

# Climate Change and Land Degradation

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## Abstract

Land degradation is a driver of climate change through emission of green house gases and reduced rates of carbon uptake. Land degradation affects people and ecosystems throughout the planet and is both affected by climate change and contributes to it. It is a major contributor to climate change and climate change is foreseen as a leading driver of biodiversity loss. Climate change is recognized as one of the major factors contributing to land degradation. Land degradation encompasses change in chemical, physical and biological property of the soil. Such a change in soil properties alter and reduce the soil ability to sustain a particular quality and quantity of plant growth. Desertification and deforestation is the result of climate change. Erosion, salinity, water shortages and loss of biodiversity are the main indicators of the land degradation which are generated by the climate change in the world.

**Keywords:** Land Degradation, Climate Change, Development, Soil Erosion.

## Introduction

Developing countries are more responsible to climate change than the developed countries in the world. They have poor technology to run the industries and transport vehicle. Due to poor technologies the developing countries misuse the natural resources and waste the resources in a huge amount. Due to reducing the level of natural resources the problems of environmental degradation has been occurred on the earth. Due to rising the temperature the problem of deforestation, drought, land degradation, climate change, water shortage and decreasing the bio-diversity has been increased rapidly in the world. To achieve the high economic growth rate the developed countries reducing the natural resources rapidly and generated the gaseous emission. Due to reducing the natural resources in alarming rate the problems of land degradation like that desertification, deforestation, salinization, soil erosion and compaction etc. are increasing rapidly day by day.

Climate change is a serious problem of the world. Its affected the natural vegetation, forests, wild animals, human beings and birds. Due to high temperature and low perception many species of the birds have lost their life on the earth. Emissions of the poison gases of the vehicles and industries polluted the atmosphere and reduced the oxygen level in the atmosphere and created many problems for human beings. The burning of the fossils fuels generated many gases which are harmful for the human beings. Due to loss of forests the problems of oxygen, rainfall and land degradation have been raised in the world. Due to use of chemical fertilizers pesticides and insecticides the problem of environmental degradation has been increased rapidly in the world. Due to over use of chemical fertilizers the problem of decreasing the bio-diversity has been increased in the developing countries. Due to climate change the problem of land degradation is increasing rapidly in the world. Its creates additional stress on land, exacerbating existing risks to livelihoods, biodiversity, human and ecosystems health, infrastructure and food systems.

## Objectives of The Study

1. To analyse about the causes of climate change and land degradation in developing and developed countries in the world.
2. To analyse the impact of climate change on the natural resources and land degradation.
3. To analyse the availability of the natural resources and the causes of soil degradation.

## Hypothesis

1. The rate of climate change and reducing the level of natural resources is very high in the developing countries than the developed countries.
2. Urbanisation and industrialization is responsible for the climate change and land degradation in the world.



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3. The high pressure of the population on the natural resources is responsible for the reducing the quality of environment.

**Causes of Climate Change**

Human is increasingly influencing the climate and the earth's temperature by burning fossils fuel, cutting down the forests and farming livestock. Modernization, urbanization and industrialization increased the temperature of the earth and produced many emissions. Carbon dioxide (CO<sub>2</sub>) is the green house gas most commonly produced by human activities and it is responsible for 64% of man made global warming. Other green house gases are emitted in smaller quantities, but they trap heat for more effectively than CO<sub>2</sub>. Methane is responsible for 17% of man made global warming and nitrous oxide for 6% responsible for it. Agriculture, industry and other human activities has increased concentrations of green house gases in atmosphere. The industrial activities that our modern civilization depends upon have raised atmospheric carbon dioxide levels from 280 ppm to 412 ppm in the last 150 years. The causes of climate change are divided into two

categories natural and man made causes. These are as-

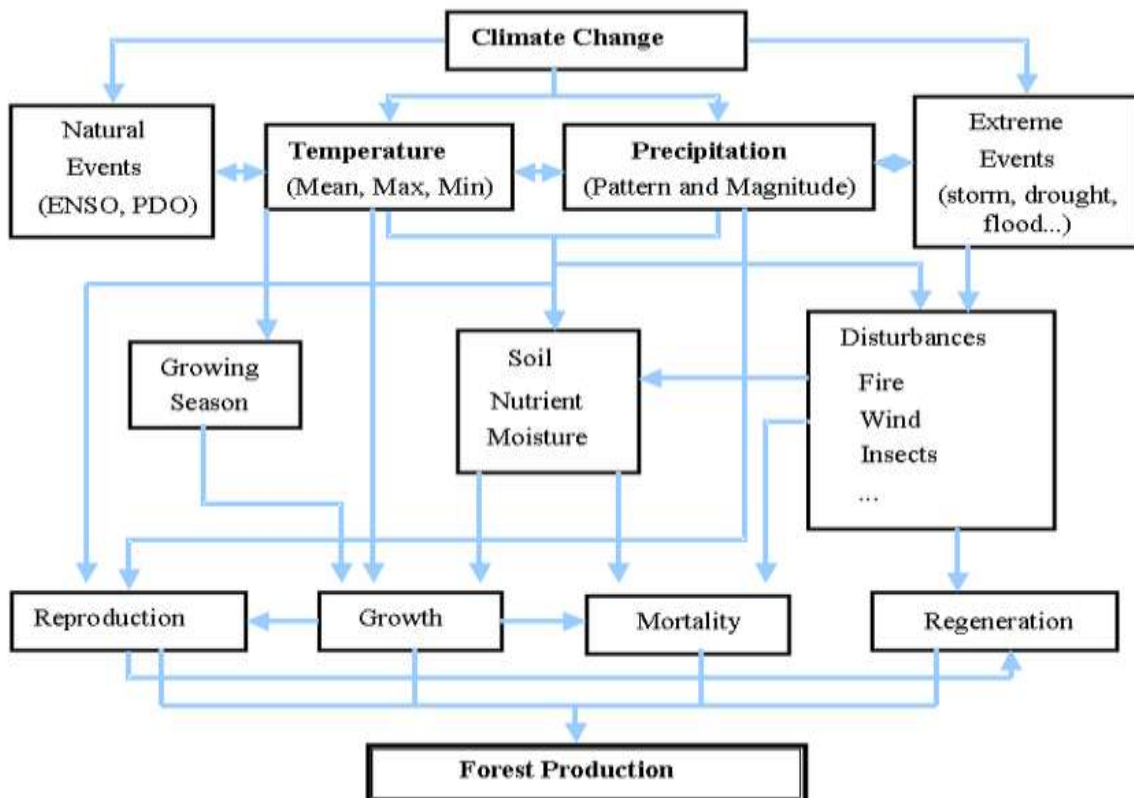
**Natural Causes of Climate Change**

1. Volcanic eruptions
2. Ocean currents
3. Earth orbital changes
4. Solar variation

**Man Made Causes of Climate Change**

1. Green house gases
2. Deforestation
3. Coal mining
4. Burning of fossil fuels
5. Industrialization
6. Urbanization
7. Agriculture activities
8. Transport vehicles
9. Luxury facilities

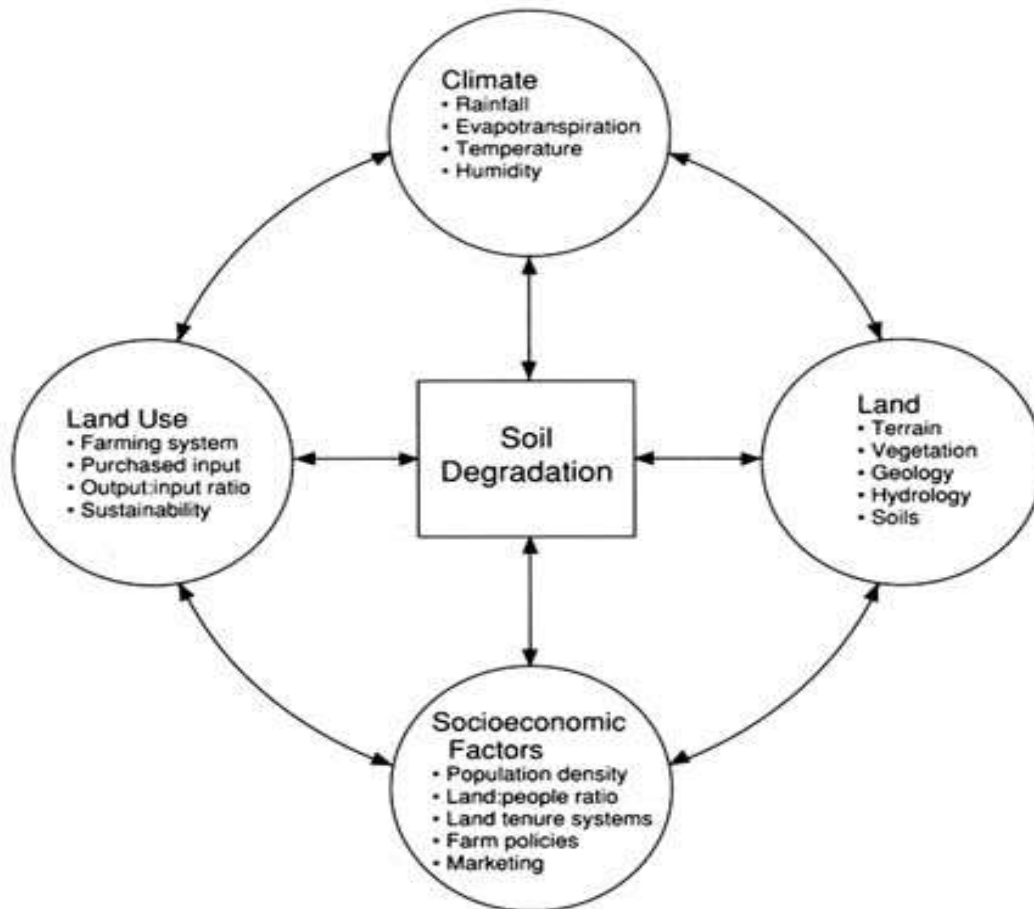
Agriculture activities produces the green house gases and contributes in increasing the temperature. This sector generates the 13% share of green house gases emissions. Industrial Sector generates 24%, burning fossil fuels 49% and deforestation generation 14% share of the green house gases emissions.



**Causes of Land Degradation**

Deforestation, excessive use of fertilizers and pesticides, overgrazing salination, water logging, desertification. Soil erosion wasteland and land slides are responsible for land degradation. According to the new report by the intergovernmental science policy platform on biodiversity and ecosystems (IPBES), the principle global driver of land degradation is the expansion and unsustainable management of agriculture, fuelled by unprecedented levels of

consumption in an increasingly globalized economy. This causes significant loss of biodiversity and ecosystem services, such as food security, water purification and the provision of energy. This landmark report reveals that land degradation, in all its different forms now undermines the well being of almost half the population of the planet. Land degradation manifests itself in many ways – land abandonment, declining population of wild species, loss of soil and soil health, reduction of rangelands and fresh water and deforestation.



### Impacts of Climate Change on Land Degradation

Due to poor land management the problem of land degradation has been increased in the world. Many factors are responsible for the land degradation climate change is one of them. Due to agent of the erosion the layer of the soil which is essential for the growing of plants has been erased and lost of nutrients and minerals. Due to acid rain fall the flora and fauna has been affected and the region of the natural vegetation has been reduced rapidly in the world. Although land degradation is the result of acidification but the problem of acidification is the result of emissions. Due to use of chemical in manufacturing units the problems of land degradation is very high in the region of urban area. Industrialization and urbanisation has increased the problem of climate change and generated many problems for human beings.

Due to low rainfall the soil structure has changed. Changes to soil structure are hard to quantify because of the influence of land use and management. Soil containing high clay contents incline to shrink when they are in dry condition, but they swell as they went up once again. This leads to formation of large fissures and cracks. Dry climatic conditions increase the size and frequency of crack formation in soils, particularly in temperature regions.

The climate change has severed impacts on acid sulphate soils and severity has reached to extreme by increase in the frequency and of weather

events such as heavy rains and droughts with climate change, the blushing of acid sulphate materials from soil containing acid sulphate and mine wastes will cause greater increases in concentrations that will be an ever increasing threat to aquatic life.

Soil nutrient quantity is often affected by climatic factor. Changing in temperature and precipitation could affect soil nutrient levels in nutrients within the soil because of raised evaporative forces and abbreviate leaching downward of water movement in soil leads to loss of soil nutrient, hence movement of water to a great extent affects the soil nutrient level. Moreover, decrease in rainfall may cause upward movements of nutrients and thus leads to Stalinization. In tropical and subtropical countries, loss of soil nutrient is an increasing problem.

Organic matter is one of the significant constituent of soils. It frame soil structure and stability, water and oxygen holding capacity and nutrient storage, hence it furnishes a home ground for numerous soil micro flora and fauna. Organic matter is sensitive to changes in the climate and their decomposition rate increases with increased temperature. Expanding of agriculture and its intensification has decreased the level of soil organic matter. Majority of this organic matter had been lost as carbon dioxide in the atmosphere and this proves that some intensively cropped land release a substantial amount of green house gases.

Due to low perception the problem of desertification has been increased in the world. Its effected the bio-diversity and changed the cropping pattern in the world. Due to poor management of the soil the problems of unfertile land, salinity, loss of production, reducing the water level, loss of soil's minerals and soil moisture etc. have been increased in the world. Deforestation is the result of over population and the requirement of the food and wood for houses and industries.

The temperature of the atmosphere has been increased rapidly in the world during in the period of 1951-2020. It is the result of high consumption of the natural resources and high pressure of the population on the natural resources. Due to industrial revolution the problem of climate change has been increased rapidly and created many problems for human beings and environment. Due to high temperature the problem of decomposition of soil has been increased and loss of minerals has been increased.

### **Conclusion**

Climate change affects all living and non living things in the world. Due to high temperature in atmosphere the problems of deforestation, drought, degradation of biodiversity etc. has been increased and affected the eco-systems. Due to high perception the land reduce the minerals and soil converted into the salinity form. The properties of the soils has been changed due to climate change. Due to reducing the natural resources in alarming rate the problem of land degradation is increasing rapidly. The cropping pattern has been changed due to rising the temperature on the earth. The problem of land degradation has been increased in the world due to high temperature and low perception. Due to high consumption rate of the natural resources the problem of climate change has been increased in developed countries rapidly. The luxuries life of the man is also responsible for the climate change. Air conditioners and refrigerators have increased the temperature in atmosphere and created many problems. Due to high temperature and low perception the properties of the soil has been changed and reduced the soil quality which is responsible for the crops. Due to high temperature land degradation encompasses change in chemical physical and biological properties of the soil and reduced the rate of fertility and production. Due to changing in soil properties the problem of food security has been increased in the world and the problem of fresh water scarcity is going on in the world. To reduce the land degradation we need to management of the soil and mineral management for crops.

### **Suggestions**

1. Use public transportation for visiting offices.
2. Share vehicle for travelling.
3. Plantation.
4. Controlled deforestation.
5. Turn off lights and unpley devices.
6. Adopt the concept of recycle, reuse and reduce
7. Use less heat and air conditions.
8. Controlled on over grazing.
9. Use bio-fertilizers in agriculture.
10. Adopt crop rotation methods.
11. Conservation of the forests.
12. Reduce the level of vehicle emissions.
13. Use new method to develop the city and develop the industry.

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