



A review of the Land Degradation Neutrality Process

By Ben Gilbey – University of Sussex



ECOSYSTEM PROGRAMME, GLOBAL DRYLANDS INITIATIVE

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Objectives of the Report

This report seeks to provide a review of the Land Degradation Neutrality (LDN) process to inform the membership of the International Union for the Conservation of Nature (IUCN). The report seeks to review how countries have followed recommended guidelines in the LDN Target Setting Process and will provide recommendations for moving forward in LDN target setting, monitoring and implementation. It will review the uptake of the recommendations made in the IUCN (2015) Technical Brief in the LDN process to date. It hopes to inform the ongoing review process of the LDN Target Setting Process.

Report Methodology

This review draws upon three main sources of data:

1. Semi-structured interviews with 29 actors involved in the LDN process including:
 - a. UNCCD country focal points/LDN national consultants
 - b. UNCCD staff
 - c. Members of the UNCCD Science-Policy Interface
 - d. FAO staff
 - e. IUCN Offices and Commissions
 - f. Economics of Land Degradation Initiative staff
 - g. LDN Fund staff
 - h. Relevant civil society organisations
2. Relevant documentation including the LDN Scientific-Conceptual Framework, the LDN Target Setting Guide, the IUCN Technical Brief on LDN and some national LDN target setting reports.
3. Academic and grey literature on LDN. Academic literature was located through the Google Scholar and Scopus search engines, whilst grey literature was located primarily from the UNCCD Knowledge Hub and interviewees recommendations.

This research also informed the author's master's dissertation submitted to the University of Sussex.

Key Recommendations

- *Use of adequate evidence*

LDN target setting has proceeded on the basis of the three agreed indicators, which provides a minimum standard that can be applied in all countries. It is recommended that countries which are yet to set their targets consider applying additional national data that can strengthen their analysis of land degradation. Countries that have already established LDN targets will benefit from further validation of those targets, particularly at the sub-national level where more detailed assessment may be required to guide investors.

- *Consultation of key stakeholders*

The degree of consultation has been variable: consultation between public sectors has generally been strong but consultation with nongovernmental actors has been weaker. Governments are recommended to strengthen consultation and outreach during LDN implementation in order to generate stronger buy-in and to avoid the risk of the LDN process being discredited. The success of LDN – as a target that covers all land within a country – lies in the diversity of actors who adopt LDN as a target.

- *Application of Integrated Ecosystem Management*

Many principles of ecosystem management are implicit in the LDN Scientific and Conceptual Framework, however, there is still work to be done to incorporate ecosystem management into LDN implementation. It is crucial to ensure that ecosystem management is decentralised to the lowest appropriate level which may prove challenging when targets are set at the national scale. Greater attention is needed to foster cross-sectoral action and interdisciplinary approaches for LDN, and to ensure LDN targets are owned and delivered at the sub-national level.

- *Strengthening of natural resource governance and equity*

Land tenure is widely agreed to be important for achieving LDN, as it provides security for investing in land to financiers and farmers, and additionally, land tenure is central to ensuring local people, especially the most marginalised, benefit from efforts to achieve LDN. Governments should ensure that investments in LDN achievement contribute to strengthening and upholding land tenure and should take action to monitor the impact on the ground. Time and resources should be allocated during LDN planning processes for gender assessments of LDN projects, and LDN-activities which empower women should be encouraged.

- *Application of the Response Hierarchy*

The LDN Response Hierarchy addresses a range of actions (protection, sustainable management and restoration) that are relevant to different actors, highlighting the importance of engaging multiple stakeholders in the LDN process. LDN implementation plans need to reflect this diversity of responses: they should include clear measures to ensure that response are prioritised appropriately and they need to mobilise appropriate actors for different response measures. One way of doing this would be to instate the response hierarchy as a principle into land use planning.

- *Use of synergies*

Synergies clearly exist between LDN, climate change mitigation and adaptation and biodiversity conservation (as well as many other development goals). Greater efforts are needed to capture the multiple benefits of LDN actions, for stronger socio-economic outcomes and greater value for money. It is recommended to capitalise more effectively on these synergies in policy, investment and in reporting.

- *Development of innovative funding*

Increased efforts are needed to ensure that finance breaks with business-as-usual and is channelled to verifiable sustainable land management. In particular, a proportionate amount of LDN finance should be directed to smallholder famers and livestock keepers.

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1. Introduction

1.1 The issue of Land Degradation

Land degradation refers to the reduction or loss of the biological or economic productivity and complexity of land (UNCCD 2016a). This entails reduced food production, water storage, biodiversity and carbon sequestered in soils and vegetation (IUCN 2015; Laban, Metternicht, and Davies 2018).

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) recently provided a comprehensive assessment of land degradation, declaring it to be a ‘pervasive and systematic phenomenon’ that ‘occurs in all parts of the terrestrial world’ (IPBES 2018). Consequently, land degradation’s impact upon people is vast. 1.3 billion people live on degrading agricultural land (UNCCD 2017b), and land degradation negatively impacts the well-being of at least 3.2 billion people globally (IPBES 2018). Land degrading processes such as deforestation or soil erosion also contribute to climate change (IPBES 2018), with 25% of anthropogenic greenhouse gas emissions resulting from Agriculture, Forestry and Other Land Use (IPCC 2014). Additionally, land degradation reduces the adaptive capacity of societies and ecosystems to cope with climate change impacts (IPBES 2018). Land degradation may also increase food insecurity, by reducing production and increasing uncertainty, thereby leading to higher food prices (Davies 2016). The Economics of Land Degradation (ELD) initiative estimates the cost of lost ecosystem services to land degradation to be between 6.3 and 10.6 trillion US\$ per year, equivalent to 10-17 per cent of global GDP¹ (ELD 2015).

Estimates of the extent of land degradation have varied hugely due to divergent definitions of degradation and different approaches to measurement (IUCN 2015). Divergent definitions emerge in part because the concept of land degradation ‘is a context-specific and value-laden concept’ (Caspari et al. 2014). Whilst deforestation may be seen as degradation by ecologists, cattle ranchers may perceive it as increasing the productivity of land (Blaikie and Brookfield 1987). Therefore, any assessment of degradation implies valuation against a subjectively determined value of land (Hobbs 2016; Blaikie and Brookfield 1987). Indeed, degradation of agricultural lands has predominantly been judged against a particular production function (Caspari et al. 2014). For example, woody-plant encroachment increases aboveground and belowground carbon, which is often used as an indicator of land degradation, but from the socioeconomic perspective of livestock production, the increase in woody plant is perceived as degradation as it reduces the carry capacity for livestock and exposes the soil to processes of wind and water erosion (Angerer et al. 2016).

Further disagreements emerge around finding the appropriate way to measure land degradation. Land degradation is often assessed through measurements of net primary productivity (NPP), which captures how much energy plants fix as biomass through photosynthesis (Caspari et al. 2014). However, this assumes that all increases in vegetation are positive, when some forms of vegetation increase may lead to a reduction in the ecological complexity and land productivity of certain land types (IUCN 2015). Consequently,

¹This is based on valuation of ecosystem services which are currently unvalued or undervalued in the global economy. The lower estimate of 6.3 trillion is derived from a proxy measure based on human appropriation of net primary productivity (NPP). The higher estimate of 10.6 trillion is based on a proxy measurement which compares actual NPP with potential NPP of land. See ELD (ELD 2015) Chapter 3a.

false positive results of land productivity may arise from this measurement, such as around bush encroachment in rangelands in Southern Africa (Minelli, Erlewein, and Castillo 2017).

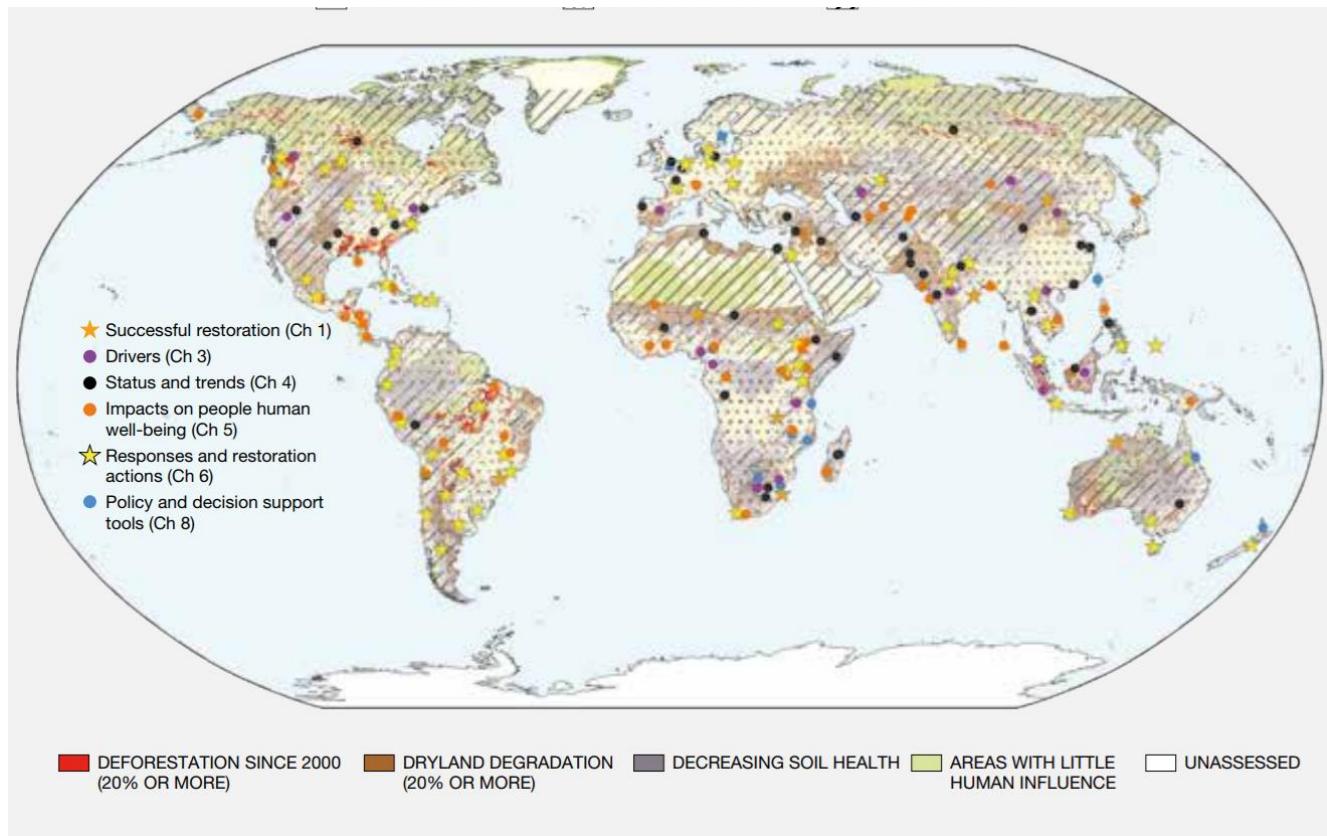
Additionally, assessments of global land degradation, such as the one used in the World Atlas of Desertification, have used assessments taken at a single point in time, ‘rather than being based on change in key variables over a known period’ (Mortimore 2016). This is problematic because its implicit basis is in equilibrium ecology, which suggests ecologies are in a self-regulating equilibrium state, unless there is human interference (Mortimore 2016). This has frequently led to the blaming of local populations for land degradation, with explanations often attributing degradation to communal management systems which are seen to cause overgrazing in these tragedy of the commons type arguments (Vetter 2005). In some cases, this has led to populations expulsion and exclusion from land under the assumption it will return to its original pre-disturbance state (Andersson, Brogaard, and Olsson 2011).

Orthodox thinking on land degradation and desertification has been challenged by insights on non-equilibrium ecological systems, which have highlighted that many ecologies are strongly influenced by disturbance from factors such as variable rainfall, fire or human influence (Briske, Illius, and Andries 2017; Vetter 2005; Mortimore 2016). Dryland ecologies in particular are influenced by non-equilibrium dynamics, meaning any dryland degradation measurement taken over a short time period, is inadequate, as it cannot account for this dynamism (Reynolds et al. 2007; Mortimore 2016). In response to these changes, ecosystems may not return to their original equilibrium point and instead may reorganise around an alternative state (Miller et al. 2011; Briske, Illius, and Andries 2017).

Recognising this dynamism, the objective of environmental management becomes the facilitation of ecological resilience ‘defined as the capacity of systems to absorb disturbances and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks’ (Briske, Illius, and Andries 2017). This emphasis on resilience often incorporates farmers and pastoralists’ environmental knowledge and livelihood strategies as enabling adaptation to ecological state-changes (Reynolds et al. 2007; Mortimore 2016). However, severe disturbance may take a system beyond a resilience threshold from which they cannot regenerate earlier ecosystem structure and function (Escribano et al. 2017; Bestelmeyer et al. 2015).

Whilst no widely-accepted, global map of land degradation exists, the IPBES (IPBES 2018) assessment report complies several peer-reviewed, best practice maps of the main types of land degradation. This map, reproduced in Figure 1, also incorporates Gibbs and Salmon’s (Gibbs and Salmon 2015) map of the degree of agreement in the literature.

Figure 1 Map of the extent of land degradation in different global ecosystems, overlaid with a map showing the degree of agreement in the literature about these estimates.



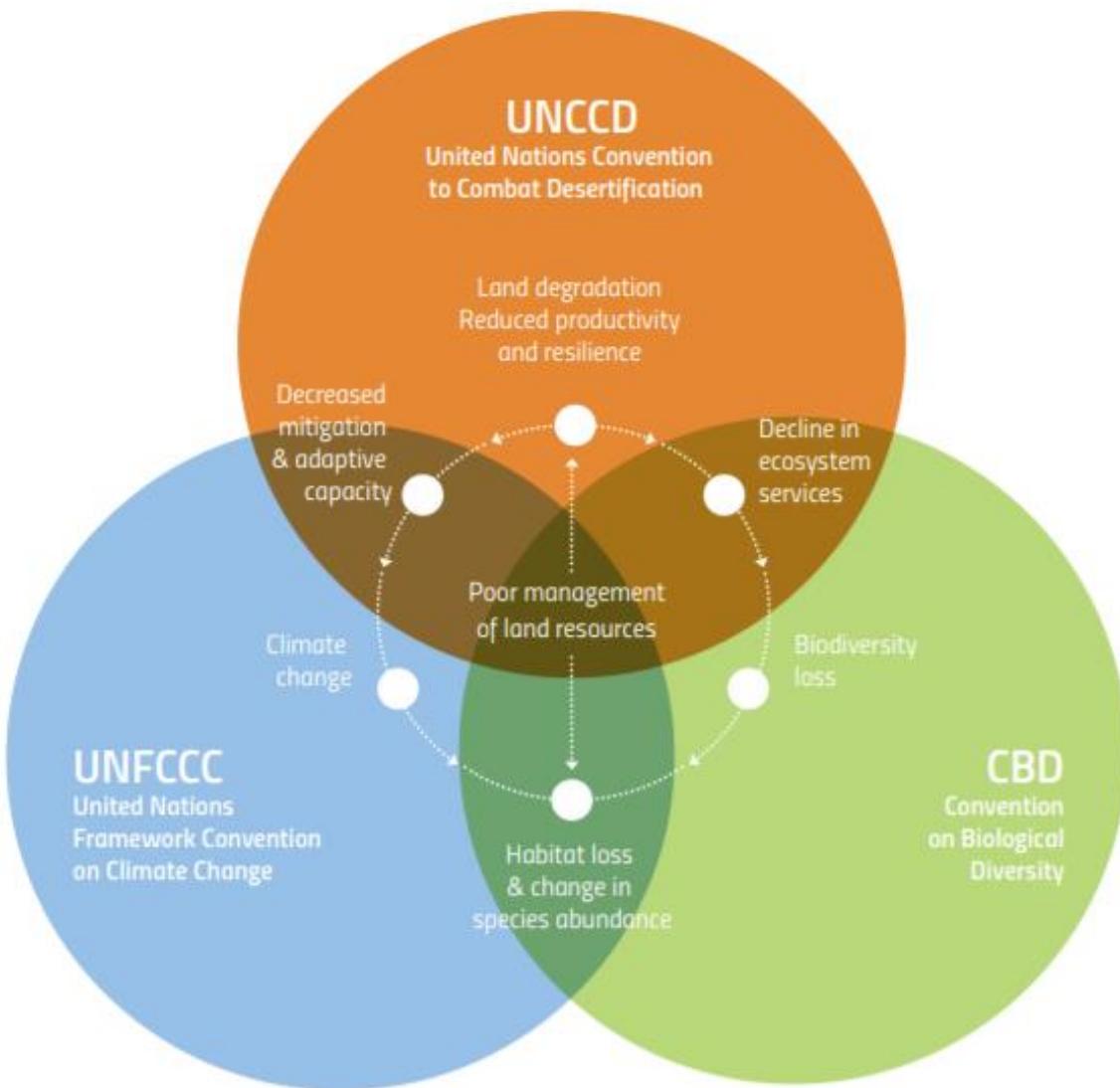
Source: IPBES (2018)

1.2 The LDN Concept

Following the 1992 Rio Earth Summit, the international community established three conventions to enable sustainable development: The United Nations Framework Convention on Climate Change (UNFCCC); the Convention on Biological Diversity (CBD); and the United Nations Convention to Combat Desertification (UNCCD). As Figure 2 shows, each of these conventions addresses unsustainable use of land resources. However, the land degradation issue has been most central to the activities of the UNCCD, as desertification is understood as ‘land degradation in arid, semi-arid and dry sub-humid areas’ (UNCCD 2016a). Therefore, the UNCCD’s mandate on land degradation is primarily limited to the drylands (Boer and Hannam 2017). Commentators have noted that compared to the CBD and UNFCCC, the UNCCD is ‘a forgotten stepsister’ (Welton, Biasutti, and Gerrard 2015), with a ‘low profile and scant resources’ (Safriel 2017). However, the LDN concept is raising the profile of the UNCCD and the challenge of land degradation.

The LDN concept was first brought to international attention in 2012 through the document ‘Zero Net Land Degradation: A New Sustainable Development Goal (SDG) for Rio+20’ (Lal, Safriel, and Boer 2012). The UNCCD used this document to advocate the inclusion of a reference to the LDN in the Rio+20 outcome document ‘The Future We Want’ (Chasek et al. 2015; UN 2012). This inclusion was significant because this document formed the basis for the discussion of the Sustainable Development Goal (SDG) targets (Chasek et al. 2015).

Figure 2. Intertwined threats and the objectives of the Rio conventions.



Source: UNCCD (2017b).

This paved the way for LDN to be adopted as SDG Target 15.3 which states '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' (UN 2015). The 12th Conference of the Parties to the UNCCD (COP 12) subsequently integrated LDN into the UNCCD process in October 2015. The UNCCD secretariat has since become the custodian agency for SDG indicator 15.3.1 on LDN, meaning that national LDN reports for the UNCCD are also used to report to the High-level Political Forum on Sustainable Development (UNCCD 2017d).

An intergovernmental working group (IWG) was established at COP 11 to provide clarity on the LDN concept. This defined LDN as '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' (ICCD 2016). This definition was then endorsed at COP 12 (decision 3) (ICCD 2016). The IWG also

noted that there are two ways to implement LDN: ““(a) Prevent, avoid or minimize land degradation [...] through, inter alia: (i) national and local land use planning that fully accounts for the potential and resilience of land resources; (ii) the adoption of sustainable land management practices”; and as the second basic pathway: “(b) Rehabilitate or restore degraded land [...] by reducing the drivers and impacts of current land degradation processes and by the implementation of projects and other measures for rehabilitation and recovery” (Minelli, Erlewein, and Castillo 2017).

COP 12 then requested the UNCCD Science-Policy Interface (SPI) to develop the “Scientific Conceptual Framework for Land Degradation Neutrality” (LDN-SCF) on the basis of the IWG’s definition and guidance. The LDN-SCF seeks ‘to provide a scientifically-sound basis for understanding and implementing LDN and to inform the development of practical guidance for pursuing LDN and monitoring progress towards the LDN target’ (Cowie et al. 2018). As the most authoritative document on the LDN concept, the LDN-SCF will be examined throughout this review.

As Safriel (Safriel 2017) suggests, the emergence of LDN as a mechanism to address land degradation globally was triggered by the failures of the UNCCD to reduce desertification. The difficulties of measuring and defining land degradation and desertification mean the UNCCD has long been undermined by ‘the absence of a clear overarching goal and quantitative targets that could guide action and make progress measurable’ (Minelli, Erlewein, and Castillo 2017). Additionally the UNCCD was founded in 1994 as the ‘Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa’ (Boer and Hannam 2017), meaning its geographic focus was confined to drylands suffering from drought and desertification. This, along with a lack of a quantifiable target led to ‘an implicit denial of land degradation as an issue of global concern, and to a low appreciation of the UNCCD as an instrument worthy of substantial support’ (Chasek et al. 2015).

The low recognition of land degradation may explain why Millennium Development Goal (MDG) 7 on environmental sustainability referred to both biodiversity and climate change, but not to land degradation (Chasek et al. 2015). Indeed, the MDGs had limited impact on the drylands, with one report calling the poor people of the drylands ‘The Forgotten Billion’ (Middleton et al. 2011).

Several features of the LDN concept enable it to reposition the issue of land degradation as an international policy priority. Firstly, in developing the concept the UNCCD drew inspiration from the UNFCCC and CBD and incorporated an offsetting mechanism (Safriel 2017). The target of land degradation *neutrality* is significant, because it galvanises support around a target of ‘no net loss’ of land to degradation, rather than seeking to prevent land degradation entirely (Orr et al. 2017). This recognises that the multiple pressures on land mean that completely preventing land degradation is ‘currently too ambitious and hence not likely to be attainable’, but that land productivity and ecosystem services can be restored (Chasek et al. 2015). According to the LDN-SCF (Orr et al. 2017), this is the ‘novel aspect’ of LDN that distinguishes it from previous attempts to combat land degradation, and is achieved through the ‘mechanism for neutrality’ where land use decision-makers can counterbalance losses to degradation by equivalent gains through restoration.

Some land use policy programmes already incorporate an offsetting principle, for example wetland mitigation banking programmes in the United States or the international reducing

emission from deforestation and forest degradation (REDD+) program (Welton, Biasutti, and Gerrard 2015). However, as Welton et al. (Welton, Biasutti, and Gerrard 2015) notes, whilst these were limited to a particular land type, LDN ‘capaciously includes *all* types of land degradation within its purview’. This means LDN surpasses these programs in scope and ambition.

Another element of the LDN concept that is helping it reposition the land degradation issue is its global character. SDG Target 15.3 aims for a ‘land degradation neutral-world’, which acknowledges that land degradation is a problem common to all regions of the terrestrial world (UN 2015). This is consistent with the universal character of the SDGs, which unlike the MDGs include developed countries, recognising ‘that no country is truly ‘developed’ in terms of sustainable development’ (Stafford-Smith et al. 2017). Indeed, the LDN-SCF was developed to be ‘applicable across all land types, land uses and ecosystem services’ (Cowie et al. 2018). Whilst SDG target 15.3 aspires to an LDN world, to achieve this countries must voluntarily adopt LDN targets at the national level, and determine the policies, rules and funding mechanisms that enable LDN-related activities to be achieved on the ground (Orr et al. 2017).

1.3 The LDN Pilot Project

LDN’s potential to ‘tie states to tangible targets and force the UNCCD to be treated with a greater degree of seriousness’ has created some controversy (UNCCD 2015). At COP 11 in September 2013, delegates raised concerns about the lack of clarity around the concept and its potential to expand the UNCCD’s remit beyond drylands (Welton, Biasutti, and Gerrard 2015). One state even proposed the deletion of any reference to zero net land degradation or a land degradation neutral world in UNCCD outcome documents (Welton, Biasutti, and Gerrard 2015). Interviewees highlighted that some countries were wary of LDN due to concerns of the pressure it might place on domestic industries such as forestry and agriculture.

To overcome such concerns and reach agreement amongst parties to the convention, the UNCCD initiated a LDN pilot project in 2014 (Safriel 2017). The pilot was designed to meet three objectives (UNCCD 2016b). Firstly, to identify and test relevant indicators for monitoring and planning LDN. Secondly, to formulate LDN national voluntary targets and measures to meet them. Thirdly, to integrate the targets into national sustainable development policies, including UNCCD National Action Programmes (NAPs) and UNFCCC Nationally Determined Contributions (NDCs). By creating national LDN targets ahead of formal agreement on LDN’s status within the convention the pilot project sought to create ‘political momentum’ to ‘push the concept along’ (UNCCD 2015).

The pilot project selected three of the six official UNCCD official indicators (see Table 1). The three selected were trends in land cover, land productivity and carbon stocks above and below ground (UNCCD 2016b). According to the pilot project coordinator, these were chosen as they were ‘*the three that were tangible and measurable*’ unlike indicators such as the one on poverty which ‘you can’t rely on in a reliable and meaningful manner’². Targets were successfully set in 12 out of the 14 pilot countries before COP 12 in 2015 (see Appendix 1 for a list of pilot countries). This was significant because the pilot ‘demonstrated the possibility of setting a target and the feasibility of an approach to achieving it’, thus ‘moving LDN beyond something which states could give purely rhetorical support to’ (UNCCD 2015).

² Quotes from interviewees have been italicised to differentiate them from quotes from written sources.

Additionally, the pilot demonstrated it was possible to create a measurement of land degradation in countries with very limited data monitoring and analysis capacity, through providing them with adequate global datasets where national datasets were insufficient (UNCCD 2016a).

Table 1 The UNCCD progress indicators from which the LDN pilot project.

Related Strategic Objective:	Indicator	Metrics/Proxies
Strategic objective 1: To improve the living conditions of affected populations	Trends in population living below the relative poverty line and/or income inequality in affected areas	Poverty severity or Income inequality
	Trends in access to safe drinking water in affected areas	Proportion of population using an improved drinking water source
Strategic objective 2: To improve the conditions of ecosystems	Trends in land cover	Vegetative land cover
	Trends in land productivity or function of the land	Land productivity dynamics
Strategic objective 3: To generate global benefits through effective implementation of the UNCCD	Trends in carbon stocks above and below ground	Soil organic carbon stock
	Trends in abundance and distribution of selected species	Global Wild Bird Index

Source: (UNCCD, 2008, 2013a).

The inclusion of an indicator on soil organic carbon was important for showing the synergies between achieving land degradation neutrality and climate change mitigation. Benefits were highlighted in terms of monitoring, with one pilot country, Italy, using the IPCC's methodology to report soil organic carbon to both the UNCCD and the UNFCCC. Advantages were also shown with NDCs, with Belarus using peatland restoration to help meet both LDN and climate change mitigation targets (UNCCD 2016b). Furthermore, the pilot LDN targets include actions that contribute to national obligations under the CBD, as well as other national commitments on sustainable development (UNCCD 2016a). Such synergies in the goals, implementation and monitoring of different sustainable development goals is important to ensuring LDN is not seen as an additional burden to countries (Orr et al. 2017).

1.4 The LDN Target Setting Program

Following the momentum created by the adoption of LDN as SDG Target 15.3, SDG 15.3 (LDN) was integrated into the UNCCD at COP 12 in October 2015 (decision 3) as 'a strong vehicle to drive the implementation of the UNCCD' (ICCD 2016). The key question then became how to translate the SDG target on LDN into national plans and policies (Minelli, Erlewein, and Castillo 2017).

As a first step towards implementing LDN, COP 12 invited country parties 'to formulate voluntary targets to achieve LDN in accordance with their specific national circumstances and development priorities' (ICCD 2016). Crucially, all countries were invited to set LDN targets, rather than just parties categorised as 'affected' under the convention, making the UNCCD's

work the guiding framework for addressing land degradation globally (Minelli, Erlewein, and Castillo 2017).

Parties of the Convention instructed the UNCCD secretariat to further develop and facilitate the use of the UNCCD indicator framework to establish national baselines and measures to achieve LDN (Minelli, Erlewein, and Castillo 2017). Consequently, the UNCCD's Global Mechanism established the 'LDN Target Setting Programme' (LDN-TSP) at the end of 2015. The LDN-TSP issued comprehensive guidance to countries on how to establish LDN Targets in its technical guide (see UNCCD, 2016a).

The SDG 15.3 (LDN) indicator is the 'Proportion of land that is degraded over total land area' (UNCCD 2016a). This is computed using the three sub-indicators the pilot project selected from the UNCCD's already established indicator framework (shown in Table 1): land cover and land cover change; land productivity; and carbon stocks above and below ground. The pilot project demonstrated these were measurable diverse biophysical contexts, and with limited data collection capacities. Furthermore, global datasets and corresponding methodologies exist to compute the data where national data is inadequate. The provision of this global "default" data and related methodologies has been one of the core responsibilities of the LDN-TSP (Minelli, Erlewein, and Castillo 2017). The LDN-TSP also aids countries in national data collection and identification of land degradation drivers and appropriate counter-measures (Minelli, Erlewein, and Castillo 2017).

Additionally, the LDN-TSP aims to develop and support large-scale initiatives that will contribute to LDN, which are labelled 'LDN transformative projects and programmes' (UNCCD 2017c). These, along with 'innovative finance', are seen by UNCCD Executive Secretary Monique Barbut as 'at the core of successful action to achieve Land Degradation Neutrality' (UNCCD 2017c). The UNCCD (UNCCD 2017c) identify five features to such projects. Firstly, they consider LDN data and contribute to LDN targets. Secondly, they deliver multiple benefits to the SDGs and the objectives of three Rio Conventions. Thirdly, they build on good practices and promote uptake of technologies to scale up what already works. Fourthly, they enhance national capacity, through institutional improvements and participatory decision-making. Fifthly, they leverage finance including public funds, climate finance and seek to use blended finance to deploy private capital.

The progress towards target setting is currently being reported and will be reviewed at the 17th session of the Committee for the Review of the Implementation of the Convention (CRIC) in January 2019 (IISD, n.d.). This review hopes to inform reflection on the LDN process in the run up to the CRIC.

1.5 IUCN and Land Degradation Neutrality

As one of the UNCCD's partner organisations, IUCN plays a key role in implementing the convention and in highlighting the role biodiversity and conservation play in combatting land degradation. This reflects IUCN's mandate as the largest professional global conservation network with more than 1,200 member organisations including 200+ government and 900+ non-government organisations, as well as 11,000 voluntary scientists and experts.

IUCN's engagement in the LDN process began with a major event organised at the second UNCCD Science Conference in Bonn in 2012. In response to concerns raised at this event by IUCN members, further consultations were held with members and commissions, leading to

the publication in 2013 of the Technical Guide “Land Degradation Neutrality: implications and opportunities for conservation”. This was updated in a second edition in 2015.

This technical brief was important in voicing the concerns and priorities of conservation actors in the development of the LDN-SCF by the UNCCD SPI. It was circulated amongst SPI members before the initial workshops on the development of the LDN-SCF and key concerns from it were highlighted by the IUCN official observer to the SPI. The report made a number of recommendations, many of which were reflected in the final LDN-SCF. The primary goal of this review is to evaluate the uptake of key recommendations from the IUCN (IUCN 2015) Technical Brief, as well as other key recommendations formulated in the LDN Target Setting Guide (UNCCD 2016a) and the LDN-SCF (Orr et al. 2017), in national LDN target setting processes.

The central goal of the joint IUCN-UNCCD work plan for 2015-2020 is to: ‘Support progress towards policies and programmes that deliver Land Degradation Neutrality through the application of Nature Based Solutions (at national and sub national levels)’ (IUCN 2016). IUCN and UNCCD have worked together to strengthen policy and institutional support for LDN implementation, collaborating primarily on issues of gender and governance. Since 2017, IUCN has received Global Environmental Facility (GEF) funding to help implement 75 LDN country target setting processes (IUCN 2017b). Additionally, IUCN’s Global Gender Office recently received funding from the Swedish International Development Cooperation Agency (SIDA) to mainstream gender in LDN target setting and implementation and has set up a help desk to advise countries on gender sensitivity in their national LDN target setting processes and implementation. IUCN and the UNCCD are also seeking to progress in using available IUCN datasets and methodologies to strengthen LDN target setting, as well as developing large scale transformative initiatives on landscape restoration (IUCN 2017b).

2. Uptake of recommendations in the LDN Process

The aim of this report is to evaluate IUCN’s influence on the LDN process and to report on how LDN standards and implementation compares with IUCN’s recommendations and other key recommendations. There are inevitable challenges of attribution between LDN outcomes and IUCN’s recommendations. Table 2 shows the key recommendations under review in this report and their source in the IUCN (IUCN 2015) technical brief, the LDN Target Setting Technical Guide (UNCCD 2016a), or the LDN-SCF (Orr et al. 2017). The following seven sections will evaluate the extent to which these concerns have been addressed in the LDN process, primarily in the LDN target setting process, but also in LDN guidance from the UNCCD, in the LDN Fund and the implementation of projects and programmes to meet the LDN target. This review is intended to be indicative to help inform future IUCN engagement with LDN, and the UNCCD’s ongoing evaluation of the LDN target setting programme will provide a more extensive evaluation of the LDN target setting process.

Table 2 Key recommendations for the LDN process evaluated by this report

Key recommendations identified	Source
Use of adequate evidence in setting LDN targets	<ul style="list-style-type: none"> • ‘LDN should proceed on the basis of adequate evidence and monitoring, without evidence-collection becoming a barrier to attaining the LDN goals.’ (IUCN 2015). • ‘Principles related to monitoring... • Monitoring and reporting should be primarily based on national data sources, including aggregated sub-national data... • Make use of additional national and sub-national indicators... • Apply in-situ validation and local knowledge’ (Orr et al. 2017)
Consultation of key stakeholders	<ul style="list-style-type: none"> • ‘Stakeholders should ideally be integrated into all stages of the LDN target setting process’ (UNCCD 2016a) • ‘For any LDN project to be effective, governments must develop inclusive, participatory consultation and outreach programmes to engage stakeholders in the co-production of knowledge and mutual learning at both the national and local levels, which could be accomplished through the establishment or leveraging of multi-stakeholder platforms at each relevant scale, with established links across scales’ (Orr et al. 2017)
Inclusion of integrated ecosystem management	<ul style="list-style-type: none"> • ‘Integrated ecosystem management approaches should be central to achieving LDN.’ (IUCN 2015) • ‘Apply an integrated land use planning principle that embeds the neutrality mechanism in land use planning’ (Orr et al. 2017)
Strengthening natural resource governance and equity	<ul style="list-style-type: none"> • ‘Natural resource governance should be strengthened to enable equitable LDN outcomes.’ (IUCN 2015) • ‘The objectives of LDN are:... reinforce responsible and inclusive governance of land’ (Orr et al. 2017)
Adoption of the response/mitigation hierarchy	<ul style="list-style-type: none"> • ‘It is preferable to adopt a mitigation hierarchy for biodiversity and ecosystem impacts with priority placed first on prevention or avoidance of land degradation, followed by minimisation through improved land management practices, and then restoration.’ (IUCN 2015) • ‘The LDN response hierarchy is an overarching principle that guides decision-makers in planning measures to achieve LDN.’ LDN-SCF (Orr et al. 2017)

Establishment of synergies with other conservation and development approaches and targets	<ul style="list-style-type: none"> ‘Achieving LDN should build on the synergy with other conservation approaches and targets’ (IUCN 2015). ‘The objectives of LDN are:... seek synergies with other social, economic and environmental objectives’ LDN-SCF (Orr et al. 2017)
Leveraging of innovative funding	<ul style="list-style-type: none"> ‘Innovative funding should be developed to support implementation of action towards LDN.’ (IUCN 2015) ‘The achievement of LDN is linked to sufficient financing. Successful implementation of LDN initiatives depends on the effective mobilization of resources from all sources, including national budgets, external donors and innovative sources of finance, ideally concurrent with local and national programming.’ (Orr et al. 2017)

Source: IUCN (2015), (Orr et al. 2017; Cowie et al. 2018); (UNCCD 2016a)

2.1 Use of adequate evidence

‘LDN should proceed on the basis of adequate evidence and monitoring, without evidence-collection becoming a barrier to attaining the LDN goals.’ IUCN Technical Brief 2015

One of the key concerns in IUCN’s (IUCN 2015) technical brief was that LDN should proceed on the ‘basis of adequate evidence and monitoring, without evidence collection becoming a barrier to attaining LDN goals’. This recommendation highlighted the challenge of ensuring adequate rigour without making rigour a barrier to progress. Adequate evidence and monitoring must track LDN progress, unwanted externalities from restoration and sustainable land management (SLM), and the impact of SLM and land restoration on biodiversity and social outcomes (IUCN 2015). This challenge is compounded by the difficulties noted in section 1.1 in defining and measuring degradation, given it is a highly contextual and value-laden concept.

The three indicators for LDN are land cover, land productivity and carbon stocks, whilst their corresponding metrics are land cover change, net primary productivity and soil organic carbon (Orr et al. 2017). Together these three biophysical indicators can be used to monitor the quantity and quality of land-based natural capital and the ecosystem services that flow from that land base (UNCCD 2016a). Due to the limited availability of datasets for these metrics in some countries, the UNCCD (UNCCD 2016a) recommends a ‘tiered approach’ for countries to compute the three indicators, which can use data from three levels. Tier 1 is data from global or regional Earth observation, whilst tier 2 comprises national statistics acquired for administrative purposes, and tier 3 is acquired from field surveys, assessments and ground measurements. By integrating data from these three tiers, this approach seeks to allow ‘national authorities to use methods consistent with their capacities, resources and data availability’, whilst still producing data that is comparable at the global scale (UNCCD 2016a).

This tiered approach to data collection on LDN is not to be confused with the classification of SDG indicators into three tiers³, on the basis of their level of methodological development

³ The LDN tiered approach to data collection will be referred to using numbers, i.e. Tier 1, Tier 2 and Tier 3; whilst the classification of SDG indicators methodological development and data availability will be referred to using roman numerals, i.e. Tier I, Tier II and Tier III, to differentiate between them.

and the availability of data at the global level. The SDG indicator 15.3.1 - proportion of land that is degraded over total land area – is comprised of the three (sub)-indicators noted above: land cover, land productivity and carbon stocks. 15.3.1 currently has Tier II status, meaning it is conceptually clear and there is a standardised methodology to measure it globally (IAEG-SDGs, 2018). However, 15.3.1 can be expected to move to Tier I status after the end of the current reporting phase to the UNCCD, as Tier I status is granted when 50% of UN member countries submit data for the indicator regularly (Sylla and Nairesiae 2018). This is a success for the LDN process, as under the SDG data-driven development agenda there is always a risk that only ‘what gets measured, gets managed’ (Chattopadhyay 2016)

One of the major components of the LDN-TSP is to provide the default global data (tier 1) to countries for their use and validation where national data was lacking. The default data on land cover was provided by the European Space Agency Climate Change Initiative Land cover dataset and defined by land cover classes derived from the Food and Agriculture Organisation’s (FAO) Land Cover Meta Language hierarchical classification (UNCCD 2016a). The default data for land productivity, measured by net primary productivity, used the Joint Research Centre’s Land Productivity Dynamics dataset, which takes a Normalised Difference Vegetation Index (NDVI) measured at 10-day intervals between 1999 and 2013 (UNCCD 2016a). Finally, the default data provides a SOC baseline from the ISRIC’s SoilGrids250m global soil mapping product and uses IPCC methodology to predict changes (UNCCD 2016a). The baseline for all three indicators is calculated over 10-15 years, usually between 2000 and 2015, as ‘the condition of land is highly variable both spatially and temporally, due to climate variability and the variety of human activities on the land’ (UNCCD 2016a). This is an improvement over past assessments of land degradation based on a single measurement in time and can better assess degradation in non-equilibrium ecologies (Mortimore 2016).

The trends in the default (tier 1) data should be compared with tier 2 and tier 3 data wherever possible to facilitate interpretation and validation with national or local information (UNCCD 2016a). It is particularly important changes in land cover are contextualised with national or local information. This was highlighted by Namibia’s experience in the pilot, where measurement of NPP created false positives, as bush encroachment increased NPP despite reducing ecological complexity (UNCCD 2016b). False negative results may also occur, for example, when NPP is lowered due to conversion of irrigated agriculture to dryland pastoralism for water management purposes (Cowie et al. 2018).

The necessity for such local interpretation and validation of land degradation trends is partly why the LDN-SCF encourages the establishment of national or subnational indicators (Orr et al. 2017). Furthermore, complementary indicators may be useful if countries wish to track progress towards other SDGS or other national indicators in LDN projects and monitoring (Orr et al. 2017).

The LDN-SCF (Orr et al. 2017) suggests countries include assessments of biodiversity through IUCN’s Red List Index, adopting the suggestion made in IUCN’s (IUCN 2015) technical brief. Spatial data from the Red List of Threatened Ecosystems and the Red List of Threatened Species could be overlaid or compared with maps of land degradation produced through LDN target setting. These could then inform land use planning in designing LDN interventions that target conservation of threatened ecosystems and species as well as combatting land degradation. The Red List Index was used by Visconti et al. (2015) to model the impacts of biodiversity of different development scenarios. The Red List Index also provides information of the threats and conservation actions for each threatened ecosystem and species.

Therefore, if used alongside data from LDN target setting, the Red List Index could be used to model the best development scenarios for combatting land degradation and conserving biodiversity. Additionally, the Red List Index is used as an indicator in the CBD's 2011-2020 Strategic Plan for Biodiversity (CBD, 2014), so its incorporation into LDN would strengthen synergies with the CBD's goals.

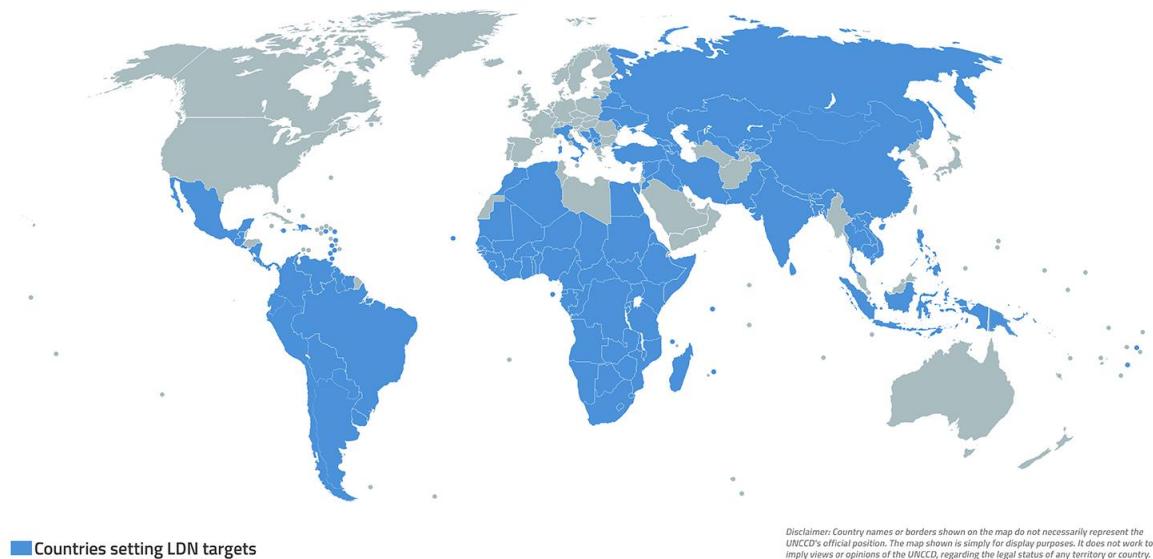
2.1.1 Findings

- **Establishment of LDN Targets:**

119 countries have committed to setting LDN targets as of September 2019. Figure 3 provides a map of which countries these are, whilst a full list can be found in Appendix 2. Of these 60+ countries have set national targets which have been validated by a multi-stakeholder process. An estimated 30 of these countries have adopted these targets at the government level.

In the seven national LDN target setting reports analysed (see Table 4), LDN targets had been set at the national level, with three also setting targets at the subnational and district level. Some of these had set targets that went beyond achieving LDN and aimed for net gains by 2030. Others used specific targets related to the sustainable use and rehabilitation of particular land classes and regions.

Figure 3. World map showing the 119 countries which have committed to setting LDN targets.



- **Measurement of three LDN indicators:**

A number of global datasets are coming online which provide data which could be used to compute the three LDN indicators. See Table 2 for a list. However, one interviewee highlighted that there was significant difference between ISRIC's SoilGrids250m product assessment of SOC, which relied more on remote sensing, and FAO's Global Soil Organic Carbon map's (GSOC), which centred on a much greater number of sample plots (1 million).

Of the 60 countries who have set national baselines, roughly half used the default data exclusively. National data has been used most frequently for land cover and least for SOC. The UNCCD (UNCCD 2016a) suggest that assessment of the default data 'can be substituted or complemented by national official data series on the same indicators'. In keeping with this advice, where national data exist but does not provide full coverage or does not conform to

UNCCD's reporting needs, countries have compared the default data against this national data to identify discrepancies and to assess land degradation trends.

Two main barriers to using national datasets were identified by interviewees. Firstly, lack of national datasets, or lack of datasets with full national coverage. Secondly, datasets might exist for the three indicators but were measured using categories or at scales incompatible with the LDN reporting process. For example, one interviewee reported comprehensive national data on land cover existed in South Africa but could not be used in reporting to the UNCCD, because it did not conform to the FAO land cover classes used by the UNCCD for LDN reporting.

Table 3 Available datasets for the three LDN Indicators

Land Cover	Land productivity dynamics (LPD)	Soil Organic Carbon
European Space Agency Climate Change Initiative Land Cover [Default dataset]	European Commission's Joint Research Centre (JRC) LPD datasets at 1km resolution [Default dataset]/ JRC's dataset 250m resolution for Small Island Developing States (SIDA) [Default dataset for SIDA]	International Soil Reference and Information Centre's (ISRIC) SoilGrids250m ⁸ (adapted for the UNCCD)
Globeland30	Enhanced Vegetation Index (EVI)	International Soil Reference and Information Centre (ISRIC) Soil Grids)
JRC TREES-3 – only forest land cover within tropical (humid) areas	Soil-Adjusted Total Vegetation index	Land Degradation Surveillance Framework
JRC Phenology based land cover classification – under development	The Normalised Cumulative Rain-Use Efficiency Index	JRC's Threats to Soil
Terra-I (for monitoring deforestation)	MODIS MOD17A3 Global NPP Model	Harmonised World Soils Database
The Land Potential Knowledge System	Fractional Cover Models	Global Soil Map
Land Degradation Surveillance Framework	Collect Earth	Global Soil Organic Carbon Map
Global Land Cover Share	Flux Tower data	
From Global Land Cover		

Sources (Aynekulu et al. 2017; Mattina et al. 2018; Sims et al. 2017)

The FAO land cover classes were seen as inadequate for understanding land degradation in South Africa because they fail to differentiate between forest and Savannah. Consequently, South Africa used default data for reporting to the UNCCD but used national land cover on ecological biomes which was seen as more relevant and well understood in the country.

Monitoring and reporting requirements for LDN, as well as NDCs, is creating demand for national datasets on SOC, with national datasets being developed in China and Ghana.

One interviewee highlighted that little guidance existed for how to bring local or traditional knowledge into target setting.

- **Complementary indicators**

Complementary indicators were not used in the seven LDN target setting reports analysed (see Table 4). However, interviewees reported that some complementary indicators had been established at the national level, including ones on sand storms, bush encroachment, drought and managing drought, soil salinity, soil erosion, soil compaction. An indicator on bush encroachment has been established in Namibia to avoid false positive results on degradation assessments based on the NDVI land productivity indicator.

Interviewees from civil society highlighted that targets and indicators related to social, economic or cultural outcomes of LDN are lacking, which would help orient LDN activities to achieve its third objective of reinforcing responsible and inclusive governance of land (Orr et al. 2017). Crossland et al. (2018) suggest developing complementary metrics for measuring productivity at local scales through discussion with land users, who might identify socio-economic factors, such as labour availability and current household needs that contribute to their productivity. This fits with Gnacadja and Wiese's (2016, 87) suggestion that LDN indicators should encompass 'increases in livelihood stemming from restoration'.

However, progress has been made in developing other SDG indicators related to land governance that could be integrated into LDN targets and monitoring. SDG Indicator 1.4.2 on tenure rights is relevant, as is indicator 5.a.1 on women's ownership and access to agricultural land, and indicator 5.a.2 which measures the extent to which women's land rights are secured in national legal frameworks (Sylla and Nairesiae 2018).

The LDN-SCF suggests incorporating IUCN's Red List Index as an indicator to ensure threatened species and ecosystems are not overlooked. However, this study saw no sign of this currently being used in LDN target setting and planning (this may be due to the limits of this study). However, an interviewee from Italy highlighted they were striving to find an appropriate biodiversity indicator.

- **Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis and identification of drivers**

In keeping with UNCCD (UNCCD 2016a) guidance, LDN national working groups conducted a SWOT analysis, in the seven LDN target setting reports analysed (see Table 4). This was used to help assess land degradation trends, identify drivers, and identify appropriate measures to achieve LDN. One interviewee highlighted that the SWOT analysis was important for identifying the weaknesses in their country's institutional and legal environment that would have to be addressed to achieve LDN.

Each target setting report also analysed direct and indirect drivers of land degradation in their country. Identifying and addressing such drivers is likely to be essential to achieving LDN, for

as one interviewee stated past initiatives around land degradation has limited success because they performed '*first aid rather than looking at underlying causes*'. Consequently, identifying and addressing drivers will be important to permanent reductions in land degradation.

Table 4 Inclusion of adequate evidence in seven LDN Target Setting Reports according to LDN Target Setting criteria

	Eritrea	Nigeria	Ghana	Guyana	Jordan	Sri Lanka	Sierra Leone
Default Data or other national data sources used in establishing LDN baselines.	Default data used but validated against comparable national and subnational datasets, including vegetation cover map, agricultural sector and agro-ecological maps.	Default data used due to absence of and low quality of data for three indicators. 10 ground surveys at hotspot sites.	Default data used, national data did not conform to the land classes used by the UNCCD.	Default data used. Used REDD+ Monitoring, reporting and verification system 2015 to validate. Data on land productivity and crop production efficiency will be used in monitoring framework for reporting on agricultural degradation.	Report does not say – though the SWOT analysis notes there is no national database and system to monitor desertification.	Default data was used for land cover and SOC compared with national datasets. Default data was used for land productivity, though it was seen as insufficient to represent land productivity dynamics. Was complemented by soil erosion hazard data.	Used default data because of lack of complementary comprehensive local data. Ground trothing of hotspot sites.
Complementary Indicators	No	No	No	No	No	No	No

	Eritrea	Nigeria	Ghana	Guyana	Jordan	Sri Lanka	Sierra Leone
LDN Hotspots (and criteria used to select them)	23 hotspots areas identified at national level. Areas that have experienced most severe land degradation.	13 hotspots areas were identified. These were already degraded sites. 10 were validated via ground surveys.	Hotspots identified by the magnitude of area affected by net productivity decline	26 hotspots identified based on assessment of land degradation trends and drivers. Used indicators around biodiversity, mining intensity, protected areas, tourism resorts and Amerindian lands.	5 hotspots identified based on declining productivity.	No (or not included in the national LDN-TSP report)	21 hotspots established based on the three LDN indicators, however, not clear whether they are based on declining trends or already existing level of degradation.
SWOT analysis of national legal and institutional framework	Yes	Yes – though the SWOT analysis was of the UNCCD NAP generally which is aligned	Yes	Yes – though the SWOT analysis was of the UNCCD NAP generally which is aligned with goal of LDN.	Yes – though the SWOT analysis was of the NAP from the LDN perspective, to create a strong linkage between the NAP and the LDN goals.	Yes	Yes – though the SWOT analysis was of the NAP from the LDN perspective.

	Eritrea	Nigeria	Ghana	Guyana	Jordan	Sri Lanka	Sierra Leone
		with goal of LDN.					
Identification of direct and indirect drivers	Yes	Yes, and rated as low, moderate or high.	Yes	Yes	Yes	Yes	Yes
LDN Targets set at national scale	LDN to be achieved by 2030 and additional 10% of territory has improved. Also, target of disseminating of Adhanet stoves.	LDN to be achieved by 2030 and additional 20% of the territory has improved.	LDN to be achieved by 2030	LDN to be achieved by 2030.	LDN to be achieved by 2030 with five specific targets set including ones on community forest management, SLM and artificialisation/urbanisation	LDN to be achieved by 2030. Specific LDN targets around land conversion, forest cover , soil degradation, soil erosion of croplands	Yes, specific targets set around reforestation, rehabilitation, productivity and reclamation in mined areas.
LDN Targets set at subnational scale	Yes	Yes (though only copied the LDN national target)	Yes targets set at regional and district level.	No – but recognises that they should be set.	No	No	No

- **Cost of land degradation and land use models**

The Economics of Land Degradation (ELD) has provided global and regional assessments of the cost of land degradation to highlight the cost of degrading land practices and the benefits of SLM and land restoration. ELD is working with 17 countries to provide understanding of the cost of degrading practices nationally, through workshops and training.

One interviewee from the SPI suggested that the land use modelling would help inform decision makers to create appropriate interventions to achieve LDN. This would model five interventions and their likely outcomes, enabling decision-makers to see the trade-offs and synergies between LDN and other national development objectives.

Such models might be informed by a database currently being developed by the ELD on the costs and opportunities of different land use scenarios in different countries. This tool should help decision makers make informed decisions about land development and raise awareness about degradation.

2.1.2 2.1.2 Recommendations

LDN target setting has proceeded on the basis of the three agreed indicators, which provides a minimum standard that can be applied in all countries. It is recommended that countries which are yet to set their targets consider applying additional national data that can strengthen their analysis of land degradation. Countries that have already established LDN targets will benefit from further validation of those targets, particularly at the sub-national level where more detailed assessment may be required to guide investors. Specifically:

1. Governments should invest in more systematic monitoring of SOC with a view to linking measurement with future regulations and incentives, and to monitor, conserve and enhance land-based carbon sinks.
2. National LDN targets will be more useful for land use planning if they are validated at a subnational level, incorporating local data, local and indigenous knowledge, and local perceptions of land degradation in relation to land use objectives.
3. Monitoring processes for other SDG targets (see section 2.6) and national development priorities can be combined with LDN monitoring to track the contribution of LDN-related activities to social and economic goals.
4. Indicators such as IUCN's Red List of Threatened Species and the Red list of Ecosystems can be used to monitor LDN activities impact on biodiversity and to strengthen synergies between UNCCD and CBD goals.

2.2 Consultation of key stakeholders

'Stakeholders should ideally be integrated into all stages of the LDN target setting process' LDN Target Setting Technical Guide (UNCCD 2016a)

The technical brief highlights that 'not all resource users are in an equal position to participate fully and efforts will be needed to promote the empowerment of women, indigenous peoples and other marginalised groups' (IUCN 2015). Broad stakeholder participation has also been linked to the effectiveness of LDN, for it create awareness of LDN initiatives, and contributes to an enabling environment where stakeholders accept responsibility and adopt voluntary commitments to meet LDN (Kust, Andreeva, and Cowie 2017; Willemen et al. 2017). Additionally, participatory methods can enhance the accuracy and reliability of top down methods to monitor land degradation, and enable identification of false positive and negatives (Stringer et al. 2007; Cowie et al. 2018). It also enables stakeholders to identify

additional targets and associated metrics related to the socio-economic outcomes they wish to see from LDN projects.

Stakeholder consultation is the basis of the LDN TSP, for Step 1 of the LDN-TSP Technical Guide is ‘Government leadership and stakeholder engagement’ (UNCCD 2016a). This step involves the identification of relevant stakeholders and interest groups including land users, who range from small scale farmers to international companies; private service providers, who are indirectly involved in land management through the provision of agricultural goods, energy, communication and financial services; governmental agencies involved in land use planning at national and subnational levels, with the technical guide highlighting the importance of the finance ministries as well as the focal points of the CBD, UNFCCC and GEF; research institutions, including universities and CGIAR; CSOs who play an important role at subnational, national and international levels, by providing an interface between land users and governmental agencies; and finally development partners, including donors and those providing technical support (UNCCD 2016a).

Whilst the LDN-TSP technical guide (UNCCD 2016a) highlights the importance of taking into account the differential power and interests of different stakeholders, it offers little guidance on how to manage these factors. As Table 5 shows, stakeholders should be integrated into all stages of the TSP, from agreeing on the methodological approach taken, to validation of LDN targets and measures, to the establishment of LDN-related commitments and partnerships.

The LDN-SCF makes clear that ‘a participatory process’ should be applied not only to national LDN-TSP but in ‘designing, implementation and monitoring interventions to achieve LDN’ (Orr et al. 2017). This should promote efforts to ‘engage stakeholders in the co-production of knowledge and mutual learning at both the national and local levels’, which may be achieved through the establishment of multi-stakeholder platforms (Orr et al. 2017). Such consultation and outreach is seen as the basis for ‘any LDN project to be effective’ (Orr et al. 2017). Multi-stakeholder platforms in the LDN-SCF are also linked to social learning and adaptation by allowing stakeholder feedback to inform and alter LDN interventions. The LDN-SCF suggests the development of an experience-sharing platform, perhaps integrated into the UNCCD Knowledge Hub, could facilitate this (Orr et al. 2017). Additionally, it calls for the dissemination of clear information on LDN ‘through workshops, meetings, internet, social media and radio programmes’ (Orr et al. 2017). Similarly, Lal (2018) advises revising school curricula to promote the stewardship of soil and involve the media in promotion of soil conservation.

Table 5 Stakeholder participation in the LDN target setting process.

Steps	Main activities
Step 1:	<ul style="list-style-type: none"> • Identification of stakeholders • Assessment of interest of identified stakeholders in land degradation neutrality (LDN) • Establishment of a national LDN working group • Participation of representatives of key stakeholders in an LDN working group • Organisation of a national LDN target setting inception workshop
Step 2-5	<ul style="list-style-type: none"> • Identification and mobilisation of stakeholders involved in LDN baseline setting and data provision/processing

	<ul style="list-style-type: none"> • Agreement on methodological approaches among stakeholders (LDN working group) • Involvement of stakeholders in the analysis of (sub)national trends and drivers of land degradation and existing land management practices • Organisation of a validation workshop on the results of the LDN assessment and proposed LDN baseline
Step 5-7	<ul style="list-style-type: none"> • Identification of LDN targets and associated measures • Organisation of a validation workshop on LDN targets and measures
Step 8	<ul style="list-style-type: none"> • Mobilisation of stakeholders to commit on action to achieve LDN • Facilitation of the political commitment to achieving national voluntary LDN targets • Establishment of LDN-related partnerships
Step 9-10	<ul style="list-style-type: none"> • Involvement of stakeholders in LDN monitoring, including the analysis and interpretation of related results • Endorsement of an LDN TSP report by an LDN national working group

Reproduced from UNCCD (UNCCD 2016a)

2.2.1 Findings

- **General**

The consultation of stakeholders in the national LDN TSPs was constrained by the lack of budget available for the TSP, with some working groups like Algeria's working for free, and by the time constraints upon the process. Interviewees pointed out that consultation was more difficult in countries which are larger and more diverse in terms of population and geography.

In formulating the LDN-SCF, the SPI sought to create an interdisciplinary group of experts to design the LDN conceptual framework. In addition, the SPI includes an observer from CSOs, IUCN, FAO, UNEP and WMO who represent the concerns of their respective institutions/communities.

Interviewees highlighted that engaging key stakeholders is necessary to prepare them for the radical shifts required to address the drivers of land degradation.

- **Government**

A high number of government ministries and agencies were represented in national LDN working groups. These mainly related to natural resource governance or land management, though ministries of finance and national statistic offices were included in some countries. National Park representatives were also included in South Africa, thereby acknowledging the role protected areas may have in achieving LDN.

An interviewee from UNCCD Global Mechanism suggested that the involvement of national statistic authorities, responsible for monitoring and reporting on the SDGs should be strengthened, which would help to bolster technical capacity of working group and to ensure that reporting on SDG 15.3 is accurate. Several countries also include CBD and UNFCCC country focal points national working groups as part of efforts to create synergies.

The target setting technical guide (UNCCD 2016a) suggests the use of pre-existing bodies in LDN target setting and planning at different scales. Interviewees highlighted potential bodies

could include coordination mechanisms on SLM, or UNCCD-related initiatives like the Great Green Wall for the Sahara and Sahel, forest and landscape restoration partnerships, or SDG implementation working groups. This study did not investigate how many countries used pre-existing mechanisms.

- **Private Sector**

Engagement of the private sector was seen by many interviewees as vital to the success of LDN, though one interviewee criticised the LDN-TSP for not pushing for greater private sector participation. Private sector involvement was seen as particularly important in designing and implementing LDN transformative projects. Interviewees cited two examples: in Nigeria LaFarge, the French cement company, is engaged in a LDN transformative project; whilst the Kubuqi initiative in China was cited as an example of best practice (UNEP 2015). The mining sector was seen as a key actor with an interest in land rehabilitation by interviewees.

To engage the private sector, in Ghana the land mitigation banking programme was being established to '*put the private sector at the centre of addressing land degradation, biodiversity and climate change*'. In Nigeria, efforts are being made to raise awareness around desertification, land degradation and drought (DLDD) issues in the private sector through the government media, along with the creation of clubs on environmental issues or tree planting at schools.

Private sector interest in LDN in Algeria was undermined by a lack of interest from national and international structures. Concrete commitment and political will was therefore seen as necessary to create momentum to bring private and other actors together.

Several international initiatives seek to champion the role of the private sector in the SDGs and conservation, including the World Business Council on Sustainable Development (WBCSD)⁴, the Natural Capital Coalition⁵, the Business and Sustainable Development Commission⁶ and the Food and Land Use Coalition⁷. The WBCSD (WBCSD 2015) highlight five reasons business should engage in LDN. Firstly, to secure operations through healthy ecosystems; secondly, to reinforce companies' sustainability targets; thirdly, to secure their access to markets and license to operate; fourthly, to gain access to rehabilitated land assets; and fifthly, to support social stability.

- **Research**

Research institutions, universities and experts, including UNCCD Science and Technology Correspondents (STCs) participated in LDN working groups and provide key technical guidance. Indeed, consultants hired to lead the LDN-TSP were often from research communities.

- **Civil Society**

It was reported some governments see the role of CSOs as only in validating the LDN TSP, rather than to take part in the technical process, whilst others saw their involvement as more relevant to LDN implementation than the TSP. However, two studies have shown that

⁴ <https://www.wbcsd.org/>

⁵ <https://naturalcapitalcoalition.org/>

⁶ <http://businesscommission.org/>

⁷ <https://www.foodandlandusecoalition.org/>

involvement of CSOs and local communities in target setting enables more effective LDN monitoring and implementation. Willemen et al. (Willemen et al. 2017) study shows how a participatory process to national LDN planning was applied in South Africa, Zambia and Tanzania. In this, diverse stakeholders, including CSOs, identified ecosystem services that are “important”, to complement modelled outputs of land degradation. This enables LDN investments to be targeted to national level priority ecosystem services under threat from land degradation and drives greater acceptance, motivation and action towards improved land management (Willemen et al. 2017). Crossland et al. (Crossland et al. 2018) used participatory mapping and farmer interviews at the local landscape scale (10-1000km²) in the Gilgel-Abay Watershed in Northwest Ethiopia to understand land users perception of degradation and the priority areas for restoration efforts. This provided insights into local degradation processes and enabled greater consideration of the distribution of benefits and disadvantages from different restoration options.

CSO representatives at COP 13 in Ordos urged Parties to the UNCCD to ‘Put the CSOs in the Frame’ (CSOs 2017) to recognise the key role that local communities play in sustainable land use actions on the grounds, and to align with the key SDG principle of “Leave no one behind” and other SDG targets around poverty and land tenure. The Groupe Travail Désertification (GTD) is developing an analysis grid which will enable the identification of CSO’s projects’ contributions to LDN goals and identification of the role of CSOs in the designing new LDN projects.

CSO interviewees also explained that participation in multistakeholder platforms around LDN would enable civil society to put pressure on government to legislate land reforms and would increase civil societies *‘capacity to avert land grabbing or land deals that were irresponsible’*. ILC interviewees highlighted that the multistakeholder platforms they are establishing could provide a useful forum for participatory planning for LDN. One interviewee suggested including both CSOs with a domestic focus and ones with international links in LDN working groups, in order to maximise civil society influence.

ILC interviewees pointed to their experience at a consultation workshop on ‘Responsible Land Governance for LDN’, in March 2018 to suggest that LDN was not yet on the agenda for much of the land community. The outcome document for this event corroborates this saying ‘Some participants admitted that LDN is relatively unknown in their respective communities’ (TMG 2018). Another interviewee reported that they had been able to strengthen CSO networks around the UNCCD and LDN by establishing online communication and knowledge sharing platforms, and by establishing meetings at other SDG or Rio Conventions events to share experiences and expectations on LDN face-to-face.

For Latin America and the Caribbean, it was estimated that there were twenty countries in the region with a working group with at least one CSO representative, whilst Ecuador and Venezuela had no CSO representatives. In Burkina Faso and Niger CSOs reported that *‘participation of civil society remains mainly symbolic’*, and *‘the number of meetings didn’t quite match the expectations and were mostly consultative’*. Indeed, in Niger it was reported that whilst CSOs had been involved in the initial launch workshop of LDN, they had not been involved in defining LDN targets.

- **LDN Fund**

The LDN Fund is a public-private fund that was established to lead investment in land restoration and SLM activities to achieve the goal of LDN (see section 2.7 for more detail). The

UNCCD created an open consultation on the Environmental and Social Safeguards of the LDN Fund in 2016 to which 16 institutions, including universities, CSOs and environmental NGOs, contributed to (UNCCD, n.d.). Additionally, an advisory panel was established including public and private investors, Cambridge University and NGOs. However, it has a nonbinding role in the Fund's management structure and the CSO panel to the UNCCD expressed disappointment that it was not invited to sit on this despite being elected by 300 UNCCD-accredited CSOs (CSOPanel, n.d.). Significantly, the consultation was only on the Environmental and Social Safeguards of the Fund, and CSOs have expressed concerns that the structure of the fund, its governance processes, who is funding and who is benefitting, as well as the details of proposed projects are not public, let alone open for consultation (van Haren 2017).

2.2.2 Recommendations

The degree of consultation has been variable: consultation between public sectors has generally been strong but consultation with nongovernmental actors has been weaker. Governments are recommended to strengthen consultation and outreach during LDN implementation in order to generate stronger buy-in and to avoid the risk of the LDN process being discredited. The success of LDN – as a target that covers all land within a country – lies in the diversity of actors who adopt LDN as a target.

1. Pre-existing coordination mechanisms at national and local levels can be used for LDN target setting and implementation planning, ensuring that they include gender experts and focal points to other relevant conventions.
2. National statistics offices can be included in LDN national working groups, for example as the organisation responsible for reporting the SDG process.
3. Consultation and outreach during LDN implementation should target all key stakeholder groups, including women's representatives, representatives of minority groups and marginalised land use groups, and land-based industries.
4. Stronger guidance is advised on inclusion of civil society in LDN target setting and implementation processes, including connecting governments with relevant existing CSO mechanisms (such as the ILC multi-stakeholder platforms).

2.3 Integrated Ecosystem Management

'Integrated ecosystem management approaches should be central to achieving LDN.' IUCN Technical Brief on LDN 2015

Integrated ecosystem management (IEM), also referred to as the ecosystem approach or ecosystem management, has increasingly become a central principle and strategy for conservation (Qun and Hannam 2011). At the 7th CBD COP it was defined as 'a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way' (Qun and Hannam 2011). As this definition suggests the emphasis is upon integrated management of natural resources, which involves moving away from the traditional siloing of different natural resource management sectors such as water, agriculture or forestry towards more systematic management. This definition also suggests that different management strategies that promote conservation or sustainable use can be complementary, and, as the IUCN technical brief suggests, integrating them to achieve LDN can help avoid 'unwanted trade-offs' (IUCN 2015). Additionally, IEM approaches highlight the

importance of seeing people and natural resources as inextricably linked, meaning any analysis must also consider social and economic systems, so that conservation can have equitable outcomes for people as well as ecosystems (Qun and Hannam 2011).

Whilst the language of IEM is not used explicitly in the LDN-SCF, it contains many elements which are consistent with the ecosystem approach (as illustrated in Appendix 3). Firstly, ‘implementation of LDN is managed at the landscape level through integrated land use planning’ (Cowie et al. 2018). Integrated land use planning is used to understand the cumulative impacts of land use and management to achieve neutrality, by understanding the biophysical interactions of different land types and by considering leakage effects, for example if one area of forest is protected it may drive deforestation elsewhere (Cowie et al. 2018). The emphasis on implementing LDN on the landscape scale is consistent again with IEM, for many conservation practitioners use the term landscape approach interchangeably with IEM (Sayer et al. 2013). Both approaches, IEM and the landscape approach, seek to account for the multi-functionality, and therefore the multiple stakeholders of a landscape or ecosystem (Sayer et al. 2013). However, whilst the IEM approach seeks management within a watershed or ecosystem, landscape approaches are often applied at a larger geographical scale (the landscape) to manage a mosaic of related ecosystems.

Furthermore, as the previous section examined, LDN utilises a participatory process to planning, implementation and monitoring, enabled by multi-stakeholder platforms. This relates to principles 1, 11 and 12 of the ecosystem approach (see Appendix 3). Another aspect of the conceptual framework that is consistent with IEM is the emphasis on enhancing ‘the resilience of land-based natural capital’, to cope with climate change and other stresses, and ‘triple loop learning’ to facilitate adaptive management of LDN (Cowie et al., 2018: 27, 31). This reflects the ecosystem approach’s conviction that change is inevitable, and that the role of conservation should be to strengthen ecosystem functionality and resilience (Shepherd 2004). Okpara et al. (2018) suggest resilience can be strengthened by moving to a social-ecological system (SES) based LDN approach. This would reposition humans as a part of nature, thereby valuing local knowledge and encouraging a shift to ecological reasoning which seeks to avoid degradation (Okpara et al. 2018).

2.3.1 *Findings*

Interviewees understood IEM as meaning holistic management involving multiple sectors and ministries, planning LDN projects at the landscape scale and aligning efforts to combat land degradation with other land-related goals such as those around rural livelihoods, combatting biodiversity loss, and mitigating or adapting to climate change.

- **Involvement of relevant government ministries and agencies**

LDN national working groups have included representatives from relevant natural resource management ministries, such as ministries of environment, water, forestry, agriculture, and mining, alongside relevant agencies or committees such as those on desertification or biodiversity.

LDN decisions in Peru were slowed down because natural resource ministries lacked the authority to make final land use planning decisions and the higher decision-making authority/inter-ministerial committees were not involved. Another interviewee noted that overlapping responsibilities and different mandates of ministries in relation to land-based activities meant disagreements slowed down LDN target setting and planning: ‘*it’s a challenge*

to have different departments singing from the same hymn book'. Kapović Solomun et al.'s (2018) account of LDN target setting in the Republic of Srpska in Bosnia and Herzegovina reports similar disagreements in the LDN target setting process between different institutions with mandates over the same land.

An interviewee reported that China has a process where the different natural resource ministries have to review land use plans to ensure they follow the principles of doing no harm to biodiversity, benefitting climate change mitigation and reversing land degradation.

- **Engagement of different land-based industries**

In the seven LDN target reports reviewed (see table 4), targets for reducing land degradation or rehabilitating and restoring lands were identified for different land classes and/or regions. Potential measures to achieve these were also included in the reports. Communicating LDN to business should focus on explaining what it means to businesses in 'their specific operational context' (WBCSD 2015), and so should therefore focus on communicating these targets and measures to their relevant sectors.

However, there was limited private sector involvement in LDN national working groups, with most working groups including only two or three private sector actors. One interviewee stated that to implement LDN it would be necessary to '*engage industry players in the food and beverages, timber, textiles and other sectors that rely on soil health and productivity of land directly for sourcing inputs and materials for their operations*'. This will be essential in planning LDN projects and programmes.

- **Telecoupling**

An interviewee from the SPI highlighted that currently there is insufficient consideration of "telecoupling" effects of globalised production and consumption patterns in LDN. In brief, telecoupling is 'an umbrella concept that refers to socioeconomic and environmental interactions over distances' (Liu et al. 2013). Its consideration is consistent with principle 3 of the ecosystem approach: 'Ecosystem managers should consider the effects (actual or potential of their activities on adjacent and other ecosystems' (Shephard, 2004: 2). This entails an analysis of coupled socio-ecological systems, bringing together political economy and ecological analysis.

In the context of LDN, this would involve a process-based analysis of land grabbing, forced human displacement and production patterns (Okpara et al. 2018). For example, Brazilian soy is being used to feed German cattle, causing tropical deforestation in Brazil and nitrate overaccumulation in Germany (Lenschow, Newig, and Challies 2016). Therefore, accounting for telecoupling effects in LDN would involve consideration of how LDN is achieved across regions and globally.

The 2011 Ad Hoc Working Group on Scientific Advice to the UNCCD proposed regional science and technology hubs were established alongside the SPI (M. Akhtar-Schuster et al. 2016). Such hubs could provide useful analysis of the regional connections and effects of implementing LDN measures nationally to policy makers. Whilst COP 11 encouraged their formation, none have yet developed (M. Akhtar-Schuster et al. 2016).

- **Integrated ecosystem managements in LDN investments**

LDN fund interviewees reported that they seek to take a landscape approach by not encouraging monocrops or community reliance on a single cash crop, aiming for multiple

community benefits, integrating management of different land and by encouraging investments and training to enable processing of raw commodities. Further analyses will be beneficial at the country level to examine existing investment portfolios from a range of actors to evaluate the extent to which ecosystem management is reflected.

2.3.2 Recommendations

Many principles of ecosystem management are implicit in the LDN Scientific and Conceptual Framework, however, there is still work to be done to incorporate ecosystem management into LDN implementation. It is crucial to ensure that ecosystem management is decentralised to the lowest appropriate level which may prove challenging when targets are set at the national scale. Greater attention is needed to foster cross-sectoral action and interdisciplinary approaches for LDN, and to ensure LDN targets are owned and delivered at the sub-national level.

1. Stronger insights are needed into the telecoupling effects of LDN activities to inform planning and investment decisions, including consideration of how land restoration and SLM affect food and commodity imports and exports.
2. Investment guidelines and best practice examples are needed to inform policies and investments in SLM and land restoration and to promote ecosystem management.
3. The LDN process should build on progress towards ecosystem management that is reflected in commitments to landscape restoration: for example, commitments to the Bonn Challenge to bring 150 million hectares of the world's deforested and degraded land into restoration by 2020.

2.4 Natural Resource Governance and Equity

'Natural resource governance should be strengthened to enable equitable LDN outcomes.'
IUCN 2015 Technical brief

This recommendation recognises that LDN, like any form of land management, has implications for social and environmental justice (IUCN 2015). REDD+ projects, another global initiative addressing land use, have been criticised for not involving local people in decision making, undermining local land rights and for recentralising forest governance (Visseren-Hamakers et al. 2012; Phelps, Webb, and Agrawal 2010). The LDN-SCF recognises the importance of learning lessons from REDD+ programs to prevent counterbalancing interventions from restricting pre-existing land use and causing conflict among land users. As Welton et al. (Welton, Biasutti, and Gerrard 2015) note, in comparison to REDD+, 'LDNW [LDN World] has enormously ambitious aims', by including '*all* types of land degradation within its purview'. Therefore, the need for inclusive and participatory governance and equitable outcomes for LDN is all the greater. The issue of participation has largely been addressed in section 2.2, so this section will focus on land rights and gender empowerment as key components of good nature resource governance.

The IUCN (2015) technical brief highlighted land and resource tenure rights as central to achieving an equitable LDN saying 'The rights of men and women and indigenous peoples to access and to manage land must be upheld, paying particular attention to lands that are not legally titled, including communal lands and lands to which indigenous peoples or ethnic groups hold customary rights'. This highlights the importance of different types of land and resource rights, and the rights of different sorts of people and groups to hold them. The

principle of Free, Prior and Informed Consent, an accepted norm in development projects is also highlighted in the Technical Brief.

Likewise, the LDN-SCF expresses a concern with land rights, embracing the tenets of FAO's Voluntary guidelines on the responsible governance of tenure of land, fisheries and forests (VGGTs). In regard to governance, the technical brief advises that it should be at the 'lowest practical and accountable level', and that knowledge of land users should better inform decision-making processes (IUCN, 2015: 8). The conceptual framework also acknowledges the valuable role of local knowledge in achieving LDN and suggests that validation of land use decision at the local level should be a prerequisite to interventions.

The technical brief (IUCN 2015) also emphasises the different land and resource rights men and women often have and the different roles they often play in land use and management. Women are often excluded from planning and decision-making, particularly on large-scale projects, and many land tenure systems formally or informally deny women the right to own and inherit land (Collantes et al. 2018). In four workshops conducted by the Ethiopian government on mainstreaming gender in LDN, participants highlighted the differing impacts land degradation and associated issues has upon men, women and youth (see Table 6). This shows that women face more challenges than men from land degradation, and that women and youth are more likely to die due to it than men.

The LDN-SCF seeks to account for women's exclusion from decision-making and the greater challenges that are posed for them by land degradation, primarily by providing guidance on how gender can be considered in 'the design of preliminary assessments' (Orr et al. 2017). This calls for collecting gender disaggregated data in a gender sensitive manner, budgeting and planning for collection of such data, working with a gender expert in the process and making use of FAO's Gender and Land Rights database which highlights the major challenges to the fulfilment of women's land rights (Orr et al. 2017). Samandari (Samandari 2017) notes that women can be 'agents for achieving' LDN if five policy areas are addressed: 'balancing of workloads between men and women; land tenure security; inclusion in decision-making; access to sustainable land management techniques and knowledge; and improving subsistence farming resilience'. Governments are the key actors responsible for implementing this through the incorporation of gender assessment into the target-setting process and the development of LDN policies and programmes in a gender-responsive manner (Collantes et al. 2018).

Table 6 Comparison of land degradation challenges for women, men and youth in Ethiopia.

General	Women	Men	Youth
Poverty	Higher work load	Increased work load	Increased work load
Migration	Health problems	Health problems	Health problems
Demographic imbalances	Long distance travel for fetching water	Low income	Less income
Disease	School dropout	Migration	Migration to cities
Reduced life expectancy	Death	Social crisis	School dropout
Loss of dignity			Death
Health problems			Unemployment
			Economic insecurity

Poor care of children Water, fuel wood scarcity	Carry more than 25 litres of water twice a day		Illiteracy Adultery Dependency Exposure to violence
Gender-based violence	Firewood shortage		
Malnutrition	Moral deterioration		
Higher costs of fuel and water	Social interaction Malnutrition Infertility		

2.4.1 Findings - Land Tenure

- **Voluntary Guidelines on the Responsible Governance of Tenure (VGGTs) and the UNCCD process**

The CSO observer to the SPI reported that the use of the Voluntary Guidelines on the responsible Governance of Tenure (VGGTs) as a standard to ensure responsible governance of tenure in the LDN-SCF was proposed by civil society. Another interviewee suggested they were effective guidelines because they were simplified enough and could be easily appropriated in national policy and legislation. CSOs see the recognition of the VGGTs, as the basis for governance of LDN, as a big opportunity to tackle concerns about land grabs and lack of community participation in LDN (van Haren 2016).

The VGGT's emphasis on marginalised people is important for LDN, due to concerns that the poor and most marginalised might be evicted from their land or pushed onto degraded land. A CSO interviewee raised concerns about whether LDN would respect the rights of these already marginalised people: particularly would these people have access to land during restoration or rehabilitation, and would they get the jobs and benefits of the restoration/rehabilitation process. This mirrors the concerns raised by Crossland et al. (Crossland et al. 2018), whose study in Ethiopia showed that households with greater pre-existing natural, social and financial resources benefitted more restoration projects. Local people with large farms and off-farm income benefitted more from restoration, than those without land, or those whose grazing area was reduced by the restoration project (Crossland et al. 2018). This shows the potential of LDN to compound existing inequalities. Consequently, as Crossland et al. (Crossland et al. 2018) conclude, in designing strategies to achieve LDN 'it will be crucial to consider who will benefit and who will be disadvantaged by different options and to take measures to give a voice to, and to address the needs of, those who may be disadvantaged'.

CSOs at COP 13 requested the UNCCD secretariat and the Parties adopt the VGGTs in the decisions made at the COP (CSOs 2017). The COP made the decision to note the VGGTs and recognise their potential contribution to the UNCCD 2018-2030 strategic framework (decision 7) but did not adopt any binding decisions (ICCD 2017b). According to one CSO interview, CSOs are going to '*push for a standalone decision regarding land rights*' at the next COP - '*something that helps to provide countries with guidance on this topic*'.

Key principles of the VGGTs. Sources: FAO (FAO 2012); Munro-Faure and Palmer (Munro-Faure and Palmer 2012).

The VGGTs, which were endorsed by the UN Committee on World Food Security in 2012, are the first international instrument on the governance of tenure. They provide principles and standards for governance of land tenure and provide a framework that states, and other actors, can use in formulating policies and legislation. They place emphasis on ‘vulnerable and marginalised people’ and achieving food security and a right to food for all. The VGGT’s identify two sets of principles for responsible action:

Guiding principles	Principles of implementation
1. Recognise and respect all legitimate tenure right holders and their rights.	1. Human dignity
2. Safeguard legitimate tenure rights against threats and infringements.	2. Non-discrimination
3. Promote and facilitate the enjoyment of legitimate tenure rights.	3. Equity and justice
4. Provide access to justice to deal with infringements of legitimate tenure rights.	4. Gender equality
5. Prevent tenure disputes, violent conflicts and corruption.	5. Holistic and sustainable approach
	6. Consultation and participation
	7. Rule of law
	8. Transparency
	9. Accountability
	10. Continuous improvement

- **Diverse tenure and use systems**

A common theme that occurred in interviews with CSOs, international organisations and the LDN Fund was the contribution that common property regimes, traditional land management practices, cooperatives and nomadic herding systems could have to achieving LDN. This is bolstered by the VGGTs which seek to secure and promote good governance ‘of all forms of tenure, including public, private, communal, collective, indigenous and customary’ (FAO 2012).

Studies have shown that communal property regimes can facilitate SLM and land restoration activities. Ostrom (1990) famously showed how common property regimes, sharing eight common design principles, have successfully managed resources sustainably for hundreds of years. These common property regimes have been successful in varied geographical contexts, including forests and mountain meadows in Japan and Switzerland, and irrigation systems in Spain and the Philippines. At least two studies have linked common property regimes with achieving LDN. Cao et al.’s (Cao et al. 2018) study shows that a jointly managed property regimes on the Qinghai-Tibetan Plateau creates less grassland degradation than individual private property regimes, by allowing livestock mobility and creating community resilience through the sharing of labour, pasture and food. Studies have also shown that the promotion of the traditional ‘Al-Hima’ land management system in Jordan can combat land degradation and deliver economic benefits to Jordanian society (Myint and Westerberg 2015; Laban 2015). Indeed, LDN fund interviewees reported that their blended finance model enabled

them to fund cooperatives in the developing world, such as a project with cooperatives in Peru, which many other investors would not do.

Interviewees highlighted that the challenge was reformulating national and subnational governance and land tenure systems to accommodate mobile peoples and/or common property land use regimes. One interviewee suggested that the process for community rights to be recognised often was very complex and so technical assistance was needed. It was also noted that mobile pastoralists needed mobility rights and corridors between grazing lands. Furthermore, it was emphasised '*we need to have more guidance on the operative part, meaning governance, land tenure, land rights*' for LDN implementation, something which would require more '*qualitative evidence*'.

- **Monitoring land rights**

It was noted in section 2.1 that LDN targets and monitoring currently looks at the three biophysical LDN indicators. However, progress has been made in other SDG indicators around land tenure, including indicator 1.4.2 on tenure rights, indicator 5.a.1 (a) on the proportion of the agricultural population with ownership or secure rights over agricultural land, which is then disaggregated by gender and tenure type in indicator 5.a.1 (b) (see Table 6). Data collected for these indicators could be triangulated relatively easily with data collected under LDN monitoring to show the relationship between land tenure, livelihoods and land conservation (Sylla and Nairesiae 2018).

The International Land Coalition is currently developing a tool called 'Dashboard' which 'is a monitoring tool to the SDGs, broadening land indicators and promoting an eco-system of data' (personal correspondence). This is comprised of 36 common indicators, which are organised around ILC's ten commitments to land governance for and with people (Hershaw 2018). Each commitment has a legal indicator assessing the policy framework to address the issue at hand, an implementation indicator which looks at how such policies are implemented on the ground and an indicator related to outcomes (Hershaw 2018). It will enable CSOs to monitor the implementation of the VGGT principles and therefore better hold government to account (Hershaw 2018).

The ten commitments of the ILC relate to principles of good land management, from commitment 1 on secure tenure rights, to commitment 3 on diverse tenure systems to commitment 9 on effective actions against land grabbing (ILC 2016). Consequently, the dashboards' measuring of the implementation of these commitments will be highly useful to monitoring the successful implementation of LDN from a land governance perspective.

Table 7 shows the proposed legal (6a) and implementation (6b) indicators for commitment 6 on 'locally managed ecosystems'. The impact indicator has yet to be finalised, but is likely to measure community control over forest resources. The legal indicator (6A) utilises the adoption of an LDN commitment to measure whether the legal and institutional environment is favourable for locally managed ecosystems. The dashboard will provide useful information for LDN planning and monitoring by correlating the relationship between a commitment to LDN and institutional support for local participatory management (indicator 6A-B), land use plans that account for rights of local land users (indicator 6B), and community control over forest resources (6C).

Table 7 ILC's indicators to assess 'locally managed ecosystems' in its Dashboard monitoring tool (the Dashboard is being piloted so indicators may be reviewed). Source: personal correspondence.

6A	<p>Legal and institutional framework in place at national level promotes the local and sustainable management of ecosystems</p> <p>Sub-indicators:</p> <ul style="list-style-type: none"> A) Adoption of Land Degradation Neutrality (LDN Commitment) – UNCCD B) Local Participatory Management of Land is Included in National Laws, Policies or Programs
6B	<p>Rural districts where land use change and land development are governed by sustainable use plans that take account of the rights and interest of the local land users and owners</p>

- **Initiatives on land rights and LDN**

LDN country consultants who were interviewed were asked about how they were addressing land rights in their respective country's LDN programs. In Nigeria, land has been vested in the government since 1978, so an LDN transformative project has sought to create security of tenure by granting long term leases which are a minimum of 50 years. In Ethiopia, the government is championing a program which provides certificates of land ownership for people whose land use and rights previously had little legal recognition. This program also promotes gender equality by granting co-ownership to men and women at the household level (see Collantes et al., 2018). In China, land tenure maps are correlated with land planning maps, to identify the land owners and involve them in decision making and benefit sharing from developments.

- **The LDN Fund**

The LDN Fund's Environmental and Social Safeguards utilises 'the VGGT as guidance in constructing the Environmental and Social Standard on land tenure' (Mirova 2017). Standard 7 on Land Tenure seeks to ensure land rights are protected, even if they are not by international law, which interviewees explained was achieved by assessing all claims to land and determining what claims are legitimate. This is aided by a due diligence process which looks at the historical status of land over seventy years and speaking to local NGOs to gain an understanding of current and historical land use. Additionally, a complaint and compliant mechanism is being established, in which complaints will first sought to be dealt with at the project level, before being escalated to the fund level, and if that does resolve a grievance an external judicator will arbitrate.

Standard 6 on 'land acquisition and involuntary resettlement' is important to land rights also, with resettlement considered involuntary when 'Project-Affected Parties do not have the right to refuse land acquisition or restriction on land use'. Resettlement can refer to being physically displaced or economically displaced, meaning 'loss of assets or access to assets that leads to loss of income sources or other means of livelihood' (Mirova 2017). A resettlement action plan and livelihood restoration plan are then established to compensate affected parties (Mirova 2017). However, this standard seeks to avoid involuntary resettlement by

using Free, Prior and Informed Consent (FPIC) where a project might affect a community's land use, and to explore alternative project designs where displacement may take place (Mirova 2017). This still allows land acquisition and involuntary resettlement 'when avoidance is not possible', though it is unclear what criteria makes land acquisition unavoidable (Mirova 2017). This should be clarified, as a CSO interviewee expressed concerns that local communities might be excluded from living on and using their land whilst land restoration takes place.

2.4.2 Findings - Gender

- **The UNCCD**

IUCN's Environmental and Gender Index (EGI) (Prebble, Gilligan, and Clabots 2015), showed that at the 2011 COP 13 in Namibia the representation of women was low (see Table 8), with the UNCCD representation lower than for the other Rio Conventions. However, the UNCCD has since sought to become more gender representative and gender sensitive. The UNCCD launched a 'Advocacy Policy Framework on Gender' in collaboration with IUCN at COP 11 in 2013, which focused mainly on mainstreaming gender in the policy process (UNCCD 2013; IUCN 2011).

Table 8 Women's representation at UNCCD COP 11. Source Prebble et al. (2015).

Groups present at COP11 in Windhoek, Namibia	Women's representation
Government delegates	26%
Chief Negotiator positions	26%
UNCCD bureau positions	2/13
NGOs dedicated to gender issues and women's empowerment	0
NGO representatives	48%

The UNCCD then launched a Gender Action Plan (GAP) at COP 13 in 2017 which seeks 'to address the gender inequalities that disproportionately undermine women's effectiveness as agents of change in the implementation of the convention' (UNCCD 2017a). This provides a mandate for parties to take action in four priority areas. These are: 1) participation in all levels of decision making of UNCCD initiatives; 2) integrating women's economic empowerment; 3) strengthening women's land rights and access to resources; 4) and enhancing women's access to improved knowledge and technologies that relate to an effective UNCCD (UNCCD 2017a). To address these priorities, it suggests working with women's organisations, ensuring the allocation of relevant budget expenditures and monitoring and reporting progress made to address gender inequalities (UNCCD 2017a). These are similar recommendations to those made in the LDN-SCF (Orr et al. 2017).

- **The LDN target setting process**

The rate of incorporation of gender concerns into the LDN pilot project was low, with only two out of fourteen project reports mentioning women or gender issues, though there was some effort to incorporate gender balance into LDN national working groups (Collantes et al. 2018). One pilot country, Ethiopia, has since identified gender mainstreaming and livelihoods

as two of its nine indicators to be achieved under LDN and conducted a study on how gender can be integrated into LDN (ICCD 2017a).

In the seven target setting reports reviewed for this report, only four made reference to women or gender issues. In these, gender equality was recognised as a goal which LDN activities could be leveraged to reach and the importance of women's participation was emphasised in two reports. However, all lacked the extensive preliminary gender analysis suggested by the LDN-SCF (Orr et al. 2017).

- **Challenges**

Several challenges to mainstreaming gender in the LDN process were identified by interviewees. Firstly, there is a persistent tendency to leave gender analysis and women's issues as an afterthought, meaning time and money was not allocated to them. Secondly, there is often a lack of gender knowledge amongst consultants hired to conduct the LDN TSP and governments more generally. Thirdly, there is insufficient guidance on how to mainstream gender in LDN. Fourthly, cultural barriers to women's participation in decision-making was seen as a difficult issue to overcome.

- **Opportunities**

In 2017, IUCN's Global Gender Office established a helpdesk through which IUCN is advising countries on the consideration of gender in LDN target setting reports and transformative project concept notes. Additionally, some interviewees highlighted that gender experts had been involved in the target setting process, which had helped to identify areas in which LDN could address gender issues. Guidance on best practice in mainstreaming gender in LDN is also emerging (Mor 2018; UNCCD 2017e; Samandari 2017; Collantes et al. 2018). IUCN's gender-responsive restoration guidelines (IUCN 2017a), part of its Restoration Opportunities Assessment Methodology, provides a useful checklist of procedures that provides guidance on how to address gender issues in land restoration. This is reproduced in Table 9.

SDG indicators 1.4.2, 5.a.1 and 5.a.2 (see table 10) monitor information on women's land rights and could help in planning LDN initiatives to address women's land rights, as well monitoring how LDN programmes affect gender empowerment. These three indicators currently have Tier II status meaning they have established methodologies but regular data is not yet being collected (LandPortal, n.d.). ILC's dashboard also monitors 'equal land rights for women' through three indicators and therefore may provide a useful tool for monitoring progress towards women's land rights.

Table 9 Gender Procedures checklist from IUCN's (IUCN 2017a) gender-responsive restoration guidelines

Objective	Procedures
Women are empowered and leading as major stakeholders	Identify potential groups (NGOs, government officials)
	Ensure women's participation in all events organised by the project
	Build the capacity of women to empower them and ensure meaningful participation
Capturing the success stories of women in restoration,	Document and systematise success stories as part of monitoring and evaluation

analysing impact and monitoring.	Elaborate gender indicators for showing impact on women and men
Knowledge products must ensure gender considerations	Gender specialist of working groups provide inputs
	Circulate to national gender/women's experts/advocacy groups
	Gender working group provides inputs
Elaboration of studies/research/consultancies to incorporate gender considerations	Include gender analysis as a requirement in the Terms of Reference (TORs)
	Gender specialist of working groups provides inputs
	Circulate to national gender/women's experts
	Gender working group provides inputs
All policies or related operational documents (national, sub-national) must be gender responsive	Establish an advocacy group on gender
	Gender specialist of working groups provides inputs
	Circulate to national gender/women's experts/advocacy groups (gender focal point at ministries)
	Gender working group provides inputs
Gender message included in training and awareness events/campaigns	National gender focal point and gender working group draft standard gender message
	Fact sheet on gender and restoration

2.4.3 Recommendations

Land tenure is widely agreed to be important for achieving LDN, as it provides security for investing in land to financiers and farmers, and additionally, land tenure is central to ensuring local people, especially the most marginalised, benefit from efforts to achieve LDN. Governments should ensure that investments in LDN achievement contribute to strengthening and upholding land tenure and should take action to monitor the impact on the ground. Time and resources should be allocated during LDN planning processes for gender assessments of LDN projects, and LDN-activities which empower women should be encouraged.

1. The contribution of diverse land tenure and use system to achieving LDN should be recognised. Legislation, policy and finance should be developed to support and upscale such systems which enhance SLM and land restoration.
2. The LDN process must seek to ensure local people are not disposed of their rights to own, use and access land during land restoration projects. Efforts should be made to ensure marginalised groups also benefit from restoration and SLM actions.
3. Further guidance and support should be provided on securing land rights and women's empowerment during LDN implementation. IUCN's (IUCN 2017a) guidelines for gender-responsive restoration may be informative for this.

2.5 The Response Hierarchy

One of the key concerns for the conservation community, expressed in the IUCN (2015: 7) Technical Brief was that the LDN counterbalancing mechanism could be ‘interpreted as a “license to degrade” whereby the restoration of one ecosystem is used to justify the degradation of another’. Consequently, the technical brief (2015) advocated for a mitigation hierarchy which prioritises avoidance of land degradation, followed by minimisation through improved land management, with restoration of land and associated ecosystem services being a last resort. The Technical Brief also highlighted that degradation in one ecosystem type should be counterbalanced only by restoration in an ecosystem of the same type, and at the scale of a particular ecosystem or watershed in order to replace the lost ecosystem services in an area.

The LDN counterbalancing mechanism - the offsetting of degradation by restoration elsewhere - seeks to ensure a no net loss of land to degradation, however, this approach has been criticised on a number of grounds by conservationists. Firstly, gains through restoration are supposed to be equivalent to losses to degradation, but there is often a time lag between the replanting of vegetation and the restoration of the full set of ecosystem services, and it may not be possible to restore the full range of ecosystem services (Gibbons and Lindenmayer 2007). As well as not being able always to restore ecosystem complexity, restoration may struggle to restore the social, cultural and historic values associated with land (Sullivan and Hannis 2015). There are a number of practical difficulties to enforcing a mitigation hierarchy, for example, when avoidance is not considered until after a project has started development it may be locked in, or the political will and regulatory systems might be inadequate to enforce the rules (Phalan et al. 2018). See Table 10 for a summary of the potential reasons a mitigation hierarchy might fail.

In response to the concerns of conservationists, highlighted in IUCN’s Technical Brief, the Conceptual Framework adopted a mitigation hierarchy, which was relabelled a Response Hierarchy of ‘Avoid > Reduce > Reverse land degradation’ which ‘articulates the priorities in planning LDN interventions’ (Orr et al. 2017). This Response Hierarchy should guide integrated land use planning to pursue ‘the most appropriate combination of mitigation options before accepting (potentially) degrading land use change’ (Orr et al., 2017: 63).

Additionally, a ‘like for like’ principle was introduced, which says counterbalancing of gains and losses should be done on a clear ‘like for like’ basis, within the same ecosystem/land type (Orr et al. 2017). An exception to this is when there is a clear net gain through restoration of another land type, though the conceptual framework suggests clear rules must be established *ex ante* on what a net gain is (*ibid*). This seeks to ensure there is ‘no net loss’ of ecosystem services and therefore maintain ecosystem service provision and resiliency (Orr et al. 2017). The ‘like for like’ principle reflects IUCN’s (IUCN 2015) recommendation that LDN should not allow the offsetting of degradation in one ecosystem type against the restoration in another ecosystem type.

The IUCN (IUCN 2015) technical brief also recommends that ‘LDN targets should be set at the individual ecosystem or watershed scale’. However, the LDN-SCF suggests the counterbalancing mechanism ‘should be implemented at the spatial resolution of the biophysical or administrative domains at which land use decisions are made’ (Orr et al. 2017). This is in order to facilitate the integration of LDN into existing planning processes, to enable effective implementation rather than LDN becoming seen as an additional process (Orr et al.

2017). By positioning LDN in existing planning processes, LDN implementation can be better tied to other development goals and an understanding of the drivers of land change (Metternicht 2018).

Table 10 Reasons for failure of plans and policies to avoid impacts on biodiversity and ecosystem services.

Reason for failure	Possible solutions
Political will	
Lack of political will to support impact avoidance	Harness & broadcast public support for conservation; expose conflicts of interest; reform institutions giving private interests undue influence
Culture within planning authorities of not valuing biodiversity	Make biodiversity education mandatory for all staff of planning authorities
Regulation	
Legal protection insufficient to ensure impact avoidance	Incorporate mitigation hierarchy principles into legislation; resist efforts to weaken legislation
Ineffective judicial frameworks for holding decision makers to account	Make full use of those judicial frameworks that are effective; lobby for stronger legislation
Failure to avoid impacts to biodiversity that is not considered important	Set avoidance requirements for biodiversity of all kinds, including common species & habitats
Weak requirements for restoration & offsetting make remediation more attractive than impact avoidance	Enforce detailed, stringent requirements for restoration & offsetting, including higher bond requirements & penalties for failure to remediate
Process	
Impact avoidance not considered until Environmental and Social Impact Assessment	Make early stakeholder engagement the industry norm; assess biodiversity risks before Environmental and Social Impact Assessment
Failure to anticipate & identify likely impacts	Audit impact assessments; require assessment of indirect & cumulative impacts
Project cancellation not considered	Require assessment of project cancellation option
Poor communication between ecologists, engineers, other technical consultants	Require direct cooperation between consultant teams as part of Environmental and Social Impact Assessment contract
Failure to adhere to plans	Hold governments, companies accountable to plans
Decision to proceed is made on basis that remediation will compensate for impacts	Separate the decision to proceed from any assessment of remediation possibilities
Capacity	
Lack of resources & ecological expertise within planning bodies	Dedicate resources to create ecologist roles within planning bodies; improve planner-ecologist liaison
Poor coordination between conservation & planning authorities	Provide resources to integrate conservation planning into local, regional & national land-use planning
Lack of permanent protection for avoided areas	Develop voluntary or regulatory mechanisms to ensure avoided areas receive long-term protection
Technical knowledge	
Biodiversity data inaccessible or difficult to use	Improve data availability through platforms that increase ease of use by non-specialists
Important biodiversity not prioritized & identified before development	Comprehensive assessments of important biodiversity at local, regional & national levels
Limited understanding of trade-offs	Incorporate trade-off analysis into Environmental and Social Impact Assessment
Perception that impact avoidance is too costly	Neutral analysis of costs & benefits of impact avoidance, including non-monetary
Discounting of future costs relative to costs today	Estimation & communication of future costs & limitations of restoration & offsetting
Unrealistic assumptions about technical capacity to restore makes remediation more attractive than avoidance	Collate evidence on efficacy of restoration & offsetting; communicate limits of remediation; use offset multipliers commensurate with uncertainties

Reproduced from Phalan et al. (2018)

2.5.1 Findings

- **The response hierarchy in national policy**

It was reported by some interviewees that the LDN response hierarchy was considered in some form in their countries' planning system. In China land use is zoned around a red line which seeks to ensure that the areas with vital ecosystem services are maintained as is the total amount of arable land. Any development that will reduce arable land or land in which vital ecosystem services are provided must compensate for it through restoration. However, '*conservation and preservation*' is the priority before restoration, building on China's 2001 anti-desertification law which emphasises the 'responsibility and obligation of society in the prevention and control of desertification' (Bao et al. 2017). This corresponds with Kapović Solomun et al.'s (Kapović Solomun et al. 2018) to introduce "“avoid and reduce land degradation” on local planning systems'.

Meanwhile, in Ghana a land mitigation banking scheme is being establish that would require the private sector to mitigate their impacts on biodiversity, or otherwise to pay for a land offset from the scheme. This approach seeks to engage the private sector in avoiding land degradation and biodiversity loss, by creating a financial cost for them when they degrade land. This mirrors wetland mitigation banking programs which have been established to encourage the private sector not to degrade wetlands (Welton, Biasutti, and Gerrard 2015). In Nepal, to keep forest cover at 44.7% of total land cover '*rather than to degrade more and try to restore, we [the government] are trying to maintain existing forest within the current baseline*'.

- **Hotspots**

The LDN target setting guide suggests that during the LDN-TSP national working groups should identify hotspots of land degradation based on an understanding of land degradation trends, the areas exposed to land degradation and indirect drivers. As Table 4 indicates, countries have identified hotspots in the TSP, with hotspots selected as priority areas for investment and transformative LDN projects. However, as Table 4 shows, the criteria on which these were selected varies, with some picked as already degraded sites and others selected as areas of high land quality but are declining. The LDN-SCF offers one definition of a hotspot as an 'area where land condition is good but deteriorating' (Orr et al., 2017: 71), although, as an interviewee from the UNCCD Global Mechanism explained, hotspots must be defined nationally.

From a conservation perspective picking already degraded land may enable unique or important ecosystem services or species to be protected that might otherwise be lost. However, the selection of hotspots as priority areas could go against the logic of the response hierarchy which prioritises actions which avoid land degradation before those which restore land. Furthermore, investors are often more interested in the restoration of land than SLM, because it shows a visible benefit and outcome to investment. This is beneficial for investors from both a CSR perspective and also alleviates worries that it is difficult to measure the benefits of investment in already healthy land, meaning investment could be misused. However, investment in avoidance strategies can be encouraged by showing its relatively lower cost than restoration and by showing the cost of allowing land degradation to take place for business (see section 2.7).

- **Like for like principle**

Interviewees reported they were trying to follow the like for like principle in counterbalancing, however, it is early in the process to assess this and a more thorough study will be needed. In implementing the like for like principle one interviewee highlighted the importance of drawing correct boundaries between land cover types. This is particularly important in South Africa, where the FAO land cover classes used for LDN reporting were not seen as acceptable in the country where biomes are the preferred term to accurately describe South Africa's ecosystems.

- **Positioning the response hierarchy within an integrated land use planning system.**

The importance of integrating the response hierarchy within the wider land use planning system was highlighted by interviewees. This would enable the response hierarchy to be tied to an analysis of the drivers of degradation, therefore meaning resources could be prioritised to address these. It would also allow an optimum balance of investments and projects along the different stages of the response hierarchy to be identified, as restoration activities and SLM can be complementary.

Interviewees suggested that information on the distribution of areas under SLM and land which has protected area status (not that these categories are mutually exclusive), could inform use of the response hierarchy. Information on this will be collected for SDG Targets 2.4.1 and 15.1.2 so would not be an additional burden. The IUCN-UNEP World Database on Protected Areas (WDPA) provides the most comprehensive global map on protected areas and is an important information source for LDN planning⁸. Additionally, providing land use modelling and estimates of the cost of different land use scenarios could encourage actions to avoid land degradation which is significantly cheaper than restoration.

It was also highlighted during an interview that the conservation community has influenced the distinction in the conceptual framework between two ways of reversing land degradation. Firstly, rehabilitation which refers to 'actions undertaken with the aim of reinstating ecosystem functionality, where the focus is on provision of goods and services' (Orr et al., 2017: 17). Secondly, restoration which 'seeks to re-establish the pre-existing ecological structure and function, including biotic integrity' (ibid: 18). This should give policy-makers more clarity in managing different areas towards different SDG goals, environmental commitments and national development priorities.

2.5.2 Recommendations

The LDN Response Hierarchy addresses a range of actions (protection, sustainable management and restoration) that are relevant to different actors, highlighting the importance of engaging multiple stakeholders in the LDN process. LDN implementation plans need to reflect this diversity of responses: they should include clear measures to ensure that responses are prioritised appropriately and they need to mobilise appropriate actors for different response measures. One way of doing this would be to instate the response hierarchy as a principle into land use planning.

1. The Global Mechanism of the UNCCD should provide clear guidance on what constitutes a 'hotspot' and how it fits within the LDN response hierarchy.
2. A typology of LDN actions and actors can be included in LDN implementation strategies, identify how they might enable avoidance, reduction or reversal of land degradation.

⁸ Available at <https://protectedplanet.net/>

- Provision of land use change scenarios, such as those being developed by the ELD, would be useful for developing an appropriate balance of actions along the response hierarchy.
3. Mapping protected areas and areas currently under SLM may help understand where resources to achieve LDN should be directed.
 4. Greater efforts are needed to avoid land degradation, through regulations and/or financial incentives. Payments for ecosystem services could provide one way to reward SLM practices where the benefits accrue to society rather than directly to farmers.
 5. Target Setting reports and transformative project concept notes identify drivers of land degradation. LDN planning should, where appropriate, address the drivers of land degradation, as well as restoring or sustainably managing land.
 6. Empirical research is needed on the implementation of the like-for-like principle in LDN interventions.

2.6 Synergies

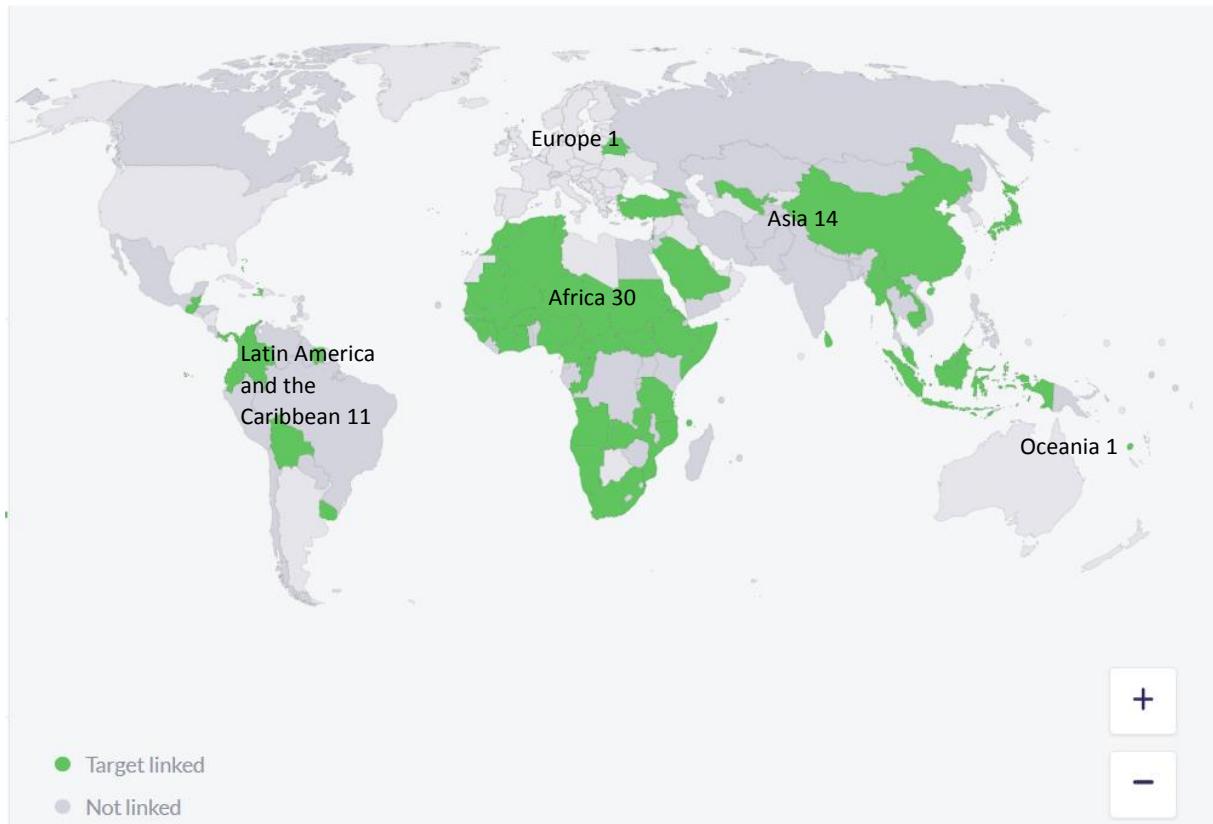
'Achieving LDN should build on the synergy with other conservation approaches and targets.'
IUCN Technical Brief (IUCN 2015)

The recommendation that LDN should build on synergies with other land use and natural resource conservation approaches was made because IUCN was eager to make clear that land degradation cannot be handled in isolation, for it is both a cause and effect of negative trends in biodiversity conservation and climate change resilience. Moreover, there is a concern LDN may be seen as an additional commitment for national governments, whose resources are often already stretched. Instead, LDN should be seen 'as an opportunity for greater value-addition through the most integrative approaches' (IUCN 2015). The necessity for synergies was also recognised in COP 12 decision 9 which called on the secretariat to harmonise 'land-based progress indicators across the Rio Conventions' and for the Secretariat and Global Mechanism to seek new partnerships to implement the Convention (UNCCD 2016a). Likewise, synergies are emphasised in the LDN-SCF, which states that the second of LDN's three objectives is to 'Seek synergies with other social, economic and environmental objectives' (Orr et al. 2017).

As Akhtar-Schuster et al. (Mariam Akhtar-Schuster et al. 2017) note, the 'UNCCD's brand is "land"', and this land-based approach can be the anchor for blending actions to meet the goals of the three Rio Conventions. This is because land is central to a number of sustainable development challenges including poverty, food and water security, migration, tackling climate change and biodiversity loss and more (Mariam Akhtar-Schuster et al. 2017; Laban, Metternicht, and Davies 2018). Global soil organic carbon stocks store more carbon than the atmosphere and terrestrial vegetation combined, making soil erosion a major contributor to climate change (Laban, Metternicht, and Davies 2018). The UNFCCC has long recognised terrestrial ecosystems as carbon sinks and land degradation as a threat to them, but the 2015 Paris agreement gave greater emphasis to the conservation and enhancement of greenhouse gas sinks and reservoirs (Boer and Hannam 2017). Likewise, the avoidance of land degradation is implicit in the CBD's goal to conserve biological diversity and to enable sustainable use of that diversity by current and future generations (Boer and Hannam 2017). The LDN-SCF states LDN seeks to address land degradation in protected areas, meaning synergies should be established in LDN implementation with the CBD which has used protected areas as its main tool of implementation (Orr et al. 2017).

As well as synergies with the three Rio Conventions, LDN has multiple synergies with the 17 SDGs. Indeed, the IPBES (IPBES 2018) assessment report on land degradation and restoration, calculates that avoiding, reducing and reversing land degradation is essential for reaching the majority of the SDGs and would deliver co-benefits to nearly all of them. Furthermore, efforts to address land degradation are more synergistic than conflictual with all the SDGs (IPBES 2018).

Figure 4 Map showing countries in which NDCs are linked to SDG Target 15.3.



Source: <https://www.climatewatchdata.org/ndcs-sdg?goal=15>

2.6.1 Findings

- **Synergies in targets, monitoring and reporting**

As mentioned in section 1.3, synergies in targets, monitoring and reporting between NDCs and LDN were established in the pilot project. Making SOC an indicator for LDN made it a central plank of Ethiopia's Climate Action Plan, whilst in Belarus an indicator for peatland restoration activities is being reported for LDN and climate change targets (UNCCD 2016b). Meanwhile, Italy was able to use an IPCC methodology to model changes in SOC from land use and land cover data (UNCCD 2016b). As Figure 3 shows, links have been established between LDN (as SDG target 15.3) and NDCs in a number of countries across the world.

The incorporation of LDN into the SDG monitoring and reporting process was said to be the '*biggest advantage*' for LDN by one interviewee, as it means the reporting process is the same for the UNCCD as the SDGs. Consequently, countries will be more likely to invest in their monitoring to the UNCCD. As Table 10 shows, a number of the other SDG targets are related to land conservation and governance. Therefore, data collected for them could provide useful

information for monitoring whether LDN programmes support participatory solutions, land rights, gender equality and other factors. Additionally, as noted in the previous section data collected on the percentage of areas which are protected areas (15.1.2), or under sustainable use, could be useful for planning LDN interventions, as well as for measuring progress towards the CBD's targets. Agreed methodologies and data collection systems are lacking for several of the SDGs targets however.

Table 11 SDG targets and associated indicators that could inform LDN monitoring.

SDG Goal	SDG Target	Related Indicators	Tier classification
1: No Poverty	1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.	1.4.2 Proportion of total adult population with secure tenure rights to land, with legally recognized documentation and who perceive their rights to land as secure, by sex and by type of tenure.	1.4.2 Tier II
2: Zero Hunger	2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.	2.3.1 Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size 2.3.2 Average income of small-scale food producers, by sex and indigenous status	2.3.1 Tier III 2.3.2 Tier III
	2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.	2.4.1 Proportion of agricultural area under productive and sustainable agriculture	2.4.1 Tier III
5: Gender Equality	5.a. Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws.	5.a.1 (a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex (b) share of women among owners or rights-bearers of agricultural land, by type of tenure	5.a.1 (a) (b) Tier II

		5.a.2 Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership and/or control	5.a.2 Tier II
6: Ensure availability and sustainable management of water and sanitation for all	6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate	6.5.1 Degree of integrated water resources management implementation (0-100)	6.5.1 Tier I
11: Sustainable cities and communities	11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums	11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing	11.1.1 Tier I
	11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	11.3.1 Ratio of land consumption rate to population growth rate	11.3.1 Tier II
15: Life on Land	15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	15.1.1 Forest area as a proportion of total land area 15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type	15.1.1 Tier I 15.1.2 Tier I
	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	15.3.1 Proportion of land that is degraded over total land area	15.3.1 Tier II
	15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development	15.4.1 Coverage by protected areas of important sites for mountain biodiversity 15.4.2 Mountain Green Cover Index	15.4.1 Tier I 15.4.2 Tier I
	15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	15.5.1 IUCN's Red List Index	15.5.1 Tier I

Sources: ILC (2018); Land Portal (n.d.); IAEG-SDGs (2018) Tóth et al. (2018).

The Inter-agency and expert Group on the SDG indicators (IAEG-SDGs) classifies indicators into three tiers based on their level of methodological development and availability of data at the global level.

'Tier I: Indicator is conceptually clear, has an internationally established methodology and standards are available, and data are regularly produced by countries for at least 50 per cent of countries and of the population in every region where the indicator is relevant.

Tier II: Indicator is conceptually clear, has an internationally established methodology and standards are available, but data are not regularly produced by countries.

Tier III: No internationally established methodology or standards are yet available for the indicator, but methodology/standards are being (or will be) developed or tested.' (IAEG-SDGs 2018).

- **Institutional synergies**

The LDN target setting guide (UNCCD 2016a) suggests that countries should include the focal points of the three Rio Conventions in LDN national working groups. Several interviewees mentioned this had been done as part of efforts to establish synergies, with the interviewee from South Africa reporting the focal points were able to create more synergies because they were all housed within the same ministry and building.

COP 12 invited CSOs 'to increase the synergies and interlinkages among the CSO communities and networks dedicated to the three Rio Conventions' (Laina 2016). CSOs often already work on more than one of the Rio Conventions, given the overlap between the conventions. It was reported by an interviewee that CSOs have sought to use meetings at other Rio Convention events in order to have face-to-face meetings about UNCCD activities, as this is difficult otherwise given their limited resources. Additionally, an interviewee reported that the CSO community has sought to expand to include CSOs which focus on non-dryland regions, which has become more important given LDN's global focus.

LDN was linked to national development priorities by several countries, which created greater political will for LDN activities. For example, South Africa's national development plan for 2030 has identified three grand challenges in the country – poverty, unemployment and issues of food security and inequality – and LDN is being used as a vehicle to address all three of these. In Italy, interviewees were seeking to get LDN incorporated into the national strategy on sustainable development and the 15-20 indicators that are being developed to monitor progress on it.

- **Implementation synergies**

The planning of LDN sought to develop synergies in activities towards LDN. In South Africa, the LDN working group developed a leverage plan before their target setting report to identify already existing initiatives '*related to how we can actually pool resources to achieve the common objectives of reducing or combatting land degradation, conserving biodiversity, and also combatting or mitigating climate change, and contributing to carbon sequestration*'.

The use of a landscape approach was linked by one interviewee to achieving synergies as '*the only way you can achieve significant benefits across several sectors, when it comes to improving livelihood, reducing poverty and also having multiple benefits for climate and biodiversity, it has to be at a landscape large enough to provide tangible benefits across several sectors*'. This links to Gnacadja and Wiese's (Gnacadja and Wiese 2016) observation that using the landscape as the unit for integrated management creates an enabling environment for LDN, because it creates opportunities for synergistic activities.

Interviews showed that the implementation of LDN programmes and projects is creating synergies. In the mitigation banking scheme in Ghana that is being developed, the private sector would have to buy land offsets if they caused land degradation or biodiversity loss. A CSO interviewee highlighted that land rights, particularly for indigenous peoples, could help achieve multiple wins for biodiversity, climate change and LDN. Synergistic outcomes are being used to leverage funding for LDN activities, which will be explored in section 2.7.2.

2.6.2 Recommendations

Synergies clearly exist between LDN, climate change mitigation and adaptation and biodiversity conservation (as well as many other development goals). Greater efforts are needed to capture the multiple benefits of LDN actions, for stronger socio-economic outcomes and greater value for money. It is recommended to capitalise more effectively on these synergies in policy, investment and in reporting.

1. Monitoring and reporting on soil organic carbon should be improved to inform LDN, NDCs and CBD goals. Further attention is needed to ensure that SLM and land restoration activities are eligible for climate and biodiversity conservation funding.
2. Data collected for other land-related SDGs indicators (as suggested in Table 10 above) should be used to strengthen LDN target setting, planning and monitoring. This will enable measurement of how LDN-related activities impact local livelihoods and effect socio-economic development goals.
3. Synergies between LDN projects and programmes and other sustainable development objectives should be encouraged, using LDN-activities as a way of catalysing and achieving other national development priorities.
4. Land use modelling systems can be used to raise awareness of land degradation costs and to design interventions that align LDN-activities with national development priorities and other international commitments.

2.7 Innovative funding

'Innovative funding should be developed to support implementation of action towards LDN.'
IUCN (IUCN 2015)

The scope and ambition of the SDGs are triggering a paradigm shift in the way development is financed, in order to meet the shift from the ‘billions to [the] trillions’ in funding that the SDGs requires (Mawdsley 2018). Schmidt-Traub (Schmidt-Traub 2015) estimated that the investment required for low and lower-middle middle income countries alone would be at least 1.4 trillion US\$ per year, while globally an incremental 1.5-2.5% of GDP needs to be invested annually by the public and private sectors.

The predominant way of financing the MDGs was Official Development Assistance (ODA). Few donor countries, however, actually met their long standing commitments to 0.7% of their gross national income to ODA, while the finance required by the SDGs ‘rendered this 0.7% target grossly inadequate’ (Mawdsley 2018). Consequently, the emphasis has shifted towards seeking to channel investment from business, venture capital, sovereign wealth funds and other non-state sources towards activities that help to achieve the SDGs (Mawdsley 2018). Therefore, the role of ODA has been repositioned to leverage or catalyse much larger flows of private finance to achieve the SDGs (*ibid*).

This new role for ODA is linked to the concept of ‘blended finance’ where public investment ‘de-risks’ private finance by providing various guarantees to invest in development related

activities (Mawdsley 2018). The OECD (OECD 2018) argue: ‘Blended finance has potential to help bridge the estimated US\$ 2.5 trillion per year investment gap for delivering the SDGs in developing countries’. It is one of a number of innovative financial instruments emerging to invest in sustainable landscapes (Lipton 2018). Another instrument are green bonds which provide long term capital to sustainable activities which often previously couldn’t attract finance (Lipton 2018). In 2016, the value of bonds officially labelled as green reached 221 billion US\$ (Boule et al. 2017). Blockchain technology is another new instrument, enabling peer-to-peer lending and having the potential to make supply chains more efficient, transparent and safe (Lipton 2018). Additionally, the polluter-pays-principle has been proposed as a way to finance LDN, where those who clearly and significantly pollute or cause loss of soil and associated water resources, would have to pay the costs of land restoration (Stavi and Lal 2015).

The ELD initiative shows SLM and land restoration activities to achieve LDN have the potential to capture such flows of private finance by generating significant returns over a long-time scale. For example, over a thirty-year period the benefits of sustainable land management are double the costs, whilst on average land restoration returns 5 US\$ for every 1 US\$ invested over the same time period (Nkonya, Mirzabaev, and Joachim 2016). However, many of the benefits that accrue from SLM go to society, whilst the costs of investments in SLM are usually borne by local land users (Laban 2015; Stavi and Lal 2015; Nkonya, Mirzabaev, and Joachim 2016). Consequently, some form of payment for ecosystem services (PES) or grant for SLM investments may be required to encourage the uptake of SLM (Stavi and Lal 2015; Nkonya, Mirzabaev, and Joachim 2016). Laban (Laban 2015) suggests mobilising international funding for PES, as ecosystem services have benefits for societies at the global, as well as country, level. Additionally, international PES financial flows may provide government agencies with leverage to improve the regulatory and legal enabling environment for SLM (Laban 2015).

As investments in SLM, as well as in land restoration, have benefits for multiple ecosystem services, it may be possible to use these synergistic outcomes to benefit from multiple funding flows (Quatrini and Crossman 2018). Indeed, financing LDN activity by establishing ‘synergies between conservation and sustainable development’ was recommended in the IUCN (IUCN 2015) technical brief.

To champion investment in LDN activities, COP 12 (decision 3) requested the GM establish ‘an independent LDN fund’, which was officially launched at COP 13 and is managed by Mirova, the Responsible Investment division of Natixis Investment Managers, the second biggest French investment fund (ICCD 2016). The LDN Fund has a target size of US\$ 300 million and will seek to catalyse further investment in LDN related activities by showing the profitability and social impact of investment in SLM and land restoration (UNCCD, n.d.).

2.7.1 Findings

- **Showing the cost of land degradation to the private sector**

Reproduced from Caldecott et al. (2013).

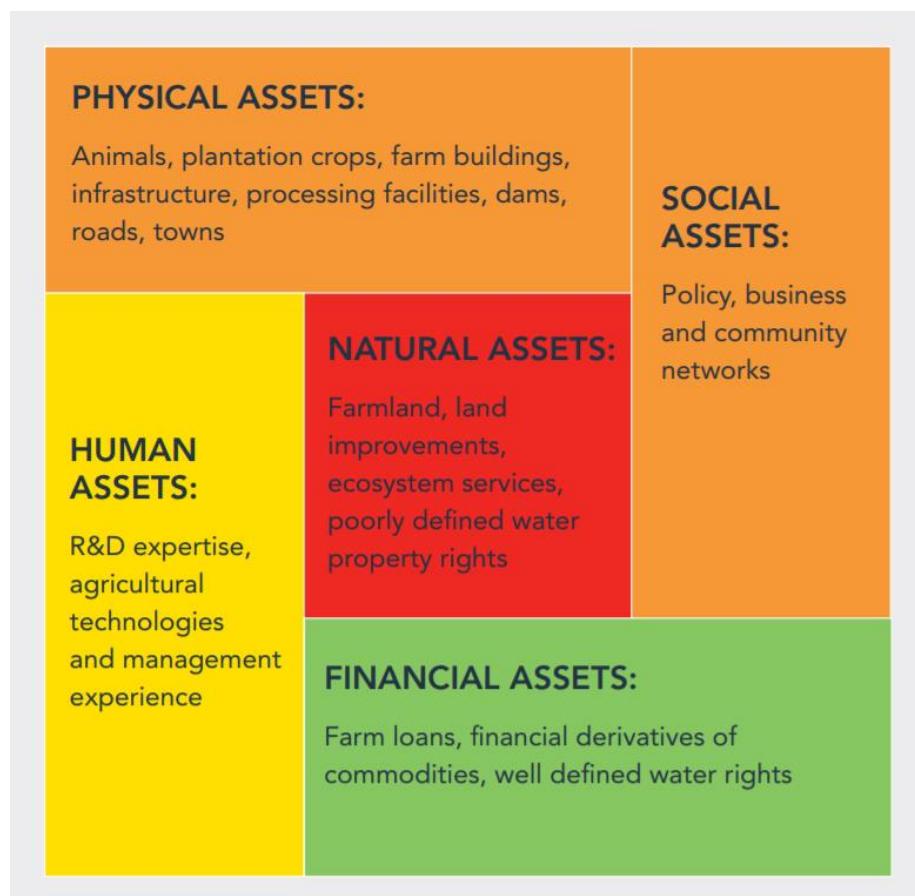


Figure 5 Agricultural assets at risk from land degradation, with colours indicating degree of vulnerability, from red (high vulnerability) to green (low vulnerability).

Whilst the main purpose of the ELD initiative is to show government policy-makers the cost of land degradation to society, they have also done work to highlight the cost of land degradation to the private sector. This includes a report (Cornell et al. 2016), which shows the opportunities and benefits of private sector investment in SLM, including increased yields, novel markets and creating social licenses to operate. Additionally, ELD worked with WBCSD on a land materiality screening tool which enables companies ‘to better assess the significance of land to their business’ (ELD, n.d.).

Measuring and monitoring the cost of land degradation to private business is important to facilitate SLM and land restoration action (WBCSD 2015). For example, Syngenta, a partner organisation of the UNCCD, has adopted a Good Growth Plan which monitors and reports progress towards six commitments:

1. ‘Make crops more efficient by increasing the average productivity of the world’s major crops by 20% without using more land, water or other agri-inputs.
2. Rescue more farmland by improving soil fertility on 10 million hectares of farmland.
3. Help biodiversity flourish by enhancing the biodiversity of 5 million hectares of farmland.
4. Empower smallholder by reaching 20 million smallholders and enable them to increase productivity by 50%.

5. Help people stay safe by training 20 million farm workers on labour safety, especially in developing countries.
6. Look after every worker by striving for fair labour conditions throughout the entire supply chain network.' (WBCSD 2015).

Deploying analysis which quantifies the long-term costs of land degradation to private business may help redirect the estimated 100 billion US\$ (as of 2013) invested annually in the agribusiness sector into SLM and land restoration (Goedde, Horii, and Sanghvi 2015). One relevant analysis is made by Caldecott et al. (Caldecott, Howarth, and McSharry 2013) who show that land degradation is driving asset stranding in the agriculture sector (see Figure 4).

One interviewee stated that to implement LDN it would be necessary to '*engage industry players in the food and beverages, timber, textiles and other sectors that rely on soil health and productivity of land directly for sourcing inputs and materials for their operations*'. Analyses such as Caldecott et al.'s (Caldecott, Howarth, and McSharry 2013) can help more land-based industry players to address land degradation, by showing such measures are necessary to ensure their long-term profitability and survival. Such negative incentives may not always be sufficient however and analyses are needed that show the positive incentives of investing in SLM, such as increased production and profitability. More work needs to be done to show the economic valuation of ecosystem benefits that result from such investments however.

- **The LDN Fund**

The LDN Fund is an impact investment fund and uses a blended finance structure where public money acts to de-risk private money. Public finance acts as the junior partner, contributing about 30% of the total investment, receiving returns after private investors and taking losses first; whilst private investors contribute 70% of the finance, receive a return first and bear less risk. This applies to both individual projects and the overall fund.

The LDN Fund has reached 120 million US\$ in firm commitments, well on its way towards its target size of the 300 million US\$. This was partly comprised of investment from development institutions such as USAID's Development Innovation Ventures, Agence Française de Développement and the European Investment Bank. However, they have also attracted institutional capital including two pension funds and two insurance funds. This was seen by the LDN Fund interviewees as a significant achievement because institutional capital rarely invests in sustainable land management in developing countries and takes LDN beyond the '*relatively limited pool*' of impact investors, to the '*huge pool*' of '*trillions of institutional capital – pension funds, insurance companies and banks*'. This was possible partly because Mirova was able to access the large client base of its parent company Natixis Investment managers. Furthermore, institutional investors are increasingly interested in financing the SDGs, and the LDN Fund is able to show a measurable impact in achieving the SDGs through SDG 15.3 monitoring.

The LDN Fund has identified investments in two sectors – sustainable agriculture and sustainable forestry – and may look at investments in ecotourism and green infrastructure on an ancillary basis. Each investment will be structured around '*the underlying commodity that is being produced by the land users*', so PES and carbon credits '*will only be considered as the cherry on the cake*'. This is possibly due to the fact PES and carbon credit markets have been volatile and have failed to emerge in the size anticipated (Dempsey and Collard 2017; Bryant 2018). Interviewees cited two examples of projects the fund is investing. Firstly, a project with

EcoTierra in Peru working with small cooperatives who are using agroforestry methods to replant degraded land to grow coffee. Secondly, a project with a car manufacturer in Indonesia to replant degraded land with rubber trees which will produce rubber from which the car manufacturer can source their rubber directly. However, as noted in section 2.2.1, the LDN Fund has not published details on its projects, meaning it is difficult to assess how they contribute to land degradation neutrality (i.e. whether they are restoration or SLM projects).

- **Public investments in LDN activities**

Outside of the fund, one of the major bodies financing LDN activities has been the Global Environmental Facility (GEF). During the GEF-6 cycle, it has funded IUCN in supporting the LDN TSP in 70+ countries and funded 17 countries in implementing SLM and land restoration amongst other LDN-relevant projects (GEF 2018). Several interviewees reported that the recently begun GEF 7 cycle finance is strongly linked to LDN. One interviewee claimed '*LDN is part of the bedrock of the logical framework of where the GEF is going over the next four years*' because of the greater recognition of land and sustainable land management across its activities. Both South Africa and Namibia interviewees reported that LDN-related projects had been funded by GEF.

Synergies with climate change objectives were identified as an important way to deploy funding towards LDN-related activities by interviewees. In Namibia, the Green Climate Fund is helping to fund several small-scale SLM projects, whilst in Nigeria projects had been funded through the new Nigeria sovereign green bond which contributed both to LDN and to Nigeria's NDC. Nigeria is the fourth country, after Poland, France and Fiji, to issue a sovereign green bond, and it is promising that this emerging form of finance is funding LDN activities (Emejulu 2018).

An interviewee from a European development agency reported that they had been able to quadruple the amount of money available for LDN activities from 20 million US\$ to 80 million US\$ by utilising land recovery as a tool to achieve multiple objectives around migration, food security and gender equality issues.

In Brazil a novel model to fund land restoration in the Caatinga biome has been established which incorporates a polluter pays principle. The government established the Recovery Units of Degraded Areas and Reduction of Climate Vulnerability (URAD) programme with a minimum 10 year mandate which was backed by a commitment of 100 million US\$ from domestic environmental fines (Rodrigues 2018).

- **Challenges to financing LDN**

The necessary finance to meet the ambitious target of LDN by 2030 has not yet appeared, with one of the most frequently problems cited by LDN country leads being a lack of finance. Additionally, three interviewees cited a need for greater guidance on the creation of '*bankable*' LDN projects. The term bankable is used to describe projects 'that are generating revenues as well as promoting the conservation restoration and management of natural capital' (WBCSD 2015). Interviewees suggested that the lack of a project development culture at the UNCCD could require the UNCCD to partner with other organisations to develop guidance.

Concerns have been raised that LDN funding may reward only well-established large-scale projects backed by large businesses and neglect small-scale community initiatives. One interviewee said SLM adoption by individual farmers and community-based organisations

could be encouraged by supporting the development of financial service providers who would provide long-term credit in rural areas, providing matching grants for land users to switch to SLM and payment for ecosystem services schemes. Gnacadja and Wiese (Gnacadja and Wiese 2016) make similar recommendations calling for improved rural infrastructure, as well as suggesting that inclusive decision-making processes are needed to ensure that incentives and subsidies are pro-poor and pro-SLM.

2.7.2 Recommendations

Increased efforts are needed to ensure that finance breaks with business-as-usual and is channelled to verifiable sustainable land management. In particular, a proportionate amount of LDN finance should be directed to smallholder famers and livestock keepers.

1. Develop and upscale innovative financial mechanisms for SLM and land restoration. The blended finance model used by the LDN Fund is a good opportunity to tap into institutional capital. Nigeria's green sovereign bond and Brazil's use of environmental fines are two innovative examples.
2. Develop and promote tools which show the long-term cost of land degradation to industry players in food, timber, textiles and other sectors that rely on soil health and the productivity of the land. Similarly, develop and promote tools which show the private sector how investing in SLM practices does not only reduce cost to their business, but can also be profitable.
3. Develop guidance on how to develop bankable LDN projects for project developers, so they can attract funding flows.
4. Develop financial products which can support small-scale SLM and land restoration initiatives by individual farmers and community-based organisations, including matching grants and micro-credit programmes.

3. Conclusions

The LDN process is rapidly transforming the way land degradation is understood and addressed globally. The establishment of a consistent and comparable global measurement of land degradation, that can accommodate contextual factors, is a significant achievement. The establishment of an offsetting mechanism for degraded land is perhaps the most novel feature of the LDN concept, making the LDN target politically palatable, but raising concerns that it might be taken as a license to degrade. Safeguards, such as the response hierarchy, are necessary to ensure such concerns are addressed, both in target setting and in monitoring. The implications of the LDN concept for achieving more sustainable and just land management are likely to be dependent on the manner in which it is implemented. Consequently, this review has provided a preliminary assessment of the early stages of LDN implementation against some of the core concerns of the IUCN community.

Reflection on IUCN's recommendations in UNCCD LDN Guidance

These concerns, which were articulated in IUCN's 2015 technical brief, have been attended to in the two main guidance documents on LDN to date: the LDN target setting guide and the LDN-SCF. The target setting guide set out a pragmatic approach to measuring land degradation and setting targets for LDN. This accounts for countries' differing data collection capacities and promotes a participatory approach to measurement, assessment and target setting. The LDN-SCF sets out the LDN concept and provided clarity on how an offsetting

principle can be applied to combat land degradation. LDN's objectives and framework are consistent with integrated ecosystem management, since it uses a holistic approach to facilitate ecosystem resilience and reduce trade-offs between conservation and development. The inclusion of the response hierarchy in the LDN-SCF, first articulated in the technical brief, reflects the input of IUCN. Additionally, the emphasis on using the VGGT framework in the LDN-SCF assists the LDN process in strengthening natural resource governance for equitable outcomes, as recommended in the technical brief.

Stronger guidance is needed on the following topics: the most appropriate way to measure SOC; how to incorporate local and traditional knowledge into target setting; telecoupling effects of activities implemented by countries to achieve the LDN target; how to secure land rights and women's empowerment in LDN projects; what constitutes a hotspot and how this fits with the response hierarchy; and finally, how to develop bankable LDN projects.

Uptake of IUCN recommendations in LDN Target Setting

One key concern for IUCN (IUCN 2015) was the use of 'adequate evidence and monitoring', without evidence collection becoming a barrier to the achievement of LDN. A majority of countries rely predominantly on the global default data for one or more of the three LDN indicators. Emerging data sources at international and national scales may help provide more accurate information on the three main LDN indicators. Failure to include monitoring of, or to establish targets on, socio-economic outcomes of LDN is a concern if LDN is to achieve its third objective: 'Reinforce responsible and inclusive governance of land' (Orr et al. 2017).

Whilst LDN national working groups have been effective at engaging a large number of relevant government ministries, there has been limited involvement of the private sector and civil society in LDN target setting in many countries. This should be rectified in the planning of LDN programmes and projects if LDN implementation is to be effective and equitable.

The involvement of large numbers of government ministries and agencies enables LDN to take an ecosystem management approach that encourages LDN projects and programmes to be developed at the landscape scale, rather than in sector silos. However, greater engagement of land-based industries is needed to allow them to make the shifts in their supply chains and production systems needed to achieve LDN. Setting and disseminating targets for ecosystem types and their associated sectors is a necessary first step to achieving this. A central feature of ecosystem management is recognition of the impacts of environmental management on other ecosystems; actors involved in the LDN process should therefore consider the telecoupling effects of large scale SLM and land restoration, particularly on food and commodity production.

Strengthening natural resource governance for equitable LDN outcomes, as suggested by the IUCN technical brief (IUCN 2015), has been achieved through two decisions at COP 13, one recommending the use of the VGGTs by country parties, and the other adopting the gender action plan to address gender inequalities in the implementation of the convention. The often-limited consultation of gender experts and women's groups, and the lack of the extensive preliminary gender analysis suggested by the LDN-SCF in target setting reports is a considerable problem if the gender action plan is to be implemented in LDN. Best practice on land rights and gender in LDN implementation should be shared and guidance developed. Other SDG indicators and the ILC's dashboard offer a useful, low cost way to track land rights and gender empowerment in LDN initiatives and should be taken advantage of by governments, CSOs and other interested parties.

The integration of the response hierarchy and the “like-for-like” principle into LDN counterbalancing is a significant step forward. However, the channelling of limited resources towards ill-defined hotspot sites could potentially undermine the response hierarchy’s logic and focus efforts on land restoration. The response hierarchy might be implemented successfully through integration into a comprehensive land use planning system. Data on land under SLM and on protected areas, as well as land use modelling, can enable land use planners to design an appropriate balance of interventions to achieve LDN.

As noted in section 1.3, leveraging synergies has enabled the LDN target to be seen as politically and financially feasible. Strong synergies have been established with NDCs through the inclusion of an indicator on SOC, whilst data collected for other land-based SDGs will be useful for LDN monitoring and reporting, especially on socio-economic outcomes. Additionally, the LDN-SCF suggestion to include IUCN’s Red List Index can help create synergies with CBD targets, though it is unclear from this study how many countries are using the Red List Index as indicator in LDN target setting and planning currently. Synergies have been leveraged in national LDN-TSP working groups by including UNFCCC and CBD focal points, as well as by establishing LDN activities as a vehicle to achieve national development priorities. Use of an IEM/landscape approach enables synergies to be established in LDN planning and implementation.

The establishment of synergies, such as with NDCs, has allowed LDN activities to access multiple funding streams. Additionally, innovative models are being established to fund LDN including the use of environmental fines to back a land restoration program in Brazil. The most significant funding mechanism created is the LDN Fund, which has raised 120 million US\$ from public sources and institutional capital through an innovative blended finance model. The LDN Fund has established strong environmental and social safeguards, but CSOs have criticised it for a lack of consultation and transparency on the fund’s structure and beneficiaries. To meet the LDN target, land-based industries must be encouraged to shift away from practices that degrade land to practices that ensure SLM, something which section 2.7.1 showed is fundamental to their long-term profitability.

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Appendices

Appendix 1 – list of pilot countries

Source: <https://knowledge.unccd.int/knowledge-products-and-pillars/ldn-target-setting-building-blocks/lessons-learned-14-pilot-4>

1. Algeria
2. Armenia
3. Belarus
4. Bhutan
5. Chad
6. Chile
7. Costa Rica
8. Ethiopia
9. Grenada
10. Indonesia
11. Italy
12. Namibia
13. Senegal
14. Turkey

Appendix 2 – List of countries setting LDN targets as of September 2018

<p>Africa (Annex I)</p> <ul style="list-style-type: none"> 1. Algeria 2. Angola 3. Bénin 4. Botswana 5. Burkina Faso 6. Burundi 7. Cameroon 8. Cabo Verde 9. Central African Republic 10. Chad 11. Côte d'Ivoire 12. Comoros 13. Democratic Republic of the Congo 14. Egypt 15. Equatorial Guinea 16. Eritrea 17. Ethiopia 18. Gabon 19. Gambia 20. Ghana 21. Guinea 22. Guinea-Bissau 23. Kenya 24. Lesotho 25. Liberia 26. Madagascar 27. Malawi 28. Mali 29. Mauritania 30. Mauritius 31. Morocco 32. Mozambique 33. Namibia 34. Niger 35. Nigeria 36. Republic of the Congo 37. Rwanda 38. São Tomé and Príncipe 39. Sierra Leone 40. Senegal 41. Seychelles 42. Somalia 43. South Africa 44. South Sudan (Republic of) 45. Sudan 46. Swaziland 47. United Republic of Tanzania 48. Togo 49. Uganda 50. Zambia 51. Zimbabwe 	<p>Latin America & the Caribbean (Annex III)</p> <ul style="list-style-type: none"> 79. Antigua and Barbuda 80. Argentina 81. Bolivia (Plurinational State of) 82. Brazil 83. Chile 84. Colombia 85. Costa Rica 86. Dominica 87. Dominican Republic 88. Ecuador 89. El Salvador 90. Guatemala 91. Guyana 92. Grenada 93. Haiti 94. Jamaica 95. Mexico 96. Nicaragua 97. Paraguay 98. Peru 99. Republic of Panama 100. St. Kitts and Nevis 101. St. Lucia 102. St. Vincent and the Grenadines 103. Suriname 104. Trinidad and Tobago 105. Uruguay 106. Venezuela (Bolivarian Republic of)
<p>Asia (Annex II)</p> <ul style="list-style-type: none"> 52. Bangladesh 53. Bhutan 54. Cambodia 55. China 56. India 57. Indonesia 58. Iran (Islamic Republic of) 59. Iraq 60. Jordan 61. Kazakhstan 62. Kuwait 63. Kyrgyzstan 64. Lao People's Democratic Republic 65. Lebanon 66. Mongolia 67. Nepal 68. Niue 69. Pakistan 70. Papua New Guinea 71. Philippines 72. Samoa 73. Sri Lanka 74. Syrian Arab Republic 75. Thailand 76. Timor-Leste 77. Uzbekistan 78. Viet Nam 	 <p>Northern Mediterranean (Annex IV) & Central & Eastern Europe (Annex V)</p> <ul style="list-style-type: none"> 107. Armenia 108. Azerbaijan 109. Belarus 110. Bosnia and Herzegovina 111. Georgia 112. Italy 113. Montenegro 114. Republic of Moldova 115. Russian Federation 116. Serbia 117. The former Yugoslav Republic of Macedonia 118. Turkey 119. Ukraine

Appendix 3 - Identification of principles of the ecosystem approach in the LDN-SCF

	Principles of the Ecosystem Approach. Source: Shephard (Shepherd 2004).	Related principles and features of the LDN-SCF. Source: Orr et al. (Orr et al. 2017).
1.	The objectives of management of land, water and living resources are a matter of societal choice.	<p>'Respect national sovereignty: Governments set national targets guided by the global level of ambition while taking into account national circumstances.' P.35</p> <p>'Legitimacy and equity: achieve societal endorsement through collaborative processes and deal fairly and impartially with individuals and groups, providing non-discriminatory access to services.' P.85</p>
2.	Management should be decentralized to the lowest appropriate level	See principle 7.
3.	Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.	'Particular attention is paid to projecting and tracking the likely cumulative impacts of land use and land management decisions.' P.3
4.	<p>Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should:</p> <ul style="list-style-type: none"> a. Reduce those market distortions that adversely affect biological diversity; b. Align incentives to promote biodiversity conservation and sustainable use; and <p>Internalise costs and benefits in the given ecosystem to the extent feasible.</p>	<p>Objective 2 of LDN: 'Seek synergies with other social, economic and environmental objectives: Actions undertaken to address land degradation can simultaneously contribute to climate change, biodiversity and sustainable development objectives' p.34</p> <p>'The enabling environment should also include policies that encourage LDN by incentivizing and helping coordinate sustainable land management practices and activities... and that remove disincentives to adoption of these practices.' P.68</p> <p>'planning and implementation should involve: removing and reversing policy drivers that lead to poor land management' p.63</p>
5.	Conservation of ecosystem structure and functioning to maintain ecosystem services, should be a priority target of the ecosystem approach.	<p>'Counterbalance "like for like": Counterbalancing gains and losses should follow, as far as possible, "like for like" criteria and thus will generally not occur between different types of ecosystem-based land types, except where there is a net gain in land-based natural capital from this exchange.' P.55</p> <p>'Within a land type, counterbalancing cannot occur between protected areas and land managed for productive uses.' P.55</p>

6.	Ecosystems must be managed within the limits of their functioning.	'LDN seeks to maintain or enhance the quality of all ecosystem services... Implementing LDN contributes to sustainable development by integrating economic and social development and environmental sustainability within the biophysical limits of natural capital, and seeking to manage the land for ecosystem services while avoiding burden shifting to other regions or future generations'
7.	The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.	'The implementation of LDN is managed at the landscape scale, considering all land units of each land type and their interactions and ecological trajectories, so that LDN interventions can be optimized among those land units, in order to maintain or exceed no net loss, per land type.' P.5 'Counterbalancing should be managed within national or subnational boundaries at the scale of the biophysical or administrative domains at which land use decisions are made, to facilitate effective implementation.' P.55
8.	Recognising the varying temporal scales and lag-effects that characterise ecosystem processes, objective for ecosystem management should be set for the long term.	In LDN planning: 'Particular attention is paid to projecting and tracking the likely cumulative impacts of land use and land management decisions.' P.3 'Counterbalance anticipated losses in land-based natural capital with gains over the same timeframe, to achieve neutrality: Achieving LDN may involve counterbalancing losses in land-based natural capital with planned gains elsewhere within the same land type.' P.55 'The condition of the land, particularly in the drylands, is highly variable temporally, largely due to climate variability. Therefore, the baseline should be quantified by averaging the indicator values over an extended period (e.g., 10-15 years) prior to t0, rather than using the values of a single year.' P.44
9.	Management must recognise that change is inevitable.	'Exploring the resilience of current and proposed land uses and management will assist in devising effective interventions in pursuit of LDN. Resilience refers to the ability of a system to absorb disturbance and reorganise so as to retain essentially the same function, structure, and feedbacks, that is, the capacity of the system to continue to deliver the same ecosystem services in face of disturbance (Walker et al., 2004)' p.71 'Particularly because LDN is a novel approach to management of land degradation, and because the land-based social-ecological system will be affected by global environmental change, it is critical to embed adaptive management, based on learning, during planning, implementation, monitoring and interpretation of LDN' p.27

10.	The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.	'Within a land type, counterbalancing cannot occur between protected areas and land managed for productive uses.' P.55
11.	The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.	'Processes should consider local, traditional and scientific knowledge, applying a mechanism such as multi-stakeholder platforms to ensure these inputs are included in the decision-making process' p.62 'Apply in-situ validation and local knowledge obtained through local multi-stakeholder platforms to interpret monitoring data according to local context and objectives, within agreed guidelines' p.96
12.	The ecosystem approach should involve all relevant sectors of society and scientific disciplines.'	'ensuring that planning processes are transparent and participatory' p.55 'Base land use decisions on multi-variable assessments: Land use decisions should be informed by appropriate assessments (land potential, land condition, resilience, social, cultural and economic factors, including consideration of gender), validated at the local level'