



## CLIMATE CHANGE AND ENVIRONMENTAL DEGRADATION: A SERIOUS THREAT TO GLOBAL SECURITY

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### **Abstract:**

Climate change and environmental degradation have been considered global issues apart from being graded as emerging issues. Climate change is a significant trend because of the adverse conditions witnessed already, and the implications likely to result when the situation is not addressed. The main causes of climate change and environmental degradation are human activities such as burning fossils, deforestation, and human settlement. The decline of the environment has led to national and international security risks as it is linked to food shortages, climate change calamities such as floods or famine, drought, loss of lives, soil erosion, and crop failure due to limited water resources. Countries have had to come together to find lasting solutions to climate change and the decline of the environment as it has raised concern across the world. Besides, there have been solutions that have been agreed by researchers that would minimize the risks of climate change and the decline of the environment, such as afforestation, avoiding the use of plastics, and recycling of waste products. Therefore, environmentally friendly activities have been encouraged in countries across the globe.

**Keywords:** climate change, environmental degradation, threat, security, human life and deforestation

### **1. Introduction**

The most emerging issue across the globe is regarding the changing weather patterns that have been associated with climate change. Countries worldwide have had to come up with artificial ways to induce the weather, for example, ways to enhance rainfall. The environment has been disregarded today since most people only care about settlements or developing a given area that was once a forest (Khavarian et al., 2019). This outcome is evident because of the world's increasing population, which is worrying. Besides, conserving the environment should be an individual responsibility, yet it does not partake as seriously as it should be as it always leads to climate change. For example,

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people should be responsible for preserving and conserving trees; they should plant more than they cut down. Deforestation experienced across the globe has led to a decrease in the amounts of rainfall, affecting people that depend on the weather patterns, such as farmers (Khavarian et al. 2019). Besides, most people have resorted to greenhouses, where they can manage different crops without interference by the climate changes, such as high temperatures that might affect or destroy the plants. Other areas that are affected by environmental degradation and climate change include; human health, food security, biodiversity, ecosystems, and water supply (Khavarian et al. 2019). The fact that climate change is experienced globally provides cause for action to minimize the impacts affecting millions of people worldwide. The risks associated with natural variables should be minimized to avoid the future sustainability of the impacts of climate change. Environmental degradation and climate change have been considered serious threats to global security due to their impacts on human health and even water supply, yet they are accrued to human activities that need to be filtered.

## **2. Climate Change and Environmental Degradation**

The global climate is changing due to multiple dynamics, such as an influx of industries. The climate changes have led to insignificant weather patterns that cannot be certain as the case was some centuries ago. Climate change refers to the significant changes in the earth's climate system that are characterized by long-term shifts in weather patterns and temperature (Fawzy et al. 2020). Global climate change has been experienced in recent decades and is estimated to progress in the next century due to the world's vision of becoming an industrialized base. Besides, climate changes are accrued to the inevitable natural variations such as arctic sea ice, the trends in the sea level, temperature, and upper-ocean heat content. Different research groups have maximized the natural variables to explain climate change as it has affected other sectors, such as agriculture. Climate change can be identified through physical measurements, satellites, or remote sensing as they give effective results regarding the observable changes (Fawzy et al. 2020). Besides, climate change has been on the rise recently as it has been highlighted as one of the emerging issues due to human impacts.

Climate change affects human life in many aspects. The implications vary depending on the environmental conditions that are present in a given geographical location. Climate change tends to worsen normal environmental dispositions by shifting conditions to extreme conditions. The changes in weather patterns that minimize the amount of rainfall affect human life in that they depend on rain for water. Besides, the amount of water accrued from the rainfall is utilized in daily human activities such as cooking meals and bathing (Rana, 2020). Climate change is also determined and analyzed by climate stations with specialists who understand its dynamics. Besides, climate change analysis is essential as it enables the weather forecasts in different parts of the world to determine and predict when rainfall will happen, when the next winter or summer might happen, and how far sea levels will rise due to the unpredictable warmer temperatures that lead to global warming (Ray et al., 2019). Climate change analysis enables climate

stations to determine which areas are affected more by the extreme temperatures and what solutions need to be undertaken to prevent future occurrences of such climatic conditions. Other than humans, climate change affects wildlife and the fact that they are considered endangered.

Environmental degradation is anchored on the ecosystems around the globe. Chien et al. contend that environmental degradation is the destruction of the environment through diverse human and technological activities which affect ecosystems, for example, the reckless cutting of trees (Chien et al., 2021). Like climate change, environmental degradation rotates around natural variables as it is anchored on the depletion of natural resources such as soil, water, and air. Besides, the changes that touch on the environment are sensitive and intriguing as they lead to the destruction of ecosystems that generally include plants, animals, and other living organisms. Most people across the world have been part of the enhancement of environmental degradation by consuming natural assets such as water, soil, and air (Chien et al., 2021). These natural assets, such as air, depend on greener surroundings, including forests. However, most people have resorted to cutting down trees that are partly used in building houses and industries and to create space for the settlement of people now that the global population is on the rise. Besides, the expanding population has been linked to exhausting natural variables that are essential indicators of environmental enhancement, hence minimizing the earth's limit to meet social and environmental needs.

Environmental degradation has been considered a form of harm aimed at destroying existing ecosystems. The environment is considered vulnerable because it involves all living and non-living things directly affected by environmental issues (Rahman, 2020). Besides, these environmental issues are caused by long-term ecological effects, which can deconstruct and demolish the entire environment at the end of the day. All creatures involved in the environment, including plants, depend on natural variables like lakes. Technological advancement has also been linked with environmental degradation by splitting up land to create more space for the technological infrastructure. For example, the governments of various countries may decide to split up forests to create more space for advanced roads to achieve their technological development objectives to complement the same (Rahman, 2020). Besides, communication lines have had to be connected through the woods to allow countries to achieve full technological advancement implementation.

### **3. Factors Behind Climate Change and Environmental Degradation**

Climate change is induced majorly by human activities. The causes of climate change are classified into human causes and natural causes, and they include; generating power, cutting down trees, burning fossil fuels, manufacturing goods such as cement, using transportation, powering buildings, volcanic eruptions, and solar irradiance (Hegerl et al., 2019). Generating electricity mainly involves burning fossil fuels in large amounts that would enable the production of unlimited power. Besides, electrical energy is still produced by coal, steam, and gas. Burning fossils produces carbon dioxide in the air,

leading to the greenhouse effect in that the sun's rays are trapped, affecting normal weather patterns (Zandalinas et al., 2021). According to Hegerl et al., in 2019, 64% of the global electricity was accrued from fossil fuels that had to be burned to produce the energy; hence the reason for climate change (123006). Also, the manufacturing of goods always occurs in industries that still produce emissions from burning fossil fuels to produce sufficient energy to be utilized in making finished goods such as cement, clothes, plastic, and electronics. Producing cement has been emphasized for being liable to 2% of the total carbon dioxide emissions globally (Hegerl et al., 2019). Deforestation has also been considered a contributor to climate change since trees mostly store the carbon dioxide released from multiple emissions across the globe, and cutting them down only releases the carbon dioxide that was initially stored, leading to global warming. Besides, agricultural activities and deforestations are responsible for a quarter of global gas emissions (Hegerl et al. 2019). Volcanic eruptions, which are natural causes of climate change, have mixed contributions in that they can release carbon dioxide in the process that can cause global warming. On the other side, volcanoes cool the earth through aerosol particles; hence they reduce the effect of global warming since they produce carbon dioxide that is 50 times less than that of humans (Hoogendoorn et al., 2020). Also, solar irradiance is accrued from the sun as it affects the earth's temperatures, hence the impacts of global warming.

Multiple variables cause the different types of environmental degradation such as water and soil. Nasir et al. claim that the causes of environmental degradation include; overpopulation, landfills, pollution, land disturbance, natural causes, and deforestation (Nasir et al., 2021). The global population has increased in the last two decades putting natural resources at risk by straining them, leading to environmental issues. For example, an increasing population will demand more food than what is available, forcing people to overuse land and even cut down trees for their settlement. Landfills also cause environmental degradation since they include specific waste materials that can be generated from households and even industries and are associated with a foul smell, a great health risk (Nasir et al., 2021). Different types of pollution are linked to environmental degradation, such as air, land, and water pollution, which all lead to health issues. For example, water pollution by industrial effluent affects the quality of water that people would drink. Natural causes of environmental degradation include earthquakes, wildfires, storms, and tidal waves. Natural causes are linked to the physical demolition of the earth or environment to the extent of causing long-term degradation of natural sources such as water.

#### **4. How Climate Change and Environmental Degradation Pose a Threat**

Climate change and environmental degradation have been linked to national and international security due to the threat they accrued. Climate change has specifically transformed the ideas or perspectives surrounding security due to the challenges involved in the process (Tong and Ebi, 2019). The national and international security concerns regarding climate change and environmental degradation include; impacts on

food supply, increased competition over natural resources, water supply, loss of livelihoods, climate-related disasters such as droughts and floods, disease and famine, crop failure, forced migration, and displacement (Tong and Ebi, 2019). The impacts of climate change and environmental degradation have been compared to a situation where nations are threatened by guns and other weapons by their enemies. Regarding food security, the small nations that experience overpopulation have a crisis related to the scramble for the available food that has been minimized by environmental degradation.

In this case, the land that was initially meant for agriculture is transformed into land for settlement; hence minimizing food production since there would be limited productive land for farming. Also, any slight increase in the sea level due to climate change would put people at risk, especially around the Pacific Island nations; hence it is regarded as a national and international threat. Climate change has also led to intensified competition for energy in diverse countries that is already overstretched due to natural factors such as storms or earthquakes. Besides, the competition for natural resources such as food and water is anchored on floods that destroy farm produce and displace people from their homes (Tong and Ebi, 2019). Most people who live around the Pacific Island nations and other nations that are surrounded by water bodies are vulnerable as climate changes forcefully displace them through floods and have to look for new homes where they can migrate to and even become refugees if need be; hence becoming a threat to international security. Also, soil erosion threatens land, freshwaters, and oceans. In this case, soil erosion can impact human life by sinking homes that are on the hillsides and even carrying along crops in farms that have not yet been nourished, a situation that can lead to human life loss and minimized food supply across the globe (Borrelli et al., 2020). Soil erosion affects the quality of freshwater as all the effluent that is carried along is deposited in the lakes and oceans, hence becoming a threat to human consumption since it is an essential component of human life. Besides, freshwater used to cook in homesteads can be contaminated due to soil erosion, posing a national and international security threat. Examples of countries affected by climate change include; Chad, Afghanistan, South Sudan, Syria, Somalia, Syria, and Nigeria (Borrelli et al., 2020). Apart from floods, other climate-related disasters include famine, common in arid and semi-arid areas that have been naturally dry due to environmental degradation. Besides, human activities such as deforestation can lead to an artificially induced drought that would cause security concerns for people who would be forced to flee to food-secure areas where they are assured of a sustainable life.

## **5. Conclusion and Recommendations**

To sum up, environmental degradation and climate change have been considered serious threats to global security due to their impacts on human health and even water supply, yet they are accrued to human activities that need to be filtered. The risks associated with climate change and environmental degradation have been considered as a threat to international and national security, for example, minimized food supply, climate-related calamities such as floods, and forced migration and displacement of people against their

wishes to evade the adverse weather conditions. However, environmental degradation and climate change can be mitigated by undertaking specific measures that act as solutions for future sustainability. The solutions to environmental degradation and climate change include; enhancing preparedness for identifying, preventing, and responding to climate change security risks, stopping deforestation from enhancing environmental and ecological systems, inducing fines and punishments for illegal dumping in public places, reusing waste products by recycling them, sensitization of other people on the importance of conserving the environment, and avoiding the use of plastics since they can be littered all over. Suppose the solutions for counteracting climate change and environmental degradation are implemented. In that case, there will be a sustainable environment with credible and predictable weather patterns that would enhance the welfare of human beings.

### **Conflict of Interest Statement**

The author has no conflicts of interest to declare. There is no co-author, I am the only author of the manuscript and agree with the contents of the manuscript and there is no financial interest to report. I certify that the submission is original work and is not under review at any other publication. The author has no affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or nonfinancial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

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### **References**

- Borrelli, Pasquale, et al. "Land Use and Climate Change Impacts on Global Soil Erosion by Water (2015-2070)." *Proceedings of the National Academy of Sciences*, vol. 117, no. 36, 2020, pp.21994-2001.
- Chien, Fengsheng, et al. "The Role of Information and Communication Technology in Encountering Environmental Degradation: Proposing an SDG Framework for the BRICS Countries." *Technology in Society*, vol. 65, 2021, p.101587.
- Fawzy, Samer, et al. "Strategies for Mitigation of Climate Change: A Review." *Environmental Chemistry Letters*, vol. 18, 2020, pp.2069-094.
- Hegerl, Gabriele C., et al. "Causes of Climate Change Over the Historical Record." *Environmental Research Letters*, vol. 14, no. 12, 2019, p.123006.

- Hoogendoorn, Gea, Bernadette Sütterlin, and Michael Siegrist. "The Climate Change Beliefs Fallacy: The Influence of Climate Change Beliefs on the Perceived Consequences of Climate Change." *Journal of Risk Research*, vol. 23, no. 12, 2020, pp.1577-589.
- Khavarian-Garmsir, Amir Reza, et al. "Climate Change and Environmental Degradation and the Drivers of Migration in the Context of Shrinking Cities: A Case Study of Khuzestan Province, Iran." *Sustainable Cities and Society*, vol. 47, 2019, p.101480.
- Nasir, Muhammad Ali, Nguyen Phuc Canh, and Thi Ngoc Lan Le. "Environmental Degradation & Role of Financialisation, Economic Development, Industrialisation and Trade Liberalisation." *Journal of Environmental Management*, vol. 277, 2021, p.111471.
- Rahman, Mohammad Mafizur. "Environmental Degradation: The Role of Electricity Consumption, Economic Growth and Globalisation." *Journal of Environmental Management*, vol. 253, 2020, p.109742.
- Rana, Irfan Ahmad. "Disaster and Climate Change Resilience: A Bibliometric Analysis." *International Journal of Disaster Risk Reduction*, vol. 50, 2020, p.101839.
- Ray, Deepak K., et al. "Climate Change Has Likely Already Affected Global Food Production." *PloS One*, vol. 14, no. 5, 2019, p.e0217148.
- Tong, S., and K. Ebi. "Preventing and Mitigating Health Risks of Climate Change." *Environmental Research*, vol. 174, 2019, pp.9-13.
- Zandalinas, Sara I., Felix B. Fritschi, and Ron Mittler. "Global Warming, Climate Change, and Environmental Pollution: Recipe for a Multifactorial Stress Combination Disaster." *Trends in Plant Science*, vol. 26, no. 6, 2021, pp.588-99.

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