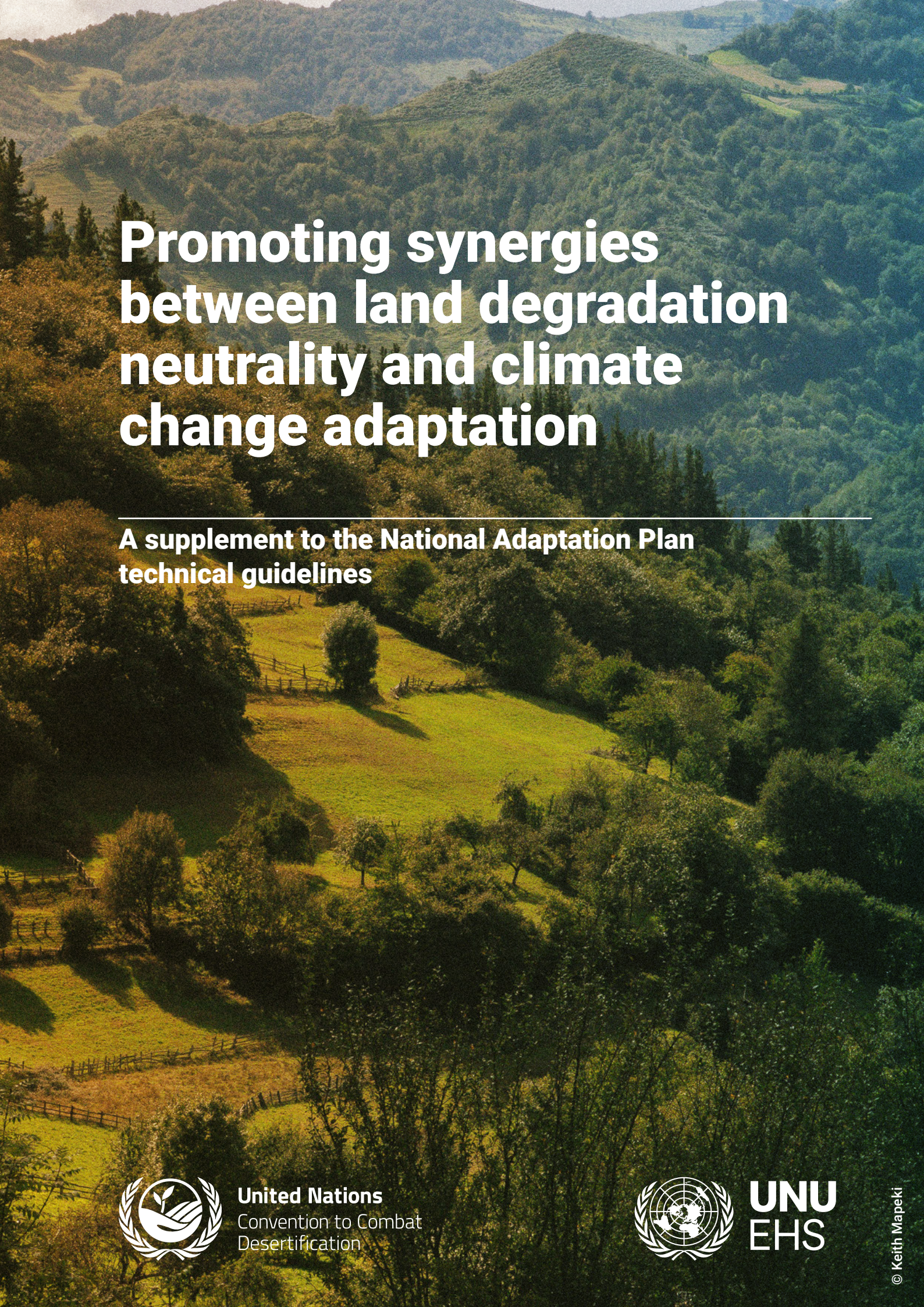

Promoting synergies between land degradation neutrality and climate change adaptation

A supplement to the National Adaptation Plan technical guidelines

United Nations
Convention to Combat Desertification

UNU EHS

© Keith Mapeki

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Foreword

Synergy holds the key in addressing land degradation and the effects of climate change – ultimately the achievement of Sustainable Development Goals (SDGs)! Good land stewardship is vital to climate change mitigation and adaptation. However, land is being transformed to the tune of a 100 million hectares of new degradation each year as reported by governments.

The ability of land to support crops and other life is already diminished across a quarter of Earth's terrestrial surface, affecting as many as 3.2 billion people. Land degradation is both a consequence of climate change and a significant driver of it. Indeed, the world-disrupting effects of climate change are here—from rising oceans and catastrophic storms to devastating floods and wildfires—and most are expected to grow or intensify in the decades ahead.

The United Nations Convention to Combat Desertification (UNCCD) is the sole legally binding instrument encouraging the sustainable management of land and soils under production and their restoration. Land degradation neutrality (or LDN) is the framework which encourages nations to manage land today and into the future in ways that balance land degradation with land restoration, ensuring no net loss of healthy, productive land. It helps guarantee that land continues to feed people and support thriving nature. It also turns out to be a powerful tool for climate change adaptation.

The United Nations Framework Convention on Climate Change (UNFCCC) has been encouraging the community of nations to get ready to adapt to the challenges—or opportunities—of climate change by guiding them through a comprehensive national adaptation plan (NAP) process. Formally missing from this adaptation planning, however, is the international goal of land degradation neutrality.

This guide highlights the essential role that land can play in helping to achieve the United Nations sustainable development goals and helping to adapt to our altered climate. Healthy land is essential to food security and biodiversity, but it also captures and stores the carbon that's largely responsible for climate warming. Degraded land, on the other hand, is commonly a source of it. Land is the nexus where climate change and other environmental challenges converge.

The goal of this report is to bridge the gap between international efforts to promote climate change adaptation and those to protect and restore healthy land. In particular, the report seeks to align the climate adaptation goals of the UNFCCC with UNCCD's land degradation neutrality targets.

The report is envisioned as a supplement to the guidelines of the NAP process. It offers a step-by-step approach to integrating the principles and objectives of the LDN framework within climate change adaptation planning. It identifies where and how these broad goals intersect, and it reveals how activities, knowledge, training, monitoring and funding sources can be better leveraged when they serve both climate change adaptation and LDN.

The guide specifically explores how the UNCCD's sustainable land stewardship tools—such as integrated land use management—can effectively support both climate change adaptation and the achievement of LDN. Incorporating these tools into the NAP process, in turn, can help to "climate-proof" LDN efforts and ensure they remain resilient to future climate fluctuations.

The guide also aims to encourage cooperation and communication among governments, government agencies and other stakeholders who might otherwise act separately when implementing climate change adaptation or land restoration measures. It highlights the importance of addressing shared challenges of climate adaptation and land stewardship, such as unequal land tenure or the disproportionate burden of land-related challenges on women.

I thank all those who helped deliver this valuable report. I also urge policymakers worldwide to use it as a guide in their efforts to ensure food security and healthy ecosystems while adapting to the changing climate.

Ibrahim Thiaw
Executive Secretary
United Nations
Convention to Combat
Desertification

Summary for Policymakers

Opportunities for promoting synergies between Climate Change Adaptation and Land Degradation Neutrality

Good stewardship of land is vital to climate change mitigation and adaptation. Sustainable land management helps to sequester carbon in plants and soils and increase the resilience of ecosystems and the people who depend on them. It also helps world nations stay on track to meet global environmental targets. Land Degradation Neutrality (LDN) contributes to good land stewardship by providing a framework for optimizing land management decisions to balance land degradation with its restoration. Efforts to achieve LDN, therefore, not only ensure no net loss of healthy and productive land, they contribute to efforts to achieve climate change adaptation (CCA).

CCA, meanwhile, is the central objective of national adaptation plans (NAPs). The NAP process was established by the United Nations Framework Convention on Climate Change (UNFCCC) to encourage adaptation planning by the Convention's signatory nations. In particular, the NAP process aims to help least-developed and other developing countries reduce their vulnerability to the impacts of climate change and to integrate CCA into new and existing policies, programmes and activities.

Using the NAP process to integrate CCA with efforts to achieve LDN and other initiatives to address desertification, land degradation and drought (DLDD) offers an important opportunity to link efforts aimed at land management and climate adaptation and to identify synergies. These synergies can strengthen the resilience of societies and people who depend on land by leveraging common objectives, activities and support and by addressing common challenges, such as those related to gender, land tenure and finance.

Why is guidance needed?

In response to the UNCCD COP Decision 20/COP.15 para 4[1], a review of NAPs of the UNFCCC Country Parties showed that, while drought and desertification are frequently mentioned as challenges, only a few NAPs refer to LDN. This is despite the fact that many of the signatory countries to the UNFCCC are also signatories to the UNCCD and many have pledged to meet LDN targets. Thus, this failure of most NAPs to integrate the principles and objectives of the LDN framework (or other initiatives under the UNCCD) presents a significant missed opportunity. The purpose of this guide is to address this opportunity by identifying shared objectives and activities and to support efforts to achieve both LDN and CCA and to highlight benefits that can be gained from integrating LDN initiatives into NAPs.

What is this guide?

This guide is a supplement to the UNFCCC's NAP technical guidelines. It describes how synergies between CCA and LDN initiatives can be identified and used by integrating efforts to achieve LDN (and to address DLDD) into the formulation and implementation of NAPs. These synergies can help reduce climate risks for vulnerable economic sectors,

[1] "requests the secretariat to collaborate with relevant constituted bodies under the United Nations Framework Convention on Climate Change as well as relevant scientific and technical partners to produce a supplement to the national adaptation plan technical guidelines on promoting synergy between efforts addressing desertification/land degradation and drought, the achievement of land degradation neutrality and the process to formulate and implement national adaptation plans under the United Nations Framework Convention on Climate Change and the Paris Agreement;" UNCCD COP Decision 20/COP.15 para. 4.

communities and individuals and enhance the provision of vital ecosystem services. This guide aims to improve an understanding of important concepts and processes and to outline ways for collaboration among efforts to achieve LDN and CCA through the NAP process.

Who is the target audience of this guide?

- National focal points and staff to the UNFCCC, who are involved in the development of the NAPs, can learn of the synergies with initiatives under the UNCCD.
- National focal points and staff to the UNCCD, who are involved in addressing DLDD, can learn about the NAP process and of the ways they can support it.
- International organizations and consultancies can learn how to support national governments in the development of their NAPs.
- Ministries and experts can better inform their work in sectors including agriculture, natural resource management, water resource management, forestry, conservation and land use planning.
- Other actors working at the intersection of CCA and LDN initiatives can better understand how to identify and use synergies between them.

Key findings on opportunities and synergies between addressing land degradation and climate change adaptation

1. Similarities between Climate Change Adaptation and Land Degradation Neutrality can benefit both

CCA and LDN (as a key concept for addressing DLDD) share many similar objectives, including strengthening the resilience of people and societies who depend on land. Beyond these common objectives, CCA and LDN also share parallels in their structural elements, like planning and monitoring and in the guiding principles for achieving their targets. For example, common principles include the express consideration of vulnerable groups and the transparent and participatory engagement of stakeholders. Integrating national LDN initiatives into the NAP process offers, therefore, the opportunity to build on these similarities and to leverage synergies.

2. The integration of established national initiatives under the UNCCD into NAP processes can make them more efficient and impactful

While the LDN Target Setting Programme is a UNCCD programme to promote LDN, several other well-established national initiatives to address DLDD under the UNCCD also directly contribute to CCA. Most prominent among these are the National Action Programmes and the National Drought Plans. They provide relevant and readily available information on CCA and have led to the implementation of a variety of projects that also contribute to CCA. Integrating national initiatives under the UNCCD into NAPs can therefore contribute to multiple NAP objectives and activities, from building on existing adaptation projects to monitoring adaptation efforts.

3. The expertise and experiences of the UNCCD on land can positively influence land-based adaptation outcomes

Since its establishment, the UNCCD and its bodies and partners have developed several tools to guide a more sustainable management of land and help achieve LDN. The tools address the governance of land tenure, the use of Integrated Land Use Planning for LDN and other topics. These tools – and the experiences of countries that have applied them – are highly relevant to CCA, especially if an ecosystem-based approach is followed. National government departments working on LDN can provide important help for the development and implementation of CCA plans and programmes.

4. The NAP process can help "climate-proof" LDN initiatives and avoid maladaptation

The NAP process aims to integrate CCA in existing national processes and initiatives, including those that aim to achieve LDN. For example, climate change projections used to inform CCA can also be integrated into LDN planning. This can help to ensure that land restoration projects are designed in a climate resilient way, such as by including plans to plant more drought-resilient tree species. Further, by anticipating the potential risks arising from responses to land degradation, CCA can help reduce the potential maladaptive outcomes of LDN initiatives and increase any LDN-CCA co-benefits. For example, rewetting

peatland can reduce land degradation, address flood risk and contribute to climate change mitigation, but it can also increase the risks of malaria.

5. Addressing shared CCA and LDN objectives together can open new funding and support opportunities

Integrating both CCA and LDN initiatives within the NAP process not only harnesses potential synergies between their objectives but also opens new opportunities for funding and technical support. These opportunities can range from funding for land-based implementation to support for capacity-building measures. For instance, the UNCCD's Global Mechanism, which acts as the Convention's operational arm, aims to empower nations to effectively mobilize resources and implement LDN initiatives through knowledge dissemination, technical assistance and policy advocacy.

Key recommendations for building synergies between Land Degradation Neutrality Initiatives and Climate Change Adaptation within the National Adaptation Plan process

Nine key recommendations, outlined below, are intended to guide countries in building synergies between activities to achieve LDN and CCA within the NAP process. Some of these recommendations may be more relevant than others for particular countries, depending on a nation's state of progress in their NAP process, on its different initiatives under the UNCCD and on the current degree of collaboration between its authorities working on CCA and LDN. More detailed steps and resources are provided in the technical chapter (Chapter 4) of this supplement.

1. Enhance coordination efforts for promoting LDN and CCA

To enhance coordination efforts for promoting LDN and CCA, national focal points to the UNCCD and UNFCCC should be brought together to facilitate discussions on the two processes. Identifying common goals and challenges can advance efforts to integrate LDN and CCA within a country's NAP. Incorporating a diverse array of stakeholders into these efforts is crucial. Engaging land users, land use planners and practitioners can provide valuable insights for integrating LDN initiatives into the NAP process. Forming a task force can also help facilitate this integration, while providing a forum to discuss other related issues, such as mechanisms to promote coordination of adaptation planning, to improve data interoperability or to standardize information exchange. While coordination within countries is important, improving regional coordination is also valuable. It can help to pool resources for climate risk assessments and scenarios, and it can help to address cross-border effects. Building on existing regional frameworks, such as subregional and regional action programmes under the UNCCD, can help to maximize benefits across countries facing similar challenges. For more information, see Step A1.

2. Learn from the past, understand the present and shape future LDN and CCA initiatives

Reviewing past and ongoing national adaptation and LDN initiatives can provide critical insights on the effects of projects, programmes or policies on land degradation, drought and adaptation. Working with experts and local communities to analyse current and future climate scenarios and the expected impacts on land degradation and drought can help identify information gaps. It can also identify climate risks and the best adaptation strategies to combat land degradation and drought. For more information, see Step A2.

3. Identify and build on technical and financial support for the integration of LDN into the NAP process

Identifying the types of technical and financial support needed and exploring potential multilateral, bilateral and national sources for these supports are important prerequisites for effectively developing and operationalizing NAPs. NAPs that integrate national LDN initiatives and emphasize the connections between LDN and CCA objectives have more opportunities for support. The UNCCD's Global Mechanism provides guidance for mobilizing technical and financial resources essential for these efforts. Several other institutions support endeavors to achieve LDN by providing earth observation data or by outlining technologies and approaches for sustainable land management. These also support the NAP processes. For more information, see Step A3 and A4.

4. Assess and prioritize risks associated with climate change and land degradation

Evaluating interacting risks associated with land degradation and climate change helps to provide a comprehensive picture of existing and future challenges that need to be addressed. Climate-related changes interacting with land degradation and drought impacts are especially important as they severely affect large parts of the global population and economic value generation. These include changing precipitation patterns, glacier retreat, heatwaves, sand and dust storms, wildfires and species migrations, as well as the exposure of people and their assets to current and future hazards and their vulnerability to DLDD impacts. Incorporating socioeconomic pathways that affect the amount of degraded land and its potential impacts can further enrich this analysis. Once a comprehensive picture of existing risks has been generated, prioritizing these risks will help narrow down adaptation options. To prioritize risks, considerations can include the likelihood and costs of climate impacts, as well as their relevance for national policies such as national strategies to achieve LDN. For more information, see Step B1 and B2.

5. Appraise and prioritize adaptation options to address land degradation and climate change risks

Adaptation options that address risks associated with land degradation and climate change are many. Establishing clear criteria for appraising adaptation options helps identify which are the most efficient for mitigating these risks. Many of the criteria used for prioritizing risks can also be used to identify suitable adaptation options. Considerations under national LDN initiatives, such as those that address the LDN response hierarchy (i.e., to avoid, reduce and reverse land degradation), can further help to appraise land-based adaptation options. Once a set of adaptation options to address land degradation and climate change risks have been identified, actively exploring opportunities to build upon and complement existing CCA and LDN initiatives can help prioritize their implementation, optimize resource use and maximize effectiveness and efficiency in the long term. For more information, see Step B2, C1 and C2.

6. Build capacity and coordinate those working on CCA and LDN for effective integration and implementation

Enhancing capacities relevant to achieving LDN and CCA across sectors and different levels of governments is important to ensure the effective integration and synergetic implementation of LDN and CCA. Efforts to enhance capacities can include peer-to-peer learning across government departments to align activities or joint training on relevant land planning tools, such as integrated land use planning and integrated landscape management to address conflicting interests. Integrating land degradation and CCA into educational activities and university programmes can also promote understanding across stakeholder groups and build the required expertise for long-term planning. Facilitating public access to land-related data – including land registers, tenure information and data concerning status of land degradation – and teaching local communities how to use this data can support informed decision-making to improve effectiveness of efforts to address adaptation and land degradation. For more information, see Step C3 and C4.

7. Ensure effective monitoring and evaluation of the NAP process and the NAP implementation

To evaluate and assess progress, effectiveness and gaps in integrating CCA and LDN within NAP processes, a monitoring system is required. Aligning NAP monitoring with existing monitoring of national LDN initiatives helps define relevant indicators and metrics, such as land cover change, net primary productivity and soil organic carbon. Additional data can include drivers of land degradation and needs of vulnerable groups. Besides reducing costs, aligning NAP monitoring with monitoring of LDN initiatives further helps to harmonize respective strategies and activities on LDN, drought and CCA. Establishing a monitoring strategy helps identify monitoring methods, define baseline data and determine monitoring intervals. A monitoring strategy can also include training on the use of public data, such as techniques for using earth observation data. For more information, see Step D1.

8. Critically review the NAP process to address inefficiencies in the integration of LDN and CCA and to incorporate new insights

Information from new assessments, emerging science and findings from the monitoring and evaluation of CCA and LDN initiatives can help determine whether a NAP adequately addresses climate change risks associated with land degradation and drought. Involving government departments working on LDN as well as independent organizations (i.e., research institutes and civil society organizations) in the review of NAP activities can help to avoid bias and to identify hidden connections and underlying root causes for land degradation and difficulties in implementing CCA. Once the review process has been finished, the NAP should be updated. For more information, see Step D2 and D3.

9. Communicate results of the NAP process and incorporate feedback to inform and promote the integration of LDN and CCA within the NAP process

Throughout the NAP process, proactively engaging with different stakeholders working on land is critical. Communicating climate risks associated with land degradation and drought and receiving feedback on adaptation options ensures that different stakeholders become aware of current and future risks and that adaptation options align with different stakeholder needs. Once the NAP has been finalized, sharing it widely with different stakeholders and communicating planned adaptation actions can help affected people working on the land make informed decisions. Moreover, data from risk assessments should be made publicly available to support further research and to inform land management decisions. Besides influencing concrete actions on the ground, widely communicating the results of the NAP process can help shape strategies on national and subnational development and sector-specific planning to link CCA and LDN more widely. Communicating experiences from NAP processes internationally can help foster exchange concerning best practices for integrating CCA and LDN initiatives within NAPs. For more information, see Step D4.

Abbreviations and acronyms

CBD	United Nations Convention on Biological Diversity
CCA	Climate Change Adaptation
COP	Conference of Parties
DLDD	Desertification, Land Degradation and Drought
EbA	Ecosystem-based Adaptation
FAO	Food and Agriculture Organization of the United Nations
GEO	Group on Earth Observations
ILM	Integrated Landscape Management
ILUP	Integrated Land Use Planning
IPCC	Intergovernmental Panel on Climate Change
LDN	Land Degradation Neutrality
LEG	Least Developed Countries Expert Group
NAP	National Adaptation Plan
SDG	Sustainable Development Goal
SLM	Sustainable Land Management
UNCCD	United Nations Convention to Combat Desertification
UNDRR	United Nations Office for Disaster Risk Reduction
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNU-EHS	United Nations University Institute for Environment and Human Security
WMO	World Meteorological Organization
WOCAT	World Overview of Conservation Approaches and Technologies

Glossary

Climate change adaptation: "The process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects" (IPCC, 2022a, p. 2898).

Combat desertification: "Activities which are part of the integrated development of land in arid, semi-arid and dry sub-humid areas for sustainable development which are aimed at: prevention and/or reduction of land degradation; rehabilitation of partly degraded land; and reclamation of desertified land" (UNCCD, 1994, p. 4).

Desertification: Desertification is defined as "land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities" (UNCCD, 1994, p. 4).

Disaster risk reduction: "Disaster risk reduction is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development" (UN General Assembly, 2016).

Driver: "Natural- or human-induced factor which creates a change in a direct or indirect way" (Nelson G.C., 2005, p. 74).

Drought: Drought is "a naturally occurring phenomenon that exists when precipitation has been significantly below normal recorded levels, causing serious hydrological imbalances that adversely affect land resource production systems" ((UNCCD, 1994, p. 4).

Ecosystem: "A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit" (Secretariat of the CBD, 2011, p. 3).

Ecosystem services: "Ecological processes or functions having monetary or non-monetary value to individuals or society at large. These are frequently classified as (1) supporting services such as productivity or biodiversity maintenance, (2) provisioning services such as food or fibre, (3) regulating services such as climate regulation or carbon sequestration and (4) cultural services such as tourism or spiritual and aesthetic appreciation" (IPCC, 2018).

Ecosystem-based Adaptation: "The use of biodiversity and ecosystem services to help people to adapt to the impacts of climate change. EbA aims to maintain and increase the resilience and reduce the vulnerability of ecosystems and people in the face of the adverse effects of climate change" (Secretariat of the CBD 2019, p. 41).

Land: "A terrestrial bioproductive system that comprises soil, vegetation, other biota and the ecological and hydrological processes that operate within the system" ((UNCCD, 1994, p. 4).

Land degradation: "[T]he reduction or loss of the biological or economic productivity and complexity of rainfed cropland, irrigated cropland, or range, pasture, forest and woodlands resulting from land uses or from a process or combination of processes, including processes arising from human activities and habitation patterns, such as: (i) soil erosion caused by wind and/or water; (ii) deterioration of the physical, chemical and biological or economic properties of soil; and (iii) long-term loss of natural vegetation" ((UNCCD, 1994, p. 4).

Land Degradation Neutrality: "A state whereby the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security remains stable or increases within specified temporal and spatial scales and ecosystems" (UNCCD, 2015, p. 24).

LDN initiative: Encompasses "the variety of activities including, projects, plans, targets, programmes, practices, policy assistance, awareness-raising and other efforts to combat desertification, land degradation and[/or] drought" (FAO and UNCCD, 2022).

Land use: "The total of arrangements, activities and inputs [a set of human actions] applied to a parcel of land. The term land use is also used in the sense of the social and economic purposes for which land is managed (e.g., grazing, timber extraction, conservation and city dwelling)" (IPCC, 2018).

Livelihood: "The resources used and the activities undertaken in order to live. Livelihoods are usually determined by the entitlements and assets to which people have access. Such assets can be categorised as human, social, natural, physical, or financial" (IPCC, 2018).

Mitigation (of climate change): "A human intervention to reduce the sources or enhance the sinks of greenhouse gases" (IPCC, 2014, p. 4).

Mitigation (of disaster risk): "The lessening of the potential adverse impacts of physical hazards (including those that are human-induced) through actions that reduce hazard, exposure and vulnerability" (IPCC, 2012, p. 561).

Mitigation (of drought impacts): "Activities related to the prediction of drought and intended to reduce the vulnerability of society and natural systems to drought as it relates to combating desertification" (UNCCD, 1994, p. 4).

Natural Capital: The stock of renewable and non-renewable natural resources (e.g., plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people (Capitals Coalition, 2023, p. 11).

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" (WOCAT, n.d.).

Synergies: "Linking processes in a way that increases the effects of the sum of the joint activities beyond the sum of individual activities and thus making efforts more effective and efficient" (Secretariat of the CBD, 2019, p. 88).

1. Introduction

Land sustains societies by providing ecosystem services essential to human health and well-being (Benton and others, 2018). Land's capacity to provide these services is reduced by desertification, land degradation and drought (DLDD), posing serious challenges to the resilience of societies at a global scale. According to the 2018-2030 Strategic Framework of the United Nations Convention to Combat Desertification (UNCCD), DLDD "contribute to and aggravate economic, social and environmental problems such as poverty, poor health, lack of food security, biodiversity loss, water scarcity, reduced resilience to climate change and forced migration" (Decision 7/COP.13; UNCCD, 2017).

The UNCCD's goal of land degradation neutrality (LDN) has emerged against this backdrop to halt and reverse DLDD through sustainable land management (SLM). LDN is defined by the Convention as "a state whereby the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security remain stable or increase within specified temporal and spatial scales and ecosystems" (Decision 3/COP.12; UNCCD, 2015). In its 2018-2030 Strategic Framework to achieve a land degradation-neutral world, the Convention suggests that combating DLDD should simultaneously combat climate change and enhance synergies with other multilateral environmental agreements and processes (Decision 7/COP.13; UNCCD, 2017). Land degradation can result in greenhouse gas emissions and further drive climate change. Inversely, land restoration and SLM can mitigate climate change by increasing the stock of carbon in soils and vegetation and can contribute to climate change adaptation (CCA) by reducing climate risks (IPCC, 2019). Meanwhile, the changing climate can intensify land degradation and desertification and is increasing the frequency, intensity, extent and duration of droughts in many parts of the world (IPCC, 2019; UNDRR, 2021b). Given these interlinkages and overlap, endeavors to achieve LDN can frequently contribute to initiatives to ensure CCA and vice versa. Efforts that address both LDN and CCA simultaneously can significantly enhance the resilience of societies.

Other UNCCD activities that improve the productivity of land and its ability to cope with droughts also contribute to CCA. UNCCD efforts to promote institutional processes and technologies, such as early warning systems, crop insurance or sustainable technologies that enhance access to water, can also help communities adapt to climate change.

Accordingly, in 2022, Parties to the UNCCD requested the secretariat during the UNCCD COP15 in Abidjan "to collaborate with relevant constituted bodies under the United Nations Framework Convention on Climate Change as well as relevant scientific and technical partners to produce a supplement to the national adaptation plan technical guidelines on promoting synergy between efforts addressing desertification/land degradation and drought, the achievement of LDN and the process to formulate and implement national adaptation plans under the United Nations Framework Convention on Climate Change and the Paris Agreement" (Decision 20/COP.15 para. 4). The national adaptation plan (NAP) process was established under the United Nations Framework Convention on Climate Change (UNFCCC) to encourage adaptation planning in the context of sustainable development and climate change. In particular, the NAP process aims to help least-developed and other developing countries reduce their vulnerability to climate change by integrating CCA into policies. To support the NAP process, the UNFCCC's Least Developed Countries Expert Group (LEG), which provides technical guidance for the national adaptation plans and actions of least developed countries, urged the creation of supplements to the NAP guidelines to address specific topics (LEG, 2012). This report on the shared aims and efforts to achieve LDN and CCA is among these supplements.

1.1 Objectives and target audience

The objective of this guide, as a supplement to the NAP technical guidelines, is to promote synergies between efforts to achieve LDN and CCA by highlighting linkages and entry points for LDN in the NAP process. In this guide, efforts to achieve LDN include activities that address desertification, land degradation and drought. Thus, the guide targets a number of different audiences:

- National Focal Points to the UNFCCC and stakeholders involved in setting up NAPs may use this supplement to learn about LDN initiatives[2] in their countries and how to build synergies between these and CCA activities;

- National Focal Points to the UNCCD and staff that work on LDN initiatives may use this supplement to support NAP planners in developing more comprehensive NAPs and to build synergies to climate-proof their LDN efforts; and

- ministries, international organizations and consultancies – as well as other experts working in agriculture, natural resource management, water resource management, forestry, conservation, land use planning and other sectors – may use this supplement to help them support national governments to effectively formulate and implement NAPs that address both DLDD and climate change.

While this guide aims to help harmonize efforts to achieve LDN into NAPs, the technical guidance also addresses other efforts to combat DLDD and how this can support the NAP process.

The guide's focus is general and intended to ensure its broad relevance to the different socioeconomic backgrounds and environments of the party countries. Nevertheless, it provides a list of more targeted suggested activities, guiding questions and knowledge tools to guide the effective integration of LDN initiatives into NAP processes in different contexts. These are complemented by case studies that illustrate how initiatives that address both LDN and CCA can operate on the ground. The guidelines aim to inspire, motivate and enable countries to assess their vulnerabilities to DLDD and climate change, mainstream DLDD and climate change risks and address adaptation in a variety of contexts.

Drawing on the structure of the NAP technical guidelines (LEG, 2012) and the adaptation cycle (e.g., Adaptation Committee, 2019), this guide highlights entry points for collaboration between key stakeholders and recommends activities within each of the NAP steps to build synergies between CCA and LDN. The guide provides questions and supporting material to facilitate the recommended activities. Further, the guide includes cross-cutting topics that underline the importance of considering gender, land tenure and ways to potentially finance land-based adaptation. To motivate and inspire activities that facilitate the NAP process, case studies from different countries and regions provide insights from initiatives that combine efforts to achieve CCA and LDN. Boxes describe practical tools and resources for developing and implementing NAPs that integrate efforts to address DLDD.

1.2 Structure of this guide

This supplement to the UNFCCC NAP technical guidelines is structured as a guide, as well (Figure 1). It begins by exploring the conceptual background and initiatives relevant to the two sister conventions UNFCCC and UNCCD. The guide then explores similarities, differences and links between the UNCCD's target of LDN and UNFCCC's goal of CCA.

It highlights entry points for collaboration between stakeholders working on initiatives related to these objectives. The document describes activities, guiding questions, supportive material and possible outputs for integrating LDN initiatives into the NAP process to encourage CCA. Finally, the guide sets out four sections to encourage synergies between LDN and

[2] Considering the wide variety of global, regional, national and local commitments and activities undertaken by countries and other stakeholders to achieve LDN, this guide uses the term "LDN initiative" to refer to the variety of targets, plans, projects, programmes, practices, policy assistance, awareness-raising and other efforts to combat desertification, land degradation and drought (drawn from FAO and UNCCD, 2022).

CCA: A. Laying the groundwork and addressing gaps; B. Assessing risks and appraising adaptation options; C. Implementing strategies; and D. Monitoring, evaluating and learning.

Throughout the document, four cross-cutting topics – namely, gender, land tenure, land use planning and management and finance – are addressed as relevant for the guidelines. To motivate and inspire further activities that leverage LDN-CCA synergies, case studies from different countries provide insights from initiatives that combine land degradation and climate adaptation initiatives. Practical resources to facilitate the formulation and implementation of NAPs that integrate initiatives for tackling DLDD are provided at the end of each section.

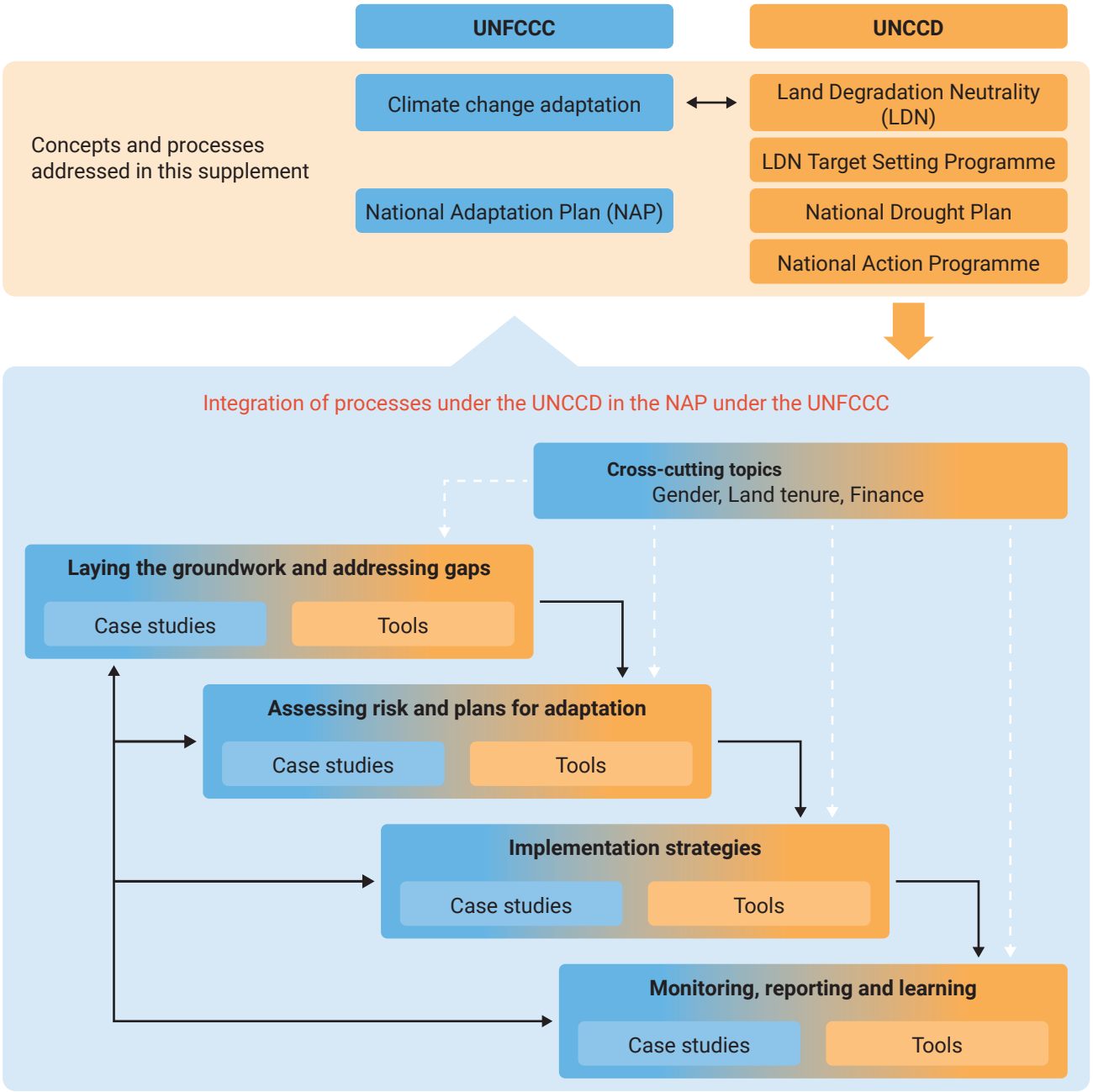
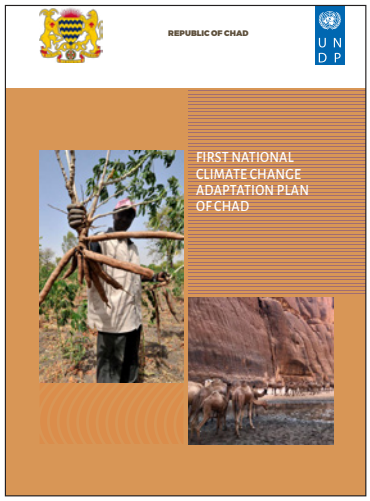


Figure 1: Overview of this guide to promoting synergies between efforts to address desertification, land degradation and drought, the achievement of Land Degradation Neutrality and the process for formulating and implementing National Adaptation Plans.

The integration of LDN initiatives in National Adaptation Plans

An analysis of NAPs was used to systematically deduce the extent to which NAPs already include terms and initiatives central to the work of the UNCCD. Thirty-one NAPs accessed in July 2023 and available in English on NAP Central, a central website of all NAP-related resources maintained by the LEG (https://www.napcentral.org/), were analysed. The UNCCD is frequently mentioned in these NAPs but most often in the context of international frameworks (in general) with no reference to concrete initiatives (e.g., the country has ratified the United Nations Convention on Biological Diversity (CBD), the United Nations Convention to Combat Desertification (UNCCD), the UNFCCC and the Kyoto Protocol).



Only three NAPs from Sierra Leone, Chad and Sri Lanka refer to the LDN concept. Sri Lanka's NAP refers to SDG 15.3, which aims to "combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods and strive to achieve a land degradation-neutral world". However, it does not connect it to concrete national initiatives under the UNCCD. Sierra Leone's NAP underlines that, in "the Land Degradation Neutrality (LDN) target setting process, Sierra Leone's Technical Working Group identified and established hotspots of degraded areas using three indicators: land cover, land productivity dynamics and soil organic carbon content. The hotspots provided useful guidelines for establishing baselines of land degradation from which the national voluntary targets were set." (Government of Sierra Leone, 2022, p. 39) However, it also acknowledges that coherence and coordination across adaptation and adaptation-related policies – including those that address LDN – are insufficient to effectively make use of synergies between them. The NAP of Chad also makes a direct connection between its priority adaptation options and achieving LDN: ''The priority adaptation measures in this NAP will support forest and land restoration, address the causes of biodiversity loss and land degradation and contribute to reducing greenhouse gas emissions. In this way, through nature-based solutions, these actions will contribute to the goal of land degradation neutrality by 2030" (Republic of Chad, 2022, p. 64).

However, while the concept of LDN and other concrete national initiatives under the UNCCD are rarely integrated into NAPs of UNFCCC Party Countries, many explicitly recognize the problems of land degradation, desertification and drought. Drought, for example, is mentioned in all the analysed NAPs. It is listed as among the main climate hazards facing the countries and is often mentioned in the context of priority adaptation options. In Ethiopia, strengthening drought, livestock and crop insurance mechanisms are mentioned in the context of reducing climate risks and creating insurance schemes to address droughts and floods leading to crop failure (Federal Democratic Republic of Ethiopia, 2019, p. 28). Land degradation and desertification are most often mentioned in the context of adaptation measures or listed as key climate risks. Brazil's NAP, for example, argues for strengthening "actions for containment, reduction and prevention of desertification and dune formation, with a view to minimizing impacts and recovering the productive capacity of afflicted areas, by applying principles of soil conservation, sustainable management and use of water" (Ministry of Environment Brazil, p. 20).

In response to DLDD, the NAPs of UNFCCC Party Countries often describe SLM and land restoration as adaptation measures. For example, Liberia's NAP notes that "[a]daptation measures include the prevention, tolerance, sharing of losses, changes in land use or activities, changes of location and restoration" (Environmental Protection Agency of Liberia, 2021, p. 12).

2. Conceptual background and relevant initiatives

This section provides an overview of important concepts and initiatives under the UNFCCC and UNCCD. These provide the basis for understanding the linkages between CCA and LDN and for encouraging the use of synergies between efforts to achieve LDN and NAPs.

2.1 Relevant concepts and initiatives under the UNFCCC

Climate Change Adaptation

Adaptation to climate change is defined as "the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects" (IPCC, 2022a, p. 2898).

The Adaptation Committee of the UNFCCC describes the CCA process as involving four iterative steps: 1) assessing impacts, vulnerability, risks and resilience; 2) planning for adaptation; 3) implementing adaptation measures; and 4) monitoring and evaluating adaptation (Figure 2). Throughout this process, continuous stakeholder engagement, capacity-building, finance and technology are essential to the success of each step (Adaptation Committee, 2019).

The National Adaptation Plan process

The NAP process was established under the UNFCCC as a strategic way to enable countries to identify medium- and long-term priorities for adapting to climate change and to develop and implement strategies and programmes to address those priorities. The objectives of the NAP process are

a) to reduce vulnerability to the impacts of climate change by building adaptive capacity and resilience; and

b) to facilitate the coherent integration of CCA into relevant new and existing policies, programmes and activities, including the development planning processes and strategies within all relevant sectors and across all administrative levels (LEG, 2012).

Led by national governments, the NAP process involves analysing current and future climate changes and assessing climate risks. It also puts in place the systems and capacities needed to make adaptation an integral and ongoing part of a country's development planning, decision-making and budgeting (Hammill and others, 2020). Countries use the NAP process and its outcomes to identify and update the adaptation elements of the Nationally Determined Contributions (NDCs), which communicates the country's contribution to achieving the goals of the Paris Agreement (UNEP, 2021).

Technical support to the NAP process is provided by the LEG, by other bodies under the UNFCCC, by United Nations organizations and by bilateral and multilateral agencies. Together with relevant organizations, the

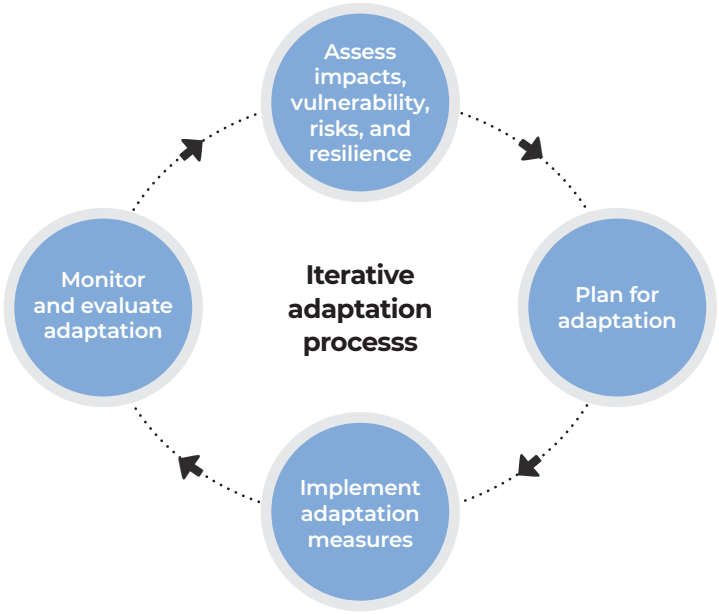


Figure 2: Iterative CCA process (Adaptation Committee, 2019, p. 10)

LEG created a NAP technical working group to provide technical guidance and support for NAPs and to help coordinate the activities of NAP support providers (UNFCCC, 2019). This work includes the development of supplements to the NAP technical guidelines – such as this one – that explore particular aspects of selected steps of the NAP process

2.2 Relevant concepts and initiatives under the UNCCD

Land Degradation Neutrality

LDN is defined by the UNCCD as "a state whereby the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security remain stable or increase within specified temporal and spatial scales and ecosystems" (Decision 3/COP.12; UNCCD, 2015). Accordingly, the LDN goal is to maintain or improve the land resource base, which refers to the natural capital stocks linked to land resources and the ecosystem services they support. The definition places a strong emphasis on the role that ecosystem services play in ensuring the sustainability of food production (Orr and others, 2017). The objectives of LDN include

- maintaining or improving the sustainable delivery of ecosystem services;
- maintaining or improving productivity to enhance food security;
- increasing resilience of the land and populations that depend on the land;
- seeking synergies with other social, economic and environmental objectives; and
- reinforcing responsible and inclusive land governance (Orr and others, 2017, p. 3).

To support countries in meeting these objectives, the UNCCD developed a "conceptual framework" for Land Degradation Neutrality (Orr and others, 2017). Interventions to achieve LDN should primarily include SLM approaches that avoid or reduce land degradation. These are coupled with actions to reverse degradation through rehabilitation or restoration of land that has already lost productivity (Orr and others, 2017). The framework proposes an LDN response hierarchy (i.e., avoid > reduce > reverse land degradation) to identify priorities in planning LDN interventions (see Figure 3).

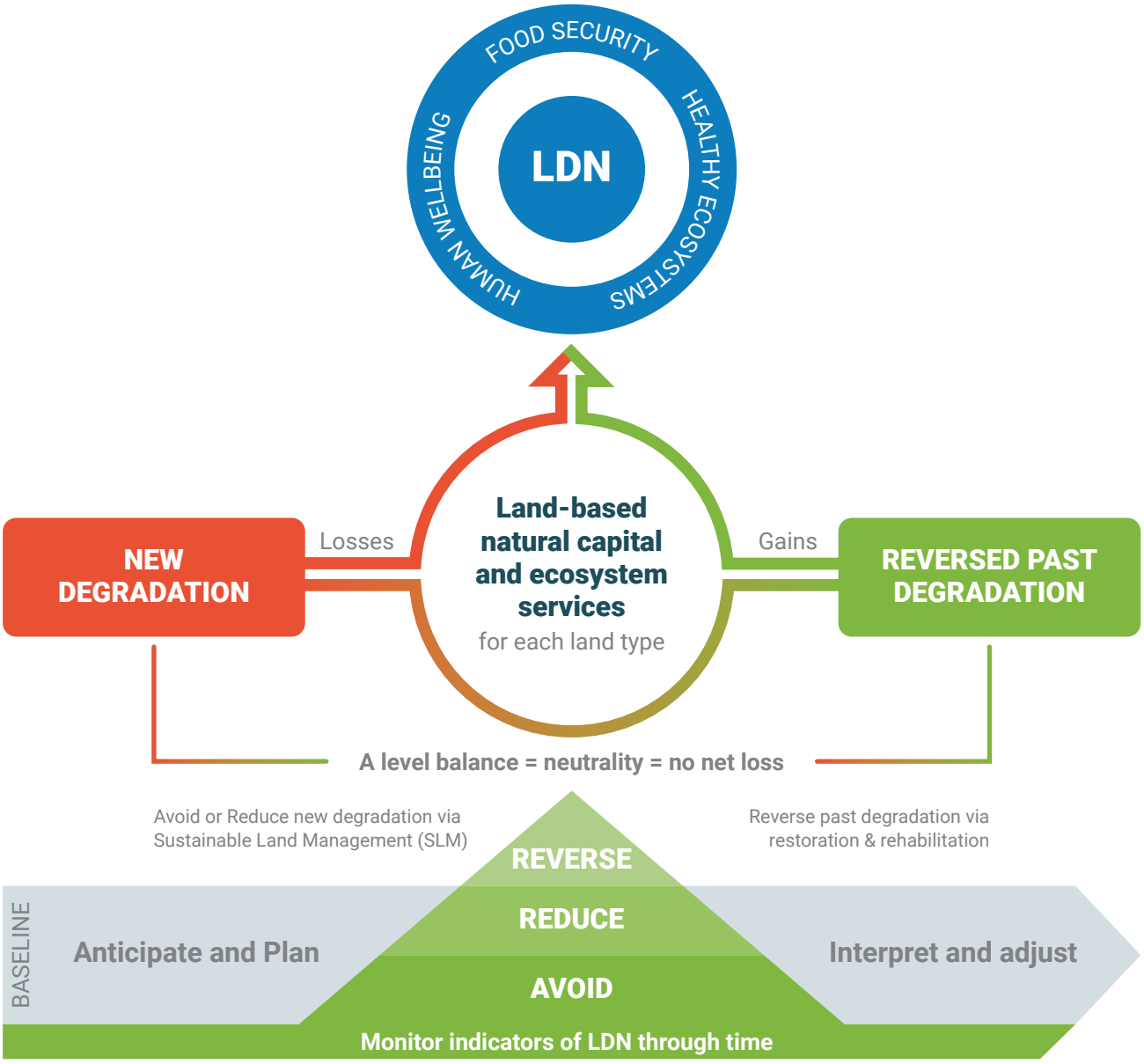


Figure 3: The key elements of the scientific conceptual framework for LDN and their interrelationships (Orr and others, 2017, p. 66)

National Action Programmes

National Action Programmes are the key instruments to implement the objectives of UNCCD. (These programmes are also sometimes referred to as NAPs, but they are distinct from the UNFCCC's National Adaptation Plans, for which the acronym NAP is exclusively used within this guide.) National Action Programmes are designed to outline practical steps and measures to address DLDD in specific ecosystems. They often involve comprehensive assessments of land degradation, the identification of vulnerable areas and the implementation of measures to avoid and reduce soil erosion, restore degraded lands and enhance community resilience to drought. Through stakeholder engagement and resource mobilization, National Action Programmes aim to foster SLM, preserve ecosystems and support the livelihoods of populations in affected regions. The National Action Programmes of UNCCD party countries (and their updates) are publicly available.

Voluntary LDN Target Setting Programmes

Parties to the Convention are also invited to formulate voluntary targets to achieve LDN and to integrate these targets into their National Action Programmes. Supported by the UNCCD, 131 countries (as of 22/03/2024) have committed to establish and pursue voluntary LDN targets. The UNCCD suggests countries follow 10 steps to develop and achieve their LDN targets. These include establishing clear, measurable goals and actions tailored to each country's specific context. To monitor progress towards LDN, "gains" and "losses" of healthy land are quantified using three LDN indicators: land cover, land productivity and carbon stocks.

National Drought Plans

Parties to the Convention may also create national drought plans as frameworks for assessing risk and tackling drought-related challenges. More than 70 countries are engaged in developing national drought plans, with support from the UNCCD drought initiative, the Global Mechanism and the UNCCD secretariat. As of March 22, 2024, 34 plans have been validated and are publicly available. The set-up and implementation of each of these national drought plans is supported by step-by-step guidelines and a plan template. Tools for monitoring and early warning, for conducting drought risk assessments and for mitigating drought risk are provided in the drought toolbox.

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3. Similarities and differences between land degradation neutrality and climate change adaptation

The previous chapter provides an overview of LDN and CCA and their objectives. The conceptual framework in Figure 4 illustrates the similarities and differences between the two concepts. A better awareness of these similarities and differences can help build understanding for creating synergies between CCA and LDN within NAP processes.

Challenges

LDN responds to the challenge of food security by preventing further degradation of finite land resources (Cowie and others, 2018). Similarly, an overarching theme of CCA is the reduction of vulnerability in key economic sectors and systems, including food systems (Adaptation Committee, 2019). Other common challenges addressed by both LDN and CCA initiatives include water scarcity, threatened livelihoods and limited economic opportunities, health impacts, disaster risk and loss of biodiversity and ecosystem services (Walz and others, 2021).

Drivers

The main common drivers of the challenges addressed by both CCA and LDN are interconnected and can act to mutually accelerate their impacts. Human-induced climate change, for example, can exacerbate the effects of unsustainable land management practices to further speed up the resulting DLDD. Similarly, soils with water retention reduced by exploitive agricultural practices may see this problem worsened by prolonged drought periods caused by a changing climate. This, in turn, can lead to a further degradation of the carbon storage potential of these soils, resulting in more atmospheric carbon dioxide contributing to climate change (IPCC, 2019).

Assessment

Preparatory assessments ahead of efforts to achieve LDN provide a knowledge base to inform effective planning and evaluation. An assessment of land degradation focuses on evaluating soil, water, vegetation and associated resources important to livelihoods (Biancalani and others, 2013; Bunning and others, 2016). It can also include an assessment of the resilience of current and proposed land uses within a given socioeconomic context (Cowie, 2020). This framing is similar to the assessments of CCA, which first requires understanding and assessing climate change risks. Climate risks consist of three components: hazards, exposure and vulnerability.

Risks can also arise from responses to impacts and risks, for example, if a CCA measure that has been designed to reduce risks for one community has negative effects and creates risks for another community (IPCC, 2022b). These components are shaped by land degradation and drought. Hazards are often modified by the condition of soil, water and vegetation and by the prevalent ways people earn their livelihoods, which affect the exposure and vulnerability of the social-ecological system. For example, healthy mangrove forests can reduce the hydrological magnitude of waves and, in turn, decrease the exposure of communities by reducing the extent and likelihood of storm floods. At the same time, mangroves provide ecosystem services, such as habitat for young fish, that reduce vulnerabilities of coastal communities to food and economic instability (UNEP, 2023a). Vulnerability to climate hazards is strongly shaped by land condition. Healthy agricultural land, for instance, can better sustain livelihoods, enabling people to better cope with any hazards they face (IPCC, 2019).

Differences in the assessments used by LDN and CCA are reflected in their different timelines and reference data for monitoring. The baseline for assessing LDN is typically the year 2015, when LDN was adopted by the UNCCD (Orr and others, 2017). While present and future developments affecting land degradation are considered by the LDN framework, efforts to achieve "no net loss" of land are assessed in reference to a baseline from the past. In contrast, the assessment of risk reduction for CCA requires projections of future conditions as the key reference for adaptation effectiveness, socioeconomic conditions and the future climate (IPCC, 2022b).

Implementation measures

Many LDN initiatives deliver CCA benefits. Measures to achieve LDN include the conservation, sustainable use and restoration of land. They can involve agroforestry, grazing management and other SLM technologies. These, in turn, build soil carbon stocks, improve soil fertility, increase water use efficiency, protect biodiversity (above and below the ground) and improve land productivity. Thus, LDN measures provide a wide range of benefits to society, reducing pressure on natural systems and contributing to climate change mitigation and adaptation (Cowie and others, 2018). Similarly, the conservation, sustainable use and restoration of land is often important to CCA as well. These interventions, for example, are central to ecosystem-based adaptation (EbA), which aims to enhance the condition of ecosystems to reduce climate risks. Sustainable agroforestry practices, precision agriculture and rehabilitative land practices are all EbA measures to improve CCA and, at the same time, help to achieve LDN[3].

Guiding principles

For both LDN and CCA, the implementation of measures should build on a set of guiding principles to create an enabling environment and to ensure equitable outcomes. Both LDN and CCA seek to build synergies with other social, economic and environmental objectives at a national and subnational level. LDN encourages incorporating LDN planning and implementation into existing national development policies and activities and promotes a careful consideration of vulnerable ecosystems (UNCCD, 2019). Similarly, CCA promotes a consideration of vulnerable ecosystems while urging the integration of CCA into various national development plans and strategies (LEG, 2012). Respective efforts towards CCA and achieving LDN should be designed in a gender-sensitive, transparent and country-led way where decisions and actions are driven by nation's context, priorities and needs. These efforts should engage a wide range of stakeholders and particularly address the needs of vulnerable groups and communities (LEG, 2012; Orr and others, 2017).

Monitoring and evaluation

Both LDN and CCA stress the vital need for monitoring and evaluation. In the LDN conceptual framework, monitoring and verifying results helps to modify actions to achieve the LDN targets (Orr and others, 2017). In a similar manner, monitoring and evaluating CCA interventions can ensure that benefits are being realized and that improvements can be made to the design of future interventions (Adaptation Committee, 2019). Thus, iterative monitoring to assess progress, effectiveness and gaps is a common feature of CCA and LDN processes.

[3] UNEP (2021) provides guidance on how to integrate EbA in the NAP process.

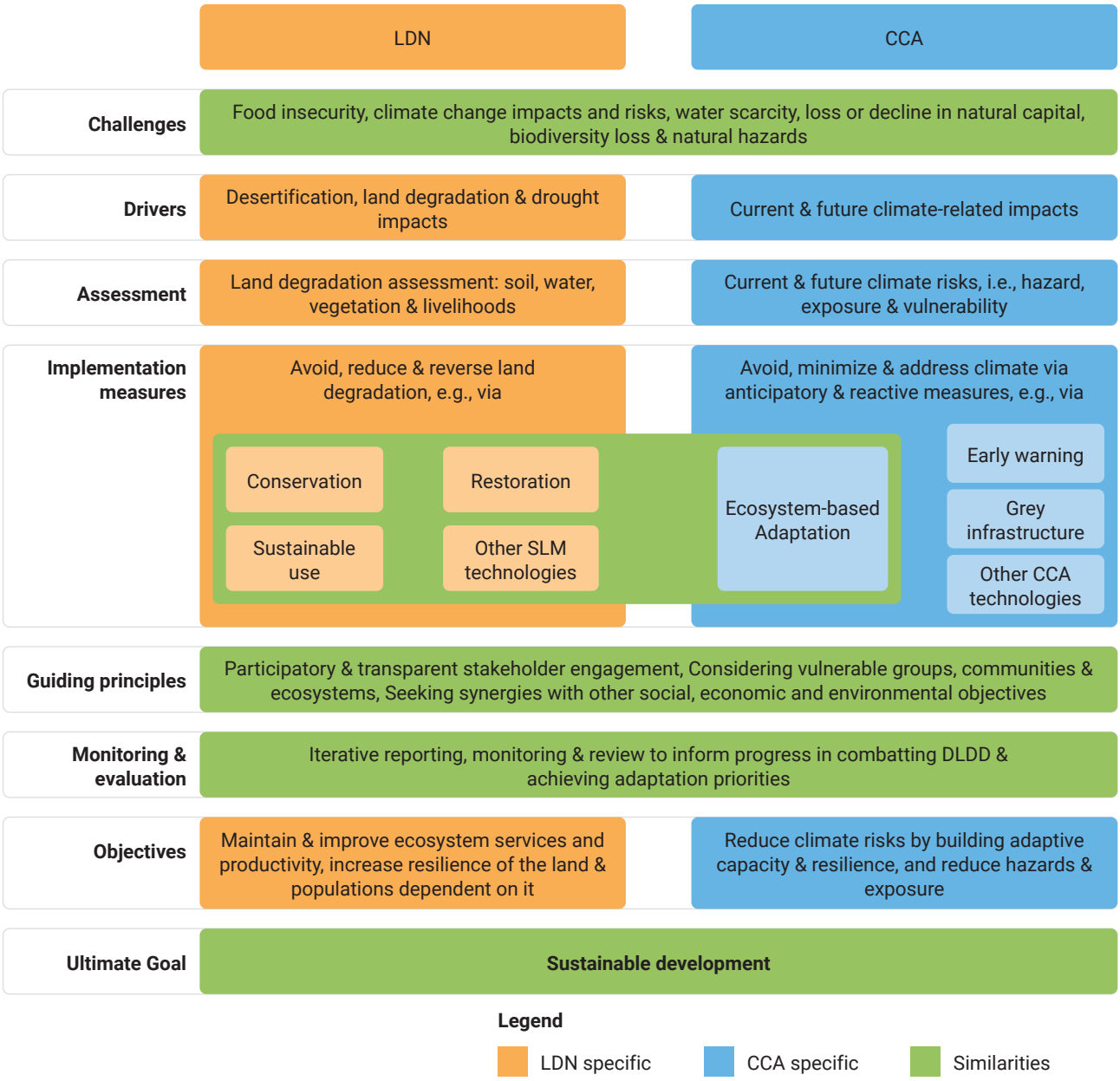


Figure 4: Similarities and differences between land degradation neutrality and climate change adaptation (drawn from Walz and others, 2021)

LDN and CCA linkages with Disaster Risk Reduction

Risk in the context of disaster and climate change is the "potential for adverse consequences for human or ecological systems" (IPCC, 2022a, p. 2921) resulting from a dynamic interaction between hazards with the exposure and vulnerability of the affected system to the hazards. Compared to climate risk, disaster risk involves additional types of hazards including geological and technological hazards. Disaster risk reduction (DRR) is an approach that helps governments and communities effectively reduce and manage risks to improve resilience and support sustainable development (UN General Assembly, 2016; UNDRR, 2021a).

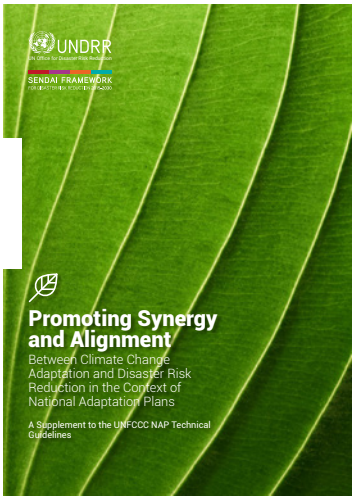
Disaster risk can also be reduced through the sustainable management, conservation and restoration of ecosystems. Known as ecosystem-based DRR (Eco-DRR), this approach relies on ecosystem services to reduce disaster risk by building the resilience of people, economies and natural resources to the impacts of sudden- and slow-onset extreme events (UNDRR, 2021a; Walz and others, 2021).

DRR (and Eco-DRR) can be linked to LDN and CCA through the cultivation of sustainable development practices and policies that incorporate efforts to achieve both LDN and CCA. These efforts, in turn, contribute to DRR and Eco-DRR by creating more resilient landscapes, improving livelihoods and supporting local economies. They can also improve local and regional technical knowledge and expertise for assessing, understanding and managing climate and non-climate-related risks (UNDRR, 2021a).

DRR targets also overlap with those of LDN and CCA. For example, all three are explicitly committed to achieving multiple SDGs. These include Goal 3 (ensure healthy lives and promote well-being for all at all ages), Goal 11 (make cities and human settlements inclusive, safe, resilient and sustainable) and Goal 13 (take urgent action to combat climate change and its impacts) (UNDRR, 2021a). These shared goals are common ground between CCA and DRR efforts and link seamlessly to LDN goals by highlighting the importance of the human-environment relationship and resilience across multiple sectors.

Some countries acknowledge these shared goals between CCA and DRR and address both disaster and climate risks in one integrated plan. The integration of climate and disaster risk is supported under the UNDRR's "Comprehensive Disaster and Climate Risk Management" flagship initiative. The initiative seeks to integrate risk-centered approaches into NAPs and to incorporate climate/forecast information into national and subnational disaster risk reduction strategies, aligning them better with national adaptation goals (UNDRR, 2024).

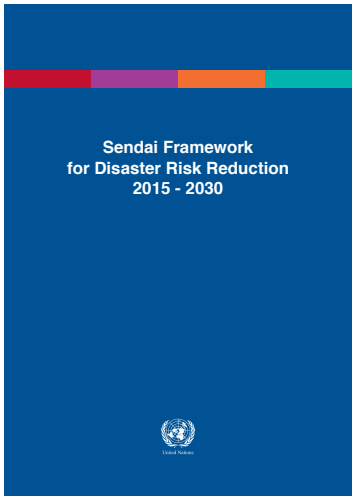
For more information on the alignment between DRR and CCA within the NAP process please see the UNDRR NAP supplement "Promoting Synergy and Alignment Between Climate Change Adaptation and Disaster Risk Reduction in the Context of National Adaptation Plans" (UNDRR, 2021a).



LDN and CCA linkages with Disaster Risk Reduction (contd.)

Further details concerning the alignment of SLM, EbA and Eco-DRR can be found in "Coherence and Alignment among Sustainable Land Management, Ecosystem-based Adaptation, Ecosystem-based Disaster Risk Reduction and Nature-based Solutions" (Walz and others, 2021).

For more general information on the disaster risk reduction framework and monitoring systems please refer to the Sendai Framework for Disaster Risk Reduction 2015-2030. It outlines four priorities for action to prevent new and reduce existing disaster risks: (i) understanding disaster risk; (ii) strengthening disaster risk governance to manage disaster risk; (iii) investing in disaster reduction for resilience; and (iv) enhancing disaster preparedness for an effective response and to "build back better" in recovery, rehabilitation and reconstruction (UNDRR, 2015).

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4. Guidelines for promoting synergies between land degradation neutrality and climate change adaptation in the National Adaptation Plan process

To support country efforts to achieve both LDN and to effectively conduct the NAP process, this chapter serves as a guide to promoting the shared goals and synergies between LDN and CCA (see Section 1.3). As a supplement to the NAP technical guidelines, the chapter outlines activities, questions to guide each step, supportive material and other possible ways to integrate DLDD considerations into the NAP process. The structure reflects that of the NAP technical guidelines and addresses four NAP process elements:

A. Laying the groundwork and addressing gaps

B. Assessing risks and appraising adaptation options

C. Implementing strategies

D. Monitoring, evaluating and learning

Also included in this chapter are separate text boxes highlighting four "cross-cutting topics" relevant to each of the steps of the NAP process and LDN initiatives, namely gender (Box 1), finance (Box 2), land use planning and management (Box 3) and land tenure (Box 4).

Case studies from different countries provide insights from initiatives that combine efforts to achieve LDN and CCA. Text boxes describing different tools provide practical resources to facilitate the formulation and implementation of NAPs that integrate LDN initiatives.

Depending on the progress of each country in the NAP process (e.g., whether formulating the NAP for the first time or revising it) and in efforts to achieve LDN, some of the activities described in this document might be more relevant than others. The current degree of collaboration between government departments leading work on CCA and LDN initiatives may also make some sections more relevant than others. Overview tables at the beginning of each section can help guide users of this guide.

A. Laying the groundwork and addressing the gaps

This section focuses on integrating LDN in national strategies that outline the timeline and approach for different activities within the NAP process and that lay the groundwork for developing, monitoring and updating NAPs. It details how to set up coordination mechanisms between actors working on LDN and CCA initiatives, taking stock of the vulnerabilities of sectors, systems and communities, understanding development needs and assessing gaps in the capacity to effectively undertake the NAP process.

Table 1: Overview of steps and activities for laying the groundwork and addressing gaps

Step	Activities
A1. Initiate and launch the NAP process	Initiate briefings between UNCCD and UNFCCC national focal points on common challenges and opportunities
	Establish coordination mechanisms within the NAP process
	Review LDN initiatives that can inform national strategies for the NAP process
	Access technical and financial support
A2. Take stock to identify available information on climate change impacts, vulnerability and adaptation and to assess the gaps and needs of an enabling environment for the NAP process	Take stock of adaptation activities and initiatives addressing land degradation and drought
	Understand the effects of climate change on impacts from desertification, land degradation and drought
	Conduct a gap analysis to assess available data, resources and capacities to engage in the NAP process
A3. Address capacity gaps and weaknesses in undertaking the NAP process	Build institutional and technical capacity
	Identify opportunities for integrating adaptation in national LDN initiatives
	Initiate programmes to promote communication and education concerning climate change and land degradation and drought
A4. Comprehensively and iteratively assess development needs and climate vulnerabilities	Compile information on national UNCCD objectives, policies, plans and programmes
	Identify and leverage synergies between national UNCCD and adaptation objectives, policies, plans and programmes

A1. Initiate and launch the NAP process

Questions that guide this step:

- *How can common challenges and opportunities between LDN and CCA initiatives be addressed?*
- *What are the existing national institutional arrangements for dealing with DLDD to which the NAP process can connect?*
- *How can technical and financial support be accessed?*

Initiate briefings between UNCCD and UNFCCC national focal points on common challenges and opportunities: A meeting between a country's UNCCD and UNFCCC national focal points can be organized to discuss common challenges faced and to elaborate on potential opportunities for synergies and collaboration. This guide can be shared in advance to provide a mutual understanding of the NAP process, relevant initiatives under the UNCCD and opportunities for synergizing LDN and CCA. These can be then complemented with discussions of examples relevant to the country or region being considered.

Establish coordination mechanisms within the NAP process: Briefings between UNCCD and UNFCCC national focal points can be used to set up coordinating mechanisms between stakeholders that can help to integrate LDN and other considerations of land degradation and drought into the NAP process. These could include the following activities:

- Establishing a national task force that brings the work of the two conventions together. (Note: If your country reports to the LDN target setting programme, it has a respective working group overseeing work on LDN. Members of this group can form the basis of the task force. See here to learn if your country is one of them.)
- Including the national focal point to the Convention on Biological Diversity (CBD) and DRR focal points in the task force to bring in further expertise and to create wider synergies (CBD, 2014; UNDRR, 2021a).
- Ensuring that the NAP coordination mechanism engages a wide array of stakeholders, such as, land users, land use planners and the practitioner communities-at-large (Verburg and others, 2019), paying special attention to women, youth, indigenous communities and vulnerable groups (See Box 1).

Box 1: Gender

Incorporating gender perspectives into NAPs is crucial for achieving LDN and effective CCA, particularly considering the unique and complex relationship women and gender minorities maintain with the land (Aguilar and others, 2022). Women play a key role in the stewardship, management and conservation of land and household resources such as water, food from gardens and fuelwood.

However, despite their key role, women and gender minorities face numerous challenges, including limited land rights, restricted access to resources and insufficient opportunities for education, knowledge acquisition, training and skills development. In many contexts, these groups have minimal involvement in decision-making processes and there is a lack of recognition for their contributions to land management and climate resilience, underscoring substantial equity gaps. These challenges are compounded by structural inequalities across society that reduce women's capacity for CCA and efforts to counteract land degradation (Aguilar and others, 2022).

Thus, gender-responsive approaches to land tenure are urgently needed to empower women and accelerate the implementation of land restoration commitments that build community resilience. Securing greater tenure for women and girls can lead to more equitable and sustainable land management practices (UNCCD, 2023a).

In response to these needs, the UNCCD has introduced a number of useful tools, including a Manual for Gender-Responsive LDN Transformative Projects and Programmes (UN WOMEN and others, 2019), offering governments step-by-step guidance to incorporate gender considerations into LDN strategies. Similarly, a brief titled Land Degradation Neutrality Interventions to Foster Gender Equality (Global Mechanism of the UNCCD, 2019a) focuses on actionable steps to achieve these goals. Similarly, the Questionaire on Gender-responsive Sustainable Land Management Technologies created by The World Overview of Conservation Approaches and Technologies in cooperation with the UNCCD (WOCAT and UNCCD, 2022) supports the integration of a gender perspective in LDN practices, ensuring initiatives are inclusive and effective. These resources offer valuable guidance for national focal points and policymakers on integrating a gender perspective into their environmental strategies, underscoring the importance of gender equality in fostering SLM and climate resilience.

Review initiatives under the UNCCD to inform the national strategy for the NAP process: In this step, national targets under the UNCCD should be reviewed to identify their roles in improving CCA. These roles can be explicit or implicit. For example, if targets are framed in terms of SLM or an associated concept, they may have relevance for CCA. Stakeholder consultations should also be conducted to further identify which national LDN initiatives under the UNCCD are relevant to CCA. This analysis should inform national strategies for the NAP process, which determine the timeline and general approach for developing, monitoring and updating NAPs (LEG, 2012). These strategies should also optimally align with timelines to achieve national UNCCD targets, such as those established by the LDN target setting programme, and include dates for reviewing the NAP process and integrating updates to the NAP that account for new developments.

Access technical and financial support: To operationalize the NAP process, access to technical and financial support is required. Besides the funding and technical support of the Least Developed Countries Fund (LDCF), other multilateral, bilateral and national sources can support the NAP process (LEG, 2012). The Global Mechanism of the UNCCD can also support countries to effectively mobilize technical and financial resources, if LDN initiatives are integrated.

Box 2: Finance for land degradation neutrality initiatives and climate change adaptation

Creating synergies between LDN and CCA in NAPs can open up access to new finance streams to help implement adaptation and reduce vulnerability for communities. The UNCCD helps with mobilizing and accessing both domestic and international finance from public and private sources (Global Mechanism of the UNCCD, 2022a). These can include concessional and non-concessional finance flows. Concessional finance refers to the provision of below-market-rate finance.

To access private finance, public-private partnerships and other blended finance initiatives can be established (e.g., accessing both public and private as well as national and international sources). Here, concessional and non-concessional resources are combined to soften the modalities of financing packages (e.g., reducing interest rates for nature-positive enterprises using concessional finance). Figure 5 provides an overview of different finance options (Global Mechanism of the UNCCD, 2022b).

The Global Mechanism of the UNCCD acts as an operational arm of the Convention that enables nations to mobilize finance. Moreover, the UNCCD assists in implementing LDN initiatives through coordinating efforts, knowledge dissemination, technical assistance and policy advocacy. This includes providing support to create LDN targets and national drought plans as well as to develop and scale up large projects that transform lives and livelihoods. For example, the UNCCD's LDN transformative projects and programmes (LDN TPP) initiative is designed to help countries gain access to finance by seeking blended finance opportunities, mobilizing and more effectively using public domestic resources and tapping into climate finance by highlighting the link between LDN and CCA objectives (Global Mechanism of the UNCCD, 2017).

The LDN TPP describes several financing opportunities, including the Global Environment Facility (GEF), Adaptation Fund, Green Climate Fund (GCF), Climate Investment Funds (CIF), International Development Association (IDA), multilateral development banks (MDBs), International Development Finance Club, LDN Fund, private impact investors, national budgets and financing mechanisms and bilateral development cooperation. An overview of financing opportunities and how to access them is provided in Land Degradation Neutrality Transformative Action, Tapping Opportunities (Global Mechanism of the UNCCD, 2017). The more recent Toolkit to Enhance Climate Finance (Commonwealth Secretariat, 2022) provides guidance on the various steps needed to access climate funding resources and includes options for developing human and institutional capacities and climate policies for which LDN can play a part.

Box 2 (contd.)

Sources	International		Domestic	
	Concessional Flows	Non-concessional Flows	Concessional Flows	Non-concessional Flows
Public	**Official Development Assistance (ODA)** Bilateral ODA Multilateral ODA **Institutions** E.g. GEF, GCF, IFAD, World Bank, etc. Multi-Bi ODA	**Other Official Flows** Official direct export credits Non-concessional multilateral flows (e.g. Non-concessional World Bank flows)	**Domestic Budget Revenues** (e.g. Domestic public spending, grants, subsidies, loans) **Institutions** Governmental agencies	
	I		**II**	
	V. Blended Finance Guarantees, Risk-based instruments, Loans. **Institutions** Public and Private Partnerships			
Private	**III**		**IV**	
	Charitable grants **Institutions** Philantropic foundations & NGOs Households and Non-profit institutions Private corporations	**Foreign direct investments** **Export credits** **Private sector loans** **Project level equity** **Balance sheet financing** **Institutions** Commercial institutions Insurances Pension funds Sovereign wealth funds Private corporations	**Charitable grants** **Institutions** National Foundation Local NGOs	**Bank loans** **Bonds** **Equities** **Derivatives** **Institutions** Domestic comercial Institutions Households Microfinance coorporations Pension funds

Figure 5: Schematic representation of financial flow categories by finance source (Global Mechanism of the UNCCD, 2022b)

A2. Take stock to identify available information on climate change impacts, vulnerability and adaptation and to assess the gaps and needs for an enabling environment for the NAP process

Questions that guide this step:

- *What activities on adaptation and DLDD exist?*
- *What information exists on the effects of climate change on desertification, land degradation and drought?*
- *What are the gaps preventing the effective integration of LDN initiatives in the NAP process?*

Take stock of adaptation activities and initiatives addressing land degradation and drought: Building on the outcomes of Step A1, countries should take stock of past and ongoing adaptation activities on land degradation and drought. National projects, programmes or policies under the UNCCD are a good starting point. Activities should be assessed to identify their objectives, participating stakeholders and funding. Attention should be paid to the role of community actors, including those affected by past and ongoing adaptation initiatives, to better understand the enabling environment for adaptation activities in the country. It can help to bring together experts working on land from both LDN and CCA perspectives.

Understand the effects of climate change on impacts from desertification, land degradation and drought: While taking stock of adaptation activities, overviews should be compiled of available knowledge on current and future climate at national and/or regional levels. Assessing the effects of climate change on DLDD should include identifying how climate change can exacerbate the impacts of DLDD on people, ecosystems and different economic sectors. The impacts can include changing precipitation patterns, glacier retreat, heatwaves, dust and sand storms, wildfires and species migration National initiatives to achieve LDN can be sources of valuable information in this regard as they often incorporate climate change projections and scenario analyses. Further, national LDN initiatives can indicate areas on the landscape that will likely be more severely affected by climate in the future (e.g., where land degradation is already being observed due to increasing droughts).

Conduct a gap analysis to assess available data, resources and capacities to engage in the NAP process: Based on the insights gathered in Steps A1 and A2, a gap analysis should look at barriers preventing the successful integration of LDN initiatives in the NAP process. The gap analysis could be conducted by the joint task force established in Step A1 and should include various stakeholders that shape actions on LDN and CCA, ranging from government officials to representatives of vulnerable communities. The gap analysis should address the following:

- The availability of data specifically on DLDD;
- The current understanding of risks and impacts related to DLDD;
- The availability of resources, including available finances and available time that stakeholders have to engage in the NAP process and to integrate LDN considerations into adaptation plans (including providing financial support and monitoring of adaptation activities to address DLDD); and
- The capacities of stakeholders, including their knowledge and understanding of DLDD and the role of climate change on these phenomena.

The LDN conceptual framework guides assessments to optimize land use and management decisions and can support a gap analysis by providing land-specific perspectives (e.g., a land tenure perspective). Further, integrated land use planning and integrated land management – approaches that support the achievement of LDN – can also help identify barriers in the planning and design of land-based adaptation (see Box 3).

As the gap analysis forms the basis for the preparation and implementation of later steps in the NAP process (e.g., capacity development planning in Step A3), investing sufficient time and resources in the analysis is important. Considerations while conducting the analysis could include the following:

1. Ensure the terms of reference of the joint task force (see above) are clear and include a budget and deliverables for two stakeholder workshops to develop a stakeholder capacity assessment report and a capacity development strategy;
2. Ensure the task force is trained and prepared to facilitate the stakeholder capacity assessment workshop and the workshop on capacity development (and that the task force is prepared to support related actions and to track results);
3. Conduct a stakeholder capacity assessment workshop (two to three days), engaging country stakeholders and representatives from sectors relevant to achieving LDN and prepare a workshop report; and
4. Conduct a capacity development strategy workshop resulting in a strategy that prioritizes areas for capacity development and creates a framework for validating results (adapted from FAO, 2017).

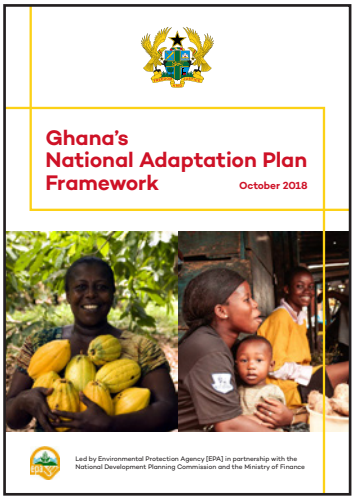
A gap analysis will help identify and assess capacities and gaps that are country specific, but it will also identify national challenges facing LDN initiatives and land-based CCA that are common across many countries. Some of these common national challenges with respect to integrating LDN are described in Land Degradation Neutrality Target Setting: Initial Findings and Lessons Learned (Global Mechanism of the UNCCD, 2019b). Common challenges relevant to CCA are described in National Adaptation Planning: Emerging Lessons Learned From UNEP Projects (UNEP, 2023b). Case Study 1 describes some of the gaps encountered during the integration of LDN initiatives in Ghana's NAP process.

Case Study 1: Experiences and lessons learned from integrating LDN with CCA within Ghana's NAP process

The many impacts from climate change in Ghana include significant temperature increases, irregular rainfall and more frequent, more unpredictable extreme weather events that particularly affect agriculture and communities. The annual cost of land degradation in Ghana is estimated at $1.4 billion due to the loss of ecosystem services, such as crop production or the provision of clean water (UNCCD, 2018). These losses underscore the need for climate adaptation.

Climate adaptation planning in Ghana has seen notable milestones. The country's first Climate Vulnerability Assessment study in 2008 focused on climate change impacts on land management and laid the foundation for future adaptation efforts. After developing the National Adaptation Plan Framework in 2018, Ghana launched the NAP Readiness Project in 2020. The Ghanaian NAP process encourages cross-sectoral and inter-agency collaborative actions that integrate adaptation goals into policies, programmes and plans. It engages a wide range of stakeholders to promote institutional coordination with members representing government bodies, local administrations, the private sector, civil society organizations, gender-focused organizations, youth constituencies and groups with disabilities (Government of Ghana, 2021). The process also recognizes the involvement of development partners, traditional authorities and local communities. These stakeholders are part of the working group that facilitates joint activities on adaptation in different sectors and among different groups. While a wide range of different stakeholders are part of the cross-sectoral working group, actors working on national LDN initiatives have not yet been actively included, leading to missed opportunities for further integrating LDN into Ghana's NAP.

In 2017, Ghana set its National Voluntary Land Degradation Neutrality (LDN) targets for 2030 and pledged to implement various climate adaptation initiatives to promote sustainable land and water management practices. This included a pledge to participate in the Africa Forest Landscape Restoration Initiative in northern Ghana, a region identified as a land degradation hotspot where its rich biodiversity is at risk. These efforts demonstrated Ghana's commitment to combat land degradation, foster sustainable practices and enhance environmental and climate resilience. Further, as part of its commitment to the work of the UNCCD, Ghana set up a National Drought Plan in 2020. Both the LDN targets and the National Drought Plan are highly relevant to the NAP process in Ghana.



Case Study 1 (contd.)

There are several reasons why collaborations between actors working on CCA under the NAP process and those working on LDN have been challenging to date. One is that limited financial resources are available for the coordination and integration of different stakeholders and sectors relevant to CCA (which are often managed by different ministries). The different geographical locations of key actors and agencies within the country are another barrier to collaboration. For instance, the national focal points to the UNCCD and UNFCCC are based in different parts of Ghana and are consequently less aware of each other's activities.

To overcome these challenges, a strong coordination mechanism should be created between the different national initiatives under the UNCCD, UNFCCC and the CBD. Having dedicated individuals or a task force to guide the NAP process in these areas is helpful (see Step A1). Members of the task force could also monitor progress (Step D1) and promote continuous exchanges that encourage potential synergies. Meanwhile, trained staff can translate national plans into action at local levels. Capacity-building measures can support these activities (Step B4). Cross-sectoral working groups can be maintained beyond a project's end to facilitate future processes on LDN and CCA. Ghana envisions its NAP task force adopting these measures in the future.

The steps described in this guide can help other nations overcome many of the challenges encountered by Ghana in its efforts to encourage collaboration between UNFCCC and UNCCD initiatives and to strengthen the integration of LDN into NAP processes.

A3. Address capacity gaps and weaknesses in undertaking the NAP process

Questions that guide this step:

- *How can institutional and technical capacity gaps be addressed?*
- *Where do opportunities exist for integrating CCA into national LDN initiatives?*
- *What can be done to raise awareness of joint challenges and opportunities for achieving LDN and tackling climate change impacts?*

Build institutional and technical capacity: To enhance institutional and technical capacities for undertaking the NAP process, a range of activities can address the individual, institutional, societal or systemic capacities needed. To build synergies with LDN initiatives, joint training should engage departments involved in CCA and LDN. This will improve the technical understanding of each department of the other's work, raise awareness of synergies and outline potential ways to strengthen cooperation. Some ways to strengthen cooperation could include engaging communities of practice on integrated land use planning and management, promoting interdepartmental cooperation or developing new/adapted policies to provide necessary mandates for joint actions. Further information and guidance on creating an enabling environment relevant for land-based adaptation is provided by Verburg and others (2019).

Identify opportunities for integrating adaptation in national LDN initiatives: One objective of the NAP process is to better integrate CCA into other national development planning processes. National initiatives under the UNCCD, such as the LDN Target Setting Programme and its activities, are among these (see Case Study 2). The previous steps and this supplement can contribute to this objective and can help strengthen the role of CCA in the land sector and help "climate proof" LDN initiatives. Raising awareness of the synergies between CCA and LDN is also

important to effectively communicate and reach as many relevant stakeholders as possible.

Initiate programmes to promote communication and education concerning climate change and land degradation and drought: Communication, awareness-raising and education programmes concerning DLDD and climate change should be developed and implemented to reach the general public. The programmes should describe social, economic and environmental problems associated with DLDD and provide hands-on solutions at the individual and community level to motivate and promote bottom-up action. In this regard, the global Desertification and Drought Day (June 17) could provide an excuse for nation-wide joint activities to raise awareness. Further, the United Nations Decade on Ecosystem Restoration 2021-2030 provides a variety of communication materials that can be accessed free of charge on its website or that can inspire other communication materials. The website also provides a video game that can help convey a message that restoration can be a part of LDN initiatives to promote climate change adaption. The UNCCD and the G20 Global Land Initiative offer other resources that can be used to disseminate knowledge to students. For example, resources are available for university courses on Innovative Sustainable Agriculture Solutions for Land Restoration. Raising awareness and motivating university lecturers to integrate such resources into their curricula can encourage efforts to build climate resilience and contribute to LDN.

A4. Comprehensively and iteratively assess development needs and climate vulnerabilities

Questions that guide this step:

- *What national objectives to meet UNCCD obligations are most at risk from climate change?*
- *Where are potential synergies between national UNCCD and adaptation objectives?*

Compile information on national UNCCD objectives, policies, plans and programmes: National UNCCD objectives, policies, plans and programmes should be compiled to help identify vulnerabilities and development needs most at risk from climate change. This is because climate change will likely hinder the national development needs of achieving LDN. Identifying development needs most at risk from climate change and the prioritizing adaptation activities to "climate proof" them are part of Step B2. The compilation should build on Step A2 and should consider UNCCD national action programmes, LDN targets and drought plans. These provide information on efforts most at risk from DLDD and prioritize activities, often spatially explicit, to address them.

Identify and leverage synergies between national UNCCD objectives and adaptation objectives, policies, plans and programmes

Based on the information compiled in the previous step, synergies should be identified between objectives, policies, plans and programmes of national initiatives on LDN and CCA and other development objectives related to agriculture or biodiversity. This will help to identify common and shared risks, reveal opportunities for shared investments and create adaptation co-benefits that will address multiple objectives at once. The following actions can help to do this:

- Reflect on the information in Chapter 3 describing the general synergies between CCA and LDN initiatives;
- Bring together insights gathered during stakeholder consultations; and
- Analyse to what extend existing national objectives, policies, plans and programmes are coherent and understandable, both horizontally across relevant sectors and vertically between different jurisdictions and levels of government.

During this step, it is useful to reflect on national LDN initiatives from an adaptation perspective. Do they consider the vulnerabilities of local communities? How do they contribute to risk reduction and/ or resilience building? Will these initiatives also address risk and resilience for marginalized groups?

Case Study 2: The Coordination of Efforts to Address Climate Change Adaptation and Desertification, Land Degradation and Drought in Paraguay

Paraguay's NAP (Plan Nacional de Adaptación al Cambio Climático) was developed by the National Directorate on Climate Change under the auspices of the Ministry of the Environment and Sustainable Development (Ministerio del Ambiente y Desarrollo Sostenible, or MADES). Paraguay is one of few countries that specifically refers to LDN in their NAP, acknowledging the interconnectedness between DLDD and climate change (see Chapter 3). During the development of the NAP, the National Office to Combat Desertification and Drought, which is also attached to the MADES, participated in workshops for the elaboration of the NAP process and submitted Paraguay's national LDN strategy for consideration there. The resulting NAP process connects its strategic priorities "Ecosystems and Biodiversity", "Agriculture, Forestry and Food Security" and "Water Resources" with actions proposed within the national LDN strategy. To outline entry points for actions, the National Office to Combat Desertification and Drought is currently updating the LDN strategy to better incorporate CCA goals. Meanwhile, with the support of the FAO, Paraguay is designing a project proposal to the Green Climate Fund (GCF; https://www.greenclimate.fund/) to develop a national plan to adapt water management approaches to climate change. The plan will reference the LDN strategy to support its goals and to encourage synergies among efforts to achieve both LDN and CCA.

Paraguay has secured financial support from the Adaptation Fund (https://www.adaptation-fund.org/) and the GCF for projects that link LDN and CCA. Among them are projects on ecosystem-based approaches for reducing the vulnerability of food security to the impacts of climate change (see Case Study 8) and on reforestation efforts that sequester carbon and support agricultural diversification and climate resilience (the Poverty, Reforestation, Energy and Climate Change project; PROZA).

Regular exchanges between the National Office to Combat Desertification and Drought and the Paraguayan the National Directorate of Climate Change facilitates these projects. Their collaboration strengthened in 2020, when a project was developed to improve institutional capacities for consolidating public policies to combat DLDD and to adapt to climate change. Now, in the course of updating the LDN strategy, monthly consultations between the officials of the two national offices are conducted to report on progress and to discuss ideas and address questions. These meetings are complemented with inter-institutional round tables involving representatives from key public and private institutions concerned with LDN, biodiversity and CCA and with representative from FAO, UN Environment Programme, UN Development Programme and others.

An inter-institutional round table to define key strategies for 2024 to fight against desertification and drought. Photo credit: MADES

The cooperation between the two national offices has revealed the importance of similar reporting approaches so both offices can use the information interchangeably for projects and efforts relevant to both the UNCCD and the UNFCCC. For example, the development and use of joint indicators is helpful for tracking whether the conventions work synergistically or not and for preventing a duplication of actions. Both national offices also benefit from understanding the work that each is doing that might be enhanced by the other. For example, introductory workshops on LDN could benefit officials of the National Directorate of Climate Change.

Improved government coordination on CCA and DLDD in Paraguay has already helped projects access more funds and improve efficiency. The ongoing alignment of the national LDN strategy with CCA objectives will further contribute to building synergies.

Creating an Enabling Environment for Land Degradation Neutrality: This report 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 DLDD. It also offers 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 (Verburg and others, 2019).

Scientific Conceptual Framework for Land Degradation Neutrality: This framework outlines the scientific background and principles for achieving LDN and its desired outcomes. It provides a robust scientific foundation for understanding the approach to LDN, assists in the development of actionable guidelines for its achievement and supports the monitoring of progress toward the LDN goal (Orr and others, 2017).

The Contribution of Integrated Land Use Planning and Integrated Landscape Management to Implementing Land Degradation Neutrality: Entry Points and Support Tools: This report offers an analytical overview of the prevalent tools that are used, or can be used, to support integrated land use planning (ILUP) and integrated landscape management (ILM). It identifies ways in which tools and approaches can aid in achieving LDN targets. Additionally, the document pinpoints opportunities for incorporating LDN initiatives within planning frameworks at national, watershed and local scales (Verburg and others, 2022).

Tenure-Responsive Land Use Planning: A Practical Guide for Country-level Intervention: The Global Land Tool Network (GLTN) facilitates the simultaneous resolution of land use planning and tenure security challenges. It uses practical, local, fit-for-purpose methods to enhance community knowledge, capacity and development through land use planning. The practical guide outlines how to implement tenure-responsive land use planning alongside other tools at the country level, detailing steps to ensure land use planning improves tenure security. While not a strict blueprint, it suggests methods adaptable to the diverse land use and tenure scenarios in various developing countries (UN-HABITAT, 2021).

B. Assessing risks and appraising adaptation options

Section B provides information on in-depth climate change risk assessments and appraisals of adaptation options that can be used to create NAPs. The following steps and activities explain how to assess risks related to DLDD and can help facilitate the identification and appraisal of adaptation options to reduce such risks that can be included in the NAP. The steps outline how approaches that address LDN can also support integrating CCA into other national development and sectoral planning activities.

Table 2: Overview of steps and activities for assessing risks and appraising adaptation options

Step	Activities
B1. Assess climate risks related to desertification, land degradation and drought	Analyse the impacts of climate change on DLDD hazards and exposure
	Assess climate vulnerabilities related to DLDD at appropriate economic, jurisdictional or geophysical scales
	Rank climate change risks associated with DLDD
	Communicate climate change risks
B2. Identify, review and appraise adaptation options	Identify and categorize adaptation options to address DLDD at multiple spatial scales
	Appraise adaptation options addressing DLDD

Step	Activities
B3. Draft and communicate national adaptation plans	Draft the NAP document and share it for review
	Finalize and communicate the NAP
B4. Integrate climate change adaptation into national and subnational development and sectoral planning	Identify opportunities and constraints for integrating NAP objectives into planning
	Build and enhance capacities around LDN for NAP planners
	Integrate CCA into existing national and subnational planning

B1. Assess climate risks related to desertification, land degradation and drought

Questions that guide this step:

- *How does climate change affect the patterns of DLDD?*
- *How will hazards, exposures and vulnerabilities related to DLDD develop with climate change?*
- *Which climate risks associated with DLDD are the most pressing?*

Analyse the impacts of climate change on DLDD hazards and exposure: An analysis in cooperation with meteorological experts is needed to identify climate trends to inform planning and decision-making. The potential effect of climate change on land degradation and drought can be assessed by, for example, evaluating climate effects on the three indices for monitoring land degradation: land cover, land productivity and carbon stocks. Information for this assessment can be retrieved from national LDN strategies and supported by tools, such as the FAO's Global Agro-ecological Zoning Tool or the Land-Potential Knowledge Systems tools of LandPKS (see Resources at the end of this section).

The climate trends analysis can be used to conduct a wider climate change scenario analysis that reflects different socioeconomic pathways and their respective impacts on DLDD in the medium to long term. This analysis should include information on hazards and exposure for each scenario, including the extent of hazards related to climate and DLDD affecting sectors, communities, individuals, assets and land use practices. In regions that encounter large amounts of land degradation or that expect to be most adversely affected by climate change, a subnational analysis is encouraged.

The analysis should also reflect on non-hydrometeorological hazards (e.g., geological hazards, such as landslides) that shape overall risks for people and that interact with hydrometeorological hazards and land degradation (e.g., when heavy rain makes landslides more likely). This part of the analysis can benefit from a comprehensive disaster and climate risk management approach

Different tools and materials to guide the analysis include the following:

- The Coordinated Regional Climate Downscaling Experiment (CORDEX) provides high-resolution climate information to generate regional climate projections to guide impact assessment and adaptation efforts;
- FAO's Modelling System for Agricultural Impacts of Climate Change (MOSAICC) can be used to link climate change information on agricultural impacts to decision-making; and
- WOCAT provides a questionnaire on the adaptation of SLM technologies to gradual climate changes and climate-related extremes to support the assessment of exposures and vulnerabilities.

However, climate scenario analyses often require a well-developed capacity to run climate models and evaluate the impacts of different socioeconomic pathways. Countries should feel encouraged to reach out to global and regional scientific partners and institutions. Institutions and tools to potentially support climate scenario analyses from an LDN perspective can be identified via WOCAT's regional clusters and its SLM database.

Assess climate vulnerabilities related to DLDD at appropriate economic, jurisdictional or geophysical scales: Building on the work in Step A4, climate vulnerabilities related to DLDD should be assessed at sector, subnational or geographically defined scales, such as a watershed catchment or landscape where climate vulnerabilities related to DLDD are relevant. The vulnerability component of climate risk includes the sensitivity or susceptibility to harm and the lack of capacity to manage and adapt to the harm. Thus, the vulnerability component is closely linked to the concept of resilience, which describes the capacity of systems to respond to a hazardous event while maintaining essential functions and structures. Depending on the availability of data, different indices can be used to assess vulnerability or resilience to climate risks associated with DLDD. Frameworks and publications to guide the assessment of vulnerabilities include the following:

- Drought Resilience, Adaptation and Management Policy Framework: Supporting Technical Guidelines (Crossman, 2019);
- Self-evaluation and Holistic Assessment of Climate Resilience of Farmers and Pastoralists (SHARP+) (Hernández Lagana and others, 2022);
- Resilience, Adaptation Pathways and Transformation Assessment (RAPTA) (O'Connell and others, 2016); and
- Sand and Dust Storms Compendium (UNCCD, 2022). (See Case Study 3 for further insights on sand and dust storms in Central Asia.)

Rank climate change risks associated with DLDD:

A ranking of climate change risks – based on the assessment from the previous steps – should be done with stakeholders. These could be, for example, expert and community stakeholders consulted during the previous steps of this guide. Ranking should consider vulnerability, hazard and exposure as well as other common criteria, such as the following:

- The probability that a hazard will occur (e.g., the likelihood that a drought will occur);
- The reversibility of impacts (e.g., the impact of land degradation on species extinctions may have limited reversibility);
- The urgency to act (e.g., communities already suffering from land degradation may be at greater risk in the near term and thus adaptation action is more urgent that for a community who are not suffering from land degradation); and
- The policy relevance, (e.g., to what extent do DLDD risks endanger other policy commitments not directly related to CCA and LDN objectives).

The ranking can be used, in turn, to appraise and prioritize adaptation actions. A strong consensus among consulted stakeholders is always preferable, if possible.

Communicate climate change risks: The climate change projections and results of the risk assessment should be communicated to all stakeholders and the wider public. This communication should ensure that non-specialists working on land can understand the implications of climate change and land degradation on livelihoods, including individual impacts (e.g., effects on subsistence farmers) and interconnected risks at a global scale (e.g., implications for global market prices). Optimally, this communication builds on the activities in Step A3 above.

Case Study 3: The value of land restoration in Uzbekistan for reducing risks associated with sand and dust storms

Central Asia experiences frequent sand and dust storms, which have been made worse by unsustainable land management practices and climate change. One region where this worsening situation is evident is the Aralkum Desert, which was formed from the dry Aral Seabed. With an estimated area of 60,000 km^2, the dry seabed's high salt concentration has become an additional hazard in the context of sand and dust storms, impacting the environment and its inhabitants. Immediate areas affected are in Kazakhstan and Uzbekistan, with lasting impacts experienced by communities near the former seashore, including the Republic of Karakalpakstan and the Khorezm Region in Uzbekistan (Akramkhanov and others, 2021; Breckle and Geldyeva, 2012).

The combination of salt and dirt scattered by frequent sand and dust storms has triggered soil degradation and desertification, contributing to impacts on livelihoods and crop production losses averaging $11.6 million/year (Akramkhanov and others, 2021). Other adverse impacts include health effects, such as anemia, lung cancer, heart attacks and birth defects, that are occurring at higher rates in the impacted regions than in those directly adjacent (Crighton and others, 2011). The exposed seabed is also experiencing primary succession, causing more salinity in the surrounding soils and making more salt available to travel with the strong storm winds. Land uses in the region vary from dry rangelands, irrigated agriculture areas, water bodies of various sizes and human settlements, all of which are impacted by the increasing frequency of sand and dust storms and the ongoing desertification (Akramkhanov and others, 2021).

Landscape restoration interventions and practices in the Aralkum Desert can prevent the loss of ecosystem services and can generate additional economic benefits of about $39 million/year. That amount is equivalent to 1.9 per cent of Karakalpakstan's GDP. Interventions, such as the simultaneous planting of trees and grasses, can reduce the health impacts on people from sand and dust storms, as well as reduce crop production losses by limiting exposure to wind-induced erosion (Akramkhanov and others, 2021). This restoration also contributes to CCA by increasing the resilience of both humans and the ecosystem to natural hazards and desertification at a regional scale.

The ecosystem services and benefits brought by these restoration efforts in the region are an important part of green-growth strategies in Uzbekistan. These government-supported efforts support national economic development and contribute to climate targets in a broader development context by aiding in economic recovery and the creation of green jobs. On a global scale, the restoration efforts in the Aralkum Desert could contribute towards Uzbekistan' s Nationally Determined Contribution (NDC) targets under the UNFCCC, its LDN goals and the country's contribution to the Bonn Challenge, among others (Akramkhanov and others, 2021).

B2. Identify, review and appraise adaptation options

Questions that guide this step:

- *What are potential adaptation options to address the identified climate risks associated with DLDD?*
- *How should adaptation options addressing DLDD be appraised?*

Identify and categorize adaptation options to address DLDD at multiple spatial scales: Once consensus on the ranking of climate change risks associated with DLDD has been reached, adaptation options at multiple spatial scales should be identified and categorized. Adaptation options might include policy adjustments, management strategies and capacity building. Some adaptation options might require only limited changes (e.g., increasing irrigation efficiency) while others might require more transformational changes (e.g., shifting from annual crops to perennial crops or agroforestry-based systems). Adaptation options should address different spatial scales and account for transboundary effects. For instance, the upstream transition of agricultural areas to agroforestry or forestry systems will also reduce the flood hazard downstream as more water will be used by the upstream system and erosion reduced. When identifying adaptation options to address DLDD, a consideration of the LDN response hierarchy of avoiding, reducing and reversing land degradation can be useful (See Figure 3).

Table 3: Selected examples of options to address climate risks associated with desertification, land degradation and drought

Climate risk associated with DLDD	Category	Option	Example	Spatial scale	LDN hierarchy
Risk to water security	Institutional	Government supported conservation of watersheds	Healthy forests in watersheds can retain water and help recharge groundwater.	Local to regional scale	Avoid
Risk of crop failure	Early warning systems[4]	Drought early warning	Monitoring drought indices can provide timely support for farmers to shift to more efficient water use to reduce drought impacts on productive landscapes.	Impact specific / national scale	Reduce
Risk to soil fertility	EbA/SLM	Agroforestry	The shift from conventional farming to agroforestry systems can help restore degraded soil.	Impact specific / local scale	Restore
Risk to riverine socioecological systems	EbA/SLM	Reforestation	The upstream reforestation of land can help reduce the impacts of flash floods.	Local to regional scale	Restore
Risk to soil fertility	Behavioral	Land tenure rights	Providing secure land tenure rights encourages a more sustainable management of land.	Impact specific / national scale	Avoid, Reduce, Restore
Risk to forest health	Institutional	Support of nature-positive enterprises	Providing female farmers access to financial services can help establish nature-positive enterprises, such as marketing sustainably sourced forest fruits.	Impact specific / national scale	Avoid, Reduce, Restore

[4] Early warning systems are an important instrument to reduce the impact of hazards. In this context, the Early Warnings for All initiative aims to ensure that everyone on Earth is protected from hazardous weather, water or climate events through early warning systems by the end of 2027 (WMO (2022)). The Early Warnings for All initiative is co-led by the World Meteorological Organization and the United Nations Office for Disaster Risk Reduction, with support from different organizations such as the International Telecommunication Union and the International Federation of Red Cross and Red Crescent Societies. The initiative engages development partners through existing partnerships and coalitions such as the Alliance for Hydromet Development, the Risk-informed Early Action Partnership and other regional partnerships and alliances (United Nations Climate Action (n.d.).)

Appraise adaptation options addressing DLDD:
An appraisal should evaluate the effectiveness of adaptation options to address DLDD. It is additionally useful to look at how adaptation options address the climate risk components of hazard, exposure and vulnerability (see Case Study 4). The appraisal should reflect on ecosystem and social costs and benefits and it should account for possible unintended positive and negative outcomes. Similar to the ranking of the climate risks associated with DLDD, common criteria exist that can be included in the appraisal process. These include the following:

- Duration until the adaptation effect materializes: For example, the effects of reforestation on an area's water holding capacity will be low in the first years and therefore might not deliver short-term benefits.

- Investment costs and adaptation gains: Adaptation benefits and efficacy of different adaptation measures can be evaluated via a cost-benefit analysis that accounts for gains in ecosystem services (see Case Study 5).

- Impact on natural capital: The impacts of each adaptation option on LDN and various ecosystem services can be considered along with economic assessments to help decision makers compare the investment return of different options. This can be supported by the System of Environmental Economic Accounting (SEEA) framework or the Economics of Land Degradation Initiative (see Case Study 10).

- Co-benefits: For example, if the adaptation options open new livelihood options or contribute to other multilateral environmental agreements, the protection of degraded forest land can contribute to both climate mitigation objectives and biodiversity conversation.

- Trade-offs: Adaptation options may result in negative outcomes elsewhere, by transferring risk to another sector, community, ecosystem or individual. For example, protecting forest land, while having significant co-benefits, can result in loss of income for some people or communities from reduced timber production.

- Potential for maladaptation: Adaptation options may result in potential unintended negative outcomes. For example, the rewetting of peatland might reduce flood risk, but it might also increase the risk of malaria.

- Efficacy: Adaptation options may differ in the extent to which it can address the identified and ranked risks. In this regard, options that will have a positive impact even if the hazard does not materialize should be prioritized (i.e., so-called low or no-regret options). Many land-based approaches, such as SLM, ecosystem-based adaptation or ecosystem-based disaster risk reduction, are often low or no regret options.

- Flexibility and robustness: Some adaptation options may be flexible enough to adjust in cases in which climate change and land degradation impacts are different from what was previously assessed.

- Social and political acceptance: Adaptation options may be more or less socially or politically acceptable depending on their co-benefits and trade-offs but also depending on the openness of people towards change or on beliefs that are not based on hard facts.

- Feasibility: Adaptation options may differ in the required enabling environment and biophysical conditions for implementation.

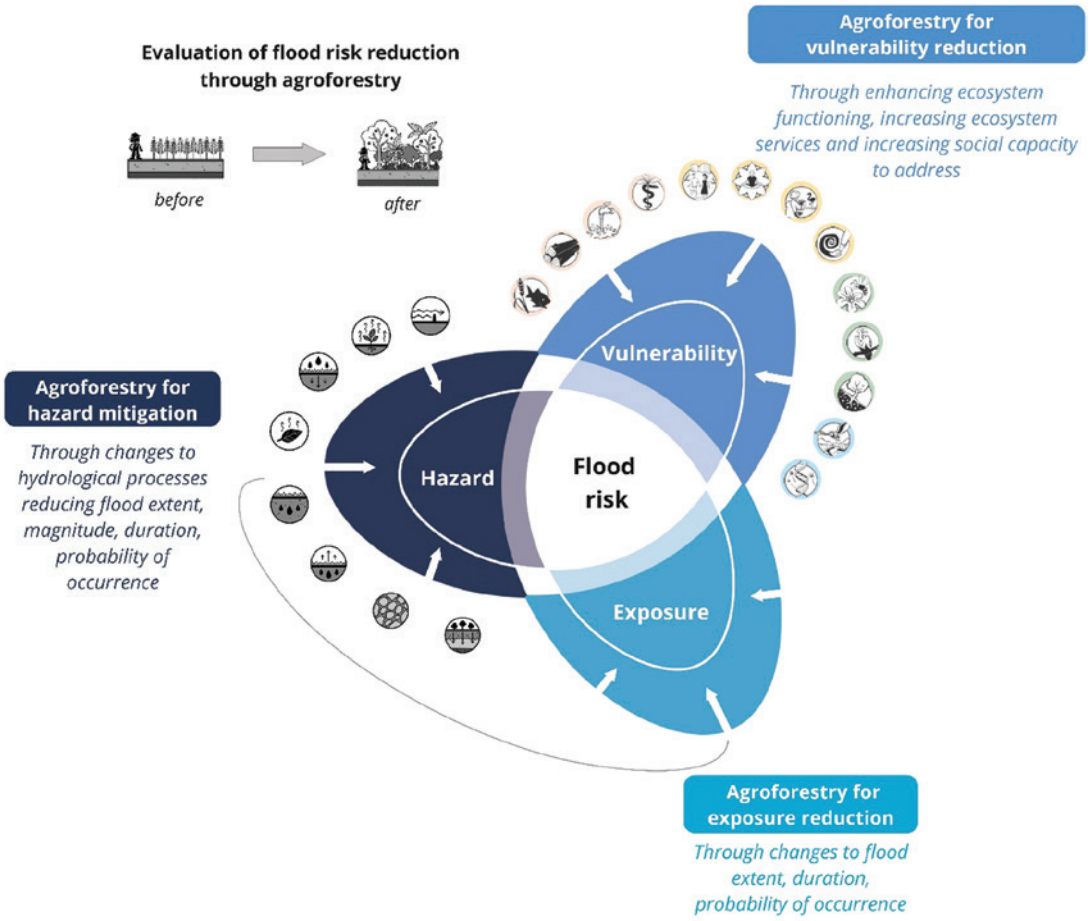
In addition to these criteria, a comprehensive overview of different methods to rank and prioritize adaptation options are provided in the NAP technical guidelines (LEG, 2012).

If an adaptation option does not address one or several of the criteria, it is not necessarily inadequate per se. However, in that circumstance, the option's design would need to be enhanced by, for example, including more socioeconomic objectives. In this regard, Rackelmann and others (forthcoming) provide guidance on designing policy options to make ecosystem restoration (as a potential adaptation option) more equitable by creating co-benefits with financial inclusion, social protection and disaster risk finance objectives.

Case Study 4: Moving towards a comprehensive evaluation of ecosystem-based disaster risk reduction: The example of agroforestry for flood risk reduction in Benin

Agroforestry is a valuable option for addressing land degradation, adapting to climate change and reducing disaster risk. It is recognized in sub-Saharan Africa for its potential to enhance biodiversity, prevent soil degradation and mitigate floods and droughts, while promoting sustainable development. In Benin, agroforestry contributes to income diversification, food security and environmental protection. About one-fifth of farmers in the country engage in agroforestry practices.

Agroforestry provides ecosystem services that help reduce the hazard, exposure and vulnerability of flood risk (see Figure 6). This characteristic should be an important part of any assessment of agroforestry as an adaptation option.



Source: Janzen and others, 2024

Figure 6: The influence of agroforestry on different ecosystem services contributing to flood risk reduction.

A literature review of studies exploring the influence of agroforestry on hydrological processes in sub-Saharan Africa compared this influence to that of cropland (see Table 4). The changes to hydrological processes inform the hydrological model used to assess the flood hazard. Through the spatially explicit overlay of flood hazard and exposed elements, effects on exposure can be evaluated.

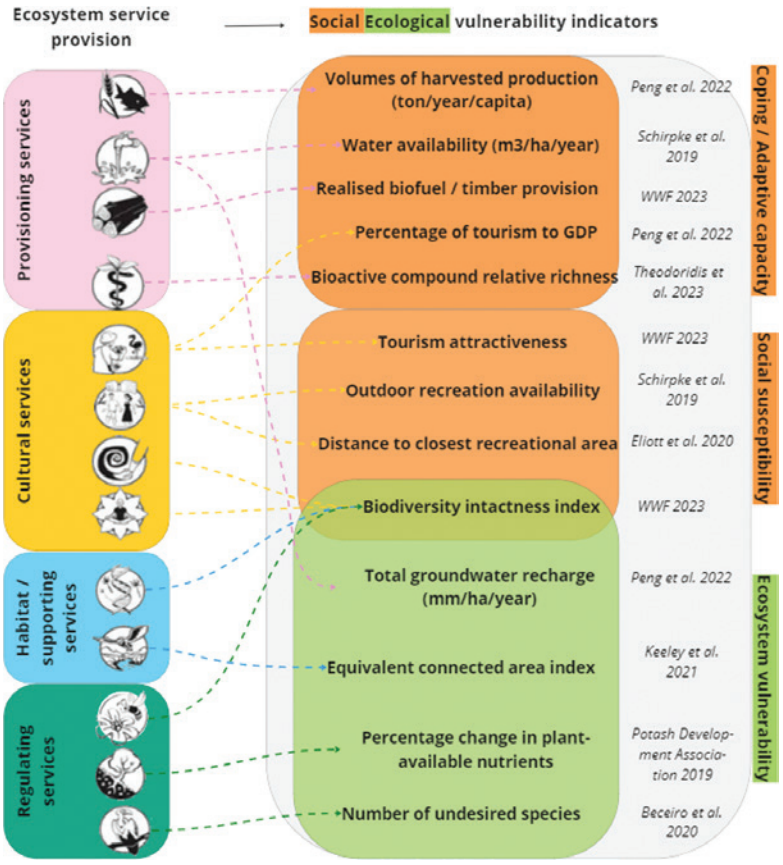
Case Study 4 (contd.)

Table 4: Table showing the impacts of agroforestry on hydrological processes compared to cropland in sub-Saharan Africa.

Hydrological parameter	Surface runoff	Infiltration	Evapotranspiration	Evaporation	Transpiration	Groundwater recharge	Soil water	Soil bulk density
Direction	decrease	increase	Increase	decrease	mostly increase	decrease	mostly increase	mostly decrease
Range (%)	(−4) to (−80)	138 to 286	0 to 21	(−3) to (−9)	(−90) to 60	(−2) to (−20)	(−102) to 58	(−23) to 20
Median	−22,5	222	2	−5	5	−6,75	5,7	−5,15
Standard deviation	31,1	56,25	7,1	2,01	48,0	6,47	38,08	15,48

Source: Janzen and others, 2024

The review also examined the effects of agroforestry on reducing vulnerability to floods by evaluating social-ecological indicators of the vulnerabilities of different ecosystem services (Figure 7).



Source: Janzen and others, 2024

Figure 7: Illustration of ecosystem services and related indicators used for capturing the effect of agroforestry on flood vulnerability.

Case Study 5: Using Economics of Climate Adaptation to assess the most cost-effective adaptation measures for land degradation and drought

Land degradation and drought pose significant challenges to livelihoods worldwide. Combined with the adverse impacts of climate change, they are particularly challenging for vulnerable communities. Many strategies and adaptation measures have been implemented to combat drought and reverse land degradation in the face of climate change. However, funding for implementing these measures is limited. To secure maximum adaptation potential, while navigating limited financial resources, the locally most-cost-efficient solutions to land degradation and drought must be identified and prioritized.

The Economics of Climate Adaptation (ECA) offers a unique framework to identify the most cost-effective climate adaptation measures. ECA is a decision-making support framework that integrates climate-related hazard, exposure and vulnerability and climate-related damage to environments, economies and societies. ECA can be flexibly applied from the national scale down to the local scale, involving different stakeholder groups and addressing different hazards. It provides key information for programme-based approaches and insurance products and can support the development of NAPs.

ECA addresses, in particular, the following questions:

1) What is the potential climate-related damage and impact over the coming decades?

2) How much of that damage can be averted, using what type of CCA measures and how cost-effective are they?

3) What investments will be required to fund those CCA measures and will the benefits of these investments outweigh their costs?

The ECA framework has been successfully applied in several countries and regions worldwide. With an objective to identify the most-cost efficient measures to address the negative impacts of drought, the United Nations University Institute for Environment and Human Security (UNU-EHS), in cooperation with the InsuResilience Solutions Fund (ISF) implemented the ECA framework in the Afar and Somali regions of Ethiopia. Given current climatic projections, droughts are expected to be the most damaging events in Ethiopia and adaptation is a priority. In the ECA study, 26 measures were assessed. The most cost-efficient measures identified included wetland restoration, the establishment of communal seed banks and the management of protected areas. The results showed that, by 2050, all analysed measures for drought will be cost-efficient, providing co-benefits for populations at risk under extreme climate conditions. Moreover, the analysis revealed that the top six cost-efficient measures will be able to avoid an estimated $500 million in damages and protect around 90,000 people over the next 31 years with an investment of under $10 million in the two targeted regions.

The results of the study can inform policy development, including NAPs, to prioritize cost-efficient adaptation measures. The study's findings may also help countries to unlock climate finance and other risk financing pools. Investments in climate resilient measures, as illustrated by the example from Ethiopia, can improve environmental sustainability and generate long-term economic benefits. The quantification of economic aspects provides financial insight for countries to strategize medium- and long-term priorities, allocate resources and prepare comprehensive NAPs addressing climate challenges (UNU-EHS and Frankfurt School of Finance & Management, 2021).

B3. Draft and communicate National Adaptation Plans

Questions that guide this step:

- *What needs to be considered when drafting and communicating a NAP?*

Draft the National Adaptation Plan document and share it for review: The prioritized adaptation options identified in the previous steps should be used to create a draft NAP that addresses challenges associated with DLDD. The NAP technical guidelines suggest a draft NAP should include following sections:

- A summary of the NAP process;
- A discussion of key climate vulnerabilities in the context of the main development priorities;
- A list of prioritized adaptation options (i.e., policies, programmes, projects and other activities);
- A plan for establishing indicators and monitoring for assessing progress; and
- A timeline for reassessing the plan as new information is gathered from ongoing assessments.

Each component of the NAP should refer to the UNCCD and its national initiatives to highlight possible synergies. This will ensure the simultaneous consideration of both LDN and CCA into the future.

Following the completion of a first draft of the NAP document, the plan should be made available for review to the stakeholders and experts who participated in its development, as well as to the wider public.

Finalize and communicate the National Adaptation Plan: The NAP should be finalized once all feedback has been received and incorporated. The final draft should ensure synergies between CCA and UNCCD objectives and initiatives are sufficiently incorporated before the document is endorsed by the national government (as required by the NAP process).

National endorsement of the NAP ensures its status as a policy document. At this stage, the plan's objectives and key activities should be communicated to all stakeholders. National government departments and agencies, as well as other organizations working on LDN should be encouraged to highlight the cross-sectoral importance of the NAP and to link their own LDN initiatives to the plan.

B4. Integrate climate change adaptation into national and subnational development and sectoral planning

Questions that guide this step:

- *What are opportunities and constraints for integrating CCA into planning?*
- *How can experiences from national LDN initiatives support integrating CCA into planning?*

Identify opportunities and constraints for integrating National Adaptation Plan objectives into planning: Achieving NAP objectives requires identifying opportunities and constraints for integrating these goals into development planning from the community to the national level**.** NAP integration into development planning can be challenging as building, construction and policies generally takes years, involving multiple actors from different governmental and non-governmental departments and institutions.

The NAP technical guidelines outline several of these opportunities and challenges. Understanding these challenges can benefit from the capacity assessment and the capacity building strategy set out in Step A3.

Build and enhance capacities around LDN for NAP planners: To better integrate NAP objectives into national planning activities, the land planning and management approaches of ILUP and ILM can help (see Box 3). These are considered important to

implementing LDN and may support the integration of land-based adaptation initiatives, for example, by helping to reconcile multi-objective land uses, carefully considering trade-offs and addressing conflicts between sectoral interests (e.g., food production vs restoration of protective forests).

Integrate CCA into existing national and subnational planning: CCA should be integrated into existing national and subnational planning activities to "climate proof" them. This requires a clear understanding of the different planning activities, including their timelines, consultation steps and actors involved, to identify entry points in the planning processes. Contacts established with stakeholders during the NAP process will be useful to stay informed about new planning activities and to ensure participation in them. These contacts should be maintained and cultivated. To facilitate specific planning steps related to land, including the national activities to achieve LDN, capacities to undertake ILUP and ILM approaches could be useful. Further guidance for this integration can be found in the *Technical Guide on the Integration of the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security into the Implementation of the United Nations Convention to Combat Desertification and Land Degradation Neutrality* (FAO and UNCCD, 2022). This guide supports activities that integrate important land-tenure governance concepts into planning steps and that enable land-based adaptation interventions.

Box 3: Integrated land use planning and integrated landscape management

Integrated land use planning (ILUP) and integrated landscape management (ILM) have an integral role to play in achieving LDN by reducing decision uncertainties, considering trade-offs and helping to manage conflicts between sectoral interests (Verburg and others, 2022). These properties also prove helpful for the NAP process. The Science-Policy Interface of the UNCCD describes ILUP and ILM as follows:

"ILUP refers to assessing and allocating land-based resources across a landscape while accounting for differing uses and demands from different users. It requires the coordination of planning and management across sectors concerned with land resources and their use within a spatial administrative or geographic unit (e.g., a catchment, region and/or country). The purpose of ILUP is to identify the combination of land uses that can meet stakeholders' needs while safeguarding natural resources for the future. By examining all land uses in an integrated manner, ILUP assesses trade-offs between land use options. It links social and economic development with environmental protection and enhancement to help achieve SLM. ILUP is an umbrella term that includes more specific approaches such as – but not limited to – territorial planning and spatial planning" (UNCCD/Science-Policy Interface, 2022, p. 2).

"ILM refers to long-term collaboration among different groups of stakeholders to achieve the multiple objectives required from the landscape. Five key features – all of which facilitate participatory development processes – characterize ILM: 1) shared or agreed upon management objectives that encompass multiple landscape benefits; 2) field practices that are designed to contribute to multiple objectives; 3) management of ecological, social and economic interactions for realizing positive synergies and mitigating negative trade-offs; 4) collaborative, community-engaged planning, management and monitoring processes; and 5) the re-configuration of markets and public policies to achieve diverse landscape objectives" (UNCCD/Science-Policy Interface, 2022, p. 2).

The cyclical ILUP-ILM planning process consists of five generic phases: assessment, visioning, planning, implementation and monitoring phases. For each of these phases different analytical tools and approaches exist that vary depending on their analytical methods and temporal dynamics (Figure 8). The Group on Earth Observations (GEO) supports an initiative called the LDN-Toolbox that can help identify the right tool for land use planning to achieve LDN for each phase and at local, regional or national scales.

Box 3 (contd.)

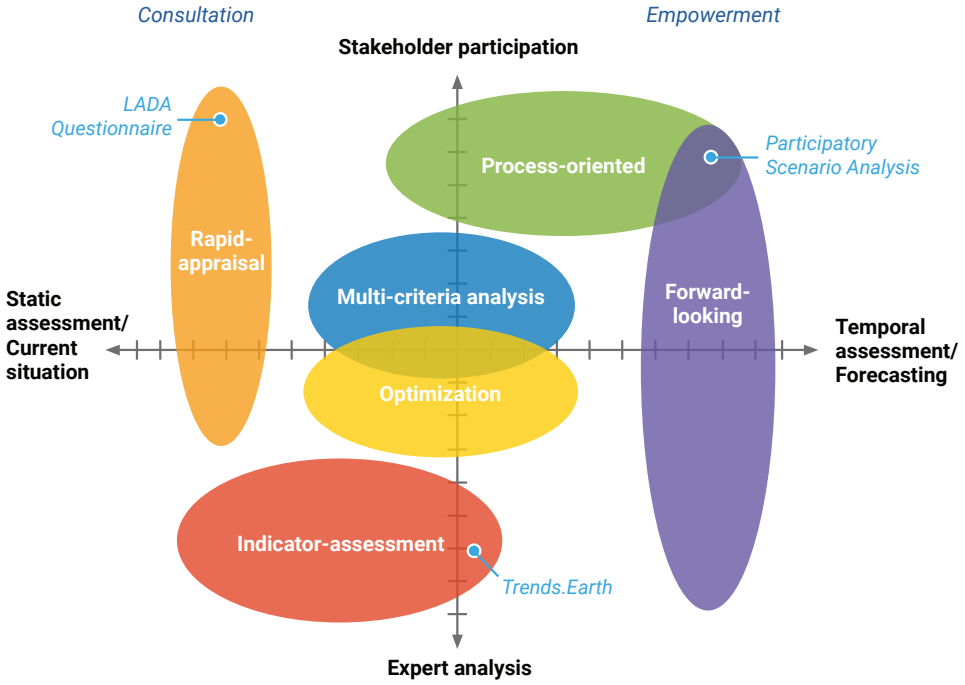


Figure 8: A classification of tool groups used for ILUP-ILM along two axes capturing differences between participatory and expert analysis and temporal dynamics. Examples of tools are given in italics (UNCCD/Science-Policy Interface, 2022).

Resources to support activities for assessing risks and appraising adaptation options

Trends. Earth: This online platform is designed to track land degradation (i.e., the reduction or loss of the biological or economic productivity of land). Using Earth observation (EO) satellite imagery and global data, Trends.Earth can identify degraded areas and help decision makers improve them. Initially launched in four African nations, this tool is now globally available (see Case Study 9).

Good Practice Guidance: SDG indicator 15.3.1: This document provides guidelines for measuring land degradation, particularly on monitoring and understanding the status of land cover, land productivity and soil organic carbon stocks. These three variables are used to measure the SDG Indicator 15.3.1 that addresses the proportion of land that is degraded over total land area.(Sims and others, 2021).

Performance Review and Assessment of Implementation System (PRAIS): The PRAIS reporting platform has been used for the reporting and review processes of UNCCD Party Countries since 2020. Improvements to the fourth generation of PRAIS (PRAIS 4) have made the platform more user-friendly in supporting countries in managing, analysing and visualizing large datasets. The information entered is automatically summarized in standalone country reports, which are accessible via the UNCCD country profiles.

Climate Risk Sourcebook: This sourcebook offers a detailed framework for understanding climate risks, identifying vulnerable areas and populations and developing strategies to mitigate these risks through adaptation. The sourcebook, published by the German Corporation for International Cooperation (GIZ), also provides guidance on best practices, methodologies and tools for stakeholders to effectively navigate the adaptation process, including identifying and appraising adaptation options.

ECON-WOCAT Dashboard: This interactive online tool guides users to work with ECON-WOCAT data and explore options to answer questions about the costs and benefits of SLM technologies. This tool covers most regions and types of terrestrial ecosystems.

C. Implementing strategies

This section focuses on the implementation of the NAP (adopted in Section B) and outlines possible approaches to implementing adaptation options that address DLDD and that promote synergies with other national initiatives and multilateral environmental agreements. NAP implementation strategies should prioritize and integrate adaptation options. Countries should also seek to improve their long-term planning capacity and should implement NAPs in a way that builds on existing land use activities, such as LDN initiatives. The following steps and activities provide a guide.

Table 5: Overview of steps and activities to guide NAP implementing strategies

Step	Activities
C1. Prioritize climate change adaptation in national planning	Identify and apply national criteria for prioritizing the implementation of adaptation options
	Identify opportunities for building on and complementing existing adaptation activities
C2. Develop a (long-term) national adaptation implementation strategy	Include LDN support tools and principles to aid in defining a strategy for implementing adaptation options
	Implement adaptation options
C3. Enhance capacity for planning and implementing adaptation	Strengthen long-term regulatory, policy and institutional frameworks across jurisdictions
	Build capacity and awareness in different sectors and among subnational jurisdictions
	Communicate NAP process outputs and promote international cooperation
C4. Promote coordination and synergies at regional levels and with multilateral environmental agreements other than those of the UNFCCC and UNCCD	Promote coordination of adaptation planning across all relevant sectors
	Promote synergies in assessment, planning and the implementation of adaptation at regional levels
	Identify opportunities for synergies with multilateral environmental agreements other than UNFCCC and UNCCD

C1. Prioritize climate change adaptation in national planning

Questions that guide this step:

- *How can the implementation of adaptation options be prioritized?*
- *What are opportunities under national LDN initiatives for building on and complementing existing adaptation activities?*

Identify and apply national criteria for prioritizing the implementation of adaptation options: Identifying and applying national criteria for prioritizing the implementation of adaptation options can inform adaptation planning while balancing competing development needs. The identification of criteria for prioritizing implementation can be informed by

- a ranking of the climate change risks associated with DLDD (Step B2) and
- an appraisal of the adaptation options for addressing DLDD (Step B3).

The LDN response hierarchy (i.e., avoid > reduce > reverse land degradation; see Figure 3) can also be used as a criterion to prioritize the adaptation options for which questions exist about which land-based interventions should be implemented. Adaptation options that avoid further land degradation (example.g., the conservation of wetlands) should

be prioritized over options that reduce or reverse land degradation (e.g., more sustainable agricultural practices or reforestation). In addition, adaptation actions at sites where the greatest gains in ecosystem services are expected to occur should be prioritized (Orr and others, 2017).

Identify opportunities for building on and complementing existing adaptation activities: To ensure a sustainable and effective approach to addressing adaptation, opportunities for building on and complementing existing adaptation activities should be identified. These existing activities may not explicitly mention adaptation, but they should nevertheless significantly contribute to adaptation, as in efforts to reduce disaster risk and different LDN initiatives. To facilitate inclusion and coherence, taking stock of adaptation options (Step A2) can help identify ongoing initiatives and gaps. Building on and complementing existing adaptation activities can also reveal opportunities to "climate proof" existing and planned LDN initiatives.

C2: Develop a (long-term) national adaptation implementation strategy

Question that guides this step:

- *How can the national adaptation implementation strategy be linked to and benefit from national initiatives under the UNCCD?*

Include LDN support tools and principles to aid in defining a strategy for implementing adaptation options: Once adaptation options have been prioritized and opportunities for building on existing adaptation activities have been identified, a strategy for implementing adaptation options should be defined. This should describe target areas, beneficiaries, responsible authorities, the timing and sequencing of activities, the mobilization of resources (see Box 2) and the communication of NAP process outputs (see Step C3). The strategy for implementing adaptation options should also address potentially conflicting interests. For this, the use of ILUP-ILM can help (see Box 3). The strategy should also integrate the "like for like" principle of counterbalancing land-based natural capital gains and losses between the same types of ecosystem-based land types. This will contribute to efforts to achieve LDN while maintaining ecosystem services required for CCA. The best spatial resolution for an adaptation action is also an important consideration; a strategy for implementing adaptation options should address the biophysical scale or administrative jurisdiction at which land use decisions are made (Orr and others, 2017).

Implement adaptation options: Once a strategy for implementing adaptation options has been developed, the options can be implemented as policies, projects or programmes. Concrete projects on the ground, such as improving ecosystems or enhancing access to water (see Case Study 6), are important to directly enhance adaptation. Policies are equally important for creating enabling conditions for communities and the private sector to engage independently in CCA and efforts to achieve LDN. For example, strengthening land tenure for vulnerable groups can often be a helpful policy (see Box 4). The implementation of policies should follow transparent processes and may require planning permission and sectoral land-use permits. It should also engage multiple stakeholders and should anticipate ways to resolve potentially emerging conflicts (FAO and UNCCD, 2022).

Case Study 6: Solar water pumping systems for climate-resilient development in Pakistan

While efforts to achieve LDN address DLDD risks by enhancing or conserving the productivity of land and its ability to cope with droughts, other efforts also address drought risks and UNCCD obligations while contributing to CCA. These can include early warning systems, crop insurance or the promotion of sustainable technologies to enhance access to water. The following case study showcases one such effort.

Case Study 6 (contd.)

Agriculture is the biggest user of fresh water in Pakistan, consuming more than 90 per cent of available water for the irrigation of crops. Currently, Pakistan has more than 1.4 million groundwater pumps, most of them installed privately by farmers and most powered by diesel or electricity. Diesel-operated pumps have large fuel costs and produce greenhouse gas emissions. Electric pumps face high tariffs, frequent power cuts, unavailability of transmission networks in remote locations and high initial purchasing costs (creating a burden for governments that often offset these costs with subsidies). These problems mean farmers across the country would benefit significantly by reducing their dependence on diesel and electricity pumping and by finding alternative clean energy sources for water pumping to increase yields and reduce drought risk.

To address this issue, the Pakistan Agricultural Research Council (PARC) conducted a successful pilot project to introduce portable solar pumping systems between 2010-11. These portable solar pumping systems comprise easily moved trolleys on which solar panels are mounted. The solar panels can be readily opened and closed so the trolley can be conveniently moved from one place to another with a tractor. The power generated by the solar panels allows farmers to replace diesel and grid-dependent electricity when pumping. The movable nature of the trolleys means farmers can escape the high capital cost of equipping all of their pumping locations with separate solar-panel systems. Moving the trolley between pump locations is feasible because farmers do not need to water crops 365 days a year. The movable systems also prevent the theft of stationary solar panels from remote pump locations. The portable solar-powered pumping systems can operate in all areas where freshwater is available at shallow depths.

Farmers have responded well to the pilot project. Sanaullah, a sugar cane and rice farmer, is one of them. He was interviewed for a short documentary about the programme created by PARC: "I bought this portable solar pump three years ago," he told the documentary. "First, a lot of diesel fuel is saved. Second, crop production overall has improved. And third, in comparison the yield average is significantly higher. I used to spend 600,000 rupees for diesel annually. Not only am I saving 600,000, but the crop production is also better. The crop yield used to be somewhere around 900 maunds [approximately 33,600 kg] per acre. Now, it is about 1,200 maunds, [approximately 44,800 kg], all due to better water and fertilizer use. I thank the Almighty Allah, my overall condition has improved a lot after installing the system."

Other farmers who purchased the portable solar pumping systems also found improved yields for high irrigation crops, such as sugar cane and reduced diesel costs, making more capital available for other products such as fertilizers. The farmers suggest the capital costs of the trolleys are offset by a return on their investment after three years. This increases incentive to participate in the project for any small- to medium-scale farmers with access to capital. To meet the demand for the solar trolleys, local manufacturers have started producing them, with added features to meet specific needs of area farmers. This has meant an improvement and diversification of local economies as well. Estimates suggest that approximately 1500 units have been produced in the Thal region of Pakistan alone.

Photo Credit: Pakistan Agricultural Research council, 2022

While the improved irrigation of this project shows obvious benefits, continuously monitoring and evaluating climate change adaptation interventions of this kind is also critical (See Section D). For example, the long-term repercussions of ground water extraction should be continually monitored to ensure this finite resource is not overused and that maladaptation does not arise.

Based on: Werners and others, 2022

C3: Enhance the capacity for planning and implementing adaptation

Questions that guide this step:

- *How can policies and legal and regulatory frameworks that govern the implementation of CCA and LDN initiatives be strengthened?*
- *How can land-based CCA capacities be built?*
- *What outreach activities can communicate the NAP process outputs to broad groups of stakeholders?*

Strengthen long-term regulatory, policy and institutional frameworks across jurisdictions: Building on Step A3 and B4, regulatory, policy and institutional frameworks across jurisdictions need to be strengthened to provide an enabling environment for adaptation and LDN initiatives in the long term. Verburg and others (2019) suggest different policy options to create an enabling environment for LDN. These include

- strengthening capacities for integrated land use planning (see Box 3);
- accounting for actors involved in private land governance;
- engaging early with local communities; and including land tenure security in national strategies (see Box 4).

Build capacity and awareness in different sectors and among subnational jurisdictions: The NAP process foresees the continuous design and implementation of training and capacity building for national citizens and experts in different sectors and across subnational jurisdictions concerning climate change and adaptation options. DLDD issues, LDN and the benefits of land-based solutions in CCA should be mainstreamed into training and educational activities. Building on Step A3., these activities could include

- strengthening national education efforts to address land degradation and climate change;
- training and developing skills within institutions working on LDN to ensure a better understanding of the NAP process and CCA;
- training and developing skills development within institutions working on CCA and the NAP process to ensure a better understanding of LDN; and
- inviting LDN experts into CCA capacity-building programmes.

As part of the implementation strategy, facilitating public access to data and information should be expanded to include information about land. This could include information on land data registers, land tenure, land condition and use, land value and LDN status.

Respective data could be derived from cadastral and topographic mapping, land capability and resilience assessments, land degradation and population maps, as well as from land use modeling and scenarios (Orr and others, 2017).

Communicate NAP process outputs and promote international cooperation: As part of the implementation strategy, NAP process outputs should be made available and communicated to national audiences. Internationally shared information could also promote regional and wider international cooperation. These activities could include the following:

- Facilitating access to data generated within the NAP process (e.g., findings from risk assessments and adaptation options applicable for individuals or the private sector and site-specific recommendations for more sustainable land management practices).
- Promoting public participation to support transparent decision-making. For example, where decisions involve trade-offs between ecosystem services or trade-offs between environmental and social goals, public consultation and participation should engage with those holding legitimate tenure rights who could be affected by decisions regarding the land. These individuals and groups should be ensured active, free, effective, meaningful and

informed participation, taking into consideration existing power imbalances and the different capacities of affected groups (FAO and UNCCD, 2022).

- Promoting exchange among regional and international governments to share examples of best practices regarding different NAP processes that address CCA and LDN together (Case Study 7).

Case Study 7: Global programme workshops to facilitate collaboration within country teams participating in The Restoration Initiative

The Restoration Initiative (TRI) is an international programme designed to address key and common barriers to expanding and scaling up land restoration efforts. The programme, which currently involves nine countries in Africa and Asia, has been working since 2018 to transform vast landscapes by restoring mangroves, arid lands and tropical forests. With a priority of increasing public, private and local investment in large landscape restoration, TRI is demonstrating how ecosystem restoration can be implemented for long-term and sustained results.

The initiative leverages the strengths and ongoing work on forest landscape restoration (FLR) by agencies in partner countries while providing extensive opportunities to identify synergies and to promote South-South knowledge sharing. The programme's integrated approach and collaboration opportunities are supported by combining expertise in policy design, institutional capacity building and best practices, private sector engagement and finance mobilization. The programme includes workshops that provide a way to encourage a sense of community and allow international colleagues to identify new collaboration opportunities. The workshops also facilitate exchanges among countries to share expertise on topics of shared concern, including seedling selection, mangrove restoration and policy strategies.

Workshop participants exchanging ideas and experiences. Photo credit: IUCN.

With a focus on identifying synergies, a mapping exercise was done during one of the workshops whereby the TRI members identified six priorities and opportunities for cross-country collaborations. These are listed as follows: 1) policy support and enabling environment, 2) FLR technical support, 3) assisted natural regeneration, 4) communications, 5) monitoring and 6) resource mobilization. A few examples of the many activities planned under these collaborative priorities include increasing seed and plant material diversity, improving policy engagement, increasing the opportunities to facilitate knowledge sharing through training and webinars and creating collaborative work streams on projects. Overall, these collaborative priorities all relate to the collection of best FLR practices and sharing through the United Nations Decade on Ecosystem Restoration.

The collaborative environment established at the workshops was useful in encouraging future partnerships across the restoration community.

Source: IUCN and others, 2023

C4. Promote coordination and synergies at regional levels and with multilateral environmental agreements other than UNFCCC and UNCCD

Questions that guide this step:

- *How can coordination be enhanced to increase the sustainability of CCA and LDN initiatives at the national and regional levels?*
- *How can synergies with multilateral agreements other than UNFCCC and UNCCD be promoted?*

Promote coordination of adaptation planning across all relevant sectors: Establishing and strengthening coordination mechanisms can facilitate adaptation planning. These mechanisms can increase the sustainability of CCA and LDN initiatives and the prospects of up-scaling them. Examples of coordination mechanisms include mechanisms that aim to improve data interoperability, standardize information exchange, improve data sharing, avoid duplication of efforts and encourage synergies between both efforts to achieve LDN and activities to promote CCA. Here, institutional arrangements between all relevant sectors (e.g., between the agrifood sector and forestry sector) could support the exchange of best practices on the implementation of LDN and CCA measures within different communities. Experiences from national initiatives relevant to LDN show that many countries have established mechanisms for multi-stakeholder coordination and horizontal coordination across sectors. However, institutional capacity gaps remain, especially regarding the vertical coordination of efforts (e.g., to integrate best practices across different policy and governance levels. Paying attention to the development of vertical integration mechanisms is important to better coordinate top-down and bottom-up activities related to CCA and LDN. ILUP-ILM can provide support in this regard (see Box 4).

Coordinating activities across sectors is both efficient and cost-effective. These activities should consider donor coordination as well. Successful coordination should also include the effective engagement of the UNCCD Science-Policy Interface (FAO and UNCCD, 2022).

Promote synergies in assessment, planning and implementation of adaptation at regional levels: Enhanced coordination among regional administrations can help to identify and promote synergies in assessment, planning and implementation of adaptation**.** Coordination can include the pooling of resources to conduct climate scenarios analyses, joint training on SLM or ecosystem-based adaptation or to address the transboundary effects of land degradation. For instance, land degradation in river catchments in one country might also affect water quality and quantity in downstream countries. The National Action Programmes of UNCCD Country Parties are often complemented by regional and subregional action programmes. For example, African countries have developed five subregional action programmes and a regional action programme to facilitate cooperation on LDN initiatives. These regional action programmes help to effectively enhance adaptation outcomes and prospective regional adaptation initiatives should build on them.

Identify opportunities for synergies with multilateral environmental agreements other than the UNFCCC and the UNCCD: Enhanced adaptation outcomes can also come from iIdentifying and promoting opportunities for synergies between UNCCD efforts to achieve LDN and UNFCCC calls for CCA with other multilateral environmental agreements. (These synergies can be seen, for example, in the planning, capacity building and implementing of projects in Case Study 8 and 10.) Other conventions and environmental agreements for which synergies may also exist with the objectives of LDN and CCA include the Convention on Biological Diversity (CBD) and the Ramsar Convention on Wetlands**.** The synergies between the UNCCD and CBD are outlined in the UNCCD publication, *Land Restoration to Safeguard Nature and Livelihoods: UNCCD and CBD Working Together* (UNCCD, 2023b).

Multiple strategies can be used to identify and promote synergies between multilateral environmental agreements. These include the following:

- Setting up a formal body or other institutional coordination arrangement that brings together the various stakeholders, such as the suggested joint task force, to facilitate the integration of national LDN initiatives into the NAP process (Step A1).
- Ensuring the national focal points to various multilateral environmental agreements and conventions work within the same department or

unit of a ministry (e.g., the Ministry of Environment) to allow for closer exchange and cooperation between these personnel.

- Identifying and prioritizing activities under closely related conventions and agreements (Step C1).
- Considering the obligations under all conventions and agreements when revising or passing new policies or legislation.

Case Study 8: Ecosystem-based approaches for reducing the vulnerability of food security to the impacts of climate change in the Chaco region of Paraguay

The western region of Chaco represents more than 60 per cent of Paraguay's land area. A climate change adaptation project in the region, financed by the Adaptation Fund, aims to reduce the vulnerability of families, agricultural producers and indigenous communities to climate impacts and to enhance food security. The project identifies main barriers to adaptation and seeks to address them through improved information and knowledge sharing for climate resilience, implementing cost-effective on-the-ground adaptation measures and strengthening the institutional capacities to adequately address climate change issues. Seven communities have been identified to receive interventions and the whole region will benefit from the capacity-building of community-based adaptation plans and institutional and governmental interventions.

Before implementing the ecosystem-based adaptation actions, background studies assessed the characteristics of different ecosystems in Chaco to ensure that any interventions would support the ecosystem services critical for provisioning, regulating and providing cultural support for communities across the region. For example, in times of frequent droughts, access to food and drinking water has been unstable for communities in the area. Agrosilvoculture and agroecology, along with other measures, were identified as adaptation strategies to increase access to these resources. Meanwhile, these adaptation benefits also contribute to the mitigation of climate change, to the protection of biodiversity and to efforts to achieve LDN by reducing deforestation and the degradation of forests.

These benefits are connected to many other national projects and efforts already initiated by the Government of Paraguay. For example, this project is consistent with the National Development Plan Paraguay (PND30), which highlights sustainable agrosystems in a socially inclusive and equitable way. It is also consistent with the country's National Forest Action Plan and the National Afforestation and Reforestation Plan, which focuses on forest conservation, restoration and management.

With its focus on vulnerability, the project considers the social aspects of adaptation. Biannual community meetings and activities allow for social learning and for identifying areas of improvement. The project also provides support to the communities by way of technical advice for the improvement of agricultural and ecosystem-based adaptation measures as well as support for business and innovation initiatives to create jobs and diversify livelihoods and community activities.

A community workshop conducted in February 2017.
Photo Credit: MADES

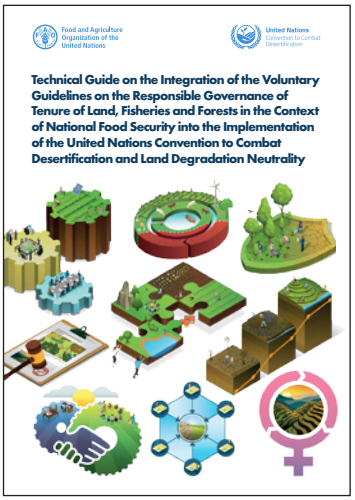
The UNCCD recognizes the importance of making ecosystem-based approaches, like restoration, attractive through social protection and financial inclusion. Guidance on how to design policy options that consider both ecosystem restoration and socioeconomic benefits can be found in Rackelmann and others (forthcoming).

Source: UNEP and Ministry of Environment and Sustainable Development of Paraguay, 2013 and MADES, 2024

Box 4: Land tenure security to address climate risks associated with DLDD

Land tenure security provides an incentive for land holders to sustainably manage and use land. Consequently, it also plays an important role in the context of LDN initiatives and efforts to address climate risks associated with DLDD.

Insecure land tenure is a significant reason SLM practices are often not adopted by land users, who may fear that the land upon which they invested time, resources and effort might be unjustly taken or encroached upon. Improved tenure security increases assurance for holders of land rights that they will access the long-term benefits accrued by more sustainable practices. As such, secure land tenure contributes to an enabling environment for the implementation of the LDN initiatives and ecosystem-based adaptation actions. Secure land tenure rights can also have multiple additional benefits, such as increasing a community's food security, avoiding conflicts over resources and reducing forced migration (FAO and UNCCD, 2022; UNEP, 2021).



Improved tenure security is also known to particularly empower vulnerable groups in society, such as women and youth. In this regard, the *Technical Guide on the Integration of the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security into the Implementation of the United Nations Convention to Combat Desertification and Land Degradation Neutrality (VGGT)* (FAO and UNCCD, 2022) emphasizes the importance of gender-inclusive and responsive initiatives to enhance women's tenure security. This is especially important considering that women "play a key role in land management and in ensuring food security for their families and communities, especially in areas highly affected by desertification, land degradation and drought" (FAO and UNCCD, 2022, p. xii). However, women often only own or have access to lower quality and smaller parcels of arable land compared to men. At the same time, women face inequalities in access to other productive resources, services and technical know-how. Similar inequalities affect decision-making that could be made more inclusive to increase women's capacities to restore and sustainably manage land (see Box 1). To address this issue, the VGGT provides specific guidance for LDN initiatives on securing women's tenure rights and access to land and natural resources that can also prove helpful for ecosystem-based adaptation activities.

Moreover, the VGGT provides five general principles to enhance land tenure security. The principles state that all nations should

1. Recognize and respect all legitimate tenure right holders and their rights;
2. Safeguard legitimate tenure rights against threats and infringements;
3. Promote and facilitate the enjoyment of legitimate tenure rights;
4. Provide access to justice to deal with infringements of legitimate tenure rights; and
5. Prevent tenure disputes, violent conflicts and corruption (FAO and UNCCD, 2022).

Integrated Valuation of Ecosystem Services and Tradeoffs (InVEST): This open-source software uses models to map and value the services from nature that sustain and contribute to the quality of human life. The spatially explicit models map biophysical characteristics (e.g., tonnes of carbon sequestered) or economic features (e.g., net present value of that sequestered carbon). The models explore how changes in an ecosystem's structure and function are likely to affect the flows and values of ecosystem services.

UNCCD capacity building marketplace: This public platform brings science, technology and human capital resources together in one location to connect capacity-related needs with solutions concerning the implementation of the UNCCD. The marketplace assists individuals and organizations in finding and offering current knowledge, funding and job opportunities. It also invites stakeholders to contribute relevant content and to network with other interested parties.

D. Monitoring, reporting and learning

This section focuses on harmonizing LDN initiatives with the monitoring, reporting and learning involved in the NAP process. This includes the final NAP and NAP-related outputs, such as the NAP implementation strategy. The following steps and activities provide recommendations to integrate monitoring, reporting and learning with existing LDN initiatives by, for example, communicating important NAP information and LDN information to stakeholders at the same time or by looking at how one indicator can provide information about both LDN and NAP targets. This section also provides guidance on communicating new insights.

Table 6: Overview of steps and activities for monitoring, reporting and learning

Step	Activities
D1. Include LDN initiatives in the NAP monitoring plan	Integrate LDN in the monitoring and evaluation plan of the NAP process Define land-based indicators and metrics for documenting the NAP process Establish a monitoring plan and collect data on defined indicators
D2. Review the NAP process to assess progress, effectiveness and gaps	Compile information from emerging science and assessments of implemented adaptation activities and LDN initiatives Review activities undertaken as part of the NAP process
D3. Iteratively update the NAPs	Update the NAP by repeating selected steps Align the production of updates to the NAP with relevant national development plans
D4. Communicate and report on the progress and effectiveness of the NAP process	Share new insights with relevant national and international actors working on land Promote new insights through national communications efforts and apply these insights in capacity building

D1. Include LDN initiatives in the NAP monitoring plan

Questions that guide this step:

- *How can the monitoring of national LDN initiatives be aligned with NAP monitoring?*
- *What data, metrics and information from other national initiatives relevant to DLDD can be integrated into the NAP monitoring plan?*
- *Can unavailable metrics be made accessible through cooperation with national and international partners?*

Integrate LDN in the monitoring and evaluation plan of the NAP process: A monitoring and evaluation plan should begin by identifying key parts of the NAP process that capture and show its progress, effectiveness and gaps that remain. This could be, for example, the number of key climate risks assessed, adaptation options implemented or stakeholders engaged. These key parts of the NAP should reflect overall the goals and objectives of NAP process.

Chapter 3 of this guide describes similarities between LDN and CCA monitoring. To create synergies between monitoring LDN and CCA, the NAP monitoring plan should be linked with existing national initiatives to monitor land degradation and drought. These include LDN target setting processes, UNCCD national action programmes, national drought plans and efforts to address SDG indicator 15.3.1.

Define land-based indicators and metrics for documenting the NAP process: Specific indicators and metrics should be developed for each of the key parts of the NAP process selected in the previous activity to effectively document progress and effectiveness and to assess gaps. The UNCCD has adopted three land-based indicators to understand the status of land degradation (UNCCD, 2013): 1. changes in land cover, 2. changes in net primary productivity and 3. changes in soil organic carbon. These should be included in the NAP monitoring and evaluation plan.

These biophysical indicators should be complemented by other qualitative and quantitative indicators to monitor the progress of LDN implementation and its socioeconomic outcomes (Orr and others, 2017). If additional national level indicators and metrics exist, these should also be integrated into the monitoring and evaluation plan of the NAP process.

National drought plans provide valuable information on drought monitoring indicators that should be integrated into the monitoring and evaluation plan If a national drought monitoring plan has not yet been finalized or initiated, countries should consider developing indicators that can also serve the NAP process. Thus, collecting data for these indicators can serve both the national drought management plan and the NAP process. The UNCCD summarizes step-by-step guidelines and a template for the national drought plans based on the National Drought Management Policy Guidelines by the World Meteorological Organization (WMO) and the Global Water Partnership (GWP) (WMO and GWP, 2014). WMO and GWP also published a handbook elaborating on some of the most commonly used drought indices to be adapted to each country's characteristics (WMO and GWP, 2016). Both publications are available in several languages.

Establish a monitoring plan and collect data on defined indicators: A monitoring plan should be developed to collect and manage data on the developed indicators. The plan should include establishing a baseline against which any change of metrics can be quantified. Here, the monitoring intervals should be determined. For example, the LDN conceptual framework suggests a five-year monitoring interval to track progress as well as the success of interventions (Orr and others, 2017). The monitoring plan should also describe monitoring personnel and procedures, such as who will monitor which indicators and how they should be reported. The monitoring plan could inform revisions of the NAP (see Step D2 and D3) and provide data used in regular meetings of key stakeholders, such as UNCCD focal points and representatives of vulnerable groups.

Where possible, existing data (e.g., data collected under the different national LDN initiatives) should be used. Relevant data on LDN and CCA are frequently available as reporting requirements of Party Countries to the three Rio Conventions and the Bonn Challenge. Restoration commitments under the UNFCCC are, for example, reported in the Nationally Determined Contribution (NDC) country reports. The commitments to the UNCCD are collected in the LDN national voluntary targets. However, other restoration pledges do not report to the Rio Conventions nor to the Bonn Challenge (van der Esch and others, 2021) and tracking these national restoration activities may be useful for creating a complete picture of potential adaptation outcomes and progress towards LDN.

Where data is missing, the international open-source data group GEO offers a cost-effective option to generate new data on DLDD and its impacts. GEO provides a supplement to the NAP technical guidelines on Integrating Earth Observations into the Formulation and Implementation of National Adaptation Plans to improve agriculture and food security. Case Study 9 outlines how open-source geospatial data can help link LDN and CCA.

Case Study 9: The role of geospatial datasets in promoting synergies between LDN and CCA

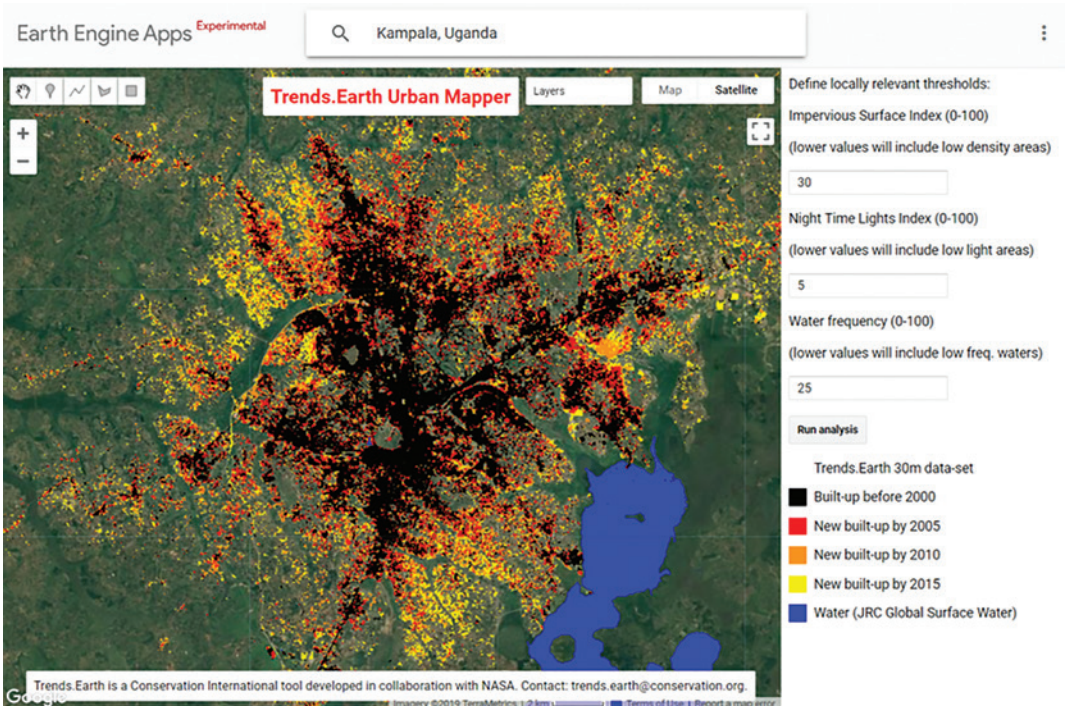
Conservation International, an international non-profit that works with people to conserve and care for nature and biodiversity, has long recognized the impact that land degradation can play in compounding the effects of climate change and complicating efforts to adapt. In late 2016, Conservation International started piloting the application of earth observation products and geospatial tools for assessing land degradation to support countries in their monitoring and reporting efforts. Together with partners, they developed Trends.Earth, with support from the Global Environment Facility (GEF), to address the need for standardized tools that could support project developers and countries in accessing the best available global datasets, while also supporting the integration of locally available data.

Trends.Earth is a free and open-source QGIS plugin tool for monitoring indicators of land change and drought vulnerability. Trends.Earth supports the calculation of SDG indicator 15.3.1 (degraded/not degraded land) based on the latest analytical methods documented in version 2 of the Good Practice Guidance for SDG Indicator 15.3.1. While using the tool, each country's zone is pre-populated with spatial default data derived from various global data sources. Trends.Earth allows UNCCD Country Parties to pre-process this data and import it to PRAIS, the UNCCD reporting platform and tool for indicator-based country reporting on LDN. Trends.Earth also supports the integration of globally available data with nationally or locally available data and allows users to customize methods to account for local conditions.

As part of the GEO-LDN working group on data analytics, the Trends.Earth team supports users to easily access, analyse and interpret large earth observation datasets in globally consistent ways, while also facilitating national data sovereignty. As of January 2024, the Trends.Earth team is collaborating with UNCCD, GEO-LDN, WOCAT and multiple other country-level partners to provide enhanced updates on geospatial datasets.

Case Study 9 (contd.)

Building upon the successful collaboration between UNCCD and Trends.Earth, future research plans include further developing Trends.Earth to sync with other spatially explicit indicators (e.g., amount of land under restoration). This will enable users to learn from countries and other users who have already been trained and/or have used the tool to officially report to the Rio conventions. To succeed, Trends.Earth is building interoperability links via other partnering platforms (e.g., the Framework for Ecosystem Restoration Monitoring (FERM), the System for Earth Observation Data Access, Processing and Analysis for Land Monitoring (SEPAL), or the Restoration Barometer) to allow the flow of spatial data from on-the-ground project locations to the UNFCCC and the CBD as well as to the UNCCD.



Changes to the built environment over time in Kampala, Uganda using the Trends.Earth tool.
Photo Credit: Trends.Earth

D2. Review the NAP process to assess progress, effectiveness and gaps

Question that guides this step:

- *What new insights are available that help address climate change risks associated with DLDD?*

Compile information from emerging science and assessments of implemented adaptation activities and LDN initiatives: To support the monitoring plan of the NAP process, information from emerging science and from assessments of implemented adaptation activities should be compiled to support the review and update of the NAP.

To identify whether existing adaptation activities effectively address climate change risks associated with DLDD, information on the following could be collected:

- the extent to which direct and indirect drivers of land degradation have been addressed;
- the needs and preferences of vulnerable groups that are most affected by DLDD;
- the extent of resources allocated or plans to access them; and
- the implemented policies to create an enabling environment, such as policies related to improved land tenure governance or to sector-specific gender issues.

Review activities undertaken as part of the NAP process: The strategy for the NAP process developed in Step A1 should detail how frequently activities undertaken as part of the NAP process should be reviewed. These reviews should evaluate compiled information and metrics collected for the monitoring of the key parts of the NAP process defined in step D1. Government departments working on LDN should be asked to provide an independent review. Countries might also find it useful to engage an independent non-governmental organization to support or conduct these reviews to independently assess if the objectives of the NAP process have been met.

D3. Iteratively update the NAPs

Questions that guide this step:

- *What steps of the NAP process need to be updated based on the insights from Step D2?*
- *How can a review of the NAP also inform the reporting of LDN and other national development plans (and vice versa) to harmonize and create co-benefits?*

Update the NAP by repeating selected steps: If the review in Step D2 finds that new or adapted NAP activities are necessary, the NAP should be updated. Updates might also become necessary over time as progress is made and as circumstances change. This could include a shift of political priorities, new scientific findings regarding the national drivers of land degradation or recent technical developments (e.g., more effective monitoring of land degradation). Updating the NAP should be done regularly and should be achieved by repeating selected steps as appropriate (e.g., steps suggested by the review). The frequency of these updates should be specified in the national strategy for the NAP process (Step A1). Updates can be used to strengthen links with efforts to achieve LDN and to encourage these synergies within the NAP process.

Align updates of the NAP with relevant national development plans: Updates to the NAP should be aligned with the timelines of any relevant national development plans. The synchronization of monitoring the NAP processes and monitoring national LDN initiatives (Step D1) can help reduce transaction costs of projects (Case Study 10). Aligning updates of the NAP with relevant national development plans would ensure adaptation and development planning could inform each other and contribute to "climate proofing" LDN Initiatives by integrating CCA perspectives.

D4. Communicate and report on the progress and effectiveness of the NAP process

Questions that guide this step:

- *Who are the relevant stakeholders to be informed about new information on the progress and effectiveness of DLDD/LDN interventions for CCA?*
- *What are the best forms of communication to disseminate the new insights?*

Share new insights with relevant national and international actors working on land: All updated NAPs and related outputs should be shared with the UNFCCC Secretariat, relevant sectoral ministries and agencies (e.g., forestry, agriculture, environment), civil society organizations and private sector associations (e.g., farmer organizations) that work on land-related issues to address DLDD, achieve LDN and contribute to CCA. Best practices should be identified and showcased at international conferences, such as NAP expos or side events of the Conferences of the Parties (COPS) for the conventions. Showcasing these best practices can help facilitate South-South cooperation while raising awareness about existing challenges in need of international attention and support.

Promote new insights in national communications and applying them in capacity building: Countries should communicate lessons learned from adaptation initiatives that simultaneously address the negative impacts of DLDD on communities. Communications materials could include case studies that can provide examples for capacity building activities in other local communities and for increasing the trust and uptake of adaptation measures.

Case Study 10: Economics of harmonizing land restoration activities across the Rio Conventions in Rwanda and implications for food security

A joint study by the ELD Initiative, University of Bonn and the Rwandan Ministry of Agriculture and Animal Resources (Mirzabaev and others, 2023) evaluated the potential for synergies arising from the joint programming and implementation of land restoration activities under the three Rio conventions in Rwanda. Throughout the country, land restoration is not only essential to achieving the goals of the conventions (e.g., achieving LDN, biodiversity conservation, mitigating and adapting to climate change), but it is also an economically sound strategy. Findings of the study show that each dollar invested in land restoration and in addressing soil erosion returns about $1.53. Other environmental and economic benefits, particularly with respect to food security, arise from the joint programming and implementation of the land restoration commitments in Rwanda's National Biodiversity Strategies and Action Plan, its Nationally Determined Contributions and its LDN targets. Using a Total Economic Value framework that includes a valuation of ecosystem services and models of transaction costs to identify synergies across land restoration activities, the study found that the coordinated implementation of land-focused activities under the Rio conventions could reduce the transaction costs (related to planning, coordination, monitoring and evaluation) of land restoration activities by almost 56 per cent. This would mean an estimated $45.6 million in savings per year compared to carrying out convention-related activities separately. These savings are the result of more effective and efficient planning, implementation and monitoring of land restoration activities throughout the country, which in turn makes land restoration more attractive for public, multilateral and private sector investments. As such, Rwanda is a prime example of the stored potential associated with coordinating land restoration activities between the Rio conventions at a national level.

To read the recommendations from the study concerning how to leverage synergies between the Rio conventions for land restoration, read an executive summary of the research here.

Resources to support monitoring, reporting and learning

Integrating Earth Observations into the Formulation and Implementation of National Adaptation Plans: Agriculture and Food Security. GEO Supplement to the UNFCCC NAP Technical Guidelines. These guidelines provide the foundation for adaptation actions and support. They offer a range of options for addressing steps of the NAP process to facilitate country-owned and country-driven action that seeks to harness and build upon national-level capacity. The supplementary material to the technical guidelines also offers additional in-depth descriptions of selected steps and topics to improve understanding of adaptation actions (GEO, 2022).

The Global Potential for Land Restoration: Scenarios for the Global Land Outlook 2: This report provides a quantitative estimate of the global and regional potential of land restoration until 2050, using a comparative scenario analysis. This restoration potential is expressed in terms of changes to a set of biophysical indicators for land and soils, biodiversity, climate, water and agriculture. The restoration potential is subsequently compared to projected future changes to land in the absence of restoration over the coming decades (van der Esch and others, 2021).

5. Concluding remarks

Synergies between LDN and CCA offer critical opportunities for countries to enhance their resilience through simultaneously advancing global policy objectives under the UNCCD and UNFCCC to ensure sustainable development and action on climate change. By recognizing the shared objectives and inherent parallels between LDN and CCA, national focal points to the UNCCD and UNFCCC and organizations and consultancies supporting NAP development can leverage existing national initiatives and international frameworks to streamline efforts and maximize impact in combatting the effects of climate change.

This guide serves as a step-by-step roadmap, highlighting key strategies to enhance coordination, identify and prioritize risks, mobilize technical and financial support and monitor progress effectively. The integration of LDN initiatives into NAP processes not only fosters more efficient resource use, but it also opens new avenues for funding and support, ultimately improving the implementation of sustainable land management practices. Through collaborative action and the exchange of best practices, countries can navigate climate change, land degradation and adaptation, ensuring the long-term viability of ecosystems and the well-being of communities.

Policymakers and practitioners should disseminate the guidance provided in this document, actively engaging with stakeholders to promote a culture of cooperation. By embracing the synergies between LDN and CCA within the NAP process, more resilient and sustainable societies can be built collectively.

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