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Environmental Impacts and its Mitigation Measures on Climate Change in Nepal

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Abstract

The climate of the earth, which is naturally clean and balanced, is changing with human potential and industrial development and expansion. The average temperature in most parts of the earth is increasing day by day due to human activities in the Earth's atmosphere. Excessive emissions of gases such as carbon dioxide, lucorphosphorus carbon, methane, nitrous oxide, and topsophagic weights are among the major causes of global warming. If the greenhouse gas emissions continue to increase and decrease at the same rate, atmospheric temperatures will rise by 1.6 degrees Celsius to 4.7 degrees Celsius by 2030, the time of the Industrial Revolution. As it is projected to reach 8 degrees, it is likely that the current planet will turn into a desert. The fact that there are holes in the sky above the region of North America and Europe, as well as in the sky above Australia and Antarctica, is a clear indication of change of the climate. Climate change affects humans and various species, such as heavy rains, floods, landslides, melting ice glaciers in the Himalayas and Polar Regions, melting sea levels. This change is a sign of the evils of the living world, so it is imperative that human activities be made environmentally friendly and that temperatures rise. Nepal, like the rest of the world, needs to reduce the pace of climate change by embracing the concept of sustainable development on the basis of holistic vision of development activities.

Keywords: Greenhouse gases, climate change, impact

Background

Air is one of the most important physical elements in the universe. Life is impossible without it and its existence cannot be imagined. It is considered as the creator of life. Climate, which is indispensable, is felt differently according to the physical condition of all places. In some places it is very hot and in other places it is very cold. There are 13 types of climates found in the world. Climate has become the basis of life. Favourable and healthy climate is changing day by day due to the human

activities. At present the temperature is rising in most parts of the globe which results to the climate change. The main factors of climate change are the growing population and human activities. Due to the limited area of the earth and excessive use of natural resources by the rapidly growing population, the emission of greenhouse gases has affected the climate. Imbalances on the environment are increasing due to excessive use of natural resources by human beings for the development activities. The current climate change is sure to have a huge impact on the biological elements in the future. The years 1995 and 2006 the hottest years on Earth, which is the clear sign of climate change. Nepal, which has slower pace of development and has an average lower consumer level than the rest of the world, has also been affected by climate change due to external and internal factors. Climate change has increased the complexity on various types of living organism in the country like Nepal and the extinction of important species are also found at present.

Methodology and Tools:

Air is the basis of all living things. The main objective of this study is to present the global warming and its effects on Nepal and the measures to reduce the effect of climate change. This descriptive type of study is based on a secondary source of information. So far, studies, reports, published and unpublished manuscripts on climate change have been collected from magazines and information from various veterans and interpreted and analyzed the data based on the information received.

Major Causes of Climate Change

Climate change is a sign of unscrupulous for the living creatures of the world. Due to various reasons, the environmental conditions on earth have become unfavorable for humans and other animals and plants. Earth, which is unique for life, is being polluted with climate-changing factors. Overall, the climate is changing due to the following conditions:

Global Warming

The average temperature of most parts of the earth has risen over the last century. The average surface temperature of the earth is 0.1^{0C} to $0.5^{0}C$ from 1982 to 1988. Environmentalists have claimed that the temperature of the earth has risen by $0.1^{0}C$ every year. Similarly, according to the data provided by the Meteorological System the highest temperature of the earth ever recorded was from 1995 to 2006. The rise in the earth's temperature is due to the rising levels of carbon dioxide Chlorofluorocarbons (CFCs), carbon monoxide gases in the atmosphere, and the depletion of forests that produce oxygen. Before the Industrial Revolution, the atmosphere contained 275 to 285 ppm (Parts Per Million) carbon dioxide, but now it has risen to 316 to 350 ppm (Bista, 2049:54). At the end of 2012, this amount increased to 391 ppm worldwide.

Green House Effect

A greenhouse is a house made of glass, plastic, or other material designed to store enough heat for plants to grow in winter or in a place where it is very cold. In this type of house the heat of the sun penetrates easily but the heat inside cannot be emitted due to radiation or any other reason and the temperature does not decrease even in cold weather. Studies have shown that the greenhouse effect is due to the destruction of greenery vegetation and desertification of most of the lands. This is due to the rapid rate of deforestation and the increase in the amount of carbon dioxide in the atmosphere. In addition to this,

chlorofluorocarbons (methamphetamine), methane, etc. are also working to increase the temperature in the atmosphere.

Table: Greenhouse Gases and their Effects

S. No.	Name of the Gas	Sources of the gas	The amount that contributes to the rise in temperature
1	Carbon Dioxide	Fuel, Deforestation	50%
2	Chlorofluorocarbons	Refrigeration, Paint, Foam	20%
3	Methane	Straw, Termites, Cattle, Firewood	16%
4	Tropospheric ozone	Minerals, Fuel	8%
5	Nitrous Oxide	Chemical, Mineral, Oil	6%

Source: American Environmental Protection Agency (EPA) 1990

The table shows that the carbon dioxide gas increases due to excessive use of fuels and deforestation, which alone has contributed 50 %. In 1988 alone, 6 billion tons of carbon dioxide was accumulated in the atmosphere and is increasing every year. The French power plant alone emits 200,000 tons of sulfur oxides into the atmosphere each year (Tripathy, 2057: 251). If this rate continues to rise, an atmospheric temperature is projected to rise by 1.6^0C to 4.7^0 degrees by 2030 and reach 5.8^0C by 2100 (Thapa, 2012).

Depletion of Ozone Layer

The ozone layer depletion is a major concern and is associated with a number of factors. Chlorofluorocarbons or CFCs are the main cause of ozone layer depletion. These are released by solvents, spray aerosols, refrigerators, air-conditioners, etc (Bishta, 2049: 62). The molecules of chlorofluorocarbons in the stratosphere are broken down by the ultraviolet radiations and release chlorine atoms. These atoms react with ozone and destroy it. Researchers say that the unregulated launching of rockets result in much more depletion of ozone layer than the CFCs does (NASS, 2013). If not controlled, this might result in a huge loss of the ozone layer by the year 2050. The nitrogenous compounds such as NO2, NO, N2O are highly responsible for the depletion of the ozone layer. The ozone layer has been found to be depleted by certain natural processes such as Sun-spots and stratospheric winds. But it does not cause more than 1-2% of the ozone layer depletion along with this the volcanic eruptions are also responsible for the depletion of the ozone layer. Concern about a depleting ozone layer dates back to the 1970s. Scientists then discovered a "hole" in the ozone layer over the Antarctic in the 1980s. (NASS, 2013).

The main reason for the destruction of the ozone layer is the smoke released from the exhaust due to the use of fuel required for the factories and machines that run the environment. Weight levels are affected by emissions from refrigerators, foam manufacturing, various paints, gas-producing drugs, and industrial mining. From these processes, a single chlorine molecule in the gas destroys about 10,000 molecules of weight, but it does not destroy itself easily.

The effects of climate change on the environment

Climate change has caused global warming, sea level rise, drought, excessive rainfall, deterioration of environmental conditions due to industrial emissions cause damage to the ozone layer. However, as the sea level rises, greenhouse gases increase, the atmospheric conditions become unfavorable, and climate change occurs.

As the Earth's temperature rises, so does the diversity of climate is found in the same region. The less water in the paddy fields will be affected. In Europe, there is less snow and the melting of the snow increases and the aridity of the soil decreases. The polar ice caps affect the coastal areas. In addition, the volume of ice melting in the sea will increase due to hot water. Sea level is projected to rise by 1 to 5 feet by 2050, depending on the current rate of temperature change and projections made on various grounds. As a result of the ambitious and irrational activities of human beings on earth, a terrible environmental situation will be created. Its main responsibility lies with the environment and the developed countries that produce it by exploiting a large amount of natural resources for the purpose of consuming material comforts. The United States alone produces 350 billion ton of CFCs gas. Russia produces 180 billion tons, Japan produces 100 billion tons, China produces 32 billion tons, Brazil produces 18 billion tons and India produces 0.7 billion tons. Similarly, only three countries in the world, the United States and Russia, emit carbon dioxide (Bista, M 48).
According to a study, 12,000 people in the United States suffer from cancer and 180,000 people lose their eyesight (EPA Report, 1990). The crisis of existence cannot be ruled out. In order to save the earth, which is the common home not only of about 7 billion people but also of innumerable species, developed countries should stop producing polluted gas as soon as possible. Otherwise, the people of developing countries like Nepal and all living beings will have to suffer due to the polluted environment without any reason.

Major Impact Sector in Environment of Nepal

The use of natural resources in Nepal is very low compared to the developed countries of the world. However, due to the global impact of climate change, Nepal is also vulnerable to climate change. Climate changes with increasing temperature. Due to which unfavorable conditions are being created such as heavy rains, droughts, floods, landslides and forest fires. Nepal, rich in biodiversity, has lost its biodiversity due to climate change. With the change of climate, the position of snow line has been shifted. Due to this the danger of glacial lake outburst has increased, water sources in different parts of the country have been drying up. *Kafal* and *Aiselu* started to ripen early, which were generally ripen in the month of Chaitra. Global warming has led to a decline in agricultural production and increased the food crisis. Nepalese have fallen into the vicious cycle of poverty due to the difference between summer and winter temperatures which results to the decline in agricultural production.

Ways to Mitigation of Climate Change in Nepal

Although there have been some signs of natural climate change over a long period of time, the rate of rapid climate change over the last four decades has been unexpectedly negative. The main reasons for this are due physical change, industrialization and rapid urbanization and over-exploitation of natural resources. The current challenge and need is to maintain a healthy environment by minimizing the harmful effects of greenhouse gases emitted by the atmosphere as a result of human activities. To minimize the climate changed developed countries have to follow the treaties which were signed in the past. It is now imperative to adopt the concept of sustainable development on the basis of holistic approach.
The impact of climate change is also increasing in Nepal and the main reason for this is the effects of toxic substances released into the atmosphere by the disorders emitted by industrialized nations other than Nepal. Although Nepal produces very small amounts of carbon dioxide, methane, tropospheric ozone, nitrous oxide, etc., which is the result to climate change. Therefore, on the basis of the Millennium Summit 2000, the National Planning Commission in Nepal has also set certain indicators. In order to minimize the root causes of climate change in Nepal, the following things need to be adopted.

- Emphasis on food production through organic farming.
- To expand and protect 42 percent of the forest as per international norms.
- To take immediate measures to control forest fires in the dry season.
- To make effective implementation of tree planting policy to make urban areas green.
- To cultivate fruits and herbs suitable for the climate in the sloping lands of hilly and mountainous areas.
- To lobby the friendly countries of the world to discourage the use of chemical weapons in accordance with the international environmental treaty.
- Emphasis on the use of environmentally friendly fuels as an alternative to petroleum products.
- To bring the industry that raises temperature under the ambit of environmental tax.
- Emphasis on conservation of Nepal's biodiversity.

Summary:
Climate change and global warming have posed a major challenge to humans. If measures are not taken to stop global warming, it is certain that the basis of life will be affected. The effects of greenhouses are such that the earth's crust will collapse, and the existing mountainous terrain will slide above the snow line. Dryness, storms, torrential rains, droughts, acid rain will occur. The catastrophic effects of climate change will wreak havoc on the earth and all biodiversity. Similarly, the people of Nepal, which is rich in biodiversity, are mostly affected by poverty. Climate change will create a crisis of production and shelter for Nepalese living in various marginalized areas. Similarly, the snow line of the Himalayas will move upwards and the volume of water in the river will decrease due to the decrease in the amount of snow. Nepal's policy of focusing on food production through organic farming to prevent climate change, controlling forest fires in dry seasons, planting trees in urban areas, using other fuels instead of petroleum products in fruit farming, and emphasizing on conservation of biodiversity is important.

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