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## Land Degradation Neutrality

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### Abstract

Land is being degraded rapidly worldwide. Ensuring food security for a growing global population requires healthy land resources and flourishing ecosystems. Yet our current agricultural practices are causing soils worldwide to be eroded up to 100 times faster than natural processes replenish them. At current rates, 90 percent of land will bear our imprint by 2050. The impacts of land degradation will be felt by most of the world's population. LDN provides significant benefits in terms of mitigation and adaptation to climate change. Halting and reversing land degradation can transform land from being a source of greenhouse gas emissions to a carbon sink, by increasing carbon stocks in soils and vegetation. Restoration of land can start a virtuous cycle of good soil health, increased land productivity, food security and improved livelihoods. It is mankind's collective responsibility to reverse the damage to land caused by human activities.

### Introduction

Land degradation neutrality (LDN) is a condition where further land degradation (loss of productivity caused by environmental or human factors) is prevented and already degraded land can be restored. Land is the important resource to humankind, like air and water. Land degradation refers to the short-term or permanent decline in the productive capacity of the soils which is a global concern that affects everyone through food insecurity, climate change, higher food prices, loss of biodiversity, environmental hazards and the ecosystem services. Land Degradation is caused by multiple factors like, over-grazing, over water logging, wind, and extreme weather conditions, particularly drought. It is also caused by human activities that pollute the land or degrade the quality of soils and over exploitation of the vegetation for domestic purpose contributing to a drastic decline in the productivity of croplands worldwide. Land degradation is one of the world's most challenging environmental problems that will deteriorate without speedy remedial action (Qadir *et al.*, 2014). About 25 percent of the total land has been degraded globally. When land is degraded, soil carbon and nitrous oxide is released into the atmosphere, making land degradation one of the most significant contributors to climate change. Recently Scientists have warned that 24 billion tons of fertile soil was being lost per year, largely due to unsustainable agricultural practices. If this trend follows, 95 percent of the crop land areas would be degraded by 2050. India faces a major problem of land degradation *i.e.*, soil becoming unfit for cultivation. It is estimated that 3.2 billion people are affected by land degradation and desertification especially in rural areas, smallholder farmers, and the marginal farmers groups in more than a hundred countries, influencing over 33% of the earth's land surface. The world population is estimated to increase by 2050 to 35 percent to 9.7 billion, with rising

demands for agricultural products including food, fuel, fiber, and feed. Furthermore, LDN plays a key role in strengthening the resilience of rural communities against climate shocks by securing and improving the provision of vital ecosystem services.

## Land Degradation Neutrality

The concept of land degradation neutrality was first introduced as “zero net land degradation” in a proposal tabled at Rio+20 in 2012 from the UN Conference on Sustainable Development. Land degradation neutrality (LDN) is a condition where further land degradation (loss of productivity caused by environmental or human factors) is prevented and already degraded land can be restored. LDN has been defined by the Parties to the Convention as: 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 and ecosystems (Mukherjee et al., 2018). Management of land degradation has co-benefits for climate change mitigation, adaptation and biodiversity conservation, in addition to enhancing food security and sustainable livelihoods.

## How can We Achieve Neutrality?

India is establishing a centre of excellence to develop a scientific approach to combat land degradation and is on track to restore 26 million hectares of degraded land by 2030 to achieve land degradation neutrality. This target would be achieved by managing land more sustainably, which would reduce the rate of degradation and increasing the rate of restoration of degraded land. India would create a carbon sink of 2.5 to 3 billion tonnes of carbon dioxide equivalent. Schemes such as the Pradhan Mantri Fasal Bima Yojana, Soil Health Card Scheme, Soil Health Management Scheme and Pradhan Mantri Krishi Sinchayee Yojana are seen to tackle this land degradation. Halting and reversing Land Degradation is a high priority for transitioning to a more sustainable society (Reddy, 2003). LDN is a globally agreed target that can be used to galvanize action to address land degradation. At national level LDN can provide clear targets that facilitate tracking progress, or the lack of it. Countries would be required to map the extent and location of land degradation and develop strategies to ensure neutral, or net positive, outcomes through a combination of restoration and sustainable land management interventions.

## Advantages of LDN

Some of the most crucial challenges of the Sustainable Development Goals depend on access to productive and healthy land *i.e.*, food security, biodiversity loss, climate change, poverty, social instability and migration. LDN action can help address these challenges through a range of

sustainable land use management activities such as:

- Integrated water management through sustainable land use;
- Comprehensive energy planning and phasing out of fossil fuels through wise use of biofuels, increasing efficiency, closing yield gaps and reducing offsite impacts.
- Improving security of land tenure, addressing gender disparities and reducing inequalities.
- Protecting large natural ecosystems for biodiversity and ecosystem services.

## LDN and Climate Change

LDN provides significant benefits in terms of mitigation and adaptation to climate change. LDN plays a key role in strengthening the resilience of rural communities against climate shocks by securing and improving the provision of vital ecosystem services. Halting and reversing land degradation can transform land from being a source of greenhouse gas emissions to a carbon sink, by increasing carbon stocks in soils and vegetation. LDN targets and associated measures contribute to and depend on the implementation of national climate plans and vice versa. Such synergies should be taken into account when developing national plans for LDN and revising and updating the INDCs under the Paris Agreement.

## Land Degradation Neutrality and the Conservation Sector

Land Degradation Neutrality can contribute to and benefit from other existing environmental targets. To ensure that countries can make progress towards LDN it is crucial that these synergies are identified and exploited. LDN specifically contributes to achieving several of the Aichi Biodiversity Targets. Target 5 aims to reduce habitat loss close to zero and to significantly reduce habitat degradation. Target 7 aims for sustainable management of areas under agriculture and forestry. Aichi target 14 safeguards ecosystems that provide essential services, including services related to water, health livelihoods and well-being. Target 15 aims to strengthen ecosystem resilience, increase carbon stocks and restore degraded ecosystems. A number of concerns have been raised over LDN during the dialogue between 2012 (Rio+20) and 2015 (adoption of the SDGs). LDN targets must not be interpreted as a “licence to degrade” whereby the restoration of one ecosystem is used to justify the degradation of another (United Nations, 2015).

## India’s Initiatives

India faces a severe problem of land degradation, or soil becoming unfit for cultivation. About 29% or about 96.4 million hectares are considered degraded. The State of India’s Environment report, 2017 calculates that nearly 30 percent of India is degraded or facing desertification. This

figure touches 40 to 70 percent in eight states, viz., Rajasthan, Delhi, Goa, Maharashtra, Jharkhand, Nagaland, Tripura and Himachal Pradesh. Various estimates put the economic costs of degradation in the country at 2.54% of its GDP. This January, India became part of the “Bonn Challenge”, 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. India’s pledge is one of the largest in Asia. Schemes such as the Pradhan Mantri Fasal Bima Yojana, Soil Health Card Scheme, Soil Health Management Scheme and Pradhan Mantri Krishi Sinchayee Yojana are seen as prongs to tackle this land degradation. India for the first time will be hosting the 14<sup>th</sup> session of the Conference of Parties (COP-14) of the United Nations Convention to Combat Desertification (UNCCD) from September 2 to 13.

### Conclusion

Policies and programmes to halt and reverse land degradation have long suffered from the absence of a clear overarching goal and quantitative, time-bound targets to guide action and make measurable progress. India is establishing a centre of excellence to develop a scientific approach to combat land degradation and is on track to restore 26 million hectares of degraded land by 2030 to achieve

land degradation neutrality. India which holds the current presidency of UN Convention of Combating Desertification (UNCCD), with this initiative, India would create a carbon sink of 2.5 to 3 billion tonnes of carbon dioxide equivalent.

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