
LAND CONSERVATION TOWARDS SDG 15.3 - ISSUES AND CHALLENGES IN INDIA: A CRITICAL EVALUATION

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ABSTRACT

Land degradation refers to a temporary or permanent deterioration in the productive capability of the land. Degradation affects the land and reduces economic worth, principal uses, and farming systems. Various factors contribute land degradation, including adverse weather conditions like drought, human activities such as deforestation, overgrazing by cows, and detrimental agricultural practices like monoculture and the use of chemical pesticides. Land degradation affects climate change by reducing the land's ability to absorb CO₂, thereby contributing to global warming. Moreover, land degradation reduces both the quantity and quality of surface and groundwater resources. United Nations Convention to Combat Desertification (UNCCD), 1994 addresses the intersection of land-related environmental and developmental concerns. To tackle the global issue of land degradation, the concept of Land Degradation Neutrality (LDN) was introduced in the Rio+20 Outcome Document, and later formalized as Target 15.3 within the Sustainable Development Goal (SDG) 15 by the United Nations General Assembly. India is making determined efforts to fulfil its national promise towards LDN and the SDG Target 15.3. This commitment involves restoring 26 million hectares of land that has suffered from degradation by the year 2030. According to SAC (2021), 97.8 M ha (29.7%) of the area is currently degraded in the country. Therefore, the conservation of land is significant for India and a challenge as well to meet SDG target 15.3. The paper aims to identify the causes of land degradation in India, examining the initiatives taken by Indian Government to restore land degradation and key challenges that hinders India's progress toward achieving land degradation neutrality.

Keywords: Land degradation, Sustainable development, Land restoration, Commitment, Challenges, India.

1. INTRODUCTION:

Land, which is non-renewable, finite and fragile is comprising of soil, water, and flora, fauna and other natural resources vital to all the living beings. Land is particularly affected by social and economic development and its resources face continuous pressure due to rising population demands and the impacts of climate change.

A substantial portion of India's land is either severely degraded or undergoing high rates of degradation. It is creating serious concerns for food and water security, mostly in the states where land degradation is high. Based on ecological and geographical conditions many states of India including Andhra Pradesh, Tamil Nadu, Chhattisgarh, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, among others have been identified mostly affected by land degradation. In India water erosion remains the primary cause of desertification and land degradation followed by vegetation cover and wind erosion. The two problems are driven by both natural factors and human activities such as excessive exploitation of natural resources, unsustainable land use patterns and improper land management in most of the regions.

In 1994, the UNCCD adopted the definition of land degradation as articulated at the Earth Summit as "reduction or loss in biological or economic productivity and complexity of rainfed cropland, irrigated cropland, or range, pasture, forest and woodlands resulting from land uses or from a process or combination of processes arising from human activities of habitation patterns".¹ Hence, degradation of land refers to the decline in the land's ability to deliver ecosystem goods and services and to sustain its ecological functions over time. It leads to various problems such as soil erosion, reduced agricultural yields, biodiversity loss, depletion of ground water and reduced availability of water in affected areas.

India has demonstrated leadership in addressing land degradation, initially pledging to restore 13 million hectares of degraded and deforested land by 2020 and an additional 8 million hectares by 2030 at the 21st meeting of the Conference of Parties (CoP) of the United Nations Framework Convention on Climate Change (UNFCCC).² The earlier target to achieve 21 million hectares of land restoration by 2030 was also revised to 26 million hectares, as India chaired the COP 15 of the United Nations Convention to Combat Desertification in 2019

¹ R.S. Rawat, Shilpa Gautam & Deepti Verma, *Sustainable Land and Ecosystem Management in India*, (2023).

² Sanjay Singh et al., *Pathways to Achieve Land Degradation Neutrality in India*, (2023).

(UNCCD, 2019).³ Although scientific knowledge and technological tools are available, they remain dispersed and often lack a unified approach. Therefore, regular and credible assessments of the nature, severity, extent, and underlying causes of soil and land degradation are essential. India is a megadiverse nation with nearly 7-8% of flora and fauna, over 18% of the global population of human beings and over 18% of cattle, despite having only about 2.4% of the world's land area.⁴ With continuous population growth, per capita land availability has steadily declined over the years. Some of the mostly land degraded states of India account for more than 25% of the country's geographical area, with a total area of 83.78 mha experiencing desertification.⁵ While land degradation can be controlled, it demands sustained, long-term commitment and strategic intervention in India.

1.1 RESEARCH OBJECTIVES:

1. To identify the causes and facts impacting land degradation in India.
2. To examine the effectiveness of existing policies and initiatives in India aimed at addressing land degradation, including the restoration of degraded land.
3. To explore the challenges and barriers faced by India in achieving Sustainable Development Goal/Targets (SDG) 15.3 related to halting and reversing land degradation.

1.2 RESEARCH QUESTIONS:

1. What are the causes and contributing factors to land degradation in India?
2. What policies, programs, and initiatives have been implemented in India to combat land degradation?
3. What are the key challenges that hinder India's progress toward achieving its national commitment to Land Degradation Neutrality (LDN) and meeting SDG 15.3?

2. CAUSES AND FACTS IMPACTING LAND DEGRADATION IN INDIA

Causes and factors that impact land degradation in India are multifaceted and interconnected,

³ *Id.*

⁴ *Id.*

⁵ *Id.*

contributing to various environmental and agricultural challenges. The following are the important factors and their effects:

2.1 Population Excess:

With a population of around 142.86 crore, India has surpassed China and is the world's most populous country. A large population impacts the country's limited resources, resulting in an abundance of problems across the country. The increased demand for food, housing, and commercial sectors by this population has become one of the key reasons for land degradation. In urban regions, population growth has resulted in various industry developments, improper waste management, pollution, and haphazard housing construction which is a cause of land degradation. Because of the constantly growing population, farm sizes are shrinking and agricultural practices are expanding into rural regions. Furthermore, due to improper utilization of land, the productive capacity of natural resources such as forests, soil, and water has been reduced.

2.2 Deforestation:

Shifting cultivation, raw materials for industrial use, growing food needs, fuel requirements overgrazing, forest fires, development related projects and other factors are major causes of deforestation. Deforestation has become more common in order to fulfil people's needs. Records show that "India loses 1.3 million hectares of forest per year". Deforestation and a rapidly growing population are interconnected as people destroy trees and forests to meet their requirements which contribute to land degradation.

2.3 Erosion of the Soil:

Soil erosion is a major global danger to the sustainability and productivity of agro-ecosystems. It leaves large areas vulnerable to the loss of fertile topsoil. It is a sneaky process that removes the most productive soil layer first, resulting in decreased productivity. The factors that contribute are, man-made factors, various other factors like water-induced and wind-induced factors. Soil erosion causes more than just land damage. It not only increase pollution in the river but also clogging water bodies and reduce the number of aquatic organisms.

2.4 Flood and Droughts:

- Floods: Rain is beneficial to crop/plant growth. The amount of rainfall that a place receives

is determined by its location. However, excessive rainfall has a number of drawbacks, including rising water levels, which can result in flooding. These floods cause substantial harm to soil quality, leading to subsequent land degradation.

- Droughts: Droughts are extended periods of abnormally low rainfall that result in a lack of water. Drought is a threat to 35% of Indian land. Droughts cause the soil to become completely dry, hurting the soil elements essential for greater plant growing, and this is land degradation.

2.5 Grazing Abuse:

India has a massive cattle population and has limited grazing area to feed such a massive cow population. Cattle remove the top soil's plants and grass, which are responsible for holding the soil together. As a result, overgrazing harms both soil and land in India.

2.6 Irrigation that is excessive:

Indian farmers are not highly educated. Because there is no proper drainage in their farm regions, they over-irrigate their fields to cultivate good crops, which causes waterlogging and decreased soil fertility and vegetation cover, both of which can accelerate land degradation.

2.7 Landslides:

Hydropower projects, construction of road, railways and building, mining projects, and other development projects are responsible for clearing forested areas. During these actions, dynamite is used to destroy large parts of vulnerable mountainous regions, which are then hurled into nearby valleys and streams. These land masses erode the already vulnerable mountain slopes and cause landslides.

3. POLICIES AND PROGRAMS IMPLEMENTED BY INDIA:

India has set a target of attaining land degradation-neutrality by 2030 and is undertaking efforts to rehabilitate 26 million hectares of degraded land within this timeframe.⁶ There are some key initiatives taken by Indian Government to reverse land degradation, maintain sustainability, to take care soil health and increase productivity in agriculture:

⁶ India Will Restore 26 Million Hectares of Degraded Land by 2030: Prime Minister Shri Narendra Modi, <https://www.pib.gov.in/Pressreleaseshare.aspx?PRID=1584542®=3&lang=2> (last visited Feb. 19, 2026).

- a) The Soil Health Card Scheme introduced by the Ministry of Agriculture and Farmer's Welfare in 2015 to improve soil quality and productivity.⁷
- b) National Mission for Sustainable Agriculture (NMSA) Scheme, where the main activity is soil health management.⁸
- c) Pradhan Mantri Krishi Sinchayee Yojna: Per Drop More Crop programme introduced by the Department of Agriculture & Farmers Welfare under the Ministry of Agriculture & Farmers Welfare, Government of India in 2015 focuses on creating water sources for assured irrigation, create protective irrigation by harnessing rainwater at the micro level through 'Jal Sanchay' and 'Jal Sinchan'.⁹

Launched in 2015, India's Soil Health Card (SHC) scheme has distributed over 25 crore cards to farmers as of early 2026, surpassing the initial 23 crore milestone. The initiative promotes sustainable agriculture by providing soil nutrient data, encouraging balanced fertilizer use, improving productivity, and reducing excessive urea application and long-term soil health management.¹⁰

3.1 United Nations Convention to Combat Desertification (UNCCD):

India is an important party to the UNCCD, a legally binding international agreement aimed to address drylands and to improve ecosystem by combating desertification and land degradation issues.¹¹ The Ministry of Environment, Forest, and Climate Change (MoEFCC) serve as the administrative body to oversee the implementation of the Convention in India. Furthermore, India has pledged to meet the 2030 SDG target of attaining LDN and aims to rehabilitate 26 million hectares of degraded land as part of this commitment. In 2019 India hosted the Conference of the Parties (COP 14) to UNCCD in New Delhi and expressed its commitment

⁷ *Soil Health Card Scheme – Benefits, Eligibility, and Application Process*, HDFCERGO, <http://www.hdfcergo.com/blogs/health-insurance/2024/12/23/soil-health-card-scheme> (last visited Feb. 19, 2026).

⁸ *Rkvy.Da.Gov.in/Static/Schemes/SoilHealthManagement.Html#:~:Text=75%25 Assistance of Total Project,56 Lakhs per SSSL/MSTL.*, <https://rkvy.da.gov.in/static/schemes/SoilHealthManagement.html> (last visited Feb. 19, 2026).

⁹ *Pradhan Mantri Krishi Sinchayee Yojana: Per Drop More Crop*, MYSCHEME - ONE-STOP SEARCH AND DISCOVERY PLATFORM OF THE GOVERNMENT SCHEMES, <https://myscheme.gov.in> (last visited Feb. 19, 2026).

¹⁰ *Over 25 Crore Cards Issued to Farmers under Soil Health Card Scheme, Launched in 2015 to Address Decline of Soil Nutrients | DD News On Air*, <https://www.newsonair.gov.in/over-25-crore-soil-health-cards-distributed-to-farmers-across-country-says-govt/> (last visited Feb. 19, 2026).

¹¹ *Convention*, UNCCD, <https://www.unccd.int/convention/overview> (last visited Feb. 19, 2026).

to ecosystem restoration, taking action on climate change, private sector engagement, and peace forest Initiative.¹² UN Women, together with the UNCCD Secretariat and the International Union for the Conservation of Nature, introduced a Manual for gender-responsive land degradation neutrality transformative projects and programmes. The manual was launched with the objective of strengthening the existing work to incorporate gender perspectives into areas such as land degradation neutrality and drought management.¹³

3.2 National Afforestation Program (NAP):

NAP was launched in the year of 2002, with the aim of plantation in India's degraded forests.¹⁴ Ecological restoration of forest areas and to develop the forest resources with the participation of people. This initiative focuses on improvement in the livelihoods of the forest communities. There are three tier institutional setup under NAP to implement the whole scheme, which are, the State Forest Development Agency, Forest Development Agency and Joint Forest Management Committees.¹⁵

3.3 National Mission for Green India:

Green India Mission (GIM), formally known as the National Mission for Green India, is one of the eight missions under the National Action Plan on Climate Change (NAPCC) introduced in 2014.¹⁶ The protection of biological resources against the negative impacts of climate change and recognizing the vital impact of forests on ecological balance, biodiversity conservation, securing livelihood, and responding to climatic change by adapting and mitigating proper measures are the goal of this program. It intends to maintain, restore, and improve India's declining forest and tree cover over a ten-year period.

3.4 Drought Prone Area Programme (DPAP):

Central Govt. launched the DPAP programme during the year 1973-74 to maintain fragile areas

¹² *Summary Report 2–13 September 2019*, IISD EARTH NEGOTIATIONS BULLETIN, <https://enb.iisd.org/events/14th-session-conference-parties-uncd-cop-14/summary-report-2-13-september-2019> (last visited Feb. 19, 2026).

¹³ Tzili Mor, *Manual for Gender Responsive Land Degradation Neutrality Transformative Projects*, (2019).

¹⁴ *GovAI Store*, <https://aistore.myscheme.in/1dteKVPfeL9znBSuuVral?isEmbed=true> (last visited Feb. 20, 2026).

¹⁵ *National Afforestation Programme*, <https://www.pib.gov.in/Pressreleaseshare.aspx?PRID=1596332®=3&lang=2> (last visited Feb. 20, 2026).

¹⁶ *National Mission for Green India (GIM) | India Science, Technology & Innovation - ISTI Portal*, <https://www.indiascienceandtechnology.gov.in/st-visions/national-mission/national-mission-green-india-gim> (last visited Feb. 20, 2026).

which are mostly affected by droughts.¹⁷ It is to reduce the negative effects of drought on agricultural output, livestock production, and land productivity. DPAP intends to promote general economic development and improve the socio-economic conditions of vulnerable communities that are frequently hit by severe drought.

3.5 Sustainable Land and Ecosystem Management Program (SLEM):

The joint initiative of the Government of India and the Global Environment Facility (GEF) is the SLEM which aims to contribute to poverty alleviation in India by making better use of natural resources, increasing land and ecosystem productivity, and protecting against extreme weather events, such as climate change. One of the major goals is to restoration of degraded land, biomass cover, and sustainable natural resource utilization to control degradation of land. As desertification, land degradation, and climate change are closely interconnected, scaling up SLEM practices along with resilient crop cultivation, sustainable water harvesting, soil conservation, improved food production methods, and reduction of greenhouse gas emissions is essential to effectively combat these challenges.

4. CHALLENGES TOWARDS ACHIEVING SDG 15.3

Sustainable Development Goal 15 is concerned with land on life and corresponds to Target 15.3, which is concerned with combating desertification and rehabilitating degraded land. Its aim is to rehabilitate damaged land and soil, particularly areas affected by desertification, drought, and floods, and work towards a world free of land degradation by 2030. While the challenges to achieving SDG 15.3 in India are indeed significant, and they are caused by various factors, including difficulty with establishing indicators, monitoring and ownership, measuring progress, natural disasters, and climate change. Here's a more in-depth look at these issues:

1. **Defining Indicators:** Developing suitable indicators to effectively monitor SDG 15.3 achievement is one of India's biggest difficulties. In the past, India has not been very effective in establishing useful indicators to track outcomes.
2. **Monitoring and ownership:** It is an important challenge in implementing the SDGs. While NITI Aayog has been designated to take the lead in tracking SDG progress, concerns have

¹⁷ *Drought Prone Areas Programme*, (1973).

been raised by its members regarding difficulty about taking on such a massive responsibility. Ensuring ownership and accountability at various levels of government and society is a challenge.

3. **Measuring Progress:** Accurately measuring the progress of SDG 15.3 is hindered by several factors, including a lack of comprehensive and up-to-date data, particularly at the sub-national level. Periodicity issues and limited coverage of administrative data make it challenging to track the goals effectively. This problem has been a persistent issue in both SDG and MDG monitoring.
4. **Natural disasters (flood 2023):** Floods affected Himachal Pradesh, Shimla, Kashmir, Haryana, Rajasthan, Uttar Pradesh, Uttarakhand, Assam, Delhi, and Punjab, causing landslides and destroying everything and killing many people. Every year, when the climate changed, the rain created floods in these locations, causing extensive damage. These events can lead to soil erosion, landslides, and loss of fertile land. The destruction and loss of life caused by such disasters are not only humanitarian crises but also exacerbate land degradation challenges.
5. **Changing Climate:** Climate change poses a very serious threat, with far-reaching consequences. India is witnessing its adverse impacts, including rising temperatures, erratic rainfall, and increased frequency of extreme weather events. Droughts hit more than half of India's crop area in 1987 and 2002-2003, resulting in a significant drop in crop production.¹⁸ Drought conditions are anticipated to occur more frequently across several parts of India, especially in northwestern India, Jharkhand, Odisha, and Chhattisgarh. Rising temperatures are projected to cause a significant decline in crop yields by the 2040s.¹⁹

Addressing these issues would necessitate a multifaceted approach that includes improving data collecting and monitoring systems, enhancing disaster planning and response procedures, and introducing climate-resilient agriculture practices. It also entails creating awareness and involving numerous stakeholders at the community, state, and national levels to collaborate in

¹⁸ *India: Climate Change Impacts*, WORLD BANK, <https://www.worldbank.org/en/news/feature/2013/06/19/india-climate-change-impacts> (last visited Feb. 20, 2026).

¹⁹ *Id.*

order to meet the goals of SDG 15.3 and effectively prevent land degradation in India.

5. CONCLUSION:

Globally, land is rapidly degrading. To provide food security for a growing global population, healthy land resources and thriving ecosystems are required. Despite this, modern agricultural practices cause soils to degrade up to 100 times quicker than natural processes renew them. Land degradation effects have already been discussed in this paper which causes social and political unrest, and fuels poverty, violence, and displacement of people. The UNCCD's goal of land degradation neutrality (LDN) has “the potential to halt, and then reverse, this ominous future scenario.” There is an urgent need to focus on land conservation to protect our food, water supply, forest, and other needs, purify air, and preserve land for future generations. Based on existing commitments immediate changes are required to monitor soil organic carbon and raise awareness of, and capacity to pursue, the numerous options for sustainable land management. Some initiatives that India should adopt include afforestation and proper management of grazing land, control over mining activities, planting of shelter belts for plants, and so on. The key to dealing with the global issue of land degradation is identifying the main causes, managing with applying effective techniques, dealing with the problems, adopting adequate mechanisms, and covering the whole issue of land degradation and its negative impacts.