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Desertification

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Interface



A Report of the Science-Policy Interface

Creating an Enabling Environment for Land Degradation Neutrality

and its potential contribution to enhancing well-being, livelihoods and the environment





United Nations

Convention to Combat Desertification

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“Creating an Enabling Environment for Land Degradation Neutrality and its Potential Contribution to Enhancing Well-being, Livelihoods and the Environment” was prepared in accordance with the rules and procedures established by the UNCCD Conference of the Parties (COP), by which any scientific output prepared under the supervision of the Science-Policy Interface (SPI) should undergo an international, independent review process (decision 19/COP.12).

The technical report was prepared by an author team of 2 lead authors and 9 contributing authors. Three authors’ meetings were held (July 2018 in Seoul, Korea, and October 2018 and February 2019 in Bonn, Germany). SPI members as well as external experts in land governance, LDN Target Setting Project implementation, and sustainable development participated in these meetings. Background Papers 1 and 2 (see supplementary materials available at <<http://www.unccd.int/spi2019-2>>) further describe the methodological framework.

The draft report produced by the authors underwent a two-step peer review process, including an internal review and an independent external scientific review. For the latter, five external reviewers (individual experts) from the different UNCCD regions, and two representatives of international organisations, which are relevant to the UNCCD processes on LDN were selected. The lead authors ensured that all peer review comments received appropriate consideration. A summary of the report was reviewed by the Bureau of the Conference of the Parties of the UNCCD.

Foreword

Nearly half the world's population feels the impact of degraded land, while there are over two billion hectares suitable for restoration. Although there have been major advances in how to do that, progress has been slow in how to prevent the degradation of other areas, to reach overall neutrality. Recognizing why the barriers to achieving this are related to strategic coordination, rather than technical issues, this report uses scientific evidence to set the stage for a holistic approach that links the management of land and drought with improvements in the well-being, livelihoods and surrounding environments of those most affected.

The unbreakable relationship between land, biodiversity and climate change means that improvements in one area can also create opportunities for the others. However, realizing this potential requires a cohesive policy environment, which fosters the land governance and planning necessary for effective and responsible investment. To help create such an enabling environment, the report explores inclusive policies and regulations, engaged institutions, access to finance and an effective science-policy interface. Therefore, the report reviews literature on the trends in land governance and markets, gauges the perceptions and expectations of stakeholders, and places those results in the context of national targets.

The report goes on to address the connections between that enabling environment, land degradation neutrality and the wider benefits for sustainable development. For example, not only does it highlight the problems land degradation creates for economic opportunity, food and water security, physical and mental health, conflict or cultural identity, but also why they tend to be more severe for poor and vulnerable populations; disproportionately so for women.

At the same time, the authors demonstrate why the reverse holds equally true: empowering women can have a positive impact on land management. Crucially, the authors are careful not to set an expectation that such benefits are always accumulated or evenly shared. In particular, they acknowledge there is no single solution for land tenure. Because on one hand, land managers are more likely to invest in sustainable measures if their assets are secure enough to bring long-term benefits and income. While on the other, that security may be threatened by interventions to resolve wider environmental issues, such as reducing the assets and income of rural households to allocate land for afforestation. So, policies to increase tenure security are to be embedded in an enabling environment for achieving land degradation neutrality while unintended social, environmental or economic outcomes should be avoided.

That incredible mix of complexity and opportunity explains why the Conference of the Parties requested more evidence to support the design and implementation of land management policies and projects that can multiply the benefits for sustainable development and minimize the risks to their success. I believe this report responds with clearly structured leverage points for consideration and concrete examples to illustrate them. My thanks to everyone who has been and will be involved in its timely delivery and, more importantly, its application.



Ibrahim Thiaw
*Executive Secretary
United Nations Convention
to Combat Desertification*



Executive Summary

The Sustainable Development Goals (SDGs) adopted by the United Nations General Assembly in September 2015 include a target on land degradation neutrality (LDN) (SDG 15.3). Attaining and maintaining LDN requires addressing a land governance challenge to steer land management towards avoiding, reducing and reversing land degradation. Uptake of LDN can be catalysed by creating an enabling environment for LDN and by designing and implementing measures that achieve multiple benefits through safeguarding and enhancing well-being and livelihoods of people affected by land degradation while improving a range of environmental conditions. This report provides science-based evidence on the configuration of the enabling environment for LDN and the opportunities for multiple benefits.

Three approaches are used to delineate the evidence base. First, a literature review summarizes contemporary trends in land governance and land markets, and assesses the implications for LDN. Second, a survey among practitioners and experts involved in the LDN process gauges their perceptions and expectations about the enabling environment, multiple benefits and general progress of LDN. Third, a review of LDN Target Setting Programme (TSP) country reports contextualizes the results from the survey. Insights from these sources are triangulated to formulate key messages and policy options. These highlight the multidimensional nature of the LDN enabling environment, which requires enhanced vertical and horizontal integration of institutions and governance mechanisms.

Further, land governance and secure land tenure need to be adapted to local conditions. Evidence highlights the dynamics of land governance and the increasing impacts of global value chains on local land management, providing both challenges and opportunities for LDN implementation. LDN stakeholders have high expectations for multiple well-being and livelihood benefits to be attained through LDN implementation. Evidence indicates that the level of achieved multiple benefits strongly depends on contextual conditions. Therefore, making assessments of the prevailing political, social, economic and cultural dimensions that characterize a target area or country is needed to better align LDN with other national targets.

Achieving land degradation neutrality (LDN) requires an enabling environment: appropriate and inclusive policies and regulations, sustainable institutions, access to finance, and an effective science-policy interface. Through inclusive and responsible governance, land can be kept in balance, which is the key to food security, climate change mitigation, and adaptation and biodiversity conservation.





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Abbreviations

| | |
|--------------|--|
| CEE | Central Eastern Europe |
| COP | Conference of the Parties |
| CSO | civil society organization |
| DLDD | desertification/land degradation and drought |
| FAO | Food and Agricultural Organization of the United Nations |
| GCF | Green Climate Fund |
| GEF | Global Environment Facility |
| GM | Global Mechanism of the United Nations Convention to Combat Desertification |
| HDI | Human Development Index |
| IGO | intergovernmental organization |
| IPBES | Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services |
| LAC | Latin America and the Caribbean |
| LDN | Land degradation neutrality |
| LSLA | large-scale land acquisition |
| MSF | medium-scale farm |
| NAP | National Action Programme |
| NDP | national development plan |
| NFP | National Focal Point |
| NM | Northern Mediterranean |
| REDD+ | Reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries |
| SDG | Sustainable Development Goal |
| SLM | sustainable land management |
| SMART | Specific, measurable, agreed, realistic, time-bound |
| SOC | soil organic carbon |
| SPI | Science-Policy Interface |
| TSP | Target Setting Programme |
| UNCCD | United Nations Convention to Combat Desertification |
| UNEP | United Nations Environment Programme (United Nations Environment) |
| VGGT | Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (Food and Agriculture Organization of the United Nations, 2012) |

Improved well-being and livelihoods can add to the enabling environment for land degradation neutrality and spur sustainable land management adoption.



Glossary

| | |
|---|---|
| Agricultural advisory schemes | Efforts to spread information on land management and agriculture to land managers. This includes Training & Visit schemes, participatory grower groups and on-demand advice, and may have an in-person format or use digital communication. |
| Coordination (horizontal and vertical) | Horizontal coordination refers to coordination across different sectors and ministries. Vertical coordination refers to coordination between different levels of government (e.g. national, provincial, municipal). |
| Customary land governance | Localized land governance where authority is primarily vested in traditional institutions. This includes indigenous land rights. |
| Enabling environment | <p>The combination of contextual elements allowing progress to be made towards a clearly defined goal (Akhtar-Schuster et al., 2011).</p> <p>A person who makes decisions (Collins, n.d). In the context of LDN, decision makers include anyone making decisions related to land use and management (e.g., policy makers, planners, managers, practitioners, land users).</p> |
| Global Mechanism | Operational arm of the United Nations Convention to Combat Desertification (UNCCD) supporting interested countries in translating the UNCCD targets into action and thereby achieving land degradation neutrality. |
| Hybrid land governance | Mixed public and private decision-making regarding access to and use of land. Governments may, for example, endorse private initiatives such as eco-certificates, and private companies may choose to demand higher sustainable land management standards from suppliers than what is required by law. |

| | |
|--|---|
| Land Degradation Neutrality | 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 (decision 3/COP.12, UNCCD, 2015a). |
| Land Degradation Neutrality measure | Any policy or on-the-ground action intended to achieve land degradation neutrality and the targets defined in the Target Setting Programmes. |
| Land formalization | The registration of land tenure rights (to use, access, and control land and its associated resources) by statutorily recognized institutes. This may – but does not need to – include land titling. |
| Land governance | The process by which decisions are made regarding access to and use of land, the manner in which those decisions are implemented and the way that conflicting interests in land are reconciled (GLTN, 2018). |
| Land management | The practices applied in managing land resources. |
| Land tenure | The relationship among people, as individuals or groups, with respect to land (Food and Agriculture Organization of the United Nations, 2002). |
| Land tenure security | The level of certainty that relationships and ensuing agreements within a land tenure system are upheld and recognized by others. |
| Land title | Statutory certificate certifying that the holder (individual, conjugal or group) has specified rights over the land in question. |

| | |
|--|--|
| Land use | All arrangements, activities, and inputs that people undertake in a certain land cover type (Watson et al., 2000). |
| Land use planning | Land use planning is the systematic assessment of land and water potential, alternatives for land use and economic and social conditions in order to select and adopt the most desirable land use options (Food and Agriculture Organization of the United Nations, 1993). |
| Livelihoods | The capabilities, assets, and activities that lead to well-being of a person or household (Chambers and Conway, 1992). |
| Multiple benefits | The combination of positive environmental outcomes with well-being and livelihood improvements, and vice versa. |
| Neutrality | Neutrality implies that there is no net loss of what land degradation neutrality (LDN) is intended to maintain. Thus, “no net loss” in this context means that land-based natural capital is maintained or enhanced between the time of implementation of the LDN conceptual framework (t ₀ , typically the year 2015, when the decision to pursue LDN was adopted by the United Nations Convention to Combat Desertification) and a future date (such as the year 2030) when progress is monitored (t ₁) (Orr et al., 2017). |
| Public versus private land governance | Public land governance refers to processes related to land initiated and steered by (sub-)national governments. In private land governance, value chain actors fulfil this role. |
| Rehabilitation | The process of putting a landscape to a new or altered use to serve a particular human purpose (United Nations Convention to Combat Desertification, 2016). |

| | |
|------------------------------------|--|
| Resilience | The ability of a system to absorb disturbance and reorganize so as to retain essentially the same function, structure, and feedback, that is, the capacity of the system to continue to deliver the same ecosystem services in face of disturbance (Walker et al., 2004). |
| Restoration | The process of returning an ecosystem to a former natural condition (United Nations Convention to Combat Desertification, 2016). |
| Sustainable land management | The use of land resources, including soils, water, animals and plants, for the production of goods to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions. |
| Well-being | The extent to which basic human needs and capabilities are fulfilled (Doyal and Gough, 1984; Sen, 2001; Sen, 1994; Sen, 1993; Sen, 1990). |





Background



This report aims to provide science-based evidence on the configuration of an effective enabling environment for attaining and maintaining Land Degradation Neutrality (LDN) with the potential to generate multiple benefits, enhancing the well-being and livelihoods as well as the environmental conditions of people affected by desertification/land degradation and drought.



A literature review, an LDN stakeholder survey, and a review of LDN target setting programme country reports are combined to assess the role of the enabling environment of LDN and how measures towards LDN work to achieve LDN alongside other sustainable development targets.

The Sustainable Development Goals (SDGs) adopted by the United Nations General Assembly in September 2015 include a target on land degradation neutrality (LDN) (SDG 15.3). In order to implement the LDN target, the Conference of the Parties, at its twelfth session (COP 12), decided to include in the Science-Policy Interface (SPI) work programme 2016–2017 an objective to provide scientific guidance for the operationalization of the voluntary LDN target.¹ The SPI developed a scientific conceptual framework for LDN,² taking into consideration the decision³ to develop guidance for formulating national LDN targets and initiatives.

The secretariat and the Global Mechanism (GM) of the United Nations Convention to Combat Desertification (UNCCD) are supporting interested country Parties through the LDN Target Setting Programme (TSP). A total of 122 countries have participated in the TSP to date. The SPI and secretariat have collaborated with the GM in providing inputs for the guidelines for target setting at the national level.⁴ Building upon

Building upon the scientific conceptual framework for LDN, there is now an unfulfilled need for sciencebased evidence on land-based intervention options to support policy-makers and practitioners in the implementation of the LDN vision.

the scientific conceptual framework for LDN, there is now an unfulfilled need for science-based evidence on land-based intervention options to support policy-makers and practitioners in the implementation of the LDN vision. Seeking to fill this significant gap in knowledge, country Parties requested⁵ the SPI to provide science-based evidence of the potential contribution of LDN to enhancing the well-being and livelihoods as well as the environmental conditions of people affected by desertification/land degradation and drought (DLDD). That evidence base on land-based response options is needed for policy design and implementation, and for projects by aid agencies, the private sector and governmental and non-governmental organizations involved in the phases that follow LDN target setting, to advance SDG 15.3 by maximizing multiple benefits and minimizing negative externalities.

1 Decision 21/COP.12.

2 ICCD/COP(13)/CST/2.

3 3/COP.12.

4 Checklist for land degradation neutrality Transformative Projects and Programmes (LDN TPP): <<https://knowledge.unccd.int/knowledge-products-and-pillars/access-capacity-policy-support-technology-tools/checklist-land>>.

5 ICCD/COP(13)/CST/7, Science-Policy Interface (SPI) work programme for the biennium 2018–2019 (objective 1.2).



The COP further requested the SPI to provide examples to show how land-based interventions to avoid and reduce degradation via sustainable land management (SLM) or reverse land degradation with rehabilitation and restoration measures enhances the well-being and livelihoods of people with the aim of encouraging the use of such interventions.⁶

6 Country Parties requested the United Nations Convention to Combat Desertification (UNCCD) Science-Policy Interface to gather science-based evidence on the contribution LDN would have to enhancing the wellbeing and livelihoods of people affected by desertification/land degradation and drought (DLDD), through decision ICCD/COP(13)/CST/7, SPI work programme for the biennium 2018–2019, objective 1.2. The request was for a report providing science-based evidence of how land-based interventions can improve the well-being and livelihoods of people while simultaneously enhancing the state of the environment. LDN is a new concept as the SDG target 15.3 on LDN was adopted by the United Nations in September 2015, whilst the implementation of the LDN target setting programme (TSP) is underway and countries have started to undertake LDN measures to work towards respective targets only recently. Hence, we lack enough evidence to argue for the cause-effect relationship between measures and benefits. Only two years after the adoption of LDN (current SPI work programme launched in 2018), its embracing by countries required a reframing of the original request of the work programme to be more focused on an enabling environment so that conclusions and proposals can inform practice and policies that countries must adopt in the implementation

of LDN as per the UNCCD 2018–2030 Strategic Framework, and to accomplish SDG target 15.3 to “strive to achieve a land degradation neutral world”. Furthermore, an online LDN survey at global level covering a wide range of stakeholders engaged with the LDN process gathered ‘expectations’ of different stakeholders regarding LDN measures as a means of achieving multiple benefits while enhancing well-being and livelihoods as well as environmental conditions. Through this global survey, data was gathered on what is needed to implement LDN and what the countries hope to achieve, as well as the perspectives of a broad range stakeholders relevant to creating enabling environment for LDN implementation. This surveyed data was complemented with an extensive literature review as well as the analysis of LDN TSP country reports from all regions, containing evidence on the enabling environment for LDN, which further complemented the evidence basis for achieving multiple benefits through LDN implementation. In spite of being compelled to re-frame the focus of the report, the SPI addresses the objective of its work programme (2018–2019) that states: “Provide science-based evidence on the potential contribution of LDN to enhancing the well-being and livelihoods as well as the environmental conditions of people affected by DLDD”.



A literature review, an LDN stakeholder survey, and a review of LDN target setting programme country reports are combined to assess the role of the enabling environment of LDN and how measures towards LDN work to achieve LDN alongside other sustainable development targets.





The links between land degradation, well-being and livelihoods, and an enabling environment for land degradation neutrality

- 2.1. An enabling environment for land degradation neutrality 30
- 2.2. Multiple benefits 32



Achieving neutrality requires planning and institutional support that goes beyond the implementation of individual SLM practices. For diverse stakeholders to converge towards LDN, two essential factors have to align an enabling environment and multiple benefits are to be in place.

Land degradation is a global environmental problem with far-reaching negative economic and social consequences, and avoiding, reducing or reversing it requires the implementation of SLM practices and soil conservation techniques (see Objective 1.1 of the SPI work programme 2018–2019). The implementation of such practices and techniques relies on the cooperation of numerous and diverse stakeholders, including land managers (farmers, residents, pastoralists, etc.), governmental administrations, companies and non-governmental organizations. Moreover, achieving neutrality requires planning and institutional support that goes beyond the implementation of individual SLM practices. For diverse stakeholders to converge towards LDN, two essential factors have to align:

An enabling environment: An adequate context for progress towards LDN has to be created to help with the development, implementation and successful execution of the LDN measures. The different contextual factors are captured under the umbrella of the enabling environment for LDN, and include the collaboration of science and policy, the availability of financial means, stable institutional arrangements, and responsible and purposeful land governance.

Multiple benefits: As LDN is one of a larger range of land-related targets that are part of the SDGs and national sustainable development agendas,⁷ finding measures towards LDN

⁷ See Background Paper 1, paragraph 4.1 for an overview of global-scale initiatives relating to land and land governance.

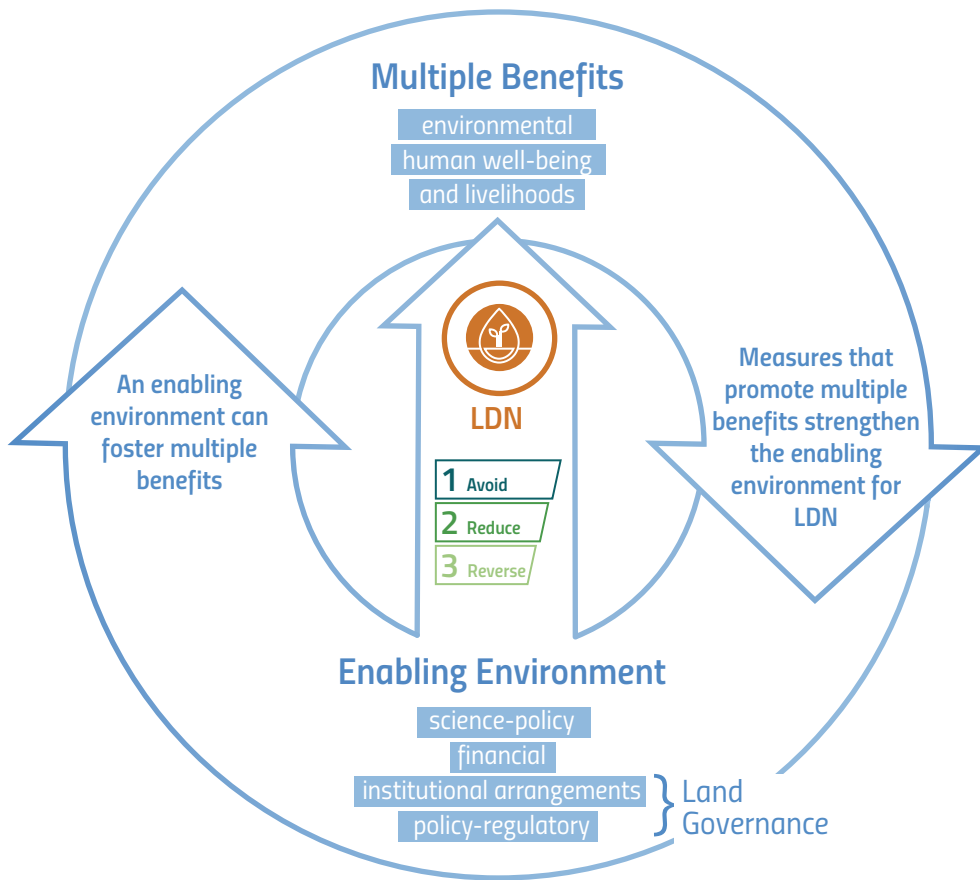


FIGURE 1

Conceptual framework of the linkages between land degradation neutrality (LDN), the enabling environment and the achievement of multiple benefits.

An enabling environment denotes the context in which the three LDN responses (avoid, reduce, reverse) are likely to be successfully implemented. Effectively designed LDN measures will be able to create multiple benefits. These multiple benefits strengthen the enabling environment, and at the same time, the enabling environment can foster multiple benefits. The four dimensions of the enabling environment mentioned in this figure take a central role in this report, with land governance (figure 2) given specific attention



that also further other goals may catalyse LDN progress. Such measures with multiple benefits can improve human well-being and livelihoods while enhancing the state of the environment.

In this chapter, the concepts of the enabling environment and the multiple benefits of LDN are defined and introduced, and the links between these concepts are discussed (Figure 1).

Drawing from the literature, the enabling environment was considered to comprise four main dimensions: (a) the SPI, and (b) financial, (c) institutional, and (d) policy-regulatory elements. A critical component of the latter two dimensions is land governance.

2.1. An enabling environment for land degradation neutrality

The enabling environment for LDN is “the combination of contextual elements that enable progress towards LDN” (Akhtar-Schuster et al., 2011). Essentially, it describes the context in which projects to avoid, reduce or reverse land degradation are most likely to be initiated and accomplished, ranging from national-scale TSPs to specific interventions. Drawing from the literature,⁸ the enabling environment was considered to comprise four main dimensions: (a) the SPI, and (b) financial, (c) institutional,

8 Akhtar-Schuster et al. (2017); Akhtar-Schuster et al. (2011); Baynham-Herd et al. (2018); Chasek et al. (2019); Chasek et al. (2015); Cowie et al. (2018); Orr et al. (2017); Enemark (2012); Enemark (2010); Fisher et al. (2018), Food and Agriculture Organization of the United Nations (FAO) (2012); Global Mechanism (GM) of the UNCCD (2016a); GM of the UNCCD (2016b); Grainger (2015); Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) (2018); Stavi and Lal (2015); Wunder and Bodle (2019).

BOX 1

Human well-being and livelihoods

Human well-being incorporates the fulfilment of the basic needs and capabilities of humans (Doyal and Gough, 1984; Sen, 2001; Sen, 1994; Sen, 1993; Sen, 1990), and the opportunities and resources to which they have access (McGregor et al., 2007; Narayan-Parker, 2000). Related to this, livelihoods comprise the capabilities, assets and activities that lead to the well-being of a person or household (Chambers and Conway, 1992). Livelihood resources are understood to include tangible assets such as natural (timber and non-timber forest resources, water, wildlife), physical (shelter, infrastructure, equipment), and financial capital, as well as intangible human (education, skills, health) and social (institutions, relationships, trust) resources (Brocklesby and Fisher, 2003; Schrekenberg, 2010; Agarwala et al., 2014).

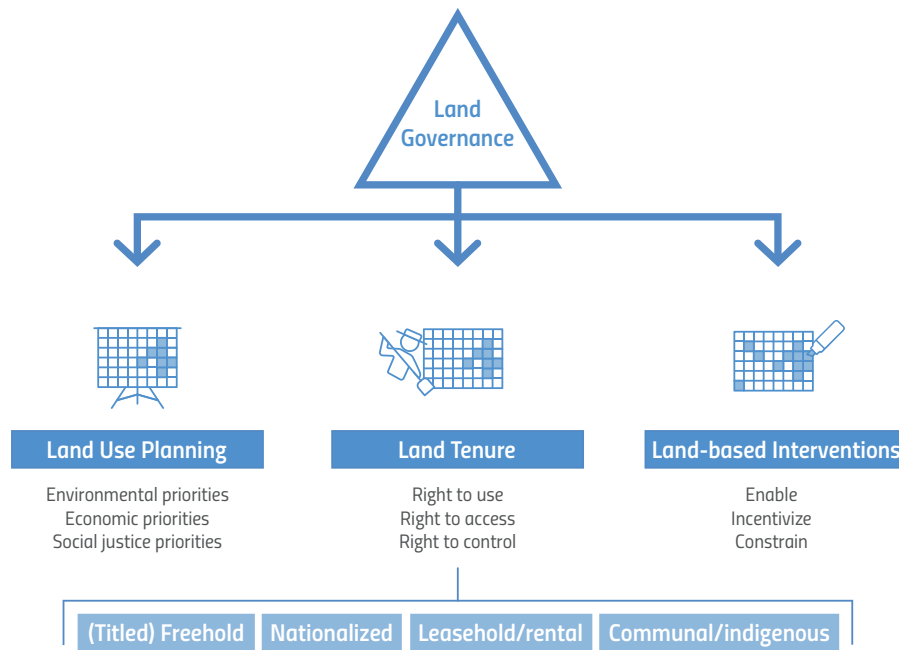


FIGURE 2
Land governance is concerned with three broad themes: land use planning, land tenure and land-based interventions.

and (d) policy-regulatory elements. A critical component of the latter two dimensions is land governance, which is treated as a specific theme in this report. These dimensions are not meant to include all possible aspects related to the enabling environment but comprise a practical framework for classifying different aspects of the enabling environment.

The enabling environment is seen as integral to the operationalization of LDN and in achieving multiple benefits; while this central role is acknowledged, knowledge on effective configurations of an enabling environment, and the extent to which it materializes multiple benefits, is scarce. Therefore, in implementing the SPI work programme, objective 1.2 of the SPI

work programme 2018–2019 requires a strong focus on the enabling environment.

Creating an enabling environment is, to a large extent, a land governance exercise. Land governance is “the process by which decisions are made regarding the access to, and control and use of land, the manner in which those decisions are implemented and the way that conflicting interests in land are reconciled” (GLTN, 2018) (see figure 2).⁹ This report assesses the

⁹ For more background on the definition and elements of land governance, see Background Paper 1 in supplementary materials available at <<http://www.unccd.int/spi2019-2>> for details.



way in which land governance underpins an enabling environment and provides incentives for LDN. To this end, land use planning, land tenure, and land-based interventions are discussed and their role in attaining LDN is appraised using recent literature.

2.2. Multiple benefits

Multiple benefits occur when positive environmental outcomes are combined with well-being and livelihood improvements (see definitions in box 1), and vice versa. Where LDN is able to align, through its multiple benefits, with other policy targets, there is scope for coherent policy action across sectors. Because this can significantly increase the chances of LDN success, interventions able to leverage expected multiple benefits should be prioritized. Moreover, expected multiple benefits will increase the willingness of land managers to implement SLM or lead to societal acceptance of some of the potential trade-offs and costs of LDN. Consultation with stakeholders and communities and an appropriate prioritization of different

outcomes and ecosystem services can help to ensure that projects are designed to that effect (Bullock et al., 2011; Lamb et al., 2005; Stanturf et al., 2014).

The relationships between LDN, the enabling environment and the associated multiple benefits can be described through three major connections:

1. Land degradation can directly impact human well-being and livelihoods.

There are many ways in which livelihoods and human well-being depend upon and interact with their natural environment. Human well-being costs associated with land degradation are not only monetary in nature, but include negative outcomes for health, social cohesion and impacts on local management practices (Fisher et al., 2018). Studies have shown a positive correlation between ecosystem services and human well-being (Brauman et al., 2007; Chiesura and De Groot, 2003; Hancock, 2010; King et al., 2014; Knight and Rosa, 2011; Summers et al., 2012). However, effectively mapping human well-being linkages and benefits derived from ecosystem services is constrained through time lags and complex, indirect relationships. This limits the integration of well-being into land use planning and conservation decisions (Norman et al., 2012; Villamagna and Giesecke, 2014; Wilson and Howarth, 2002).

The recent land degradation assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) (2018) concludes that it is well-established that land degradation is leading to increasing poverty and worsening inequality by negatively affecting the agricultural sector and by reducing access to environmental incomes upon which poor populations are relatively

Multiple benefits occur when positive environmental outcomes are combined with well-being and livelihood improvements.





more reliant (Potts et al., 2018). The report highlights that land degradation has diverse and wide-reaching impacts on quality of life, causing declines in economic opportunity, food security, physical and mental health, water security, safety from conflict, and personal and cultural identity. These impacts, however, are not evenly distributed: effects tend to be more severe for poor and marginalized populations. The IPBES (2018) assessment therefore provides the science-based evidence that reducing new degradation via SLM or reversing land degradation with rehabilitation and restoration measures will positively contribute to the well-being and livelihoods of people and environmental conditions.

2. Land degradation neutrality measures can have the potential to enhance well-being and livelihoods.

There is an emerging literature on the socioeconomic impacts associated with measures addressing land degradation. These impacts can be positive, for example when interventions reduce poverty or create new opportunities (e.g. employment, availability of new resources). Research looking at the effect of protected areas in Costa Rica and Thailand has shown that communities near protected areas generally have lower rates of poverty than communities that are not (Andam et al., 2010), suggesting a link with the increased income and employment from the tourism that results from the presence of protected areas (Ferraro and Hanauer, 2014). Additional studies show that projects focused on restoring or rehabilitating degraded ecosystems have improved employment opportunities, agricultural income, environmental incomes, and other aspects of well-being, such as health, equity, livelihood resilience, empowerment, and livelihood diversification (Adams et al., 2016; Sendzimir et al., 2011; Reij and

More secure tenure is shown to increase the propensity of land managers to invest in SLM.

Garrity, 2016; Das, 2017). Payment for Ecosystem Services (PES) schemes are often designed to have societal benefits such as poverty alleviation (Börner et al., 2017).¹⁰

However, evidence also suggests that positive well-being and livelihood impacts do not always accrue from interventions or may not be evenly distributed. Well-being and livelihood assets can also decline post-intervention. For example, land set aside and afforestation programmes can decrease the asset base of rural households and thereby reduce their income (Wang and Maclaren, 2012). In other instances, there is concern that interventions with legitimate environmental sustainability aims may negatively affect land tenure security (Sunderlin et al., 2018).

3. Improved well-being and livelihoods can add to the enabling environment for land degradation neutrality and spur sustainable land management adoption.

Land managers are more likely to invest in SLM measures if their livelihood assets are sufficient and secure. This link is most strongly evidenced in the literature concerning land tenure security. More secure tenure is shown

¹⁰ See Background Paper 1, paragraph 5.3.3 in supplementary materials available at <<http://www.unccd.int/spi2019-2>> for details and a discussion of Payment for Ecosystem Services (PES).



to increase the propensity of land managers to invest in SLM, as they are assured of being able to enjoy the long-term benefits of such investments and have increased access to financial means to realize these investments (Higgins et al., 2018; Lawry et al., 2017). Apart from SLM adoption, increased tenure security is expected to have well-being impacts such as an increased income¹¹.

This makes the case for the need for an effective enabling environment for LDN that ensures that trade-offs are made explicit and that expectations on the multiple benefits of SLM are effectively managed. This will help guarantee the selection of interventions that best deal with expected trade-offs in a particular context.

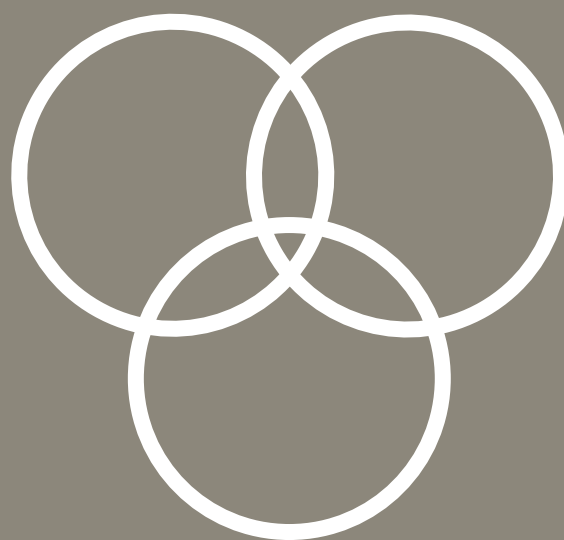
11 The theoretical pathways from improved tenure security to income gains is presented in Background Paper 1, figure 8. Currently, empirical evidence to prove or disprove these effects is lacking, as a consequence of a general lack of long-term quantitative studies (see figure 10).



Apart from SLM adoption, increased tenure security is expected to have well-being impacts such as an increased income.

This makes the case for the need for an effective enabling environment for LDN that ensures that trade-offs are made explicit and that expectations on the multiple benefits of SLM are effectively managed.





Aims, approach and methodology

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| 3.3. | Review of Land Degradation Neutrality Target Setting Programme country reports | 42 |



The enabling environment and multiple benefits constitute the central themes of this SPI report (figure 1). It aims to provide science-based evidence on the potential contribution of LDN to enhancing the well-being, livelihoods and environmental conditions of people affected by DLDD.

To that effect, four main guiding questions are posed:

1. What are the perceptions of LDN stakeholders concerning an effective enabling environment for national LDN implementation, what progress has been attained to date and what are the remaining gaps and priorities?
2. What multiple benefits do LDN stakeholders perceive to be delivered from LDN initiatives in terms of well-being, livelihood and environmental outcomes?
3. What literature-evidence is available on the current land governance mechanisms, actors involved and trends in these as a key component of the LDN enabling environment? How are differences in land governance context an important determinant of LDN operationalization?

4. How are authorized land users and managers enabled or disabled, incentivized or constrained to make SLM decisions?

To address the guiding questions, the study adopted three main components, drawing upon different types of evidence which were assessed in two background papers (figure 3). First, a comprehensive literature review was undertaken of the science-based evidence on land governance and the institutional enabling environment for LDN to present the current state of knowledge on contemporary land governance dynamics and their relation to the LDN enabling environment (see Background Paper 1 in supplementary materials, available at <http://www.unccd.int/spi2019-2> for details). Because LDN is a relatively new concept, the analysis and literature review presented here mostly captures evidence surrounding SLM rather than fully addressing the LDN concept.

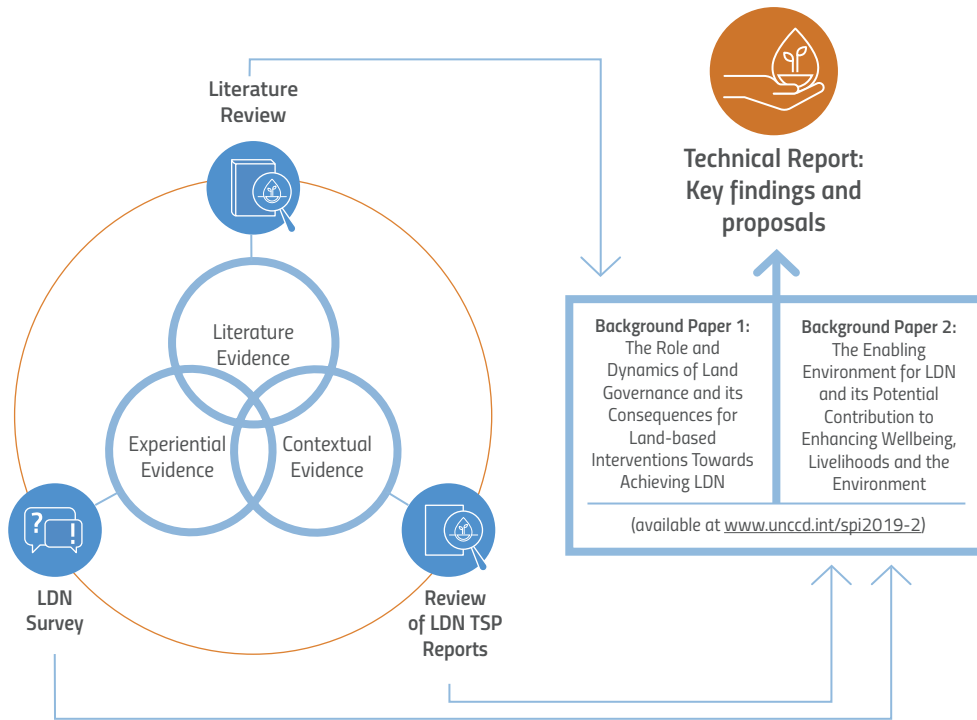


FIGURE 3
The methodological approach of this report. Three main approaches are used to construct an evidence base and formulate key findings and proposals. The two background papers provide in-depth discussions of the underlying evidence described in this report.

Second, given the sparse literature-based evidence on LDN as a new concept, a complementary stakeholder survey was conducted to collect and synthesize perceptions relating to the LDN enabling environment, national priorities and capacities for implementing LDN, as well as multiple benefits of LDN for livelihoods, well-being and the environment. Lastly, further contextual information was provided through a systematic review of LDN TSP country reports which provided an assessment of national progress and challenges in implementing an effective enabling environment for LDN, as well as approaches to addressing multiple benefits. The results from the survey as well as the review of LDN TSP country reports are summarized in Background Paper 2 (see supplementary

materials available at <http://www.unccd.int/spi2019-2> for details).

This approach captures and combines different types of evidence, summarizing the best available research on the potential of LDN, and concurrently addressing the important element of stakeholder perception. Perceived multiple benefits and constraints to LDN are leading stakeholders toward decisions¹², and science-based evidence plays a major role in these perceptions (figure 3).

¹² Environmental decisions in general (including those related to LDN) are strongly influenced by ideology, bias, interest, values and politics (Harding et al., 2009).



3.1. Literature review

The literature review (see Background Paper 1 in supplementary materials available at <<http://www.unccd.int/spi2019-2>>, for details) on aspects of land governance presents the current state of knowledge on contemporary land governance dynamics and their relation to an enabling environment for LDN. A number of broad themes were identified by the SPI as of particular relevance for LDN. These themes, which were subsequently used as keywords in search engines, included:

- Land ownership, land tenure, land tenure security, land titling, gender issues relating to land;
- Institutional arrangements, level of land governance centralization, (dis-)integration between institutions;
- Land markets, large-scale land acquisitions, agricultural commercialization;
- Private actors in land governance;
- Land-based interventions to achieve multiple benefits of LDN and well-being.

For each of these themes, literature describing the recent dynamics (past ten years) and the interface with SLM and LDN is reviewed. Moreover, literature establishing an evidence base for multiple benefits, or lack thereof, is analysed.

The review draws from a mix of peer-reviewed publications, grey literature, institutional sources and reports. Keywords relating to the identified themes were identified for use in search engines such as Google Scholar. Institutional (e.g. World Bank) and civil society (e.g. International Land Coalition) resource repositories were further searched. In general, literature published in the period 2008–2018 was considered, although older important publications were occasionally included too. Existing review papers or reports on the discussed topics were used as primary sources of information. In the absence of recent review papers or reports, case studies were searched to add to the evidence base.

This report (see Background Paper 1 in supplementary materials available at <<http://www.unccd.int/spi2019-2>> for details) reflects the evidence base available on the various governance aspects of LDN which does not cover all aspects equally. For example, because more evidence could be found on the governance aspects of SLM, more attention is dedicated to this theme as compared to restoration, for which less literature evidence was available.

The key messages are supported by statements for which an assessment of confidence was carried out by evaluating the level of agreement between different literature sources and the amount of literature evidence that was available on a given subject, following the Intergovernmental Panel on Climate Change and IPBES systems of depicting evidence (Mastrandrea et al., 2010) (Table 1).



| | | | |
|------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| Agreement ↓ ↑ | High agreement Limited evidence | High agreement Medium evidence | High agreement Robust evidence |
| | Medium agreement Limited evidence | Medium agreement Medium evidence | Medium agreement Robust evidence |
| | Low agreement Limited evidence | Low agreement Medium evidence | Low agreement Robust evidence |
| ← Evidence → | | | |

TABLE 1
Intergovernmental Panel on Climate Change evidence depiction used to appraise the literature evidence in this report, based on Mastrandrea et al. (2010).

3.2. Land Degradation Neutrality Stakeholder Survey

An online survey (see Background Paper 2 in supplementary materials available at <<http://www.unccd.int/spi2019-2>> for details) was developed with an SPI task group and circulated to practitioners and experts involved in the LDN TSP and associated activities in mid-November 2018. The survey was delivered via SurveyMonkey and comprised a maximum of 25 questions, with the list of questions varying depending upon the type of respondent (national and regional consultants; national focal points; researchers/scientists; business/private sector; and civil society organizations/intergovernmental organizations).

The survey was designed to collect information in two key areas: firstly, regarding what is needed to achieve and maintain LDN in terms of policies, incentives, and support; and, secondly, how LDN initiatives contribute to achieving environmental objectives as well as improving human well-being and livelihoods. The survey questions were developed based on advice from the SPI through several rounds of consultations. The majority of the questions adopted either Likert-scales or rating-scales to collect responses.



3.3. Review of Land Degradation Neutrality Target Setting Programme country reports

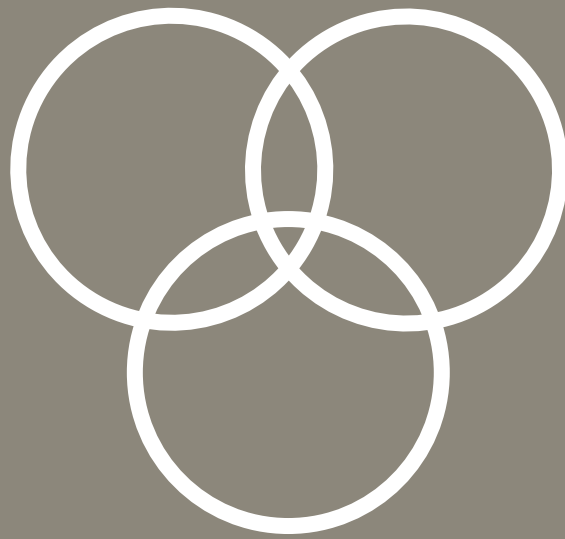
A total of 30 LDN TSP country reports were reviewed¹³ (see Background Paper 2 in supplementary materials available at <<http://www.unccd.int/spi2019-2>> for details). The selection of national reports was undertaken to ensure balance across the five UNCCD Regional Implementation Annexes, as well as within regions in terms of covering diversity in the level of development of each country and sub-regional differences. To ensure inter-regional balance, where available, a minimum of six countries were selected from each region¹⁴. To ensure intra-regional balance, the Human Development Index (HDI) was used as a proxy, with country selection including a spectrum of HDI values ranging from the lowest to highest. Reports were reviewed in English, French, Spanish and Russian by seven different reviewers.

The content of each national report was evaluated on a set of criteria which were initially defined based on a review of the expert literature¹⁵. An initial set of potential criteria was then revised through a round of consultations with experts. Fifteen criteria were identified in total across the four dimensions of the enabling environment (figure 1), which formed the framework for the systematic review of LDN TSP country reports. A rating scale and scoring template were developed to provide a consistent approach for evaluating the reports which was based upon a scale of 1 to 4 (1 = Off Track; 2 = Some Advancement; 3 = On Track; 4 = Completed or Achieved) (see Background Paper 2 in supplementary materials available at <<http://www.unccd.int/spi2019-2>> for details).

13 Asia: Nepal, Cambodia, Bangladesh, Viet Nam, Jordan, China, Sri Lanka; Africa: Niger, Cameroon, Eritrea, Malawi, Benin, Swaziland, Equatorial Guinea, Algeria; Central Eastern Europe: Kyrgyzstan, Moldova, Armenia, Georgia, Bosnia Herzegovina, Belarus; Latin America & Caribbean: Guyana, Nicaragua, Bolivia, Dominican Republic, Colombia, Grenada, Chile; Eastern Mediterranean: Turkey, Italy.

14 In the case of the Northern Mediterranean region, only two country reports were available. As such, an additional country from each of the other four regions was selected to reach a total of 30 reports.

15 Akhtar-Schuster et al. (2017); Akhtar-Schuster et al. (2011); Chasek et al. (2019); Chasek et al. (2015); Cowie et al. (2018); Orr et al. (2017); Enemark (2012); Enemark (2010); Fisher et al. (2018); Food and Agriculture Organization of the United Nations (2012); Global Mechanism of the United Nations Convention to Combat Desertification (2016a); Global Mechanism of the United Nations Convention to Combat Desertification (2016b); Grainger (2015); IPBES (2018); Stavi and Lal (2015); Wunder and Bodle (2019).



This approach captures and combines different types of evidence, summarizing the best available research on the potential of LDN, and concurrently addressing the important element of stakeholder perception.







Key messages

- | | | |
|------|--|----|
| 4.1. | Experiential and contextual evidence on the land degradation neutrality enabling environment and multiple benefits | 46 |
| 4.2. | Literature evidence on land governance dimensions of Land Degradation Neutrality | 53 |



Key messages based on science-based evidence for shaping an effective enabling environment in the realm of Land Degradation Neutrality and achieving multiple benefits while enhancing well-being and livelihoods as well as environmental conditions.

4.1. Experiential and contextual evidence on the land degradation neutrality enabling environment and multiple benefits

4.1.1. Findings from the Land Degradation Neutrality Stakeholder Survey and the Land Degradation Neutrality Target Setting Programme country reports review

The results from the review of LDN TSP country reports as well as the survey of LDN stakeholders both highlight elements of the LDN enabling environment where good progress has been made and national capacities and capabilities are reported to be stronger.

Figures 4, 5, and 6 present a summary of the results from the stakeholder survey.¹⁶ These highlight measures that stakeholders perceive as the most important for implementing LDN (figure 4), the most important challenges to the implementation of LDN moving forward (figure 5), as well as the multiple benefits that stakeholders are expecting to see from LDN implementation (figure 6). In terms of important measures, a national long-term vision and

¹⁶ Background Paper 2, section 3.2 (see supplementary materials available at <<http://www.unccd.int/spi2019-2>>) provides a detailed summary of the results from the LDN survey. These results are then discussed in section 4 of Background Paper 2.



commitment to LDN features strongly, as do a national budget and secured land tenure. In terms of challenges, insufficient awareness and understanding of LDN as well as insufficient finance and high-level commitment all rank as important. Stakeholders are expecting a broad range of multiple benefits from LDN implementation, including increased biodiversity, food security, productivity and enhanced livelihoods.

Figure 7 summarizes the results from the review of the LDN TSP country reports.¹⁷ The four dimensions of the enabling environment as well as the 15 criteria used to evaluate the reports are included, along with the mode and average scores for each criterion across all 30 reports reviewed. Higher values in the figure reflect elements of the enabling environment where countries reported stronger progress, with lower values highlighting more limited progress or a lack of information. Greater progress and national capacities were reported relating to establishing a national commitment and target setting, institutional coordination (particularly establishing a lead agency and horizontal coordination), and multi-stakeholder consultation. Greater progress and capacities were also evident in terms of environmental regulation, planning and policy coherence, evaluating causes and effects of LDN, and setting national baselines for global indicators.

Areas that were reported as lagging behind relate to the financial enabling pillar (both assessing financing needs and securing financial sources), land tenure and user arrangements, integrated land use planning, neutrality mechanisms for counterbalancing gains and losses, technical capacities needed for implementation, and evaluating multiple benefits and economic, social and environmental trade-offs associated with achieving LDN.

The key findings from the LDN survey and the review of TSP country reports are further developed in sections 4.1.2 and 4.1.3, structured around the four dimensions of the enabling environment identified.

Secure land tenure and access to land are important enablers for Land Degradation Neutrality implementation, however national progress and capacity remains low. Limited national progress is evident in establishing effective integrated land use planning systems and, in particular, embedding neutrality mechanisms.

¹⁷ Background Paper 2, section 3.1 (see supplementary materials available at <<http://www.unccd.int/spi2019-2>>) provides a detailed summary of the results from the review of the LDN TSP country reports. These results are then discussed in section 4 of Background Paper 2.

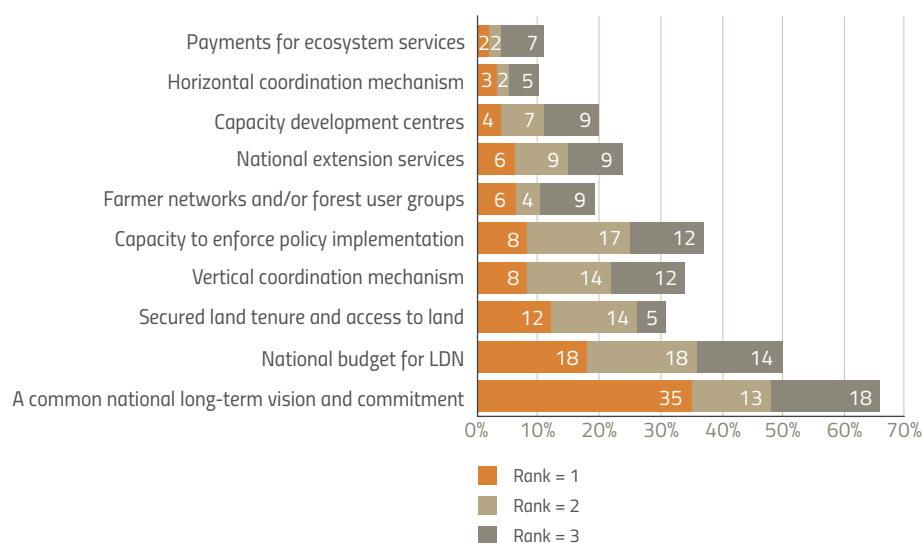


FIGURE 4
Results from the survey: perceptions of the most important policies, procedures and incentives that can help implement land degradation neutrality (% of respondents in each rank; n=204)

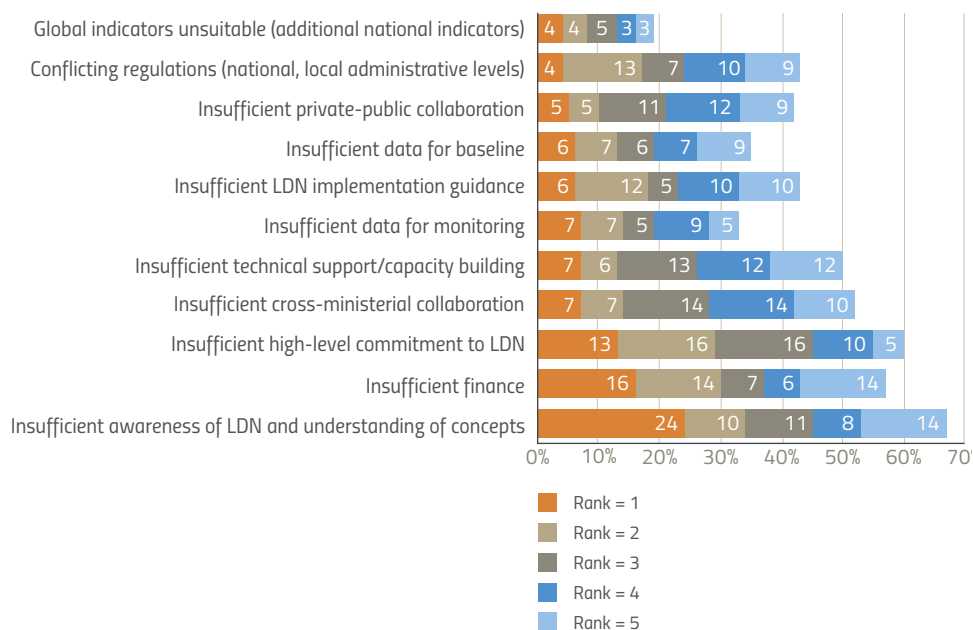


FIGURE 5:
Results from the survey: perceptions of the five most important challenges to the implementation of land degradation neutrality moving forward (% of respondents; n=190)

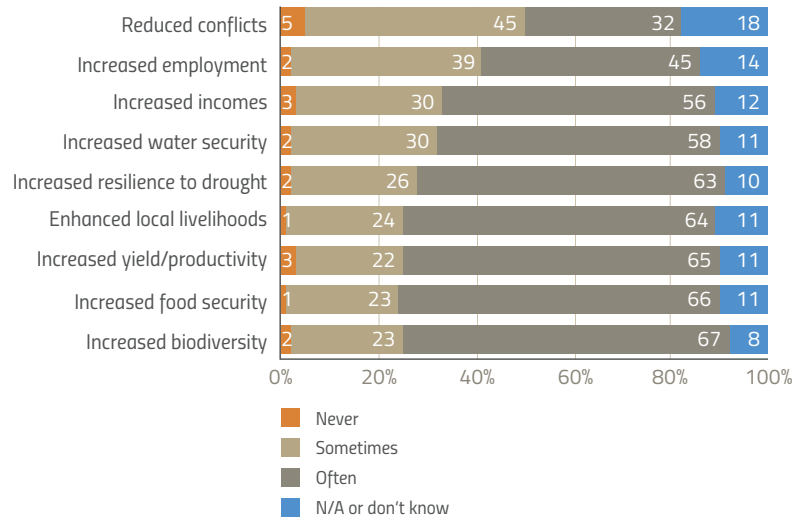


FIGURE 6

Results from the survey: perceptions of multiple benefits expected from land degradation neutrality implementation (% of respondents; n=190)

4.1.2. An effective enabling environment

Institutional dimension of an enabling environment

A common national long-term vision and commitment to LDN is perceived as critical for implementation of LDN, and good progress is evident in target setting and institutional coordination. However, gaps remain in the mainstreaming of LDN targets, vertical coordination, and the overall political importance given to LDN amongst competing priorities.

1. A common national long-term vision and commitment to LDN is ranked in the survey as the most important measure to support LDN implementation.
2. Overall, good progress is evident in the survey and LDN TSP country reports on LDN target setting, establishing a lead agency (primarily environmental or agriculture ministries), horizontal coordination mechanisms and multi-stakeholder consultation.
3. Gaps are evident in mainstreaming targets into national plans, establishing vertical coordination mechanisms and institutional capacities in enforcement, securing land tenure and resolving conflicts, as well as the overall importance given to LDN amongst competing political priorities.

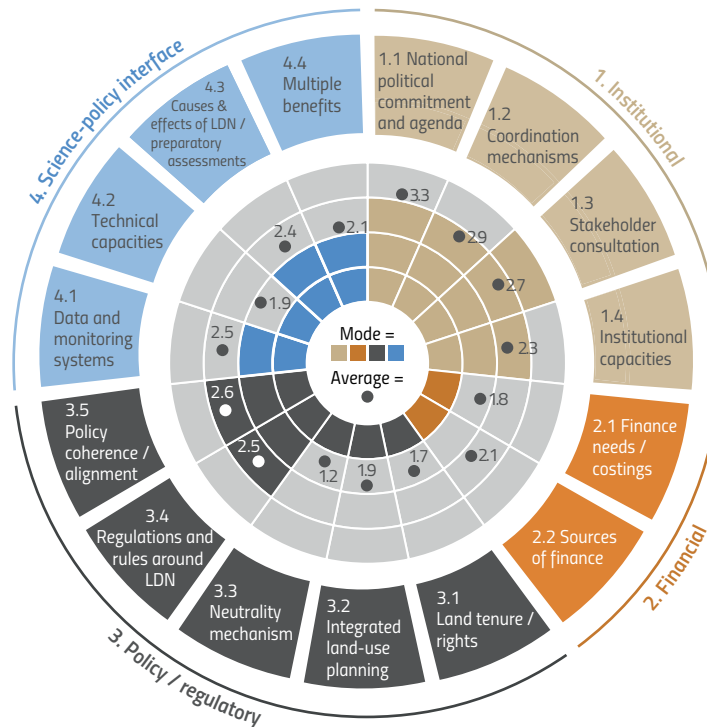


FIGURE 7

Summary of results from the review of 30 Land Degradation Neutrality Target Setting Programme (LDN TSP) country reports: mode and average scores out of four for each criterion.

Results are presented based on the four dimensions and 15 criteria developed for evaluating the enabling environment for LDN. Numbers in the outer ring represent criteria numbers, as listed in the associated text boxes. The results from the scoring across all 30 reports are presented as mode values (coloured bars) and average values (dots with numbers). Scores are out of a maximum of four points across all reports reviewed. Scores can be interpreted as follows: 4 = 'Completed or Achieved'; 3 = 'On Track'; 2 = 'Some Advancement'; 1 = 'Off Track' or 'Insufficient Information'. Scores presented in the chart are calculated as either the mode or average score for each criterion across all 30 countries reviewed (see Background Paper 2, section 2.2: Systematic Review of TSP Reports, pages 6-7).



Financial dimension of an enabling environment

A national budget for LDN is ranked in the survey as an important measure for implementation, however few countries have assessed financial needs or secured finance for LDN.

4. A national budget for LDN is ranked in the survey as one of the most important measures to support implementation, while the lack of finance was ranked as an important challenge to moving forward.
5. The Global Environment Facility is identified as another important source of finance, while the Global Mechanism of the UNCCD was considered a key enabler of finance.
6. There is very limited information in the LDN TSP country reports on financial needs and costings, which suggests that this is an important gap in progress.
7. Overall, a minority of survey respondents (16%) indicate that they have secured finance for LDN to date.

Policy and regulatory dimension of an enabling environment

Secure land tenure and access to land are important enablers for land degradation neutrality implementation¹⁸, however national progress and capacity remains low. Limited national progress is evident in establishing effective integrated land use planning systems and, in particular, embedding neutrality mechanisms.

8. Secured land tenure and access to land is ranked in the survey as an important measure for LDN implementation, while national capacity for securing land tenure arrangements is rated as low.
9. The LDN TSP country reports provide limited evidence to support the importance of land tenure security as very few reports consider land tenure. In the few cases where it is addressed, it is identified as a weakness or barrier to SLM. This suggests that land tenure and governance arrangements represent an important capacity gap for the national implementation of LDN.
10. The majority of survey respondents rate their integrated land use planning systems as modest or limited, while there is limited reported adoption of neutrality mechanisms in land use planning.
11. Very few LDN TSP country reports evaluate the effectiveness of integrated land use planning systems or make reference to a neutrality mechanism. Integrated land use planning and neutrality mechanisms appear to be important capacity gaps.

Science-policy dimension of an enabling environment

Countries are using the three global indicators¹⁹, however gaps remain in national capacities to set baselines and track progress, particularly for land productivity dynamics and soil organic carbon. Despite these gaps, in most cases, national data systems are adequate for making data available for land use planning decisions.

¹⁸ The survey evidence presented here is strongly corroborated by literature findings (see Background Paper 1, paragraph 4.2. in supplementary materials available at <<http://www.unccd.int/spi2019-2>>).

¹⁹ Land productivity, soil carbon stocks, land cover. See Orr et al. (2017).



12. Survey respondents rate the lack of awareness and understanding of LDN and its key concepts as a key challenge for LDN moving forward. Gaps in technical capacities for implementing LDN are apparent in both the survey and LDN TSP country reports.
13. Most respondents to the survey confirm that they would use the three global indicators, however national capacities to set baselines and track progress are rated comparatively low.
14. The LDN TSP country reports highlight considerable progress in setting national baselines for the global indicators. Stronger capabilities are evident in land cover mapping and land use change assessment, and national datasets are often utilized. However, limited capabilities in monitoring land productivity dynamics and SOC are reported, with reliance upon global datasets.
15. Despite these gaps, the survey results highlight that, in most cases, national data systems are considered adequate for making data available in land use planning

decisions, and data is perceived as a lower priority challenge for LDN implementation moving forward.

16. Both the survey results and the LDN TSP country reports highlight stronger capabilities and better progress on land degradation and potential assessments, but limited progress and capacities on resilience and socioeconomic assessments. Resilience refers to the ability of a system to absorb disturbance and reorganize so as to retain essentially the same function, structure, and feedbacks (Walker et al., 2004).

4.1.3. Multiple benefits

Stakeholders expect a range of multiple benefits on human well-being and livelihoods to materialize as a result of sustainable land management and land degradation neutrality (LDN). Important measures mentioned for leveraging multiple benefits include the full and effective participation from local communities and stakeholders, mainstreaming of LDN into existing plans and programmes, and evaluating economic, social and environmental trade-offs during programme design. Capacity gaps remain in assessing multiple benefits and trade-offs and managing these during project design.

Important measures mentioned for leveraging multiple benefits include the full and effective participation from local communities and stakeholders, mainstreaming of LDN into existing plans and programmes, and evaluating economic, social and environmental trade-offs during programme design.

17. Over 90 percent of survey respondents agree or strongly agree that they expect positive effects on human well-being and livelihoods as a result of SLM and LDN. Respondents also expect to see a broad range of multiple benefits from implementing LDN, in particular increased food security, enhanced local livelihoods, increased biodiversity, increased yields/productivity and increased resilience to drought. The respondents' strong expectation for multiple benefits to be accrued from LDN implementation contrast with similarly strong



indications that LDN is competing with other political priorities (key message 1).

18. The LDN TSP country reports highlight that countries are identifying these linkages and benefits to varying degrees, with some adopting leverage plans. The main leverage opportunities included enhanced food security, poverty reduction, conservation, agricultural productivity, climate resilience, water security, hunger eradication, household income, and economic development. LDN TSP country reports thus see scope for advancing SDG implementation in tandem with LDN implementation.
19. The survey results and the LDN TSP country reports highlight some important measures for leveraging multiple benefits, including the full and effective participation from local communities and stakeholders, mainstreaming of LDN into existing plans and programmes, greater engagement of central planning and finance ministries, evaluating economic, social and environmental trade-offs during programme design, and prioritizing livelihood outcomes.
20. While there is strong agreement from survey respondents that the consideration of multiple benefits makes planning for LDN easier, less than half agree that it is clear how to manage trade-offs, and considerable gaps in the availability of data for monitoring multiple benefits are apparent. This highlights potential gaps in national capabilities for assessing multiple benefits and trade-offs, and designing projects and programmes that maximize multiple benefits and manage tensions or unintended consequences.
21. Close to 50 percent of survey respondents point to considerable gaps in the availability of quality data across a range of different

benefits, including for advancing gender-responsive LDN. Areas with absent or particularly poor data quality included resilience (56%), soil organic carbon (SOC) (45%), and gender equality (56%).

4.2. Literature evidence on land governance dimensions of land degradation neutrality

4.2.1. Trends in current land governance mechanisms and involved actors

Land governance is a disconnected balancing exercise between three broad priorities: environmental protection, economic objectives and socio-cultural objectives. Different governmental agencies at multiple administrative levels and private actors weigh in on land-related issues, mostly without a central forum to connect these diverse stakeholders. Achieving LDN requires responsible land governance, including the cooperation of land users and stakeholders involved in land governance at different levels and in a gender-responsive way (box 3). In the following, the key findings of an extensive review of the scientific literature are provided.

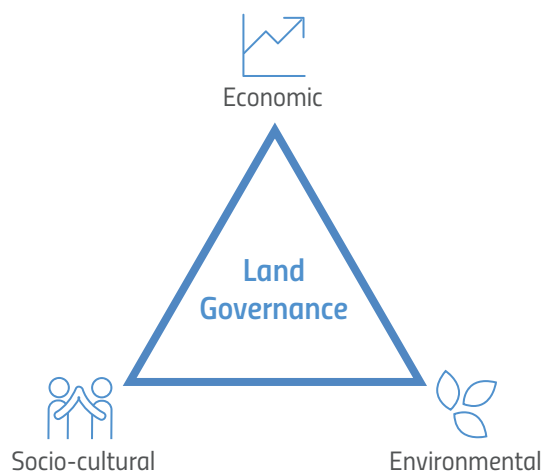


FIGURE 8
Land governance as a balancing exercise between three broad objectives



The implementation of land degradation neutrality (LDN) measures relies heavily on responsible land governance. LDN initiatives should account for the ways land governance is organized in a specific context. This implies being aware of the various interests in land, the multiple and often fragmented agencies of relevance, the legislative framework, the level of decentralization, the importance of customary land governance institutions and the various land management regimes (ranging from different forms of sedentary agriculture over pastoralism²⁰ and forest dwelling).

Land governance can be statutory, customary or, in pluralistic contexts, a combination of both. The many types of customary land governance likely constitute the most important form of land governance in terms of land area. Customary land governance is under threat by outside interests and globalization processes but is also increasingly being protected by national laws.

22. Land governance is shaped by statutory laws and institutions in some countries but evidence in the land governance literature suggests that customary land governance continues to be in effect on most agricultural land²¹ [Medium agreement, Limited evidence].

20 For insights into solutions for pastoral communities to achieve LDN, see (see Background Paper 1 box 13 in supplementary materials available at <<http://www.unccd.int/spi2019-2>>), where examples from the Qinghai-Tibetan Plateau and the Jordanian rangelands are discussed.

21 See Background Paper 1, paragraph 3.1 in supplementary materials available at <<http://www.unccd.int/spi2019-2>> for an overview of the importance and implications of customary land tenure and legal pluralism.

23. Where statutory and customary land governance coincide, people are subject to legal pluralism (see Background Paper 2 in supplementary materials available at <<http://www.unccd.int/spi2019-2>> for details). Legal pluralism may be an adaptive solution to governing land in varying socio-ecological contexts but it can also be a source of conflict when land users are subjected to contradictory sets of rules [High Agreement, Medium evidence].

24. Private actors have an increasingly important role in shaping land governance [High agreement, Robust evidence].

25. Decentralization of land governance refers to the ongoing redistribution of power and authority over land governance between central, regional and local administrative levels. This global phenomenon allows land governance to be adaptive to local socio-ecological contexts but may also increase fragmentation and hamper coordination at the national level [High agreement, Robust evidence].²²

Land tenure security forms the backbone of responsible land governance. Without land tenure security, land users are less likely to invest in sustainable land management (figure 9). Moreover, most land-based interventions require secure land tenure to function. Land tenure form (freehold, nationalized, rental,

22 See Background Paper 1 in supplementary materials available at <<http://www.unccd.int/spi2019-2>> for a discuss the different forms of decentralization of land governance. Table 1 of Background Paper 1 presents the advantages and disadvantages of centralized and decentralized land governance for LDN.



communal/customary²³) is not directly related to land tenure security (the certainty that relationships and ensuing agreements on the rights to use, control and transfer land are upheld and recognized by others). Customary systems can be highly secure even when no formal land titles exist, and freehold systems can be perceived as highly insecure in certain contexts.

Land tenure security forms the backbone of responsible land governance. Without land tenure security, land users are less likely to invest in sustainable land management.

23 See Background Paper 1, box 1 in supplementary materials available at <<http://www.unccd.int/spi2019-2>> for definitions relating to land tenure systems.

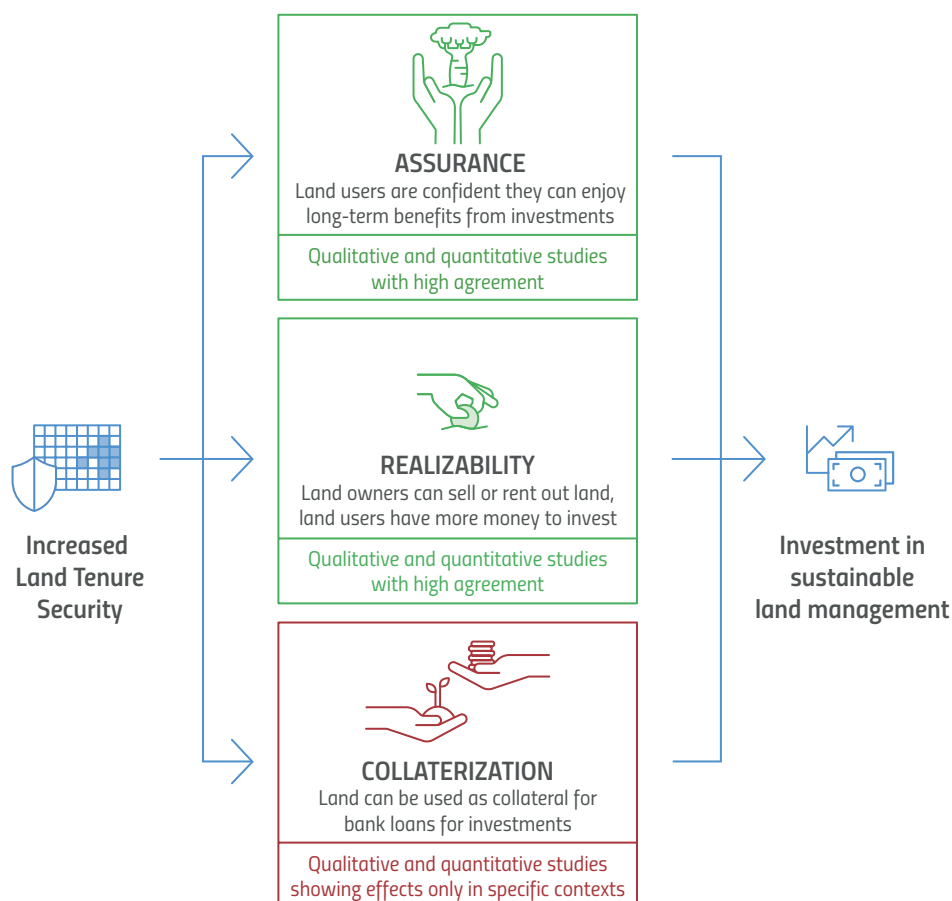


FIGURE 9

Three theoretical pathways from increased land tenure security to investment in sustainable land management, with an indication of the current evidence base. The assurance and realizability effects are shown to work in concert to enable SLM investment in a majority of studies, while current studies fail to find a collateralization effect in most contexts.



- 26. Although more evidence on the specific combinations of tenure measures that can produce SLM outcomes is still needed, studies, especially those assessing longer-term impacts, suggest that secure tenure is a necessary but insufficient condition for SLM. Uncertainties remain on the direction of causality: land investments can also produce an increase in land tenure security [Medium agreement, Medium evidence].
- 27. Improving the perceived security of tenure can instigate changes in land users' behaviour as they gain confidence that they will reap the benefits from investments (figure 10). This assurance effect can add to the enabling environment for LDN [Medium agreement, Medium evidence].
- 28. Increased land tenure security likely further produces a realizability effect, as land users can access new revenue streams by renting out or selling part of their land and/or work in off-farm jobs. This enables them to invest in SLM. There is no evidence to support a collateralization effect (figure 10), where secure land tenure allows land users to obtain bank loans [Medium agreement, Medium evidence].
- 29. Commonly used LDN interventions like payments for ecosystem services or other subsidies cannot work under insecure land tenure circumstances. Therefore, land tenure issues should be addressed before implementing such measures or alternative measures should be looked for [High agreement, Robust evidence].

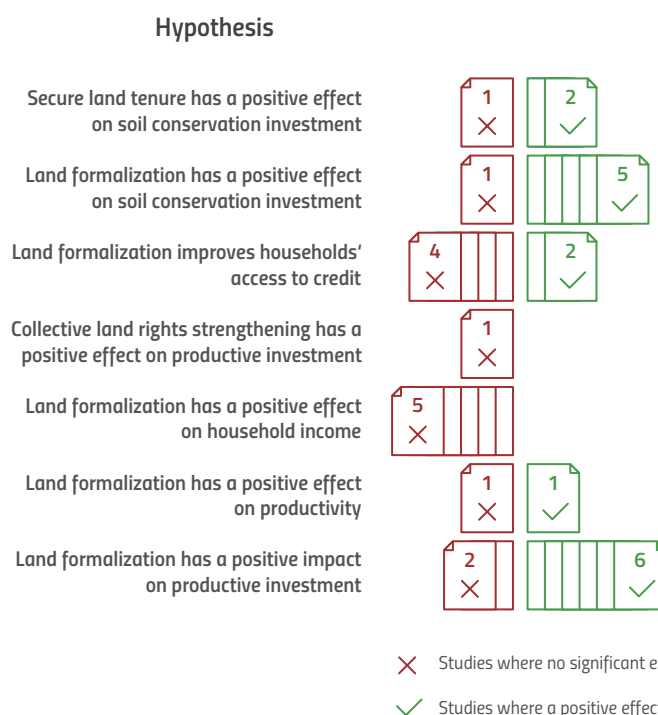


FIGURE 10
Support for selected hypotheses in quantitative studies.

Based on Higgins et al. (2018)



Efforts to increase land tenure security have long been limited to the granting of individual land titles. Funding agencies have transitioned towards more general strengthening of land governance. Interventions that address the sources of tenure insecurity.

30. Security of tenure can be improved by land registration and titling but other measures may be more effective depending on the context. Individual freehold tenure is not a prerequisite for land tenure security²⁴. Strengthening local land administrations

²⁴ A discussion of the problems that can arise from a sole focus on the granting of individual land titles is presented in Background Paper 1, box 7 (see supplementary materials available at <<http://www.unccd.int/spi2019-2>>).

BOX 2

Recipes for success in land administration projects

There is no one-size-fits-all solution to insecure land tenure. The same measures may increase tenure security in one context while being ineffective or even deleterious in others (Holden and Ghebru, 2016). Even if these interventions improved land governance, their implementation costs (e.g. the cost of demarcating and registering individual land rights) were often very high (Palmer et al., 2009). An internal review of land tenure interventions which were funded by the World Bank (The World Bank, 2016) highlights that interventions are more likely to succeed if:

- There is an understanding of the sources of tenure insecurity and the intervention addresses those sources. For example, tenure may be insecure under a communal customary system because of land encroachments by outsiders. Then, registering freehold individual land titles will likely be ineffective, because the source of insecurity is the lack of capacity of the community to protect their common property, not the lack of individual property (Fitzpatrick, 2005).
- They strengthen the legal and policy framework incrementally. For example, immediately jumping to full title is unlikely to succeed when the land administration does not yet have the capacity to adjudicate or administer such titles.
- They account for local capacity by asking whether the measure can be sustained financially. Land administration (i.e. the maintenance of a land register and cadastre) is costly, and these costs must be carried by governments, land users and/or international donors (Deininger et al., 2011).
- They enjoy long-term financial, political and public opinion support.



and land institutions can be more effective to improve perceived tenure security while titling may have perverse effects on perceived tenure security in some contexts [Medium agreement, Medium evidence].

31. LDN measures should be aware of and adaptive to different land tenure systems and account for the dynamics in those systems. Measures should take stock of the bundle of rights distributed over the land in question. Inclusion of all relevant stakeholders can guarantee that LDN measures do not induce conflicts and do not deprive people of livelihood assets. For example, when a project aims to rehabilitate degraded land by denying access to this land, a compensation scheme should include all people who use this land throughout the year [Medium agreement, Limited evidence].
32. The impact of land tenure interventions on actually attained sustainability and well-being is uncertain, and longer-term studies are needed to establish hypothesized relationships [Low agreement, Limited evidence].

Agricultural cooperatives have the potential to be partners for Land Degradation Neutrality (LDN). Different forms of vertical integration in land governance should be accounted for in operationalizing LDN and offer scope for implementation through partnerships with various players in globalized value chains.

The agricultural sector has moved into a period of dynamism in which new land governance and management types, such as large-scale land acquisitions, medium-scale farms, and contract farming are increasing. Agricultural cooperatives have the potential to be partners for land degradation neutrality (LDN). Different forms of vertical integration in land governance should be accounted for in operationalizing LDN and offer scope for implementation through partnerships with various players in globalized value chains. These new land governance arrangements also pose a threat to achieving LDN targets.

33. Given the scale at which new land governance and management types (Large-Scale Land Acquisitions (LSLAs), Medium-Scale Farms (MSF) and contract farmers) are currently operating, and the pace at which they are proliferating, LDN measures should account for these. These new land systems may offer opportunities for LDN to leverage new governance and management arrangements to achieve the LDN targets [Low agreement, Medium evidence].
34. Reported detrimental environmental impacts of LSLAs are in contrast with the sustainability aspirations conveyed by many LSLA managers.²⁵ When negotiating new LSLAs, robust environmental impact assessments must be conducted and clear, binding agreements on land stewardship in general and LDN specifically must be part

25 A World Bank study finds that surveyed large-scale land acquisitions (LSLAs) are mostly interested in generating positive environmental and socioeconomic impacts but are mostly achieving the opposite. Background Paper 1, box 21 (see supplementary materials available at <<http://www.unccd.int/spi2019-2>>), gives some preliminary recommendations on how to leverage positive impacts from LSLAs.



of the agreement [Low agreement, Medium evidence].

35. Strengthening the monitoring capacity and regulatory power of host governments towards LSLAs can be a way of taking environmental control over potentially very large areas of land [Medium agreement, Medium evidence].

36. MSFs have different characteristics than typical smallholder farmers. MSFs may respond to different SLM incentives than smallholders and, given their rising importance in terms of the area of land occupied, research is needed to find ways to incentivize them towards LDN [Low agreement, Limited Evidence].

BOX 3

Gender dimensions of land governance

Because women tend to be more reliant on natural resources and land, land degradation negatively affects them disproportionately. However, they are often not granted an equal role in official land governance decision-making or land use planning (UN Women, 2018). At the same time, the large environmental steward role bestowed upon women makes them key partners in land degradation neutrality actions that need to be enabled towards action against degradation (Collantes et al., 2018).

Land tenure can be heavily gendered: at the intra-household level, land titles are often vested in men, and skewed inheritance laws can further exacerbate this situation (Tsikata, 2016). While customary (not formally titled) systems can experience similar gender issues, poorly designed land formalization campaigns risk exacerbating such inequalities, especially when land titles cannot be shared among spouses. These tenure insecurities affect women's participation in initiatives to address land degradation (see figure 9) and Okpara et al. (2019). The ongoing trend of large-scale land acquisitions and medium-scale farms pose an additional threat to gender equality as it can involve a shift from many and relatively gender-equal rural jobs to few, male-dominated farm hand jobs (Doss et al., 2014).

Gender-responsive land governance interventions can significantly alleviate unequal land access and enable women to be effective stewards of the environment (Holden et al., 2011; Ali et al., 2014). Gender therefore takes a central role in United Nations Convention to Combat Desertification frameworks, the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests and land-related Sustainable Development Goals. Continued attention for the inclusion of gender dimensions in target setting programmes, land use planning and the design of interventions is warranted (Collantes et al., 2018).



37. New land users who only have a distant and short-term interest in land are likely a threat to LDN [High agreement, Medium evidence]. Their incentive to responsible land stewardship is lower. To engage such land users in LDN measures, restrictive measures may be more effective [Low agreement, Limited evidence].
38. Contract farming can bring farmers closer to the reach of private land governance tools, and therefore provides an opportunity to roll out measures at scale [Medium agreement, Robust evidence].
39. In contrast, contract farming can take the form of crop booms where either high profits or high debts create incentives for farmers to expand and/or adopt unsustainable land management. This can be a source of severe land degradation and specific interventions are needed to avoid such – often fast – land degradation [High agreement, Robust evidence].

The large environmental steward role bestowed upon women makes them key partners in Land Degradation Neutrality actions that need to be enabled towards action against degradation.

4.2.2. Mechanisms for operationalizing land degradation neutrality decisions in land governance

Integrated land use planning reconciles land degradation neutrality (LDN) and other targets in a political process that decides upon a desirable future land use. Efficiency of LDN implementation in land use planning processes can be increased by managing trade-offs and synergies with other land-based targets.

Of the range of available integrated land use planning instruments (figure 11 and table 2), governments opt mostly for agricultural advisory services and financial incentives, either embedded within broad agricultural policies or targeted in the form of payments for ecosystem services. Land zoning or specific land management regulations are used to a lesser extent but may be important to attain the neutrality target.

40. Recent African input subsidy programmes²⁶ have eased pressure on land and scarce evidence suggests that this is reducing forest clearing [Low agreement, Limited evidence]. However, biases in recipient targeting and existing land degradation can undermine the well-being and productivity impacts of these programmes [Medium agreement, Robust evidence].

26 See Background Paper 1, paragraph 5.3.2 in supplementary materials available at <<http://www.unccd.int/spi2019-2>> for a discussion on large-scale agricultural subsidies.

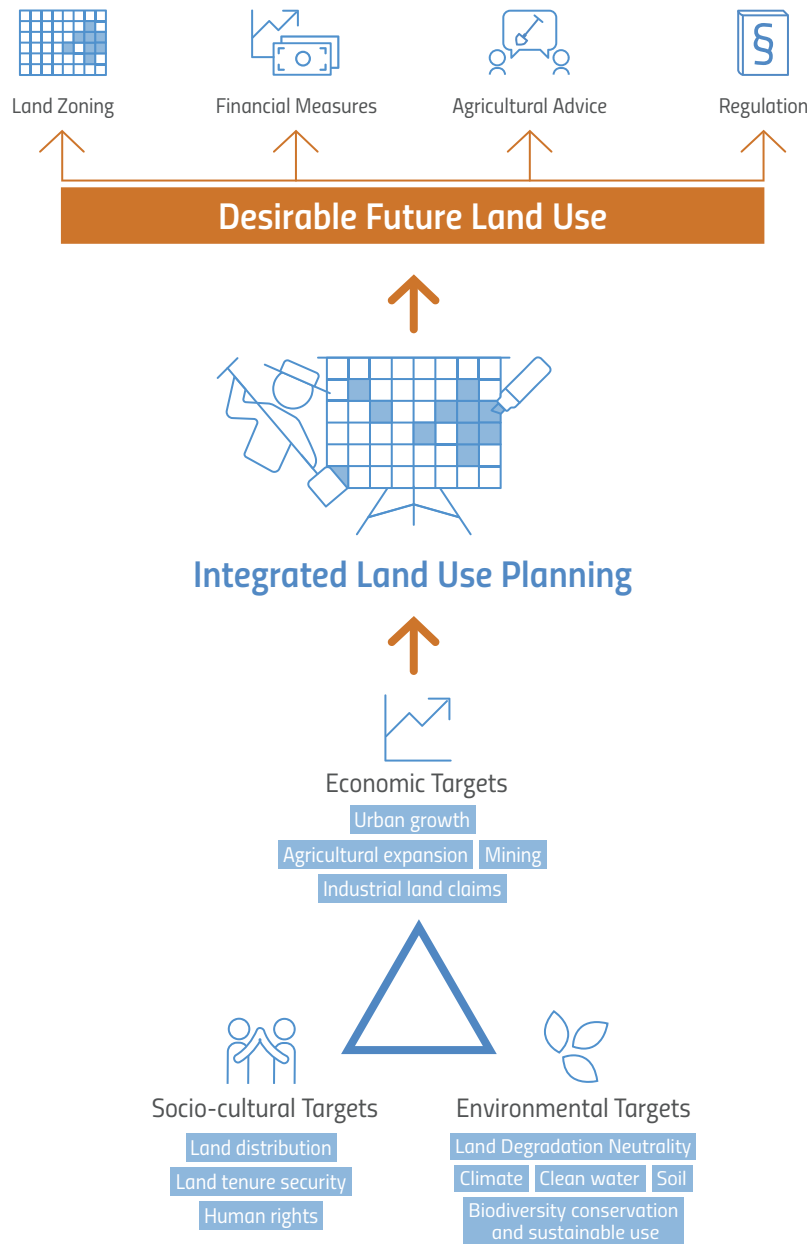


FIGURE 11

Integrated Land Use Planning (ILUP) as a balancing exercise between three broad priorities. ILUP is a negotiation to express desirable future land uses. Various ILUP instruments can be applied to attain this desirable future land use. Land use zoning¹⁶ can be applied to exclude land users, as has been done in the realm of ecological restoration projects or grazing land exclusion. This measure creates opportunity costs for local land users. The effectiveness of land use zoning remains understudied and may be undermined by leakage effects when excluded land users move their activities elsewhere [Medium agreement, Limited evidence].

¹⁶ See Background Paper 1, paragraph 5.2 in supplementary materials available <<http://www.unccd.int/spi2019-2>>, for a discussion on land zoning.



41. Large-scale agricultural subsidies,²⁷ such as the Common Agricultural Policy in the European Union, increasingly use cross-compliance (where subsidies are contingent on specific SLM practices) and opt-in subsidies (where land users can choose to adhere to additional clauses in return for additional subsidies). While the potential of these programmes to reach a high number of farmers is high, evidence suggests that additionality in cross-compliance schemes is often low as clauses do not go beyond pre-existing practices [High agreement, Medium evidence].
42. Large-scale agricultural subsidies can be disruptive and create perverse incentives to overproduce or move towards monocultures [High agreement, Robust evidence]. Recent dynamics in Organisation for Economic Cooperation and Development countries show a decline in these types of subsidies [High agreement, Robust evidence].
43. PES²⁸ are interventions to reward land users that take measures to maintain a supply of ecosystem services, which are often beneficial to a general public beyond the single land user. These schemes can contribute to LDN and well-being, but they are likely only appropriate when on-farm land degradation has off-farm impacts (e.g. sediment load issues) [High agreement, Limited evidence]. Additionality can be undermined by leakage (when a degrading land use practice that is locally discouraged using PES relocates to areas where the PES scheme is not operational, thereby displacing degradation rather than creating a net reduction in degradations) and biased targeting (when elites capture the payments and/or when enrollees were already practising the desired land management). Payments can also crowd out intrinsic motivation for responsible land stewardship (when voluntary action diminishes if monetary compensation is offered) [High agreement, Robust evidence].
44. Agricultural advisory services²⁹ can provide land users with the necessary information to implement LDN. This can be effective insofar as a lack of information is the only limiting factor to adopting SLM [High agreement, Medium evidence]. Prolonged and participatory engagement may be necessary to achieve results, while in other context, on-demand advice may be more appropriate.

Integrated land use planning reconciles Land Degradation Neutrality (LDN) and other targets in a political process that decides upon a desirable future land use.

27 See Background Paper 1, paragraph 5.3.2 in supplementary materials available at <<http://www.unccd.int/spi2019-2>> for a discussion on large-scale agricultural subsidies.

28 See Background Paper 1, paragraph 5.3.3 in supplementary materials available at <<http://www.unccd.int/spi2019-2>>, for a discussion on PES.

29 Also known as agricultural extension. See Background Paper 1, paragraph 5.4 in supplementary materials available at <<http://www.unccd.int/spi2019-2>> for a discussion on agricultural advisory services.



45. Regulations³⁰ setting limits or preconditions on land management are rarely used to control land degradation. Regulations are used to control pesticide or manure amounts, although the main concern of these stringent tools is not land degradation but, rather, clean water or human health. The effectiveness of regulations against land degradation is uncertain [Low agreement, Limited evidence].

Increased integration of land users in global value chains has amplified the role of private land governance. Tools and interventions that companies can use to improve the sustainability and well-being of farmers in their supply chain include: agricultural training, direct investments at origin, internal codes of conduct, eco-certification, commodity round tables and retailer-imposed standards. Hybrid governance arrangements can encourage other companies to take up these tools and allow monitoring of the effectiveness of these tools.

46. The potential for LDN targets to be included in existing private governance tools needs to be investigated. Many current tools have no or very limited attention to land degradation aspects [Low agreement, Limited evidence] (also see table 2).

47. Private land governance alone is unlikely to be sufficient to reach LDN targets [Medium agreement, Limited evidence]. Private interests in sustainability are having an effect, but companies are less likely to adopt measures that negatively affect their profits, competitive position, or output

[Medium agreement, Limited evidence]. Hybrid land governance, where public and private land governance complement each other, may have more potential but the evidence base is scarce [Low agreement, Limited evidence]

Land degradation neutrality (LDN) interventions can impact peoples' livelihoods, therefore policy instruments need to account for potential impacts on land tenure security. The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests³¹ provide good guidance for implementation.

48. Current LDN implementation relies heavily on SLM and is mostly limited to information delivery, choice enablement and financial incentives. Such tools with low land tenure security impacts can be effective [Low agreement, Limited evidence] but additional research is needed to assess whether they can be sufficient to attain LDN.

30 See Background Paper 1, paragraph 5.5 in supplementary materials available at <<http://www.unccd.int/spi2019-2>> for a discussion on regulation.

31 See Food and Agriculture Organization of the United Nations (2012) for The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGT).



TABLE 2

Nuffield ladder of public and private governance interventions towards land degradation neutrality. Public land governance refers to processes related to land initiated and steered by (sub-)national governments. In private land governance, value chain actors fulfil this role. Interventions are ordered from permissive (bottom) to strict (top). Permissive interventions are more voluntary in nature, while strict interventions force land management in a specific direction. Both public and private interventions are listed. For an elaborate discussion of these interventions, see Background Paper 1 in supplementary materials available at <<http://www.unccd.int/spi2019-2>> for details.

| | Description | Public land governance | Private land governance |
|---|--|---|---|
| Eliminate choice | <i>Channel actions only to the desired end</i> | Zoning of strictly protected area | Ban products sourced from specific areas from the supply chain |
| Restrict choice | <i>Remove inappropriate choice options</i> | Regulated land management | Production-management contract farming with limitations on damaging practices Retailer-imposed standards |
| Guide choices through disincentives | <i>Apply taxes or charges</i> | Polluter-pays taxes | |
| Guide choices through incentives | <i>Apply financial incentives</i> | Agricultural subsidies with compliance clauses (e.g. Common Agricultural Policy in the European Union) | Eco-certification |
| Guide choices by changing default policy | <i>Provide better options</i> | | Contract farming with conditions on sustainable production Commodity round tables |
| Enable choice | <i>Enable land users to change behaviour</i> | Increase land tenure security Provide farmers with more sustainable inputs (e.g. African input subsidy programmes) | Company codes of conduct |
| Provide information | <i>Inform or educate land users</i> | Agricultural advisory schemes | Training of contracted farmers |
| Do nothing | <i>No action beyond monitoring</i> | | |



**Land Degradation Neutrality
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livelihoods, therefore policy
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Policy options

- | | | |
|------|--|----|
| 5.1. | Institutional dimension of an enabling environment | 68 |
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Proposals for creating an enabling environment for Land Degradation Neutrality and achieving multiple benefits through safeguarding and enhancing well-being and livelihoods of people affected by land degradation while improving environmental conditions.

5.1 Institutional dimension of an enabling environment

A common national long-term vision and commitment to LDN was ranked by surveyed stakeholders as the top priority measure for implementing LDN. The SPI proposes that:

- Country Parties align and mainstream national LDN targets into National Action Plans and National Development Plans, and raise the profile of LDN in the national policy agenda to maintain and enhance well-being and livelihoods.

Stakeholders and LDN TSP country reports highlight that many countries have established horizontal and multi-stakeholder coordination mechanisms while there were gaps in institutional capacity for vertical coordination,

enforcement of LDN and resolving land use conflicts as well as securing land tenure for LDN. The SPI proposes to:

- Institutionalize horizontal and multi-stakeholder coordination mechanisms in support of LDN mainstreaming, and implementation beyond the LDN TSP;
- Strengthen or develop vertical integration mechanisms that support LDN implementation and enforcement to better coordinate top-down and bottom-up actions related to LDN;
- Ensure that horizontal and vertical institutional arrangements enable up- and out-scaling of best practices to implement and to monitor LDN measures and support capacity-building to develop, implement and monitor LDN interventions.



5.2 Financial dimension of an enabling environment

Lack of finance was ranked as an important LDN implementation challenge and few countries completed a financial needs assessment. The SPI proposes that:

- The costs of measures are accounted for in budgets at all levels. Where possible, existing or planned investments are recommended to be leveraged for LDN. Finance needs assessments at the national and other levels for achieving each national LDN target should be completed, including medium- to long-term financing needs (operational, monitoring, enforcement costs).

5.3 Policy and regulatory dimension of an enabling environment

Secured land tenure and access to land was ranked as an important precondition for LDN implementation, while national capacity for securing land tenure arrangements was rated as low. This is corroborated by extensive literature linking secure land tenure with the adoption of SLM. The SPI proposes to:

- Integrate land tenure security into national strategies to achieve LDN. Where land tenure is insecure, evaluating the sources of insecurity and addressing these sources appropriately is a recommended first step to be taken;
- Reconsider programmes aimed at solely providing individual land titles as these often fail to increase land tenure security. Capacity-building of land administration, legal and regulatory reform, property rights clarification, information campaigns and integrated land use planning can be opted for.

Applying multiple interventions in concert is the most effective way of addressing sources of insecurity;

- Governments to further recognize and protect customary land governance systems in national laws to enable customary land rights holders to be partners in LDN;
- Country Parties to follow the VGGT³³ to manage impacts of LDN measures on land tenure.

Stakeholders rated their integrated land use planning systems as insufficient with limited adoption of neutrality mechanisms. Very limited coverage of integrated land use planning and neutrality mechanisms in LDN TSP country reports was observed. Therefore, the SPI recommends to:

- Enhance national capacities for effective implementation of integrated land use planning and establishing the full integration of a neutrality mechanism to counterbalance assessed losses with equal or greater gains. It is recommended that this be based on the LDN response hierarchy for measures to avoid, reduce, reverse land degradation

There are new emerging private land governance mechanisms that cover significant land areas and new land system types such as LSLAs, MSFs and contract farming. These land system types may respond to different policy signals. Therefore, the SPI recommends to:

- Account for actors involved in private land governance who have an increasingly prominent role in shaping land governance and can therefore be instrumental to achieve

³³ Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (FAO, 2012)



LDN. Hybrid governance and coalitions between public and private actors can open up pathways to implement measures at a large scale.

- Adapt LDN implementation to account for the globalization of value chains of the agricultural and forest sectors. More research needs to be actioned to tailor LDN implementation mechanisms to these land system types and shape sustainable value chains.

5.4 Science-policy dimension of an enabling environment

Stakeholders rated lack of awareness and understanding of LDN and key concepts as the top priority challenge for LDN moving forward. The survey and TSP country reports also identified gaps in technical capacities (monitoring land productivity dynamics and SOC (Objective 1.1 of the SPI work programme 2018–2019) as well as a socioeconomic and resilience assessment) for implementing LDN. Therefore, the SPI recommends to:

- Enhance awareness by facilitating access to information on LDN and build capacities beyond the lead LDN entities, including higher political and policy decision levels, and the public in general;
- Support research and development initiatives to develop novel context-sensitive land governance mechanisms capable of avoiding, reducing and reversing land degradation;
- Build national capacity for improved assessment and monitoring of LDN, including global and national indicators, multiple benefits and trade-offs to support integrated land use planning;
- Synthesise and develop science-based methods to support land use planning,

including the use of scenario analysis and the assessment of trade-offs.

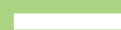
5.5 Multiple benefits

The IPBES Land Degradation and Restoration Assessment highlights that it is well established that land and environmental degradation is leading to increased poverty and worsening inequality by negatively affecting the agricultural sector and reducing access to environmental income upon which poor populations rely (IPBES, 2018). Survey results show that stakeholders hold high expectations for achieving multiple benefits from LDN. However, the literature suggests that multiple benefits are context-specific and take time to materialize. Therefore, the SPI recommends:

- Synthesise and apply available scientific tools and approaches to help build national and subnational capacities to evaluate environmental, economic and social trade-offs, as well as multiple benefits;
- Adequately assess potential multiple benefits during the design of LDN programmes and initiatives, including quantification wherever possible, to properly manage expectations;
- Engage early with local communities and affected stakeholders to ensure that well-being and livelihood needs and outcomes, as well as potential trade-offs and multiple benefits, are effectively identified, discussed, and prioritized. Trade-offs between immediate economic benefits and long-term multiple benefits are of particular importance in such engagements;
- Develop national leverage plans to maximize multiple benefits from LDN and minimize trade-offs or unintended consequences.



Synthesizing and applying available science and policy-relevant approaches can contribute to creating an enabling environment and providing multiple environmental, economic and social benefits.



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The UNCCD-SPI technical report “Creating an Enabling Environment for LDN and its Potential Contribution to Enhancing Well-being, Livelihoods and the Environment” provides science-based evidence on the potential contribution of LDN to enhancing the well-being and livelihoods as well as the environmental conditions of people affected by desertification/land degradation and drought. This is done by capturing evidence on the configuration of an enabling environment for LDN drawn from the scientific literature, the outcomes of the LDN target setting programme, and the experiences of individual stakeholders directly involved in LDN initiatives gathered through a global LDN survey.

An enabling environment for LDN is found to consist of inclusive policies and regulations building on already existing national plans and programmes, an LDN conducive institutional setting, access to multiple sources of finance, and an effective science-policy interface designed to inform sustainable land-based interventions. This report offers solid evidence for the critical dimensions of an enabling environment and provides key messages and policy options for stakeholders involved in national efforts to further engage in LDN planning for sustainably managing land and providing multiple benefits for the environment, human well-being and sustainable livelihoods.

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