

# Land Degradation Neutrality

## Resilience at local, national and regional levels

The concept of Land Degradation Neutrality (LDN) is a new international impulse to combat the ongoing degradation of valuable land resources. Land and soils are an essential global good – the basis of food security and many rural livelihoods. Soil degradation is contributing to climate change and biodiversity loss. To reduce and reverse this trend is a main objective of the United Nations Convention to Combat Desertification (UNCCD) and part of the Sustainable Development Goals (SDG 15.3).

### Background

Land is a complex resource composed primarily of soil, water and biodiversity. Land resources are the foundation for food security, sustainable livelihoods and economic growth.

More than 1.5 billion people, of which 74% are poor, depend on the land that is already degrading. Land degradation and desertification are global issues with huge implications for peace, health, wellbeing, and the very existence of our planet. Already fifty-two per cent of land used for agriculture worldwide is either moderately or severely affected by soil degradation. On a global scale, the loss of 75 billion tons of soil amounts to \$400 billion USD in annual costs (UNCCD 2013).

#### What is land degradation neutrality?

It is “a state whereby the **amount and quality of land resources** necessary to support ecosystem functions and services and enhance food security **remain stable or increase** within specified temporal and spatial scales and ecosystems.”

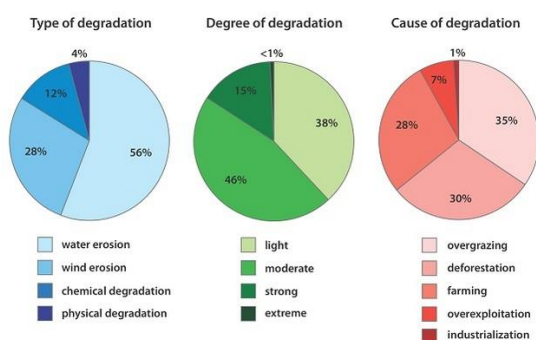
(UNCCD Decision 3/COP 12)

There are clear economic and environmental actions to prevent or reverse land degradation, for example the adoption of sustainable land management practices. To encourage countries in the implementation of measures that avoid, reduce or reverse land degradation, the UNCCD developed a conceptual framework on the implementation of Land Degradation Neutrality<sup>1</sup>.

### A global vision: Zero net loss of productive land

Types, degrees and causes of land degradation are diverse. However, the impact of human activity is not ignorable: Unsustainable land use practices, namely overgrazing, deforestation and inappropriate farming, are accounting for 92% of global land degradation (see Figure 1). Natural processes exacerbate these effects while being closely intertwined with climate change and biodiversity loss.

Land Degradation Neutrality is one of the Sustainable Development Goals (SDGs), the vision of achieving a zero net-loss of productive land. This objective is directly linked to eradicating poverty, ensuring food security, protecting the environment and using natural resources in a sustainable manner. SDG 15.3. sets the concrete aim of achieving a land degradation neutral world until 2030.



The objectives of LDN are to:

- Maintain or improve ecosystem services;
- Maintain or improve land productivity and enhance food security;
- Increase resilience of the rural populations that are dependent on the land;
- Seek synergies with other environmental objectives;
- Reinforce responsible governance of land tenure

Figure 1: Types, degrees and causes of land degradation on a global scale (Source: Gruver 2013).

<sup>1</sup> <http://www2.unccd.int/news-events/scientific-conceptual-framework-ldn-released-english-french-and-spanish>

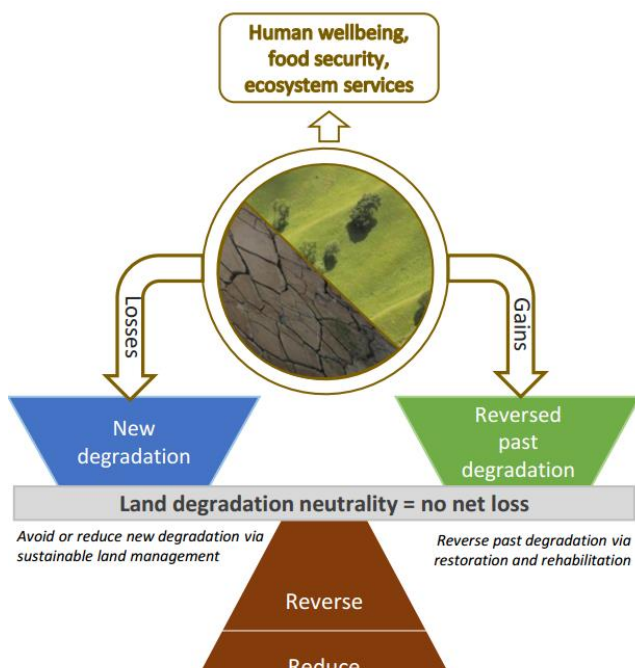


Figure 2: The concept of Land Degradation Neutrality: Degradation has to be minimized. Unavoidable degradation has to be offset by restoration and rehabilitation efforts (Figure based on UNCCD 2016).

## Action for Land Degradation Neutrality

Land degradation is a challenge that can only be addressed in a comprehensive and inter-sectoral way. The costs of soil degradation and loss as a result of inaction are much higher than the costs of action to prevent degradation. Therefore, LDN activities should follow a response hierarchy:

### 1<sup>st</sup> Priority: Avoid

Maintain well managed areas and preserve non-affected areas.

### 2<sup>nd</sup> Priority: Reduce

Change land management regimes and adapt land use practices that reduce negative impact on ecosystems.

### 3<sup>rd</sup> Priority: Reverse

Restore degraded land and ecosystems through sustainable land management practices agroforestry systems, pasture management or conservation agriculture. However, LDN activities must be designed based on the given degradation causes, development targets and needs and initiatives of local communities.

## Benefits of Land Degradation Neutrality

Sustainable land management and the restoration of ecosystems are centerpieces of a **landscape approach**. Soil, water and vegetation are managed as one integrated system and ensure productivity, ecosystem services and improved rural livelihoods.

The global challenges of food security, climate change and biodiversity loss demonstrate that communities and countries can no longer afford to waste and destroy their valuable land resources. Moreover, the benefits of sustainable land management and land restoration are multifold. For local communities it can mean:

- Return of inspiration: Giving people hope and a sense of purpose;
- Return of social capital: Bringing back jobs, business, activity, education and security;
- Return of natural capital: Restoring biodiversity, soil and water quality;
- Return of financial capital: Realizing long-term sustainable profit (commonland.com).

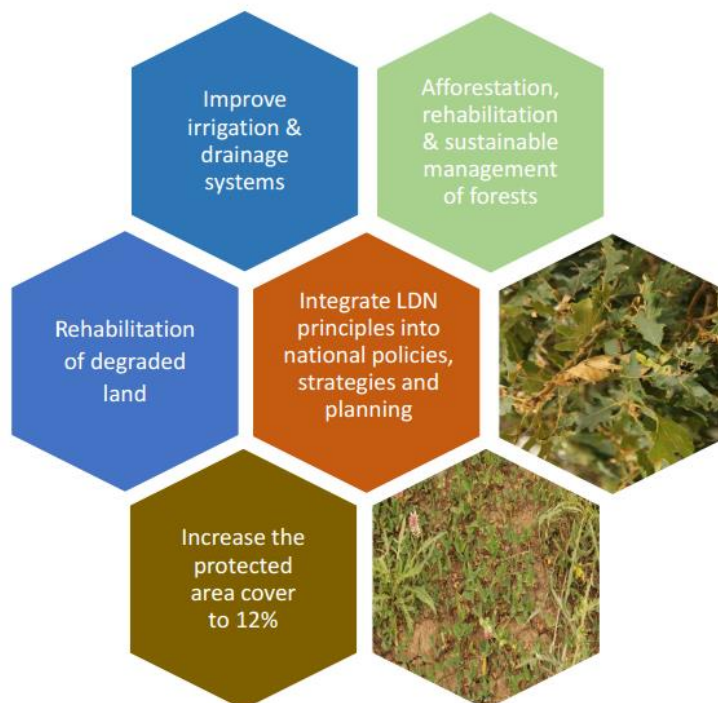
Investments in land rehabilitation are yielding into higher incomes for farmers. The UNCCD states, that “restoring only 12% of degraded agricultural land could boost smallholders’ incomes by US\$ 35-40 billion per year” (UNCCD LDN-flyer). Furthermore, actions for Land Degradation Neutrality increase the resilience of countries to drought and water scarcity, contribute to the reduction of greenhouse gases.

## National LDN targets of Georgia

To achieve the vision of zero net loss of healthy and productive land, measures and action on the ground are needed. Georgia is one of 114 countries that committed to define national LDN targets and an implementation strategy. In a first step, land degradation hot spots and main degradation causes had been identified. Land degradation in Georgia can be characterized by the following aspects:

- Loss of natural vegetation and soil quality caused by overgrazing;
- Loss of agricultural productivity and soil due to inappropriate farming techniques;
- Reduction of area and quality of forests due to illegal extraction and inappropriate forest management;
- Loss of productive land due to urbanization and conversion into non-agricultural areas.

The process of setting up national targets and an implementation strategy for LDN started in Georgia in 2016 in the frame of the 'Target Setting Program' (TSP) facilitated by the Global Mechanism. Cross-sectoral meetings yielded in a set of national LDN targets, which were submitted to the UNCCD Secretary by the Ministry of Environment and Natural Resources Protection of Georgia in September 2017 (see Figure 3). Some pilot projects on sustainable land management within the municipalities most affected by land degradation – Akhmeta, Dedoplistskaro and Gardabani – are now being set up together with the local communities.



*Figure 3: National LDN targets of Georgia.*

### Monitoring progress towards LDN

To assess the status of land degradation and to track progress towards LDN, a baseline must be established. Neutrality means that no net degradation is occurring, compared to this baseline. The achievement of land degradation neutrality is monitored by quantifying the baseline and then assessing the balance between land “gains” (significant positive changes/improvements) and “losses” (negative change/degradation).

The SDG indicator 15.3.1 and its three bio-physical metrics ‘Land Productivity’, ‘Land Cover Change’ and ‘Carbon Stocks’ are defined as UNCCD reporting indicators. Beyond these, each country is called to identify additional indicators that reflect the country context on local level.

For Georgia, a set of proposed process indicators is proposed to track (a) the improvement of the legal and political framework conditions for LDN, (b) the consideration of LDN in local spatial planning procedures and (c) the amount of land (in hectares) that is already subject to specific land rehabilitation measures or improved management practices (see Figure 4). Such LDN monitoring will yield valuable spatial data and information which will be made available for all sectors and planning levels and serve as a solid foundation for local and national planning procedures.

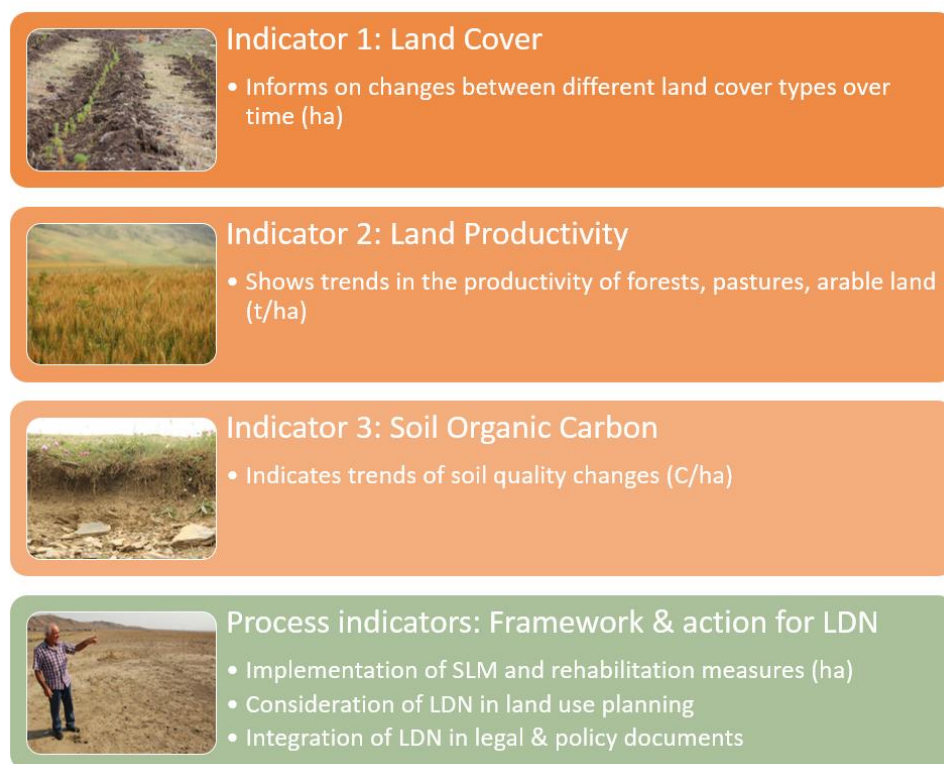


Figure 4: Proposed LDN indicators for Georgia.

## Planning and decision-making for LDN on local level

The monitoring of the three bio-physical indicators - land cover, land productivity and soil carbon - will provide solid spatial data/maps and information for planning processes on municipal and community level. The knowledge on the spatial distribution of different land use systems and their productivity is essential for reasonable decisions on how best to use the land resources for achieving food security, healthy ecosystems, a high agricultural productivity and consequently improved rural livelihoods.

### *Integrate the LDN vision into local policy procedures*

To integrate the vision of Land Degradation Neutrality into local decision-making and land use planning means in concrete terms, to

- ✓ consider likely outcomes of land use and management decisions, and
- ✓ counterbalance/compensate unavoidable degradation by measures that reverse the impacts of land degradation elsewhere.

### *Use of solid data and maps for decision-making*

Solid data and maps are the foundation for the work of decision-makers and spatial planners. Therefore, maps need to be provided by the appropriate that display:

- Land cover type (e.g. based upon FAO Land Classification System or CORINE)
- Actual land use type and land use intensity/productivity (based upon ground-verified remote sensing data)
- Property status (state, private, municipal land)

### **Benefits: Integrating the LDN concept into local spatial planning procedures**

- The LDN concept brings perspectives of different sectors together for finding joint strategies and balancing interests;
- The LDN monitoring system gives feedback on the effectiveness of local strategies and measures;
- Local authorities can refer to solid maps and data for reasonable spatial planning & decision making;
- Mapping of trends and drivers of land degradation helps to identify priority areas for corrective action;
- Supports counterbalancing unavoidable land degradation through targeted restoration or rehabilitation efforts elsewhere.
- The LDN vision creates awareness on the value and vulnerability of our land resources.

- Land degradation hot-spots (e.g. due to soil erosion, contamination, salinity).

For taking reasonable decisions regarding different land use options, additional assessments may be useful. The UNCCD recommends the following assessments in order to plan effective measures (UNCCD 2016):

- Land degradation assessment, including degradation causes (more detailed than the provided national data)
- Land potential assessment (for long-term provision of ecosystem services)
- Resilience assessment (capacity of the land use system to continue to deliver the same ecosystem services in case of disturbance)
- Socio-economic assessment (social and economic impacts of alternative land use options)

#### *Designing concrete measures for LDN – Avoid, reduce, reverse*

Developing concrete measures based on the LDN vision is related - in the first instance - to the adoption of sustainable land management (SLM) practices to avoid or reduce degradation. The table below shows some examples of unsustainable versus sustainable land use practices. The results of the pre-assessments will support the decision between different land use options.

#### Unsustainable practices

- Monocultures, intensive use of herbicides/pesticides, burning of residues, inappropriate fertilization
- Overgrazing
- Single-sector planning and programming

#### Sustainable practices

- Agroforestry, anti-erosive structures
- No till and cover crops, plant rotation
- Sustainable pasture management
- Inter-sectoral and landscape-level planning

In cases, where severe land degradation is not avoidable or has already happened, e.g. through the construction of a landfill or roads, losses need to be counterbalanced with measures that yield in equivalent ‘gains’ (same area in hectares or quantity of ecosystem services) through land rehabilitation close by. Rehabilitation can be achieved by a change of land management (e.g. cover crops, minimum tillage, organic fertilization) or by bio-engineering measures (e.g. afforestation, soil erosion control).

The response hierarchy of *Avoid > Reduce > Reverse* is based on the recognition that prevention is better than to cure. Sustainable land management will maximize long-term benefits and is more cost-effective than the efforts needed to reverse past degradation (UNCCD 2016).

#### *Develop local land use maps & define compensation areas*

Land use maps at the municipal level are needed for reasonable decision making and should include an identification and demarcation of:

- Area subject to unavoidable land degradation (‘losses’)
- Priority areas for land rehabilitation measures (‘wins’)



Figure 5: Example of a land use plan ([http://www.timberlandheights.com/wp-content/uploads/2010/07/landuseplan\\_web.jpg](http://www.timberlandheights.com/wp-content/uploads/2010/07/landuseplan_web.jpg))

The definition of priority areas for compensation/rehabilitation measures within the spatial development plan will ensure that land is available to compensate land degradation through rehabilitation measures. LD neutral planning should be pursued at municipal level as well as at landscape/ecosystem type level.

On community level, more detailed land use plans should be elaborated and should highlight the different land use capabilities (e.g. fertile soils for agricultural use, dry degraded pastures for extensive grazing, etc.).

#### The multiple value of land use maps

- ✓ Assess available land resources
- ✓ Define targeted measures for SLM and LDN
- ✓ Effective use of resources
- ✓ Balance different land use interests
- ✓ Allow landscape monitoring over time
- ✓ Useful communication & participation tool
- ✓ Feedback on effectiveness of measures

### What can policy makers know and do?

The implementation of LDN will be realized at the local landscape scale. However, improvements in land management requires multi-stakeholder engagement and planning across scales and sectors that should be supported by a national coordinating body (UNCCD 2016). That body and/or other relevant policy makers have to ensure an enabling environment for the implementation of LDN related measures at local level, to integrate LDN targets into broader national strategies and instruments, to manage the LDN monitoring process on national level and to incorporate the experiences made on local level (e.g. through SLM or LDN pilot projects) into existing government strategies, incentives and regulations.

Ensuring an enabling environment for LDN could include the following tasks:

- Responsible governance of land resources including tenure;
- Establish mechanism for integrated land use planning;
- Facilitate multi-stakeholder platforms to collaborate in planning, implementing, monitoring and evaluating LDN interventions;
- Abolish incentives for non-sustainable management practices, develop policies and incentives for SLM
- Initiate preliminary assessments and provide spatial data for land use decision-making

### References

Gruver, J. B. (2013) Prediction, Prevention and Remediation of Soil Degradation by Water Erosion. *Nature Education Knowledge* 4(12):2

UNCCD (2013): Land Degradation Neutrality. Resilience at local, national and regional levels. ISBN 978-92-950-43-77-0.

UNCCD/Science-Policy Interface (2016): Land in balance. The scientific conceptual framework for land degradation neutrality (LDN). Science-Policy-Brief 02. September 2016. United Nations Convention to Combat Desertification (UNCCD), Bonn, Germany, ISBN 978-92-95110-36-6 8hard copy), 978-92-95110-35-9 (electronic copy)

UNCCD – LDN flyer: Towards a Land Degradation Neutral World. A Sustainable Development Priority.

Internet source: <http://www.commonland.com/en/4returns>

### Further information in form of short movie clips:

“Land Degradation Neutral World” (UNEP & UNCCD):  
[https://www.youtube.com/watch?time\\_continue=2&v=DPgtdEw5JgI](https://www.youtube.com/watch?time_continue=2&v=DPgtdEw5JgI)

“The Value of Soil” (ELD initiative):  
<https://www.youtube.com/watch?v=403sT9CGRI0>

“Experiment: Erosion and Soil”:  
<https://www.youtube.com/watch?v=im4HVXMGi68>

Documentary “Regreening the planet” (2012):  
[https://www.youtube.com/watch?v=OC\\_Y1ZTZXQ4](https://www.youtube.com/watch?v=OC_Y1ZTZXQ4)