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The shocking effect of climate changes and global warming on glaciers

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Abstract
Environmental science plays an important part in our daily life. It helps in solving the various issues which are arising in the environment very rapidly and without the checks. It is a burning topic at present. The objective of study is to know the impact of global warming and climate change on glaciers. This research is fully based on the secondary data. In this research I analyzed the causes and their effects of environmental issues on glaciers melting. I believe that these environmental issues have become a threat to everything and everyone on earth. In environmental issues, each country's own contribution to worldwide emissions needs coordinated actions between countries.

Keywords: climate change, global warming, melting glaciers

Introduction
Glacier's social, economic, and environmental significance have motivated several countries to regulate activities on glaciated areas and their surroundings. However, these have not been the trend since governments had not yet considered Glacier's associated significance. As a result, recent trends in glacier protection have forced different countries in the contemporary world to ratify laws specifically for protecting mountain glaciers. These laws protecting glaciated areas have therefore been considered within the national political agendas. The policies are known to originate from those countries where mining activities are posing a significant threat to the glacial damage with the aim of guarding the cryosphere against such destructive undertakings.

Climate change
Climate change is a change in the usual weather found in a place. This could be a change in how much rain a place usually gets in a year. Or it could be a change in a place's usual temperature for a month or season.
Climate change is also a change in Earth's climate. This could be a change in Earth's usual temperature. Or it could be a change in where rain and snow usually fall on Earth.
Weather can change in just a few hours. Climate takes hundreds or even millions of years to change. (NASA.gov)

Global warming
Global warming is the unusually rapid increase in Earth's average surface temperature over the past century primarily due to the greenhouse gasses released as people burn fossil fuels. The global average surface temperature rose 0.6 to 0.9 degrees Celsius (1.1 to 1.6° F) between 1906 and 2005, and the rate of temperature increase has nearly doubled in the last 50 years. Temperatures are certain to go up further. (NASA.gov)

Melting glaciers
Specifically, since the industrial revolution, carbon dioxide and other greenhouse gas emissions have raised temperatures, even higher in the poles, and as a result, glaciers are rapidly melting, calving off into the sea and retreating on land.

Fig 1: Melting glacier source: world glacier monitoring service

Causes of melting of glaciers
- Since 1900, the rate of melting of glaciers worldwide has increased. Human activities have been held responsible behind this.
- Since the Industrial Revolution, emissions of carbon dioxide and other greenhouse gasses have also led to an increase in temperature at the poles.
- Scientists say that if the pace of emissions of carbon dioxide and other greenhouse gasses continues, then ice will not be seen in the Arctic region until the summer of 2040.
- Global warming due to climate change is also another major reason for the melting of glaciers.
- Local air pollution as well as increasing commercial activities in the mountains have contributed to this.
- In recent years, the temperature is also increasing due to changes in land use in the Himalayan region.
- Most of the Himalayan tourist destinations are gradually turning into concrete forests, affecting the ecology of the region.
- Vehicular movement along with humans has also increased the speed of melting of snow.
- The burning of fossil fuels results in the emission of greenhouse gasses, affecting the heat process as these hinder heat from going out of the atmosphere.
- Methane gas formed due to various factors also contributes to the warming of the atmosphere and increases global warming. Methane is considered more harmful to the environment than carbon dioxide.
- Indiscriminate deforestation also affects ecosystems and disrupts the stagnation process of water on the mountains.

Impact of melting of glaciers

- Increase in frequency of floods, resulting in a sudden rise in the water level of other sources of water such as rivers, lakes and seas.
- The melting of glaciers damages biodiversity and animals are losing their habitats.
- The rising water temperature and water level affect aquatic animals and aquatic plants, which in turn affect the birds that depend on them.
- It also affects coral reefs, which need sunlight for photosynthesis, but when the water level rises, sunlight does not reach them in sufficient quantities.
- It also affects aquatic animals that depend on coral reefs for their food.
- The melting of glaciers can reduce the amount of freshwater, which is very worrying in terms of increasing population.

Importance of glaciers

- The sediments of the glaciers provide fertile soil for crops.
- Sand and gravel are used to make concrete and asphalt.
- Glaciers are the largest source of freshwater. Many rivers depend on the ice of glaciers for water.
- Most of the lake basins of the world are formed due to glaciers.
- Ice acts as a protective shield for the earth and oceans. It keeps the earth cool by sending excess heat back into space.
- Glaciers can range from several hundred to several thousand years old, providing a scientific record of how the climate changed over time.

Possible measures

- According to scientists, the only way to prevent temperature from rising is to cool the earth and for this, the emission of greenhouse gasses will have to be reduced.
- Global warming has been affecting Himalayan glaciers for decades, but research on its impact has only recently begun.
- Ground data of only 25 of the 9575 glaciers of the Indian Himalayas listed by the Geological Survey of India is available.
- There are about 1 lakh 98 thousand glaciers in the world and about 9,500 of these are in India alone. Although most of these are still untouched by human intervention, more detailed research is needed to fully understand the condition of glaciers and the risk of their damage.
- In addition, human activities in areas around glaciers will have to be limited. This will result in a decrease in the melting speed of these glaciers. But the biggest issue is to curb the rise in temperature, without which all efforts will be futile.

Conclusion

In conclusion, the glacier provides vibrant biome services such as water storage and direct runoff. However, regardless of the positive impacts of Glacier, it has posed significant threats to both the environment and the general ecosystem. As a result, measures have been taken to protect the glacier and prevent the hazardous impacts of its dynamics. Among the identified measures include the national laws, which help protect the surroundings of glaciated areas and regulate the activities around the glaciated regions. Besides, different parliaments, including Argentina and Chile, have enacted various laws to govern glacial activities and the environment. Future analysis will focus on how climate change impacts global conditions and how glaciers current situation would cause link reactions

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