



## PERSONALITY TEST PROGRAMME 2019 (Current Affairs Interview Issues)

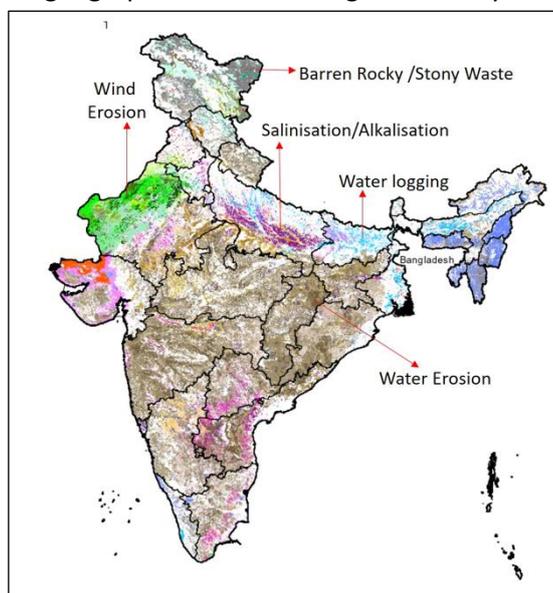
### INDIA AND LAND DEGRADATION NEUTRALITY

#### Introduction

Land degradation is increasingly becoming a major concern for Indian economy, especially the agriculture on which two-third of the population depend for their livelihood. Many policies and programs have been initiated in the last two decades to address this problem, but the results have not been much encouraging.

#### Land Degradation and India

- Land degradation is a **reduction or loss of the biological or economic productivity and integrity of land** (rainfed cropland, irrigated cropland, pasture, forest etc.) resulting from land uses, processes arising from human activities and habitation patterns, such as soil erosion caused by wind and/or water; deterioration of properties of soil; and long-term loss of natural vegetation.
- When land degradation occurs in dryland areas, more specifically arid, semi-arid and dry sub-humid areas, it is referred to as **desertification**. Around 69% of India falls under drylands.
- **State of India's Environment 2019** shows that 30% of India's total geographical area is being affected by land degradation.
  - 82% of these degraded land lies in just nine states: Rajasthan, Maharashtra, Gujarat, Jammu & Kashmir, Karnataka, Jharkhand, Odisha, Madhya Pradesh and Telangana.
  - It shows 1.87 million hectares of land in the country faced process of desertification between 2003-13 period.



#### Major causes behind land degradation in India

- **Poor agricultural practices** such as improper crop rotations; overuse of agrochemicals etc.
- **Soil erosion** which leads to surface runoff and removal of topsoil.
- **Vegetation degradation** through activities such as deforestation, shifting cultivation etc.
- **Increasing urbanization** driven by increasing population pressure has increased diversion of land.
- **Overgrazing**- On one hand, India has one of the largest numbers of cattle population while on the other the grazing practices in India are not sustainable.

#### Impact of Land Degradation on India

- **Economic Impact and food security**- As per TERI, the economic losses from land degradation and change of land use in 2014-15 stood at 2.54% of India's GDP.
  - Most affected are the small and marginal farmers who make-up about 86% of the total farmers in India.
- **Climate Change**- It is exacerbating climate change events, which in turn, are causing even greater degradation.
  - For e.g. degraded land loses its capacity to absorb carbon-dioxide (CO<sub>2</sub>), a greenhouse gas (GHG) that is the biggest factor in worsening global warming.



- **Water Scarcity**- The dryland population vulnerable to water stress and drought intensity is projected to reach 178 million under the most ideal conditions of 1.5 deg-C warming by 2050.
- **Rights of indigenous people**- Insecure land tenure affects the ability of people and communities to fight climate change, which is further endangered by land degradation.

### About Land Degradation Neutrality (LDN)

- As per the UNCCD definition, LDN is a state whereby **the amount and quality of land resources**, necessary to support ecosystem functions and services and enhance food security, **remains stable or increases** within specified temporal and spatial scales.
- The **overarching principle for LDN** includes:
  - **Avoid**: Land degradation can be avoided by **addressing drivers of degradation** and through proactive measures to prevent adverse change in land quality and confer resilience, via appropriate regulation, planning and management practices.
  - **Reduce**: Land degradation can be reduced or mitigated on agricultural and forest land through application of **sustainable management practices**.
  - **Reverse**: Where feasible, some of the productive potential and ecological services of degraded land can be restored or rehabilitated through actively **assisting the recovery of ecosystem** functions.
- LDN can prevent Soil erosion, desertification, water scarcity, migration insecurity and income inequalities caused by land degradation. Thus, it helps in combating the impacts of climate change.
- It represents a paradigm shift in land management policies and practices. It is a unique approach that counterbalances the expected loss of productive land with the recovery of degraded areas.
- **India** has adopted the goal of **achieving LDN by 2030 as adopted under Sustainable Development Goals. (Target 15.3 of SDGs).**

#### Government's broad approach towards addressing land degradation

- **Adoption of watershed approach**- planning based on micro-watersheds, use of remote sensing data and spatial data in planning at the micro-watershed level. E.g. **Integrated Watershed Management Programme (IWMP)**
- **Integrated treatment** incorporating contouring, gully plugging, vegetative as well as engineering-based solutions for soil-moisture conservation, covering agricultural as well as non-agricultural lands. E.g. **Fodder and Feed Development Scheme**-its component of **Grassland Development including Grass Reserves**.
- **Integrated farming-based approach**- e.g. National Afforestation Programme (NAP), National Mission for Green India (GIM), incorporating fodder and fuelwood supply, farm-forestry and agroforestry and silvi pastures (combination of **trees, forage plants and livestock** together as an integrated, intensively-managed system), stall feeding, improved chullahs etc.
- **Focus on water management**- aquifer recharge and water budgeting as well as crop planning. E.g. Command Area Development and Water Management (**CADWM**) programme, Soil Conservation in the Catchment of River Valley Project National Watershed Development Project for Rainfed Areas (**NWDPR**A).
- **Focus on social aspects**- e.g. Constitution of **Watershed Committee** under the Gram Sabha, Water User Association development, Social Audit under **MGNREGA**, Joint Forest Management (**JFM**) and Social Fencing by involving local communities.
- **Incorporation of livelihood related activities**- Development of micro-enterprises, involvement of Self-Help Groups (SHGs), programmes such as Mahila Kisan Sashaktikaran Pariyojana (**MKSP**) focusing on increasing capabilities women farmers with a view to increasing sustainability.
- **Adoption of climate-adaptation related solutions**- both with regard to floods and intense precipitation as well as temperature and moisture stress.
- **Increasing the role of Panchayati Raj Institutions (PRIs)**- and ensuring "convergence" between Government programmes and programmes executed by PRIs.

#### Steps taken by India to achieve Land Degradation Neutrality

- **Comprehensive National Plan**- The National Action Plan (NAP) to combat desertification was launched in 2001 for 20 years.
- **Mapping of issue**- The ISRO and some other partners prepared the **Desertification and Land Degradation Atlas (2016)** of entire country using Indian remote sensing satellites data in GIS environment.
- **Mission Mode approach**- India adopted a **Bonn Challenge pledge**, (a global effort to bring 150 million hectares of world's deforested and degraded land into restoration by 2020 and 350 million hectares by 2030).
- **Sustainable land and Ecosystem Management (SLEM) Programme**- which is jointly implemented by Government of India and Global Environment Facility (GEF), aims to promote sustainable land and ecosystem management.

- **Initiatives launched-** Government has launched various schemes like Integrated Watershed Development Program, Per Drop More Crop, National Afforestation Program, National Green Mission, etc. have components to tackle Land degradation.
- **Delhi Declaration-** India hosted the COP 14 to UNCCD (*refer the box*) recently and adopted new targets.
  - India raised its total area that would be restored from its land degradation status, from 21 million hectares to 26 million hectares till 2030.
  - India has announced to set up a Centre of Excellence at the Forest Research Institute, Dehradun, for providing technical assistance to meet the challenges.

#### Important takeaways of the CoP 14 of the United Nations Convention to Combat Desertification (UNCCD)

- **Adoption of Delhi Declaration:** in which parties expressed commitment for a range of issues, including gender and health, ecosystem restoration, taking action on climate change, private sector engagement, **Peace Forest Initiative etc.**
  - **Peace Forest Initiative** is an initiative by South Korea to provide a practical platform that will foster international collaboration by demonstrating the value of achieving land degradation neutrality in cross- border post-conflict situations.
  - Emphasis on need to participate in **United Nations Decade on Ecosystem Restoration (2021–2030)**, which commits to adopting an integrated, best-practice approach to land restoration based on scientific evidence and traditional knowledge.
- **Drought Toolbox launched:** The Drought Toolbox is currently being developed as part of the Drought Initiative through the close partnership among UNCCD, WMO, FAO, GWP, National Drought Mitigation Centre (NDMC) of the University of Nebraska, and UNEP-DHI
  - It is being designed to provide drought stakeholders with easy access to tools, case studies and other resources to support the design of National Drought Policy Plan with the aim to boost the resilience of people and ecosystems to drought.
- **Release of Adapt Now:** A Global Call for Leadership on Climate Resilience' Report:
  - It has been written by the **Global Commission on Adaptation** — a group of 34 leaders in politics, business and science.
  - It focuses on making the case for climate adaptation, providing specific insights and recommendations in key sectors.
  - As per it, an investment of \$1.8 trillion (Rs 2 lakh crore) in climate-adaptation measures over the next decade will bring about concrete transformation on the ground
- India has called upon the leadership of UNCCD to create a **Global Water Action Agenda** which is central to the land degradation neutrality strategy.

#### Way forward

- To reduce land degradation, the increasing pressures on land resources should also be reduced. In this context, **Global Land outlook by UNCCD** outlines certain pathways that producers, consumers, governments and corporations can follow to stabilize and reduce pressure on land resources:
  - **Multifunctional landscape approach:** Prioritizing and balancing different stakeholder needs at a landscape scale while identifying those land uses in Land-use planning that best meet the demands of people towards safeguarding biodiversity.
  - **Farming for multiple benefits:** The agricultural practices should be shifted in a way to support a wider array of social, environmental, and economic benefits and optimize the most desirable suite of ecosystem services from food production activities.
  - **Managing the rural-urban interface:** Cities designed for sustainability in the wider landscape can reduce environmental costs of transport, food, water, and energy, and offer new opportunities for resource efficiency.
  - **Creating an enabling environment** to scale local successes into large-scale through stakeholder engagement, land tenure, gender equality, and the availability of sustained investment and infrastructure.

#### Some successful practices

- **Sustainable agricultural practices:** In Jamni village in Telangana, people cultivated vegetable kitchen gardens, where they grow vegetables and fruits, where the size of garden is less than half an acre. Here dung, household garbage and ashes are used as fertilizers.
- In Ghana, **community land management groups** were formed, trained and empowered as **community educators** in **sustainable land management (SLM)** practices like the formulation of participatory land use plans, establishment of SLM committees, etc. The project helped restore 30 ha of degraded woodland and placed them under SLM.
- In Cuba, after severe drought during 2014- 2017, **new varieties of crops** that are resistant to extreme weather, including tomato, onion, garlic, chili, banana etc. were encouraged to be cultivated, with **sustainable farming practices** were also introduced such as planting along contour lines to reduce soil erosion, crop rotation. This brought a total of 210 hectares of farmlands have come under sustainable management using climate-smart measures.

- **No net loss of healthy and productive land** by providing incentives for the sustainable consumption and production of natural resources. E.g. incentivizing reduction in the current levels of food waste and loss. Roughly **one third of the food produced** in the world gets lost or wasted accounting for **4.4 billion tons of annual greenhouse gas emissions**.
- **Conservation of Land degradation in rangeland** (areas that consist predominantly of grasses, grass-like plants, and shrubs - encompass almost half the world's land surface) through
  - Land capability and condition assessments and monitoring.
  - Grazing pressure management, Pasture and forage crop improvement, Silvo-pastoral management, Weed and pest management
  - Maintaining appropriate fire regimes and the reinstatement or development of local livestock management practices and institutions.
- Combating land degradation resulting from **invasive species** involves the identification and monitoring of invasion pathways and the adoption of eradication and control measures (mechanical, cultural, biological and chemical).
- **Conservation of Land degradation from mining areas** include:
  - On-site management of mining wastes (soils and water),
  - Reclamation of mine site topography and early replacement of topsoil
  - Restoration and rehabilitation measures to recreate functioning grassland, forest, wetland and other ecosystems
- **Conservation of Land degradation in wetland** include, controlling point and diffuse pollution sources, adopting integrated land and water management strategies and restoring wetland hydrology, biodiversity, and ecosystem functions through passive and active restoration measures, such as constructed wetlands
- **Creation of windbreaks** through afforestation, tree planting and ecosystem restoration programmes that can function as “green walls” and “green dams” that reduce dust and sandstorms and sand dune movement.
- Recognizing the **key role of Land managers**, including indigenous people and local communities in the design, implementation and evaluation of sustainable land management practices.
- **Urban planning**, replanting with native species, green infrastructure development, remediation of contaminated and sealed soils (e.g. under asphalt), wastewater treatment and river channel restoration.
- **Eliminating perverse incentives that promote degradation**, e.g. subsidies that reward overproduction, and devising positive incentives that reward the adoption of sustainable land management practices.

## Conclusion

Reversal of land degradation is important for countries for not just economic gains but also for the achievement of SDGs and Paris agreement goals. Reduction and reversal of land degradation could mitigate 1/3rd of greenhouse gas by 2030 through soil's carbon absorption and storage functions.

## Summary

- Land degradation is a **reduction or loss of the biological or economic productivity and integrity of land** resulting from land uses, processes arising from human activities etc. 30% of India's total geographical area being affected by land degradation.
- Land degradation in dryland, arid, semi-arid and dry sub-humid areas is referred to as **desertification**. 69% of India falls under drylands.
- **Major causes behind land degradation in India**
  - Poor agricultural practices like improper crop rotations; overuse of agrochemicals etc.
  - Soil erosion
  - Vegetation degradation
  - Increasing urbanization
  - Overgrazing
- **Impact of Land Degradation on India**
  - **Economic Impact:** 2.54% of India's GDP (in 2014-'15)
  - **Climate Change** as degraded land loses its capacity to absorb CO<sub>2</sub>
  - Food Security
  - Water Scarcity
  - Rights of indigenous people
- **Land Degradation Neutrality (LDN)**, is a state whereby the amount and quality of land resources, necessary to support ecosystem functions and services and enhance food security, remains stable or increases within specified temporal and spatial scales.
- LDN is based on **Avoid, reduce and reverse** principles. **India** has adopted the goal of **achieving LDN by 2030 as adopted under Sustainable Development Goals. (Target 15.3 of SDGs)**.
- **Steps taken by India to achieve Land Degradation Neutrality:**
  - The **National Action Plan (NAP)** to combat desertification was launched in 2001 for 20 years.
  - ISRO and other partners prepared the **Desertification and Land Degradation Atlas (2016)**
  - India adopted a **Bonn Challenge pledge**
  - Initiatives like Integrated Watershed Development Program, Per Drop More Crop, National Afforestation Program, National Green Mission etc.
  - **Focus on social aspects** like **watershed Committee** under the Gram Sabha etc.
  - **Sustainable land and Ecosystem Management (SLEM) Programme**
  - **Delhi Declaration of COP 14 to UNCCD**, hosted by India
- **Important takeaways of the CoP 14 of the United Nations Convention to Combat Desertification (UNCCD)**
  - **Peace Forest Initiative** to achieve land degradation neutrality in cross- border post-conflict situations.
  - **Drought Toolbox acting like** knowledge bank, for countries to anticipate and prepare for drought was launched.
  - **Adapt Now:** A Global Call for Leadership on Climate Resilience' Report was released.
  - India called upon to create **Global Water Action Agenda**
- **Way forward**
  - **Global Land outlook** by UNCCD outlines following pathways
    - ✓ Multifunctional landscape approach
    - ✓ Farming for multiple benefits
    - ✓ Managing the rural-urban interface
    - ✓ Creating an enabling environment to scale local successes
    - ✓ Ensure no net loss of healthy and productive land
  - Combating land degradation resulting from **invasive species**
  - **Conservation of Land degradation from mining areas**
  - **Conservation of Land degradation in wetland**
  - **Creation of windbreaks** through afforestation, tree planting etc.
  - Recognizing the **key role of Land managers** like indigenous people etc.
  - Appropriate **urban planning**

- **Some successful practices**
  - **Sustainable agricultural practices** like **vegetable kitchen gardens** In Jamni village in Telangana
  - **Community land management groups** in Ghana
  - Introduction of new varieties of extreme **weather resistant crops** with **sustainable farming practices** in Cuba.

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