



## UNESCO Warns of 90% Soil Degradation by 2050

**For Prelims:** [UNESCO](#), [Biosphere Reserves Programme](#), [Desertification](#), [Food and Agriculture Organization](#), [Soil Health Card Scheme](#), [Bonn Challenge](#)

**For Mains:** Challenges Related to Soil Health in India, Issues Related to Soil Degradation, Conservation

**Source:** DTE

### Why in News?

Recently, at an international conference in Agadir, Morocco, [United Nations Educational, Scientific and Cultural Organization \(UNESCO\)](#) Director-General urged its 194 Member States to improve soil protection and rehabilitation as the organisation warns that **by 2050, up to 90% of the planet's soil could be degraded.**

- This alarming prediction highlights a major threat to global biodiversity and human life.

### What are UNESCO's Insights on Global Soil Degradation?

- **Current State of Soil Degradation:** UNESCO states that according to the **World Atlas of Desertification**, **75% of soils are already degraded, directly affecting 3.2 billion people.** The current trend may increase the impact to 90% by 2050.
- **World Soil Health Index:** UNESCO will establish a '**world soil health index**' with international partners to standardise soil quality measurement and comparison.
  - This will help identify trends in degradation or improvement and vulnerable areas, aiming to improve the evaluation of soil management practices.
- **Pilot Programme for Sustainable Soil Management:** **UNESCO will launch a pilot programme for sustainable soil and landscape management in ten natural sites supported by its [Biosphere Reserves Programme](#).**
  - The program aims to assess and improve management methods, and promote best practices worldwide.
- **Training Programs:** **UNESCO will train member government agencies, indigenous communities, and conservation organisations to access soil-protection tools.**

### What is Soil Degradation?

- **Definition:** Soil degradation is defined as a **change in soil health status** resulting in a diminished capacity of the ecosystem to provide goods and services for its beneficiaries. **It involves biological, chemical, and physical decline in soil quality.**
  - Soil degradation encompasses a broad range of processes that reduce soil health and its ability to function properly within its ecosystem.
  - **It follows the LADA (Land Degradation Assessment in Drylands) definition of land degradation**, highlighting the complexity of degradation processes and their subjective evaluation by different stakeholders.

- This degradation can manifest through **loss of organic matter, decline in soil fertility, structural damage, erosion**, and adverse changes in salinity, acidity, or alkalinity. It also includes contamination by toxic chemicals, pollutants, or excessive flooding.
- **Current State of Soil Degradation:** About **33% of the world's soils are moderately to highly degraded**. This degradation disproportionately affects regions plagued by poverty and food insecurity, with **40% of degraded soils located in Africa**.
- Approximately **12 million hectares of agricultural soils are lost globally** each year due to degradation.
- In India, according to the [National Bureau of Soil Survey and Land Use Planning](#), 146.8 million hectares, around **30% of the soil in India is degraded**.
  - Of this, around 29% is lost to the sea, 61% is transferred from one place to another, and 10% is deposited in reservoirs.
- **Causes:** Soil degradation can be caused by various factors such as **physical factors** like rainfall, surface runoff, floods, wind erosion, and tillage.
  - **Biological factors** include human and plant activities that reduce soil quality, while **chemical factors** involve nutrient reduction due to alkalinity, acidity, or waterlogging.
    - The Green Revolution boosted food production but led to significant soil degradation.
  - **Deforestation** exposes soil minerals by removing trees and crop cover, which are vital for soil formation.
  - **Rapid urbanisation** and development projects led to the conversion of land for non-agricultural use, impacting soil quality. Untreated sewage and **industrial waste were released into rivers**, resulting in toxic water with heavy metals that degraded the soil.
    - Mining activities, such as opencast mining, disturbed the water table, contaminated soil and water, and destroyed local flora and fauna. **Many states did not enforce pollution laws**, allowing industries to dump toxic effluent on agricultural land.
- **Impact:** Degraded soils lead to reduced food production, heightened food insecurity, and diminished ecosystem services.
  - Soil degradation is also a significant environmental issue affecting climate change mitigation and resilience due to its impact on **carbon stocks**.

## Note

- **Land degradation** has a **broader scope than both soil erosion and soil degradation**. It includes all negative changes in the capacity of the ecosystem to provide goods and services, encompassing biological, water-related, social, and economic services.
- **Desertification** refers to **land degradation in dryland areas** or the irreversible change of land to a state where it can no longer be recovered for its original use.

## What are the Initiatives Related to Management of Soil?

- **Global:**
  - Global Soil Partnership (GSP): The GSP, established in 2012, aims to prioritise soils in the global agenda and promote sustainable soil management.
    - Hosted by the [Food and Agriculture Organization \(FAO\)](#) of the United Nations, the Partnership strives to enhance soil governance for productive soils, ensuring food security, climate change adaptation and mitigation, and sustainable development for all.
  - **World Soil Day:** It is celebrated annually on 5th December to raise awareness about the

importance of healthy soil and promote sustainable soil management. It was officially adopted by the **68th UN General Assembly 2013**, designating 5 December 2014 as the first official World Soil Day.

- **Bonn Challenge**: It is a global goal to **bring 150 million hectares of degraded and deforested landscapes into restoration by 2020 and 350 million hectares by 2030**.

- It was launched by the Government of Germany and **International Union for Conservation of Nature (IUCN)** in 2011, the Challenge surpassed the **150-million-hectare milestone for pledges in 2017**.

- **Land Degradation Neutrality (LDN)**: It is a goal of the **UNCCD (United Nations Convention to Combat Desertification)** to **stop and reverse land degradation by 2030**.

- LDN is defined as a state where the amount and quality of land resources are stable or increasing, within specific time and space, and support ecosystems, food security, and human well-being:

- **Sustainable Development Goal 15** : Goal 15 of the **2030 Agenda** aims to protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss.

- **Recarbonization of Agricultural Soils (RECSOIL)**: It was led by the FAO, and aims to decarbonise global agricultural soils by increasing **soil organic carbon (SOC)** through **sustainable soil management (SSM) practices**.

- **India:**

- [Soil Health Management under National Mission for Sustainable Agriculture \(NMSA\)](#)

- [Soil Health Card Scheme](#)

- [Paramparagat Krishi Vikas Yojana \(PKVY\)](#)

- [Sub-Mission on Agroforestry \(SMAF\) Scheme](#)

## Way Forward

- **Regenerative Agriculture**: It focuses on restoring soil health through practices like **crop rotation, cover cropping, and reduced tillage**. These methods enhance soil organic matter, improve water retention, and increase biodiversity.
  - Develop and use **biochar, compost, and other organic amendments** to improve soil structure and fertility.
- **Promote Agroforestry**: Integrate trees and shrubs into agricultural landscapes. **Agroforestry** not only prevents soil erosion but also enhances soil fertility.
- **Assessment and Mapping**: Create a global database on standardising soil health monitoring this allows for better tracking of progress and facilitates targeted interventions.
- **Green Infrastructure**: Integrate green roofs, bioswales, and urban parks into city planning. This allows **rainwater infiltration, reduces runoff, and creates pockets of healthy soil**.
  - Reclaim and remediate abandoned industrial sites for urban agriculture or green spaces, promoting soil regeneration.
- **Bioremediation**: Utilise microbes and plants to break down or neutralise contaminants in polluted soils, promoting natural soil healing.
- **Phytomining**: Explore the use of specific plants that can absorb and accumulate metals from contaminated soils, offering a natural remediation approach.

**Prelims:**

**Q. Consider the following statements: (2017)**

**The nation-wide 'Soil Health Card Scheme' aims at**

1. expanding the cultivable area under irrigation.
2. enabling the banks to assess the quantum of loans to be granted to farmers on the basis of soil quality.
3. checking the overuse of fertilisers in farmlands.

**Which of the above statements is/are correct?**

- (a) 1 and 2 only
- (b) 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

**Ans: (b)**

**Mains:**

**Q. How far is the Integrated Farming System (IFS) helpful in sustaining agricultural production? (2019)a**

PDF Refernece URL: <https://www.drishtiias.com/printpdf/unesco-warns-of-90-soil-degradation-by-2050>

