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# The Essay

## Climate change in Pakistan: Causes & Consequences

### Outline

1. Introduction
1.1. Hook / Grabber
1.2. General statement
1.3. Thesis statement: Pakistan contributes less than 1% of the world's greenhouse gases & yet it remains the fifth most vulnerable country to climate change and faces the brunt of it with each passing year.
2. Causes of climate change in Pakistan
2.1. Rise in human-led global warming
2.1.1. Burning fossil fuels such as oil & gas cause a large chunk of global emissions.
2.1.2. Fast-paced manufacturing industries and mining activities add to the woes
2.2. Expanding transportation sector
2.2.1 Growing traffic accounts for one-fifth of global carbon dioxide emissions
2.2.2. Automobiles such as trucks and cars degrade the air quality index
2.2.3. Emissions from planes & ships continue to grow
2.3. Rapid deforestation
2.3.1. Cutting down trees for the sake of fuel
2.3.2 Clearing out vast areas of vegetation for agriculture & ~~2.3~~ infrastructural development.
2.3.3. Production of food also emits greenhouse gases
2.4. Emergence of El Nino phenomenon across the globe
2.4.1. El Nino episodes every 5-7 years, trigger extreme climate events across the globe

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2.4.2 Results in unusual monsoon, lower rainfall & water scarcity in the South Asian region.

3. Consequences of climate change in Pakistan

3.1. Rise in extreme weather events

3.1.1. Rising temperatures with intense heatwaves in Summer

3.1.2. Heavy rainfall, catastrophic floods & severe droughts are becoming common.

3.1.3 Melting glaciers are rising sea levels & disturbing ecosystem

3.2.4. Economic consequences of climate change

3.2.1. Pakistan's GDP to reduce by 18 to 20% in 2050 due to climate-related events (WB).

3.2.2. Hefty reconstruction cost of damaged property and road network after destructive floods.

3.2.3. Loss of household income, assets & disease outbreaks impacted the most vulnerable groups.

3.2.4. The damage to the agriculture & livestock has been irreparable

3.3. Health implications associated with severe climate events

3.3.1 Water & vector-borne diseases spread more widely in floods.

3.3.2. More than 33 million people were impacted with over 6.6 million needing emergency medical assistance in 2022 floods.

3.3.3 Already overwhelmed healthcare system of Pakistan struggled to meet the needs.

3.4. Severe damage to transport and Urban sector

3.4.1. Increased stress on urban drainage system as a result of flash floods.

3.4.2. Heavy rainfall induced landslides rupture road network & health facilities

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3.4.3. Damage to sensitive government installations, residential and commercial properties.

3.4.4. Climatic changes such as extreme heatwaves pose safety risks to transportation workers.

4. Conclusion

We are the first generation to feel the sting of climate change and the last generation who can do something about it (Jay Inslee, 23rd Governor of Washington). In August 2022, melting of glaciers & torrential rains triggered the most devastating floods in Pakistan's history with over 33 million people affected by the floodwaters. World Bank reported 1,700 death, 12,000 injuries with hundred of people displaced & economic losses & reconstruction to cost around $40 billion. Being part of the South Asian region, Pakistan is already vulnerable to the severe impact of climate. Moreover, its geography of mostly arid & semi-arid land coupled with already higher temperatures make it more vulnerable. Pakistan contributes less than 1% of the world's greenhouse gases and yet it remains ~~the~~ ~~5th~~ 5th most vulnerable country to climate change & faces the brunt of it with each passing year.

One of the major reasons of climate-change is human activity which is driving the global warming. In a race to compete with each other, developing countries like China, India & Saudi Arabia are burning fossil fuels such as oil, coal & gas to run their industries and associated

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Services/businesses such as transportation. These emissions release large amounts of carbon dioxide and green house gases into the air which get trap in our atmosphere & cause global warming. These fossil fuels are by far the largest contributor to climate change accounting for over 75 percent of global green house emissions and nearly 90 percent of all carbon dioxide emissions (United Nations). Similarly, mining activities is a significant contributor as it provides these fossil fuels to countries. On the other hand, mining is not an easy task & require large chunks of earth to be removed by explosives or heavy machinery. These machines also run on fossil fuels such as oil and release carbondioxide and other pollutants, while explosives produce carbon monoxide, which also contributes to the global warming.

· With ever growing transportation sector, millions of cars, buses & trucks are on the road along with ships in the sea & airplanes in the sky. Traffic on roads account for one fifth of global carbondioxide emissions ~~while~~ which not only degrade the air quality index ~~of the cities~~ but also contributes to global warming. In this case, developed world is majorly to be blamed. In 2023, the united states became the biggest producer of transportation emissions worldwide by releasing/emitting

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the equivalent of 1.74 billion metric tons of carbon dioxide. Similarly, road transport accounts for about a fifth of European Union emissions too. Carbon dioxide emissions from planes & ships have grown rapidly over the past three decades. Currently, aviation i.e; air transport ~~(civil &~~ accounts for about 12% of total transport emissions while shipping contributes about 11%. However, these emissions from these two sectors since 2010, have increased faster than any other end-use sector ~~is~~ and is likely to grow further with increase in incomes. (United Nations).

Despite being the cause of major $CO_2$ emissions in the atmosphere, humans continue to act in ways that are even more ~~dead~~ detrimental to the environment. One such act is rapid deforestation. Humans cut down trees and burn them to use as fuel for cooking & other household uses especially in winter. Similarly, ^energy companies burn trees to make electricity that result in $CO_2$ emissions, devastated ecosystem and displaced wildlife. Forests are one of the best tools for fighting climate change & act as the best defense against impacts such as intense temperatures, landsliding etc. However, cutting them down is the worst possible thing humans can do to themselves & the planet. Likewise, humans also clear vegetation for agriculture & infrastructural development but do not make up for the lost land due to which the green areas reduce. Meanwhile, production of food

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is responsible for over a quarter (26 percent) of global greenhouse emissions. This includes emissions from land-use change, on-farm production, processing, transport, packaging & retail.

Apart from the human input, natural phenomenon such as ~~El Nino also has a direct impact & triggers extreme weather events across the globe.~~ El Nino, which is a recurring global phenomenon that triggers extreme weather events such as intense heatwaves, wildfires, droughts etc. El Nino is another reason which began in 2023 & still going on and has contributed to unusual monsoon, rainfall & heatwaves in Pakistan. This has not only intensified the weather patterns but is also driving food insecurity for millions of residents as it has a direct impact on crops.

~~Human-led~~ actions along with the El-Nino phenomenon has had devastating impacts across the globe, especially in underdeveloped countries like Pakistan. It has led to unprecedented changes in the geography, infrastructure, health, economy & transport sector of Pakistan such that it will take Pakistan years & billions of dollars to recover from the consequences & to prepare for the future years of even severe climate.

One very obvious consequences of climate ~~change~~

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Change is the visible difference in climatic events in recent years ~~in this decade~~. From rising temperatures to intense heatwaves, torrential rain, flash floods, melting glaciers, rising sea levels, disturbed monsoon & unexpected drought, this decade has seen it all. Recent rainfall in Naran-Kaghan & ~~Swat Valley resulted in~~ Balakot wreak havoc. The heavy rainfall triggered flash floods ~~as~~ which caused widespread devastation in these areas. Such that the rising floodwaters of Munawar Nullah swept away the bridge connecting the Kaghan valley to the central region. Similarly, flood waters entered cities & residential areas causing significant damage. ~~FA~~ Moreover fish farms in the valley were damaged & agricultural lands were badly affected. Several areas suffered from landsidding which led to the closure of Kaghan Highway. This is just one example of how severely climatic events impact the entire ~~country~~ region. Similarly, intense heatwaves & ever-rising temperatures in Pakistan broke all records. This year, 26 districts of the country swelttered in the intense heat. This heatwave not only accelerated the melting of glacier but also increased the risk of forest fires. Dawn reported the the world experienced 26 more days of extreme heat in 2023 - 2024 (mid).

All of this also has insane economic consequences which are hard to bear for a country like ours. World Bank has reported that Pakistans GDP

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is likely to reduce by 18 to 20% in 2050 as a result of climate-related events. Climatic events such as severe rainfall, floods, landsliding etc. hurts the most vulnerable first. These are people who are displaced as a result & cannot afford to get back on their feet, on their own. ~~As a result of damage in the effects of these climatic events, these~~ Such events damage their households, impact their income & their connectivity & communication with the other areas & regions. In majority of the cases, the land routes are also severely damaged. The cost of rebuilding is so hefty for a country like Pakistan, that these people can never go back to their ~~p~~ old lifestyle. Similarly, the damage to their agriculture & loss of their livestock is irreparable.

Events like flashfloods give way to the spread of water & vector-borne diseases such as diarrhea, cholera, e-coli, dengue, malaria etc. Back in 2022, floods, more than 33 million people were impacted, out of which 6.6 million needed emergency medical assistance which the already overwhelmed health sector of Pakistan couldn't provide as per the requirement. As a result, 1,700 people died. Moreover, thousands of pregnant women were unable to access maternity services & had no access to menstrual hygiene products in flood-stricken areas.



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Land routes, transportation & urban sector also face the brunt of extreme climate events. Heavy rainfalls strain urban drainage to the point that water gets accumulated on ~~roads~~ streets of roads & entire commercial & residential areas in extreme cases. Last month, heavy rainfall in Faisalabad inundated the low-lying areas & created problems for the pedestrians & residents. Similarly, heavy rainfall in Lahore disrupted the flow of traffic and long queues of vehicles even on main roads.

So, despite being a negligible contributor, Pakistan is extremely vulnerable to climate change. Therefore, it is important for the administration (govt) & people of the country to understand that climate is real, is going to stay & is going to wreak havoc in the upcoming years. For this reason, it is significant to prepare beforehand so that such events can be controlled & damage could be minimized.