

CLIMATE CHANGE AND ITS IMPACTS (OUTLINE)

A. INTRODUCTION

B. UNDERSTANDING CLIMATE CHANGE

C. IMPACTS OF CLIMATE CHANGE

1. Rising Global Temperature.

Earth's average surface temperature has risen by 1.2°C since the late 19th Century (National Aeronautics and Space Administration (NASA), 2023).

2. Melting glaciers and ice caps.

Arctic sea ice is declining at a rate of 13% per decade. (National Snow and Ice Data Center (NSIDC))

3. Rising Sea Levels.

Global Sea levels have risen by about 8 inches (21cm) since 1880 (Environmental Protection Agency).

4. Frequent and Intense heatwaves.

Europe's 2022 heatwave caused over 61000 deaths (Nature and Medicine).

India and Pakistan experienced heatwaves touching 50°C in 2024.

5. Increased frequency of Natural Disasters.

Category 4-5 hurricanes have doubled since the 1980s (National Oceanic and Atmospheric Administration).

6- Extreme rainfall and flooding.

Pakistan Floods (2022) displaced over 33 million people, causing \$30 billion in damages.

7- Health impacts and Spread of Disease.

Vector-borne diseases like Malaria and Dengue are spreading to new areas due to rising temperatures. (World Health Organization)

8- Economic damages and Insurance losses

Climate-related disasters caused \$213 billion in losses globally in 2022 (Swiss Re Institute)

Developing countries face GDP losses upto 11-14% by 2050 (Asian Development Bank.)

D- WAYFORWARDS

1- Strengthen global Climate Agreements

Enforce and enhance commitments under the Paris Agreement to limit global warming to 1.5°C

Promote cooperation through platforms like COP Summits and UNFCCC.

2- Transition to Renewable energy.

Germany's *Energiewende* policy to reduce carbon emissions by 80-95% by 2050.

3- Climate Education and Public Awareness.

Integrate environmental education into National Curricula.

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4- Enhancing Carbon Sequestration
Pakistan's 10 billion Tree Tsunami
project

E- CONCLUSION

If you destroy the Nature, Nature will destroy you. Nature is very unforgiving. (Modus Mathai) - This quotation emphasizes that ~~the~~ firstly human beings disturbed the natural phenomena and now nature is taking revenge. So, Present-day climate change includes both global warming - the ongoing increase in global average temperature - and its wider effects on Earth's climate system. Climate change in a broader sense also includes previous long term changes to Earth's climate. This definition of climate change is proved by Wikipedia. Furthermore, Climate Change can be impacted through Rising of global temperature. Melting glaciers and ice caps are the impact of climate change. Moreover, Frequent and Intensive heatwaves and Increased frequency of Natural Disasters are the impacts of climate change. However, Climate Change Controlled through Transition to Renewable Energy. Moreover, strengthen climate Agreements like COP, and Paris Agreement can be way forwards of climate change. In a nutshell, Climate Change is

one of the most challenging problem that humanity has ever faced. But, the good news is that the challenge of climate change is surmountable, as technologies supported by research to prove emitting green-house gases today stopped. Then the rise in global temperatures would begin to flatten within few days.

Understanding Climate Change is easy in the modern world because every third world country faces the challenges due to climate change. Let's understand the climate change with the help of definition given by United Nations Framework Convention on Climate Change: A shift in climate attributed directly or indirectly to human activities, altering the composition of the ~~least~~ global atmosphere, and exceeding natural climate variability. By changing in temperatures, world forest fires and melting of glaciers are due to climate change. According to European Copernicus Climate Service, Between 2015 and 2024, global temperatures were, on an average around 1.2°C above those of the late 19th Century. Through all these arguments climate change is

easy to understand.

In addition to, Rising Global Temperature is foremost impact of climate change. Rising global temperature leads to ~~wild~~ ^{forest} fires. Rising global temperatures are primarily driven by human activities, specially the release of greenhouse gases like Carbon dioxide and Methane. As, National Aeronautics and Space Administration (NASA) in 2023 report, reported that Earth's average surface temperature has risen by 1.2°C since the late 19th Century. El Nino also a climate phenomena which contributed to rising temperature during 2023-24. (According to Food and Agriculture Organization (FAO)). These reports highlight the rising to global temperature. Hence it can be controlled through modern technology.

Moreover, Melting glaciers and ice caps ~~are~~ ^{is} the another impact of climate change. By melting glaciers intensity of water increases and ice caps melt the weather would be ~~more~~ hotter. By melting glaciers the stability of earth would be damaged. Climate change impacts directly to glaciers and they are melting with high

intensity - As, National Snow and Ice Data Center (NSIDC) reported, Arctic Sea ice is declining at a rate of 13% per decade. Melting of glaciers create huge water, which causes the would be the cause of floods. By controlling climate change the stability of earth would be remain constant.

Furthermore, Climate Change created frequent and intensive heat waves. Heat waves made when temperature rises and recently temperature ~~rise~~ ^{rose} upto 54°C in 3rd world countries especially Pakistan. Heat waves directly hits and cause health issues to lower class who ~~are~~ ^{are} working on daily wages 10-12 hours under sun. Heat waves also caused deaths. As Nature and Medicine recently reported that In Europe 2022 heat waves caused over 61000 deaths. In developed countries if heat waves caused 61000 deaths then it will destroy the approximately whole nation in developing countries like India, Bangladesh and Pakistan. With the help of technology and emitting green-houses gases climate change can be controlled and it can be

possible to save the lives-

As, climate change increases, the frequency of Natural Disasters also increases. Natural disasters like flood and hurricanes created thousands of deaths and thousands of displacement. In displacement and deaths not only human beings included but also Animals, ^{and} Plants ~~and~~ Natural Disaster ~~create~~ destroyed ecosystem and also destroyed crops, and buildings. As World Bank estimates that The Sindh Floods of 2022 caused total damages exceeding \$14.9 billion and total economic losses reaching about \$15.2 billion. Over 22,000 schools were damaged and more than a 1000 people died and over 12 million about quarter of the province's population were affected. These losses of lives are unrecoverable. Natural Disasters directly hits the lives, crops and building, which causes economic, financial and social loss of the country. ~~For~~ ^{By} controlling climate change countries would be safe and prosper.

Although extreme rainfall is also one of the most dangerous impacts

of climate change. Extreme rainfall also created economic losses, which directly affects agriculture sector of the world. Pakistan is an agriculture based country. If extreme if a country which is totally based on agriculture and there extreme rainfall occurs, then the production of any would be affected. According to National Oceanic and Atmospheric Administration; Between October and mid-December, San Francisco recorded 7.95 inches of rain whereas Los Angeles received only 0.12 inches. These historic changes pointing out the changing of rainfall.

Additionally, ~~clim~~ Climate change indirectly impacts on health and spread of disease. Like, climate change causing disasters ~~and~~, rainfall and flood. which spread the diseases like Malaria, Typhoid, Cold and cough. During the flood 2022 of Sindh, most of the people were displaced and left their houses, due to rainfall water was gathered and that water created insects; Mosquitos which caused many patients and in 2022 flood hospitals were full of patients.

and there was shortage of medicine. As World Health Organization (WHO) recorded that vector-borne diseases like Malaria and Dengue are spreading to new areas due to temperature, rainfall and flooding. These diseases can cause the deaths. For controlling this, it is necessary to control Climate Change.

Lastly, climate change creates economic damages and Insurance losses. Developing countries directly hit by climate change which created Economic losses. As, a developing country which suffers from extreme rainfall, floods, Health issues and Natural disasters which destroyed the agriculture and for that country agriculture would be the basic and exporting product. According to Asian Development Bank; Developing Countries face GDP losses upto 11-14% by 2050. which is huge. On the other side, Swiss Reinsurance recorded that climate related disasters caused \$313 billion losses globally in 2022. For developing country, which is suffering

for the betterment and bear these losses then how that country would be prosper?

However, strengthen climate agreements, climate change would be controlled. climate agreements are Paris Agreement and Conference of the parties (COP) which ~~are~~ ^{have} been working on climate change by mitigation of carbon gases.

After implementing these agreements climate change has controlled.

In Paris Agreement every ~~has~~ country has limit to produce gases. But United States of America withdrawn from it recently, By claiming that climate change is not ~~disturb~~ the result of disturbance of humans. From these agreements implemented the temperature had controlled. **Before the**

Paris Agreement, some were predicting temperatures to go up by 4-6°C by 2100, Now (after Paris Agreement) the estimates sit around 2-2.8°C.

which is entirely significant achievement. After involvement of United States of America, it would increase the influence of Paris Agreement and decrease in

temperature.

Therefore, transition to renewable energy can also control the impacts of climate change. As, these traditional motor vehicles ~~it~~ creates air pollution through their waste, which directly hits the Ozone layer. By breaking of ozone layer human beings would suffer from ultraviolet rays which will cause of many diseases even deaths. Shift from motor vehicles to Energy vehicles, thermopower to solar energy can save the ozone layer as well as expenses of oil and petrol. As Germany's energien de policy to reduce Carbon emission by 80-95% by 2050. This is milestone achievement by Germany. If large contributors of Carbon emission make commitment like Germany. then no one can stop this world from prosperity.

Besides, giving climate education and public awareness, it can control climate change. System lacks because there is awareness program given by them to the younger generations. Even most of the University students have not ~~know~~ information regarding climate change and Global Warming.

Integrating National Curricula environmental education into National Curricula
can be the result of saving Climate Change and its impacts.

By enhancing Carbon Sequestration, climate change would be resilient. Carbon emission would be somehow ended. By focusing on afforestation and reforestation carbon emissions can be controlled through trees. Because, trees directly absorb the carbon and produce oxygen. Every country specially developing country should start carbon sequestration as Pakistan's 10 billion Tree

Tsunami project highlights the positive and optimistic approach towards controlling climate change and its impacts.

In conclusion, Climate Change caused through the activities of human beings. By using traditional motor vehicles, overpopulation, and industrialization. Climate Change can be controlled through afforestation and reforestation. By enhancing climate education and awareness climate change can be controlled. Investing in population control can mitigate

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climate change. Climate change can be controlled through strengthening international agreements like Paris Agreement and Conference of parties. In today's modern technology climate change is like a myth because shifting towards renewable energy and increase limitation toward carbon emission can make this world prosper.