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

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Abstract:
Climate Change is a concerning issue in the present world. In both, national and international forums, there have been discussions regarding climate change and environmental deterioration as a cause of insecurity. Human activities are the leading forces behind the decline of the environment as well as climate change. An Intergovernmental Panel on Climate change (IPCC) report depicts that global temperatures are so far the warmest to have been experienced since 1885. These temperatures are expected to increase further to a margin of about 6.4oC by the year 2100 due to global warming. Global warming is instigated by the accumulation of greenhouse gases (GHG) in the atmosphere which ultimately leads to increase in water levels in the oceans and lakes. The resultant implications are displacement of people to other regions for safety. The natural resources are destroyed along as the natural catastrophes hit causing scarcity which leads to completion of these resources. Security is bleached at both national and international level as people scramble for the resources disturbing peace in the affected areas. Since security is a global responsibility, various countries in a specific region require an alliance for a consorted effort to avert the impending catastrophes as a result of climate change to maintain peace among its people. Developing countries are the most predisposed to these calamities, requiring that more funds be committed to facilitating environmental friendly activities and responding to risks of climate change.

Keywords: climate change, environmental degradation, global security, threats, deforestation, global warming and international actors

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1. Introduction

Recently, at both, national and international forums, there have been discussions regarding climate change and environmental deterioration as a cause of insecurity. Global change of climate and ecological degradation resulting from human practices are evident as backed up by scientific findings. This paper will discuss the leading causes of climate change and environmental degradation and how they threaten international peace and cooperation basing on recent data.

Climate variability and the accompanying ecological deterioration have recently been recognized to pose serious security issues to national and international peace and cooperation (Dodo 2014, p.194). Globally, the security implications of climate variability and ecological deterioration have gained much attention enhancing its prioritization in various international forums as an agenda for discussion. Although, some people disregard the idea that climate change can threaten global peace, many others have taken it seriously. About 70 member states of the United Nations (UN) overwhelmingly prioritize climate change security risks according to their statements in the Paris conference of 2015 (Davenport, Gillis, Chan & Eddy 2015, p.15). Notably, the UN Secretary-General Ban Ki-moon brought the matter to the Security Council highlighting the necessity of governments to assemble more resources for the mitigation of security issues of climate change (Scheffran and Battaglini 2011, pp.27-39). In response to this anticipated security threat, many like-minded governments have collaborated to facilitate conventions aimed at finding the best policies to avert security issues resulting from the worldwide variability of climate as well as ecological degradation (Dodo 2014, p.194). As a result, the Intergovernmental Panel on Climate change (IPCC) was established through the guidance of the United Nations Environment Program in collaboration with the World Meteorological organization which mandate is to enlighten the countries across various regions with an up to date data on climate change and its impacts. Such information directs various governments on the formulation of policies to adequately respond to the problems resulting from climate change and environmental degradation.

2. Climate Change and Environmental Degradation

According to the understanding of most people, climate change denotes the alteration of the environment which results from human activities, such as improper disposal of wastes, combustion of fuels, the inadequacy of forested areas, and other influential factors that increase the amount of Green House Gases (GHG) in the atmosphere. Officially, as defined by the UN Framework Convention on Climate change (UNFCCC), it is the alteration of the world environment as a result of direct or indirect human practices as well as the natural climate variability witnessed over comparable years. Therefore, it ultimately changes the composition of the global atmosphere (Dow and Downing 2016, p.451). Environmental degradation implies that the degeneration of the ecosystem is as a result of over-depletion of naturally existing resources which support

and enhance the lives of both, the plants and animals. Also, it can refer to the disruption of the equilibrium of the natural ecosystem whereby the existence of different life forms is hampered, affecting the survival of other life in that ecosystem. The "United Nations International Strategy for Disaster Reduction" defines environmental degradation as the decline in the capacity of the environment to support both, social and ecological needs as well as objectives (Liberatore 2013, p.83).

3. Present scenario of Climate Change and Environmental Degradation

Reports on climate changes all over the world present a worrying trend on the rate of this change and the resultant effects. An evaluation of the fourth report by the IPCC revealed that the global temperature for the last twelve years, that is from 1995 to 2006 shows that eleven of this years have experienced the warmest temperatures since 1885 (Matyasovszky and Ljungqvist 2013, pp.215-225). Further, the IPCC report of 2007 estimates a temperature rise of 1.1-6.4 oC by the year 2100 (Banu, Hu, Guo & Tong 2014, pp.137-142). As a result of climate change, about 3,852 natural catastrophes have claimed the lives of more than 780,000 persons while affecting more than two billion people as property of more than $960 billion has been lost in the process (Duran, Ergun, Keskinocak & Swann 2013, pp.447-462). These disasters are predicted to double up in the next 10 to 15 years compounding to the risks that the world is to suffer if the high rate of climate change is not controlled. Also, there are changes in sea-levels and human environments that have been presented in geological reports over the past years (Kates, Travis & Wilbanks 2012, pp.7156-7161). The rapid rising of the water level in the oceans and seas results from the melting of land ice and mountain glaciers. One of the conclusions of the IPCC report is the emission of GHG, Carbon dioxide, methane, Nitrogen (IV) oxide, the hydrofluorocarbons, Sulphur hexafluoride and Perl fluorocarbons. These are the driving force of climate change as the gases trap the radiated solar energy from the earth's surface which makes the earth surface warm (Dodo 2014, p.194). As the emission of these gases increases, there is a growth in the earth's temperatures which enhances global warming and its effects. In fact, the sea-level has been increasing at a proportion of about 1.7bmm/year over the past one hundred years, which is evidence for global climate change (Williams 2013, pp.184-196). Moreover, the shrinking of the glacier volume as a result of the warming temperature on the earth's surface shows the far-reaching effect of climate variability. Reports indicate that the northern hemisphere snow has sharply retreated whereby the most significant declines have been observed during summer and spring seasons (Lamb 2013, p.47).

The recent mass migration is evidence of environmental degradation as a result of extreme environmental events, such as droughts and storms. When there is a gradual deterioration of the environment, mass displacement is bound to occur as many of them move to look for safer and better places for survival. For example, between 1979 and 2008, an estimated number of 1.6 billion people suffered from droughts as other 718 million were hit by storms (Laczko and Piguet 2014, pp.1-20). Other slow-onset

phenomena, such as reduced soil fertility, desertification, and coastal erosion bring about mass migration. The forms as mentioned earlier of environmental degradation impact the available livelihood patterns of production triggering various types of movement.

3. Causes of Climate Change and Environmental Deterioration

Many factors contribute to the climate change as well as environmental degradation. The leading cause of climate change is the accumulation of GHG in the atmosphere (Steffen et al. 2015, p.1259855). These gases affect the earth's radiative balance, the population of various animal and plant species, and the influx of the ultraviolet rays to the earth's surface (Singh 2017, p.10). Overly, when these gases are emitted to the atmosphere, they accumulate forming a blanket layer that absorbs the infrared rays from the sun as well as shield the earth from irradiating its heat. The result of all these is an increase in the earth's temperatures, which is a condition referred to as global warming and has vastly been experienced in many parts of the world. Besides the melting of Greenland ice and mountain glaciers, there have been increased temperatures in the oceans and decline of Arctic sea ice (Merila and Hendry 2014, pp.1-14). Steadily, the earth's temperature has been rising at about 0.8^{o}C since 1900. The largest concentration of the GHG is Carbon dioxide (CO2) which accumulation had been increased by about 70% with more than half of the increase occurring from 1970 when the global energy consumption escalated (Ballantyne et al. 2012, p.70). In nature, CO2 is continuously exchanged through the process of photosynthesis, respiration, and decomposition between the atmosphere and living organisms. Also, it is cycled between the atmosphere and the ocean through gaseous exchange, while a small percent (1%), is released through volcanic eruptions (Ballantyne et al. 2012, p.70). However, the primary cause of the greenhouse effect is human activities such as combustion of the fossil fuels that contain a lot of carbon compounds that form CO_2 upon combustion. Other GHGs, such as nitrogen (IV) oxide and Methane are also increasing in their atmospheric concentrations as a result of human activities, such as industrialization and changing of the landscape (Pachauri et al. 2014, p.151). Therefore, through the emission of the GHGs global warming is induced through the activities of human beings as well as to a small percentage of the natural causes.

As noted above, the other leading cause of both, environmental deterioration and climate change is human activities. The resulting ecological problems can have long-term ecosystem destroying the entire environment of an organism. The primary causes include overpopulation, environmental pollution, and deforestation which are chiefly human instigated. For example, urbanization and deforestation lead to the destruction of natural or even man-made forests to create more room for the ever-increasing world population (Tyagi, Garg & Paudel 2014, pp.1491-1498). Deforestation indirectly leads to increase in atmospheric CO_2 since the significant way of its utilization from the atmosphere is through photosynthesis. Furthermore, the clearing of the forests affects soil fertility as the trees prevent the erosion of the topsoil through wind and water

erosion. Even further, the erosion of the topsoil that ends up in the water bodies affects the aquatic ecosystem. The above effect compounds to pollution which is detrimental to the sustainability of the environment. Moreover, many of the human economic activities carried out in the contemporary world released toxic gases into the atmosphere and end up destroying the ecosystem. Overpopulation also leads to the increased demand for the little available resources of the environment, and this result to overexploitation. As a result of environmental destruction, the existence of humans in these environments has been threatened.

4. Climate Variability as a Risk to Global Peace

Climate variability has been a topic of discussion in various regions of the world threatening general safety and human security across the globe. Multiple policies are being formulated and implemented by numerous governments and organization in response to climate variability as a security agenda. Before the consideration of how this change poses security problems to human security, it is essential to decipher what a global security threat is as well as the concept of human peace and safety. The "High-Level Panel on threats, challenges, and change" in its report defined international security and peace as "*any event or process that leads to large-scale death or lessening of life chances and undermines states as the basis of the international system*" (Dodds and Pippard 2013, pp.549-601). Basing on the above definition, the panel came up with a list of six occurrences that constitute international security risk which include interstate conflicts, internal discord, and terrorism-use of biological, chemical and nuclear arsenals, transnational organized crime and economic and social risks entailing maladies, abject poverty, and environmental degeneration. In another report, the Human Development Report 1994, defines an individual, community, and national security as a "*symbolized protection from hunger, disease, unemployment, crime hunger, social discord, political repression, and environmental hazard threats*" (Schafer 2013, pp.5-18). After the evaluation as mentioned above, since 2007, the UN in international scale initialized the process of mobilizing for rapid international response to climate change as they created awareness among member states on the implications of this phenomenon on global security. Having classified climate as a constituent of international security which outcomes endanger the safety of persons at the national and international levels, it is possible to evaluate how it presents these security challenges.

Climate change creates depressing conditions which amount to tensions resulting in mass migration, displacement, and strife over power (Oppermann 2017, pp.243-256). According to the 2001 World report on the disaster, an estimated 25 million people became refugees as a result of climatic catastrophes. The number is predicted to rise to 50 million by 2050 due to rise in sea level, desertification, storms, and increasing water insufficiency among other causes (Hamza et al. 2012, p.194). Most countries face economic, political, and social hardships resulting from the uncertainties caused by climate change and its associated negative impact (Schäfer 2011, p.20). Some, for example, Turkey, Brazil, Egypt, Iran as well as Iraq are already faced with security

threats caused by the discord between the armed forces and the respective defense forces due to consequences of climate change (Aronoff et al. 2016, p.234). Many conflicts have been experienced in various regions of the world over the natural resources, such as water, oil, and land. In the areas of the scarcity of water, climate change worsens the quality of the inadequately available water. Recent study findings depict that more than 1.1 billion persons lack adequate access to safer water for consumption. A further 120 million to 1.2 billion people in the South and South East Asia will be experiencing water scarcity issues by the year 2020. Also, recent statistics show that more than 3.5 million persons succumb to waterborne diseases, 84% of them being children. The report further indicates that almost all of these deaths (98%) occur in the developing countries (Muniruzzaman 2011, p.3). This crisis triggers inter-state and social conflicts which endanger the security of the affected communities and nations, posing security issues to the neighboring countries as the search for these resources goes beyond the border, amounting to an international security problem. In Nigeria, for instance, climate change is responsible for the continuous herders' vs farmers conflict. Herders' militancy for the survival of their herds makes the tense struggle and violent contestation with farmers inescapable. The domino effect of these conflicts over the past five years has resulted in the death of thousands, though precise tallies are not available, but a survey of open sourced reports suggests fatalities over this period may have reached an annual average of more than 2,000 from 2011 to 2016. This for some years exceeds the toll from the Boko Haram insurgency (Crisis Group, 2017). Climatic changes caused by droughts increase tension among communities with depressed conditions, and that is why wars easily erupt when such climatic conditions encroach. For example, the Darfur war in Sudan was a result of conflict caused by the drought and land deterioration. Similarly, in Somalia, the internal security issues were as a result of the significant drought (Busby, Smith, White & Strange 2012, pp.463-511). There is an impending international unpredicted conflict consequence if the Indo-Pak water conflict is not resolved. A UN report shows that there are about 300 water potential conflicts existing in the world currently (Muniruzzaman 2011, p.3).

Another element of climate change that disturbs national and international peace is the reduction of agricultural productivity (Muniruzzaman 2011, p.3). The result of this is food insecurity, which is one of the most alarming dangers that impacts of climate variability pose to the world. The number of persons likely to be stricken by hunger is expected to increase to 550 million from the current 250 million people if global warming increases to 3oC (Muniruzzaman 2011, p.3). Agricultural production is further expected to be hit by the changes of climate as the German Council on Global change reports that by 2020, there is the likelihood that 50% of the rain-fed arable land in some regions of the world would be lost. Regarding the world market, there is expected to be a tremendous rise in food price which may intensify food insecurity and poverty among many people. Among the consequences of food insecurity and poverty is the collapse of economically stable systems which may cause instability and social

conflict, therefore, raising national and probably international concerns (Muniruzzaman 2011, p.3).

Furthermore, climatic change is accompanied by severe economic losses as well as human casualties of global catastrophes. In fact, such losses have increased in the recent past with substantial increments beginning in the year 1980. The developing countries have to respond to this phenomenon by allocating at least $50 billion to get prepared for the unpredictable and unavoidable climatic associated catastrophes, according to the report released by Oxfam (Biagini and Miller 2013, pp.242-252). Such climatic disasters can induce regional tensions and conflict which can be a source of regional strives.

The impacts of climate variability may trigger national and international tensions and wars by destroying essential energy infrastructures, such as energy plants and nuclear installation. For example, an earthquake in Japan leads to the explosion of the Fukushima atomic plant leading deaths and many other wounded, something that may disrupt public order (Kim, Kim & Kim 2013, pp.822-828). One of the most predisposed nations to the impacts of climate variability is Bangladesh. The country is often faced with frequent natural catastrophes such as floods which cause water-related issues in the state. Out of her 165 million Bangladeshis, about 77 million are at risk of using dirty water which has resulted to the exposure of approximately 77 million of this population to arsenic, a carcinogenic compound. The Arsenic is likely to cause 2,000- 270, 000 deaths. This is according to a Lancet report (Flanagan, Johnston & Zheng 2012, pp.839-846).

The other effect of climate changes is the increase in rainfall accompanied by changing rainfall patterns. As a result of climate, variability rainfall is expected to rise by 10% which is bound to cause unprecedented flooding (Hirabayashi et al. 2013, p.816). Consequently, the sea level will rise at the foreseen amount of 2-3 ft. which will further displace about 30 million people in Bangladesh (Muniruzzaman 2011, p.3). Also, the Bangladeshis are threatened by river bank erosion and loss of their cultivatable land which will significantly hamper rice production. For this reasons, it is projected that global rice production will drop by 10% and that of wheat by 30% by 2050 (Muniruzzaman 2011, p.3). The above examples and statistical findings show that climatic change threatens human security at different levels due to its impact. The difference in climatic conditions instigates the security challenges as a result of majorly human activities and global warming.

5. Environmental Degradation Is a Threat to Global Security

Among the causes of ecological degeneration is climate change. Therefore, most of the climatic instigated insecurity threats can also be as a result of environmental deterioration. As the environment loses its capacity to support life, then the living conditions of the people in such a situation are bound to move to better environments in an attempt to avoid the poor conditions. As noted earlier, loss of fertility, therefore, reduces agriculture production. For example, the Northern part of Darfur, Sudan was

eroded of its topsoil due to desertification process. As a result, many people migrated from the North towards the South for the search of arable land, and as a result, this led to wars and internal tensions over the little resource (Theisen, Gleditsch & Buhaug 2013, pp.613-625). According to Krause (2014, pp.1421-1451), environmental degradation indirectly causes national and international wars as these factors interact more with the more direct aspects, therefore, intensifying the drifts that already exist. Refugee problems may aggravate conflict between two neighboring nations. Some environmental conditions, such as pollution and depletion of natural resources cause an acute risk to security (Adger et al. 2014, p.20). Such degradations predispose individuals to strife; a good example being the security unrest that occurred in Haiti in 2008. According to the United States Agency for International Development (USAID), the country got into violent protest due to the destruction of her forests. Statistics indicate that in 2008, only 1.5% of the nation was forested compared to 60% in 1923 (Aviles 2016, p.13). As a result of industrialization, the developing countries have lost most of their forest, and only one-fifth of the world forest remains intact (Schomers and Matzdorf 2013, pp.16-30). The high rate of deforestation and increased progress towards industrialization leads to more accumulation of GHGs such as CO2 that could have otherwise reduced through the process of photosynthesis. The resulting condition is global warming which sees rises in sea level. Many people get displaced as a result of flooding, storms, cyclones, and typhoons which are accelerated by global warming causing loss of lives and disorder in the country and its neighbors through the refugee.

Environmental degradation causes the loss of biodiversity due to over-exploitation and pollution of the available resource. There is increased pressure on the scarce resources as equal sharing becomes a problem creating strives among the communities that share the resources. The problem could extend to other countries.

6. Conclusion

Climate change poses a severe threat to international peace and security. As depicted above, the extreme conditions are predicted to rise in the coming years in both, the advanced and developing nations. This may affect the lifestyle of people by increasing the budget expenditure of the particular country as well as other forms of insecurity. Therefore, the states need to engage in environmentally friendly activities in all the sectors of the economy to control climate change and environmental degradation and avert this impending danger. Moreover, the impact of ecological deterioration and climate change has a more significant consequence on the developing nations as compared to the developed economies. The reason for this scenario is due to the lack of the capacity to handle such calamities when they hit. Also, the pressure on the scarce resources may degenerate into wars due to competition. The health status of the citizens may also be endangered as well as their livelihoods as a result of the impact of climate change. There is the need for these countries as well as others of the alliance to define their individual and collective roles in reducing these threats of climate change. International agencies and organizations should follow up on the established functions

of each country and hold them responsible for ensuring they actively participate in controlling climate change. If necessary trading restrictions can be imposed on the defiant nations since their failure to avert climate change endangers the security of its people and other countries. At the national level, the climate regulating agencies and organizations should impose penalties to the defaulters of instituted guidelines of attaining environmental friendly planet.

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