Global Desertification Causes And Effects

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Introduction

Farming came in with the evolution of human beings on planet Earth (Schlesinger et al., 1990). Humans need food for a living and for growth, so they use the land to grow crops on it and to get food from it. The degradation of the land in the dry sub-humid, semi-arid, and arid regions because of human activities and climatic variations results in the desertification of the Earth. Almost one-third of the total area of the land is composed of deserts and semi-deserts (De Pinto et al., 2017). Land degradation is a slow process in which the quality of the land slowly becomes worse, resulting in the decline of productivity and then results in impacting the lives of the persons who are associated with it for food or other domestic purposes. Degradation of land surface leads to a reduction in land productivity.

Due to the process of desertification, about 30% of the land in China is being converted into desert (Guan et al., 2017). About 39.7% of the world's land is under drylands and is vulnerable to desertification. Arid land covers about 26% of the area, whereas dry sub-humid lands cover almost 21%, and semi-arid land covers 38% of the total area of the dryland. Desertification can have a significant effect on human beings due to the shortage of productive land and food by this process.

Discussion

In the recent few years, there have been a lot of additions to the land that have been classified as dessert. Land which was covered with plants and vegetation in recent years has now become dry and barren. This is the conversion of the fertile and habitable land of different organisms into the land of uninhabitable deserts. This occurrence of desertification is mainly due to the reduction in the vegetation. This process can be done either by human activities or by natural actions causing drought. Land can suffer a lot of changes due to this change in the lack of plants. Plants mostly provide shade to the soil from the sunlight, but once these plants are removed, there is a straight path for the sunshine to dry the soil more quickly. Moreover, the plant's roots help support the land's stability. However, once these plantations are removed, the soil will be more vulnerable to erosion by winds. Due to this erosion, the top layer of the soil that is rich in nutrients is removed, resulting in a reduction in the fertility of the soil. Ultimately, the land will dry soon, and lack of vegetation will make it a desert.

The process of desertification can also be caused by human activities. For the provision of water to agriculture, humans mostly change the route of the river from its natural path, which makes that logical path available for the process of desertification. The vegetation in this area gradually dies due

to the stoppage of the water, which will result in a desert. Desertification can also be caused by poor irrigation techniques in an area. Too much water usage by farmers can result in the overall reduction in the water for that area, which will ultimately lead towards the loss of vegetation and then desertification.

Nowadays, there is an increase in the number of farm animals, which results in overgrazing (Reynolds et al., 2007). Livestock damage vegetation by grazing it. As the number of animals has increased a lot in recent years, it ultimately results in more grazing of the plantation. Overgrazing is happening either because the farmers are keeping the livestock in an area for an extended period by which these livestock are eating the grass for a long time, which results in the reduction of plantation, or when the farmers keep more animals in a small place. As these animals eat the plant down to the roots, the growth of the plant becomes short, resulting in the unmaintainable increase of the roots, which leads towards the stoppage of the plant growth altogether. Due to this, these more extensive areas of soil are exposed to different elements with no vegetation. Landscape changes due to this loss of vegetation lead to the destruction of the land's productivity and can be very catastrophic for the ecosystem's biodiversity.

Deforestation is also a factor that contributes significantly to the desertification process. Deforestation is the cutting or removing of the trees from a wooded area. As the human population has increased in the past years, there is a need for more space on land for building and residing purposes (Park et al., 2018). Forests are being cut down to make room for houses to reside or for making room for farmland. Some desertification can also be caused by wildfires, which result in the burning of many trees. The reduction in forest land in the world is increasing at higher rates, which is why the Earth is suffering from desertification (Zanchetta et al., 2016).

The process of desertification has some catastrophic effects at the global level, including the migration of people and dust storms. The majority of the people are being moved into urban areas from the ruled areas due to the significant effect of desertification on agriculture in the ruled areas. According to various studies, it is estimated that about 50 to 700 million people can be subjected to this desertification. Desertification is indicated as the primary factor for the migration of Mexicans into the United States, where almost 700,000 people migrate from the Mexican drylands annually (Symeonakis, 2016). Different studies from Africa, Niger and Burkina Faso show that desertification results in the migration of humans and it also makes worse conditions for the living of both those who leave their places and those who remain behind.

Desertification is also the primary cause of dust storms from the drylands where there is no vegetation. Dust storms result in the deposition of a large amount of dust in areas which occur in affecting many towns and cities. Major dust storms can cause health problems along with the burying of the houses, equipment, and even the trees. Dust storms also result in the death of farm animals and may lead to dust pneumonia in persons. A dust storm in China for about three weeks resulted in the closing of the roads, railways, and hospitals (Wang et al., 2017). Dust originating from dust storms may contain different pollutants and many toxins, like sulfur, pesticides, and salt, which may cause

severe damage to human health. Moreover, desertification is the primary reason behind the global food crises (Berdugo, 2017). As the vegetation decreases at a higher rate, it may eventually result in a threat to global food security.

Desertification also has many negative impacts on the regional levels. Most of the areas are facing very different climate and weather patterns due to the change in climate due to deforestation. Due to this change in the environment, the terrestrial biomass also adjusts due to the difference in the range and species composition. Due to this, there is a massive impact on both the ecosystem functions and physical processes like the water cycle, resulting in the change of the zones of food production and crops. All these climate changes result in the incidences of drought and heavy rainfall in different regions of the world. An increase in the number of droughts and floods has a widespread and stronger impact on the destruction of the land. About 2 billion people are being affected by desertification because their lives are mainly dependent on agriculture (Geist, 2017).

Due to continual changes in the climate and the new global temperature, there is a reduction in the rainfall in most of the dryland areas of the world, which may come to some considerable impacts on desertification and land cover. In the next few decades, there will be a reduction of almost 10-30% of the overall river run-off and in the availability of water in the dry regions of the world. The 2.4 billion-by-2025 water-scarcity figure was an expired forecast. A more recent World Bank scenario projects up to 216 million internal climate migrants by 2050 across six regions, driven by water scarcity, declining crop productivity and sea-level rise; it is not a desertification-only estimate.

To avoid desertification, there should be a sustainable agriculture procedure in which reasonable livestock, such as a limited number of animals grazing, should be used. Moreover, there should be a rotation of the grazing lands so that one can avoid overgrazing the plantation. Furthermore, the reestablishment of species of the plant can help in the curbing of the effects and may lead to a reduction in desertification in that area. The forest acts as a source of carbon dioxide absorption due to the process of photosynthesis from the atmosphere. However, with deforestation, the released carbon dioxide will result in the formation of greenhouse gases, which will ultimately lead towards global warming and climatic change. Due to the greenhouse gases, the Earth will eventually heat up, causing the warming of the Earth’s surface. Due to the warming of the Earth’s surface, the fertile land will eventually convert into the desert due to the evaporation of the water from the ground.

Dehydration then causes the drying of the land, and no water will leave for these plants to absorb, so they will eventually die out and result in the process of desertification. Scientists need to develop some techniques for the reduction of the desertification of productive land. Renewable energy should be used instead of fossil fuels and wood as a source of fuel so that there will be a reduction in the creation of greenhouse gases.

Conclusion

Recent studies have shown us the causes of global desertification and its effects on humans and our ecosystem. There are a lot of factors that contribute towards the process of desertification, including overgrazing, and deforestation, but the primary factor for cause of global desertification is overpopulation (Bastin et al., 2017). Desertification results in the massive migration of humans from ruler to urban areas, which leads towards overcrowding in the cities. The climate also changes due to desertification, which ultimately results in the formation of floods and many massive storms of dust, which can be catastrophic for human beings.

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