

1. MODULE LAND

EcoTournament -Planet depends on us

The resulting teaching material was created for the Eco- Tournament platform and includes basic information about the environment and ways to fight against climate change. The knowledge contained in the publication will allow tournament participants to acquire the knowledge to correctly answer the Eco- Tournament tasks. Good luck!



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Introduction

A flourishing life on land is the foundation for our life on this planet. We are all part of the planet's ecosystem and have caused severe damage to it through deforestation, loss of natural habitats and land degradation. Promoting the sustainable use of our ecosystems and preserving biodiversity is not a cause. It is the key to our survival.

No matter where you are, the world's population depends on sustainable uses of land, the conservation of natural environments, and the protection of life within them. Human endeavors relate critically to future food production and health, freshwater availability, economic development and inequities, crime, and corruption.

Life on land is so important because Plant life provides 80 percent of the human diet, and we rely on agriculture as an important economic resource. Forests cover 30 percent of the Earth's surface, provide vital habitats for millions of species, and are important sources of clean air and water and crucial for combating climate change.

SDG 15: Life on Land

The three "means of achieving targets" include Increasing financial resources to conserve and sustainably use ecosystem and biodiversity; financing and incentivizing sustainable forest

management; combatting global poaching and trafficking.

What we are thinking about is linking with the Sustainable Development Goals SDGs. In our mind is goal number 15, Life on Land, and Goal number 13, Climate Action.

Goal 15: Life on land - The Global Goals.

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and biodiversity loss.

Goal 13: Climate Change - The Global Goals.



Improve education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning.

Deforestation and forest degradation result in loss of habitat for all species, a decrease in freshwater quality, an increase in soil erosion, land degradation, and higher carbon emissions into the atmosphere. In short, not taking action on forests impacts both the planet's and our communities health.

Action that we can do:

1. Plant Trees. Could be a follow-up after the activity to ask.

- ◆ What are trees used for?
- ◆ Why is it important to plant trees? Why are forests important?
- ◆ Whose responsibility is it to plant trees and maintain the
- ◆ forests? What are other global goals supported when reaching this goal?

2. Recycle paper, glass, plastic, metal, and old electronics.

3. Bike, walk or take public transport. Save the car trips for when you've got a big group.

4. Clean Beach.

5. Awareness at schools.

SDG 15: Life on land- facts and figures, targets, why it matters Terrestrial ecosystems provide a series of goods, raw materials for construction and energy, food, and a series of ecosystem services, including the capture of carbon, maintenance of soil quality, provision of habitat for

biodiversity, maintenance of water quality, as well as regulation of water flow and erosion control, therefore contributing to reduce the risks of natural disasters such as floods and landslides, regulate climate and maintain the productivity of agricultural systems. Maintaining those ecosystems greatly supports climate change mitigation and adaptation efforts.

Data and Statistics / Facts and Figures:

- ◆ Around 1.6 billion people depend on forests for their livelihood.



- ◆ Forests are home to more than 80 percent of all terrestrial species of animals, plants, and insects.
- ◆ 74 percent of the poor are directly affected by land degradation globally.
- ◆ Of the 8,300 animal breeds known, 8 percent are extinct, and 22 percent are at risk of extinction.
- ◆ Plants provide over 80 percent of the human diet. Only three cereal crops, rice, maize, and wheat, provide 60 percent of energy intake.
- ◆ As many as 80 percent of people living in rural areas in developing countries rely on traditional plant-based medicines for primary healthcare.

Why Does Goal 15: Life on the Land matter?

Desertification

- ◆ 2.6 billion people depend directly on agriculture, but 52 percent of the land used for agriculture is moderately or severely affected by soil degradation.
- ◆ As of 2008, land degradation affected 1.5 billion people
- ◆ globally. Arable land loss is estimated at 30 to 35 times the historical rate.
- ◆ Due to drought and desertification, each year, 12 million hectares are lost (23 hectares per minute), where 20 million tons of grain could have been grown.
- ◆ 74 percent of the poor are directly affected by land degradation globally.

Biodiversity

- ◆ Of the 8,300 animal breeds known, 8 percent are extinct, and 22 percent are at risk of extinction.
- ◆ Of the over 80,000 tree species, less than 1 percent have been studied for potential use.
- ◆ Fish provide 20 percent of animal protein to about 3 billion people. Only ten species provide about 30 percent of marine capture fisheries, and ten species provide about 50 percent of aquaculture production.
- ◆ Plants provide over 80 percent of the human diet. Only three cereal crops rice, maize, and wheat provide 60 percent of energy intake.
- ◆ As many as 80 percent of people living in rural areas in developing countries rely on traditional plant-based medicines for primary.
- ◆ Healthcare.
- ◆ Micro-organisms and invertebrates are essential to ecosystem services, but their contributions are still poorly known and rarely acknowledged.

Forests



- ◆ Around 1.6 billion people depend on forests for their livelihood. This includes some 70million indigenous people.
- ◆ Forests are home to more than 80 percent of all terrestrial species of animals, plants, andinsects.

Targets linked to the environment:

- ◆ Target 15.1: By 2020, ensure the conservation, restoration, and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains, and drylands, in line with obligations under international agreements.
- ◆ Target 15.2: By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increaseafforestation and reforestation globally.
- ◆ Target 15.3: By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought, and floods, and strive to achieve a landdegradation-neutral world.
- ◆ Target 15.4: By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.
- ◆ Target 15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction ofthreatened species.
- ◆ Target 15.6: Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed.
- ◆ Target 15.7: Take urgent action to end poaching and tramcking of protected species offlora and fauna and address both the demand and supply of illegal wildlife products.
- ◆ Target 15.8: By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control oreradicate the priority species.
- ◆ Target 15.9: By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies, and accounts.
- ◆ Target 15.a: Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.
- ◆ Target 15.b: Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to



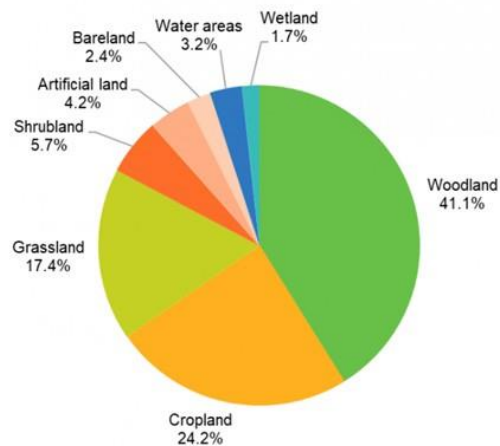
developing countries to advance such management, including for conservation and reforestation.

- ◆ Target 15.c: Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities.

Land Cover in the EU

Woodland constituted the greatest proportion of the total area of the EU (41.1%) in 2018.

Breakdown of land cover, EU, 2018
(% of total area)



Source: Eurostat (online data code: lan_lcv_oww)

eurostat

Landscapes of the European Union (EU) range from sub-Arctic tundra in the far north to semi-arid climates in certain Mediterranean regions in the south or from northern continental Europe's lowlands and plains to comparatively high mountain ranges such as the Alps, Pyrenees, or Carpathians.

Northern and southern nations' wooded regions have highly varied structural characteristics. Larger forests with giant trees in thick stands are common in the north, with minimal flora in the understory (plants growing beneath the forest canopy). Trees in the south are often shorter and less thickly planted, resulting in a better-developed canopy on each tree but a lower total forest canopy cover and more flora in the understory.

Soil is a thin material near the Earth's surface that regulates the flow and transmission of mass and energy between the lithosphere, biosphere, hydrosphere, and atmosphere (FAO, 2015). It is an essential medium for human



life since it supports agricultural output, which accounts for 95% of world food production.

The European Mediterranean area, or the southern half of the continent surrounded by the Mediterranean Sea, covers 1.2 million km² (11% of European territory) and is divided into 12 nations.

Harmful energy sources

All energy sources have an influence on the environment in some way. By most counts, fossil fuels, coal, oil, and natural gas do far more harm than renewable energy sources, including air and water pollution, public health damage, wildlife, habitat loss, water usage, land use, and global warming emissions.

On the other hand, renewable energy sources such as wind, solar, geothermal, biomass, and hydropower have major environmental implications.

The exact nature and severity of environmental consequences vary depending on the technology utilized, the geographic region, and various other factors. Understanding the existing and prospective environmental hazards connected with each renewable energy source allows us to take proactive actions to prevent or mitigate these consequences as they become a more significant percentage of our power supply.

Geothermal energy

Geothermal energy is heat obtained from the earth's subsurface, carried to the Earth's surface via water and/or steam. Geothermal energy may be utilized for heating and cooling or for generating clean power, depending on its properties.

In many countries, this important renewable source meets a significant percentage of the demand for power. The primary benefits of geothermal power plants include their high- capacity factors and lack of reliance on the weather. As a result, they may produce baseload energy as well as, in certain circumstances, auxiliary services for short- and long-term flexibility.

The most common form of the geothermal power plant, called a hydrothermal plant, is situated close to geological "hot spots," which are regions where hot, molten rock is present in close proximity to the earth's crust and generates hot



water.

The major benefits of geothermal power plants include their high-capacity factors and lack of reliance on the weather. As a result, they may produce baseload energy as well as, in certain circumstances, auxiliary services for short- and long-term flexibility.

Materials, both inorganic and biological, make up the land. In addition to offering services like agricultural productivity, biological diversity, carbon sequestration, and others, it also offers a variety of resources, including food, fiber, medicine, minerals, and so forth. The most fundamental function of land is to sustain various types of plants, giving all terrestrial creatures a place to live.

Because of human abuse and poor management, the world's land resources are under grave danger. Numerous anthropogenic activities have caused the land to become degraded and contaminated, lose productivity, and lose its natural beauty. Desertification is a severe kind of land degradation in which semi-arid regions of the world lose their ability to produce crops to the point that they resemble deserts and are completely barren as a result of human activity and climate change problems.

The different resources and services that we humans rely on from the land are being impacted by land degradation and soil erosion. We are dependent on it both directly and indirectly, which has an effect on our quality of life and, in many circumstances, our ability to survive.

Land Resources

The land is made up of a variety of components from the soil and vegetation. It serves as the foundation of all primary production systems and is a non-renewable resource. The earth is a massive ecosystem with a surface area of roughly 13.4 billion hectares. It is composed of 1.48 billion man-made crop-growing agroecosystems and 12 billion highly diverse natural ecosystems.

The land resources have been misused, overused, and abused by man to the point where the present and future generations will suffer long-term consequences from the land use pattern. Conversion and modification were the two types of land cover changes that took place. When a forest is removed to make way for cropland, when farmland is transformed into an urban area, or when wetland drainage is utilized for crop cultivation, the process of conversion takes the cover from one class to another.



Around the world, agriculture has replaced less productive land uses like various types of forest wastelands. Humankind has significantly changed the ground surface from the beginning of civilization to the present. The most densely inhabited regions see a significant modern transformation that shifts from one human-shaped state to another. Nowadays, a lot of urban construction—more so in industrialized countries—is essentially redevelopment. It is not the first time that forest has been cut now. Repeatedly, the intensification of land use has taken the form of a global push for more production to keep up with the population boom, expanding markets, and producer competitiveness.

Currently, there is significant pressure on forests due to an expanding population and ever-increasing human demands and ambitions, which has led to significant deforestation. It has a negative effect on the environment that is destructive to both human society in particular and to life in general on this planet when forest land is converted to other land uses, particularly urban and industrial.

Human societies have made numerous changes to the land cover. Social unrest and a decline in vegetation cover are the results of land conversion. Rural land is consumed as metropolitan areas grow, especially flat or rolling ground with fertile, well-drained soil.

More rural and agricultural land—including the majority of cropland—is transformed each year for urban development, such as motorways, industrial zones, residential colleges, etc. The landmass has degraded in numerous ways over time as a result of these various human activities and related changes in abiotic variables.

The four main anthropogenic processes that cause wasteland areas

The four main anthropogenic processes that cause wasteland areas are as follows:

1. Deforestation
2. Overgrazing
3. Over-cultivation
4. Unskilled irrigation

While the first three activities reduce the land's protecting plant cover, speeding up the process of soil erosion and land degradation, careless irrigation creates unique issues with water-logging and salinity. Additionally, soil erosion and deterioration



affect both cultivated and uncultivated regions.

Wastelands have been created as a result of the growing abuse of land resources due to ill-considered development initiatives. Inappropriate land use techniques, mining operations, shifting cultivation, and deforestation for lumber, fodder, and fuel wood extraction, followed by the conversion of forestland to agricultural or urban areas, create land degradation and precipitate the formation of wasteland.

Reclaiming abandoned land has become one of the nation's top priorities as the demand for land resources has gradually increased. Due to the rising population, agriculture and forestry require more land. The latter is related to erosion, desertification, water logging, salinity, alkalisoils, harmful effects of agrochemicals, and industrial effluents, while the former is due to unanticipated demands. Numerous diverse anthropogenic activities have left large tracts of land unusable throughout the world.

The problem is especially concerning in tropical regions where land that once supported forests is being degraded at previously unheard-of rates. Reclamation and development of degraded lands is the only way to increase the amount of available land.

About 80% of Europe's surface area is shaped by land use in cities, agriculture, and forestry. We cannot live without well-managed, multi-functional lands. The land is the terrestrial foundation of society; it is the platform for infrastructure and for residential, commercial, and industrial areas and is a source of economic growth. However, an increasing share of our planet's land area is in some way modified by human activities, leading to unsustainable changes in our landscapes. Together with climate change and severe weather events such as floods and drought, these changes stress land resources. In extreme cases, such changes might lead to unhealthy and degraded lands.

Landscape fragmentation pressure in Europe

Land take, urban sprawl, and economic activities lead to habitat fragmentation, decreasing the resilience of ecosystems. Monitoring fragmentation supports policy actions that aim to ensure that the remaining habitat can support biodiversity. Fragmentation affects all areas of Europe, even very sparsely populated ones. Moreover, 27% of the land in the EU and the United Kingdom is considered highly fragmented, where habitats are less than 0.02km² on average. However, policy measures to protect certain areas effectively prevent fragmentation, particularly



in protected areas.

Landscape fragmentation is the physical disintegration of continuous habitats into smaller units or patches, most often caused by urban or transport network expansion. This has a wide range of environmental, social, climate change adaptation and mitigation, and biodiversity implications.

The EU biodiversity strategy for 2030 aims to protect and restore nature by tackling fragmentation. Fragmentation also impacts the implementation of the EU strategy on green infrastructure and achieving the long-term objectives of the EU common agricultural policy, namely the sustainable management of natural resources, climate action, and balanced territorial development.

Large parts of Europe have become fragmented because of urban and transport infrastructure expansion. On average, every km² in the 27 EU Member States plus the UK (EU-27+UK) comprises around 1.4 habitats, indicating an average habitat size of 0.68km². Moreover, 27% of land in the EU-27+UK is considered highly fragmented, where habitats are less than 0.02km². As the distance from city centers increases, the extent of landscape fragmentation drops rapidly. In villages, the average habitat size is around 0.12km². This increases to 0.8km² in rural areas and 5.3km² in mostly uninhabited regions. The proportions

of strongly fragmented habitats is more persistent, with habitats smaller than 0.02km² accounting for 79% of land in the suburbs, 61% in villages, and 53% in rural areas. Even in mostly uninhabited areas, more than 20% of the land is covered by habitats of less than 0.02km².

Other than urban ecosystems, croplands are the most fragmented ecosystem type, with an average habitat size of 5km². Habitat size in grasslands is on average 8km² but forests are more continuous, with an average habitat size of 27km². Coastal ecosystems are under increasing pressure from urban sprawl, with transport infrastructure and other construction jeopardizing wildlife movement.

Indeed, the average habitat size in coastal ecosystems is around 0.4km²; in inland areas, the average habitat size increases to 0.9km². Policy measures that safeguard protected areas seem to be effective; however: while the average habitat size in non-protected areas in the EU-27+UK is around 0.6km², the average habitat size in protected areas is, on average 20km². The extent of landscape fragmentation varies considerably by country in the EU-27+UK region, being highest in Malta, followed by the Netherlands, Belgium, Germany, and Luxembourg. Malta has the most fragmented landscape by far, with 15 landscape objects per km² on average, which is around double the extent of landscape



fragmentation in the Netherlands and Belgium, four times that of Germany, and greatly above the EU-27+UK average of 1-3.5 landscape objects/km² (95% confidence interval). Moreover, Malta's average landscape object size is around 0.06km², considerably below the EU-27+UK average of around 0.68km².

Although on average, the extent of landscape fragmentation is highest in Malta, Luxembourg and Belgium have the largest area of highly fragmented habitats, that is, areas with average habitat sizes of less than 0.02km². About 90% of the landscape is highly fragmented in Luxembourg, and around 84% is highly fragmented in Belgium.

In Finland, the Baltic countries, and Sweden, habitats are much more contagious than in other parts of Europe, with habitat sizes of at least 2.8km², far greater than the EU-27+UK average.

Soil

Soil underpins 90 % of all food, feed, fiber, and fuel production, and it provides the raw material for activities from horticulture to the construction sector. Soil is also essential for ecosystem health: it purifies and regulates water and is the engine for nutrient cycles and a reservoir for genes and species, supporting biodiversity. It is a global carbon sink, playing an important role in the potential slowing of climate change and its impacts. Moreover, conserving traces of our past is an important element of our cultural heritage.

However, the soil is subject to ongoing, often conflicting demands from our society. The ability of soil to deliver ecosystem services in terms of food production, as a biodiversity pool, and as a regulator of gasses, water and nutrients are thus under pressure. Observed rates of soil sealing, erosion, the decline in organic matter, and contamination all reduce soil resilience or its capability to absorb the changes it is exposed to.

Within the time frame of human life, soil can be considered a nonrenewable resource. As a society, we need to manage it sustainably to enjoy its benefits. Despite the range of activities that ultimately depend on soil, there is no specific EU legislation on the soil. To date, and unlike water and air, soil protection is addressed indirectly or within sectoral policies: agriculture and forestry, energy, water, climate change, nature protection, waste, and chemicals. The need for a coherent soil policy at EU level is also reflected in the scarcity of harmonized soil data.



Regional Assessment of Soil Changes in the Near East and North Africa

The Near East and North Africa (MENA) region includes Tunisia, Algeria, Morocco, Libya, Egypt, Sudan, South Sudan, Jordan, Lebanon, Syria, Palestine, Iraq, Yemen, Saudi Arabia, Oman, Qatar, United Arab Emirates, Kuwait, Bahrain, and Iran. The region has a land area of approximately 14.9 million km², nearly all of which is hyper-arid, arid or semi-arid. The region faces three climatic constraints: aridity, recurrent drought, and desertification, the latter also in part human-induced. South Sudan is the only country in the region that falls within the dry sub-humid tropical zone. Large areas of Libya, Egypt, Bahrain, Kuwait, Qatar, and the United Arab Emirates are entirely desert.

Agriculture is an important source of income for many countries in the region. Arable land constitutes only 6.8 percent of the total land area, while about 26 percent is used for pasture and about 7 percent is under forest. Based on the type of agriculture practiced, Dregne and Chou (1992) divided the productive land in the region into irrigated land (0.7 percent, 8.5 million ha); rainfed (2.2 percent, 27.7 million ha); rangelands (40 percent, 495.6 million ha); and extremely arid land (57 percent, 705.2 million ha). Proportions vary considerably by country. Productive lands represent 30 percent of the total area in Syria and Lebanon, but only 3 percent in Egypt, Algeria, and Sudan, and only 0.5 percent in Saudi Arabia, Oman, and Mauritania.

Natural resource degradation, especially where agriculture is practiced, is a real threat in all countries of the region and remains a major limitation to the reliable supply of food. In most countries, salinization, water and wind erosion, loss of vegetation cover, and soil physical degradation (including compaction and surface crusting) are the main threats to the soil's capacity to provide ecosystem services. The expansion of agriculture into marginal lands has

greatly aggravated water erosion and, consequently, soil degradation. In almost all countries in the region, extreme climatic conditions, overgrazing, unsuitable cropping patterns, and accumulation of salts have rendered large areas of land unproductive.



Initiatives to address land quality issues in the MENA region

1. Zero tillage:

Plowing up soil can have many deleterious effects, such as loss of moisture and organic matter, which increase the vulnerability to wind and water erosion. Farming with zero or minimum tillage can avoid these problems by eliminating plowing, leaving the soil undisturbed. Roots left from the previous crop stabilize the soil, hence protecting against erosion, while the organic matter above ground adds to the fertility and water-holding capacity of the soil. Seed drills are used to insert seeds and fertilizer directly into the soil without plowing. However, seed drills are expensive, and most smallholder farms are not able to afford the cost of about USD 30,000. A recent project by ICARDA and the Australian government has addressed this problem. Working with local farmers and craftsmen, the project has produced and distributed almost 200 affordable seed drills, which are now being used across the Syrian Arab Republic, Iraq, Lebanon, Jordan, Algeria, Tunisia, and Morocco.

2. Soil maps:

Soil data is important for farmers and policymakers. However, soil maps are often outdated, of low resolution, and not easily understandable. The Amman-based Institute of Digital SoilMapping is serving as a regional hub for a global consortium of scientists and researchers. The consortium is developing GlobalSoilMap.net, which can combine data from several sources and present it in a user-friendly format for a broad range of audiences. The data can include soil pH, water storage electrical conductivity, and carbon content data derived from remote sensing, near- and mid-infrared spectroscopy, and field sampling. The initiative can also make use of the Global Soil Partnership system of the International Network for Soil Information Institutes. In addition, the European Union, the African Union, and FAO have recently published a Soil Atlas of Africa.

Urbanization in the MENA region



We live in a world dominated by cities. Cities have transformed the dichotomy of human settlements and created a space where large human populations, economic activities, and a man-made environment can co-exist and thrive. They attracted residents eager to lead a modern urban life with an appeal that continues to grow and a perception of being the pinnacle of human civilization. Cities and urban areas occupy less than 3 percent of

terrestrial areas. Still, they are home to 55 percent of the global population, generate 80 percent of the global GDP, and are responsible for 70 percent of carbon emissions.

Urbanization is supposed to procure certain economic, social, and environmental benefits. To start with, the city's density creates proximity to businesses and goods, which leads to economic development. Socially, density entices the development of a wide variety of attractions -including niche social activities of all sorts- to capitalize on the range of interests of residents within a small catchment area. On the environmental front, densification presents an opportunity for higher energy efficiency in heating and cooling buildings and powering transportation compared to non-urban areas.

In the MENA region, however, the transformation of the fabric of human settlements into an urban one has not addressed the scarcity of resources through improved efficiency. Instead, rapid urbanization has exacerbated the disparity between population growth and the scarcity of resources and services. The transformation to urban life, urban society, and even urban politics has in fact added stressors to what were already disjointed settlements, further escalating urban problems of congestion and inequality.

Substantial Increase in Congestion and Pollution: An attractive MENA city is Amman, a city with only a quarter of Cairo's population with 4.5 million residents and half its urban density at just over 5,000 residents per square km. The Jordanian capital's GDP in 2015 was a third of Cape Town's, which shares the same population size. Amman's density is comparable to many European cities. It is thus expected to maintain a viable public transport network. Still, its hilly terrain has long limited its ability to develop a high volume - high-speed public transportation network, and its 485 buses and 49 lines have proved insufficient to draw people away from private vehicles. As a result, car ownership rose to twice that of Cairo, at 211 cars per 1000 residents, and so did traffic congestion and air pollution, albeit not to the same extent experienced in Cairo. Both of these cities have failed to invest adequately in networks that capitalize on their population sizes and densities, such as investing in public transportation systems and roads.



The Negative Effects of Informalities: Informal settlements in Amman represent a large share of the city's urban area. The waves of refugees entering Jordan in 1948, 1967, and during the Gulf War have aided in the rapid urbanization that has erupted in the city. This rapid increase of population created high demands on both residential and service infrastructure within urban areas. However, the official response to such urbanization had not matched the city's growth rate, resulting in what Saad Ibrahim calls "under-urbanism". This, in turn, led to the formation of informal settlements built by refugees near urban centers.

Land issues

The degradation of soil and land surfaces owing to various factors is called land pollution, also referred to as soil pollution. Large-scale dumps of solid waste are the most frequent cause of land pollution. Others include industrial waste and chemicals used in agriculture.

Such pollution poses a threat to the health of all Earth's inhabitants, including people. In the long run, land pollution may throw the natural order off, resulting in disasters.

Some Land Pollution Facts

As previously noted, solid trash that is dumped on the planet is the principal cause of land contamination. The ever-increasing amount of rubbish that has been building up on the land is caused by a number of factors. Population growth accelerated urbanization, and industrialization are examples of this. This disease is exacerbated by a number of variables, including a lack of knowledge about the causes and effects of land contamination and a disregard for pollution control regulations. It has been noted that improper waste disposal practices exist. Even though some biodegradable garbage takes a while to degrade, non-biodegradable waste, such as plastic and electronic items, persists for years and poses a health risk.

Even industrial waste containing chemicals has the potential to degrade both soil and water. This also holds true for agricultural pesticides and fertilizers. Therefore, there are a variety of factors for land pollution. Land pollution will harm the flora and animals in addition to being a health hazard. When placed on land, some of these waste products produce dangerous chemicals that can contaminate the soil and groundwater. They might also prevent groundwater from accumulating. Eventually, it might also be a factor in natural disasters.



Solutions for Land Pollution

A layperson with a rudimentary awareness of the causes of land pollution will be able to provide solutions. These answers can be deduced directly from the reasons. Some of the remedies for land pollution include the ones listed below.

- ◆ The majority of the control methods are related to garbage disposal because it is the primary cause of land contamination. One of the most important guidelines for reducing soil contamination is proper trash disposal. This is much more crucial when it comes to the disposal of dangerous waste materials. Regarding trash disposal, industries are required to abide by the law.
- ◆ Recycling is one of the main methods for reducing land pollution. It not only decreases the number of waste items in landfills but also lessens the amount of non-biodegradable waste that is dumped on the planet. Recycling is advantageous for reducing other types of pollution, saving money, and conserving energy resources.
- ◆ Reusing resources is something else you should strive to do. Always choose to reuse items rather than purchase new ones. You might utilize cardboard and plastic containers, for instance, for later use. If not, keep them in storage and resell them for recycling. By forgoing new purchases and selling your unwanted items for recycling, you can also earn some money.
- ◆ Thus, by making efforts to reduce land pollution, each and every person may make a positive contribution to this worthwhile cause. Reduce the amount of non-biodegradable items you utilize. To avoid taking a plastic carry bag from the store, you may, for instance, carry paper or cloth bags with you. Change to biodegradable materials if you can. Use metal or glass instead of plastic when making purchases.

Each and every person must make efforts to reduce land pollution because it is a problem that harms both humans and nature as a whole. The government must make an effort to raise public understanding of land pollution's origins and impacts. The rules for disposing of waste products must be properly followed by all businesses. Encourage the reuse and recycling of nonbiodegradable products, stay away from using fertilizers and pesticides that contain hazardous chemicals, and don't dump toxic garbage on the ground. All of these actions can make a significant difference in reducing land pollution.



Five significant issues with land management in the context of global change

It would be an enormous understatement to say that these are intriguing times. Population growth, globalization, and climate change have increased the demand for land, while market forces have driven prices to levels that are out of many people's price ranges. Although traditional methods of regulating urban growth have not been able to address the requirements of primarily low-income migrant and native urban populations, urbanization has been the driving force behind economic progress. The peri-urban areas face the most difficulties.

1. **Security of tenure:** Land disputes are the most frequent type of litigation, which hinders social and economic progress in many nations. Dual or multiple legal land tenure systems make difficult decisions for politicians and citizens. Numerous practical solutions have developed that command social legitimacy despite not having full legal status. Claims that owning property may help people escape poverty have been greatly exaggerated. As a result, land values have increased to levels that many people are unable to afford, leaving them exposed to market-driven eviction. More importantly, the confidence that titles give ends until all subsequent land transfers are legally registered. The lesson is obvious: Governments must support a variety of tenure options to fulfill a range of requirements because ownership can be a burden rather than a benefit for the young, the poor, and the old.
2. **Regulatory barriers:** The planning requirements, laws, and administrative processes for registering, developing, and transferring land all have a significant impact on the fairness and effectiveness of the land market. Despite being developed by experts, these guidelines have been shown to be inadequate for many nations' needs. Official minimum plot sizes, for instance, are frequently based on idealized visions rather than actualities

and impose costs that many people cannot afford, forcing them to engage in a variety of forms of unpermitted development and rendering it impossible for many current residents to obtain legal status. Many people are discouraged from abiding by official rules and regulations because of the numerous administrative procedures, expenses, and time needed to register and develop land. This is a significant source of corruption. Innovative methods, such "One-Stop-Shops," have enhanced land management and governance but still require wider adoption.

3. **Land use planning:** Mixed land use is a crucial component of successful cities



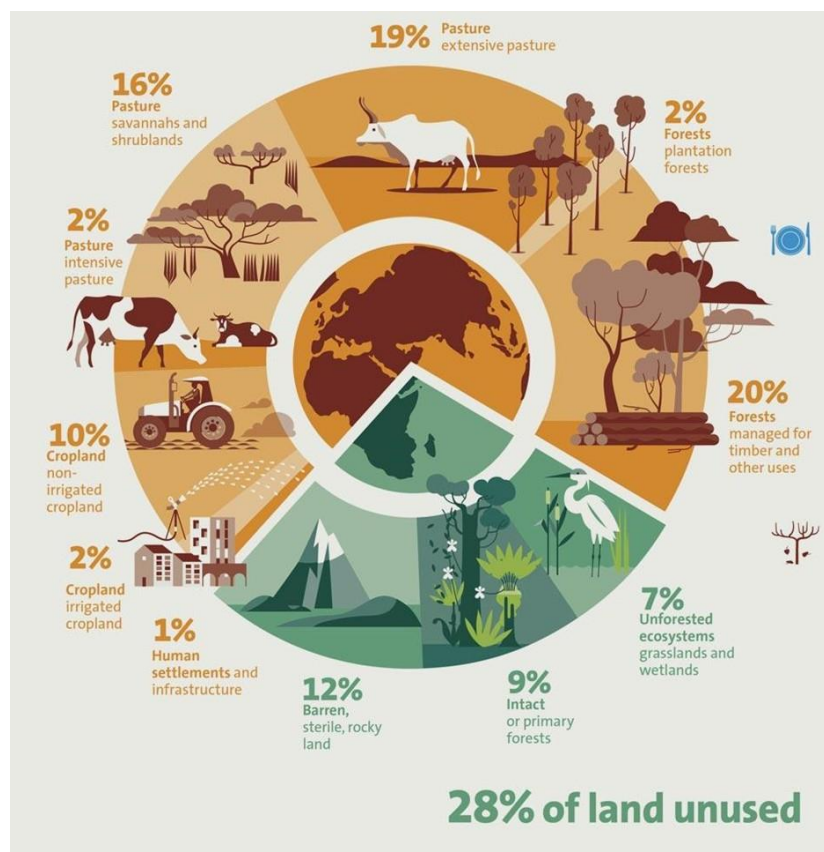
because it promotes social interaction and economic growth. Many master plans, nevertheless, aim to prevent this in favor of flimsy kinds of order. Planning should also maximize the amount of land used privately for commercial purposes. As a result of rising transportation costs and the encroachment of satellite cities on substantial tracts of productive rural land, more attention should likely be paid to creating compact, poly-centric cities. Numerous examples of innovative partnerships have been created using creative strategies to balance the interests of the public and commercial sectors. But as land has become more commercialized, private interests have grown, reducing public influence.

4. **The rise of neoliberalism:** An evaluation of the political and economic framework that influences outcomes must be the foundation of any discussion of land management. Globally, the influence of capitalist forms of market-driven growth or neoliberalism increased after the fall of the Soviet Union and the limitations of socialist state planning they revealed. Neoliberalism was intended to strike a compromise between traditional liberalism and state planning. However, it evolved into a more regressive branch of economic theory and had a significant impact on Reagan and Thatcher's policies, not to mention those of the World Bank and IMF. Despite the worldwide recession of 2008, land and property remain a major asset class of preference for those with the financial resources to invest. Land has since turned into a commodity like any other, drastically cutting the cost of ownership. Neoliberalism's promotion of the privatization of land has widened inequality in nations of all economic development levels and brought about social, economic, and political instability.
5. **The political economy of land:** It is unavoidable that the fight for land currently dominates global public discourse and media attention given how much it has intensified. There are now so many people interested in land rights that many of them have even been killed. The obligations we have to society as professionals and as individuals have never been higher. The problem, to put it simply, is to make markets work for society rather than the other way around. Since the government has a significant direct and indirect impact on land prices and is therefore justified in claiming a reasonable amount of the surplus generated for distribution in the public good, land and housing markets are fortunately a great tool for attaining this larger goal. There are numerous effective examples of creative, useful ways to accomplish this. Vested interests, however, prevent its adoption and implementation at the required pace and scale. To address entrenched interests and bring about change or find and encourage alternatives, progress



mandate that professionals use all available tools, including the public media. The first choice is unquestionably the better one and calls for a greater understanding of the arguments and supporting data. The second should only be used as a very last resort, especially when there may be very hostile opposition. Professionals must maintain their intellectual independence and recognize any possibilities available at a specific time and location, even when the scope for change is limited. The global community can be a tremendous resource for assistance.

Conclusion



Land misuse and mismanagement not only destroys soils and results in loss of ecosystem services but also impacts our human heritage. Anticipated climate change may worsen the situation as about 175 million more people may go hungry by the end of the century if no action is taken (Brown et al., 2015).

On the other hand, all over the world, generations of farmers and herders have shaped and maintained specific agricultural systems and landscapes that value local natural resources. Their management is based on experience, practices and



local knowledge.

These ingenious agricultural systems that abound in the Mediterranean region reflect the evolution of humankind, the diversity of its knowledge, and its profound relationship with

nature. Due to its natural conditions, demographic trends, and environmental constraints, the challenge of sustained agricultural productivity in the Mediterranean relies mostly upon the proper use and management of existing agricultural land resources.

These are also the conditions that could provide a measure of success in the quest for achieving the recently endorsed Sustainable Development Goals to improve food security and living conditions, especially for the rural poor.

The dramatic political and social events throughout the Arab World initiated since 2011 only reinforce the need for continued stewardship of land resources.

This could only be achieved if sustainable land use planning is introduced in governmental agendas and maximum care is applied to implement legislation that optimizes and protect land and avoid its waste.

Traditional Mediterranean agroecosystems that have adapted and evolved over the years have resulted not only in outstanding landscapes and globally significant agricultural biodiversity but also, above all, in the sustained provision of multiple goods and services, food and livelihood security, and quality of life.

The innovations and 106 MEDITERRA 2016 ingenious practices of the land users themselves, the farmers, livestock keepers, forest managers, and even fisher folk, contribute to improving food supply and providing environmental benefits for the community as well as sustaining livelihoods and wellbeing of rural societies.

Inappropriate use or management of land resources, and this may have many negative impacts: the degradation of soil and of water and biological resources, the loss of ecosystem functions and associated services, hence the wasting of land resources, urbanization on productive soils, use of poor quality water or inadequate water for irrigation leading to salinization, disturbance of fragile coastal ecosystems accompanied by biodiversity losses and ecological disruption.

Otherwise, assessing land suitability for different land uses, taking into account social, economic, environmental, and governance issues, should guide the selection of the optimum utilization that improves productivity, reduces land degradation, and



provides livelihoods for local populations. Soil-landscape modeling is among the available modern tools to support land suitability analysis.

Nowadays, international and national research needs to be more effective than in the past on problems of land use planning and management problems. This is the only way to provide land users and planners with suitable and tested technologies for targeted measures to increase agricultural production while protecting the natural resources. The lack of research, application of research findings and access to new and advanced technology in this field is

one of the main reasons for the problems plaguing the sector: poor land use efficiency, environmental degradation, high costs and lack of responsiveness to beneficiaries.

Land resources include forest, biodiversity, minerals, soil etc. The demand of land to produce fuel wood, food and fiber is also increasing with increase in population. It leads to degradation of land resources. The major aspects of land degradation are solid and hazardous waste disposal, mining, deforestation, soil erosion, landslides, soil pollution by use of heavy metals, pesticides and fertilizers etc.

The land degradation decreases the production of food, timber, biomass energy, fiber, seed etc. Eco-friendly mining techniques should be adopted to minimize the adverse effects of mining.

Reestablishment of mined regions by replanting suitable plant species, regaining of flora, stabilization of the mined lands, control of water and air emissions are necessary to reduce impacts of mining. Proper disposal of waste particularly solid waste by scientific methods and resource recovery is required for control of land degradation. Paper, plastics, metals, glasses, organics, petroleum products and industrial effluents etc should be recycled and reused. Instead of chemical fertilizers and pesticides, organic fertilizer and bio pesticides should be used. Hazardous persistent non biodegradable chemicals like DDT, BHC, etc should be ban. Polluted soil can be reclaimed by adopting in-situ and ex-situ techniques of soil reclamation and bioremediation.

Also, The degradation of land surfaces is caused directly or indirectly by human (anthropogenic) activities. It is possible to mention several reasons for temporarily or permanently changing the land structure and so causing land pollution. However, three main reasons are generally identified industrialization, overpopulation, and urbanization, and the others are counted as the reasons stemming from these main reasons. Some of them are as follows:



- ◆ improper waste disposal (agricultural/domestic/industrial/solid/radioactive waste), littering;
- ◆ mining polluting the land through removing the topsoil which forms the fertile layer of soil, or leaving behind waste products and the chemicals used for the process;
- ◆ misuse of land (deforestation, land conversion,
- ◆ desertification); soil pollution (pollution on the topmost layer of the land);
- ◆ soil erosion (loss of the upper (the most fertile) layer of the soil);
- ◆ the chemicals (pesticides, insecticides, and fertilizers) applied for crop enhancement on the lands.

Regarding these chemicals used for crop enhancement, it should be underlined that while they are enhancing crop yield, they can also kill insects, mosquitoes, and some other small animals. So, they can harm the more giant animals that feed on these tiny animals.



Sources

1. 04_Mediterra2016_EN.pdf (ciheam.org)
2. Land-use key | Veolia Planet
3. (PDF) Pollution, Land (researchgate.net)
4. Residential land development practices by david Johnson
5. <https://helpsavenature.com/land-pollution-solutions>
6. Status of the World's Soil Resources
7. <https://mena.fes.de/press/e/urbanization-in-the-mena-region-a-benefit-or-a-curse>
8. https://www.oecd-ilibrary.org/agriculture-and-food/oecd-fao-agricultural-outlook-2018-2027/the-middle-east-and-north-africa-prospects-and-challenges_agr_outlook-2018-5-en;jsessionid=29hZNkYUpAtduAOS2qVEI8Y-PdJwMAxq5Wq-7sDW.ip-10-240-5-125
9. <https://www.eea.europa.eu/ims/landscape-fragmentation-pressure-in-europe>
10. <https://mena.fes.de/>