

Threats of climate change to Pakistan, the way forward.

Outline

- 1) Introduction
- 2) An Overview of Climate Change in Pakistan
- 3) Major Threats of Climate Change to Pakistan.
 - 1) leads to frequent floods and environmental degradation
 - 2) ~~Badly~~ Badly impacting agriculture which causes loss to GDP.
 - 3) Causes huge infrastructural damage and loss of biodiversity
 - 4) leads to large scale migration which causes social unrest.
 - 5) Tends to increase ~~rate~~ unemployment leading to poverty and inflation.
 - 6) Worsen Sanitation System and enhances number of diseases
 - 7) Creates water dispute with neighbouring countries.
 - 8) Causes water scarcity bringing about interprovincial water conflicts.
- 4) The way forward to Mitigate Climate Change
 - 1) Updating policies and implementing laws
 - 2) ~~Implementing~~ Enforcing SDGs goals and boosting sustainable agricultural practices.

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- 3) Building more dams to conserve water and transisting to renewable energy sources
- 4) Encouraging afforestation.
- 5) Inculcating climate education in curriculum and vocational trainings
- 6) Hunting international co-operation
- 7) Seeking financial support from developed countries
- 8) Becoming part of international frameworks in mitigating climate change

5) Conclusion

Climate change has become one of the most pressing challenges that the world is facing, with far-reaching consequences for the environment, humanity, economy, and society. ~~The~~ ^{the} AS ~~Sec~~ Secretary-General of the United Nations said, "Climate change is the defining issue of our time - and we are at a defining moment." This reflects that climate change is not a distant threat it is a present day reality which requires strategic action, especially from the highly vulnerable countries.

Pakistan is one such country. Although being responsible for ^{less than} $\sim 1\%$ carbon greenhouse gas emission, but ranked top ten among most climate-affected nations in the world. Pakistan, a country already grappling with socio-economic challenges, climate change presents an even greater threat. It has triggered frequent floods, environmental degradation and massive

infrastructure damage. A significant loss in GDP due to decline in agricultural ~~prod~~ productivity. Moreover, destruction of sanitation system leading to waterborne diseases and biodiversity loss further destabilized ecosystems. These environmental crisis have forced large-scale migration, resulting in social unrest, increased unemployment, poverty, and inflation. Additionally, shrinking water resources have given rise to inter-provincial and international water disputes. Despite these grim realities, Pakistan can chart a sustainable path forward. This requires updating national policies, ensuring strict implementation of climate-related laws, promoting sustainable agricultural practices, constructing dams, and transiting to renewable energy sources. Increasing afforestation, inculcating climate education into academic and seeking support from developed countries. Although climate change presents a serious threats to Pakistan's economy, environment and society, but these challenges can be effectively mitigated through strategic planning, reforms and a international co-operation.

Pakistan despite being responsible for less than 1% gas emission, ranked among top ten countries to suffer due to climate change. Pakistan is experiencing a significant rise in temperature, due to climate change, with annual temperature increase approximately 0.63°C over the past century. This increasing temperature has catastrophic effects ranging from economic to social to environmental and health. In 2022, temperature soared above 50°C in several regions of Pakistan exacerbating climatic conditions leading to floods, heatwaves in many parts of the country. Moreover, projections shows that Pakistan's temperature could rise by 1.3°C to 4.9°C by the year 2090. Thus, it requires timely and comprehensive climate adaptation and mitigation strategies to overcome the catastrophic impacts of climate change and temperature rise. With rapid industrialization temperature rise will drastically impact Pakistan in the coming years which will lead to further exacerbate socio-economic conditions.

One of the most alarming consequences of climate change in Pakistan is the increasing frequency of floods. According to the National Disaster Management Authority (NDMA), Pakistan has faced ~~a lot~~^{many} of catastrophic floods since 2010, the most devastating flood occurred in 2022 impacting about 33 million people, caused around 17,000 deaths. In addition, melting glaciers in the north especially from Himalaya and Hindu Kush region lead to increase sea level increasing risks of floods. A report by Germanwatch's Global Climate Risk Index (2021) ranked Pakistan among the top 10 countries most affected by climate change. Moreover, environmental degradation is occurring due to deforestation, rapid urbanization and unregulated constructions^{which}. It has adversely impacted the ecosystems. In a nut shell, frequent floods and environmental degradation are occurring at a rapid speed and further exacerbating the situation in Pakistan.

Pakistan is an agricultural country where 19% of GDP depends on agriculture and employs over 38% of the labor force. This sector

is under huge threat due to climate change. Rising temperature, changing weather patterns, frequent floods and droughts are affecting crop yield and soil fertility. According to Pakistan Meteorological Department, the country's average temperature has increased by 0.6°C over the past century, this leads to heatwaves and change in climate. In 2022, the catastrophic floods destroyed crops on over 8 million acres of farmland, resulting to about USD 30 billion economic loss. The International Food Policy Research Institute warns Pakistan's agricultural output could decline 15-20% by 2050 if climate change is not taken seriously. In conclusion, this sector if remained unchecked could cause devastating effects for GDP, labor force and overall economy of Pakistan.

Furthermore, climate change causes huge infrastructural damages and biodiversity loss. Due to climate change temperature is rising which leads to glacial melting, causing floods, heavy rainfall that causes destruction to roads, buildings, bridges and dams. ~~For~~ As per reports, in Pakistan in

2022 floods over 2 million homes and 13,000 km of roads were damaged. Additionally, rising temperature causes polar ice melting leading to increase sea level which threatens coastal cities. ~~In~~ Moreover, ~~change in climate~~ climate change causes habitat destruction due to which large scale migration occurring for survival. It also ~~impact~~ disrupt breeding cycle, food chain and weather pattern, leading to extinction of species. In conclusion, climate change leads to infrastructure damage through extreme floods, huge rainfalls, rising ^{sea} levels, and extreme weather events, while simultaneously causing biodiversity loss by damaging habitat, food chain and weather pattern.

Not only that, climate change causes frequent floods, droughts and storms destroying homes and livelihoods which compels people to migrate and becoming climate migrants. For example during the floods of 2022 in Pakistan over 8 million people migrated. It also causes water scarcity, agricultural collapse due to prolonged rainfall, leads to food ~~to~~ shortage. Thus, to overcome these trouble people use to

migrate to other safe regions. This large scale migration in turn causes social unrest due to increasing competition for jobs, housing, healthcare and education. It also creates strain on public services, creating public dissatisfaction. Additionally, creates social unrest by increasing ethnic and cultural tensions due to large scale migrations. Hence, climate change triggers climate-migrants leading to social disturbance by creating competition, economic strain and identity conflicts.

Similarly, climate change intensifies floods, droughts and ~~alter~~^{alters} rainfall pattern, which reduces crop yield, ~~low~~ agricultural productivity due to which farmers loss their income.

Further, the floods also damage factories and industries which causes industrial shut down and loss of employment. Also, governments divert funds to climate recovery and cutting budgets for development and employment programs. For example, in Pakistan, "2022 floods over 30 billion US dollar loss to ~~crop~~ occur due to the huge floods. The increasing unemployment boost up poverty and inflation because fewer

people^{are} working due to which production drops, leading to scarcity of goods which enhances the prices. It also weakens the economy and a weak economy has weaker currency due to which ~~the~~ imports become expensive and prices of goods rise. On the whole, climate change is a major threat to source of income for the people which leads to poverty and inflation in the country.

Correspondingly, heavy rainfalls, floods caused by climate change overflow sewage systems and this untreated water becomes mixed with drinking water causing water-borne diseases. Same way, ~~the~~ dry areas struggle with maintaining toilets, and waste disposal. Additionally, rising temperature causes more decomposition which releases more foul odors and harmful gases. Not only that, the huge floods damage pipelines, treatment plants and worsen sanitation systems. It causes water pollution which spreads various diseases like cholera, typhoid and dengue etc. Moreover, it has bad impacts on mental health as it causes fear of disease outbreaks causing

stress and anxiety. In a nut shell, climate change has far-reaching impacts on sanitation system creating various problems related to health and hygiene.

In the same vein, due to climate change temperature is rising which leads to melting of glaciers initially, increases ~~the~~ water flow but eventually causes long-term reduction of water in rivers. In response to surface water scarcity, people start to extract ~~water~~ underground water rapid speed. This over-extraction of groundwater leads to depletion of underground water. In addition, climate change reduces groundwater recharge due to less rainfall, drought. Moreover, extreme climatic conditions cause drying of small lakes, and dams. This water scarcity creates interprovincial water conflict, when water is scarce provinces like Punjab may divert more water for themselves being ~~most~~ agriculturally active province. It also increases competition over water resources. Foreexample, Punjab and Sindh canal dispute. Furthermore, it fuels political narratives of injustice and marginalization. Foreexample, Sindh government has accused the federal

government of data manipulation in telemetry systems measuring water flow. In the conclusion, climate change pose huge threat to provincial harmony by creating various problems related water resources.

Another point is that, as Pakistan is already facing disputes over water with its neighbouring countries, climate change further exacerbate this dispute. The changing climatic patterns affects glacial melting, rainfall and monsoon patterns which leads to irregular river flows, and which causes floods, and thus complicating water-sharing agreements. Foreexample, Indus Waters Treaty between Pakistan and India. India is violating this treaty leading dispute between the two countries. Along with that, the Kabul river between Afghanistan and Pakistan. Glacial retreat and reduced rainfall are leading to the shrinking of water flow in the Kabul river, which causes droughts and water scarcity. Also, India is supporting Afghanistan in order to, create problems for Pakistan through building dams

in Kabul river which adds a geopolitical layer to the climate water-security nexus. In ~~sumo~~ summary, climate change is becoming one of the core factors in complicating relations with neighbouring countries through water scarcity, and creating disputes over water resources.