

Status of Land Degradation and Desertification

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The Indian Prime Minister had last year said that India was on track to achieve its national commitment of land degradation neutrality. But the findings of a new document prepared by the Indian Space Research Organisation (ISRO) have revealed otherwise. In this context, it is prudent to know about the basics of the issue in detail.

In news: Despite PM Modi's assurance, land degradation, desertification increasing

Placing it in syllabus: Environment

Dimensions:

- Causes of land degradation and desertification
- United Nations Convention to Combat Desertification
- Land Degradation Neutrality (LDN)
- Status of Land Degradation and Desertification in India
- Efforts to Combat Desertification

Content:

Causes of land degradation and desertification

- According to the UNCCD, **land degradation** refers to the loss of biological or economic productivity of land resulting from land uses or from a combination of factors including human activities.
- **Desertification** is a form of Land degradation and refers to the process by which fertile land becomes desert, typically as a result of drought, deforestation, or inappropriate agriculture.
- Desertification does not imply the expansion of existing deserts.

Various reasons for increasing land degradation include:

Over-exploitation of Land:

- Growing demand for food, fodder, fuel and raw materials is increasing the pressure on land and the competition for natural resources.
- This has led to stress on land usage and has led to over-exploitation of land resources like overgrazing, and conversion to other land uses.

Unsustainable agricultural practices:

- About 141 million hectares of land is used by agriculture in India.
- Faulty land and water management practices in agriculture have significantly contributed to land degradation.
- Intensive irrigation and high chemical use (fertilisers, pesticides, etc.) adds to degradation.

Climate Change:

- Climate change plays a huge role in desertification. As the days get warmer and periods of drought become more frequent, desertification becomes more and more eminent.
- Further rise in incidents like forest fires are destroying forests and leading to rise in desertification.

Population Pressure:

- With rise in population, stress on natural resources is increasing. People are looking to move into new areas and are invading new land in order to make houses.
- This is contributing to the rise in desertification and land degradation.

Unplanned urbanisation:

- Economic development has led to expansion of urban and industrial land. Much of the present urban and industrial development has taken place on agricultural land.
- The expansion of cities has resulted in the encroachment of forest areas and wetlands.
- For example, rapid urbanisation triggered by a population increase in coastal areas has caused coastal land degradation.

Erosion:

- Loss of soil cover, mainly due to rainfall and surface runoff, was one of the biggest reasons for desertification. It was responsible for 11.01 per cent of the desertification in the country, the ISRO atlas said.
- In 2011-13, water erosion was responsible for 10.98 percent of desertification in the country. In 2003-05, it was responsible for 10.83 per cent of desertification.
- Wind erosion was found to be responsible for 5.46 per cent of the desertification in India. In 2003-05, it was responsible for 5.58 percent of desertification.
- Vegetation degradation was found to be responsible for 9.15 per cent of desertification in the country.

Consequences of Land Degradation and Desertification:

- **Reduce in agricultural productivity:** Land degradation exacerbates climate change and threatens agricultural productivity. It reduces soil health, water quality and damages. Thus in turn impact the livelihood of rural people.
- **Worsen Water Crisis:** Land degradation has resulted in a deterioration in the quantity and quality of both surface and groundwater resources. Less vegetative cover leads to soil erosion. Runoff increases and flooding

becomes more frequent and extensive. Groundwater recharge decreases, and the water table also drops.

- **Endanger Food Security:** With land degradation, the food production is endangered and reduced. With reduced agricultural activities and productivity, land degradation endangers future nutrition.
- **Force Migration:** populations are pressured to migrate to more hospitable areas. It reduces human settlement as land becomes non productive for livelihood. This would lead to internal and external migration.

Impact Health: Land degradation and desertification can affect human health through complex pathways – higher threats of malnutrition from reduced food and water supplies; more water- and food-borne diseases that result from poor hygiene and a lack of clean water; respiratory diseases caused by atmospheric dust from wind erosion and other air pollutants; the spread of infectious diseases as populations migrate.

United Nations Convention to Combat Desertification (UNCCD):

- UNCCD is an **international convention to combat desertification and mitigate the effects** of drought through national action programs that incorporate long-term strategies supported by international cooperation and partnership arrangements.
- Established in 1994, **UNCCD is the sole legally binding international agreement which links environment and development to sustainable land management.**
- The UNCCD addresses particularly the arid, semi-arid & dry sub-humid areas, called drylands, where some of the most vulnerable ecosystems and peoples are found.
- UNCCD is **one of the Rio Convention** that focuses on desertification, land degradation and drought (DLDD) in regions like Africa, Asia, Latin America and Caribbean.
- UNCCD launched **Land Degradation Neutrality (LDN)** to

- conserve, sustainably manage and restore land
- As the dynamics of land, climate and biodiversity are intimately connected, the UNCCD collaborates closely with the other two Rio Conventions; the **Convention on Biological Diversity (CBD)** and the **United Nations Framework Convention on Climate Change (UNFCCC)**, to meet these complex challenges with an integrated approach and the best possible use of natural resources.
 - The **new UNCCD 2018-2030 Strategic Framework** is the most comprehensive global commitment to achieve Land Degradation Neutrality (LDN) in order to restore the productivity of vast expanses of degraded land, improve the livelihoods of more than 1.3 billion people, and reduce the impacts of drought on vulnerable populations

Land Degradation Neutrality (LDN):

- The concept of Land Degradation Neutrality (LDN) emerged from the **UN Conference on Sustainable Development (Rio+20)** in 2012.
- LDN responds to an immediate challenge of intensifying the production of food, fuel and fiber to meet future demand without further degrading our finite land resource base.
- In other words, Land Degradation Neutrality (LDN) envisions a world where human activity has a neutral, or even positive, impact on the land.
- The UNCCD Secretariat launched this Land Degradation Neutrality initiative, which has been **enshrined in the SDGs as target 15.3** on achieving a land degradation neutral world by 2030.
- India is striving towards achieving the national commitments of Land Degradation Neutrality (LDN) and the restoration of 26 million hectares of degraded land by 2030.

Bonn Challenge:

- The **Bonn Challenge** is a global effort to bring **150 million hectares of the world's deforested and degraded land into restoration** by 2020, and 350 million hectares by 2030.
- The 2020 target was launched at a high level event in Bonn in 2011 organised by the Government of Germany and IUCN.
- It was later endorsed and **extended to 2030** by the **New York Declaration on Forests** of the 2014 UN Climate Summit.
- To date, 74 governments, private associations and companies have pledged over 210 million hectares to the Challenge.

At the **UNFCCC Conference of the Parties (COP) 2015** in Paris, **India also joined the voluntary Bonn Challenge pledge** to bring into restoration 13 million hectares of degraded and deforested land by the year 2020, and additional 8 million hectares by 2030.

Status of Land Degradation and Desertification in India:

The findings of a new document prepared by the Indian Space Research Organisation (ISRO) , and Desertification and Land Degradation Atlas of India have revealed:

- Some **97.85 million hectares (mha) of India's total geographical area (TGA)** of 328.72 mha **underwent land degradation** during 2018-19
- This amounts to **29.7 percent of the country's land** become degraded
- Besides **land degradation, desertification had also increased**. Some 83.69 mha underwent desertification in 2018-19.
- This was greater than the 81.48 mha in 2003-2005 and 82.64 mha in 2011-13 that underwent desertification.

- India **witnessed an increase in the level of desertification in 28 of 31 states** and Union territories between 2011-13 and 2018-19
- Around **23.79 per cent of the area undergoing desertification** / land degradation with respect to TGA of the country was contributed by **Rajasthan, Maharashtra, Gujarat, Karnataka, Ladakh, Jharkhand, Odisha, Madhya Pradesh and Telangana.**
- However, land degradation and **desertification was declining in Uttar Pradesh, Rajasthan and Telangana** in 2018-2019.

Desertification and Land Degradation Atlas of India

- **Published by:** The Atlas has been published by Space Application Centre, ISRO, Ahmedabad.
- **Prepared using:** The Atlas was prepared using IRS Advanced Wide Field Sensor (AWiFS) data of 2011-13 and 2003-05 time frames in the Geographical Information System (GIS) environment.
- The Atlas provides a **state-wise area of degraded lands** for the time frame 2018-19.
- It also provides the **change analysis for the duration of 15 years** from 2003-05 to 2018-19.
- It is helpful in **prioritizing areas to be taken up for minimizing the impact** of desertification and land degradation.
- Moreover, the Atlas will also be helpful in strengthening the proposed National Action Plan for achieving land restoration targets by providing important inputs.

Efforts to Combat Desertification:

- In order to prevent and reverse desertification, major policy interventions and changes in management approaches are needed.

- Such interventions should be implemented at local to global scales, with the active engagement of stakeholders and local communities.

The following can be implemented to combat desertification:

- ***Sustainable Land and Water Use:*** Sustainable land use can fix issues such as overgrazing, overexploitation of plants, trampling of soils and irrigation practices that cause and worsen desertification.
- ***Increasing vegetation cover:*** Increased vegetation protects land from erosional forces. Protecting soil from wind and water erosion helps to prevent the loss of ecosystem services during droughts.
- ***Sustainable Farming :*** Encourage agro-forestry, organic farming, environmentally sustainable cropping patterns and adoption of efficient irrigation techniques.
- ***Creating economic opportunities outside drylands:*** Unpacking new possibilities for people to earn a living, such as urban growth and infrastructure, could relieve and shift pressures underlying the desertification processes.
- ***Blending Scientific & Traditional Practices:*** Applying a combination of traditional techniques with the selective transfer of locally acceptable technology is a major way to prevent desertification.

Mould your thought: Differentiate between land degradation and desertification? What are their causes and consequences? Mention efforts to combat their effects.

Approach to the answer:

- Introduction
- Define Land degradation and desertification and highlight their differences
- Discuss their causes

- Discuss their effects on Human Life
- Mention UNCCD and India's commitments
- Discuss other efforts needed to combat desertification
- Conclusion