NYMUN

UNEP- Study Guide

Assessing the Impact of Human Activities on Glacial Melting and Determining Fair Responsibility Between Developed and Developing Nations

Chairperson: Dhairya Shah
Vice-Chairperson: Labh Sharma

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I. Letter from the Executive Board

Greetings Delegates,
It is our pleasure to welcome you to the United Nations Environment Programme (UNSC) at the 3rd Edition of Nashik Youth Model United Nations.

The agenda for this committee *(Assessing the Impact of Human Activities on Glacial Melting and Determining Fair Responsibility Between Developed and Developing Nations)* has been extensively debated on since the 20th century. Yet due to various factors, including but not limited to: Strategic Resource Interests, Disputes over Financial Responsibility, Dependence on Fossil Fuels, , Unequal Development, Concerns Regarding Sovereignty, Domestic Political Pressure, and Geopolitical Rivalries, the international community remains unable to establish and enforce a fully unified climate framework.

While agreements like the *Paris Agreement* achieved near-universal participation, several nations struggled to meet emissions targets, many climate commitments remain non-binding in practice, and the inconsistent participation of notable nations, have led to the agreement falling short of enforcing a unified and global protocol. Such debates regarding climate finance, historical emissions viz. responsibility, and debates on equitable vs equal burden-sharing continue to shape international negotiations today.

You, the delegate, are encouraged to delve into the nuances of both historical and current debates presented by both state and non-state actors (climate organisations) regarding the distribution, extent, and enforcement of responsibilities with regards to curtailing the extent of climatic disruption as caused by various states, industries, and humanity as a whole.

We urge you to treat this study guide as the base of your research, from which you can build an understanding through which you can assess your own country's (Portfolio's) stance, involvement, and situation. And while the guide does provide a list of questions a resolution must answer, do not let that be the sole dictator of the limit of the solutions you provide, or even your scope of contents you plan on addressing overall.

Lastly, we would like to remind you that while artificial intelligence has become more advanced, and accessible than ever, we can still tell. Delegates are encouraged to never solely rely on AI for any purposes ranging from drafting speeches to research, as the dais reserves the right the question the delegate regarding the content of their speech, and test their research whenever deemed necessary. AI should therefore be used only in the capacity of assisting your main research and drafting efforts; using it as a substitute for critical thinking and diplomacy will only render the quality of your preparation lower than what it needs to be.

Best of Luck, we look forward to the debate you will bring to the table.

Regards,
Executive Board, UNEP

II. Introduction

The rapid melting of glaciers stands as one of the twenty-first century's most pressing climate change-related threats. "Water towers of the world," glaciers both stabilize global climate and provide crucial freshwater resources to millions of people globally. As the scientific community reveals ever more evidence for a rise in global temperatures fuelled by the consumption of fossil fuels, deforestation, industrialization, and inequitable patterns of growth, glaciers in virtually every region of the globe - from the Himalayas to the Arctic - are receding.

However, the melting of glaciers is becoming inextricably linked to issues of national security, food supply, fresh water, forced displacement and economic instability; low-lying island nations face the prospect of inundation due to sea level rise, while countries with major glacier-fed rivers worry about critical fresh water shortages to come. As such, the question of responsibility is at the heart of debates surrounding the issue of glacial melting.

The division in the international community concerning climate responsibility is large. Historically, the vast majority of greenhouse gas emissions are attributed to developed nations that industrialized in the eighteenth and nineteenth centuries. Conversely, the developing nations assert that they cannot be held responsible for an equal burden due to their relatively recent industrialization and need to address poverty and spur economic development. This debate has, since the establishment of United Nations-facilitated climate negotiations, framed current policy responses to global warming.

III. Historical Background

The origin of modern climate change can be dated back to the Industrial Revolution which started in the late 18th century in the United Kingdom before the phenomenon quickly spreading into Europe and America. The Industrialization had revolutionized economies by the adoption of coal fired industries, mechanized mass production and the use of large scale transportation systems. Although, immense economic and technological development was achieved, vast quantities of greenhouse gas were emitted into Earth atmosphere.

From 19th to 20th centuries, the industrial nations namely America, Germany, France and later Soviet Union increasingly depended on fossil fuel resources including coal, oil and natural gas for energy and consequently there was accumulation of the emission gases in the atmosphere which subsequently led to increase of the world temperatures. Scientists' understanding of climate change was very basic in this era and economic activities were prioritized at the expense of any precaution.

By the middle of 20th century scientists discovered a relationship between emission of carbons and increasing temperature. In the 1950's and 1960's researchers increasingly warned that excessive greenhouse gas emission into the atmosphere could influence world weather pattern and glacier melting. However, serious global concern towards the environment did not emerge until late 20th century.

In 1988, Intergovernmental Panel on Climate Change was set up by the United Nations and World Meteorological Organization to assess scientific information relevant to climate

change. In its findings, the IPCC identified humans as the primary driver for the increase in global temperature and glacier melting.

First major action taken towards climate change control was the adoption of the United Nations framework convention on climate change (UNFCCC) at the Earth Summit which was held in Rio de Janeiro, Brazil in 1992. The framework established the principles of common but differentiated responsibility (CBDR) which implied that all nations share the duty to preserve the atmosphere but developing nations carry more weight as they have historical accumulated emission burden.

This principle was crucial for subsequent negotiations. Developing nations claimed that industrial nations had prospered at the cost of the environment and hence they must bear the primary burden of emission reduction and climate change mitigation. Kyoto Protocol of 1997 put binding emission targets mainly for developed nations, but due to disagreement regarding obligation on the rapidly growing economies like China and India the developing nations still insisted on CBDR and the western world questioned the fact that developing nations were responsible for vast amounts of emissions.

Negotiations intensified further and finally in 2015, Paris Agreement was signed, according to which almost all nations had committed to hold the increase in global average temperature to well below 2 degrees Celsius above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels. Under the agreement, developed nations, as well as developing nations, presented their own Nationally Determined Contributions, but dispute over climate finance and technology transfer continued to remain an obstacle.

IV. Timeline of International Climate Action

1972 – Stockholm Conference
- United Nations Conference on the Human Environment becomes the first major international environmental conference.
- Established environmental protection as an issue of international diplomacy.

1988 – Establishment of the IPCC
- Intergovernmental Panel on Climate Change created by the United Nations and World Meteorological Organization.
- Tasked with assessing scientific evidence regarding climate change.

1992 – Rio Earth Summit and UNFCCC
- Earth Summit held in Rio de Janeiro.
- Adoption of the United Nations Framework Convention on Climate Change.
- Principle of CBDR (Common But Differentiated Responsibilities) formally introduced.

1997 – Kyoto Protocol
- Kyoto Protocol adopted.
- Legally binding emission reduction targets imposed primarily on developed countries.

2009 – Copenhagen Climate Conference (COP15)
- Major disagreements emerge between developed and developing nations regarding emissions responsibility and climate finance.

- Conference highlights growing divide over climate justice.

2015 – Paris Agreement

- Paris Agreement adopted by nearly all UN member states.
- Countries commit to limiting global warming to well below 2°C and pursuing efforts toward 1.5°C.

2021 – Glasgow Climate Pact (COP26)

- Countries strengthen commitments toward emission reduction.
- Increased focus placed on coal reduction, methane emissions, and climate adaptation funding.

2022 – Loss and Damage Fund Agreement (COP27)

- Historic agreement reached to establish a climate "Loss and Damage" fund for vulnerable developing countries suffering severe climate impacts.

V. Human Activities and Their Role in Glacial Melting

Now, human activities have been identified as the main causes of the observed melting of glaciers worldwide. One of the greatest influences is the large-scale release of greenhouse gases from the burning of fossil fuels. Greenhouse gases such as carbon dioxide, methane and nitrous oxide retain heat in the earth's atmosphere, causing the global temperatures to rise constantly, in what is termed the 'greenhouse effect.' As glaciers are highly sensitive to temperature fluctuations even small increase in temperature can have significant effect in melting rate.

Industrial manufacturing processes continue to account for one of the highest volumes of emissions. Large amounts of CO2 are released into the atmosphere from power stations, factories and other manufacturing industries. Emissions are intensified further by the transportation sector's reliance on gasoline and diesel. Aviation and shipping trades are also important emitters of atmospheric pollution.

Forest cover reduction is one of the other main factors which have resulted in increased rate of climate change and global warming. Forests absorb CO2 and act as natural 'carbon sinks' to keep the atmosphere balanced. However, clearing of vast areas of forests, predominantly for agriculture, mining and development, diminish the capacity of the planet to absorb emissions. Areas where development has rapidly outpaced the natural growth of forest cover are experiencing amplified rates of global warming, for example India and its surrounding areas which are struggling with the melt rates of the Himalayas.

Black Carbon is proving to be a particularly dangerous element in glacial melting. In simple terms black carbon is soot and its deposition on glaciers in the form of emissions from the burning of coal, diesel fuel, and biomass reduces the albedo of glaciers, meaning that glaciers are now absorbing more sunlight and are melting at an increased rate. Glaciers such as those of the Himalayas have been heavily impacted by black carbon and this contributes greatly to the melt rate.

Global increase in population along with consumption based lifestyles have also aggravated the problem. The richer countries tend to consume disproportionately high amounts of resources and hence cause high energy consumption and more waste production. Developing countries have an intensified need to produce energy with the rapid industrial development of countries such as India and the rapid rise in standard of living and energy usage.

VI. Current Global Scenario

Currently, glaciers are melting faster than any time in recorded human history. Nearly all major glacier systems on the globe are receding, according to the IPCC. The Arctic is warming four times faster than the average global temperature rise, and Greenland and Antarctic ice continue to melt by billions of tons a year.

Glacial melts in the Himalayas The "Third Pole" of the Earth The Himalayas hold the world's largest ice volume outside the poles and the water from the ice feeds Asia's largest rivers – including the Ganges, Indus, Brahmaputra, Yangtze, and Mekong. Almost 2 billion people across Asia rely on those rivers for water for drinking, agriculture and hydroelectricity. The rate of glacial melts in the region has led to the increasing threat of GLOFs (glacial lake outburst floods) across countries including India, Nepal, Bhutan, Pakistan, and China. Europe Melting ice on glaciers in the Alps has significantly decreased in recent decades. The Alps have lost one-third of its ice volume over the last 40 years alone, while some glaciers have completely disappeared. South America Andean glaciers continue to shrink and threaten access to drinking and irrigation water to millions of people across the region. "Andean glaciers are melting at rates that outstrip the rest of the world's glaciers," one report said. Alaska and Greenland Ice on Alaskan glaciers are melting rapidly. The Greenland ice sheet continues to lose billions of tons of ice each year, which directly contribute to sea level rise. Small island developing states (SIDS) Maldives and Tuvalu, for example, are among the most vulnerable nations to climate change, even though they are contributing so little to the emissions causing it. The land of these islands are disappearing and their future is uncertain. But a strong debate continues over responsibility for emissions. Developed nations have pushed for immediate universal climate action, citing rapidly rising current emissions in the developed world and major economies, whereas developing countries emphasize the historic emissions of wealthy nations and call for "climate justice ." Many developing nations say drastic emission cuts will hamper economic growth and poverty reduction efforts. Climate finance remains a sticking point Climate financing, where developed countries are expected to provide funds to developing countries to help them adapt to climate change and to invest in cleaner technologies, has become another sticking point. Wealthy nations pledged to provide $100 billion annually to developing countries to assist with adapting to and mitigating climate change, but many believe those commitments have not been fully met, and this trust issue is impeding progress.

VII. The Debate on Fair Responsibility

At the heart of this political agenda is the question of who is responsible, and how the burden should be shared between the developed and developing countries.

Developed countries account for the vast majority of total greenhouse gas emissions that have accumulated globally since the industrial revolution. Their economies grew out of the use of fossil fuels over centuries, expansion through industry, and the consumption of resources on a mass scale. For countries like the USA and a majority of European countries, this means they have larger historical footprints.

However, developing countries assert that their industrialisation process is still ongoing and that economic development is needed to raise standards of living, combat poverty, and improve their infrastructure. Many developing countries like India assert that their per-capita emissions are still vastly below that of most developed countries and thus climate policy must be sensitive to their differential capacity and development needs as well as historical responsibility.

Hence climate justice necessitates:

1. Greater reduction commitments by developed countries
2. Financial assistance to be provided by developed countries
3. Green technologies to be transferred from developed countries
4. Developed countries to provide support for adaptation in vulnerable regions

Meanwhile, developed countries have argued that rapidly industrializing countries with high current emissions levels should have a proportionally larger share of mitigation responsibility.

This difference has remained a fundamental point of conflict throughout international climate negotiations, most notably within the annual UN conferences of the parties (COP).

VIII. Future Implications

Should the current rate of glacial melting continue, the potential consequences are devastating for both humanity and the natural environment.

One of the most immediate consequences will be the rise in sea levels. Coastal regions such as Mumbai, Jakarta, New York, Dhaka and Shanghai will be more vulnerable to flooding, destruction of property and displacement of citizens. Some small island nations may be inundated completely (an unfortunately notable example of which, is Tuvalu).

Water scarcity will continue to be a key problem. Although melt water from glaciers initially increases river flow, there will be a tipping point after several years or decades, often called ‘peak water’, after which glacier runoff and hence its contribution to river flow downstream will decline. This may be disastrous for agriculture, food security, sanitation and drinking water for billions.

Climate-driven migration will likely grow extensively (similar to the migrations caused by desertification and draught as is seen in the *Sahel* along other regions). Displacement caused by floods, droughts and rising sea levels may precipitate regional instability and humanitarian crises. In addition, there will be an increase in geo-political tensions as competition for limited water resources escalates between neighbouring states sharing river systems.

The economic costs associated with melting glaciers will be enormous. Damage to infrastructure, disruption to agriculture, costs of disaster relief and loss of productivity will put a huge strain on economies in both the developed and developing world.

Environmental impacts will be amplified, potentially causing numerous species reliant on cold ecosystems to become extinct. Oceanic currents and climate patterns will likely become more unpredictable and result in a greater number of devastating disasters including cyclones, heatwaves, droughts and floods.

Arguably the most significant impact of failing to act on melting glaciers may be an erosion of trust in international institutions and multilateral action. The failure of countries to find an equitable burden-sharing system will further weaken the ability to negotiate climate policy.

IX. Possible Solutions

A successful international approach, therefore, must find a balance between environmental necessity and economic fairness. Nations will need to increase commitments made under the Paris Accord while simultaneously assuring that climate policies remain fair and just to all.

Wealthier countries will need to increase the funds available through climate finance mechanisms for the purposes of renewable energy transitions, adaptation strategies and disaster resilience in vulnerable countries. The transfer of appropriate technology may facilitate sustainable industrialisation in developing countries without replicating the high carbon-intensive development patterns previously established.

Investment in clean sources of energy such as wind, solar and hydropower is necessary in order to mitigate future emissions. Projects designed to absorb atmospheric CO2 through reforestation and afforestation will play a role.

Cooperation internationally will be increasingly required for glacier monitoring, scientific research and disaster preparedness. The creation of regional collaborations for states sharing river basins could contribute to avoiding future water conflict.

The concept of climate justice must remain central to discussions in order to formulate effective policies. Policies which ignore developmental disparities will ultimately not garner widespread international support. Future policy decisions must consider the issue of justice and fairness as much as they address environmental concerns.

X. Questions a Resolution Must Answer

A robust resolution addressing this issue will need to consider many important questions. What distribution of historical emissions is to be shared between the industrialized and emerging economies? How will commitments for climate finance be strengthened and enforced?

Delegates must determine whether the size of emission reduction targets for countries should be adjusted in accordance with factors such as historical pollution, economic capability and existing contribution to emissions. Another significant debate will focus on achieving a balance between economic progress and environmental sustainability, especially for poorer states.

The role that international organizations should play in glacier monitoring, disaster management and adaptation must also be explored, as will the need for adequate international law and agreements to ensure states work cooperatively for future endeavours.

XI. Key Terms Delegates Must Know

Climate Change: Long-term alteration of global temperatures and weather patterns caused primarily by human activity.

Glacial Retreat: The shrinking or disappearance of glaciers due to melting.

Greenhouse Effect: The process through which gases trap heat in Earth's atmosphere.

Climate Justice: The principle that climate change impacts and responsibilities should be addressed fairly and equitably.

Carbon Footprint: The total amount of greenhouse gases produced directly or indirectly by human activities.

CBDR (Common but Differentiated Responsibilities): A principle recognizing that all states are responsible for environmental protection but not equally accountable.

Mitigation: Efforts to reduce greenhouse gas emissions.

Adaptation: Measures taken to adjust to the effects of climate change.

Climate Finance: Financial assistance provided to support climate-related actions in developing nations.

XII. Useful Resources for Research

United Nations Climate Change (UNFCCC):(https://www.un.org/en/climatechange)

Intergovernmental Panel on Climate Change (IPCC):(https://www.ipcc.ch/)

United Nations Environment Programme (UNEP):(https://www.unep.org/)

World Meteorological Organization (WMO):(https://wmo.int/)

NASA Climate Change Research:(https://science.nasa.gov/climate-change/)

National Geographic Climate Section:
(https://www.nationalgeographic.com/environment/topic/climate-change)

World Bank Climate Change Knowledge Portal:(https://climateknowledgeportal.worldbank.org/)

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