

Climate Change and its Solutions

Outline

I, Introduction

II, Defining Climate and Climate Change.

II, Factors responsible for the degradation of

Climate

A, Natural causes

B, Anthropogenic causes.

IV, The implications of Climate Change.

A, Global warming: A phenomenon.

1. Case in point: The rise in earth's average temperature by 2°F (1°C) since the late 19th century. (NASA)

B, Extreme weather events.

1. Case in point: Hurricane Harvey (2017)

and Hurricane Katrina (2005), Pakistan floods (2022)

C, Rising sea levels

1. UN report 2023

2. A new capital born in Indonesia: Nusantara.

Focus on proper deconstruction of the statement
Bring further maturity in your arguments

Solutions to tackle Climate Change:

A.

1.

A, At national or local level

1. mitigation or adaptation measures

1.1. By Urban Climate adaptation through green-blue infrastructure, sponge cities and sustainable transport.

1.2, By Investing in energy efficiency and advocating for climate policies.

1.3, By ~~address~~ increasing the community participation in green projects.

1.3.1, 'Billion tree tsunami' project by KPK Govern

1.3.2, Peepaltrai village initiative in Rajasthan.

B, At regional level

1. By climate diplomacy.

1.1, Case in point: Smog - Punjab's fifth season'

C, At International level

1. By accelerating technology transfer and capacity building.

2, By generous and equitable flow of climate finance.
Case in point. NCAQ (COP-29).

VI, Conclusion

Add more arguments

REB3/2.

Komal was reminiscing about her garden home garden that was washed away due to the sudden glacial outburst in the Hunza valley, a few days back. The BBC showed an image of her sitting on the top of the jagged mountain, amid the rubble of her broken home.

A young ~~girl~~ ^{girl} like her should have been in school, ~~dreamer~~ Her eyes should be gleaming with the hope of future. ~~Instead of the hopelessness that was apparent in them.~~ But, instead there were only shadows of bleak future lingering in her ^{long narrow} ~~eyes~~ gaze.

The developing countries like Pakistan are at verge of such climate disasters. Pakistan stands fifth on the list of most climate vulnerable nations. A drastic change ^{has been} is noticed in the ^{last} few decades in

cyrosphere of the planet. The glaciers are melting at a rapid rate and threatening the ecosystems, destroying homes, businesses, ~~lifestyles~~ etc. According to

a latest report, the glaciers in the Himalayan region, also known as the third pole, are melting due to ~~slow~~ climate change. Climate change is ^{like} a chronic

disease which if not treated and managed ^{vigorously} ~~can~~ prove to be ~~extremely~~ fatal. ~~Its~~ Its symptoms are manifesting already in the most horrid manner.

In this regard, this essay will discuss the climate change, its causes, implications and will finally give solutions to halt its progression.

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REB3/2.

To start with climate change, one must know what is climate. Climate in a narrow sense is usually defined as the "average weather", or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period of time, ranging from months to thousands of years. The classical period is 3 decades, as defined by the World Meteorological Organization (WMO). These quantities are most often surface variables such as temperature, precipitation, and wind. Climate in the wider sense is the state, including a statistical description, of the climate system. On the other hand, climate change refers to any significant change in the measures of climate lasting for an extended period of time. It means that it includes major changes in temperature, precipitation, or wind patterns, among others, that occur over several decades or longer.

The changes or shifts can be natural, due to changes in the sun's activity or large volcanic eruptions. But since 1800's, human activities have been the main driver of climate change, primarily due to burning of fossil fuels like oil, coal and gas. Burning fossil fuels generates

The ~~previous paragraph~~ defined climate change, the ~~subsequent paragraph~~ will discuss the ~~causes~~ of climate change.

As ~~we~~ mentioned earlier, climate change can be due to the natural ~~causes~~ and anthropogenic causes. Although, the latter cause has statistically been more detrimental to the health of climate as per various studies ^{carried out} over the decades. The man-made ~~causes~~ factors include transport, industrial and agricultural emissions of large quantities of green house gases. These enormous quantities ~~are~~ when not adequately absorbed by the atmosphere ~~linger there~~ for a long time. These gases in turn trap sun's re-radiated heat and warm up the earth's surface temperature, causing significant ^{negative} implications for the life on planet.

~~In the earlier paragraphs we discussed the causes, while in the succeeding paragraphs the effects of climate change will be enumerated.~~

The first and the most catastrophic ~~cause~~ of repercussion of climate change is the global average rise in temperature near the earth's surface, called the global warming. This global warming is due to a phenomenon called the greenhouse effect, which is the trapping and build-up of heat in the atmosphere (troposphere) near the earth's surface. Some of the heat

Irrelevant details

PERB/2.

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flaring back towards space from the earth's surface is absorbed by water vapor, carbon dioxide ~~and~~, ozone, and other gases in the atmosphere and then re-radiated back toward the earth's surface. If the atmospheric concentrations of these green house gases rise, the average temperature of the lower atmosphere will gradually increase. The NASA estimates that the planet's average temperature has risen by 2°F (1°C) since the late 19th century. It also says that the most of the warming occurred in the last 40 years. The World Meteorological Organization says that the year 2024 is on the track to be hottest year on record as warming temporarily hits 1.5°C (1.3°C in 2023). Hence, global warming is the main effect of climate change. is the sudden

The second complication of climate change is the extreme weather events across the globe. increase in A number of floods, droughts, hurricanes and cyclones are associated with the climate change ^{as pointed out} by the leading scientific experts. For example, the extreme rainfall associated with Hurricane Harvey (2017) was due to the climate change. Also, in Hurricane Katrina in 2005, it was said the flood heights were 15-60% higher than they would have been in the climate conditions of 1900. The Pakistani floods of 2022 were not only due to the unprecedented rainfall that occurred

PER 3/2.

Upstream the river Indus which led to affected 33 million people and destroyed infrastructure worth 9 billion dollars. But, the question is why did the unprecedented rainfall occurred in the first place? It was undoubtedly due to the increase in the surface water temperature due to global warming. The warmer temperature means the atmosphere holds more water vapor and that makes rainfall more extreme and intense. Also, it is a well-known scientific fact that the hurricanes and tornadoes need more energy to become intense. This energy increases as the temperature increases on the ocean surface waters. Ergo, the rise in temperature of water bodies lead to extreme weather events around the planet earth.

The third effect of climate change is the rise in sea levels ~~at~~ ~~everywhere~~ everywhere. The United Nations in 2023 singled out Bangladesh, China, India, Pakistan and Netherlands as being at risk from rising sea levels, with nearly 900 million people living in low-lying coastal areas in acute danger. In regards to this, the ~~the~~ countries are moving their capitals away from the coastal areas. For example, Indonesia has planned to shift its capital

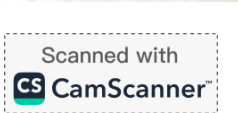
from Jakarta to Nusantara by 2045, because Jakarta is facing large swathes of Jakarta are rapidly submerging. It is estimated it could be fully submerged by 2052 due to land subsidence caused by the excessive ground water extraction carried out due to rapid urbanisation. To sum up, the rising sea levels pose a significant threat to the populations living along the coastal margins. The last arguments centred around the effects of climate change whereas, the upcoming paragraphs would revolve around its solutions.

The climate change needs to be tackled at national or local ~~level~~, regional ~~level~~ and international level through concerted efforts by all stakeholders. ~~through mitigation and adaptation measures.~~

The following are the solutions that can be employed at the national level for halting the climate catastrophe.

Firstly, urban climate adaptation policies in form of ~~sponge cities~~, blue-green infrastructure, ~~sponge cities~~, and sustainable transport will improve the community resilience and its adaptive capacity.

Blue green-infrastructure is a city planning term that means incorporating natural landscapes

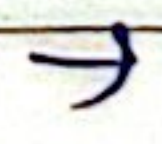


into public spaces (green) and combining them with good water management (blue). In turn, it reduces the heat island effect caused by the re-radiation of heat by the concrete infrastructure. It also improves the city's water quality and improves sustainable mobility with bicycle paths. By creating green-blue infrastructure, the urban runoff and water pollution are reduced. Finally, it becomes a safe habitat for biodiversity to thrive in. It includes sponge cities, water sensitive urban design and low impact development that mitigate the impacts of flooding and stormwater pollution. In addition to that, a network of sustainable transport system helps mitigate the environmental impact of the fossil fuels generated out of the transportation sector. An overhaul in this sector needs to include changes in the fuel quality by using high-end fuels like Euro five, enforcement of fitness standards to phase out polluting vehicles, development of mass-transit solutions, such as new energy vehicles, to reduce use of private vehicles and switching to electric vehicles. Summing up, urban climate adaptation needs to be carried out to mitigate and lower the impact of climate change on the national level by empowering the local communities with resilient infrastructure.

Secondly, the adaptive capacity of the community can be enhanced by investing in energy efficiency across sectors and advocating for climate policies that prioritize energy efficiency. Energy efficiency is the use of less energy to perform the same task or produce the same result. Energy efficient homes, buildings and industries use less energy to heat, cool and run appliances and electronics, and ~~energy efficient~~ to produce goods. It is thought to be one of the easiest and most cost effective ways to combat climate change.

Energy efficiency is also a vital component in achieving net-zero emissions of carbon dioxide through decarbonization. Efficiency in energy sector can be carried out by introduction of cutting-edge technologies, promoting circular economy and incorporating renewable energies into the energy mix.

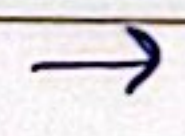
Similarly, the energy efficient methods and technologies can be used at homes and industries to make human activities less become less carbon intensive. For example, using usage of insulation over buildings or homes require less energy for heating or cooling. Choosing LED bulbs and energy efficient appliances, ^{Options like walking, biking and} public transportation, energy efficient vehicles ^{to be efficient.}



help mitigate the climate impact of energy use

like plug-in hybrids and fully electric vehicles. Along with this, there is a need to adopt a comprehensive policy on energy policy with its widespread implementation through regular checks and accountability mechanisms over homes and businesses alike. Additionally, providing clear and accessible information about the efficiency implications of technology options is vital in helping consumers make informed choices about the energy costs of what they buy and how they use energy. Ergo, energy efficiency, called the "first fuel" in clean energy transitions, provides some of the quickest and most-effective CO₂ mitigation options which can be implemented on all sectors simultaneously.

Thirdly, green-energy initiatives need to be employed at the community level. to drive sustainable development and resource efficiency. One of the most notable green initiative is the afforestation drive by the Pakistani government, called the 'Billion Tree Tronami' project, where the government planted trees to improve the ecosystems of degraded forest, farms lands in close collaboration with communities and stakeholders to ensure their meaningful participation through their services. Another story worth



mentioning in terms of afforestation measures by communities ~~as best practice~~ is the story of Peeplandri village in Rajasthan. It was once a village that was victim to denuded land due to marble mining. The soil fertility was very poor. ~~It~~ It ~~was~~ suffered intense heat waves. During such a hot summer, a 17 year old girl lost ~~its~~ her life due to bouts of dehydration. Her father, completely devastated by his loss, spearheaded a tree plantation movement. Today, it has gained an international recognition for its unique model where villagers plant 111 trees upon the birth of a girl child. The village has now more than 3,50,000+ trees and has become a boon to the environment and climate. Hence, it is evident that community ~~part~~ involvement is ~~the~~ ~~prime~~ key to unlock the healing ~~of~~ ~~climate~~ ~~the~~ ailing climate.
 ↓
 process

Fourthly a collaboration

The previous paragraphs were of ^{climate} solutions on the local level and the next paragraph would be about the climate solutions at the regional level.

Climate change is a transboundary issue so it needs cross border ^{climate} diplomacy and ~~more~~ collaborative efforts by governments to ~~stop its progression~~ mitigate its effects. ~~Let's take the~~ For example, the issue of smog between India and Pakistan's Punjab have started gaining traction in the political and environmental discourse between the two countries. Lahore's AQI reached 1300+, which was way above the ~~dangerous~~ ^{hazardous} levels described by the United Nations. Similar conditions were noticed ~~in~~ on the other side of the border with people choking ~~to~~ ^{the} pollutants mixed in the ~~breathed~~ ^{inhaled} air. Experts across the countries have suggested that ~~a need for~~ joint and collaborative efforts were needed by all stakeholders and governments to phase out the emissions and the new coal plants running ~~on the~~ along the ~~border~~ Raddcliffe line. ~~the~~ Moreover, the industries need to apply carbon capture and sequestration ~~and~~ carbon capture, utilization and storage ~~techna~~ (CCUS), which is an advanced iteration of the traditional CES technology. It focuses on capture, sequestration and practical application of the captured carbon, like turning it into plastics and biofuels, to mitigate emissions.

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So, ~~as~~ climate diplomacy needs to be at the forefront of political dialogues in order to safeguard the communities from the harmful emissions.

The following paragraphs will discuss the solutions at the international level.

At international level, there must be an acceleration in the technology transfer and capacity building of the affected regions. An investment should be made by the high carbon emitters ~~to~~ in green technical and vocational education and training (TVET) to support ^{the vulnerable people to achieve} sustainable development in core areas of ^{their} economy. These capacities need to be aligned with the climate goals, ^{skills} such as solar panel installations, modern agriculture and sustainable agricultural practices ~~etc~~ should be inculcated in the ~~affected~~ climate affected communities at the earliest. Hence, an investment in the capacity building of the most affected countries ~~needs~~ should be a priority ~~for~~ to facilitate of countries who contribute ~~significantly~~ largely to the carbon emissions devastating the global climate.

Furthermore, the Annex I countries or developing nations contributing to the greenhouse gases, as mentioned in the Kyoto protocol of 1997,

pledge

need to ~~make~~ ~~see~~ that the climate finance is flowing generously and equitably to help adapt the countries that are at verge of climate crisis. At the recent COP-29 conducted in Baku, Azerbaijan, the developing ~~to~~ economies demanded delivery of trillion dollars in climate finance ~~as~~ as the New Collective Quantified Goal (NCQG). ~~on climate finance~~.

If accepted this new goal will replace the old goal of \$100bn / ~~per~~ annually ^{to be} given to developing nations. According to UN estimates, the countries need \$5.8 trillion to fund their Nationally Determined Contributions (NDCs). These climate crisis-ridden nations demand these funds be given in terms of grants only and not loans, which was practiced earlier, as these nations are already indebted to the developed world due to their poor financial growth.

Climate finance is an "enabler" that can make climate action possible, as said by the United Nations. It is important because the countries ~~there~~ if financed according to their needs will not be ~~put~~ in a dilemma to choose between climate action and economic sustainability. This money will

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be used for mitigation and adaptation measures. This is in the form of building renewable ~~infrastructure~~ energy plants, increasing number of electric ~~vehicles~~ buses or constructing sea walls to protect communities against storms, rising sea levels or shifting to climate resilient food crops such as millets, etc. Summing up, the developed nations need to provide climate finance of trillions of dollars as the ~~new~~ NDCG to help the developing ~~economies~~ economies brace the impact of climate change.

The International Centre for Integrated Mountain Development estimated that if the current emissions continue, Himalayan glaciers could lose upto two thirds of their volume by the end of this century. One wonders how many youngsters like Komal will see their entire villages ~~be~~ swept ^{away} by the sudden glacial outbursts, not knowing that this climate catastrophe was not due to their sins or activities but due



the enormous emissions ~~excess~~ released by the industrial giants in the rich ~~economies~~ economies.
~~been~~ ^{fortunately,} it has a way out through sophisticated and harmonized emission mitigation and adaptation techniques, the developing countries can plug in the hole ^{that is} contributing to this climate devastation. Meanwhile, a sensitized and empathetic response by the developed nations in the form of sufficient climate finance ~~is~~ will contribute significantly to a ~~new~~ healthy and sustainable world. Keeping the above ~~ps~~ in perspective, this essay focused on climate change, its causes, ~~is~~ effects and finally layed down solutions to curb the climate ~~crisis~~ crisis.

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