Oguzkaan Schools
JMUN
Environment Committee

Issue : Preventing Desertification and Ensuring an Integrated Approach to Lower Carbon Intensity

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I. Introduction

United Nations Industrial Development Organization (UNIDO) is a specialised United Nations Institution which was established in 1966 but it became specialised agency in 1985. On 17 May 2018, there were currently 168 countries to be the members of the UNIDO. The main goal of the Committee is to take necessary measures in countries against the environmental and industrial problems by implementing the Sustainable Developments Goals (SDGs). As it is detailed in the Organization's Medium-Term Programme Framework 2018-20121, the focus of the organisation is structured in four strategic priorities.

- Creating shared prosperity
- Advancing economic competitiveness
- Safeguarding the environment
- Strengthening knowledge and institutions

Each of these programmatic fields includes various individual programmes which are implemented to achieve efficient outcomes through UNIDO's four enabling functions;

- Technical cooperation
- Analytical , research functions and policy advisory services
- Normative functions and standards ,quality-related activities
- Meeting for knowledge transfer, networking and industrial cooperation.

UNIDO has increased its technical services over the past ten years to achieve its missions. It also increased its financial capacity to improve the international recognition of the Organization.

II. Definition of Key Terms

Desertification: Desertification is a kind of land degradation which spreads desert-like conditions with the combination of climatic events and human impacts.

Overgrazing: Overgrazing is a situation in which there are too many animals eating grass in an area, which damages the environment.

Deforestation: The act or result of cutting down or burning all the trees in an area

Climate Change: Climate change is a change in the pattern of the usual states of the atmosphere- such as the temperature, the state of weather and humidity in particular places of the Earth. It is caused by the excessive emissions of greenhouse gases to the atmosphere.

Reforestation: the act of planting tree seeds or young trees in an area where there used to be a forest.

Carbon Emissions: Carbon dioxide and carbon monoxide in the atmosphere produced by vehicles and industrial processes.

III. General Overview

a)The Current Situation in Global Desertification

Desertification has severe effects in most of the regions around the world. Land degradation is currently affecting 168 countries

according to the studies published by the United Nations Desertification Convention (UNCCD). 10 to 20 percent of the drylands of the world are already degraded, which means 6 to 12 million square kilometres have already been destroyed. However, the exact proportion of drylands remains unclear since only a few works have been done so far. This fact causes to have a wide range of predictions upon the matter.

Asia

Certification is visible in many different forms across Asia. Out of a total land area of 4.3 billion hectares, Asia contains some 1.7 billion hectares of arid, semi-arid, and dry sub-humid land reaching from the Mediterranean Coast to the shores of the Pacific. Problems of land degradation are closely linked to poverty in Asia, with many vulnerable communities dependent upon arid lands which have periodic drops and desertification processes.

Sub-Sharan Africa

The situation is particularly sensitive in sub-Saharan countries, where over 80% of the economy is based on subsistence farming. According to Monique Barbut, UNCCD Executive Secretary emphasized that almost 12 million hectares of arable land are lost each year globally, whereas 20 million tonnes of cereals could have been cultivated on this area.

Despite the diversity and intensity of efforts to combat desertification, the challenge of land degradation in Africa's arid areas remains unresolved. The environmental and societal risks are massive, including food security, climate change, health, law and social equality.

Europe

Water shortage in higher temperatures, which increases the dehydration, is combined with soil erosion intensified by extreme weather events, increasing the risk of desertification in Europe.

According to the European Environment Agency (EEA) 2008 data, in the areas of Southern Coleman Central and Eastern Europe, 8% of the territory corresponding to about 14 million hectares, showed "very high" and "high sensitivity" to desertification. The affected part increases more than 40 million hectares. The situation is more serious in Southern Portugal, a large part of Spain, Sicily, south-eastern Greece, Cyprus, and the areas bordering the Black Sea in Bulgaria and Romania.

America

Seventeen states in the western U.S. can be categorized as arid, semi-arid or subhumid based on climate and soil type; this characterizes them as vulnerable to desertification. The most seriously affected areas in the U.S. are in New Mexico, Texas and on the Navajo Indian reservation in New Mexico and Arizona. Overgrazing, which has led to wind and water erosion, and poor irrigation are the leading causes of desertification in the U.S., and scientists believe that these areas are unlikely to be mended naturally from the damage in the next 100 years.

Australia

Just like other regions, Australia is drying up rapidly, rivers are running well and aquifers are shrinking at record rates. Australia has failed to recognise that many of its current agricultural practices are destroying soil health and leading us to an ecological abyss. One of

the most common causes is overgrazing which severely leads to plants' death.

b) The Causes and Effects of Desertification

According to the United Nationals Educational, Scientific and Cultural Organization (UNESCO), World's land surface is facing with desertification problem. This problem not only affects the environmental segments but also the livelihood of millions of people who count on the advantages of the ecosystem. Desertification also stands as a barrier to meeting the fundamental human needs which are threatened by human pressures and climatic variability.

There are several cases which cause desertification and some are listed below:

Overgrazing: If the vegetation is overgrazed by the animals, it becomes harder for the plants to regrow. Moreover, overgrazing was not as huge as it is now because people used to move from place to place depending on the rainfall and this prevented overgrazing. but now, people settle down with steady food supplies so they confine their livestock to a specific place for a food source which results in overgrazing.

Deforestation: Because of urbanisation and increase in agriculture, the forests are being cut for several infrastructural purposes. These cause diverse effects on the environment like soil erosion. And this is also one of the biggest causes of desertification.

Climate Change: With the removal of the vegetation, the effects of climate change has increased in a remarkable amount. Because of the lack of presence of the vegetation on the land, there is nothing to

moisture the soil and to form clouds which are the main factors to cause rainfall.

Desertification also has several causes to lands and some are listed below;

Soil erosion; deforestation causes soil erosion to increase.Because of shortage of water, the nutrients in the soil can be annihilated. Desertification also becomes even worse with the lack of plants and the increasing rate of aridity of soil.

Food Loss; with the damages to the areas which have food production, the food that is produced will be getting scarcer and also the people living in those areas will have challenges in accessing food. In this case, the animals will also have problems with having food and this will leadto more food shortage. Considering population growth, this can even cause starvation and economic problems.

Poverty; If the aforementioned causes cannot be checked and eliminated, they all can lead to poverty. Without proper access to food or water, it becomes harder for people to thrive since it will be a lot more challenging to have a good life.

IV. Measures that Have Previously Been Taken

a) The Great Green Wall of China

Circling an area of 1.3 million square kilometres, the Gobi Desert is the fifth-largest desert in the world and is rapidly desertifying parts of China. The Gobi and the Taklamakan Desert in the Northwest of China regularly blow sandstorms to the west, covering Beijing. The expansion of the desert is a product of climate change and the massive deforestation .

By 2050,the artificial forest is to stretch 400 million hectares - covering more than 42 per cent of China's landmass.

The benefits of reforestation, advocates say, are evident. Notably, the trees help stop China's fast-moving deserts in the west and north. In a 2006 report to the United Nations Convention to Combat Desertification, China declared that 2.63 million square km -or 27 per cent of its landmass -was covered with desert, compared with 18 per cent in 1994. China 's grasslands have shrunk by 15,000 square km annually since the early 1980s.

Moreover, scientists say the new forests are better at absorbing carbon than slow-growth forests. They argue that fast-growing poplar and white birch trees capture double amount of carbon as Korean pine, larch and firs.

Despite its success, critics disapprove the Great Green Wall because of environmental disadvantages such as polar biodiversity and heavy water use. Some studies even show that creating new forests is not an effective way to absorb carbon or mitigate climate change.

In conclusion, the Green Wall project could be China's only solution and seems to be working as a buffer zone right now but scientists have allegedly found out that reforestation and afforestation -the creation of new forests-actually lower a forest's potential to lessen climate change which means that this project might not be sustainable.

Further reading: https://www.theguardian.com/environment/2010/sep/china-great-green-wall-climate

b) The Great Green Wall of Africa

The Great Green Wall is an African -led movement with an ambition to grow an 8,000 km natural wonder of the world across the width of Africa.It was promised to be a compelling solution to urgent threat

not only facing the African Continent but the global community as a whole .Urgent threat is listed as climate changes, drought, famine, conflict and migration.

Great Green Wall has seemed to be an efficient and sustainable solution so far. It was able to solve problems like drought and lack of food in many regions such as Senegal. Due to tree roots holding water in the soil, there is water in formerly dried wells and people are able to plant crops for food.

Some experts say that the project is simply too big to work as it stretches across such vast economic, ecological and political fields.It is entirely possible that one country in the chain may lose political will, or the financial capability, to continue the project. Furthermore, trees planted which are not peculiar to the area will not survive.

c) The Land Degradation Neutrality (LND) Programme

LDN represents a paradigm shift in land management policies and practices. It is a unique approach that counterbalances the expected loss of productive land with the recovery of degraded areas. It places the measures and restores land in the context of land use planning.

130 countries have participated in the "Land Degradation Neutrality Target Setting Programme" to combat desertification, restore degraded land soil and strive to achieve a world 4th EU Adaptation Strategy.

2013 EU Adaptation Strategy for the cause of the climate change is to encourage the Member States to take adaptation action. It stresses the need for the EU to take measures to adapt to unavoidable climate impacts and their economic, environmental and social costs.

V. The Paris Agreement

The Paris Agreement brings all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects, with enhanced support to assist developing countries to do so.

a) All related actions that build up to the Paris Agreement

. United Nations Framework Convention on Climate Change

Climate change entered the political agenda in the 1980s. The Intergovernmental Panel on Climate Change (IPCC) released its first synthesis report in 1990, highlighting the real risk that human activities could affect the Earth's environment to a potentially very serious extent. When the United Nations Conference on Environment and Development took place in Rio two years later, climate change had become a known issue. The Conference led(among other positive achievements) to the adoption of the United Nations Framework Convention on Climate Change (UNFCCC) as the basis of the global response to climate change.

. Kyoto Protocol.

The UNFCCC sets non-building limits on greenhouse gases emission. It is a "framework" convention, which does not represent the final word and can be expanded over time.

The US signed the Kyoto Protocol but never ratified it. China (which has now overtaken the US as the world 's largest producer of CO2) was considered as a developing country under the Protocol and consequently did not have any obligation either.

b) Was Paris Agreement a success?

Although the agreement was legally binding, the emission targets were not binding. Weeks after the adaptation of the agreement, some top climate experts published an open letter to *The Independent,*

warning that the agreement is far too weak to prevent harmful impacts(insufficient pledges and sufficiently binding)

. US Withdrawal

We can't technically blame the US for making this agreement inefficient by withdrawing it because it wasn't already an efficient one to start with .However, this might have made things worse for the agreement in a political matter. If the US had stayed, there could have been a chance that some cities set goals for emission but the US' completely withdrawing it can be understood as a political and symbolic move.It may have an impact on people's perception of the problem and their (un)willingness to engage in any personal action and behavioural changes.

VI. Global Emissions and Climate Change

a)The Effects of Climate Change

Impact on Agriculture

One of the most important and critical sectors in the 21st century -and most probably in the future-is agriculture and food production.The world needs to be able to feed the billions of people today and in the future, and that is only possible with effective farming and prosperous yields. Nevertheless, there is a new threat to the future of this sector,which is climate change .Changes in temperature, atmospheric carbon dioxide(CO_2), and the frequency and intensity of extreme weather could have significant impacts on crop yields. These impacts may depend on different crops' optimal temperature for growth and reproduction. In some areas, the change of temperatures may benefit the kind of crops usually planted there, or force the farmers to change their crops to other kinds that can be more productive in warmer climates --- since the yields will start to decline if the temperature exceeds the optimal need of temperature of the crops.

More extreme temperature and precipitation can prevent crops from growing. Extreme events, especially floods and droughts --- which are some of the impacts of climate change---, can harm crops and reduce yields.

Dealing with drought could also be a big challenge for agriculture, with the rise of temperatures, more water than usual would be needed in order to keep the soil damp enough. This could also mean that the water sources in some places could end up declining or even vanishing due to increased irrigation.

Many kinds of fungi, weeds and pests today may grow faster under high temperatures. With the impacts of climate change, this could be a big problem for agriculture, considering that the ranges and distributions of these beings would increase, causing problems for the farmers' crops that are previously unexposed to these species.

Impacts on Livestock

Same as the agriculture sector, the livestock sector is also a very important sector today.

But climate change could also have severe impacts on livestock.

Drought may threaten pasture and food supplies. Drought reduces the amount of quality forage available to grazing livestock. Some areas could experience longer, more intense droughts, resulting from higher summer temperatures and low precipitation. For animals that rely on grain, changes in crop production due to drought could become a problem.

Climate change may increase the prevalence of parasites and diseases that affect the livestock. The earlier onset of spring and warmer winters could allow some parasites and pathogens to survive more easily. In areas with high rainfall, moisture-reliant pathogens could thrive.

Increases in atmospheric CO2 can affect the productivity of plants on which livestock feed. However, the quality of some of the forage found in pasturelands decreases with higher CO2. As a result, cattle would need to eat more to get the same nutritional benefits, which is also a problem.

Impacts on Fisheries And Fish

The ranges of many fish and shellfish species may change. In the United States, several economically important species have shifted northward since the late 1960s, moving to approximately 119 miles northwards from their natural habitat due to the impacts of climate change in the ocean. The forceful migration of fish species may not seem like a big problem, but it, in fact, may cause problems such as overpopulation in a particular area, and the competition of foods and resources between species.

Some marine disease outbreaks have been linked with changing the climate. Higher water temperatures and higher estuarine salinities have enabled an oyster parasite to spread farther north along the Atlantic coast, warmer temperatures have also caused disease outbreaks in coral, eelgrass, and abalone.

Changes in temperature and seasons can affect the timing of reproduction and migration, which are the most important problems that climate change may cause in the oceans.

Impacts on Wildlife

Global warming is likely to be the greatest cause of species' extinctions in this century. The Intergovernmental Panel on Climate Change estimates that a 1.5ºC average rise may put 20-30% of species at risk of extinction. If the planet warms by more than 2ºC, ecosystems will be in danger.

Average air temperatures in the Arctic region have increased by about 5ºC over the last 100 years. Recent data shows that there'll be almost no ice cover left in the Arctic in the next few decades. The effects won't just be felt by the habitats and species .

The Antarctic ice sheet is the largest single mass of ice on earth, accounting for around 90% of all freshwater on the earth's surface and spanning almost 14 million sq km. This ice plays a vitally important role in influencing the world's climate, reflecting the sun's energy and helping to regulate global temperatures. Parts of the West Antarctic Peninsula are among the fastest-warming places on earth. Even small-scale melting is likely to have significant effects on global sea-level rise and the species living in the Antarctic region.

Oceans are vital 'carbon sinks', meaning that they absorb a huge amount of carbon dioxide, preventing it from reaching the upper atmosphere. High water temperatures and higher carbon dioxide, which make oceans more acidic, have already had an impact on oceans. Oceans have already experienced large-scale changes at the warming of 1ºC, with critical thresholds expected to be reached at 1.5ºC and above. Coral reefs are projected to decline by a further 70-90% at 1.5ºC. Warming of 2ºC virtually, all coral reefs will be lost. It's not only a tragedy for wildlife around half a billion people also rely on fish from coral reefs as their main source of protein.

Impacts on Human Life

Researches show that Warmer average temperatures will lead to hotter days and more

frequent and longer heatwaves. These changes will lead to an increase in heat-related deaths in the United States during summer months. Exposure to extreme heat can lead to heat stroke and dehydration, as well as cardiovascular, respiratory, and cerebrovascular disease. Certain types of people are more vulnerable than others: for example,

outdoor workers, student-athletes, and homeless people tend to be more exposed to extreme heat since they spend more time outdoors. Low-income households and older adults may lack access to air conditioning, which also increases exposure to extreme heat. Additionally, young children, pregnant women, adults, and people with certain medical conditions are less able to regulate their body temperature and can, therefore, be more vulnerable to extreme heat. Urban areas are typically warmer than their rural surroundings. Large metropolitan areas in the United States have seen notable increases in death rates during heat waves. Climate change is projected to increase the vulnerability of urban populations. Heatwaves are also often accompanied by periods of stagnant air, leading to increases in air pollution.

Strong scientific evidence shows that global warming is increasing certain types of extreme weather events, including heatwaves, coastal flooding, extreme precipitation events, and more severe droughts. It is estimated that the sea levels will continue to rise until they reach 80 meters higher than the current sea levels. Global warming also creates conditions that can lead to more powerful hurricanes.

Carbon Emissions

Carbon emissions, greenhouse gas emissions, are defined as the release of greenhouse gases and/or their precursors into the atmosphere over a specified area and period of time. Emissions of several important greenhouse gases that result from human activity have increased substantially since large-scale industrialization began in the mid-1800s. Most of these human-caused greenhouse gas emissions were carbon dioxide because of burning fossil fuels.

Today, there are many types of activity that can cause carbon emissions to rise at a significant level, such as Electricity and heat, industrial activities, transportation, deforestation or agriculture. For

the first time in more than 40 years, the largest source of greenhouse gas pollution in the US hasn't been electricity production but transport – cars, trucks, planes, trains and shipping.

Effects of Greenhouse Gases' Emissions

When it comes to the well-being of humans, carbon dioxide emissions affect human health by displacing oxygen in the atmosphere. Breathing becomes more difficult as carbon dioxide levels rise. In closed areas, high levels of carbon dioxide can lead to health complaints such as headaches, changes in bone calcium and changes in body metabolism.

Scientists know that increasing greenhouse gases tend to warm the planet. In computer-based models, the rise of greenhouse gases has produced an increase in the average surface temperature of the earth over time. Rising temperatures may produce changes in precipitation patterns, storm severity, and sea level. This is commonly referred to as climate change, which was thoroughly explained prior to this topic.

Carbon dioxide is a contributor to the environmental effect known as acid rain. Emissions released from fossil fuel-burning energy plants combine with moisture in the air. The result is precipitation with high acid content. Statistics showthat there is physical damage to trees and other plants' lives. Water and soil pollution occur from the acidic precipitation. A complicating factor is the mobility of emissions. The effects of carbon dioxide can be seen and felt far from their sources, making their impacts on air pollution more seriously.

VII. Conclusion

Our environment has had lots of damages over the past decade. With the latest projects and advancements through fixing the problems caused by desertification and climate change and also the carbon

usage, bad effects are decreasing. However, the progress is inadequate.

For a better environment and a better future, all member states and people should have the awareness for the issues that are mentioned before in this document.

VIII. Questions that a Resolution Must Address

1. What further measures can be taken in order to decrease the causes of desertification?

2. What further actions can be done to reduce the effects of climate change?

3. How can the previous projects and initiatives for the prevention of desertification be improved?

4. How can the Paris Agreement be improved?

5.How can the usage of carbon be reduced?

6.How can the effects of desertification be fixed?

7. How can green technology and renewable energy be implemented?

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