



GA4: Environmental Committee

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Issue: Assessing future repercussions of land and marine degradation

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I. Introduction

Land degradation is a serious global issue that has negatively impacted 1.5 billion people's livelihoods, food security, economic growth, and general well-being. Essential ecosystem services, such as resources, habitat, healthy soil, clean water and clean air can no longer be provided by degraded areas. Although the causes of degraded areas are numerous and intricate, all are caused by human demands on the environment. For instance, deforestation can result in soil erosion, which then causes sediment and nutrient discharge, lowering the quality of the water and soil. Intensifying farmland use and overcrowding produce soil erosion and salinization, overgrazing causes vegetation loss and soil compaction, and urban growth results in soil sealing and permanent soil loss as other common causes of land degradation.

Numerous factors, such as harsh meteorological conditions, particularly drought, lead to land degradation. Additionally, it is brought on by human activities that deteriorate or impair soil quality and land usability. Production of food and livelihoods, as well as the creation and delivery of other ecosystem products and services are all negatively impacted. A kind of land deterioration known as desertification occurs when rich land turns into a desert.

Due to increased and combined pressures from agricultural and livestock production (over-cultivation, overgrazing and forest conversion), urbanization, deforestation, and extreme weather events like droughts and coastal surges that salinate land, land degradation has accelerated during the 20th and 21st centuries.

Marine pollution is the introduction of human-made substances into the ocean that have detrimental effects on the marine environment, including harm to living things, risks to human health, impediments to marine activities like fishing, deterioration of seawater quality, and loss of infrastructure. The world's seas and coastal waterways are deteriorating due to rising coastal development, marine trash, too many nutrients, untreated wastewater, and other pollution risks. A higher risk of malnutrition due to diminished food and water availability; an increase in water- and food-borne illnesses from poor sanitation and a lack of clean water; respiratory illnesses brought on by atmospheric dust from wind erosion and other air pollutants;



and the spread of infectious diseases as populations migrate are just a few of the potential health effects of land degradation.

There are currently between 1-6 billion hectares of degraded land in the world, including 47% of marginal rainfed croplands and 73% of the planet's dryland rangelands. Future human pressure on the land will increase due to predicted population growth and lifestyle changes. If we do not take immediate action, the effects of climate change, such as droughts and floods, will worsen the degree of land degradation.

The world community is aware of the serious effects of land degradation and the need for quick action. Members of the Rio20+ Conference on Sustainable Development in 2012 vowed to fight desertification and work toward a world without degradation by 2030. Sustainable land management and a neutrality mechanism similar to no-net-loss rules, which have been established in some places, for example for biodiversity, are the two key components of land degradation neutrality LDN. Such a neutrality mechanism accepts that some degradation is unavoidable but does not intend to restrict all progress and calls for an equivalent amount of restoration. The adoption of a mitigation hierarchy that only restores data when loss is inevitable is a crucial requirement. While LDN has been embraced at the municipal level, it is still largely unknown how LDN will be implemented nationally and how future land use and management patterns would develop. Since LDN is a "no-net-loss" strategy, it will interact with the other pressures on land systems. Land use and land management (sometimes referred to as "land systems") respond to conflicting demands on land resources. Therefore, the difficulty of reaching several Sustainable Development Goals (SDGs) is illustrated by the achievement of LDN in the context of numerous competing claims on land resources.

II. Involved Countries and Organizations

1. The UNCCD (the United Nations Convention to Combat Desertification)

This ominous future scenario may be stopped and reversed thanks to the UNCCD's LDN aim. One hundred and twenty nine nations out of the 196 nations on the globe that have promised (or are striving) to stop land degradation by 2030 are already receiving the UNCCD's assistance. The Changwon Initiative, which encourages national voluntary target-setting procedures to attain land degradation neutrality, is supported by more than 100 nations . According to their definition of LDN, this condition occurs when the quantity and quality of land resources required to sustain ecosystem services and functions that improve food security are either steady or growing within predetermined temporal and geographical scales and ecosystems.



Three actions must be taken that are suggested by the UN and experts simultaneously to achieve LDN: 1. preventing new land degradation by preserving healthy existing land; 2. reducing existing degradation by implementing sustainable land management practices that can slow degradation while improving biodiversity, soil health, and food production; and, 3. increasing efforts to restore and convert degraded lands to a natural or more productive state.

To improve global food security, maintaining or increasing land productivity; increasing the resilience of the land and the populations that depend on it; seeking synergies with other social, economic, and environmental objectives; and reinforcing and promoting responsible and inclusive land governance are just a few of the UNCCD's goals for LDN. LDN essentially entails managing land more sustainably to slow down deterioration and speed up land regeneration. In order to achieve a zero-net rate of land degradation, these two endpoints converge.

The African Union established the Great Green Wall initiative in 2007. The ground-breaking Great Green Wall program, driven by Africans, intends to improve the Sahel region's landscapes and millions of people's livelihoods. This large-scale initiative, which is being carried out in 22 African nations, will reinvigorate tens of thousands of local communities. Under the direction of the African Union Commission and the Pan-African Agency of the Great Green, it brings together African nations and foreign partners. For this revolutionary project, more than USD 8 billion has been raised and promised.

The GGW effort seeks to trap 250 million tons of carbon, rehabilitate 100 million hectares of damaged land, and generate 10 million green employment by 2030. Communities located along the Wall will benefit from one of the world's most valuable natural resources: fertile land, economic opportunities for the youngest population on the planet, food security for the millions of people who go hungry every day, climate resilience in a region where temperatures are rising more quickly than anywhere else on the planet, and a brand-new, 8000-kilometer-long wonder of the world.

The Drought Initiative will be implemented throughout the 2018–19 biennium, according to a request made by the Conference of the Parties (COP) during its thirteenth Meeting (COP13) to the Secretariat and relevant UNCCD agencies and bodies, including the Science–Policy Interface. The new initiative's main areas of concentration are drought preparedness systems, regional efforts to lessen drought susceptibility and risk, and a toolkit to increase people and ecosystems' resilience to drought.

The goal is to deliver pertinent information prior to or during the early stages of a drought in order to trigger action (through threshold triggers) within a drought risk management plan in order to minimize



potential effects. For such a slow-onset threat to be monitored, a thorough, comprehensive methodology is essential.

2. The GEF (the Global Environment Facility)

The GEF acknowledges the need for careful and sustainable management of all productive landscapes, including the temperate forests of Europe, the subtropical grasslands of South America, and the drylands of Africa and Asia. From grain and animal production to water resource management, The GEF's investments aim to halt and reverse desertification and deforestation.

The United Nations Convention to Combat Desertification (UNCCD) uses the Global Environment Facility (GEF) as its primary funding source, and one of its goals is to invest in the global environmental advantages of productive landscapes. In order to help communities, corporations, and governments and to balance the need to enhance food production without deteriorating land resources, the Conference of the Parties to the UNCCD has recognized the idea of "land degradation neutrality" (LDN).

On the eve of the Rio Earth Summit, the Global Environment Facility was created to address the most urgent environmental issues facing our world. Since then, it has raised an additional \$120 billion in co-financing for more than 5,200 projects and initiatives, providing over \$22 billion in grants and blended finance (UNEP). The GEF, the biggest multilateral trust fund, promotes the implementation of important international environmental treaties, including those on biodiversity, climate change, chemicals, and desertification. It also enables poor nations to invest in nature. Along with civil society, international organizations, and business partners, it unites 184 member governments. More than 27,000 community and civil society projects have received funding from the GEF through its Small Grants Programme, which has been implemented in 136 nations.

3. The EPA (the United States Environmental Protection Agency)

Together with U.S. government agency partners, national governments in other nations, and international organizations, EPA helps shape U.S. government positions on international marine pollution issues in order to ensure that management of marine pollution issues on a global scale advances EPA's mission: to conserve the land, water, and air that are essential to life as well as protect human health. The EPA employs a variety of strategies to reduce marine pollution. For instance, to create and implement national action plans on marine trash, the EPA collaborates with governments in Latin America and the Caribbean. In order to meet US obligations under the Cartagena Convention, which focuses on reducing land-based sources of marine pollution through the Land-Based Sources Protocol and protecting



biodiversity through the Specially Protected Areas and Wildlife Protocol, EPA also collaborates with the State Department and the National Oceanic and Atmospheric Administration (NOAA).

III. Focused Overview of the Issue

1. Land Degradation

Food insecurity, rising food prices, climate change, environmental dangers, and the loss of biodiversity and ecosystem services are just a few of the ways that everyone is impacted by land degradation which is the deterioration or loss of the productive capacity of the soils for the present and the future. An alarming rate of land degradation is contributing to a sharp drop in the productivity of croplands and rangelands throughout the world.

Without prompt corrective action, one of the most serious environmental issues facing the planet will worsen: land degradation. Approximately 25% of the world's land has been degraded. Land degradation is one of the main causes of climate change because it releases nitrous oxide and carbon from the soil into the atmosphere. Scientists recently issued a warning that unsustainable agricultural methods are mostly to blame for the annual loss of 24 billion tons of rich soil. By 2050, 95% of the Earth's land regions are at risk of degradation if the current trend persists.

Land erosion affects 3.2 billion people worldwide, mostly rural populations, smallholder farmers, and the extremely poor. The predicted increase in the global population to 9.7 billion people in 2050 would result in a rise in the demand for agricultural goods such as food, feed, fiber, and fuel. The loss of biodiversity has made agricultural production systems less robust, and other natural factors like climatic unpredictability and extreme weather events are adding to the burden on the world's land resources. Agro-ecosystem resilience and the stability of food production systems are threatened by the escalating differences in agricultural yields and revenue brought on by climate change.

There are more and more sand and dust storms in the MENA region (SDS). Sandstorms happen close to the ground, while finer dust gets swept kilometers into the air and spread out across vast distances. In 2022, Iraq is predicted to see 300 SDS, up from 122 in 2010. Kuwait experiences up to three months of SDS annually, compared to roughly a month in Qatar and several weeks in Bahrain. Demand for food, water, and land is expected to rise as the population grows, putting more strain on available water and agricultural land (see JORDAN: Coming climate crisis will hit youth hard - December 13, 2021).



Salinity in the soil is a result of unsustainable farming methods, such as the use of shallow-rooted, water-intensive crops. Groundwater reserves are being consumed faster than they can be replenished by rainfall due to improper crop planting. Poor agricultural practices, coupled with the effects of climate change, have made this pressure worse and are reducing soil productivity. Poorer harvests, in turn, jeopardize livelihoods and food security.

In the MENA region, the annual cost of land degradation accounts for an average of 1% of GDP, however there are large country variations. The cost is from 0.4% to 0.6% of GDP in Lebanon, Morocco, and Tunisia, but it can reach 2.5% of GDP in Iran.

Additionally, land offers ecological services including the provision of food and fuel as well as the control of air, water, and soil that are not reflected in market value. The World Bank claims that ecosystem losses in MENA are approximately USD5,600 per person compared to the global average of USD1,000 using the ecosystem approach.

The world's driest regions are where the issues are most acute. Around 40% of the world's total area is made up of arid regions, which are home to two billion people. The bulk of people who rely on drylands reside in underdeveloped nations, where women and children are particularly susceptible to the effects of drought and land degradation.

Globally, land is being degraded quickly. Healthy land resources and thriving ecosystems are required to provide food security for a growing global population. But because of the way humanity now farms, soils are eroding up to 100 times quicker than they are being replenished by natural processes.

Over 3.2 billion people have been affected by the 70 percent of ice-free territory that has already been changed (UNCCD). By 2050, 90 percent of the land will have been affected by human activity. Most of the world's population will experience the effects of land degradation. In addition to altering and sabotaging rainfall patterns, land degradation fuels climate change and exacerbates catastrophic weather events like droughts and floods. Instability on a social and political level leads to poverty, war, and migration.

Between 2015 and 2030, intensive agriculture will result in the loss of 32 gigatons of carbon from the environment.

2. Marine Degradation



In the modern world, marine pollution is becoming a bigger issue. Chemicals and rubbish are the two primary sources of pollution in our ocean. And this marine pollution is leading to the degradation of marine life.

Some have prophesied that 2050 will be a dark year for the ocean. According to experts, the oceans may include exclusively plastic by 2050 or may contain more plastic than fish. Others claim that our coral reefs may be 90% dead, that catastrophic marine extinction waves may have already begun, and that our waters may soon become hot, acidified, and oxygen-deficient. The UN Environment Programme (UNEP) reports that plastic trash and marine litter are both increasing quickly. By 2040, plastic emissions into aquatic environments are expected to nearly treble in the absence of serious intervention.

Chemical contamination, often known as nutrient pollution, is problematic for the environment, human health, and the economy. This kind of pollution happens when human activities, particularly the application of fertilizer on farms, cause chemical runoff into streams that eventually empty into the ocean. Algal blooms are encouraged by the elevated levels of chemicals in the coastal water, such as nitrogen and phosphorus, which may be hazardous to wildlife and dangerous to humans. Algal blooms have a severe impact on the ecosystem and human health, which hurts the local fishing and tourist sectors.

All man made items that wind up in the water, the majority of which are made of plastic, are considered marine garbage. This debris, which comes from sources on land in 80 percent of cases, accumulates as a result of littering, storm gusts, and poor waste management. Numerous plastic goods, such as shopping bags and beverage bottles, together with cigarette butts, bottle caps, food wrappers, and fishing equipment, are examples of common maritime garbage. Being such a persistent contaminant, plastic waste is particularly harmful. Decomposition of plastic products might take hundreds of years.

Both people and animals are at risk from this garbage. In the debris, fish become entangled and hurt, and some animals mistakenly consume things like plastic bags, thinking they are food. Microplastic, or very small fragments of degraded plastic, is consumed by small creatures, which then take the chemicals in the plastic and absorb them into their tissues. Microplastics have been found in a variety of marine organisms, including plankton and



Photo 1: Jennifer Lavers/University of Tasmania



whales, and have a diameter of less than five millimeters (0.2 inches). The poisonous compounds become a part of bigger animals' tissues when they devour microscopic creatures that absorb microplastics. In this way, the contamination from microplastics moves up the food chain and finally ends up in the food that people eat.

IV. Key Vocabulary

Land degradation: As a result of natural processes, land uses, or other human activities and habitation patterns like land contamination, soil erosion, and the eradication of the vegetation cover, land degradation is the reduction or loss of the biological or economic productivity and complexity of rain-fed cropland, irrigated cropland, or range, pasture, forest, or woodlands.

Degrade: It is to damage the quality or condition of something.

Marine: Something that is found in the sea, or relating to the sea is marine.

Agriculture: The work and methods of growing crops and looking after animals that are then used for food is agriculture.

Salinization: It is the process by which a non-saline soil becomes saline, as by the irrigation of land with brackish water.

Biodiversity: The vast variety of life on Earth is referred to as biodiversity. It can be applied more precisely to all the species found in a certain area or environment. Every living creature, including plants, microorganisms, animals, and people, is referred to as biodiversity.

Marine degradation: Chemicals and debris, the majority of which originates on land and is dumped or blown into the water, make up marine degradation. This situation harms the ecosystem, the wellbeing of all living things, and economic structures.

V. Important Events & Chronology

Date (Day/Month/Year)	Event
2.400 BC	Degradation of the land goes back before recorded history. For instance, irrigated agriculture in the Tigris and Euphrates



	basins caused salinization 2,400 BC in Mesopotamia, which is a very early and well-documented example.
1953-1965	Concern about deterioration, especially the processes of soil erosion, has sparked several initiatives to stop it and given rise to a variety of institutions to deal with it. For instance, the Federation of the Rhodesias and Nyasaland supported the largest soil conservation research program ever in colonial Africa between 1953 and 1965 to examine runoff and erosion rates, the efficacy of conservation measures, and different land use patterns.
1960	In 1960, the Land Husbandry Branch was established to carry out land use planning. This gave rise to the argument that the more comprehensive idea of "land husbandry," which encompasses all farm-level production activities, is a more effective instrument for implementing conservation than technical, frequently structural, solutions like earth bunds (contour embankments to intercept runoff and sediment).
1980	The Sahel droughts in the middle of the 1980s serve as an example of the stigma associated with land degradation.
1992-1998	Interest was rekindled by the 1992 Rio de Janeiro United Nations Conference on Environment and Development. However, it wasn't until 1998 that the Convention to Prevent Desertification, whose main elements are national and international measures to combat land degradation, had enough signatures to ratify it.

VI. Past Resolutions and Treaties

Since 2006, when land degradation was made a priority, the GEF has allocated more than \$1.069 billion in funding for at least 190 projects and initiatives that support national and regional development targets by promoting the adoption of sustainable land management methods (SLM). More than 80 million



smallholders are already receiving benefits from SLM on 143 million hectares. GEF's investments have significantly increased the possibility of regenerating damaged land. Additionally, through producing a variety of advantages, GEF's work on land degradation promotes other priority areas including biodiversity and climate change.

Over 120 countries are involved in the Land Degradation Neutrality (LDN) Target-Setting Programme, which aims to achieve land degradation neutrality (LDN), protect and restore land resources, strengthen the resilience of communities that depend on their land, and encourage responsible land governance.

- Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter

<https://www.imo.org/en/About/Conventions/Pages/Convention-on-the-Prevention-of-Marine-Pollution-by-Dumping-of-Wastes-and-Other-Matter.aspx>

This document, sometimes referred to as the London Convention, was adopted at the Inter-Governmental Conference on the Convention against the Dumping of Wastes at Sea, which convened in London in November 1972 at the invitation of the United Kingdom. On August 30, 1975, the London Convention, one of the first global agreements to safeguard the marine environment from human activity, went into effect. It has been managed by IMO since 1977.

The London Convention forbids the dumping of specific hazardous items, which aids in the global management and prevention of maritime pollution. Additionally, a general permission for other wastes or matter and a special permit for a number of other listed materials are needed before dumping.

- General Assembly, Agenda 20, e Seventieth Session, Reported of the Second Committee, Sustainable development: Implementation of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa

https://www.un.org/ga/search/view_doc.asp?symbol=A/70/472/Add.5&Lang=E

- General Assembly, Seventieth Session, Agenda Item 20, Sustainable development, Report of the Second Committee

https://www.un.org/ga/search/view_doc.asp?symbol=A/70/472&Lang=E



- General Assembly, Seventy-fourth session, Item 76 (a) of the preliminary list*, Oceans and the law of the sea, Report of the Secretary-General

https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_63_111.pdf

- General Assembly, Seventy-fourth session, Item 76 (a) of the provisional agenda, Oceans and the law of the sea: oceans and the law of the sea, Report on the work of the Ad Hoc Working Group of the Whole on the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects

https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_71_257.pdf

VII. Failed Solution Attempts

If we claimed that everything that has been made and tried up to this point has failed, we wouldn't be lying. Since it began, the rate of land deterioration has not decreased. Land degradation has significantly grown recently as a result of climate variables and human activity, reducing fertility, biodiversity, and productivity. As I stated in the introduction and involved organizations sections, little has been done to address the issue, and it continues to send out distrust on its significance.

VIII. Possible Solutions

Both prevention and remediation are solutions for marine contamination. In today's world, disposable and single-use plastic are widely utilized for a variety of purposes, including plastic bottles, shipping containers, and shopping bags. It will take time and money to change society's perspective on the use of plastic. On the other hand, some objects may make cleanup difficult. Many different forms of garbage, including certain plastics, do not float and end up lost in the depths of the ocean. When plastic does float, it tends to gather in big "patches" in ocean gyres. One such collection is the Pacific Garbage Patch, which spans an area of around 1.6 million square kilometers between California and Hawaii and contains plastics and microplastics floating on and below the surface of whirling ocean currents. According to the National Oceanic and Atmospheric Administration, these patches are more like flecks of microplastic



pepper floating about in an ocean soup than they are like islands of rubbish. The fight against marine pollution lacks even some viable options. Plastics marketed as "biodegradable" frequently only degrade at temperatures that will never be reached in the ocean.

Nonetheless, several governments are taking action. More than sixty nations have passed laws restricting or outlawing the use of throwaway plastic objects, according to a 2018 study from the United Nations.

Reducing all actions that contribute to land degradation in the first place is the first and most crucial step. Deforestation, excessive grazing, inappropriate farming practices, mining, etc. are examples of this. The extent of these activities can simply be reduced to stop additional land degradation.

Since soil erosion is thought to be the main factor contributing to the degradation of the land, efforts should be made to stop it. The process of replenishing soil takes thousands of years, making it practically a non-renewable resource. There are several strategies to stop soil erosion, including afforestation, which involves planting trees, particularly those with a high root-to-shoot ratio and strong soil-binding abilities, in erosion-prone areas. In actuality, it needn't only be trees. You can restore the surrounding degraded land by establishing lawns and tiny plants. The outcomes will remain the same.

Reforestation: Here, we are regrowing a previously deforested region, which makes a difference. By doing this, land productivity can be restored before it is totally lost.

Reclamation: In order to restore degraded land to a productive state, it must first be restored or reclaimed. There is a process for restoring degraded land that we can use to do this. Also some of the most significant losses of valuable land are caused by agriculture. Certain farming techniques can effectively stop soil erosion.

IX. Useful Links

- <https://www.unccd.int/land-and-life/land-degradation-neutrality/resources>

UNCCD's official website

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3539015/>

Article named "Human-induced marine ecological degradation: micropaleontological perspectives":

- <https://www.frontiersin.org/articles/10.3389/fmars.2020.567126/full>



Article named “Marine Environmental Plastic Pollution: Mitigation by Microorganism Degradation and Recycling Valorization”

- <https://geog.umd.edu/project/land-degradation-background#:~:text=History%20of%20degradation%20studies,Thomas%20%26%20Middleton%2C%201994>

Department of Geological Sciences Official Website: Placing land degradation in the context of ecological processes

- <https://www.un.org/pga/71/2017/05/01/high-level-event-on-desertification-land-degradation-drought/>

UN’s official website: Statement of H.E. Mr. Peter Thomson, President of the 71st Session of the General Assembly, at the High-Level Event on Desertification, Land Degradation and Drought:

- <https://www.science.org/content/article/global-land-degradation-serious-u-n-report-finds-restoration-offers-hope>

Article named “Global land degradation serious, U.N. report finds, but restoration offers hope.

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