Global Assessments, the Rio Conventions, and the SDGs
Transforming our world: the 2030 Agenda for Sustainable Development

The SDGs of Agenda 2030 are laudable goals.
Global Land Outlook

- **Land is finite** in quantity. Competing demands for its goods and services are increasing pressures on land resources in virtually every country.
- **Over 1.3 billion people trapped** on degrading agricultural land
- **Land transformation in rural areas** is **unprecedented** in terms of both speed and scale
- **70 per cent of agricultural land** is now used to grow **feed crops and livestock production**
- **Consumption of natural resources** **doubled in 30 years**
- **3 planets to meet 2050 natural resource demands**

https://www.unccd.int/actions/global-land-outlook-glo
Black: Urban circa 2000

Red: Urban circa 2030 competing with cropland
Between 1998-2013, 20-30 per cent of Earth’s vegetated land surface showed persistent declining trends in productivity: 20% of cropland, 16% forest land, 19% grassland, and 27% rangeland.

In 2000, a projected 2% (30 million ha) of croplands globally were in areas that would be urbanized by 2030.

Some old some new drivers of land degradation at a global scale. Urbanization, climate change and dietary changes, which will exacerbate the demand for land and natural resources are part of these underlying trends.
Panel on Biodiversity and Eco Services

- Wellbeing of over **3.2 billion people undermined** by land degradation
- **Biodiversity loss** to reach **38–46%** by 2050. **Leading causes** are habitat transformation (i.e., conversions, to farmland and settlements) and habitat degradation.
- **Land restoration and rehabilitation** can have **significant co-benefits** for all SDGs
- There is a **difference in the co-benefits** of the restoration **process** and of the **restored land**.
- **A landscape approach**, which includes targeting investments, **is the key** to increasing the total return on land restoration investments.

https://www.ipbes.net/deliverables/3bi-land-degradation
IPBES on Biodiversity

- 1 million species are threatened by extinction largely because 75% of the land surface has been altered.
- These (negative) transformational changes are creating the conditions for a biological evolution so rapid, it is visible just over a few years.
- The conversion of land for agriculture is the leading driver of land-use change, with meeting the demand for food, feed, fibre and bioenergy production in the lead. Forests, wetlands and grasslands and savannas are paying the price.

https://www.ipbes.net/news/ipbes-global-assessment-preview
IPCC Special Report on Land and Climate

• An IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems

• The press conference to present the approved Summary for Policymakers is scheduled for 10:00 (CEST)/ 13:30 (IST) on 8 August 2019.

Release 08 August 2019

Media Registration

https://www.ipcc.ch/report/srccl/
Global Land Outlook regional reports

- Northeast Asia Thematic Report: Partnerships to Achieve Land Degradation Neutrality
- East Africa Thematic Report: Responsible Land Governance to Achieve Land Degradation Neutral
- West Africa Thematic Report: Land Degradation Neutrality, Poverty and Human Security
- Latin America and the Caribbean Thematic Report: Responsible Land Governance to Achieve Land Degradation Neutrality

IPBES' 2019 Global Assessment Report on Biodiversity and Ecosystem Services
Land and synergies: Land is clearly central to the achievement of all SDGs
SDG 15.3 is the land target

By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world
Land can accelerate many SDGs...

...but SDGs compete for the same land resources.
Synergies also mean trade-offs

Observed synergies and trade-offs between the SDGs.

Shares of synergies (green) and trade-offs (orange).

Pradhan et al. (2017)

Source: Figure 2 doi:10.1002/2017EF000632
The top synergies among SDGs are not surprising

Pradhan et al. (2017)

Source: Figure 3 doi:10.1002/2017EF000632
...and the top trade-offs should not be surprising either

Pradhan et al. (2017)
How can navigate the inevitable SDG trade-offs?
On one side of the equation:
Decoupling natural resource use and environmental impacts from economic growth

Here decoupling means using less resources per unit of economic output and reducing the environmental impact of any resources that are used or economic activities that are undertaken.

Source: UNEP IRP 2011

Indicator 12.2.1: Material Footprint
Is decoupling possible?

If the flows of consumption and production can be linked to land, policies to minimize impact are much more feasible.

Trase.Earth seeks to transform our understanding of commodity supply chains by increasing transparency, revealing the links to environmental and social risks, and creating opportunities to improve the sustainability of how these commodities are produced, traded and consumed.
On the other side of the equation

A balanced approach is needed.

• One that **anticipates new degradation** even as we plan to reverse past degradation
• One that **considers tradeoffs** among competing interests across the landscape

LDN provides the framework for this.
“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 COP12 October 2015
Land Degradation Neutrality

- LDN seeks to **maintain natural capital** and the **ecosystem services** that flow from it
- LDN is about keeping **land in balance**
- Keeping land in balance provides the basis for keeping food, carbon and biodiversity in balance as well.
- LDN is about achieving **multiple benefits**
- LDN provides a framework with **multiple entry points** which facilitate optimizing the synergies among the Rio Conventions (Climate Change, Biodiversity, Land Degradation)

The Vision of LDN

Human wellbeing
Food security
Healthy ecosystems

The goal of LDN is maintaining or enhancing the land resource base - in other words, the stocks of natural capital associated with land resources and the ecosystem services that flow from them.
Neutrality = no net loss compared to the reference state (baseline)

Baseline is NOW (current condition)

Counterbalancing future land degradation (anticipated losses) through planned measures to achieve equivalent gains elsewhere within the same land type

“like for like”
Integrated land use planning

LDN planning (which begins with target setting) involves anticipating where degradation is likely so that the optimal mix of interventions across the landscape to achieve neutrality can be pursued.

- Occurs at multiple levels
- Leverages existing land use planning
Optimizing land use planning and management decisions across the landscape

A Map of Land Types

- **A1**: Land Area: 15,000 ha, Use: short grazing period, Status: Not Degraded
- **A2**: Land Area: 25,000 ha, Use: grazing excluded, Status: Not Degraded
- **A3**: Land Area: 10,000 ha, Use: long grazing period, Status: Degraded
- **A4**: Land Area: 40,000 ha, Use: med. grazing period, Status: Degraded
- **A5**: Land Area: 10,000 ha, Use: short grazing period, Status: Not Degraded

**Context**
- **A1**: Grazing period extended
- **A2**: Livestock exclusion maintained
- **A3**: Long grazing period continued
- **A4**: Sustainable grazing management introduced
- **A5**: Urban expansion

**Preparation for Integrated Land Use and Management Planning (t0)**

**Decisions**
- **A1**: Negative change anticipated
- **A2**: No change anticipated
- **A3**: Negative change anticipated
- **A4**: Positive change anticipated
- **A5**: Negative change anticipated

**Anticipated Change In Metrics (t1)**
- **A1**: Loss: 15,000 ha degradation anticipated
- **A2**: Stable: 25,000 ha no change anticipated
- **A3**: Loss: 10,000 ha degradation anticipated
- **A4**: Gain: 40,000 ha improvement anticipated
- **A5**: Loss: 10,000 ha degradation anticipated

**Projected Gains vs. Losses (t1 - t0)**
- Land Degradation Neutrality Status Anticipated
  - Net Gain: 5,000 ha

**Legend**
- 🟢 All metrics are anticipated to remain stable
- 🟢 Positive change anticipated (in at least one metric, others stable)
- ⬇️ Negative change anticipated (in at least one metric)

Stable (no change)
- Degraded land or anticipated negative change
- Not degraded land or anticipated positive change
Response Hierarchy

Prevention is better than cure

Avoid: Land degradation can be avoided by addressing drivers of degradation and through proactive measures to prevent adverse change in land quality of non-degraded land 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 (sustainable land management, sustainable forest management).

Reverse: Where feasible, some (but rarely all) of the productive potential and ecological services of degraded land can be restored or rehabilitated through actively assisting the recovery of ecosystem functions.
Integrated land use planning is the key to achieving LDN

Using the best information available

- Land degradation status
- Land potential
- Resilience
- Socio-economic data
- Gender considerations

In order to

- Optimize the spatial mix of possible interventions
- Navigate trade-offs
It is about having the right information...
...to do the right thing in the right place at the right scale
Sustainable Land Management can be defined as the use of land resources, including soils, water, animals and plants, for the production of goods to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions.

Source: WOCAT
Pivotal soil carbon

- Stores atmospheric C
  - Cost effective climate mitigation measure
- Improved water holding capacity
  - Buffer against drought
- Improved soil fertility
  - Nutrient store and supply
  - Improved productivity / yields
- Improved soil structure
  - Improved workability
- Improved soil habitat soil organizations
  - Improved biodiversity
What should we measure?

For harmonization of LDN monitoring, 3 essential variables are measured in all countries.

Countries also measure any other relevant indicators.
Monitoring and learning

- Global indicators: Land cover, land productivity and soil organic carbon
- “One out, all out”, area basis
- Complemented by:
  - Locally-relevant indicators
  - Process indicators
  - Outcome indicators
- Verified using local knowledge (multi-stakeholder platforms nested across scales)
The framework does not prescribe how to measure the indicators. It recommends effort to achieve consensus on common criteria and standards to harmonize application.

Monitor indicators relative to the baseline.
Default Land Cover data
Default land productivity dynamics data
Default global soil organic carbon data
The combination = SDG indicator 15.3.1

SDG Target 15.3:
“By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation neutral world”

SDG Indicator 15.3.1:
Proportion of land that is degraded over total land area.
What was the outcome for SDG 15.3.1 reported by countries in 2019?

The proportion of degraded land for all land reported by country Parties is 20%, which amounts to over 18 million km$^2$. 

[Map showing the percentage of degraded land by country, with different shades indicating the percentage ranges.]
Guiding principles

Principles are provided to govern application of the framework and to help prevent unintended outcomes during implementation and monitoring of LDN.

These principles are central to how LDN can encourage responsible governance and help safeguard land tenure.
Guiding Principles (1)

Principles govern application of the framework, and prevent unintended outcomes during implementation of LDN

1. Maintain or enhance land-based natural capital.
2. Protect the rights of land users.
3. Respect national sovereignty.
4. For neutrality, the LDN target equals (is the same as) the baseline.
5. Neutrality is the minimum objective: countries may be more ambitious.
6. Integrate planning and implementation of LDN into existing land use planning processes.
7. Counterbalance anticipated losses in land-based natural capital with interventions to reverse degradation, to achieve neutrality.
8. Manage counterbalancing at the same scale as land use planning.
9. Counterbalance “like for like” (within the same land type). Not between conservation and production areas.
10. Balance economic, social and environmental sustainability.
Guiding Principles (2)

11. Base land use decisions on multi-variable assessments, considering land potential, land condition, resilience, social, cultural and economic factors.

12. Apply the response hierarchy: Avoid > Reduce > Reverse.

13. Apply a participatory process including stakeholders in designing, implementing and monitoring LDN.

14. Reinforce responsible governance: protect human rights, including tenure; ensure accountability and transparency.

15. Monitor using the three UNCCD land-based global indicators: land cover, land productivity and carbon stocks.

16. Use “one-out, all-out” to interpret the three global indicators.

17. Use national and sub-national indicators to aid interpretation and fill gaps.

18. Apply local knowledge to verify and interpret monitoring data.

19. Apply a continuous learning approach: anticipate, plan, track, interpret, review, adjust, create the next plan.
The UNCCD Drought Initiative

- national drought preparedness plans
- regional efforts to reduce drought vulnerability and risk, and
- toolbox to boost the resilience of people and ecosystems to drought
The Three key pillars

**SO 1:** Improve the condition of affected ecosystems, combat desertification/land degradation, promote SLM & contribute to LDN

**SO 2:** Improve the living conditions of affected populations

**SO 3:** To mitigate, adapt to, & manage effects of drought in order to enhance resilience of vulnerable populations & ecosystems

- *Expected impact 3.1:* Ecosystems’ vulnerability to drought is reduced, including through sustainable land & water management practices.
- *Expected impact 3.2:* Communities’ resilience to drought is increased.

**SO 4:** Generate global environmental benefits through effective implementation of the UNCCD

**SO 5:** Mobilize substantial, additional financial & non-financial resources to support the implementation of the Convention by building effective partnerships at global & national level.
The Three key pillars

1. Monitoring & Early Warning Systems
2. Vulnerability & Risk Assessment
3. Risk Mitigation Measures
Planning early is key to achieving drought resilience.
Three dimensions of drought impact & vulnerability

(Meteorological Hazard)

People-centred:
livelihoods, economies resilience

Land/(agro) ecosystem-based

Hydrological:
water demand vs availability

Source: Caroline King-Okumu, 2019
The Drought Toolbox is currently being developed as part of the Drought Initiative by the close partnership collaboration of the UNCCD, WMO, FAO, GWP, National Drought Mitigation Center (NDMC) of the University of Nebraska, and UNEP-DHI.
Drought monitoring and early warning tools

Data Portal with freely available data for floods and drought assessments. Data updated in near real time, read more in the user guide.
Interaction visualization tools for assessing drought
...involving drought-relevant data sets

Example: Tropical Rainfall Measuring Mission (TRMM) data
Generally speaking...

There are three main contributors to drought:

• Land and sea surface temperatures
• Atmospheric circulation patterns
• Soil moisture

Each of these physical parameters is linked to the others intricately; changing any one of them significantly will typically set up a chain of events that causes the other parameters to change.

https://earthobservatory.nasa.gov/features/N AmerDrought/N Amer_drought_2.php

Image credit: Susan Byrne, NASA GSFC
Anything which reduces the water holding capacity of soil...

Anything which consumes more soil moisture...

This means...

...contributes to water scarcity.
In current policy and practice in your country, what factors trigger a response to drought?

Credit: Matthew T Rader @matthew_t_rader https://unsplash.com/photos/2nAWr7kVspY
How large is the problem? Very large.

Global map of drought vulnerability

Carrao et al. 2016
Which is why policies focus on the land-drought nexus are so important.
Thank you!

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