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**A World in Harmony: Creating a Future of Mitigated Polarization
by Addressing Ongoing Crises**

GA3: Environmental

*Tackling the effects of mass floods in
South Asia*

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**RESEARCH
REPORT**



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Issue: Tackling the effects of mass floods in South Asia

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Introduction

South Asia is a subregion of Asia where heavy rain is a big part of the year. With the jungle and monsoon forests in the region, the subregion is open for floods and massive deluges for the majority of the year. In recent years, South Asia has experienced devastating floods that have caused widespread destruction and loss of life. These floods are often caused by a combination of factors, including heavy monsoon rains, poor infrastructure, and most importantly deforestation. Climate change is expected to exacerbate the frequency and intensity of floods in South Asia in the coming years, which could have devastating consequences for millions of people in the region without proper precautions for these events. All the countries in the region are classified as developing, thus the infrastructure in the region is not suitable for fighting mass floods. The south Asia region is home to some of the biggest and densest river deltas in the world which are ready to overflow with the heavy tropical and monsoon rains constantly occurring in the region. If we look at recent years we can see that the frequency and the size of these floods are only increasing. Most importantly in countries with huge populations such as India, Pakistan, and Bangladesh.

Currently, the global climate crisis is the biggest issue without a feasible solution. With the increased effect of climate change in one of the most populated regions of the world, it has started to cause a big problem with the place being covered in river deltas. Progressively, the effects are getting more severe. We can classify these effects into some main titles such as infrastructure, social, economic, and more. These are important effects but they are not as important as the loss of life caused by these disasters. For the aim of a perfect world, not being prepared for natural disasters like these is an important issue that we aim to solve.

Definition of Key Terms

Monsoon Climate: A monsoon is a seasonal change in the direction of the prevailing, or strongest, winds of a region. Monsoons cause wet and dry seasons throughout much of the tropics. Monsoons are most often associated with the Indian Ocean. Monsoons always blow from cold to warm regions. The summer monsoon and the winter monsoon determine the climate for most of India and Southeast Asia.

Levee: A levee is a wall along a river channel or other body of water that serves to prevent flooding by keeping water behind it and protecting the people from dangers.

Storm Drains: a system of pipes or channels that carry away storm and other types of water which can be used to also drain the water causing the floods before they become massive and cause problems to the people of the region.

Climate Risk: Climate risk refers to risk assessments based on formal analysis of the consequences, likelihoods, and responses to the impacts of climate change and how societal constraints shape adaptation options. The climate risk is only getting bigger and more dangerous these days.

Dry Spell: A dry spell is a drawn-out period where the weather has been dry, for an abnormally long time but shorter and not as severe as a drought.

General Overview

Mass floods in South Asia are a common natural disaster that occurs during the annual monsoon season, which usually lasts from June to September. The region is particularly vulnerable to flooding due to its low-lying terrain and high population density, which increases the risk of damage and loss of life and also causes significant damage to major infrastructure and crops. The floods have been known to cause landslides, destroy homes and cause displacement of people. This often results in severe economic loss, disruption to transportation and trade, and significant public health impacts. Several other main components which contribute to flood development are deforestation, snowmelt, topography, and precipitation. South Asia is a risky region, vulnerable to extreme weather due to its long coastline, generally low-lying lands, and river deltas which face more environmental risks and the high population density, particularly along the coasts.

The Effects of Climate Change: Climate change is expected to lead to more intense extreme weather events in the region. Warmer air can hold more moisture, implying longer dry spells as water remains in the atmosphere and heavier rainfall when clouds do eventually burst. But climate change is also expected to bring greater uncertainty regarding weather patterns. The central weather event in South Asia is the monsoon, to the region yet the specific ways in which weather change will affect the monsoon climate, which is a hard affecting weather system.

Social Factors & Effects: Mass floods in South Asia can have significant social effects on the affected communities. By mid-January 2023 because of the recent floods that happened in the west of the region 4 million children were still living near contaminated and stagnant flood waters, risking their survival and well-being. Hundreds of thousands of homes and many public facilities, water systems, and schools have been destroyed or damaged, due to this situation children are suffering from malnutrition and hygiene problems, this condition also affects their

mental health. Floods can also disrupt education, particularly for children, who may be forced to miss school for extended periods of time. Floods can cause significant economic losses, particularly for those who rely on agriculture and other forms of subsistence livelihoods. With some of these floods have a huge impact on people which can start with the loss of human life immediate impacts of flooding are loss of human life, damage to personal and state properties, destruction of the corps in the region, damage to the functioning of infrastructure and deterioration of health condition due to the waterborne diseases. Flash floods, with almost no warning time, can cause more deaths other than slow-rising riverine floods. As communication and infrastructure such as roads and bridges of the region are damaged, economic activities come to a stop, resulting in the dysfunction of normal life for a period of time much beyond the duration of the flooding.

Infrastructure: One of the other big effects of the mass floods is the damage to the country's infrastructure. Infrastructure is one of the most important things for a country. The effect of floods on infrastructure affects the speed of recovery from natural disasters. The region's current situation and the climate changes have shown that the situation will only get worse without the proper precautions taken such as a strong infrastructure.

Overall, mass floods in South Asia can have significant impacts that do require careful planning and support to mitigate. Without these, we can only expect the problem to grow with the current situation, and climate change is getting worse and worse every day.

Major Parties Involved and Their Views

Pakistan: Floods in Khyber Pakhtunkhwa killed eight people in January, however from June 2022, floods affected most of Pakistan, affecting around 33 million people, or 12% of the country's giant population. Over two million houses were damaged or destroyed by flooding, and over \$40 billion USD worth of damage has been caused. The Pakistani government and international organizations have implemented various measures to mitigate the impact of floods, including early warning systems, infrastructure improvements, and disaster preparedness and response plans. However, the frequency and severity of flooding in Pakistan continue to pose significant challenges for the country and its people.

Afghanistan: In May 2022, floods affected several parts of Afghanistan, killing 429 people. It was later reported that 182 people died due to flooding in August, as well as 40 people in July and 19 in June. From June to August, just as the country was recovering from an earthquake in Khost Province, floods hit again, killing 19 on June, 39 in July, and 182 others in August. As being mountainous we can think of Afghanistan as dangerous but actually, the country is not counted as a country with a monsoon climate. Thanks to the mountains present in the country melting snow in the region cause flood mainly in the spring and summer seasons.

Bangladesh: Since 17 May 2022, floods have affected parts of Bangladesh. At least 141 people were killed, most of them in the Sylhet Division. In October, Cyclone Sitrang caused an additional 35 fatalities. In recent years, floods have caused significant damage and loss of life in Bangladesh. In 2020, the country experienced some of the worst floodings in years, affecting over 5 million people and causing damage to crops, homes, and infrastructure. The Bangladeshi government and international organizations have implemented various measures to mitigate the impact of floods but the frequency and severity of flooding in Bangladesh continue to pose significant challenges for the country and its people.

India: Floods are the most lethal of natural disasters in India. Between 1980 and 2017, India experienced 235 floods, which led to 126,286 deaths and affected 1.93 billion people. The economic losses due to floods stood at a humongous \$58.7 billion. Floods in India are also the costliest among disasters, accounting for around 68 percent of economic losses caused by all disasters. Floods in India account for over 40 percent of the deaths out of all-natural disasters. Empirical studies have also shown that flood damage has a negative impact on economic growth in the long run and considerably reduces female employment opportunities most important in the agricultural sector.

Nepal: While Nepal is a landlocked country, it is prone to floods due to its rugged terrain and mountainous landscape. In Nepal, floods are caused by heavy rainfall during the monsoon season, which runs from June to September. The country's river systems, including the Koshi, Gandaki, and Karnali rivers, are also prone to flooding. In recent years, Nepal has experienced several devastating floods. In 2017, floods caused by heavy monsoon rains affected over 1.7 million people.

Sri Lanka: The country receives heavy rainfall during the monsoon season, which runs from May to September, and from the northeast monsoon season, which runs from December to February. Three deaths have been reported due to floods in Sri Lanka in June 2022, and hundreds of homes had been damaged. In October, an additional three deaths occurred and over 210 houses were damaged or destroyed. In 2016, Sri Lanka experienced its worst flooding in over a decade, with heavy rains and landslides affecting over a million people and causing extensive damage to homes and infrastructure. The floods caused significant loss of life, with over 200 people killed and many more missing.

ADB (Asian Development Bank): ADB initiatives on domestic resource mobilization, green recovery, energy transition, climate finance, and tourism revitalization aim to help reposition South Asian economies on a path toward sustainable recovery. ADB is one of the main investors and one of the main players in the industry of projects which prevents natural disasters (such as floods) from happening. ADB help the countries in the region by giving them advancements and funds for their development works for trying to be developed nations.

Timeline of Events

1893	<i>British Surveyor General Walter Lawrence mentioned that it was not just torrential rains, but the melting of snow peaks that often causes floods in the region. It has been noted that among all the Himalayan glaciers, the ones located in Kashmir and those which feed the Indus water system are receding fast.</i>
1974	<i>Bangladesh saw the biggest flood ever in the region with over 28.700 casualties recorded.</i>
2005	<i>Heavy rains across the state of Maharashtra, including large areas of Mumbai which received 567 cm³/m² alone in July 2005 killed at least 1,094 people. The day is still remembered as the day Mumbai came to a standstill, as the city faced the worst ever rain. The airport remained closed for 30 hours The expressway was closed for 24 hours.</i>
2011	<i>In Bangkok the government set up a sandbag wall that spanned over six kilometers in order to prevent flooding from high tides in November of 2011 this was one of the first successful projects concerning the matter.</i>
2020	<i>In 2020, floods have affected South Asia due to heavy monsoon rains. The floods caused \$105 billion USD of damage making it the costliest flood in modern times and the ninth of all time. In addition, there were 6,511 fatalities, the most reported in a flood since Cyclone Sidr flood in 2007.</i>
2022	<i>From January to October 2022, excessive rainfall and floods occurred in South Asian countries and It has become the region's deadliest floods since 2020 with over 3,700 people dead.</i>

Treaties and Events

Agreement on Rapid Response to Natural Disasters: The SAARC Agreement on Rapid Response to Natural Disasters was signed in 2011 by the member countries of the South Asian Association for Regional Cooperation (SAARC). The agreement aims to establish a framework for cooperation among member countries in the event of natural disasters.

SAARC Agreement on Rapid Response to Natural Disasters (1998): This agreement aims to promote cooperation among South Asian countries in the areas of disaster management, including flood response.

The Brahmaputra River Agreement 2020: This agreement was signed between India and China to establish a mechanism for sharing hydrological data on the Brahmaputra River, which flows through both countries and is prone to flooding.

The Indus Water Treaty, 1960: Establishes a water-sharing system between India and Pakistan. The Committee noted that under it India has unrestricted access to Eastern rivers while the water of the Western rivers can be used in a non-consumptive manner for agriculture and the generation of hydroelectric power. It noted that India does not fully utilize all accessible water of the Eastern rivers and the irrigation and hydropower potential of the Western rivers. The Committee recommended the government take necessary diplomatic measures to renegotiate the treaty with Pakistan to address the impact of climate change on water availability in the Indus basin.

Evaluation of Previous Attempts to Resolve the Issue

There have been some attempts to resolve this issue with treaties concerning the infrastructure fighting the floods and with early warning systems to help people evacuate if needed. There have been also evacuation plans and other types of infrastructure plans to resolve this issue. There are also some obstacles in old plans trying to resolve this issue such as but not limited to;

The problem of cooperation between the states and the countries in the region are often hit by a natural disaster together with a single disaster affecting more than one country. With some countries having political disagreements and even wars between them the states are not cooperating as well as they should have. The SAAC, the region's states, and the ABD may find solutions with contributions from more states in order to make more usable solutions. One example of this situation occurred in 1960 when the countries of Pakistan and India signed a treaty to resolve the problem of rivers between these countries. The treaty was effective at the time because with the treaty the countries knew which country is responsible for the parts of rivers crossing. This helped in the time of disaster with the countries knowing where to go and where to leave to the other countries' teams.

Corruption is still a huge problem in South Asia and the people who are responsible for the lack of attempts to resolve this issue are still far from taking action against this crisis. In Pakistan, the Prime Minister of the country and 70% of the cabinet are facing corruption charges, and flood management will be its last priority. This is one example of the many times corruption inside countries has affected the fight against floods.

The big effect of the issue tackling the effects of mass floods in a developing region with a lot of places with a high risk of flooding is hard. Some people are not comprehensive about the issue with them still making settlements in more risky parts of the region. The ADB, the member states, and other entities can try to resolve this issue by decreasing the population in more risky areas thus the effects of the disasters occurring. The Brahmaputra River Agreement in 2020 between China and India has looked at the effects of the problem and suggested feasible solutions regarding this issue.

Possible Solutions

As for the solutions to this major problem there are several possible solutions which we can list; *The reduction of usage of fossil fuels*, looking at the current flood areas we can see that they are related to the melting ice and rising water levels. Reducing the usage of fossil fuels can slow the melting of ice and prevent water levels to rise. The member states and the foundations may find ways to encourage and do agreements to reduce the usage.

The construction of infrastructure as the floods are not stoppable we can at least minimize the effects of the natural disaster. Seeing that a sizeable part of the effects and casualties were preventable with an acceptable infrastructure

More technical city planning is an important subject to developing nations. Without proper city planning the cities become overpopulated and are expanding near rivers and sea which are areas with a high risk of flooding. We're encouraging the SAARC and other entities and the member nations to find a feasible solution.

Raising awareness internationally, and recognition is important for a subject and the aid concentrating on this subject. With awareness and donations, we can expect the effects of the problem to shrink. International media and government-related social media may help in raising awareness.

Useful Links

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<https://www.ifrc.org/docs/idrl/N840EN.pdf>

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