewable energy projects to guarantee food security, it could use sustainable agriculture methods. Local communities should be actively involved in decision making processes according to green theories, premise of grassroots democracy. This may include creating channels for the general people to have a say in the planning and execution of flood control measures in the event of the devastating floods of 2022.

The floods additionally brought to light the susceptibility of human systems, including health care, water distribution, and agriculture to natural disasters. As a result, in order to restore and preserve ecological integrity, it is necessary to implement policies that safeguard against the degradation and exploitation of nature, encourage the sustainable utilization of natural resources

and bolster resilience against environmental disruptions. Policy examples that could contribute to ecological integrity include the following. Ecological integrity is a assortment of moralities that stresses the human coexistence with nature to ensure the continued functionality of ecosystems. The impact of floods on Pakistan's natural ecosystems demonstrates how climate change has jeopardized the survival of numerous species and habitats by upsetting the global ecological equal equilibrium.

By implementing disaster risk reduction measures, the detrimental effects of flooding on vulnerable infrastructure and communities can be prevented or mitigated. Advocate for the implementation of agro ecological methods that improve food security, biodiversity, water conservation, and soil fertility, endorsing conservation initiatives that are community based and enable local residents to manage their natural resources in a sustainable manner, restoring degraded ecosystems that provide essential services for human wellbeing, including forests, wetlands, and grasslands, reduced the emission of greenhouse gases from sources, such as fossil fuels and others that contribute to global warming. An additional principle that underscores the significance of humans respecting the rights and dignity of every living being, irrespective of their distinctions or social standing is social justice. By examining the social repercussions of the floods on the communities affected in Pakistan.

One can discern how climate change has further compounded preexisting, societal inequities and injustices. The impoverished who lack access to fundamental services, including water, sanitation, health care, education, and means of subsistence were disproportionately impacted by the floods. Discrimination on the basis of gender, ethnicity, religion, or cast was also brought to light. Hence, in order to uphold social justice, it is imperative that we implement policies

that facilitate equitable opportunities for all individuals to engage in decision, making procedures pertaining to the adaptation and mitigation of climate change.

The following are some examples of policies that could aid in the pursuit of social justice, providing humanitarian and pecuniary assistance to those whose residences or means of subsistence have been destroyed by the floods, supporting women and adolescents who aspire to pursue education or employment opportunities in green sectors through the provision of scholarships or training programs, incorporating affirmative action policies into public institutions and private enterprises, such as quotas or reservations to assess marginalized groups, promoting discourse and collaboration among diverse stakeholders, including but not limited to religious leaders, government agencies, civil society organizations, and private sector actors regarding adaptation to and mitigation of climate change, adhering to principles of human rights, including but not limited to freedom of expression, assembly, association, and engagement in environmental governance. An additional principle that emphasizes the criticality of humans envisioning a future in which they can fulfill their present requirements while safeguarding the capacity of future generations to do the same as long term planning.

An examination of the impact of floods on Pakistan's long term development objectives demonstrates that climate change presents a significant obstacle to the attainment of sustainable development in a world that is is constantly evolving. Numerous infrastructure projects that are critical for social progress, environmental preservation, and economic expansion, including bridges, hospitals, power, plants, roads, and bridges were severely damaged by the floods.

Additionally, numerous sectors that are critical for the welfare of humanity were disrupted, including agriculture, industry, commerce, and tourism. As a result, long term planning

necessitates the implementation of policies that strike a balance between immediate requirements and future ambitions.

The following policies are examples of measures that could facilitate long term planning, establishing a nationwide climate change strategy that delineates precise objectives, benchmarks, metrics and obligations to tackle climate change challenges across all tears, capitalizing on renewable energy sources, including but not limited to solar, wind, hydroelectricity, and biomass in order to mitigate greenhouse gas emissions and bolster energy security, increasing productivity and efficiency by fostering innovation and technology transfer in green sectors, including intelligent agriculture, green transportation, and clean manufacturing, fostering mutual trust and solidarity by enhancing regional cooperation and integration with neighboring countries on cross border issues, such as water management and disaster response.

The green philosophy emphasizes the utmost importance of safeguarding the environment. To address climate change effectively, it is crucial that we adopt steps to reduce and alleviate its effects. In order to strengthen Pakistan's inherent ability to withstand floods, it is recommended that the government prioritize sustainable land use management practices, such as reforestation and the rehabilitation of marshlands. Moreover, the notion highlights the need to treat all persons equally. Impoverished areas are disproportionately affected by catastrophes caused by climate change. Pakistan needs to develop policies prioritizing vulnerable groups, guaranteeing them fair access to resources and meaningful involvement in decision-making. Establishing economic stability is of equal importance.

CHAPTER THREE: RESEARCH METHODOLOGY

This study will employ the tools from qualitative research design with some of the facts and figures to provide a solid ground for argumentation. Another reason to opt for this research design is to get the subjective understanding of the impact of drastic climate change on the field of International Relations. It is to find out that how climate change is becoming a new cornerstone and fulcrum of International Relations. Moreover, the expertise of my supervisor in qualitative research also became one of the core reasons behind the selection of qualitative study.

The main epistemological source of information for this study will be secondary in nature. The number of case studies from the flood ridden area would be selected through purposive sampling from non-probability sampling grounds. Moreover, the population of this study will be number of cases of people from flood ravaged areas while some of the relevant official sources will also be selected in order to analyze the situation on factual and objective grounds.

As a gist the exotic blend of this techniques would provide not only the ground realities but also a comprehensive analysis of situation. After the collection of data, discourse analysis technique will be employed to analyze and club the collected data to provide a comprehensive study while employing the relevant theoretical discourse. Lastly, while conducting this research all due protocols and ethics are strictly taken in to an account to ensure the integrity of study taken hereby.

Research Epistemology

The research primarily focused on the complexity of the equation of climate dynamics in the contemporary era where dangerous level of surging the flooding in Pakistan. It exemplifies its environmental impact and far-reaching effects upon global human development as well

international relations. By following polymorphic approach, the epistemological foundations are considerable to understand where primary focus is on the environmental studies. This impact to international relations for the development of the countries in the realm of social economic dynamics at the same time. With a sophisticated, elastomer-like perspective the research seeks to deal with diffuse non-traditional security challenges in an ever changing international environment.

From the premise that there are actual consequences of whether climate transformations will promote or hinder sustainable human development, this kind of research is going forward. Recognizing the concrete residue of 2022's flooding in Pakistan as a starting point, there is faith that empirical data and actualities are portable. The ontological position tends rather to realism, emphasizing an external reality which determines human experience. This framework has a pragmatic and adaptable stance. Using both qualitative and quantitative non-experimental methodologies, this study acknowledges the multifaceted nature of the research subject.

Climate change, poverty, and food insecurity are all linked together when viewed through the lens of quantitative approaches. Still, qualitative approaches like as text analysis in international framework agreements and case study analysis can offer deep insights into the complex relationships between these components. Concurrently, our research gains a qualitatively measurable component from quantitative measures of poverty, impact levels, and economic implications (effects on GDP).

The methodology of the research combines elements from pure sciences, social science and international relations. The study combines quantitative data for statistical analysis with the qualitative approaches of interviews, content analysis of policy documents and case evaluations. This eclectic approach is intended to capture the depth of phenomena investigated, and so aim for

a thorough exploration of research problems. Since this is actual research into a life-and-death crisis, ethical considerations naturally take center stage. It values the welfare and dignity of affected populations in Pakistan. Informed consent, confidentiality and cultural sensitivity are important parts of the research process. In addition, the study seeks to find ways of presenting results responsibly. It avoids sensationalist reporting and emphasizes that international cooperation must be key in coping with climate-related hazards.

This research aims to enrich the existing corpus of knowledge in international relations and climate studies. Through this detailed case study of the complex relationships among climate change, poverty and international relations that it seeks to illuminate, here is an attempt by such a work to fill in those gaps left open at present. This diversified approach provides a fine-grained understanding, enabling policymakers and scholars to accumulate subtler, complex knowledge. In the final analysis, the epistemology of research is designed to generate a thorough and systematic survey focused on interdisciplinary exploration into how climate dynamics impact sustainable human development as well as international relations in order to produce an integrated and textured world.

Research Strategy: From the Floods to Rain Making Unveiling Connection between Climate

The methodology of this study carefully slices open the framework linking major climatic evens, as showcased in last year's devastating monsoon flooding that struck Pakistan (proper) and its outreach implications for even more sustainable human development into practical ripple effects on international relations.

Its core strategy calls for a detailed qualitative case study of the flooding that affected Pakistan in 2022. The specifics of this environmental event are probed so as to be able shed subtle light on the impact upon human sustainable development and international relations. The research covers in depth, a comprehensive evaluation of international conventions on climate change including the UNFCCC and Kyoto Protocol. “The Paris Accords” or Earth Summit are also included. In this qualitative analysis, we intend to reveal the actions and responses of the international community in dealing with climate change's adverse impact on sustainable human development.

The exhaustive examination of these frameworks makes the research unique. To balance the qualitative depth of data, non-experimental quantitate data analysis is conducted for it. It involves analyzing economic losses, GDP impact, poverty rates and other quantitative data brought about by the 2022 flooding in Pakistan. A quantitative aspect is added by the use of statistical tools and methodologies, thus increasing the study's diversity in methods.

Thinking quickly on your feet research strategy encompasses the contributions of natural and social sciences without having a monolithic disciplinary view. Through integrating environmental science, international relations and socio-economic analysis to provide an all-around awareness of the highly complex phenomena being studied. This interdisciplinary integration makes the research more original.

Research Approach

This paper critiques Disaster-Acknowledgement toward Climate Improvement and Socio-economic Revival in Pakistan after 2021 Floods. To address what many have called for an integrated approach that integrates multiple disciplines, including international relations,

socioeconomics, and climate dynamics, the methodology has adopted an integrated approach. Adding new, insightful viewpoints and creative concepts to the academic discourse on these unconventional security concerns is one of the key goals. A qualitative case study focused on the floods in Pakistan in 2022 is the main field research methodology. This entails giving the causes, characteristics, and effects of the floods deep thought. By employing qualitative techniques such case studies, interviews, gap analysis, and document review, the research seeks to uncover not only the full range of socioeconomic consequences but also the local identity problems that arose in their international ties. A thorough understanding of the complex character of the topic under investigation can be achieved by emphasizing qualitative depth.

Content analysis of pertinent international frameworks on climate change, such as UNFCCC Kyoto Protocol Paris Accords Earth Summit, has been built using Abers's involvement with the commitment, influential thinking, and good energy. This qualitative evaluation aims to measure how governments, including Pakistan, apply and fulfill this commitment in real-world scenarios. Analyzing these accords' responses and commitments closely so reveals a pattern that is necessary to understand global shifts from climate-related actions toward international relations. This study also uses non-experimental quantitative data analysis to counterbalance the qualitative viewpoint. In order to do this, a variety of statistical data related to the flooding disaster that occurred last year will be examined, including changes in poverty rates, GDP growth implications, and economic losses. The aim is to utilize statistical tools to include numerical data into the overall effects and so present a full picture.

In order to establish an interdisciplinary synthesis, the research technique combines concepts from the social sciences and natural sciences. The interrelationships among environmental science, international politics, and socio-economic theory enable us to examine the

complex processes that led to this year's floods and their aftermath. The intricacy of this subject is reflected in the multidisciplinary approach, which will guarantee innovation in Cyber-Japan's study. Ethical considerations are fundamental to research principles. To properly report an analysis, one must uphold the strictest standards of integrity in terms of honesty and secrecy and show consideration for cultural differences. However, given the delicate nature of this subject, we must make every effort to conduct our work in an ethical manner in order to respect individuals who were impacted by the floods as well as to further research into what transpired during them.

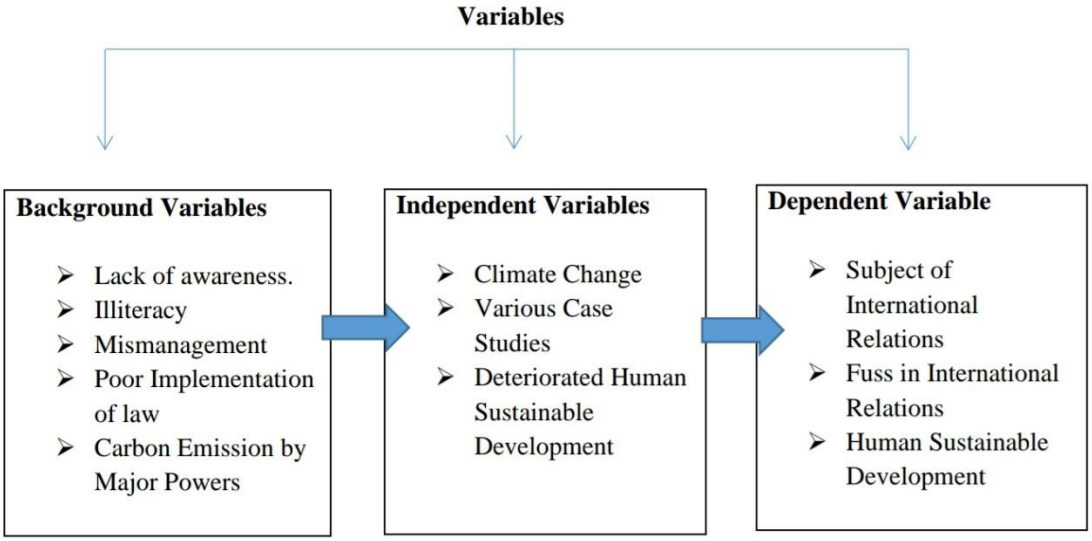
Innovative recommendations are produced by combining qualitative and quantitative data, which is another crucial component of the research methodology. Building resilient socio-economic infrastructure and addressing diverse climate concerns demands more than just analysis—it also involves doable recommendations. This research's innovative quality and forward-looking nature combine to produce data that is both pertinent for policymakers and helpful for global stakeholders. To put it briefly, the study material is multidisciplinary, deeply qualitative, and quantitatively focused.

Additionally, it sufficiently takes into account the ethical implications of various issues, which ought to be regarded as a fundamental presumption for any debate of revitalization. When these two methods are combined, a thorough understanding of the intricate web of relationships underlying Pakistan's 2022 floods can be obtained. Due to the fact that these non-traditional security risks have entered our global reality against the expectations of those who base their ideas on very different historical circumstances, the research thus places itself at the forefront of tackling these concerns.

Research Ethics

While conducting this research all due protocols and ethics are strictly taken in to an account to ensure the integrity of study taken hereby. All participants who have been involved in this research process have informed consent obtained from them. The information and data collected from participants will be stored securely. The sole purpose of the data would be to collect data for the thesis, and their information would not be shared except with a targeted audience. This research will be done within cultural, religious, and social boundaries, and sensitive areas will be tackled in a professional way so research ethics won't be disturbed. Accurate information will be written, and the way individuals give their opinions, it will be written according to their words; no change will be made.

Variables


Variables
Background Variables
Lack of awareness.
Illiteracy
Mismanagement
Poor Implementation of law
Carbon Emission by Major Powers
Independent Variables
Climate Change
Various Case Studies
Deteriorated Human Sustainable Development
Dependent Variable
Subject of International Relations
Fuss in International Relations
Human Sustainable Development

CHAPTER FOUR: FINDINGS AND IMPLICATIONS

Causes and Characteristics of 2022 Floods

The monsoon season of 2022 in Pakistan resulted in substantial rainfall, catastrophic flooding, and landslides, which had an impact on millions of individuals. Situated in all four provinces of the nation, the inundations impacted an estimated 15% of the populace. Recovery was arduous in 2023, and many affected individuals continued to struggle. Pakistan is confronted with some of the most severe disaster risks globally. Apart from the peril of inundation, the nation is also susceptible to the perils of earthquakes and the possibility of conflict. Furthermore, Pakistan's susceptibility to disasters is exacerbated by its social vulnerability, particularly its elevated poverty rates.[58]

The 2023 monsoon season further exacerbated the hardships endured by those impacted by the 2022 floods and hindered their recuperation. The southwestern provinces of Pakistan were devastated by torrential monsoon rainfall and flash floods from July 25-30, 2023. As of August 5, 2023, the catastrophe in four provinces had caused 283 injuries and 196 fatalities.[59]

Waters, according to Human Rights Watch, demonstrate the urgency of climate action. Pakistan, despite contributing less than 1% to global greenhouse gas emissions, ranks among the nation’s most severely impacted by climate change-induced extreme weather phenomena. Higher global temperatures were found to be a stronger predictor of increasingly frequent, widespread, and intense droughts and floods than naturally changing weather patterns, according to a study by

[58] CDP, *2022 Pakistan Floods*, (Washington DC: Center for Disaster Philanthropy, 2023), https://disasterphilanthropy.org/disasters/2022-pakistan-floods/.
[59] Ibid.

NASA scientists published in the journal Nature Water. As of September 6, 2023, only 68.2% of the $816 million requested in the revised Pakistan Floods Response Plan had been funded by donors.[60]

Numerous factors likely contributed to the catastrophe, including the socioeconomic status of those affected, precipitous gradients in certain areas, unanticipated embankment failures, and climate variation. Pakistan, despite allocating resources towards disaster risk management in the aftermath of the 2010 floods, failed to sufficiently equip its systems and institutions to confront the unparalleled magnitude of this climate-induced catastrophe.[61]

Global warming increased the probability of the 2010 flood event by causing more intense rainfall, according to one study. Further research from 2021 indicates that the south Asian monsoon is becoming more intense and erratic due to global warming. The Global Climate Risk Index positions Pakistan as the top nation in terms of vulnerability. Pakistan has accounted for a mere 0.4% of the global historic emissions attributed to climate change since 1959, while the United States bears the responsibility for the remaining 21.5%. Climate change, according to a group of international climate scientists from Pakistan, Europe, and the United States, increased the likelihood of significant precipitation in 2022.[62]

The devastated nation's economic situation further complicated the catastrophe. Pakistan encountered its most severe economic crisis since the British Empire in 1947. In July 2023, the inflation rate in Pakistan escalated by 3.46%, culminating in a value of 28.3%.[63]

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[60] Pakistan Finance Ministry, *Pakistan Economic Survey (2022-23) - Annex-III: Pakistan Floods 2022 Impact Assessment*, (Islamabad: Ministry of Finance, Pakistan, 2023), https://www.finance.gov.pk/survey_2023.html.
[61] Pakistan Finance Ministry, " *Pakistan Floods 2022 Impact Assessment*."
[62] Ibid.
[63] Ibid.

The suicide assault that occurred on January 30th at a mosque in Peshawar, the provincial capital of Khyber Pakhtunkhwa, which is among the provinces impacted by the floods, presents Pakistan with an additional obstacle as it initiates the execution of its strategies for flood recovery and reconstruction. Regular militant assaults have occurred in Peshawar, Khyber Pakhtunkhwa, where the Pakistani Taliban maintain a significant presence.[64]

Pakistan Floods 2022 Impact Assessment

Pakistan is extremely vulnerable to climate change, as evidenced by the floods of 2022, despite the country contributing less than one percent of global greenhouse gas emissions. This catastrophe has illustrated the manifestation of this susceptibility among the populace of the nation. Local, national, and international partners, in addition to federal and provincial authorities, have been diligently coordinating the ongoing enormous relief efforts across the nation since July 2023. A third of the nation has been submerged in water, affecting 33 million individuals. Reportedly, close to eight million individuals are displaced. The magnitude of the catastrophe in Pakistan surpasses the devastation caused by the flooding of 2010.[65]

The disasters have affected the weakest households in the poorest areas disproportionately. Particularly hard-hit have been those regions of the nation where human development outcomes were at their lowest levels prior to the floods. There is an opportunity to create a better future and do things differently as the nation recovers from this catastrophic event, particularly in regions that have not benefited from the progress made over the past two decades. In order to safeguard the nation's future, it is critical to strengthen Pakistan's capacity to withstand and recover from the

[64] CDP, "2022 Pakistan Floods."
[65] Pakistan Finance Ministry, " *Pakistan Floods 2022 Impact Assessment*."

adverse impacts of climate change, with a particular focus on the most impoverished segments of society. This can be achieved by confronting the root causes of vulnerability and reestablishing more effectively.[66]

Estimates of Damage and Loss Due to Flood 2022

The estimated damages amount to US$14.9 billion, the GDP loss to US$15.2 billion, and the overall rehabilitation costs to US$16.3 billion. Housing was hardest hit, incurring losses of $5.6 billion; agriculture, food, livestock, and fisheries incurred losses of $3.7 billion; and transport and communications incurred losses of $3.3 billion. At US$5.0 billion, the transport and communications sector has the greatest reconstruction and recovery requirements, followed by the housing sector at US$2.8 billion and agriculture, food, livestock, and fisheries at US$4.0 billion. Reconstruction and recovery expenditures are estimated to be 50 percent and 15 percent, respectively, in the provinces of Sindh and Balochistan.[67]

The direct costs associated with destroyed or damaged physical assets constitute damage. The valuation of the asset is expressed in monetary units, and the costs associated with repairing or replacing physical infrastructure and assets are estimated using the replacement price that was in effect prior to the crisis. Monetary losses are defined as alterations in economic movements caused by the catastrophe. Loss and devastation combined comprise the consequences of the crisis. While needs costing utilizes the monetary value of loss and injury, it does not equal the sum of those estimates.[68]

[66] Ibid.
[67] Ibid.
[68] Pakistan Finance Ministry, " *Pakistan Floods 2022 Impact Assessment*."

National Response and Vulnerable Segment

Vulnerable populations, including women, children, individuals with disabilities, and refugees, are anticipated to be disproportionately impacted by the floods due to their precarious living conditions and restricted availability of social protection and adaptive strategies. Existing gender disparities are likely to be further intensified as a result of the flooding' effects, which will expose significant differences in employment, education, safety, and decision-making. At present, over 800,000 Afghan migrants reside in districts of Pakistan that have been devastated by natural disasters.

It is probable that these refugees are less affluent than members of the community, possess fewer material possessions (including land), reside in settlements with inadequate fundamental services, and rely on humanitarian aid. In addition, 3.8 million individuals with disabilities reside in the districts affected by the disaster. Individuals with disabilities frequently encounter social exclusion, financial deprivation, and prejudice in areas such as transportation, housing, education, employment, and social services.

Significant losses to the means of subsistence, especially those associated with livestock and agriculture, have been borne by women. These setbacks have had adverse effects on their economic empowerment and overall welfare. Women are now more susceptible to gender-based violence (GBV) as a result of heightened household tensions, harassment, and abuse brought about by displacement and inadequate infrastructure caused by the flooding. The prevalence of coerced and child marriages tends to escalate following periods of economic stability and crisis. According to the United Nations Population Fund, 640 Thousand adolescent females are at increased risk of coercion, GBV, and child marriage as a result of the current crisis.

Furthermore, it is worth noting that certain population segments, such as Afghan refugees and displaced persons, may incur disproportionate losses due to the insufficient representation of these groups in national household surveys. In response to the issue of gender-based violence (GBV), the Pakistani government launched a nationwide activism campaign spanning sixteen days. Sessions and seminars on GBV Law Awareness were organized at various universities with the assistance of the Higher Education Commission (HEC), the Ministry of Planning, Development & Special Initiatives, and Federal Investigation Agency (FIA) Experts.[69]

Rescue and relief operations were promptly initiated by the Government of Pakistan, including provincial governments. At the federal level, NDMA and relevant agencies at the provincial level carried out these operations, with assistance from the Pakistan Armed Forces and various UN agencies in coordination with the MoPD & SI. In support of relief operations, more than 20,000 soldiers of the army participated, in addition to hundreds of helicopter and C-130 sorties. Hundreds of motorboats were deployed to facilitate the distribution of aid supplies to the displaced populace and conduct search and rescue operations in the affected regions of the country.

The Federal Government has funded flood relief with an allocation of 70 billion rupees. 63 percent of the total amount has been disbursed via BISP. Additionally, the government facilitated the distribution of an estimated 18 lac food packets, 3.5 million mosquito netting, 4 lac tents, and 3.5 million tarpaulins. With the assistance of the Armed Forces, NDMA, PDMAs, foreign aid, and humanitarian organization assistance, these endeavors were accomplished.[70]

On the directive of the National Flood Response Coordination Centre (NFRCC), the Ministry of National Health Services and Regulations subsequently revised a comprehensive

[69] Pakistan Finance Ministry, " *Pakistan Floods 2022 Impact Assessment*."
[70] Ibid.

health plan that had been developed, presented, and approved. Camps for medical treatment were established. In addition to provincial facilities and military medical centers, international and national organizations are involved in the medical endeavor. It was ensured that maladies in priority clusters were strictly monitored and that medications were advanced in affected regions. The comprehensive strategy has integrated solutions provided by Defence Science & Technology Organization (DESTO) local partners, including a water filtration facility, anti-malaria medication, and solar solutions.[71]

Ultimately, it is imperative that recovery-oriented programs and policies penetrate the most severely impacted regions and encompass all sizes of households. Support for livelihoods facilitates future income generation. Grants could ensure the viability of small-scale producers and contribute to the future food supply, particularly. According to international evidence, labor-intensive construction projects, including cash-for-work initiatives in infrastructure rehabilitation, have the potential to facilitate the restoration of livelihoods and create opportunities for income generation. Technical facilitation and skill development pertaining to climate adaptation and resilience in buildings should be incorporated into such initiatives.[72]

A large number of lives have been lost due to natural catastrophes in the area, which is responsible for forty percent of all disasters worldwide. In addition, flood-stricken Pakistan has also felt the full force of the health catastrophe. But for both wealthy and developing nations, the Sustainable Development Goals (SDGs) lay out an all-encompassing plan to combat poverty, insufficient food supply, poor healthcare, extreme weather, and other related problems. In instance,

[71] Ibid.
[72] Pakistan Finance Ministry, " *Pakistan Floods 2022 Impact Assessment*."

one of the SDGs is to put a stop to world hunger as a result of catastrophic weather events.[73] Regarding global environmental, socioeconomic, and governance crises, 2022 was undeniably a turbulent year. A major disturbance in the ecological equilibrium occurred this summer, resulting in calamities. Having said that, the floods in Pakistan were named the sixth most expensive climate catastrophe of 2022. The central dilemma in flood discussions is how to avoid catastrophes while protecting the environment.[74]

"In our approach, Pakistan has fulfilled the climate action target, since its energy-related emissions are below two tons per capita," said Guillaume La fortune, SDG index manager at SDSN, confirming that Pakistan has accomplished SDG goal 13. It must continue to take action against climate change. Goal 3, which concerns universal health and well-being, is also behind Pakistan's progress. The healthcare system is undergoing improvement efforts, but there is little hope that it can achieve this objective over the next seven years.[75]

Overview of 2022 Pakistan Floods

The melting of mountain glaciers triggered the floods, which were triggered by a heatwave and heavy rainfall. Extreme occurrences like floods may wreak havoc on land and infrastructure. Unfortunately, the nation had to deal with another big catastrophe last year, and the damage from the 2010 flood still needed to be repaired. Lots of land in Sindh and Punjab washed away in the devastating flood since nobody thought to take enough precautions. The nation was already in the throes of the worst political and economic crisis when the flood hit. During the crisis, the

[73] United Nations, "THE 17 GOALS," Sustainable Development Goals, accessed December 23, 2023, https://sdgs.un.org/goals.
[74] Muhammad Ali, "Pakistan UN SDGs, Catastrophic Floods Are a Public Health Crisis," *Creating Sustainable Advantage by Mastering Business Sustainability Planning and Plans | Awardaroo!*, December 11, 2023, https://www.awardaroo.io/sdgs/catastrophic-floods-in-pakistan-a-public-health-crisis.
[75] Ibid.

government's response was subpar because of the political unrest. Adequate assistance was not provided to the impacted individuals. Hyperinflation and food shortages ensued because essential policymaking was hindered by political instability.[76] However, the humanitarian catastrophe in Pakistan is becoming worse as floods keeps hitting the country. Dr. Brennan, the World Health Organization's Regional Emergency Director, said that humanitarian groups had an uphill struggle throughout this crisis. "The calamity has driven the nation to the edge and illnesses are epidemic," he said.[77]

Many people lost their houses and farmland in the flood, and it also killed a lot of people. The aftermath, which included food and water shortages, cost the nation more than $15.2 billion. The enormity of the flood destruction is becoming more evident as the skies clear in Pakistan.[78]

Impacts of the Flood on Health

Women Health Issues

After the health crisis of 2022, the situation was much more dreadful than the floods of 2010. Some 650,000 pregnant women were forcibly removed from their homes, forcing them to give birth in unsafe environments where they risked maternal malnutrition and inadequate medical attention. A lot of women who are menstruating or expecting a child are in a terrible position since there aren't

[76] Muhammad Ismail Khan, Tabindah Anwar, and Mariam Altaf, "Pakistan: Flood Damages and Economic Losses Over USD 30 Billion and Reconstruction Needs Over USD 16 Billion - New Assessment," World Bank, last modified October 28, 2022, https://www.worldbank.org/en/news/press-release/2022/10/28/pakistan-flood-damages-and-economic-losses-over-usd-30-billion-and-reconstruction-needs-over-usd-16-billion-new-assessme.
[77] Atlantic Council, "Pakistan's Political Crisis: Implications and Scenarios," podcast audio, April 2022, https://www.youtube.com/watch?v=JaaHzKQC9b4.
[78] Ibid.

enough maternity care and menstrual supplies. Because menstruation prevents women from using correct sanitary products, it poses a serious health risk because it may transmit diseases.[79]

The already difficult fight against diseases like COVID-19, dengue fever, and polio became much more so after the storm as a result of inadequate sanitation and water contamination, as well as the devastated health care system. The nation is experiencing a massive health catastrophe as a consequence of new born mortality, postpartum deficits, and the lack of medical personnel and medicines in flood camps where infants are being born. Additionally, women in flood-affected regions have a harder time getting to hospitals and clinics due to the inaccessibility of roads caused by the destruction of infrastructure. There has been a rise in polio and other viral infections due to the disruption of inoculation campaigns caused by the absence of communication with authorities.[80]

Malnutrition

Pakistan is home to 10 million undernourished children, as reported by UNICEF. In addition to having one of the world's worst rates of maternal mortality, almost 40% of women in Pakistan were already anaemic before to the floods. An epidemic of undernourished infants has recently emerged. Unfortunately, malnutrition becomes an actual concern when flooding continues to destroy crops and the roadways that carry food. Kids aren't receiving the nourishment and medical attention they need, which is stunting their development physically and mentally.

[79] Sonia Sarkar, "Pregnant Women Caught in Pakistan's Floods Struggle for Maternal Healthcare," *South China Morning Post*, April 24, 2023, https://www.scmp.com/week-asia/people/article/3199316/pregnant-women-caught-pakistans-floods-left-struggling-maternal-healthcare.
[80] Ibid.

There is so little food and energy that not even moms can breastfeed their babies. Food shortages and crop devastation will cause a national crisis, the effects of which are already visible in the increasing cost of staples like rice and wheat, but the disaster will have far-reaching consequences.[81]

Snake Bites

The loss of habitat caused by floods has affected both people and wildlife. Poisonous animals, such as snakes, spread their deadly illnesses as a result. Victims of deadly snake bites need immediate administration of anti-venom; yet, access to medical care may be impeded by flooding. At least 134 people in Pakistan have been bitten by snakes as a result of the floods as of August 30. One of these victims was a lady in the northwest region of Khyber Pakhtunkhwa who died from a lack of prompt medical treatment.[82]

Infectious Diseases

The floodwaters still can't be directed to the sea, according to the officials. Many illnesses and infections may thrive in stagnant water, including cholera, dysentery, dengue, malaria, and many more. Furthermore, many illnesses might be lethal in the absence of vaccination and medical treatment. The classification of illnesses into acute and subacute care settings was justified, considering that flooding has caused the emergence of several water and vector-borne diseases.

[81] "Nutrition," UNICEF, accessed December 24, 2023, https://www.unicef.org/pakistan/nutrition-0.
[82] Robyn White, "Woman Dies and Over 100 Others Bitten by Venomous Snakes in Pakistan Floods," *Newsweek*, August 30, 2022, https://www.newsweek.com/woman-dies-over-100-bitten-venomous-snakes-pakistan-floods-1738061.

Acute care facilities reported diseases such as diarrhoea, leptospirosis, and skin infections, while subacute care facilities reported respiratory infections, leishmaniosis, hepatitis, and malaria.[83]

It is common for people to have a hard time getting their hands on clean water after major floods. Sewer overflows in flood-prone locations, polluting drinking water and increasing the incidence of gastrointestinal illnesses, exacerbating the spread of infections in overcrowded shelters and places with inadequate sanitation. Most skin infections are caused by excessive humidity or by being in touch with polluted water for an extended period of time. Also, places that have flooded are ideal places for mosquitoes to grow, which increases the risk of diseases like dengue fever and malaria.[84]

Psychological Trauma

Vaccinations, adequate food supplies, and education are all negatively impacted for many children as a result of the flood's destruction. Given that the nation is already falling short of its educational goals, this might have a significant impact on its future progress. Due to the psychological and physiological effects of their ordeal, these youngsters will be unable to cope. Many instances of emotional trauma have also been left behind by the monsoon rains, which have caused disastrous floods.[85]

More than half of the youngsters impacted by the floods showed symptoms of emotional anguish, according to reports. Homelessness, educational opportunities lost, and loved ones killed

[83] Abid Hussain, "People Dying of Water-borne Diseases in Flood-hit Pakistan," *Al Jazeera*, September 20, 2022, https://www.aljazeera.com/news/2022/9/20/people-dying-of-water-borne-diseases-in-flood-hit-pakistan.
[84] Cheryl Alberts, "Manage Standing Water to Reduce Mosquito Disease Threat," *CropWatch (Institute of Agriculture and Natural Resources - University of Nebraska)*, July 17, 2019, https://cropwatch.unl.edu/2017/manage-standing-water-reduce-mosquito-disease-threat.
[85] Juvairia Yousuf et al., "Effect of Floods on Mental Health of Pakistanis: A Commentary," *Annals of Medicine and Surgery* 85, no. 5 (May 2023): xx, doi:10.1097/ms9.0000000000000590.

or injured are just a few of the ways in which catastrophes impact children's psychological and social health. Their minds and spirits will be haunted for decades by the insularity of their circumstances, the lack of access to education, and the constant threat of sickness and death from the skies above.[86]

Implications

"The water has stopped rising, but the danger has not, we are on the edge of a public health crisis," said Tedros Adhanom Ghebreyesus, director general of the WHO. Citizens of Pakistan, both at home and abroad, have rallied to aid those in need at this time of distress. Still, the scale of the calamity necessitates international assistance for the plight of those trapped in these terrible circumstances, who face constant danger of sickness, hunger, and death.

The county-wide food, housing, clothing, and health crises is reaching a fever pitch as the winters go on. The most significant obstacle is health care, which, if neglected, may eventually impact the whole nation. The water is a potential vector for the transmission of highly contagious diseases and viruses throughout the nation. Once a virus like measles or polio spreads, the government will have its hands full trying to contain the disease.

Preventive Measures for Disaster Management

To effectively organize a healthcare program during floods, it is helpful to have knowledge about typical health-related difficulties. The authorities have established around 4,210 medical camps to assist those affected by the flood. In order to ensure that individuals may safely escape before

[86] Ibid.

major damage occurs, digital media should provide early warnings on the consequences of flood catastrophes and flood forecasts.

Psychological First Aid

It is crucial to reduce the likelihood of psychological trauma as mental problems are prevalent. Psychological First Aid (PFA) and other public health initiatives may help flood victims in Pakistan recover from the emotional and mental harm they've suffered. Policymaking on mental health should be prioritized.[87]

Early Warning Systems

There has to be action to stop the spread of water-related diseases. Enhancing Early Warning Systems (EWSs) is a crucial step in preventing epidemic illnesses. Risk factors such as water contamination and sanitation, lack of healthcare facilities and suitable housing, and contact with disease vectors must be assessed in order to formulate policies and create strategies to reduce infectious disease outbreaks. At order to avoid the spread of mosquito-borne diseases like dengue and malaria, it is crucial to have rehydration fluids and anti-malarial on hand in healthcare facilities in areas prone to heavy rainfall. The public's health should be prioritized; thus, steps should be done immediately to disinfect water by chlorination and dispose of dirty water and other trash.[88]

The deluge has devastating effects on Pakistan's already-fragile healthcare sector, which is struggling to adapt. Some parts of the nation are still receiving water after one-third of the nation

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[87] Ling Wang et al., "Psychological First Aid Training: A Scoping Review of Its Application, Outcomes and Implementation," *International Journal of Environmental Research and Public Health* 18, no. 9 (April 2021): 1, doi:10.3390/ijerph18094594.

[88] Saud Bin Ahsen, "Disaster Risk Reduction: Early Warning System (Part II)," *Daily Times*, October 14, 2022, https://dailytimes.com.pk/1011958/disaster-risk-reduction-early-warning-system-part-ii/.

was submerged. Environmental problems in Pakistan are not something the country has caused. Acute climate concerns are faced by the nation, despite its contribution of less than 0.5% to global emissions. Climate justice, in the shape of global collaboration, is necessary in this situation to lessen the impact of these dangers on a large population. In order to reach SDG targets and lessen the impact of environmental patterns and save lives during natural catastrophes, the government must move quickly. Leveraging Pakistan's efforts and aligning its budget with SDGs is crucial if the nation is to accomplish the majority of these objectives and reduce the impact of several risk factors on its economy and health.

CONCLUSION AND WAY FORWARD

The terrible floods that swept over Pakistan during the monsoon season of 2022, followed by this year's onslaught of extreme weather, have lifted the lid on a spectacular story about humanity being attacked on all sides by climate change. But owing to this ongoing research, we are now familiar with the effects these disasters have on society in addition to their causes and characteristics. These kinds of challenges, it is evident, are quite complicated and call for an all-encompassing approach from us instead of one that concentrates only on specific objectives.

Pakistan had a disproportionately high ratio in terms of climate-change-induced catastrophes, despite its contribution to global greenhouse gas emissions being less than 1%. The nation's susceptibility to severe weather is demonstrated by the 2021 floods, which have impacted a quarter of the population, or about 37 million people, throughout all four provinces. The devastated flash floods and deluges of rain that characterized the 2023 monsoon season brought even more suffering to the impacted communities. Injuries, fatalities, and challenges with recuperation also occurred throughout this period.

Since Pakistan is one of the severely afflicted countries despite making relatively small contributions to global emissions, the need for global climate action is becoming more and more pressing. This is particularly related to the idea that rising global temperatures brought on by climate change are a better indicator of more intense droughts and floods, as scientists at NASA have seen. But as of September 6, 2023, roughly, when the Australian report was being prepared, only US $578 million of the US $816 million in total monies needed in the recently amended Pakistan Floods Response Plan had been pledged or given to contributors.

Undoubtedly, there are challenges in garnering backing for climate resilience. A number of factors combined to generate these deadly floods, including topographical gradients, socioeconomic strata, and embankment failures. Pakistan invested some funds in disaster risk management during the 2010 floods. Unfortunately, it was not prepared for the kind of disaster that struck in November and continued until August of this year. A major factor that increases the likelihood of extreme rainfall occurrences is global warming. Global warming made the south Asian monsoon particularly more intense and unstable.

Pakistan was in the midst of its greatest economic crisis since gaining independence in 1947, which was made worse by the floods' economic effects. In July of that year, the already faltering economy saw a spike in inflation to 28.3%. The complex interplay between social discontent, economic hardship, and natural calamities has occasionally even resulted in security-related issues. For aid workers operating in areas with a history of insurgency, the Peshawar mosque suicide attack on January 30, 2023, added a layer of complexity.

Pakistan's disproportionate susceptibility to climate change was brought to light by the 2021 floods study. Thirty-three million people were affected and about eight million were relocated, but only a small portion of the nation's emissions went up in the air. The poorest households in underdeveloped areas were disproportionately affected by these impacts, which outweighed those of the 2010 disaster. An equitable and targeted recovery strategy is clearly needed, since the already-present differences in human development outcomes have become even more pronounced.

Pakistan is at a critical crossroads in its future reconstruction and recovery efforts. Improving the country's capacity to withstand and recover from climate-related damage is imperative, as this research emphasizes, particularly for the more vulnerable landless classes.

In addition to addressing the underlying global imbalances that produce situations susceptible to climate stresses, internationalization is also understood in terms of providing logistical and financial support. In summary, our research has illuminated the many degrees of risk posed by the flooding that occurred in Pakistan in 2021—namely, the interplay between social inequality and climate change sensitivity and the global burden. The path ahead calls for international collaboration for sustained resilience in addition to a thorough plan that identifies the point of vulnerability and concentrates support on the communities' least equipped to handle it. In the endless tangle left by climate change, Pakistan's story of recovery is not simply a question of national urgency but also a global one.

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