Food and Agriculture Organization of the United Nations

Living land

Taking a sustainable land management approach in law

FAO LEGISLATIVE STUDY 120

Living Land

Taking a sustainable land management approach in law

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Foreword

Land degradation driven by human activity affects at least 1.6 billion hectares worldwide, directly impacting 3.2 billion people. More than 60 percent of this land degradation is happening on agricultural lands (including cropland and pastureland), putting agrifood systems under unprecedented pressure.

Sustainable Land Management (SLM) is a key strategy for governments to respond to the urgent need to avoid, reduce, and reverse land and soil degradation in agricultural lands. SLM is a holistic approach to managing land resources, one that ensures degradation neutrality, enhances food security, and supports livelihoods without compromising the ability of future generations to meet their own needs. SLM considers the three main pillars of sustainability: economic, social, and environmental. It requires policy as well as supportive, enabling legal frameworks that incorporate and articulate these three dimensions.

The Food and Agriculture Organization of the United Nations (FAO) has undertaken significant efforts over recent years on tenure governance and tenure rights. Technical guides to the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGT) have been produced including on the role of law, regulated spatial planning and on how the VGGT can contribute to the implementation of the United Nations Convention to Combat Desertification. However, less attention has been paid to other areas of law and to how law can enable and support tenure rights holders in undertaking sustainable land management.

Interdisciplinary work and systems thinking are of utmost importance in implementing SLM. For this study, the Land and Water Division and the Development Law Service of the Legal Office have worked closely together, benefiting from the wide available expertise from all other relevant units across FAO. FAO also teamed up with Landesa, which undertook the legal research and contributed additional insights from their networks.

This legislative study aims to fill a knowledge gap in its exploration of various legal frameworks that can support SLM while respecting all legitimate tenure rights. The study provides guidance to strengthen the capacities of governments and stakeholders globally to adopt and propose regulatory measures that can be conducive to SLM both as a good in itself and as a means to support the achievement of several other fundamental objectives such as sustainable agricultural development, for better production, better nutrition, a better environment and a better life for all, leaving no one behind.

Li Lifeng
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Preface

Climate change and land degradation present enormous challenges for food security. Recognizing this, Sustainable Land Management (SLM) should be part of every government's strategy to respond to these challenges. It supports a holistic approach to managing land resources, one that ensures land degradation neutrality, enhances food security and supports livelihoods of populations all around the world without compromising the ability of future generations to meet their own needs.

The SLM approach should consider the three pillars of sustainability: economic, social and environmental. Policies and regulatory frameworks that prioritize one of these pillars to the detriment of another would not reach sustainability.

The Food and Agriculture Organization of the United Nations (FAO) has a mandate to support its Member Nations and partners in developing or reforming norms, standards, and policies; provide technical advice; and implement national and local programmes through capacity development and technical knowledge management activities.

Legal frameworks provide the foundations to promote land use strategies that lead to a productive ecosystem, prevent land degradation, restore degraded areas, and ensure that the land's socio-economic and ecological services are maintained or improved over time. Effective legal frameworks for SLM clarify and protect tenure rights, provide incentives to promote SLM practices and discourage unsustainable ones, and set standards to ensure that land-use planning takes into account socio-economic, cultural, and environmental factors, thereby leading to sustainable and legitimate decisions, including in the creation of protected areas. They also set requirements for the protection of the rights of Indigenous Peoples and local communities, women, and other stakeholders, and ensure their participation in natural resource management and decision-making processes.

Much work has been undertaken by FAO over recent years on tenure governance and tenure rights; technical guides to the *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGT)* have been produced on regulated spatial planning and on how the VGGT can contribute to the implementation of the *United Nations Convention to Combat Desertification (UNCCD)* (FAO, 2022). However, less attention has been paid to other fields of law and how law can enable and support tenure rights holders to undertake sustainable land management.

The Development Law Service of FAO provides technical legal support to Members on all issues falling under FAO's mandate. It collects legal data through FAOLEX[1] and related databases and undertakes research to provide general guidance and share legislative experiences of Members to support them in achieving their internationally agreed obligations, objectives and goals, thus creating global public goods.

This legislative study aims to fill a knowledge gap by exploring various legal frameworks that can support SLM while respecting all legitimate tenure rights and in particular the rights of Indigenous Peoples, who along with many local communities have been found to be good stewards of their land and natural resources. The study provides guidance to strengthen the capacities of governments and stakeholders globally to adopt and propose regulatory measures that can be conducive to SLM both as a good in itself and as a means to support the achievement of several other fundamental objectives such as sustainable agricultural development, protection of the environment and protection of livelihoods.

[1] The FAOLEX database can be accessed at www.fao.org/faolex/en

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Acronyms and abbreviations

AFOLU	Agriculture, Forestry and Other Land Use
CBD	Convention on Biological Diversity
CBNRM	community-based natural resource management
CCSF	Community Controlled State Forests
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CF	community forestry
COP	Conference of the Parties
CSA	climate-smart agriculture
CSO	civil society organization
DENR	Department of Environment and Natural Resources (the Philippines)
ECE	Economic Commission for Europe
EIA	environmental impact assessment
ESIA	environmental and social impact assessment
ELC	Economic Land Concession
FAO	Food and Agriculture Organization of the United Nations
FIG	International Federation of Surveyors
FPIC	free, prior, and informed consent
GAEC	Good Agricultural and Environmental Condition
GIIN	Global Impact Investing Network
GSP	Global Soil Partnership
ICCA	Indigenous and Community Conserved Area
ICMM	International Council on Mining and Minerals
IDH	The Sustainable Trade Initiative
IIED	International Institute for Environment and Development
ILM	integrated landscape management

INCRA	Instituto Nacional de Colonização e Reforma Agrária (Brazil)
IRENA	International Renewable Energy Agency
ITPS	Intergovernmental Technical Panel on Soils
IUCN	International Union for Conservation of Nature
JFM	joint forest management
LAS	Land Administration Systems
LDN	land degradation neutrality
MET	Ministry of Environment and Tourism (Namibia)
MPC	maximum permissible concentration
NCE	The New Climate Economy
NDC	Nationally Determined Contribution
NGO	non-governmental organization
NIPAS	National Integrated Protected Areas System
OAS	Organization of American States
OECD	Organisation for Economic Co-operation and Development
PES	Payment for Ecosystem Services
PFM	participatory forest management
PPA	private protected area
RAI	Committee on World Food Security's Responsible Investment in Agriculture and Food Systems
RECSOIL	Recarbonization of Global Soils
REDD+	Reducing Emissions from Deforestation and Forest Degradation
SDG	Sustainable Development Goal
SEA	strategic environmental assessment
SFM	sustainable forest management
SIA	social impact assessment
SLM	sustainable land management
SSM	sustainable soil management

TSM	temporary special measure
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNCLOS	United Nations Convention on the Law of the Sea
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNDROP	United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas
UNFCCC	United Nations Framework Convention on Climate Change
VGFSN	Voluntary Guidelines on Food Systems and Nutrition
VGGT	Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security
VGSSM	Voluntary Guidelines for Sustainable Soil Management
VLUP	Village Land Use Planning
VPA	Voluntary Partnership Agreement
WHO	World Health Organization
WOCAT	World Overview of Conservation Approaches and Technologies
WRI	World Resources Institute

1. Introduction

1.1 Objectives and context of the study

The objective of this legislative study is to provide an insight into the key issues to be considered to foster legal frameworks that enable a sustainable land management (SLM) approach. Special emphasis is given to the instruments and frameworks that prioritize equity and social inclusion as essential elements of sustainability.

This legislative study is conceived as a means of strengthening capacity to adopt and propose regulatory measures that can be conducive to SLM both as a good in itself and as a means to support the achievement of several other fundamental objectives such as sustainable agricultural development and protection of the environment and promotion of the right to an adequate standard of living. The intended audience is policy makers, lawyers, legislators, administrative officials, and land management professionals. The study can be used in parts, with each subsection of Section 4 providing a standalone review of different areas of law.

This study is part of an ongoing FAO focus on SLM. FAO is involved with SLM at every level of governance, from field-level interventions through global policymaking and goal setting. FAO supports Member Nations and partners in developing or reforming norms, standards, and policies; provides technical advice; and offers programmes to develop capacity and technical knowledge. FAO also implements a range of programmes through farmer field schools and other learning methods that include issues relating to pasture management, responsible governance of tenure, conservation agriculture, landscape, catchment- and farm-scale approaches to integrated land and water management and animal husbandry, land management and local land-use planning, integrated plant and pest management, and sustainable forest management (SFM) (FAO, 2023a).

As part of this SLM focus, FAO issued a flagship publication in 2011 on *The State of the World's Land and Water Resources for Food and Agriculture* (SOLAW). Its latest version *SOLAW 2021 – Systems at breaking point*, reviews the drivers and pressures on these resources, their current state of affairs and the impacts involved, as well as proposing suitable responses (FAO, 2022a).

FAO hosts the Global Soil Partnership (GSP),[2] which was established in December 2012 to develop a strong interactive partnership with enhanced collaboration and synergy of efforts between all stakeholders from land users to policymakers. One of the key objectives of the GSP is to improve soil governance and promote its sustainable management. The GSPs five pillars of action are to: i) promote sustainable soil management (SSM); ii) encourage investment and action; iii) support research; iv) enhance data; and v) harmonize methods. In addition to global policy initiatives on soils (see Section 2), the GSP established SoilLex,[3] a database of national laws and policies relevant to soil management created in coordination with FAOLEX, FAO's global database of food, agriculture, natural resource and climate legislation from countries around the globe.

Furthermore, FAO is the custodian United Nations (UN) agency for 21 indicators of the Sustainable Development Goals (SDGs), cutting across SDGs 2, 5, 6, 12, 14 and 15, and it is a contributing agency to four other SDG indicators. FAO has a strong comparative advantage in its capacity to assist countries in meeting the monitoring challenge posed by the SDGs and other land management treaties.

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[2] The GSP can be accessed at https://www.fao.org/global-soil-partnership/pillars-action/en

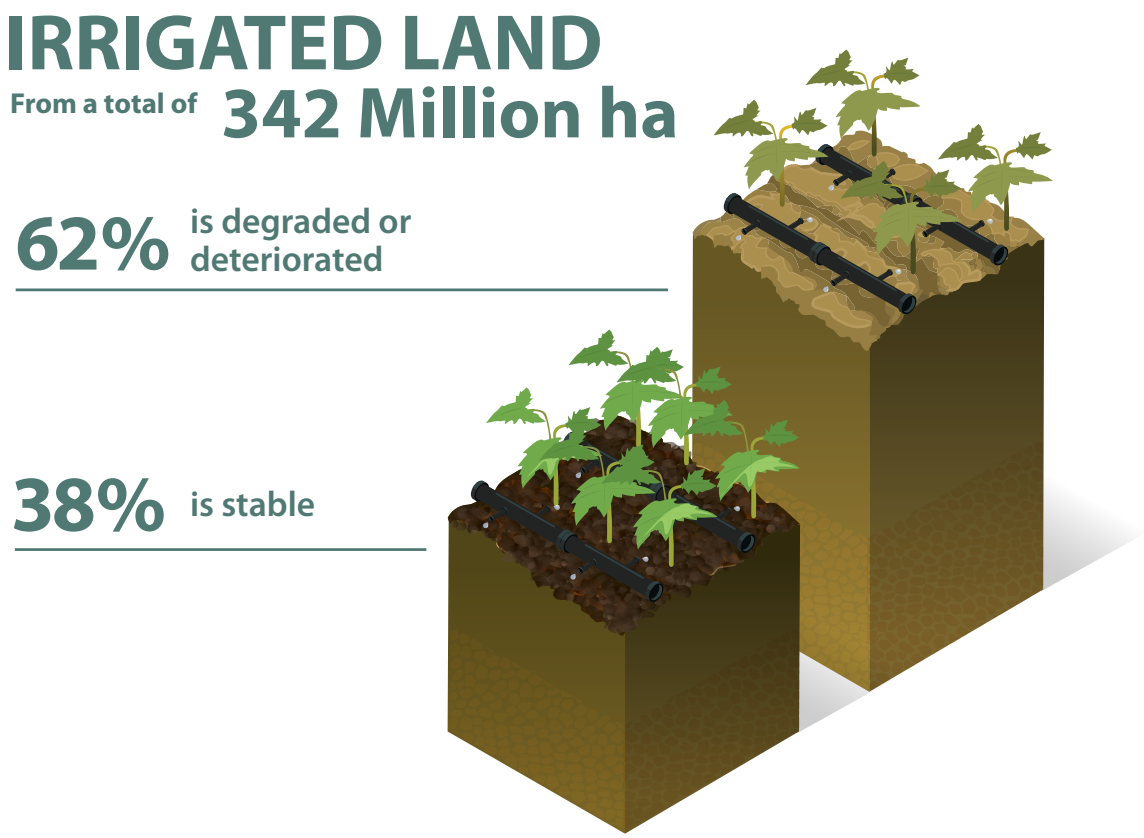
[3] SoilLex can be accessed at www.fao.org/soils-portal/en

This study is divided into five main sections. Section 1 introduces the subject of SLM. Section 2 introduces the international framework supporting uptake of SLM principles – the section provides an overview of international agreements and programmes aimed at expanding the uptake of this approach. Section 3 situates SLM in the context of intersecting issues, including land degradation neutrality, land-use change, and climate change, among others. Section 4 presents examples of good practices for incorporating SLM considerations into supportive legal frameworks, providing examples from different global regions. Section 4 is divided into 13 sections, each focusing on different areas of law. The instruments studied in the section are largely legislations and regulations, with some mention of policies and local, state, and national government programmes where relevant. Section 5 discusses SLM implementation priorities and provides concluding remarks.

1.2 Achieving land degradation neutrality

A major goal related to SLM is achieving land degradation neutrality (LDN), which was adopted by the Parties to the *United Nations Convention to Combat Desertification (UNCCD)* and defined in its *Decision 3/COP 12* as: "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" (Paragraph 2).

Figure 1. Degradation of irrigated land



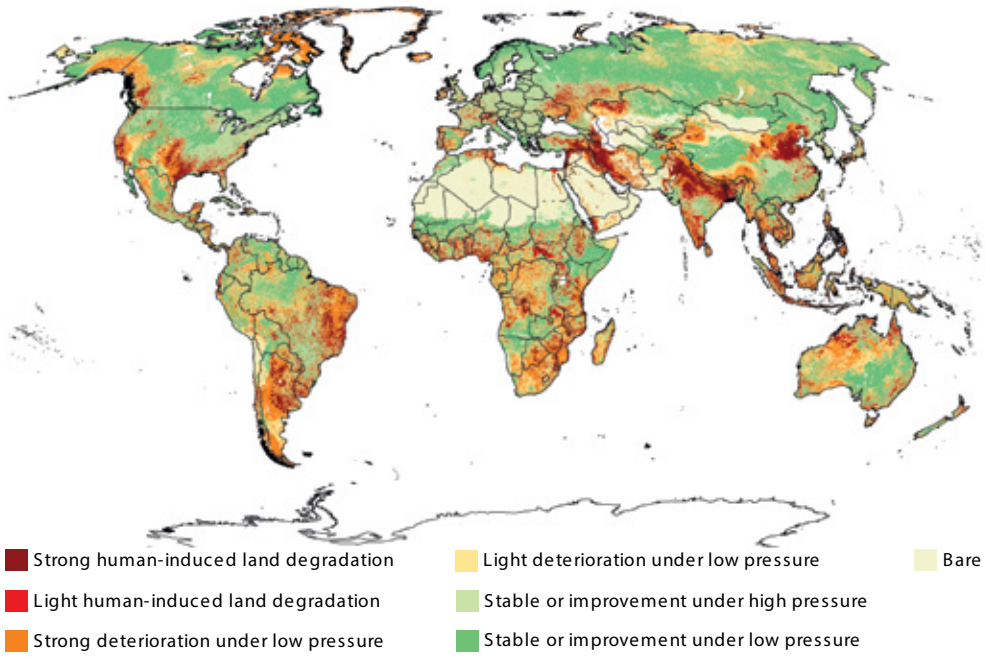
Source: FAO. 2022a. *The State of the World's Land and Water Resources for Food and Agriculture – Systems at breaking point. Main report*. Rome. https://doi.org/10.4060/cb9910en

Land degradation neutrality includes land conservation, sustainable land use and management, as well as land restoration. It thus cuts across many elements of SLM. Small-scale farmers, fisherfolk, pastoralists, and forest users are among the first to suffer from degrading environments and discontinued ecosystem services, losing resilience to stresses such as climate change (FAO, 2017a). In some cases, these same land users are drivers of degradation through use of unsustainable practices. Biodiversity, the variety and variability of life on the planet, can be conserved when lands are managed to avoid degradation, both to maintain existing diversity and to encourage suitable and sustainable uses of lands rather than expansion into protected areas or land conversion to other uses post-degradation.

Land degradation can be both a cause and an effect of poverty, as livelihood needs can lead to degradation and degraded lands are often abandoned, which leads to further land conversion and higher agricultural costs (FAO, 2017a). By implementing SLM techniques such as those detailed in the World Overview of Conservation Approaches and Technologies (WOCAT) Database (see Section 1.3), land users have the opportunity to pursue LDN.

The SLM approach plays a central role in combatting desertification, "the land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities" (Article 1(a) of the UNCCD). Water scarcity, already an agricultural stressor in many regions, has amplified with the advent of climate change (FAO, 2020a). Twelve million hectares of previously productive land become barren due to desertification and drought each year (UNCCD Sectretariat, 2014). Careful management of water resources, adoption of sustainable agriculture techniques, and understanding of sustainable land use management can all contribute to healthier and less vulnerable soil that is better suited to providing ecosystem services that combat desertification. Since SLM is a strategy for both "preventing and reversing degradation" (Welton, Biasutti and Gerrard, 2015), land users practising SLM maintain and increase the land's carbon sequestration ability as the soil becomes healthier.

Figure 2. Land degradation classes based on the severity of human-induced pressures and deteriorating trends, 2015



Source: FAO. 2022a. *The State of the World's Land and Water Resources for Food and Agriculture – Systems at breaking point. Main report*. Rome. https://doi.org/10.4060/cb9910en. Modified UN. 2020. Map of the World. https://www.un.org/geospatial/file/3420

Note: Refer to the disclaimer on page ii for the names and boundaries used in this map.

Global distribution of land degradation. Overall trend combined with cumulative pressure by direct human drivers. Human-induced land degradation refers to a negative trend, which is caused by human activity. Deterioration refers to a negative trend caused by natural phenomena or by humans in case status is low. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Final boundary between the Sudan and South Sudan has not yet been determined.

Box 1. Responses to challenges of degradation and pollution

"A central challenge for agriculture is to reduce land degradation and emissions and to prevent further pollution and loss of environmental services while sustaining production levels. Responses need to include climate-smart land management attuned to variations in soil and water processes. Management options are available to increase productivity and production levels if innovation in management and technology can be taken to scale to transition to sustainable agrifood systems. **However, none of these can go far without planning and managing land, soil and water resources through effective land and water governance."** (emphasis added)

Source: FAO. 2022a. *The State of the World's Land and Water Resources for Food and Agriculture – Systems at breaking point. Main report*. Rome. https://doi.org/10.4060/cb9910en

Deforestation contributes to land degradation and desertification as well: the trends in recent years are not positive (FAO and UNEP, 2020b).

Securing tenure rights and adopting sustainable agriculture or other land management techniques can help to build resilience back into the system and fight against degradation. This was recognized by the UNCCD Conference of the Parties in 2019, which in COP 14/ Decision 26 requested FAO to prepare a guide, which is entitled *Technical Guide on the Integration of the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Forests, and Fisheries in the Context of National Food Security into the implementation of the UNCCD and Land Degradation Neutrality* (from here onwards Technical Guide on the Integration of the VGGT into the UNCCD and LDN), published in 2022. UNCCD COP remains seized with the importance of tenure for combating land degradation.

The key messages of *The State of the World's Land and Water Resources for Food and Agriculture* are:

- The interconnected systems of land, soil, and water are stretched to the limit.
- Current patterns of agricultural intensification are not proving sustainable.
- Farming systems are becoming polarized.

The challenges posted by this state of affairs can be listed as:

- Future agricultural production will depend upon managing the risks to land and water.
- Land and water resources will need safeguarding.

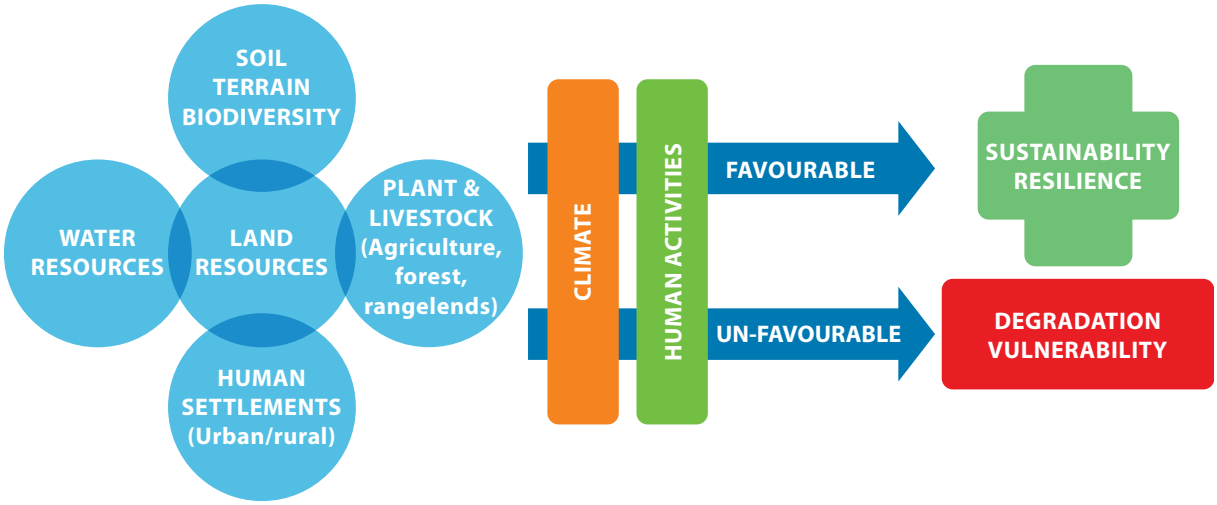
  (FAO, 2022a)

The key message for the purposes of this study is that land and water governance must be more inclusive and adaptive (see also Box 1).

1.3 What is sustainable land management?

Over the last half century, human pressures on land exploded due to growing population, unsustainable land management practices, and climate change. Rural communities and others are saddled with mounting food insecurity, economic pressures, industrialization, and rapidly dwindling natural resources. At the same time, worsening climate change introduces cycles of storms, droughts and floods, soil degradation, sea level rise, and natural disasters with increasing frequency and intensity. Challenged with escalating immediate needs and future threats, land users and managers are faced with a seemingly impossible choice of how to manage natural resources in a way that meets the needs of the present without compromising future generations' ability to thrive. Sustainable land management seeks to balance complex environmental, social, and economic pressures to meet immediate needs while building ecological resilience for future productivity.

Figure 3. Sustainable land use and management (human activities) decide the sustainability/ resilience or degradation/vulnerability of land resources



Source: FAO. 2023b. *Climate Smart Agriculture Sourcebook. In: FAO.* [Cited 27 September 2023]. https://www.fao.org/climate-smart-agriculture-sourcebook/production-resources/module-b7-soil/b7-overview/en

Sustainable Land Management is commonly defined as "the use of land resources, including soils, water, animals and plants, for the production of goods to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions" (FAO, 2023a). In a study coordinated by FAO, TerrAfrica defines SLM as "the adoption of land-use systems that through appropriate management practices enable land users to maximize the economic and social benefits from the land while maintaining or enhancing the ecological support functions of the land resources" (TerrAfrica, 2011). These definitions are people-centric in that they focus on human needs. However, these definitions also seek to integrate human needs from land with the ecological productivity of land for non-human populations and resources. This is to be achieved over both short-term and long-term temporal scales.[4]

Box 2. The four principles of SLM

1. Targeted policy and institutional support, including the development of incentive mechanisms for SLM adoption and income generation at the local level.
2. Land-user-driven and participatory approaches.
3. The integrated use of natural resources on farms and at the ecosystem scale.
4. Multilevel, multistakeholder involvement and partnerships at all levels – land users, technical experts, and policy makers.

Source: FAO. 2023a. *Sustainable Land Management. In: FAO.* [Cited 26 September 2023]. https://www.fao.org/land-water/land/sustainable-land-management/en

[4] Sustainable land management should be distinguished from integrated landscape management, which is relevant to SLM but focuses on a single landscape and finding collaboration among land managers and stakeholders to achieve multiple landscape objectives, rather than taking a systems approach to interacting landscapes. The two approaches work harmoniously, but on different scales (Scherr, Shames and Friedman, 2013).

The intersectoral nature of SLM is clear in how SLM principles appear in the SDGs. Sustainable land management directly affects the ability to achieve almost every goal, as shown in Table 1. Sustainable land management is most directly addressed in Goal 15, which represents core SLM principles. The Annex provides a list of SDG targets relating to SLM for further consideration.

Table 1. Sustainable Development Goals relevant to sustainable land management (SLM)

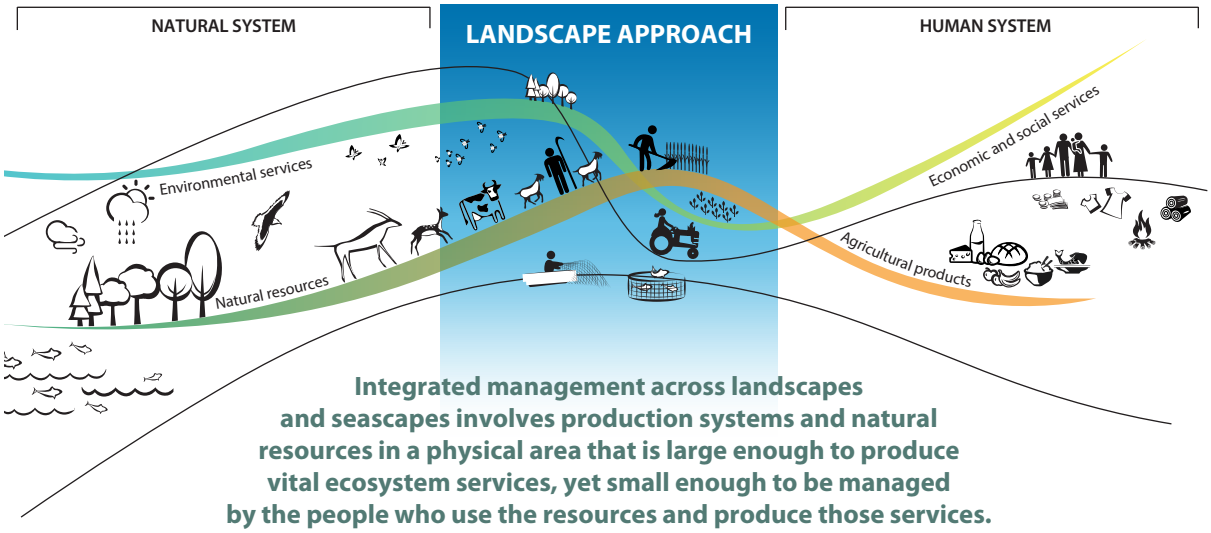
SDG		*SLM Nexus*
1	**No Poverty**	Arable land is a key building block of wealth, particularly for the rural poor.
2	**Zero Hunger**	Sustainable land principles are required to produce enough food to eliminate hunger as population increases.
3	**Good Health and Well-Being**	SLM principles reduce pollution, increase nutritious food, and conserve landscapes that are part of social identity.
4	**Quality Education**	SLM principles increase agricultural productivity, freeing youth from working and allowing them to pursue their education
5	**Gender Equality**	SLM principles ensure women benefit from land as well as men and protects their rights to land.
6	**Clean Water and Sanitation**	Land and forests must be sustainably managed to provide clean water.
7	**Affordable and Clean Energy**	Most clean energy solutions rely on land, and SLM principles help ensure appropriate land is made available while meeting other needs as well.
8	**Decent Work and Economic Growth**	Making well-managed land available for multiple uses is a key cornerstone of economic growth provided by SLM principles.
9	**Industry, Innovation and Infrastructure**	Sustainably managed lands provide green infrastructure solutions and support innovation through availability of diverse biological resources.
10	**Reduced Inequalities**	SLM principles increase the value of land to the people who live on it and protect vulnerable populations from being dispossessed of their lands.
11	**Sustainable Cities and Communities**	Sustainable communities are dependent on well-managed land uses to ensure infrastructure and ecosystem services are available to all.
12	**Responsible Consumption and Production**	SLM principles call for land-use planning to ensure highly sustainable land uses that support responsible production.
13	**Climate Action**	Sustainable land management helps mitigate greenhouse gas emissions and promote climate adaptation strategies.
14	**Life Below Water**	SLM principles reduce ocean pollution from water and air and help restore wetlands vital to ocean life.
15	**Life on Land**	Life on land is dependent upon sustainably managed lands.

Table 1. Sustainable Development Goals relevant to sustainable land management (SLM) *(cont.)*		
SDG		*SLM Nexus*
16	**Peace, Justice and Strong Institutions**	SLM principles result in more secure land tenure, which reduces conflict.
17	**Partnerships for the Goals**	Sustainable land management requires significant cross-agency and cross-sectoral cooperation in pursuit of sustainable development goals.

While SLM has a clear definition, there is not a clear and singular body of law that could be defined as "sustainable land management law". Much like sustainable development, the SLM legal framework is composed of a multitude of laws, policies, plans, and approaches that collectively seek to achieve SLM. Sections 2 and 4 discuss the international and national SLM legal frameworks, respectively. Similarly, there are SLM principles that should be integrated across areas of law relevant to the use of land.

Sustainable land management is taking form, in part, through integrated landscape management (ILM). A number of multistakeholder approaches to ILM have arisen, and more are being organized. These approaches, which include the Global Landscapes Forum, Sustainable Trade Initiative Verified Sourcing Areas and Landscapes (SourceUp) by the Sustainable Trade Initiative (IDH), and Conservation International's Landscape Assessment Framework, offer resources and frameworks for policymakers and implementers to consider. An effort to gather lessons across these approaches, under the banner of 1000 Landscapes for 1 Billion People, has also been launched.

Figure 4. Integrated management of landscapes and seascapes



Source: FAO, 2019a. Landscapes for Life. Rome. https://www.fao.org/documents/card/en/c/CA2694EN

Global Landscapes Forum: Under the Global Landscapes Forum method, landowners/occupiers, government institutions, conservation groups, and corporations work together to develop land-use plans in an integrated manner. Solutions should consider the local and national need for food and livelihoods, finance, local indigenous rights, restoration, the need for biodiversity, and climate impact. The method includes understanding the objectives of each stakeholder and recognizing and negotiating tradeoffs in land use. This also includes recognizing what each stakeholder understands to be the biggest threat to sustainable land use (Global Landscapes Forum, 2020).

Sustainable Trade Initiative Verified Sourcing Areas and Landscapes: This approach by IDH, relaunched as SourceUp, uses market-based mechanisms to drive sustainable land use in commodity-sourcing areas. The IDH found that individual corporate commitments to supply chain sustainability were not enough to effectively address the social and environmental issues that exist in tropical production areas. Thus, the IDH created the Verified Sourcing Area (now SourceUp) model. The SourceUp model is "an inclusive, multi-commodity sustainability model that builds strong local government involvement and creates a pre-competitive space for buyers" (IDH, 2020). This model was built to address the need for an efficient and inexpensive way to match local commodity producers to companies who had made sustainability commitments in their product line. The SourceUp model verifies sustainability across an entire region, rather than on an individual producer basis. The producers in the region, in turn, decide on sustainability targets and work together to achieve them. The model assesses each area on five overall sustainable land use metrics: i) forest and peat protection; ii) good governance; iii) labour; iv) land tenure; and v) transparency. The final performance standard is then finalized after public consultation. The programme uses an online platform to match global demand for sustainability in raw materials with local sustainability priorities and achievements (IDH, 2020).

Landscape Assessment Framework: This approach by Conservation International considers landscapes as the appropriate unit of management to holistically consider various land uses and stakeholder needs within a region. The approach seeks to find synergies and minimize trade-offs between multiple objectives using the Landscape Assessment Framework as a structure for measuring, monitoring, and communicating the sustainability of a landscape to guide local activities, inform policy, and advise investments. The Framework characterizes the sustainability of a landscape against broader management objectives and can help provide stakeholders with a more holistic view of the landscape's sustainability, which can inform decision-making and policymaking (Conservation International, 2017).

2. International frameworks

Sustainable land management principles are found in many international agreements, regional treaties, and multistakeholder processes. This section highlights the agreements and procedures, both public and private, that set forth elements of SLM and affect SLM approaches.

2.1 The importance of international instruments

International instruments (legally binding and non-legally binding) that incorporate SLM, serve as global standards and recommendations for states and organizations seeking to maintain ecological and human health and well-being.

Sustainable land management and economic development are inextricably tied together by their impact on the environment and human health and well-being. Given the centrality of land to communities' well-being, SLM practices can be used to alleviate poverty, support gender equality, and reduce other inequalities. This intersectionality helps to drive SLM adoption throughout the world as a strategy to advance human rights and environmental sustainability. Sustainable land management is a necessary extension and component of the sustainable development movement that first manifested with the 1987 Brundtland Commission report (WCED, 1987).

The United Nations Conference on Environment and Development held in 1992, also known as the Rio Earth Summit, translated these findings into a series of instruments, including the *Rio Declaration on Environment and Development, Agenda 21, and the Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests* (also known as the Forest Principles). Additionally, three SLM-relevant legally binding agreements, collectively known as the Rio Conventions, stemmed from the Earth Summit: the *Convention on Biological Diversity (CBD)*, the *United Nations Convention to Combat Desertification (UNCCD)*, and *the United Nations Framework Convention on Climate Change (UNFCCC)*. The most current and relevant international policies relating to sustainable development were drafted 20 years later in 2012 at the Rio+20 Conference (Earth Summit 2012). Produced at the conference, *The Future We Want* declaration reaffirmed sustainable development commitments, explicitly mentioning goals to deepen their understanding of SLM policies and practices. Together, these declarations, agendas, principles, and conventions give expression to many of the backbone SLM principles.

This section proceeds by reviewing the central international frameworks relevant to SLM, starting with the Rio Conventions before focusing on more specific instruments within the topics of land, fisheries and forest tenure, rights of Indigenous Peoples and rural communities, soils, chemicals, and ending with some essential procedural rights.

2.2 The Rio Conventions

Agenda 21 adopted at the Rio Earth Summit in 1992 provides a non-binding action plan for sustainable development. The action agenda can be executed at local, national, and global levels, and every signatory is encouraged to draft its own Agenda 21, according to locally relevant factors. The Agenda's second section addresses "conservation and management of resources for development," including guidance on managing fragile ecosystems, combating deforestation, conserving biological diversity, among others.

Most relevant, several sections discuss an integrated approach to the planning and management of land resources. Placing land management at the core of a sustainable development guidance expands the contextualization of land as an environmental concern to one of global importance for the advancement of humanity. The Rio Earth Summit also adopted a number of binding agreements for signature and ratification, the so-called Rio Conventions.

The ***Convention on Biological Diversity (CBD)*** of 1992 has three aims: i) the conservation of biological diversity; ii) the sustainable use of its components; and iii) the fair and equitable sharing of benefits arising from genetic resources. The CBD has a significant effect on SLM because "the Convention's cross-cutting initiative for the conservation and sustainable use of soil biodiversity aims to increase the recognition of the essential services provided by soil biodiversity across all production systems and its relation to land management" (Secretariat of the CBD, 2012a). The Convention also emphasizes the importance of sustainable use of biodiversity in food security and improved nutrition, particularly for vulnerable households.

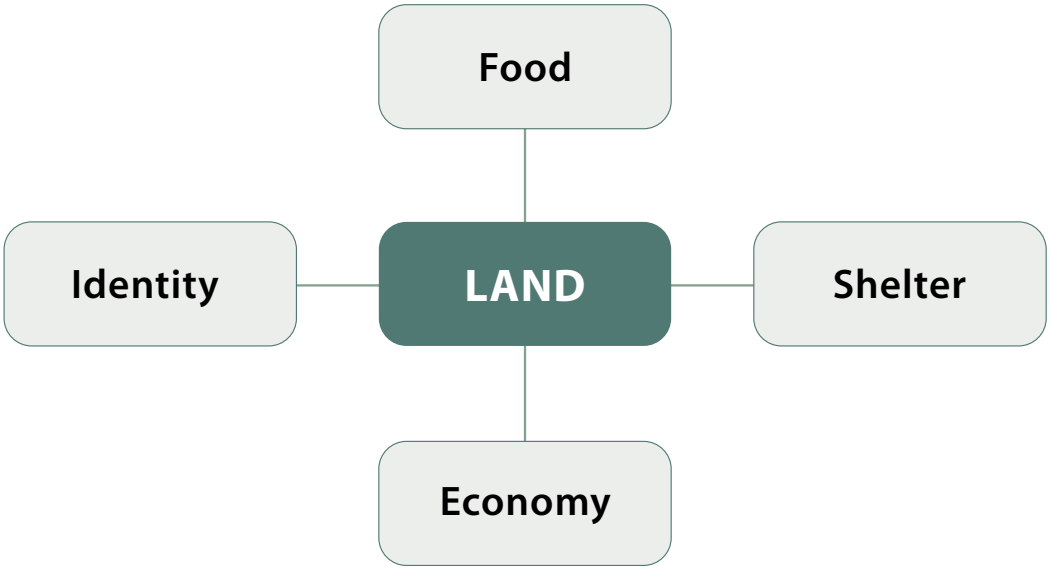
The United Nations Framework Convention on Climate Change (UNFCCC) of 1992 is an international environmental treaty seeking to reduce the emission of anthropogenic atmospheric greenhouse gases to avoid dangerous interferences with the Earth's climate and to mitigate climate change. Countries that ratify the treaty submit Nationally Determined Contributions (NDCs) that outline their climate mitigation and adaptation plans to reach global goals. Climate change offers a transdisciplinary issue for states to tackle, with SLM as a piece of the solution and with climate solutions themselves impacting SLM (IPPC, 2019). Sustainable land management is inevitably a key component of countries' NDCs, given the emissions associated with land use, such as deforestation and agriculture. In striving to match the Convention's targets, states have enacted legislation and offered new financial incentives to support their citizens in practising SLM as a component of their action plans associated with achieving their NDCs. For instance, Uganda identifies SLM and climate-smart agriculture (CSA) as areas to scale up to increase resilience at the grassroots level, and Ghana includes sustainable land use as a priority sector and strategic area for reaching its targets (Uganda Ministry of Water and Environment, 2015; Republic of Ghana, 2015). In 2020, to further assist in the planning and support of the agriculture, forestry and other land-use sectors, and facilitate in establishing NDC priorities, FAO released a Common framework for agriculture and land use in the nationally determined contributions (Crumpler *et al*., 2020). In the following, an increasing number of countries are integrating measures relevant to SLM in their NDC, including for agroforestry and agroecology.

Established two years after being called for at the 1992 Earth Summit, the ***United Nations Convention to Combat Desertification (UNCCD)*** of 1994 strives to combat desertification, to achieve land degradation neutrality and mitigate the effects of drought through national action programmes and international cooperation. The Convention shares almost universal ratification and applies an interdisciplinary lens to the environmental issues it intends to mitigate through acknowledgement of the social and economic factors at play that influence decisions around land management. Article 9 specifically emphasizes the significance of identifying the needs and gaps of sustainable land use. The Convention promotes cooperation between developing and developed countries, decentralization, and participation in achieving SLM.

2.3 Tenure of land, fisheries and forests

The ***Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries, and Forests in the Context of National Food Security (VGGT)*** of 2012 were developed as a response to an increase in land-based investments. As the primary instrument for sustainable land governance, the VGGT play a foundational role for fostering SLM. The Guidelines recognize that for much of the global population, land is "the source of food and shelter; the basis for social, cultural and religious practices; and a central factor for economic growth". Naturally, access to, control over, security of, and use of lands are essential to the livelihoods of the majority

Figure 5. Land is the source for many core human needs



Source: Author's own elaboration.

of the rural poor. The Guidelines intend to counteract the fact that weak governance adversely affects social stability, sustainable use of the environment, investment, and economic growth. Acknowledging the intersectionality of SLM, the Guidelines link land users' decisions with the governance structures in which they reside. With strengthened tenure systems, land users can make decisions regarding land use and investment with a more long-term lens given their increased security. Balancing today's needs with tomorrow's is a core element of LDN, which translates into balancing inevitable land degradation with measures to avoid further degradation, reducing existing degradation and restoring land. Tenure governance plays an important underlying role in this balance. The Conference of the Parties (COP) to the UNCCD noted in its *Decision 26/COP 14* the importance of tenure governance as part of the enabling environment for LDN and encouraged state parties to follow VGGT principles in the implementation of the UNCCD. The 2022 *Technical Guide on the Integration of the VGGT into the UNCCD and LDN* is an important resource in this regard.

With reference to forested ecologies, the ***Forest Principles*** of 1992 are preeminent. The non-legally binding document offers recommendations for conservation and sustainable development of forests in an attempt to balance sustainable use with economic development needs. The Principles include promotion of efforts to "green" the world and maintain and increase forest cover and productivity, which are central SLM principles.

General Comment 26 of the Committee on Economic, Social and Cultural Rights elaborates the relationships between land and human rights. and State Party domestic and extrateritorial obligations, and states:

Land plays an essential role in the realization of a range of rights under the International Covenant on Economic, Social and Cultural Rights. Secure and equitable access to, use of and control over land for individuals and communities can be essential to eradicate hunger and poverty and to guarantee the right to an adequate standard of living. The sustainable use of land is essential to ensure the right to a clean, healthy and sustainable environment and to promote the right to development, among other rights. In many parts of the world, land is not only a resource for producing food, generating income and developing housing, it

also constitutes the basis for social, cultural and religious practices and the enjoyment of the right to take part in cultural life. At the same time, secure land tenure systems are important to protect people's access to land as a means of guaranteeing livelihoods and avoiding and regulating disputes (CESCR, 2022, para. 1).

2.4 Rights of Indigenous Peoples, peasants and other people working in rural areas

Several UN resolutions explicitly address the importance of the rights of Indigenous and marginalized people. The UN General Assembly adopted the ***United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)*** in 2007, detailing the rights of Indigenous Peoples in international law and policy. The resolution explicitly recognizes "that respect for indigenous knowledge, cultures and traditional practices contributes to sustainable and equitable development and proper management of the environment".

The ***United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP)*** is an international declaration that enumerates the rights of peasants and other people working in rural areas and encourages states to respect, protect, and fulfil those rights. The Declaration calls on states to take appropriate measures to eliminate all forms of discrimination against rural women and to provide opportunity for rural people to participate in the management and sustainable use of natural resources. The Declaration also proclaims a right to land for peasants and other rural people.

Not only are both UNDROP and UNDRIP important in providing guidance for multistakeholder approaches to SLM, but both exemplify the importance of land-user-driven and participatory approaches in SLM. Specifically, to ensure the sustainability of a land-use system, consultation is needed with those who often are the recipients of adverse effects from unsustainable land management practices.

2.5 Soil management

Persisting hunger coupled with degraded environments have applied pressures on soil management. ***Transforming our world: the 2030 Agenda for Sustainable Development*** of 2015 adopted several soil-related targets aiming to restore degraded soil, achieve a land degradation-neutral world and implement resilient agricultural practices that could progressively improve soil quality and minimize soil contamination. When the UN General Assembly proclaimed 2015 as the International Year of Soils, SSM was elevated to a global priority (FAO, 2015). More recently, the ***United Nations Decade on Ecosystem Restoration*** was declared for 2021-2030, offering a multistakeholder approach to ramp up restoration efforts related to SLM (United Nations, 2021).

The Global Soil Partnership (GSP), established by FAO, revised the ***World Soil Charter*** in 2015. Adopted initially by FAO members in 1981, it establishes soil as fundamental to life on Earth due to its essential role in sustainable agriculture, climate regulation, and ecosystem services and biodiversity. Recognizing the increasing pressures of a growing population, the revised Charter outlines actions for the private sector, the science community, governments, and international organizations to minimize and reverse land degradation trends. While previous policies had stressed soil's importance to agriculture, food security, and nutrition, the revised Charter highlights soil's role as a carbon sink, and SSM as a climate mitigation strategy.

To complement the Charter, the FAO Council endorsed the ***Voluntary Guidelines for Sustainable Soil Management (VGSSM)*** to further elaborate principles and practices for incorporation into policies and decision-making. The Guidelines address technical aspects of SSM to "present generally accepted, practically

proven and scientifically based principles to promote SSM and to provide guidance to all stakeholders on how to translate these principles into practice, be it for farming, pastoralism, forestry or more general natural resources management" (1.2 Objectives). Voluntary and non-legally binding, the Guidelines are intended to serve a wide variety of stakeholders, including government officials, policymakers, farmers, pastoralists, forest and land managers, civil society, the private sector, and academia. While the majority of guidance is focused on agricultural practice, the results of the suggested actions would have ancillary benefits to climate mitigation and other ecosystem services provided by soil.

The ***Voluntary Guidelines on Food Systems and Nutrition (VGFSN)*** were developed in 2021 to support countries in eradicating hunger and malnutrition through a holistic approach. The Guidelines are designed to assist in the development of national policies, laws, and programmes related to sustainable food systems. Of particular importance to SLM, Section 3.2.2 focuses on promoting the sustainable use and management of natural resources, highlighting the importance of soil management to agricultural production systems.

Further focusing on agriculture and food systems investments, the Committee on World Food Security called for guidelines specifically devoted to the land-use surrounding agriculture and food systems. Endorsed in 2014, the ***Principles for Responsible Investment in Agriculture and Food Systems (RAI)*** outline ten principles and stakeholder roles and responsibilities to achieve a sustainable food system. The Principles go beyond ecological health to discuss how gender equality, youth empowerment, cultural heritage and traditional knowledge, and inclusive governance and other elements of "responsibility" engage to yield a holistically healthy, sustainable food system.

Box 3. Guidelines for sustainable soil management

1. Minimize soil erosion.
2. Enhance soil organic matter content.
3. Foster soil nutrient balance and cycles.
4. Prevent, minimize, and mitigate soil salinization and alkalinization.
5. Prevent and minimize soil contamination.
6. Prevent and minimize soil acidification.
7. Preserve and enhance soil biodiversity.
8. Minimize soil sealing [covering soil with impermeable material].
9. Prevent and mitigate soil compaction.
10. Improve soil water management.

Source: Voluntary Guidelines for Sustainable Soil Management, 2016.

2.6 Chemical regulation

Food producers are increasingly leaning on chemicals to enrich their soils, reduce pest burdens, and increase productivity. While chemical fertilizers and pesticides can support short-term outcomes, their use can result in negative consequences for local ecosystem health through overuse, run-off, and improper disposal. Ultimately, SLM practices can support the conservation of healthy ecosystems and reduce the need for chemical additives (FAO, 2022a). In pursuit of that reality, integrated pest management (IPM) can help to reduce reliance on harmful pesticides while improving yields, food quality, and incomes. Furthermore, IPM can help to support soil nutrient conservation (FAO, 2022b).

Drafted in 2019 as an implementation tool for the VGSSM, the ***International Code of Conduct for the Sustainable Use and Management of Fertilizers***, also known as the Fertilizer Code, specifically addresses soil nutrient imbalances and soil pollution. The Code promotes the responsible use of fertilizers, paired with SLM practices like nutrient recycling, and recommends regulation of the sale, distribution, and labelling of fertilizer products where appropriate. The Code offers a locally adaptable framework and voluntary set of practices to promote capacity development and education programmes for all stakeholders involved in the fertilizer value chain to manage fertilizers throughout their life cycle (FAO, 2019b). While overuse and misuse of fertilizers can rapidly degrade an environment, responsible and prudent use can strengthen food security and prevent deforestation and other land-use changes by increasing agricultural productivity using best practice methods. As such, the responsible and prudent use of fertilizers is an essential component of SLM policy and practice.

FAO members first adopted a code of conduct on pesticides in 1985. The fourth version, the ***International Code of Conduct on Pesticide Management*** of 2013 is a voluntary framework that adopts a life-cycle approach to pesticide management and promotes integrated pest management and integrated vector management. This holistic perspective on pesticide use yields benefits for the entire landscape when included in land users' management plans and helps support SLM by improving soil and ecosystem health (FAO and WHO, 2014). The Code of Conduct developed by the World Health Organization (WHO) and FAO is implemented through a number of guidance documents, which includes a *Guidance on Pesticide Legislation - Second edition (2020)*.

The ***Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade*** of 1998 and the ***Stockholm Convention on Persistent Organic Pollutants*** of 2001 are legally binding treaties regarding the use of hazardous chemicals that threaten human and environmental health. The Rotterdam Convention covers use and international trade of pesticides to share the responsibility of managing these hazardous chemicals through cooperative efforts. The Stockholm Convention specifically addresses persistent organic pollutants as a major threat to human and environmental health due to their ability to bioaccumulate and resist environmental degradation through chemical, biological, and photolytic processes. The responsible and prudent management of pesticides and hazardous chemicals is central to SLM both to assist in intensification of agricultural production as well as protecting biodiversity and human health and welfare.

Critical to chemical management is the movement of these chemicals, which is addressed by both the Rotterdam Convention and the ***Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*** of 1989. For coastal nations, land-use decisions can have lasting impacts on surrounding bodies of water as chemicals are carried through local watersheds to diverse estuarian and marine ecosystems. Broadly concerned with public order at sea, the ***United Nations Convention on the Law of the Sea (UNCLOS)*** of 1982 addresses pollution allowances from land-based sources into the marine environment. It offers an essential reminder that land use planning must take into consideration non-land environments as well.

2.7 Rights to information and participation

The centrality of public participation in sustainable development was established at the original Earth Summit and took form, in part, through the ***Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters*** of 1998 (Aarhus Convention). While only open to members of the Economic Commission for Europe (ECE) and states with consultative status with the ECE, its influence has been global and it is intended to advance Principle 10 of the Rio Declaration. The Aarhus Convention grants the public rights regarding access to information, public participation, and access to justice in governmental decision-making processes on matters concerning the local, national, and transboundary environment. The Convention highlights the importance of environmental information access and transparency. The Convention's focus on enhancing the environmental governance network and building trustworthy relationships between civil society and government acknowledges the limited role of government in advancing environmental sustainability and the critical role civil society organizations (CSOs) can play. Given the multistakeholder nature of SLM, its principles are particularly applicable when adopting and implementing SLM practices.

Various human rights treaties are a primary source for these and other procedural rights; environmental law and human rights law are increasingly supporting and informing one another (Knox and Morgera, 2022).

2.8 Regional frameworks

In addition to global agreements, many regions have created their own land management or landscape-level conventions concerning the conservation of natural resources broadly. Regional examples are: the ***African Convention on the Conservation of Nature and Natural Resources (revised)***, adopted in 2003 by the African Union; ***Summits of the Americas Mandates on the Environment***, adopted various agreements by the Organization of American States; the ***ASEAN Agreement on the Conservation of Nature and Natural Resources***, adopted in 1985 by the Association of Southeast Asian Nations; the ***Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean*** (also known as the Escazu Agreement), adopted in 2018 by United Nations Member States in Latin America and the Caribbean; and the ***European Landscape Convention of the Council of Europe***, adopted in 2000 by the Council of Europe. These agreements consistently acknowledge natural resources as being important economically, socially, culturally, and environmentally. They foster environmental protection and natural resource conservation as core models to their land-use planning processes for economic development and include provisions such as that in the *African Convention on the Conservation of Nature and Natural Resources (revised)* requiring Member States to take "effective measures to prevent land degradation, and to that effect shall develop long-term integrated strategies for the conservation and sustainable management of land resources, including soil, vegetation and related hydrological processes." States that have undertaken such commitments have a duty to implement them through national actions.

Photo by Pixabay

3. Key intersecting issues

When considering legislation and policy to improve SLM, policymakers should consider issues that intersect with and can be informed by SLM principles. Some of the key issues include land degradation neutrality, land-use conversion, urbanization, legitimate tenure rights, responsible investment in land, biodiversity conservation, and climate change. The reverse is true as well: when considering legislation and policy to address these issues, SLM principles should be addressed. This section addresses each of these issue areas, highlighting how they intersect with SLM and how that should inform policymaking.

3.1 Land degradation and the concept of land degradation neutrality

Half of the world's terrestrial vegetation cover has been lost in the past 200 years as land has degraded (Dooley and Stabinsky, 2018). Experts provide evidence of potential collapse of many agricultural and natural ecosystems due to overexploitation, fragmentation, and pollution (Dooley and Stabinsky, 2018). Sustainable land management is the key to building back more sustainable and resilient land and ensuring against further degradation.

SLM plays an important role in addressing human-induced land degradation. Small-scale farmers, fisherfolk, pastoralists, and forest users are among the first to suffer from degrading environments and discontinued ecosystem services, losing resilience to stresses such as climate change (FAO, 2017a). In some cases, these same land users are drivers of degradation through use of unsustainable practices. Securing tenure rights and adopting sustainable agriculture or other land management techniques can help to build resilience back into the system and fight against degradation. Biodiversity, the variety and variability of life on the planet, can be conserved when lands are managed to avoid degradation, both to maintain existing diversity and to encourage suitable and sustainable uses of lands rather than expansion into protected areas or land conversion to other uses post-degradation.

Land degradation can be both a cause and an effect of poverty, as livelihood needs can lead to degradation and degraded lands are often abandoned, which leads to further land conversion and higher agricultural costs (FAO, 2017a). By implementing SLM techniques such as those detailed in the WOCAT Database, land users can pursue LDN.

Box 4. What is land degradation neutrality?

Land degradation neutrality was defined at UNCCD COP 12 as "a state whereby the amount and quality of land resources necessary to support ecosystem function and services and enhance food security remain stable or increase within specified temporal and spatial scales and ecosystems."

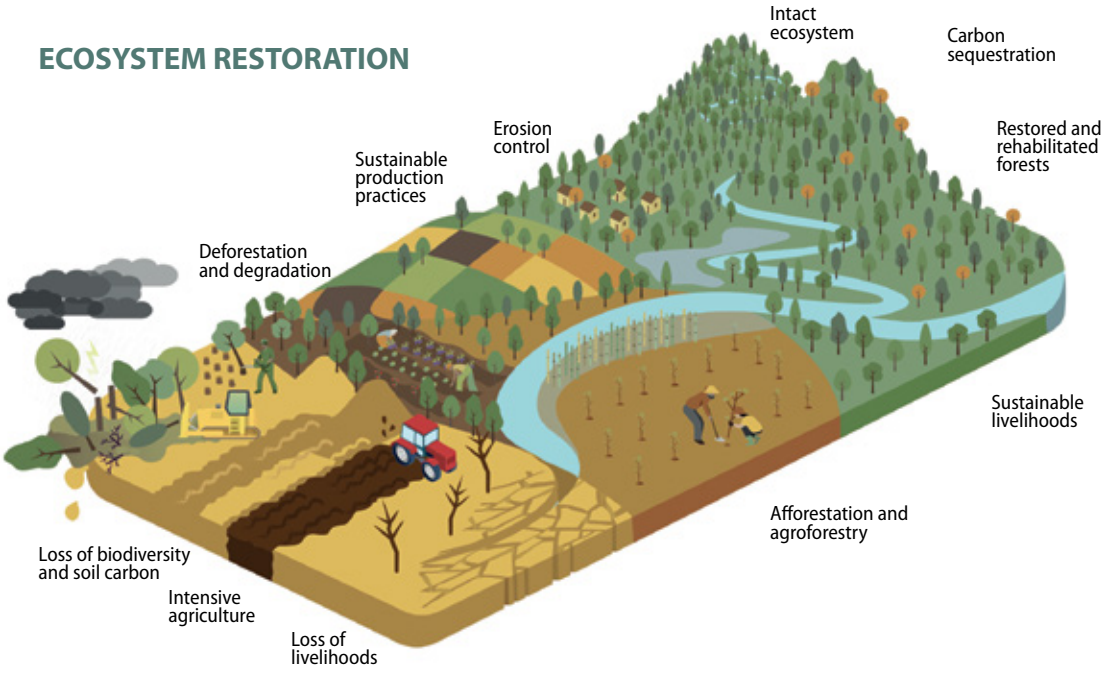
Source: Decision 3/COP.12. Integration of the Sustainable Development Goals and targets into the implementation of the United Nations Convention to Combat Desertification and the Intergovernmental Working Group report on land degradation neutrality. Report of the Conference of the Parties on its twelfth session, held in Ankara from 12 to 23 October 2015. ICCD/COP(12)/20/Add.1.
https://www.unccd.int/sites/default/files/sessions/documents/ICCD_COP12_20_Add.1/20add1eng.pdf

Sustainable land management plays a central role in combatting desertification, defined in the UNCCD as "land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities" (Article 1(a)). Water scarcity, already an agricultural stressor in many regions, has amplified with the advent of climate change (FAO, 2020a). Twelve million hectares of previously productive land become barren due to desertification and drought each year (UNCCD Sectretariat, 2014). Careful management of water resources, adoption of sustainable agriculture techniques, and understanding of sustainable land-use management can all contribute to healthier and less vulnerable soil that is better suited to providing ecosystem services that combat desertification. Since SLM is a strategy for both "preventing and reversing degradation" (Welton, Biasutti and Gerrard, 2015), land users practising SLM maintain and increase the land's carbon sequestration ability as the soil becomes healthier.

Focusing on land restoration, and ecosystem restoration more broadly, is a second key element in achieving LDN. It is not sufficient to simply decrease degradation; degraded lands have to be restored to health to return land systems to sound functioning. Countries have already pledged to restore one billion hectares of degraded land, and implementing modern restoration principles, which have been refined by decades of failures and successes, is vital to meeting these pledges (UNEP, 2021). Land restoration contributes to the economy, food security, clean water, human health, climate change mitigation and adaptation, and biodiversity (UNEP, 2021).

The UNCCD's Secretariat, recognizing the utility of SLM to LDN, has a partnership with WOCAT to provide greater access to SLM good practices in order to help combat degradation and desertification. In 2014, following decision 17/COP.11, the World Overview of Conservation Approaches and Technologies (WOCAT) was recognized as the primary recommended database for UNCCD stakeholders to exchange knowledge and best practices on SLM. The WOCAT global database provides access to over 2 400 SLM practices (WOCAT, 2016).

Figure 6. How FLR can support climate change mitigation and adaptation at landscape level



Source: Garrett, L., Levite, H., Besacier, C., Alekseeva, N. & Duchelle, M. 2022. *The key role of forest and landscape restoration in climate action.* Rome, FAO. https://doi.org/10.4060/cc2510en

Box 5. Key messages | Land degradation neutrality

To help combat desertification, land degradation and drought:

- Encourage and enable uptake of sustainable farming practices through supportive legal frameworks and capacity-building programmes.
- Establish mechanisms, incentives, and regulations to encourage restoration of degraded ecosystems using sound restoration principles.
- Secure tenure rights for small-scale farmers, fisherfolk, pastoralists, and forest users to promote sustainable use rather than further degradation.
- Ensure careful management of water resources through regulation and planning.
- Plan for land use to counterbalance degraded areas with areas similar in size where land degradation is either avoided, reduced or reversed.

The UNCCD Data and Knowledge hub also has a section on SLM best practices, drawing from its area of work focused on LDN (UNCCD Sectretariat, 2023). The UNCCD recognizes the importance of legislation to support sustainable land use systems (Cowie *et al.* 2024).

FAO has also worked with several Member Nations to develop SLM technologies in drylands. FAO published *Promoting sustainable land management through evidence-based decision support*, which puts forward a decision support Framework. This framework integrates experience from work with land degradation and SLM into an overall strategy for mainstreaming and scaling out SLM at different spatial and temporal scales. This publication serves as a step-by-step guide for the application and implementation of the DSF during planning, design and implementation of SLM interventions. It includes elements – both in its modules and proposed tools and methods – which can support countries in pursuing LDN (Harari *et al*. 2023). To develop SLM capacities in drylands, FAO has produced a process for land degradation assessment (LADA) with a series of publications (FAO, 2023c).

3.2 Land use conversion and competing land uses

Careful and considered conversion of land from one use to another is a key element in SLM as balances are struck between societal needs and ecological imperatives. Converting grassland to agricultural land or forest to agricultural land, for example, can have negative SLM impacts. These land-use changes often lead to the degradation of natural ecosystems, which puts more pressure on already-stressed systems and raises carbon emissions (FAO, 2017a). Yet, food security and nutrition concerns often drive these conversions. As such, taking an SLM approach to land-use change is essential for the health of ecosystems and the communities that depend on them. For example, sustainable intensification of agriculture, a key SLM technique, can decrease some of the pressures that lead to conversion and can lead to greater food security and nutrition (FAO, 2017a). Financial incentives for converting or modifying from one land use to a more desirable land use can also help to reverse detrimental conversions (Martin, 2008).

Table 2. Percentage of land-use class change due to different causes, 1992–2019

LAND-COVER CLASS	1992	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Artificial surfaces (including urban and associated areas)	26	48	49	51	52	54	55	56	57	58	60
Grassland	1 773	1 796	1 799	1 800	1 801	1 802	1 802	1 801	1 801	1 810	1 813
Herbaceous crops	1 877	1 910	1 909	1 909	1 908	1 907	1 907	1 904	1 905	1 905	1 904
Woody crops	178	222	223	224	224	224	223	222	220	221	222
Shrubs and/ or herbaceous vegetation, aquatic or regularly flooded	202	189	189	190	190	189	189	189	189	191	193
Shrub-covered areas	1 615	1 595	1 597	1 598	1 599	1 599	1 600	1 597	1 597	1 601	1 605
Tree-covered areas	4 347	4 291	4 286	4 282	4 281	4 281	4 280	4 287	4 288	4 278	4 270
Sparsely natural vegetated areas	905	886	888	889	888	887	887	888	888	887	890
Terrestrial barren land	1 950	1 935	1 932	1 930	1 930	1 929	1 929	1 927	1 926	1 920	1 915
Inland water bodies	381	381	381	381	381	382	382	382	382	382	383
Mangroves	18	18	18	18	18	18	18	18	18	18	18
Permanent snow and glaciers	1 437	1 437	1 437	1 437	1 437	1 437	1 437	1 434	1 434	1 434	1 434
Total land cover	**14 709**	**14 709**	**14 709**	**14 709**	**14 709**	**14 709**	**14 709**	**14 706**	**14 706**	**14 706**	**14 706**

Source: FAO, 2022a. *The State of the World's Land and Water Resources for Food and Agriculture – Systems at breaking point. Main report.* Rome. https://doi.org/10.4060/cb9910en

3.2.1 Pastoralism and grassland

Pastoralism is an animal production system that uses natural grassland habitats to graze livestock. The use of land as natural grassland supports biodiversity, economic growth, and social benefits to the users of the land. The ability to move livestock across various grasslands, called pastoral mobility, is an essential element of increased production and SLM within pastoral systems. Mobility requires flexibility and dynamism in land management systems as livestock are moved to different areas to access fodder resources as they are at their nutritional and productive peaks.

The practice of pastoral mobility contributes to the sustainable management of land where there is an integration and balancing of grazing and resource demand for the area. For example, grazing on fallow agricultural lands increases the overall productivity of the system as animal droppings fertilize the land and consume fauna from the land while it is not actively growing crops. When planned properly, pastoral mobility can improve soil fertility and "soil carbon sequestration, nutrient cycling, pollination and seed dispersal", and maintain biodiversity (FAO, 2022c). However, the practice of pastoral mobility can be challenged by industrialization, water access, border enforcement by private landowners, conflicts between pastoralists and agricultural communities, and delimiting conservation areas (FAO, 2022c). As a result, pastoral land has often become fragmented and enclosed, forcing pastoral practices to be sedentary rather than mobile.

To incentivize sustainable management of pastures, states or local governments could establish corridors or demarcated routes for pastoral mobility, or establish temporal grazing rights, in collaboration with those using land for agricultural purposes to establish a sustainable exchange of resources and a more sustainable circular economy by trading the use of fallow land for the generation of fertilizer. Such systems may be enforced through access to public lands, incentivizing private agreements between pastoralists and farmers, and creating defined routes in law (Cameron, Marty and Holland, 2014). Pastoral management at a smaller scale can avoid some of the common problems of land degradation or overgrazing, as administration can be more dynamic. For any of these approaches to be viable, tenure systems and administrative structures at all levels of governance must offer enabling environments.

Agricultural land users, perhaps because of land degradation, displacement, or other forces such as government incentives, often expand onto poorly administrated pastoral lands, putting pressure on already-stressed grasslands to accommodate more intensive use (FAO, 2017a). As pastures and grasslands are also degraded and fail to provide enough food for livestock, demand grows for additional grazing areas or agricultural land areas to feed livestock. These pressures, which highlight the need for SLM and land-use planning interventions such as integrated livestock and agriculture systems or polycropping to improve soil health, can lead to conflicts between pastoralists, ranchers, and farmers if not properly managed.

As grasslands are converted to agricultural lands, pastoralists can no longer graze their livestock and instead must buy or produce agricultural products to feed their livestock in increasingly limited areas. Concentrated animal feeding operations, one method for cutting costs and space needs of livestock, can have a deleterious effect on nearby communities and the environment, leading to large amounts of pollution being released into the air and water. Ecosystem function should be a key consideration for approval of land conversion to take place, as grasslands ecosystems are important to both biodiversity conservation and sustainable livestock management (FAO, 2017a).

3.2.2 Forest conversion

Forests house most of the world's biodiversity and act as important carbon sinks, yet in the last 30 years, roughly 420 million hectares have been lost through conversion to other land uses (FAO and UNEP, 2020b). A growing global population, higher standards of living and industrialization have generated increased demand on the agricultural system, which in turn converts forests to fields. The pressures of agricultural conversion of forest land are so significant in some areas of the world that nearly one half of the deforestation is done in contravention of law (FAO, 2017a). Because forests serve as critical sources of water, oxygen, livelihoods, forest products, cultural heritage, and biodiversity and are such a significant carbon sequestration source, sustainable global forest management is an important aspect of sustainable land-use management. Adoption of SLM techniques can decrease the perceived need for conversion, as agroforestry and sustainable agriculture techniques can increase profitability and productivity (FAO, 2017b).

Land-use planning at a landscape scale is fundamental to support policy and legal options that are appropriate for agricultural intensification, reducing emissions from deforestation and degradation (REDD+) and other land uses (food production, mining, infrastructure developments, etc.). Government policies on land tenure and land-use planning and the capacity to implement and enforce these policies also affect the relation between forests and agriculture. It is widely known that, while the objective of REDD+ is to reduce greenhouse gas emissions from the forest sector, the objective of the agriculture sector in most countries is to increase economic development and contribute to local and national levels of food security. However, there are a number of synergies between REDD+ and agricultural sector objectives. The forest and agricultural sectors should therefore ideally be able to coordinate their actions to build on these synergies and avoid the existing trade-offs between economic development, agricultural production, and deforestation and forest degradation (FAO, UNDP and UNEP, 2013a).

3.2.3 Agricultural land conversion

Agricultural land is the main source of land converted during urbanization and industrial development (Bren d'Amour *et al*., 2017). As populations of cities increase and populations of rural areas decrease, agricultural land is converted to suit the needs of the urban centre, which in turn puts pressure for agricultural land to expand into pasturelands and forests, as noted by Bren d'Amour *et al*. (2017). Such conversion has led to food insecurity in some regions as productive land decreases. In addition to limiting productivity, conversion of agricultural land also modifies habitats, the water cycle, and the biogeochemistry of the land, which can negatively impact soil health, water quality, and biodiversity.

In addition to measures to encourage young people, women and farmers to remain on agricultural lands through technical, financial and land access incentives, states can help to balance the costs of land-use conversion by setting fees for converting land to less sustainable uses or requiring businesses to offset conversion with other beneficial activities. Such measures can help to introduce the real costs of land degradation and biodiversity loss into financial decisions. When setting these fees however, care must be taken to avoid over-burdening vulnerable individuals and communities. Land-use planning that promotes compact urban development and protects agricultural land through zoning laws can also help to promote SLM practices without halting urban development.

Box 6. Key messages | Land-use conversion and competing land uses

Decrease land-use conversion and competition between land uses by:

- Requiring offset of land-use conversion with other beneficial activities that help to reduce the damage that would be caused to ecosystems and to the communities that utilize the land, such as reforestation, wetland restoration, wildlife habitat conservation, or creation of ecological corridors.
- Setting fees for the conversion of land to less sustainable uses.
- Monitoring actual land use to identify breaches in land-use rules and intervene to prevent further breaches.
- Establishing legally recognized corridors for pastoralists in consultation with agricultural users.
- Granting managed access to public lands to promote pastoral mobility.
- Establishing supportive legal frameworks and capacity-building programmes to promote the adoption of sustainable and efficient agricultural techniques to reduce agricultural pressure on forests and range areas.
- Implementing land-use planning at a landscape scale to better understand the context and needs of the environment and local communities.
- Providing more secure land tenure to youth, women and local communities and implementing policies to facilitate their access to land.
- Ensuring meaningful consultation and participation from concerned communities and stakeholders in the preparation of land use plans and management of competing uses.
- Facilitating coordination between different sectors to avoid overlap and competition.
- Facilitating or incentivizing agreements between pastoralists and farmers, including through exploring the use of customary or traditional negotiation arrangements to support beneficial exchanges.

3.3 Urbanization

People are increasingly moving from rural to urban areas: by 2050, 68 percent of the world's human population is projected to live in urban areas (United Nations, 2018). Growth of urban populations requires the conversion of land into infrastructure used for residential, industrial, and commercial purposes. Urban areas that house large populations require hospitals, schools, and business centres – all of which consume land and generally prevent it from being used for alternative purposes. As such, urbanization is a driver of environmental degradation, soil erosion, deforestation, and biodiversity loss (FAO, 2022a). The dense population centre of urban areas also creates additional stresses on sustainable land use, as policymakers must decide on how to dispose of waste, obtain water, and prevent pollution (Peerzado, Magsi and Sheikh, 2019). Without regulations designed to promote sustainability and prevent pollution and overuse of resources, best practices for responsible management of land, water, and waste are often avoided in favour of more cost-effective options.

In an urban context, spatial regulated planning is a key tool for promoting SLM. Spatial regulated planning, the process of carrying out land-use regulations and policies to guide spatial development of urban areas, can help preserve a balance between urban development and natural resource and ecosystem protection. Compact, mixed-use development can decrease the negative impacts of dense populations on surrounding areas and promote protection of agricultural land or critical habitats through zoning.

However, one benefit of urbanization on agriculture is increased crop values. Developing value chains and increasing efficiency and equity in food systems can help to balance the pressures of urbanization and allow for more sustainable uses of rural lands (FAO, 2017c).

Urbanization is often driven by population growth, land degradation, and less profitable rural livelihoods (Noel *et al*., 2015). Sustainable land management, particularly if it involves and engages youth, can help to moderate urbanization, as healthier lands can provide more stable livelihoods. In addition, providing more secure land tenure for youth can encourage young people to access or remain on the ancestral lands. Many countries are seeing widespread abandonment of agricultural lands as young people seek higher paying livelihoods in urban centres (Noel *et al*., 2015).

Box 7. Key messages | Urbanization

- Enact zoning laws to preserve agricultural land while accounting for urban areas; spatial regulated planning can be used as a tool to sustainably manage urban development.
- Enact environmental regulations that account for additional urban populations.
- Engage youth in agricultural programmes to slow urbanization.
- Develop local markets to reinforce rural-urban linkages and give prominence to the protection of land during spatial planning exercises.

3.4 Recognizing and enhancing land tenure rights

Tenure rights, especially for Indigenous Peoples and local communities working on the land, ensure that both groups are protected and can benefit from SLM principles and practices in a mutually reinforcing relationship. Securing legitimate tenure rights to land already being used, protected, or otherwise managed by land users contributes to the resilience of that land as well as its user community. Formalized or strengthened rights give land users additional tools to protect vulnerable landscapes, which can be an important factor in improving land management outcomes (Landesa, 2020). As people inherently value and are more inclined to protect land if they have long-term security of tenure, strong, recognized tenure rights are key to ensuring SLM. Similarly, when land is sustainably managed, it may increase its utility and make it more likely that people will seek to strengthen their tenure over the land. Thus, an increase in SLM practices and strengthening of land tenure can be mutually reinforcing. However, adopting SLM practices may also increase the value of the land, which could have a detrimental effect on vulnerable tenure rights holders; securing rights in tandem with adopting SLM practices can help to protect against land grabbing by more powerful actors.

Legally recognized tenure rights increase the probability of farmers adopting sustainable agriculture practices, such as climate-smart agriculture, "an approach to help the people who manage agricultural systems respond effectively to climate change" (FAO, 2022d). In Nigeria and in Czechia, researchers found that farmers with formalized ownership rights adopted techniques to combat land degradation and restore soil health at a higher rate than those without secure tenure documentation (Landesa, 2020). Smallholder farmers are especially well-placed to respond to climate change through agroecological and agroforestry approaches; formalizing their tenure rights allows them to do that (Dooley and Stabinsky, 2018).

Box 8. FAO and UNCCD Technical Guide on the VGGT

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* was written "to inform policy and decision-makers on the potential and means whereby which legitimate and secure tenure can accelerate progress towards LDN and other restoration commitments".

The four key messages of the Technical Guide are:

i. Secure tenure increases the positive impacts of LDN initiatives for people and the planet.

ii. Addressing tenure in LDN initiatives begins with the assessment of local needs and conditions.

iii. Meaningful and inclusive consultation and preparation is essential to ensure that legitimate tenure rights are not overlooked in LDN initiatives.

iv. Gender-responsive approaches can address underlying inequalities in control and access to land resources and are needed for realizing transformative change.

Based on these key messages, the Technical Guide offers nine pathways to increase tenure security in LDN initiatives, focusing on providing practical solutions to commonly encountered land tenure challenges in the context of national plans, legal frameworks, strategies, and action programmes.

Source: FAO & UNCCD. 2022. *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, Rome and UNCCD, Bonn. https://doi.org/10.4060/cb9656en

3.4.1 Women's land tenure and gender issues

Increased women's involvement in land management through secure tenure rights is important both for equity and for sustainability. In the Niger, farmer-managed natural regeneration projects, spurred by a change in land management policies that had discouraged responsible forestry, improved women's social status as women were seen to have substantial involvement in the restoration of degraded lands that led to income generation opportunities (UNEP, 2019). A study in Rwanda found that women with regularized land tenure rights increased their investment in soil conservation measures as much or more than their male counterparts (Landesa, 2020). When women hold secure rights to land, communities have been found to be more successful in protecting biodiversity and addressing climate change (Gazebrook, Noll and Opoku, 2020).

When designing policies and interventions to support SLM uptake through tenure reforms, policymakers should consider the gender dimensions of tenure rights and should ensure equal rights for women. Interventions that take a gender-neutral approach to agriculture and livestock production often result in majority male involvement because growing crops for cash or for a company is often perceived as men's work, while subsistence farming is often seen as women's work. Thus, shifting land use from subsistence to cash farming may have significant unintended gendered impacts (Rajamma, 1993). In addition, gender-blind tenure interventions can further entrench social divisions and leave women behind as land titles are given to men almost exclusively. Women make up nearly half of the agricultural workforce but have fewer opportunities than men to access land tenure rights (FAO, 2017b).

Half the countries reporting on Sustainable Development Goal Indicator 5.a.2 on women's equal rights to land ownership and control have weak legal protections for women's land rights (FAO, 2023d). Dual registration, i.e. the registration of tenure rights in the names of both husband and wife, can help to avoid this (Landesa, 2020) as well as equal inheritance rights and the protection of women's rights in customary systems of land tenure (FAO, 2021a). In accordance with the *Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)*, countries should make use of temporary special measures (TSMs) to accelerate the realization of substantive gender equality (Kenney, 2022).These measures provide preferential treatment to women and should be implemented in all areas, including in the political, economic, social, cultural, civil or any other field, where discriminatory practices or behaviours affect women's opportunity to enjoy and exercise their rights equally with men. The use of TSMs in general and sectoral legislation can contribute to SLM by strengthening gender equality in land rights but also in participation and decision-making and access to resources (Kenney and Vidar, 2023).

Box 9. SDG Indicator 5.a.2 and its 6 Proxies

A. Is the joint registration of land compulsory or encouraged through economic incentives?

B. Does the legal and policy framework require spousal consent for land transactions?

C. Does the legal and policy framework support women's and girl's equal inheritance rights?

D. Does the legal and policy framework provide for the allocation of financial resources to increase women's ownership and control over land?

E. In legal systems that recognize customary land tenure, does the law explicitly protect the land rights of women?

F. Does the legal and policy framework mandate women's participation in land management and administration institutions?

Source: FAO, 2021a. *Realising Women's Rights to Land in the Law. A guide for reporting on SDG indicator 5.a.2.* Rome. https://www.fao.org/3/i8785en/I8785EN.pdf

Box 10. Integrating gender into laws

Sustainable land management-related laws should integrate gender perspectives and should explicitly address women's land and natural resource rights and responsibilities – including consideration of the unique challenges faced by women. Gender considerations include attention to women in their individual capacity, within households, and within communities; it also cuts across all other relevant identities, such as age, religion, ethnicity and race, political affiliation, sexual orientation, language, education, and disability.

For example, Liberia's *Land Rights Policy* of 2013 explicitly acknowledges that "women's land rights are often less protected than those of men" and thus specifically "aims to give equal protection to the land rights of men and women" (para 2.5). Subsequently, a key purpose of Liberia's *Land Rights Act* of 2018 is to "ensure equal access and equal protection with respect to land ownership, use and management" and that land ownership is provided to all Liberian citizens regardless of gender, ethnicity, tribe, language, etc. (Article 3). The Act recognizes the community as the legal holder of community land and recognizes as community members those citizens who meet the law's criteria irrespective of gender, age, ethnicity, religion, and disability (Articles 2 and 34). All community members are responsible for formulating a land-use management plan for their community land. Currently, the Government of Liberia is actively addressing gender issues within the land-use policy formulation process, including prioritizing and investigating issues like women's sustainable use of wetlands.

To counter the male predominance in land titling programmes and enhance women's access to land in Brazil, different policies designed for women have been developed in recent years, especially to guarantee their land access after land allocation. *The Law No. 8.629* of 1993 that establishes the National Agrarian Reform Programme including regulation of rural settlements, provides that land title shall be given to a man or a woman alike (Article 19), but the regulating *Decree No. 9.311* of 2018 provides preference to families run by women for establishing priority among those entitled to be settled by the Programme (Article 12). Furthermore, *Norm INCRA No. 97* of 2018 gives preferential land tenure rights to woman when the plot cannot be divided, such as in the case of divorce (Article 7) – land tenure rights priority is given to men who retain legal guardianship of children. Another *Decree No. 9.424* of 2018, helps to create positive conditions for women, for example, by developing the "*fomento mulher*" a credit line destined for projects conducted by woman, guaranteeing an entire package of policies oriented to strengthen women's land tenure rights in rural Brazil.

In the Philippines, the *Indigenous Peoples' Rights Act* of 1997 explicitly requires the State to ensure that Indigenous women are guaranteed the fundamental human rights enshrined in the *Constitution*, the *Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)*, and other international human rights instruments (Article 21). The Act also contains provisions that give women equal rights and opportunities to participate in all spheres (political, social, economic, cultural) and decision-making processes at all levels (s. 26) – provisions which implicate land-use rights.

Colombia's *Law on Rural Women, No. 731* of 2002 recognizes the rights of an abandoned spouse or permanent partner to agricultural reform parcel allocation, specifically calling for the equitable participation of women in allocation and use of land (Articles 24-26). Preferential access is also given to women in charge of a household and to those lacking social and economic protection due to violence or widowhood. Property must also be titled in the name of both spouses or permanent partners.

3.4.2 Rights of Indigenous Peoples

For Indigenous Peoples, tenure regimes are characterized by collective rights over land and natural resources connected to their identity, culture, and spirituality. The VGGT includes a section dedicated to Indigenous Peoples and other communities with customary tenure structures and calls on governments to recognize the legitimate tenure rights of those communities. Across the globe, there are numerous examples of statutory recognition of customary rights, rules, and institutions with differences as to the strength, scope, and impact (FAO and UNEP, 2020a). For pastoralist groups, it is important for legislation to protect their rights of mobility and migration routes, while also recognizing their "role as users of the environment as well as their duty to protect grazing lands against degradation" (FAO and UNEP, 2020a).

Indigenous Peoples legally own about 10 percent of the world's land, and much more land is claimed by Indigenous Peoples but unrecognized in law (Rights and Resources Initiative, 2015a). As such, indigenous communities play a significant role in determining how land will be used but are often left out of formalized tenure considerations. Legal pluralism, or the existence of multiple legal systems in one population or area, complicates tenure claims and authority over land management decisions. Determining both codified and customary authority structures is important to building an SLM structure.

Many of the policy documents discussed in this study consider local communities and Indigenous Peoples together. However, it is important to recognize the legal distinction between these groups, as Indigenous Peoples are afforded specific rights under international instruments such as the *International Labour Organization (ILO) Convention No. 169* and the *United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)* and may have a different relationship to land than that of other local communities. Presently, the right to free, prior and informed consent (FPIC) is not extended to local communities (see VGGT), even though it is considered a good practice (Cotula *et al*., 2016).

The identity of Indigenous Peoples is inextricably linked to the continuation of traditions and preservation of ancestral lands and territories such that land is part of their identity (FAO, 2010). International law and some national laws afford Indigenous Peoples the right to FPIC when their land may be significantly impacted or when they may be removed, such as provided for in the UNDRIP. Understanding the relationship between Indigenous Peoples and land is critical for SLM because the priorities and consent of Indigenous Peoples are so central to potentially acceptable land uses and the processes that will need to be undertaken if land uses are to change. These unique characteristics make consultations with Indigenous Peoples around SLM quite different from engaging with other communities.

Strengthened tenure rights of Indigenous Peoples and local communities can improve their ability to protect land for sustainable use. In agroforestry, increased tenure security has led to much lower deforestation than other forest uses (Dooley and Stabinsky, 2018). One study found that deforestation rates in community-owned forests of Colombia and Brazil were between three and seven times lower than rates outside of those community forests (Stevens *et al*., 2014). Another found that secured community land tenure rights reduced both deforestation and forest carbon emissions in several countries (Blackman and Veit, 2018).

Box 11. Key data on Indigenous Peoples

There are **476 million Indigenous Peoples** in the seven socio-cultural regions of the world, in **90 countries**, belonging to more than **5 000 different groups.**

Asia has the largest concentration of Indigenous Peoples with **70.5 percent**, followed by **Africa with 16.3 percent, and Latin America with 11.5 percent.** In **Canada and the United States of America**, Indigenous Peoples **represent 6.7 percent** of the total population.

Indigenous Peoples make up **6.2 percent of the global population.**

Indigenous Peoples represent more than 19 percent of the extreme poor.

Indigenous Peoples' territories encompass 28 percent of the surface of the globe and contain 11 percent of the world's forests.

Indigenous Peoples are guardians to almost 80 percent of the world's remaining biodiversity.

Indigenous Peoples' food systems have high levels of self-sufficiency ranging from 50 percent to 80 percent in food and resources generation.

Source: FAO, 2023e. *Indigenous Peoples. In: FAO.* [Cited 28 September 2023]. https://www.fao.org/indigenous-peoples/en

Box 12. Key messages | Recognizing and enhancing land tenure rights

- Identify and respect particular land rights of Indigenous Peoples as well as the rights of local communities when designing SLM interventions.
- Pay attention to gendered impacts when considering changes to land use or recognizing land tenure rights.
- Address the effects of legal pluralism, including customary structures, when recognizing land tenure rights.
- Recognize community forestry and community-driven conservation areas in legislation and simplify administrative mechanisms for securing tenure.
- Promote participatory mapping and easy-to-use technologies for land administration to empower communities in land management.
- Adopt temporary special measures to enhance women's land rights until equality is achieved.
- Consider fit-for-purpose approaches for land administration that are practical, efficient, and accessible, expanding the inclusivity and sustainability of land management.
- Report on progress towards SDG 5.a on women's land rights.

A study of ten Latin American countries found that, in areas where Indigenous Peoples owned forest areas, increases in agricultural productivity were more likely to produce land-sparing approaches (Ceddia, Gunter and Pazienza, 2019). Reforestation is also more likely in community-managed forests. Thus, strengthened tenure for Indigenous Peoples and local communities can lead directly to improved SLM.

States can support forest communities by recognizing community forestry in legislation, simplifying complex administrative mechanisms and planning requirements for securing tenure, and by providing technical advice to help achieve greater sustainability and productivity within the bounds of the community forest requirements (Landesa, 2020). Participatory mapping and easy-to-use technologies have also had success, as a fit-for-purpose approach to land administration has gained traction (Enemark, McLaren and Lemmen, 2004).

3.5 Responsible investment in land

Large-scale investments in land can both promote and hinder SLM, depending on whether they are made with attention to the characteristics of the land and its appropriate uses as well as to the impacts of the investment on human and biological populations. Investment can increase the value of land, fostering increased attention to management and care of the land and the potential for increased productivity (Lawry *et al*., 2017). But investment can also undermine sustainability if it is short-term with limited attention given to the long-term effects of investment on the land.

The need for lands by the agricultural, extractives and forestry sectors, among others, has resulted in as many as 50 million hectares of land changing hands in the past decade globally (Boudreaux and Schang, 2019). Much of this land, however, is already occupied by Indigenous Peoples or local communities who lack formal recognition or documentation of their land tenure rights (Gilbert, 2016). According to the VGGT, while states may be within their legal rights to grant concessions on such lands, best practices suggest that consulting with and obtaining consent from affected communities prior to awarding such concessions will decrease the potential for social unrest, maximize investment outcomes, and provide a more secure long-term land use (Locke *et al*., 2019). Legal frameworks should establish clear procedures for the consultation of affected communities and decision-making process. Increasingly, companies and international lenders insist such processes be followed as a prerequisite to making land investments (Boudreaux and Schang, 2019).

According to FAO and UNEP, "in connection with large-scale agricultural investments, safeguards in legislation should be geared towards the protection of existing legitimate tenure rights and the environment, as well as the continuation of livelihoods relating to the resource. Allowing the participation of the local community in decision-making enables their priorities to be accommodated in the investment design and approval process." (FAO and UNEP, 2020a).

Significant guidance is available to guide government officials, company executives and community representatives through responsible land investment.[5] The Committee on World Food Security's *Principles for Responsible Investment in Agriculture and Food Systems (CFS RAI)* provides a conceptual framework for responsible investments in agriculture that reflects SLM principles throughout.

Investing in land can also support SLM by recognizing the natural capital inherent in land to provide green infrastructure to avoid the need for or supplement human-built infrastructure. Landscapes can filter water, prevent landslides, mitigate flooding, protect coasts, and absorb carbon, thus enhancing the sustainability of natural systems instead of replacing them with built systems (NCE, 2016). Guidance is also available on the contractual issues surrounding large-scale investments – see UNIDROIT and IFAD, 2021.

Impact investing occurs when funders invest in agricultural and other projects that not only seek to generate a profit for the investor but also seek to achieve social and environmental outcomes, such as generating livelihoods for local communities or reforesting a denuded landscape. Because many of these projects occur on land, impact investing can be another method of fostering SLM (WRI, 2019). Such investments may, for example, yield forest products while simultaneously restoring degraded landscapes, providing income for local peoples and generating carbon reduction credits (GIIN, 2019).

Box 13. Excerpts from Principles for Responsible Investment in Agriculture and Food Systems (CFS RAI) – Principle 6

Responsible investment in agriculture and food systems conserves and sustainably manages natural resources, increases resilience, and reduces disaster risks by:

i. Preventing, minimizing, and remedying, as appropriate, negative impacts on air, land, soil, water, forests and biodiversity;

ii. Supporting and conserving biodiversity and genetic resources, including local genetic resources, and contributing to the restoration of ecosystem functions and services, and in this regard, recognizing the role played by Indigenous Peoples and local communities;

iv. Increasing resilience of agriculture and food systems, the supporting habitats, and related livelihoods, particularly of smallholders, to the effects of climate change through adaptation measures;

vi. Integrating traditional and scientific knowledge with best practices and technologies through different approaches, including agro-ecological approaches and sustainable intensification, among others.

Source: Principles for Responsible Investment in Agriculture and Food Systems (CFS RAI), Principle 6.

[5] A general overview of standards and primers on implementing them is available at https://ripl.landesa.org.

Box 14. Key messages | Responsible investment in land

- Ensure that legislation related to large-scale land-based investments includes provisions to protect existing legitimate tenure rights of local communities and Indigenous Peoples.
- Incorporate safeguards to prevent or minimize negative impacts on the environment, such as consideration of long-term impacts on the land.
- Consider using international principles, such as CFS RAI and VGGT, to ensure that investments in land follow SLM practices, also increasing their chance of success.
- Consider green infrastructure investments to spur SLM.
- Follow SLM practices to help attract impact investors, thus increasing the chance for positive community and ecosystem impacts as well as economic growth.
- In case of gaps in national legislation, ensure that contractual provisions are adequate.

3.6 Biodiversity conservation

Biological diversity is fundamental to a healthy planet and sustainable societies, as many human resources depend on a diversity of species. Increased biodiversity has a range of socioeconomic, production, nutrition, and environmental benefits (FAO, 2018). Land that can sustain life is, in turn, fundamental to maintaining the abundance of species that depend on land to survive and flourish. Biodiversity loss, which has accelerated in recent years, puts stress on ecosystems and the communities that depend on those ecosystems for their livelihoods, particularly as biodiversity is a key element of sustainable food and agriculture systems. Some strategies to combat biodiversity loss depend on SLM techniques, such as establishment of protected areas and reintroduction of diverse species in agriculture and soil management.

As part of the *Convention on Biological Diversity (CBD)*, the *Kunming-Montreal Global Biodiversity Framework*, adopted at COP 15 in 2022, builds on the *Strategic Plan for Biodiversity 2011–2020 and the Aichi Biodiversity Targets*. The Framework, with 4 goals for 2050 and 23 targets for 2030, recognizes the contribution and rights of Indigenous Peoples and local communities and is supported by a Gender Action Plan. It also commits Parties to apply a human rights-based approach to its implementation.

The Aichi Targets integrate SLM principles and practices throughout, including: strategic goals to address natural habitat loss and degradation and fragmentation; reducing direct pressures on biodiversity through promoting sustainable use; safeguarding ecosystems, species, and genetic diversity; promoting sustainable agriculture and forestry; and enhancing the benefits from biodiversity and ecosystem services (Secretariat of the CBD, 2010). These goals recognize that biodiversity and SLM are inextricably linked and are reliant on one another for success.

Box 15. Biodiversity defined

The *Convention on Biological Diversity* defines biodiversity as "The variability among living organisms from all sources including, inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems."

Source: Convention on Biological Diversity (CBD) of 1992, Article 2.

If solutions to biodiversity loss through SLM fail to consider the lives and livelihoods of local communities, particularly Indigenous Peoples, the solutions are likely to fail. Indigenous Peoples and local communities are both dependent on biodiversity and fertile soil, as well as being the best positioned caretakers of the land. The CBD recognizes this interconnection in Article 8(j), which highlights the importance of local knowledge for conservation of biological diversity and the need to share benefits of biological diversity equitably. Parties to the CBD, understanding the interconnection of biodiversity and sustainable land use, adopted the *Akwe: Kon Voluntary Guidelines* in 2004, for use in cultural, environmental, and social impact assessments (SIAs) for land-based developments to ensure safeguards for sacred and traditionally used sites. Biodiversity is particularly important for the nutrition of Indigenous Peoples and local communities, leading to improvement of health and well-being. In addition, the *Mo'otz Kuxtal Voluntary Guidelines* adopted in 2016 provide practical guidance to countries on how to develop domestic laws, policies, and mechanisms to ensure the protection of the rights of Indigenous Peoples and local communities related to biological diversity, and how to ensure their free, prior and informed consent before access and use of their traditional knowledge, innovations, and practices by others.

Sustainable agriculture can be an answer to trends that lead to biodiversity loss and unsustainable land use, as the sustainable agriculture approach recognizes the importance of biodiversity to a well-functioning farm (FAO, 2023f). Agrobiodiversity can improve resilience to shocks including climate change and is important to maintaining healthy soil, resilient crops, and clean water resources. Biological diversity protects against disease, climate pressures, and pests. The *FAO Strategy on Mainstreaming Biodiversity across Agricultural Sectors* (FAO, 2020b) aims to mainstream biodiversity across agricultural sectors, including crop and livestock production, forestry, fisheries, and aquaculture.

In order to allow biological diversity to flourish in areas at risk of biodiversity loss, protected areas are a common land-use management tool. Protected areas are also an important component of the SLM approach, as some areas are too fragile to be used sustainably and are best set aside from other uses; however, this land management decision is often controversial, as farmers, pastoralists, and informal land users are often forced off land and resettled.

The CBD Subsidiary Body on Scientific, Technical, and Technological Advice (SBSTTA) noted that "nature-based solutions with biodiversity safeguards are an essential component of ecosystem-based approaches to climate change adaptation, mitigation, and disaster risk reduction" (SBSTTA of the CBD, 2019). Land can be a key element in nature-based solutions, such as restoring wetlands and creating rice paddy to increase biodiversity, control floods, and stimulate the local economy (Cohen-Shacham *et al*., 2016). Biodiversity is an important element of land's carbon sequestration and sink potential. A feedback loop between climate change and biodiversity loss, with increased ecosystem stresses and more carbon released, makes the need for SLM even more pressing. Accordingly, the next section addresses the intersection of climate change and SLM.

Box 16. Nature-based solutions

The IUCN defines nature-based solutions as:

"Actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits."

Source: Cohen-Shacham, E., Walters, G., Janzen, C. & Maginnis, S. 2016. *Nature-based solutions to address global societal challenges.* Gland, Switzerland: IUCN. https://portals.iucn.org/library/node/46191

Box 17. Key messages | Biodiversity conservation

- Ensure that solutions to biodiversity loss and sustainable land management consider the lives and livelihoods of Indigenous Peoples and local communities, promoting participation and equitable sharing of benefits.
- Align legal frameworks with the strategic goals outlined in the *Kunming-Montreal Global Biodiversity Framework* and its *Targets*, addressing habitat loss, sustainable land and biodiversity use, ecosystem safeguarding, sustainable agriculture and forestry, and enhancement of benefits from biodiversity and ecosystem services.
- Incorporate biodiversity considerations into legal frameworks, including protection and conservation of species, ecosystems, and genetic diversity.
- Ensure the recognition, protection and fulfilment of the rights of Indigenous Peoples, local communities and women.
- Develop safeguards for sacred and traditionally used sites through cultural, environmental, and social impact assessments in land-based developments.
- Incorporate protected areas as a land management tool to preserve areas at risk of biodiversity loss, ensuring the consideration of the rights of local communities.
- Utilize sustainable land-use planning to address pressures on soil that negatively impact biodiversity, such as land degradation and monocropping.

Biological diversity itself is also a critical element in SLM. For example, without a diverse soil biome, land cannot remain resilient and support a multitude of uses. Soils host a quarter of the Earth's biodiversity, yet 20–30 percent of lands are degraded, and this biodiversity jeopardized, by pressures on soil (FAO, 2023f). Lands that are extensively monocropped may lose important nutrients and soil cover, leading to long-term degradation. Thus, the relationship between biodiversity and SLM is one of interdependence. The *State of Knowledge of Soil Biodiversity – Status, Challenges, and Potentialities* discusses these pressures and their effects (FAO, ITPS, GSBI, SCBD and EC, 2020).

3.7 Climate change

Climate change and human use of land resources are the primary drivers of land degradation globally. However, if sustainable land management practices are employed, human activities can contribute to ecological resilience and minimize the impacts of climate change by serving as a tool for both climate adaptation and mitigation (FAO, 2023b). SLM practices can improve soil carbon sequestration and storage, helping the land to return to normal carbon densities (Dooley and Stabinsky, 2018).

Good governance and social, economic, and political factors are needed to develop climate resilience. An individual's land use decision-making depends largely on immediate needs (food security and economic independence), policies regarding land tenure, and local to national governance structures. Without secure property rights, land users often lack the incentive to invest in climate-smart infrastructure or land management strategies that rely on a long-term perspective on the land they manage. Strengthening global frameworks and national policies on land tenure and climate resilience can incentivize SLM uptake and support existing SLM practices. For example, when the Intergovernmental Panel on Climate Change identified linkages between climate mitigation and the recognition of indigenous rights (IPCC, 2019a), Indigenous Peoples from 42 countries stated that "finally, the world's top scientists recognize what we have always known … that strengthening our rights is a critical solution to the climate crisis" (Rights and Resources Initiative, 2019). Acknowledging indigenous governance and SLM principles in climate change policy can be a powerful step to ensuring that SLM practices continue and are backed by legal land tenure rights.

Box 18. Integrating climate and disaster issues into law

Land-use law and related instruments offer a vehicle for implementing climate change mitigation and adaptation strategies (FAO and UNEP, 2020a). One example is the *Philippines's Administrative Order (2010)* directing local governments to adopt guidelines for disaster risk reduction in their land use and planning activities. The Order also makes available technical assistance and support in planning for mitigating the risk of disaster (FAO and UNEP, 2020a).

Another example is El Salvador's *Legislative Decree – Special Law for legalization of property rights and regularization of possession to people of limited economic resources and people affected by natural phenomena of 2012*. The law establishes a special legal regime to implement the legalization or regularization of property rights to provide legal security for economically disadvantaged groups who are impacted by natural disasters.

Finally, Ukraine's *Resolution of the Cabinet of Ministers validating the National Action Plan for combating land degradation and desertification of 2016* is an example of legislation specifically addressing the impacts of climate change on land use.

Many climate change and SLM-related programmes and practices are supported and advanced by national states in their pursuit to meet commitments they have made through the ratification of various international treaties on climate change. Upon ratification, countries draft plans that rely heavily on SLM practices to achieve their national climate targets (IISD, 2019).

Given national political context and geography, states can select the land management practices that will most effectively and efficiently help meet their goals for greenhouse gas emissions reduction. Plans incorporate practices to conserve biodiversity, soil richness and water quality while mitigating greenhouse gas emissions and unsustainable natural resource extraction. These plans emerge as components of new environmental or agricultural laws and through financial levers like payments for ecosystem services or carbon markets. Such plans should incorporate input and feedback from local governments, community leaders, and even local companies with interest in promoting sustainable practices on the ground.

Box 19. Programmes and practices linking climate change and sustainable land management

Because land use and changes in land use are inextricably linked to climate change (Seddon *et al*., 2019), sustainable land management (SLM) can often be implemented as a tool for climate change adaptation and mitigation. Examples below illustrate programmes and practices at the intersection of climate change and SLM.

- Reducing Emissions from Deforestation and Forest Degradation (REDD+) is a voluntary climate change mitigation approach that has been developed by Parties to the *United Nations Framework Convention for Climate Change (UNFCCC)* to offer guidance on "reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries" (FAO, UNDP and UNEP, 2013a).
- Climate-smart agriculture (CSA) aims to sustainably increase agricultural productivity and incomes, adapt and build resilience to climate change, and reduce or remove greenhouse gas emissions, where possible. One of the 11 Corporate Areas for Resource Mobilization of the Food and Agriculture Organization of the United Nations (FAO), CSA advances SLM as a tool to support immediate and future population needs while also adapting to and mitigating climate change (FAO, 2023b).

Climate mitigation programmes can provide vital funding for SLM projects. In some cases, interest in advancing climate mitigation is so great that states, corporations and individuals are willing to pay others to implement SLM practices such as reforestation and afforestation, and wetlands restoration. The emergence of carbon markets and payments for ecosystem services create platforms for actors to participate in supporting SLM (IPCC, 2019a).

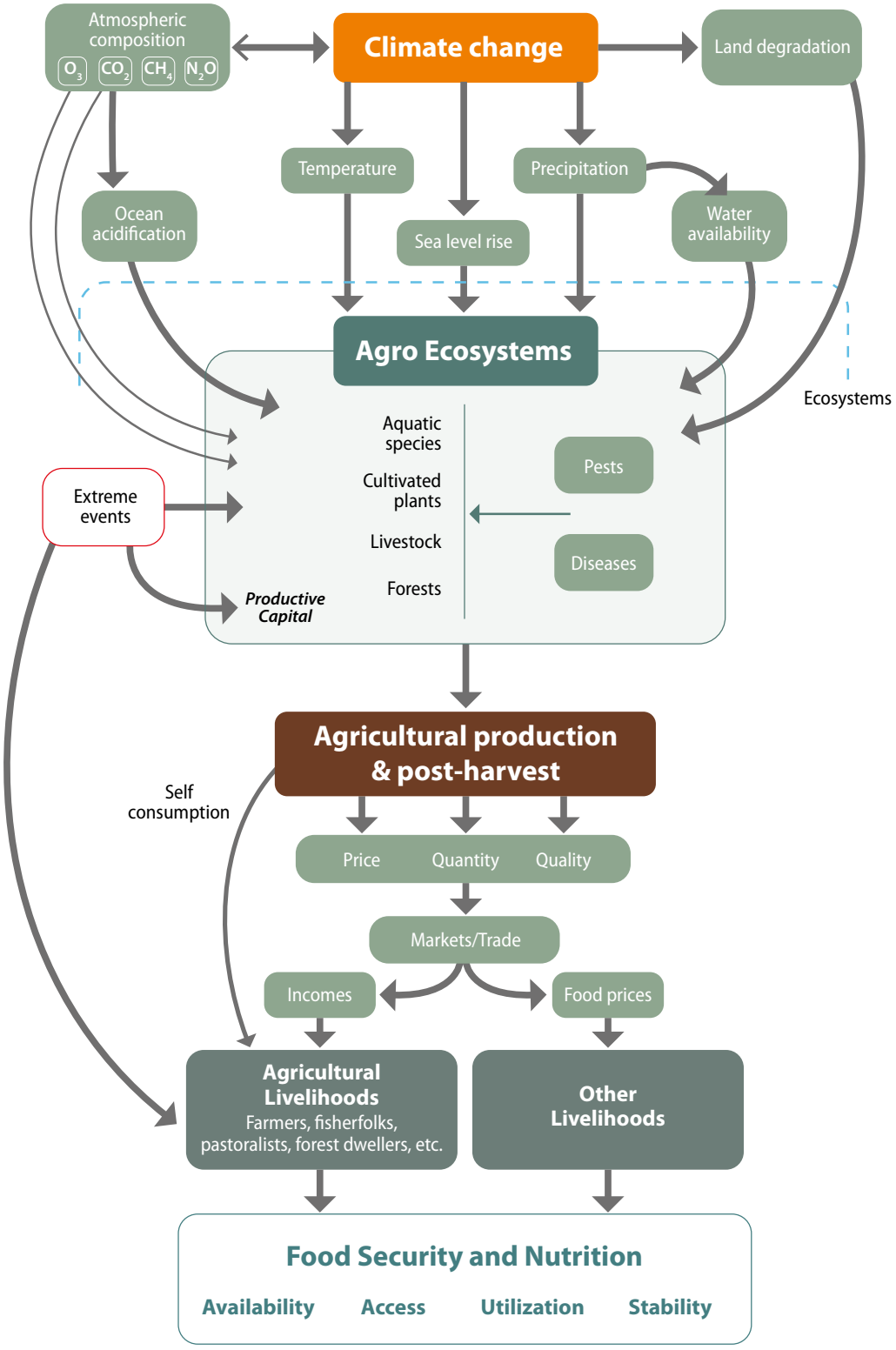
Because land is so central to much of the global population's livelihoods, communities in rural areas are among the most vulnerable to climate change impacts, including land and soil degradation and more frequent and intense floods and droughts (Dehnert, 2014). These environmental changes exacerbate ongoing social and economic issues like price fluctuations, food scarcity, limited government resources, migration and conflict and compound the impacts of climate change. Climate change and poverty are now so intertwined that they can only be solved together (IPCC, 2018). Policies aimed at solving poverty through food security have sometimes undermined the sustainability of land use. For instance, some countries have policies that make monocropped agriculture mandatory. However, monocropping has distinct disadvantages, as it degrades soil through reduced soil cover and organic matter and exposes farmers to shocks in the market as they lack crop diversity to balance market pressures. Monocropping is also particularly vulnerable to climate change impacts (Dooley and Stabinsky, 2018). Sustainable land management systems that support techniques such as polycropping and agroforestry can have a profound beneficial impact on both the individual farmer's well-being and societal resilience and mitigation of climate change.

As states advance climate mitigation and adaptation efforts through SLM, poverty reduction and sustainable development benefits emerge. For example, strengthening land tenure rights for families holds promise for effective climate change adaptation and mitigation strategies, including better land and natural resource management and climate-smart agricultural practices, as well as strengthened food security and economic development (IPCC, 2019b). See also FAO, 2020c.

Box 20. Key messages | Climate change

- Many climate mitigation and adaption strategies are sustainable land management (SLM) practices; when looking for climate solutions, consider SLM tools.
- Strengthen global frameworks and national policies on land tenure and climate resilience to incentivize uptake of SLM practices and climate-smart infrastructure.
- Support Indigenous Peoples' rights as a critical solution to the climate crisis, integrating their local knowledge and practices into land tenure and management systems.
- Utilize land-use laws and related instruments to implement climate change mitigation and adaptation strategies.
- Draw on climate mitigation programmes and funding mechanisms, such as carbon markets and payments for ecosystem services, to support further uptake of SLM practices.
- Draft national climate plans that integrate SLM practices.
- When addressing SLM projects, consider whether financing for such projects might be available from climate mitigation and adaptation projects.
- Establish special legal regimes to provide security and regularization of land rights for disadvantaged groups affected by natural disasters.
- Incorporate guidelines for disaster risk reduction into land use and planning activities.

Figure 7. Schematic representation of the cascading effects of climate change impacts on food security and nutrition



Source: Chaudhary, M., Gupta, S.K., Naresh, R. *et al.* 2019. Smart Strategies for Enhanced Agricultural Resilience and Food Security under a Changing Climate in Irrigated Agro-ecosystems of Northwest IGP: A Review. *Int.J.Curr.Microbial.App.Sci.*

4. National legal frameworks

In this section, we look at how SLM can be enshrined in national legal frameworks. The first subsection focuses on the legal structures that create the architecture for these frameworks – constitutions and land-use law and planning. The second subsection reviews the critical elements of these frameworks, including legitimate tenure rights, forest and rangelands management, conservation and protected areas, sustainable agriculture, SSM, sustainable water management, pollution and environmental law, environmental impact assessments (EIAs), mining and energy, land management tools, and protection for ecosystem services.

Given the cross-cutting nature of SLM, states should consider creating overarching national policies on SLM, as in Palau's *National Sustainable Land Management Policy (2012)* and Papua New Guinea's *National Sustainable Land Use Policy (2014)*. Such policies can establish the SLM priorities to be considered in revisions of sectoral laws as well as identify some of the main considerations for promoting SLM in the country. More technical policies could identify specific enabling provisions to be incorporated into national laws, create action plans to improve implementation of SLM practices, or fund research to determine the best way forward.

Before crafting new legal instruments to advance SLM practices, policymakers should determine the legal and technical gaps and overlaps in the existing instruments and frameworks, including where regulatory frameworks or instruments have yet to be established.

The following sections review the various ways in which law and policy can advance, or hinder, SLM with an eye to concrete steps that countries and stakeholders can take to implement SLM. Each country context is unique, as is the local context within each country for creating SLM practices, which requires local participation and consultation. Thus, this review is intended to provide practitioners with examples of practices from which they can draw as appropriate to adapt to their situation.

4.1 Constitutions

Constitutions are an opportunity for countries to build SLM principles into their foundational legal frameworks. Constitutions can set forth rights that can be enforced by courts, agencies, and even individuals in some instances, and they set forth authority for legislatures to enact legislation. Provisions that support SLM within constitutions range from aspirational yet legally weak provisions through to explicit individual and collective rights, supported by clearly articulated duties and strong judicial oversight (Lewis, 2018). Researchers have found that constitutional provisions related to SLM correlate to positive effects on sustainability (Boyd, 2012; Ewing *et al*., 2008). Countries with constitutional environmental rights provisions have smaller "ecological footprints" compared to countries without these provisions (Ewing, *et al*., 2008).

The main role of constitutions in SLM is to create an enabling environment. Constitutional provisions that support the tenets of SLM – such as public participation, access to justice, equal rights, environmental rights, etc. – can offer a solid foundation for other legal instruments to build upon. The more that the values stated within the constitution align with SLM principles, the more likely that the rest of the legal framework will follow that lead.

Box 21. Environmental provisions in the Constitution of the Province of Buenos Aires

The *Constitution of the Province of Buenos Aires of 1934* includes significant environmental provisions, including a charge to promote actions that avoid air, water, and soil pollution and a duty to preserve and recover natural resources and control the environmental impact of the use of those resources.

Box 22. Sustainable land management provision in the Constitution of Colombia

According to Article 80 of the *Constitution of Colombia of 1991*: "The state will plan the handling and use of natural resources in order to guarantee their sustainable development, conservation or replacement. Additionally, it will have to prevent and control the factors of environmental deterioration, impose legal sanctions, and demand the repair of any damage caused. In the same way, it will cooperate with other nations in the protection of the ecosystems located in the border areas."

Recognizing environmental or sustainability rights can energize government efforts in relation to environmental protections and considerations. Constitutions can set out the rights of nature or of individuals and communities to enjoy the benefits of a healthy environment. This approach, which is often characterized by a mandate or obligation on the government to provide for such an environment, can lead to a government-wide inquiry into the current state of the environment, the effects the government has on the health of that environment, and the steps it can take to improve upon that health.

According to the Viet Nam *Constitution of 1992* (as amended 2013), everyone has the constitutional right to live in a clean environment and has the duty to protect the environment. The state adopts environmental protection policies and is required to manage and use natural resources in an efficient and sustainable manner; conserve nature and biodiversity; and take the initiative in preventing and controlling natural disasters and responding to climate change (Article 63(1)). Moreover, land is constitutionally recognized as a special resource (Article 54(1)), and the state is obliged to allocate and protect use rights for individuals and organizations (Article 54(2)). These constitutional protections eventually led to the creation of the *Environmental Protection Law* in 1993 (amended 2020), followed by the creation of criminal enforcement of environmental destruction under the *Criminal Code* in 2015 (Tín, 2019).

A right to a healthy environment does not explicitly require an SLM approach, but it could be interpreted to imply a duty on government to undertake SLM approaches or a right of citizens to exercise SLM practices. As the constitutions of some 150 states already provide for some form of environmental protection, this may be an obvious place to find existing authority for SLM practices (UNEP, 2019).

Explicit SLM-related provisions can be given force by courts. Courts have increasingly used the rights of nature to halt projects likely to have negative impacts or to require planning to improve the environmental situation. Ecuador in 2008 amended Article 1 of the *Constitution of the Republic of Ecuador* to include the Rights of Nature, recognizing that nature "has the right to exist, persist, maintain and regenerate its vital cycles, functions and evolutionary processes" (Article 1). The Constitutional Court has invoked the provision in upholding a lower court ruling that production of leaded fuel violated federal law and in concluding that degradation of a national park unconstitutionally threatened citizens' rights (Long, 2012). Following a decision in 2018, the Colombian Supreme Court requested the President and government agencies to craft a series of action plans to combat deforestation and the impacts of climate change, with the participation of affected communities. The 2018 decision recognized the legal rights of the Amazon River ecosystem based on the Constitution's Article 79 stipulations of environmental rights. The Court further required Amazon municipalities to form and implement land-use plans that take into account the rights of the Amazon. While these decisions do not necessarily relate to SLM principles, the consideration of national park users in Ecuador and the holistic considerations regarding deforestation, climate change, land use, and local communities in Colombia align well with considerations of SLM.

When environmental laws or policies are insufficient to address environmental harms, such as unsustainable land use, constitutional provisions can provide the basis for courts to require remedies. The *Philippines's Constitution of 1987* mandates that states "shall protect and advance the right of the people to a balanced

and healthful ecology in accord with the rhythm and harmony of nature" (Article II, Sec. 16). Courts applied this provision in a seminal landmark case in 1993, *Oposa v. Factoran* (Baldago, 2012), in which petitioners filed a class suit on behalf of themselves and others of their generation to stop deforestation by asserting that specific permits granted by the Government to cut trees in the country's forests violated the rights of citizens to a balanced and healthy environment. In that case, the Supreme Court ruled that minors could file a class action lawsuit for themselves, others of their generation, and for future generations. Globally, this was the first time that future generations were recognized as having standing to bring claims, and the first time that environmental rights of future generations had been considered and upheld (UNDP, 2014). Many countries have recognized similar rights since.

Constitutions can include citizen suits to allow for individuals or communities to seek redress for environmental harms. While an SLM approach to decision-making necessarily involves relevant land users, oftentimes local communities are left out of the decisions that ultimately cause environmental and social harm in their areas. Citizen suits have arisen around the world to enable public interest groups and communities to enforce rights guaranteed in the constitution.

In India, the *Constitution of 1949 (with amendments through 2015)* places an obligation on the state to "endeavor to protect and improve the environment and to safeguard the forests and wild life of the country" (Article 48(A)). From this constitutional protection, the Government of India has successfully spearheaded a number of procedural innovations, including public interest litigation that allows groups of citizens to file lawsuits claiming broad societal harms and inequities from environmental change (UNDP, 2014). Over the years, the Supreme Court has weighed in on the impacts of industrialization on the ordinary citizen through a series of cases attempting to strike a balance between growth, equity, and sustainability. The Court has also recognized a right to clean air and water.[6] In the *Constitution of the Republic of Uganda of 1995*, a similar enforcement provision allows any person to sue for redress for the violation of any human right, even if they were not personally affected by the violation (Article 50). Public interest groups have used this provision to enforce the rights to a clean and healthy environment. To aid in such suits, the Constitution provides for wide access to state-held information, which can be integral to the success of an environmental case. **Recognizing other elements of SLM, such as land-user-driven decision-making and equal rights, can provide legal grounding for related provisions in SLM legislation.** The Right to equality (Article 14), Prohibition of discrimination (Article 15), and the Right to freedom (Article 19) in the Constitution, are important to SLM because land conflicts that lead to unsustainable outcomes can sometimes be linked to discrimination on the basis of race, sex, social standing, ethnicity, religion, or another attribute.

Specific protections for Indigenous Peoples or indigenous-held lands can help to address equity principles related to SLM. For example, indigenous lands have been recognized in the *Constitution of the Federative Republic of Brazil* since the late 1980s, establishing Indigenous Peoples as original owners of land in Brazil, which remains a strong source of related rights to natural resources (MacLennan and Perch, 2012).

Box 23. Striking a balance

Balancing effective enforcement of environmental rights and maintaining other civil liberties is a delicate matter. For example, the state can declare a state of emergency or remove the right of movement in the name of protecting the natural environment. While well-intended, such provisions are ripe for abuse and need to be clearly limited in order to succeed. It is important to remember that the rights of local communities are integral to SLM.

[6] For example, *M.C. Mehta v. Union of India* (1998 and 1999), and *Murli S. Deora v. Union of India* (2001). For more detail see Cases under the list of References.

Constitutional provisions should be accompanied by other legal instruments supporting SLM. Perhaps the most common challenge for SLM in constitutional law is that the concept is new enough that it is rarely explicitly stated in constitutions. This means SLM principles have to find support in broad language protecting general environmental rights. Descriptive terminology like "clean," "healthy," or "balanced" can add vagueness to the constitutional requirement. Unlike specific interests like housing or medical care, the environment can encompass nearly everything, and nearly everything that happens in society can affect the environment (Daly, 2012).

Some jurisdictions require legislative action to give meaning to constitutional rights. In the United States of America, roughly half of the state constitutions contain a right to a healthy environment in some form. But most of the courts in these states have ruled that these provisions are not self-executing, meaning that without the legislature writing laws to give force to the provisions, they cannot be the basis for a lawsuit or create a duty (UNEP, 2019). As a result, these provisions have had little effect.

It is critical to enact implementing laws and regulations to give form and definition to these rights. Absent such legislation, SLM implementation, like environmental law implementation, may rest with the judiciary (Burns, 2016) and be dependent upon judicial willpower (Howard, 1972). Courts that are unfamiliar with environmental rights provisions may be reluctant to find SLM principles that are not explicitly spelled out, for fear of overextending judicial power (UNEP, 2019). Weak judicial stature and a lack of judicial education about these provisions can greatly affect the utility of constitutional provisions supporting SLM.

Box 24. Key messages | Constitutions

- Where possible, establish legal obligations or rights to sustainable land management (SLM), such as establishing a governmental duty to undertake SLM approaches or a right of citizens to exercise SLM practices.
- Be as explicit as is reasonable when including SLM principles in constitutional provisions, such as by calling for sustainable land and resource management, inclusive decision-making, and access to justice.
- Recognizing some elements of SLM, such as land-user-driven decision-making, equal rights, and freedom from discrimination can provide legal grounding for related provisions in legislation relevant to SLM.
- Give definition to SLM principles when creating laws and policies based on constitutional principles.
- Consider existing environmental constitutional provisions and whether they can be reasonably interpreted as providing authority to undertake SLM practices.
- Complement constitutional provisions with other legal instruments that more clearly address SLM practices and principles.
- Constitutions can include citizen suits to allow for individuals or communities to seek redress for environmental harms.
- Recognizing environmental or sustainability rights can energize government efforts around environmental protections and considerations.
- Explicit SLM-related provisions can be given force by courts.
- Include SLM principles in judicial trainings about various areas of law, including environmental, agricultural, and business law.

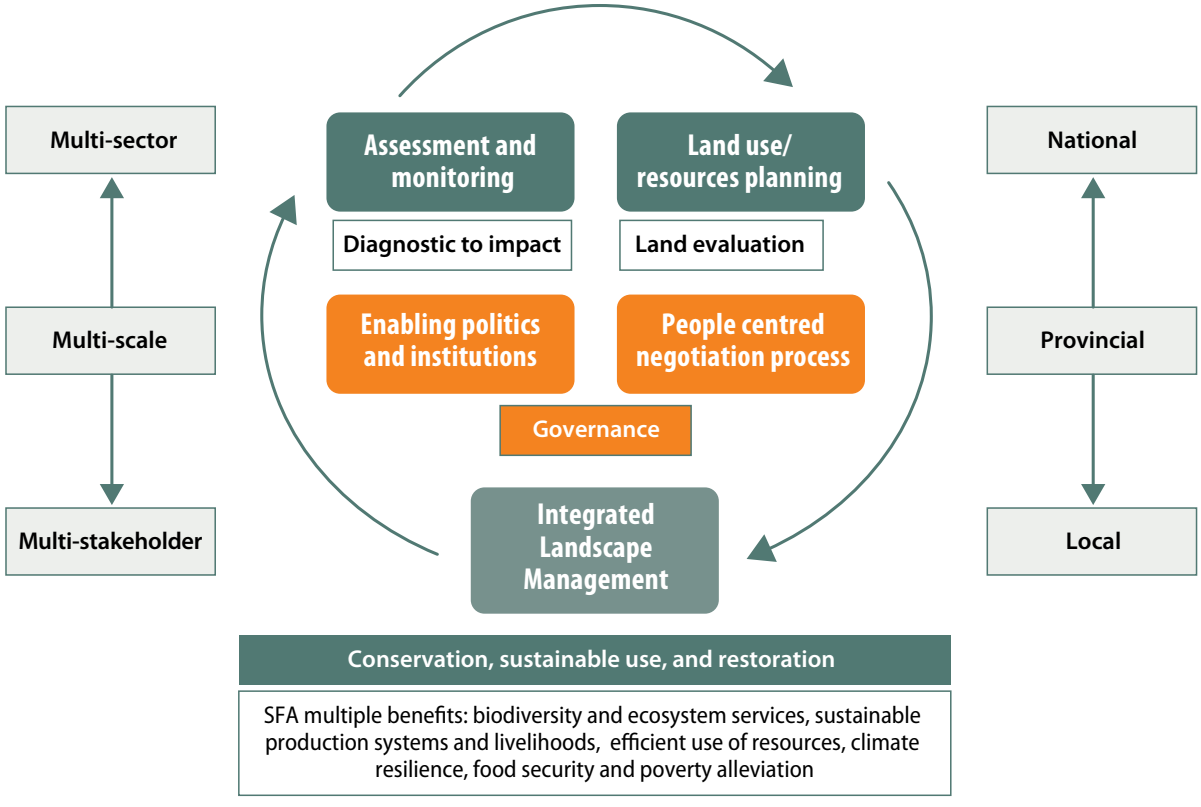
4.2 Land-use law and spatial planning

Land-use laws and spatial planning are foundational elements of SLM. Without undertaking the analysis, dialogue, and planning needed to adopt and implement land-use laws and planning, it is unlikely SLM practices and policies will be effective.

Agenda 21, the comprehensive action plan on sustainable development adopted by over 178 countries, recognizes land-use law as an important vehicle for avoiding degradation of land, soil, natural vegetation, water, and biodiversity (Nolon, 2006). Good land-use governance has the potential to support land uses and human activities that protect the environment, shifting away from trends contributing to degradation and towards sustainability. Land-use legislation and policymaking create the mechanisms to allocate different land uses while balancing competing interests and trade-offs.

In the VGGT, Section 20 is dedicated to regulated spatial planning, which is a decision-making process enabling land allocation to uses that maximize sustainable development and food security (FAO, 2020d). Spatial planning broadly describes planning and natural resource monitoring in a holistic manner. Spatial planning holds the potential to integrate economic, social, and environmental priorities at different scales and for competing uses of natural resources to achieve optimal land uses for evolving human needs (including environmental protection) (FAO, 2020d).

Figure 8. Land resource planning as part of an integrated land resource decision-making process



Source: Ziadat, F., Bunning, S. & De Pauw, E. 2017. *Land resource planning for sustainable land management.* Land and Water Division Working Paper No. 14. Rome, FAO. https://www.fao.org/3/i5937e/i5937e.pdf

National land-use laws, when examined comparatively and over time, exhibit tremendous variability, flexibility, and potential as a vehicle for guiding and enabling SLM decisions (Nolon, 2006). This section reviews the various approaches that policymakers can take in crafting SLM-enabling land-use laws and spatial planning policies. Approaches include formal land use strategies, high-level laws laying out goals and objectives, framework laws establishing governance structures and strategies to tackle land-use problems, laws that employ economic incentives to market-based mechanisms, and spatial planning policies. Lawmakers can pursue, combine, and invent legal strategies to support sustainable land use and management that are well-adapted to their country contexts.

Sustainably using, developing, and conserving land requires coordination of government at all levels and across sectors. Achieving progress on SLM and use requires adjusting governmental arrangements and decision-making to holistically integrate environmental, social, and economic concerns (Nolon, 2006). Local government is a key partner given that it operates close to ground-level land-use realities and provides effective approaches to land use (Nolon, 2006). Local governments play an important role integrating citizens and communities into people-centred planning processes and can hold administrative power over determinations of legal use (and value) of land. Democratic, accountable land-use planning systems contribute to limiting opportunities for state capture, and well-governed land administration bodies can bolster local institutions and good governance (Grover, 2007). Given the interconnected nature of land and natural resource use, other administrative bodies are also responsible for sustainable resource management, and they span multiple sectors such as agriculture, forestry, environment, mining, and water. Integrating SLM practices into land-use laws and spatial planning requires broad consideration of the laws in place and coordination between various government bodies.

Some land-use laws simply provide generic considerations related to land-use plans that must be met. For example, Mauritius' *Planning and Development Act of 2004* sets out three kinds of development plans, namely local plans, area plans, and thematic or subject matter plans. Laws can also provide requirements around periodically revising land-use plans to reflect changes in land situations. In Australia, Capital Territory's *Planning and Development Act of 2007* requires authorities to review territory plans every five years to ensure alignment with objectives and sustainability principles. Either approach can work alongside SLM principles, as both can allow for adjustment to the needs of the land and its users.

Set SLM goals in law or policy. Goal-oriented laws and policies can formalize societal consensus related to SLM, identifying nationally applicable, high-level vision, goals and objectives. Once there is a consensus on overall SLM goals, it can be useful to set that political will to work in committing those goals to national policy or legislation. Initial policies and goal setting may, and often do, precede the development of (or consensus on) more comprehensive law and policy frameworks that envision and operationalize a sustainable land use and management system.

Some states have begun to incorporate SLM principles into frameworks and policies around spatial planning and land use, choosing to adopt SLM as a guiding principle for future laws or interpretation of existing laws. Myanmar's *National Land Use Policy of 2016* commits to environmental sustainability and free, prior, and informed consent (FPIC) principles, important elements of SLM. Sustainable land management is also a stated objective of the Policy, which was designed to be the foundation of a new national land law that has yet to be enacted. Similarly, Liberia is developing a national *Landmark Land Use and Management Framework* which will fill a key gap in land administration, given that Liberian zoning laws and efforts historically "have been either municipal-based (the City of Monrovia Land Use Amendment for example) or sectoral" (Liberia Land Authority, 2019). The Framework aims to guide the formulation of a national land-use and management policy, laying out a roadmap to achieve a more systematic, harmonized system for land-use regulation across Liberia. This is "intended to ensure the sustainable use of land … while conserving the country's natural resource base" (Liberia Land Authority, 2019). Centralized approaches such as this should take care to recognize and adapt elements to cater for important local differences in order to carry out the goals successfully.

Box 25. Ghana and sustainable land management prioritization in land-use planning

In Ghana, before the *National Land Policy (1999)* was adopted, land was managed by different legal instruments, customary practices, and court enforcement. And as acknowledged in the Policy, while this land management approach "was not wrong in itself, it did not provide an overall direction for policy development and therefore did not provide a basis for evaluation and change, where necessary" (Foreword). The Policy provides direction for the "sound management and utilisation of the country's land and water resources" (Preamble). It explicitly states that the policy provides the framework not only for equitable land allocation but also the maintenance of "a stable environment for the country's sustainable social and economic development" (Article 3.0). The Policy's aim is "the judicious use of the nation's land and all its natural resources by all sections of the Ghanaian society in support of various socioeconomic activities undertaken in accordance with sustainable resource management principles and in maintaining viable ecosystems" (Article 3.2) A key policy objective is to "Ensure that every socio-economic activity is consistent with sound land use through sustainable land use planning in the long-term national interest" (Article 3.3). The Policy also provides policy guidelines for dealing with multiple issues, including land use and development, land ownership and tenure security, sustainable social and economic development, and environmental protection.

The *Land Commission Act (1994, repealed 2008)* then established a Land Commission with the objective to "promote the judicious use of land by the society and ensure that land use is in accordance with sustainable management principles and the maintenance of a sound eco-system" and to "ensure that land development is effected in conformity with the nation's development goals" (Article 4).

Source: Ghana. National Land Policy (1999) and Land Commission Act (1994m repealed in 2008).

Other states have incorporated sustainability considerations into land management laws. *Latvia's Land Management Law of 2014* was enacted to promote sustainable land use and protection of land. The Law defines land management as a set of land policy implementation measures whose purpose is "to promote sustainable use of land and protection of land" (Article 1(15)). It lays out land management principles, such as the role local government is to play in land-use planning and provides "for efficient management and sustainable development of natural resources in the spatial development planning documents" (Section 3). Laws such as this one risk failure to achieve SLM goals by not building public participation into planning structures and by putting the onus of sustainable use solely on the land user. Land-use planning has also been included in the *Constitution of the Republic of Ecuador of 2008*, which requires the national government and decentralized autonomous states to adopt participatory policies for urban land-use planning and development to manage urban growth and urban fauna and to encourage the creation of green areas (Article 375).

Promote stakeholder engagement at every level of decision-making. Land-use planning laws and other legal instruments can help formally initiate and frame society-level discussions on SLM. Such laws can create the opportunity for a society to focus on the issue of sustainable land use, to debate the issue thoughtfully and inclusively, and to make principled, strategic decisions. When land-use laws require meaningful stakeholder

Box 26. Sustainable land management challenges in implementing South Africa spatial planning law

The *Spatial Planning and Land Use Management Act (2013)* in South Africa articulates SLM goals but has faced challenges in implementation and enforcement. In addition to harmonization issues arising from conflicting provincial laws, there have been critiques that "zoning as a land use management tool," employed in the Act, is "exclusionary and socially, economically, and environmentally unsustainable" (Nel, 2015). While the Act intends to serve present and future generations, the government's failure to adequately consult with communities led to resistance from traditional authorities (Custom Contested, 2021). Introduction of land-use management in informal settlements has also proven difficult. To address some of these challenges, states should work with customary institutions and traditional authorities to develop plans in a manner respectful of the unique nature of customary land rights. More broadly, public participation is key for an SLM approach to land use and spatial planning.

engagement, they can be designed to convene diverse stakeholder groups, create administrative bodies to oversee land management and planning, or otherwise regulate dialogue on sustainable land use. Successful land use and spatial planning requires knowledge of local needs, resources, and constraints; incorporating SLM considerations into land-use decisions will help to emphasize the importance of land users and other stakeholders in those decisions.

Laws can serve to structure the form of public engagement. For example, Cabo Verdes' *Legislative Decree on Urban and Spatial Planning of 2006 (amended 2010)* provides parameters for participation within the planning process. Citizens have a right and responsibility to participate in reviewing, developing, implementing, and enforcing land management instruments.

At its best, spatial planning integrates relevant economic, social, and environmental priorities at different scales and effectively manages competing land and natural resource uses to achieve optimal land use for current and future generations. However, there are often ingrained institutional, political, social, and economic factors at play that complicate spatial planning. Authority over land is often distributed among various ministries and across levels of government, meaning that efforts to centralize or coordinate planning can meet resistance. Managing public consultations and participation in planning adds another element of difficulty. Designing a land-use planning system that integrates SLM principles requires careful consideration of existing authorities and interests and either adaptation to that context or revision of the framework.

Adopt a participatory approach to spatial planning. There is a need to ensure that all citizens (regardless of their gender, ethnicity or race, age, etc.) are able to participate meaningfully in land-use planning (FAO, 2020d). This applies to both developing land-use laws and policies and to implementing them. A core principle of SLM is the integration of participatory mechanisms that are consultative, user-driven, and give sufficient time and information for stakeholders to review land-use planning proposals and provide input. Engagement of the public is particularly critical in land-use planning processes as they need to be amenable to the changes, or lack of change, that the planning process portends in order for the plans to meet with public acceptance. Failure to take a participatory approach to spatial planning can enable discriminatory decisions that are difficult to reverse.

Land-use planning processes and plans are also aimed at the local level. For example, in the United Republic of Tanzania, its *Guidelines for Participatory Village Land Use Planning* supports village land-use planning (VLUP) across all relevant land-related sectors and focuses on sustainability (National Land Use Planning Commission, 2020). The Guidelines provide instruction to local governments on how to deploy integrated land-use planning as a vehicle for allocating land for different sectoral uses and how to create goals for sustainability and gender equality (National Land Use Planning Commission, 2020). In the United Republic of Tanzania, there are scant published case studies on the impact of local land-use plans. However, field research conducted in Arusha suggests that in certain cases completing VLUP improved village governance and increased enforcement of land-use planning by-laws (in cases that had received external support) (Huggins, 2016).

Box 27. Environmental stability in spatial planning

In Uruguay, the *Law No. 18.308 on territorial planning and sustainable development of 2008* recognizes that environmental sustainability and considerations of equity and social cohesion are key principles of spatial planning (Article 5). The Law promotes decentralization of spatial planning to the regional and local levels, recognizing the unique needs and resources of each place (Article 5(c)). Promotion of public participation in the development and use of planning instruments further incorporates sustainable land management principles into Uruguay's guiding law on land use and spatial planning. The Law outlines the duties of both individuals and communities to protect the environment as well as the rights of those individuals and communities to contribute to decision-making and access information.

In Simanjiro district, a village implemented the VLUP guidelines, and it contributed to facilitating village agreement on land-use zones and by-laws, including enforcement mechanisms. The local plans helped resolve conflicts, harmonize boundaries, and distribute land titles to villagers (beginning with widows) (FAO, 2009a). In Laos, participatory land-use planning has improved the confidence of villages in land management; planning also helped secure land rights and settle land-use conflicts (IFAD, 2014).

Consider social needs in addition to environmental and economic needs. Land-use law may also regulate urban informal settlements and shelter for economically disadvantaged groups. Informal settlements are a critical and distinct element of town and country planning, and urban land-use laws can include a proactive focus on individuals' shelter needs, improving these neighbourhoods, and meeting needs around jobs and services. These laws can also require addressing illegally occupied housing by squatter illegal occupancy and residents of slums who are marginalized and isolated from mainstream urban populations (Nolon, 2006). Brazil's Statute of the City addresses this issue by granting property title to urban squatters who meet certain conditions (e.g. landless, uninterrupted occupancy for five years) (Nolon, 2006). Namibia's *Flexible Land Tenure Act of 2012* creates simpler, cheaper alternative forms of land title, provides tenure security for those living in informal settlements, and economically empowers these individuals through these rights (Article 2).

Ensure coordination across sectors and levels of government. The substantial coordination required to achieve SLM and land use may require restructuring institutional arrangements and decision-making (Nolon, 2006). This often includes the creation of a national authority or focal point for land management. For example, in Liberia, the Land Authority Act created an autonomous national entity that centralized land governance (including land management), and now the entity can work across ministries and sectors to advance a comprehensive land policy in the direction of sustainability. Integrating frameworks across sectors and stakeholders such as this are necessary to the development of SLM decision-making.

Some restructuring can focus on the availability of information and resources to support integration of SLM principles. In the Bahamas, for example, the *Spatial Data Infrastructure Act of 2014* reforms the country's system for geospatial data collection and storage. It creates the Bahamas National Geographic Information Systems Centre as the government's technical focal point for geospatial data collection and management. The Act includes land use and zoning as one of its spatial data themes. Other relevant themes include land cover, soil, vegetation, watershed boundaries, state-owned lands, land ownership status, settlement boundaries, and protected areas.

Adequately weigh competing interests. Spatial planning balances competing interests, meaning that it supports SLM by creating a common vision for future land use and dispute resolution processes where competing uses clash. For example, in Mauritius, the *Environment and Land Use Appeal Tribunal Act of 2012* establishes a Tribunal that has the competency to resolve disputes arising under the *Town and Country Planning Act*, the *Environment Protection Act*, and the *Local Government Act*, among others. The Act lays out procedures for tribunal proceedings and appeals. In Mozambique, the *Resolution Approving the Statute of the Community Land Initiative Foundation (iTC-F) of 2016* establishes the Community Land Initiative Foundation and charges it with the responsibility to manage land and natural resource-related conflicts, to encourage community participation in the benefits of land and natural resource use, and to promote sustainable land and natural resource use by local communities – including adherence to environment measures.

Land-use planning often adopts an expert-driven approach, which can be costly and time-consuming. While this approach can result in high-quality plans, it can also result in failure to implement or update the land-use plans over time (FAO, 2024a). Adopting a fit-for-purpose land-use planning approach can help to identify the key needs for local land-use plans and ensure that those elements of planning are carried out. This can be a more sustainable approach in areas with limited resources.

Box 28. Key messages | Land-use law and spatial planning

- Taking stock of how land-use principles and authorities are spread across ministries, agencies, and levels of government can help to create a clear map of where SLM principles need to be integrated.
- Ensure coordination across sectors and levels of government.
- Consider social needs in addition to environmental and economic needs when developing land-use plans.
- Involving land users and other local stakeholders in spatial planning exercises is an essential first step to integrating SLM considerations, and such efforts should take into account gender and social inclusion.
- Set SLM goals when creating new land-use or spatial planning law or policy.
- Existing land-use and spatial planning laws and regulations may provide adequate authority to create SLM policies and frameworks and may provide a vehicle for integrating SLM principles into national, regional, and local land-use planning.
- If the legal framework is lacking support for sustainability principles, consider developing legislation that defines land management principles, the role of local government, stakeholder participation, and mechanisms for efficient and sustainable use of land and natural resources.
- Adequately weigh competing interests when engaging in spatial planning exercises.
- Periodically review and revise land-use plans to reflect climate change impacts, land degradation, changing land use needs, and other factors.

4.3 Tenure and land rights

The VGGT offer a framework for governing tenure in line with SLM principles. The VGGT objectives include improving governance of tenure of land for the benefit of all, including "an emphasis on vulnerable and marginalized people, with the goals of food security and progressive realization of the right to adequate food, poverty, eradication, sustainable livelihoods, social stability, housing security, rural development, environmental protection and sustainable social and economic development" (p. 1). While not all of these topics are obviously related to SLM, they are integral elements of building a sustainable tenure structure that respects all legitimate tenure rights, which in itself is important to SLM.

The VGGT also states "How people, communities and others gain access to land, fisheries and forests is defined and regulated by societies through systems of tenure. These tenure systems determine who can use which resources, for how long, and under what conditions. The systems may be based on written policies and laws, as well as on unwritten customs and practices" (p. iv). The ways that tenure decisions are made – and the desired results of tenure security and equitable land access – are key elements of SLM. Tenure security is defined as a degree of "certainty that person's rights to land will be recognized by others and protected in cases of specific challenges" (FAO, 2002a). Secure tenure is a prerequisite for SLM, as uncertainty related to land rights can lead to unsustainable use, can prevent users from pursuing long-term sustainable practices, and can drive land conversion detrimental to ecosystem health.

Ensure that tenure rights are clear and secure. The security of tenure can be measured through a range of dimensions, such as whether the rights are recognized by national law, whether rights are documented, the duration and enforceability of rights, and the vulnerability of the right to change based on residence, social status, marriage status, religion, or community leadership. Perception of tenure security, which can vary based on information access, relationships with local government, education of rights and responsibilities, and community pressures, can also affect SLM. Many of the same constraints regarding the uptake of SLM techniques occur both with perceived tenure insecurity as well as legal tenure insecurity. Clear tenure governance can help to avoid both problems.

When tenure rights are secure, the probability that the rights holders would be able to enjoy the return on a land-based investment is enhanced. Secure tenure is also a strong factor in the ability to access credit. Research shows that rights to transfer land have a positive correlation with visible investments such as tree planting, and those visible investments affect the value of land. Additionally, the duration of occupancy on land is positively correlated with invisible investments such as soil conservation and soil fertility (Vu and Goto, 2020). A study in Uganda also revealed that long-term investments were more frequent in registered land (Schurmann *et al*., 2020). In Ethiopia, farmers apply more long-term soil fertility management practices, such as compost or manure, on their own parcels and short-term soil fertility management on shared or rented parcels (Teshome *et al*., 2014).

Insecure land tenure has a connection with poor land use, which leads to environmental degradation and ultimately threatens food security and nutrition. Studies have shown that tenure insecurity has greater impact on benefits that accrue over a longer period of time, thus discouraging investment decisions on tree planting, irrigation, and conservation measures (McCulloch, Meinzen-Dick and Hazell, 1998; Asaag, Hirons and Malhi, 2020). One study in Angola shows that the absence of title deeds discourages investment in drainage and excavation (Fenske, 2011). Furthermore, where tenure is insecure or the rules are unsuitable, forest clearing is used as a strategy to lay claims to land, and grassland or forestland become open-access resources that suffer from over-use. A study in Brazil indicates that frontier Amazonian forests are cleared more rapidly in areas where land ownership is uncertain (Araujo, 2011).

Overlapping tenure regimes and inadequate administration of the different access mechanisms to natural resources can adversely affect the ecosystem and biodiversity, resulting in over-harvesting and over-exploitation. In Kenya, several tenure rights were identified in the Arabuko Sokoke Forest Reserve, including use rights, access rights, the rights to livelihood earning through direct or indirect use of resources, exclusion, alienation, and management rights (Bendzko, 2019). Multiple stakeholders, including local communities and the Kenya Forest Service, have overlapping rights. As further noted by Bendzko (2019), due to a lack of management of these different tenure arrangements, the manners in which stakeholders use and manage their rights have led to biodiversity changes, including overharvesting, habitat alterations and pollution, uncontrolled access, over-exploitation of biodiversity, and poor conservation.

Failure to carry out land demarcation and titling can reflect a lack of technical capacity, as land titling is expensive in terms of human resources, professional knowledge, technology applications, and time. Developing a fit-for-purpose approach to land administration and safeguarding tenure rights can help to avoid some of these pitfalls. FAO's Governance of Tenure Technical Guide No. 10, *Improving ways to record tenure rights* offers general advice on ways to improve the recording of rights (FAO, 2017f). Technical Guide No. 5, *Responsible governance of tenure and the law: A guide for lawyers and other legal service providers* provides specific guidance on how to use the law to promote responsible governance of tenure, focusing on appraising legal frameworks, preparing or revising legislation, ensuring that legislation is duly implemented, and using the VGGT in the context of dispute settlement (Cotula *et al*., 2016). Corruption can spoil even the most robust frameworks, so understanding of the operating environment is important for analysis.

Clearly communicate tenure changes to land users and require that decisions impacting tenure are made in consultation with local communities. Sustainable land management is dependent on land-user and community-driven decision-making. Land management tools such as land consolidation or land banking can be beneficial to increased sustainability, but they can also be harmful if the intentions, scope, and possible impacts are not carefully discussed with communities prior to action. Buy-in from local communities, specifically those whose land might be directly impacted by the use of a land management tool, is essential to successfully carrying out tenure changes. Lack of transparency in this regard can lead to animosity between local communities and government bodies, breaking down relationships that can be vital to communication of SLM techniques.

A study in the northern uplands of Viet Nam found that farmers who were affected by land readjustment had a low level of trust in the land institutions. Possession of formal land titles positively influenced the adoption of soil conservation practices, but the insecurity stemming from reallocations discouraged such adoption (Saint-Macary *et al*., 2010).

Similarly, changes to laws that will affect the rights of land users should be clearly and promptly communicated. Ideally, land users should be involved in the policy discussions leading up to those changes as much as possible.

Safeguard customary tenure structures to protect land and respect communities. It is widely accepted that local communities and Indigenous Peoples still face endemic challenges to having their customary tenure recognized, formalized, and protected. Some countries do not recognize customary rights to land and instead establish state ownership and authority to manage such land. In addition to perpetuating tenure insecurity, the failure to recognize and safeguard customary tenure structures can lead to distrust between the government and local communities to the detriment of SLM.

In the context of increasing global demand for land and natural resources, recognition of customary tenure rights can help to safeguard potential for SLM, as the land and decisions for it remain within the local community. Land acquisitions by companies, sovereign states, and local elites in the scramble for land can result in exploitative land use incompatible with SLM, such as monoculture agriculture, extraction, timber, and infrastructure projects carried out at the cost of local people and communities. Where land acquisitions occur, problems such as dispossession and displacement of communities and negative environmental effects often result (Peters, 2012).

Landowners in Brazil are incentivized to clear forests preventively to increase productive use of land and enforce their rights against squatters; deforestation thus became a strategy to offset landowners' exposure to potential expropriation (Araujo, 2011). The lack of land tenure security, compounded by ineffective or unenforceable tenure regulations, has contributed to a high rate of deforestation of the Amazon rainforest. In fact, a study in the Brazilian Amazonian forests observes a significant decrease in deforestation in territories with full property rights, while such an effect is not observed in territories without full property rights (Baragwanath and Bayi, 2020). In this way, adverse possession regulations that allow squatters to claim another's land through productive use can lead to deforestation or unsustainable overuse of land.

Box 29. Challenges arising from partial recognition of customary tenure in Cambodia

The Cambodian *Land Law of 2001* recognizes "Indigenous Community Properties" as owned collectively by a qualifying indigenous group (Article 26), and such land or right of use cannot be alienated outside of the group (Article 28). This is designed to ensure that Indigenous Peoples can continue living on the land and carry out traditional practices. However, while the government has promoted tenure security through the Indigenous Communal Land Titling programme, the Law does not effectively recognize community's customary rights over forests. According to the *Sub-Decree on Registration Procedures of Indigenous Communal Land of 2009*, forests cannot be included in communal titles because forestland is classified as "State Public Property" (Land Law, 1992, Article 15) (Ironside, 2017). Instead, the *Sub-Decree on Community Forestry Management of 2003* grants user rights, called community forestry (CF), to communities for 15 years on a renewable basis. Deforestation and overuse of forests have been observed. Since customary rights to forests are not recognized, forests can be cleared and taken over by private companies under Economic Land Concessions (ELCs) granted by the state (FAO and MRLG, 2019). An Independent Forest Sector Review conducted in 2004 found that most CF areas are in degraded forest areas whereas the best forest areas are most often allocated for ELCs (Diepart and Thol, 2018). The granting of CF is a multi-step process that is time-consuming and technically challenging for local communities; until CF is granted, it is difficult to enforce exclusive user rights against outsiders, which ultimately leads to overuse of the forests (Ironside, 2017). Fifteen-year tenure rights may be too short to incentivize long-term planning; forest users may not be able to reap the benefits of planting and conservation of trees if their use rights are not renewed.

Increasing evidence also suggests that granting secure land rights to local communities and Indigenous Peoples is crucial in curbing land degradation and deforestation and protects biodiversity (Dooley and Stabinsky, 2018). Since a substantive portion of forest carbon is stored in areas where tenure rights of Indigenous Peoples and local communities are not formally recognized (Rights and Resources Initiative, 2018), improving their tenure security can have a profound impact on mitigating climate change.

However, recognition of customary tenure is not enough to ensure tenure security. Even where customary rights are recognized, formalization of community tenure can be inaccessible, time-consuming, technically challenging, susceptible to issues of corruption, and carry restrictive conditions. Moreover, since registration is not a guarantee or panacea to tenure security – even if documented, enforcement can be piece-meal and costly to those seeking to secure their rights – recognition is an important, but not sufficient, step towards tenure security. Without documented, secure, and enforceable tenure rights, Indigenous Peoples and local communities may be further marginalized, and their potential as good stewards of land circumvented or reduced (Notess *et al*., 2018), to ill effect for SLM goals. The FAO Governance of Tenure Technical Guide No. 9, *Creating a system to record tenure rights and first registration* offers guidance on developing a system to register land users not previously within the formal tenure structures (FAO, 2017g).

Ensure gender equality across tenure interventions and laws. Gender issues are frequently overlooked in the intersection of tenure and SLM and require gender-sensitive approaches as discussed in Section 3.4.1. Women have less access to land than men in all regions around the world, but evidence shows that women are crucial stakeholders in improving agricultural productivity, reducing poverty, and adopting sustainable measures to build climate resilience (FAO, 2002b). Recognizing women's claims and granting them titles to land is a starting point; legal and policy deliberation must also take into consideration barriers such as illiteracy, lack of identity documents, polygamy, and customary and social norms, in order for women to acquire effective tenure security (Giovarelli and Scalise, 2019).

The Government of Rwanda launched a major land tenure regularization programme in 2010, through which almost 11 million parcels were demarcated (Ali *et al*., 2015). The programme stressed the importance of listing women's names on tenure documents. A study found that, when given the opportunity, Rwandan women with regularized land rights increased their investments in soil conservation measures at the same or higher rate than men (Ali, Deininger and Goldstein, 2014).

Failure to uphold women's equal rights to tenure can have deleterious effects on SLM. A study in Malawi shows that customary bias against women in the inheritance of land has negative impact on soil conservation investments (Lovo, 2016). As recommended in the VGGT, national legislation, policies, and programmes should ensure that women have equal ownership to, or control of land and resources. This requires mainstreaming gender equality in national and regional land laws and land administration, such as treating women as direct recipients in land allocation programmes, listing women's names in land titling initiatives, and empowering women in land-related decision-making. States and local governments should work with traditional authorities to encourage recognition of women's land rights, both to improve implementation of the laws and to help ease social and cultural tensions. FAO Governance of Tenure Technical Guide No. 1, *Governing land for women and men*, provides guidance supporting gender equality in tenure governance, focusing on equity and how land tenure can be governed in ways that address the different needs and priorities of women and men (FAO, 2013). Pathway 3 of the *Technical Guide on the Integration of the VGGT into the UNCCD and LDN* contains several useful suggestions on improving women's land tenure security at the national and local levels (FAO and UNCCD, 2022).

Young people may also find it more difficult to obtain access and rights to land. Shortage of land, cultural biases against young people, lack of power and status in communities are major obstacles for young smallholder farmers to secure land rights. Nevertheless, young people, including young women, hold the future for SLM and the actions on climate change. Therefore, land laws, policies, and institutions should recognize and protect youth's land rights and develop measures to provide access to land for youth. These measures can include giving youth equal inheritance rights, designing community agreements to transfer land to young people, and developing land markets.

Box 30. Key messages | Tenure and land rights

- Use the *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGT)* as a framework for analysing tenure rights in line with sustainable land management (SLM) principles.
- Ensure that tenure rights are clear and secure, as recognizing smallholder tenure rights can improve uptake of SLM techniques.
- Safeguarding customary tenure structures and recognizing Indigenous Peoples' rights is important to SLM principles and sustainability more broadly.
- Clearly communicate tenure changes to land users and require that decisions impacting tenure are made in consultation with local communities.
- Land registration programmes and provisions should ensure gender equality and social inclusion, including through temporary special measures and reporting on progress towards SDG 5.a.2.
- Consider the needs of young people, including young women, in land tenure systems. Develop measures to provide equal inheritance rights, facilitate land transfers to young people, and create opportunities for youth in land markets and the agricultural sector.

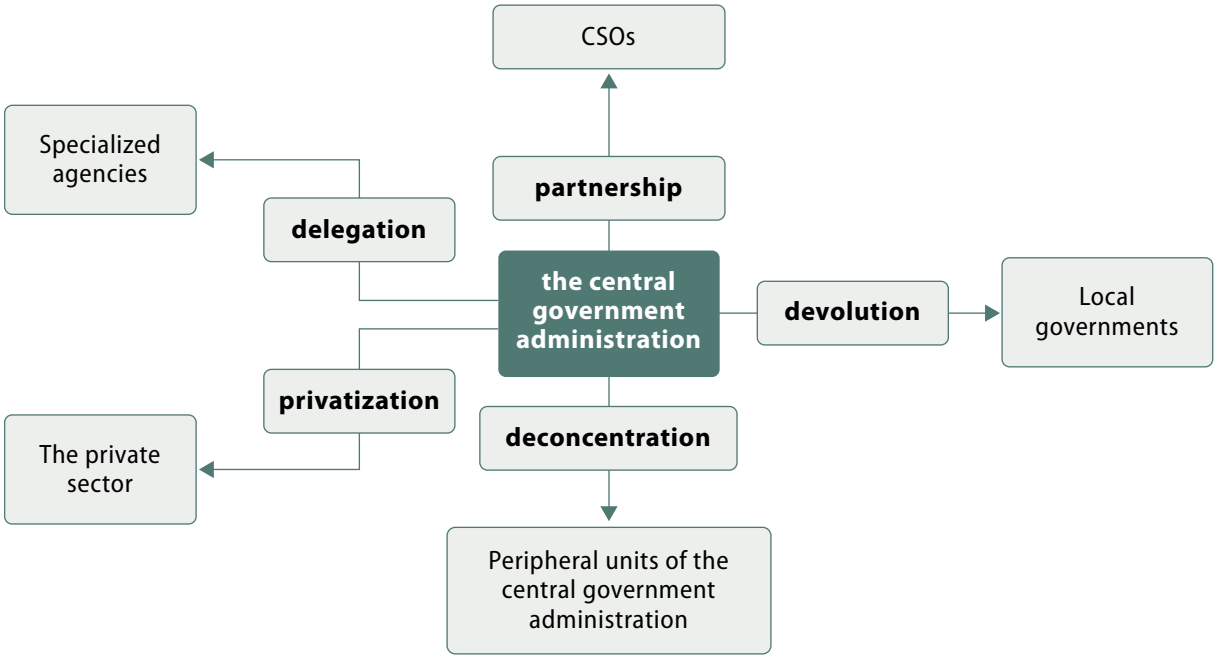
4.4 Forest management

Forests, comprising 31 percent of the Earth's land area, are undoubtedly essential to human well-being, sustainable development, and the health of the planet (FAO, 2020e). Forests play many roles – they not only generate oxygen and store carbon dioxide, provide wildlife habitats, and host biodiversity, but they also provide vital resources for humans, such as water, fuel, food, timber, and medical herbs for people living near or afar. However, forests are being lost at a rate of 13 million hectares each year, resulting in devastating ecological, economic, and social impacts (FAO, 2008). In this context, sustainable forest management (SFM) is a necessary counterpart of SLM. The SFM principles mirror the SLM principles: balancing the needs of the environment, economic development and wildlife and biodiversity conservation for the benefit of both present and future generations (FAO, 2023g). Key SFM elements examined in this section include afforestation, deforestation, and community management of forests.

Many countries have enacted forestry laws that share common goals of restoring forests and preventing deforestation through afforestation programmes, promoting local engagement, and protecting forests from over-exploitation. Despite the substantial progress made towards SFM globally, its implementation and enforcement still vary across regions. Clear and equitable laws on forest tenure and effective enforcement are both instrumental in achieving SLM.

Build or strengthen structures for multilevel administration of forests. States commonly exercise control of forests through centralized administrative agencies, such as forest departments. Given that forest management is a technical matter, forestry authorities are sometimes independent agencies and enjoy great autonomy. Decentralization and devolution have also been common in forest management. In decentralization, the administrative responsibilities are transferred to regional or local offices within the same department; in devolution, power to make decisions is relocated away from the central point, sometimes even outside the government. Any of these administrative structures can be conducive to SFM if there is significant communication between levels of administration.

Figure 9. Forms of decentralization



Source: Smith, L.D. 2001. *Reform and Decentralization of Agricultural Services: A Policy Framework*. Rome, FAO.

In India, forests are governed by the Ministry of Environment and Forests at the national level and by Forest Departments at the state level. The *National Forest Policy of 1988* led to the establishment of joint forest management (JFM) in which the state-level Forest Department and village-level organizations jointly manage forest resources (Singhal, 2020). This joint management structure, although at risk of gaps in implementation due to lack of clarity about shared duties, enables land-user-level decisions to be informed by state-level considerations and vice versa. Such a structure is well suited to the SLM principle of participatory decision-making.

Adopt a community-based forest management approach. It is estimated that more than 500 million people, including Indigenous Peoples, are directly dependent on forests (White and Martin, 2002). Since the 1980s, forest governance has been shifting away from the centrally administered, top-down approach as a response to social justice for Indigenous Peoples, the need for local economic development, changing conservation approaches, and weak state governance. Participatory forest management supports SLM by emphasizing the consultation, consent, and empowerment of local stakeholders in resource management.

The United Republic of Tanzania and the Gambia are pioneers in participatory forest management (PFM) and have established well-developed processes for community participation. In the United Republic of Tanzania, the *Forest Act of 2002* provides a clear legal basis for PFM – it allows local communities to establish forest reserves and manage or co-manage forests (Article 32). Under the Act, the village council is fully responsible for managing village land forest reserves according to a village management plan made as a result of a participatory process. Such management plans prescribe duties of the village to conduct forest management and operate in a sustainable way while meeting villagers' needs for forest products (Group, 2004). The rights holders of the village land retain ownership to the trees but must conduct forest management according to the management plan. Where forest reserves are established on non-village land, villagers may enter into JFM agreements to share responsibilities with government or other forest owners, and participating villagers receive compensation through fines collected on illegal activities (Ministry of Natural Resources and Tourism, 2008).

Like the United Republic of Tanzania, the Gambia also strongly promotes PFM and the empowerment of communities. The *Forest Act of 1998* established the concept of community forestry under which the state transfers ownership of forest land to an interested local community. The community is evaluated after going through a training and probation period. Once it acquires the gazetted community forest, the community enjoy full ownership and decision-making power over forest management (Bongartz, Cham and Schade, 2003). Prior to this, The Gambian Forest Management Concept introduced Community Controlled State Forests (CCSF) as an intermediate step to community forests (Schindele, 2001). In the *Forest Act of 1988*, a CCSF is defined as a forest reserve jointly managed by the Forest Department and a forest committee consisting of interest groups in the communities (Article 59) (The Gambia, 1998). Under a CCSF, no ownership rights are transferred but communities have all operational powers to manage forests according to management plans (Schindele, 2001). Malawi's *National Forest Policy of 2016* also expressly prioritizes sustainable management of indigenous forests and aims to invite more local community participation (see Section 3.2) (The Gambia, 2016).

Community-based approaches can be very successful. Some examples have improved the livelihoods of the communities and facilitated community participation in forest governance (Matose, 2008; Rainforest Alliance, 2018). But weak institutional support and failure to provide stable and practical guidance on implementation have undercut some approaches. Similarly, when the roles and powers of local communities are limited, the approach may be ineffective and prone to disputes. When communities' roles have been limited, such as only allowing collection of forest products in designated peripheral areas without ownership, control or meaningful input into management, conflicts between communities and managers can emerge and cause negative environmental impact and erosion of trust in managers (Matose, 2008).

Take steps to manage and slow deforestation. Deforestation generally occurs when forests are transformed to non-forest uses, which damages biodiversity, habitats, and ecosystem and livelihood services (FAO and UNEP, 2020b). Deforestation in most cases is problematic for SLM, as forest land is degraded and the replacement land-use puts more strain on the ecosystem and local communities. Slowing deforestation can be achieved through a range of tools, including strengthening tenure rights, tightening enforcement measures, banning logging, incentives for conservation such as Payment for Ecosystem Services (PES) schemes, permit requirements, and land-user education.

Timber logging is the main driver of deforestation in tropical Asia and Latin America and has been addressed by stringent regulations by many countries. Permits and quotas are the two common approaches to regulate forest clearing and tree felling. For instance, the *Philippines' Forest Resources Act of 2013* has stringent rules banning commercial logging (Section 29). Over 20 policies on logging bans and moratoria were imposed across 46 provinces between 1970 to 2000 (Bugayong, 2006). However, the logging ban sent a chilling effect to the forest industry with substantial loss of jobs and may have inadvertently put remaining forests under heightened extractive demands from displaced workers and forest-dependent communities (Bugayong, 2006). Strict logging bans and moratoria are a common approach to address deforestation, but they need to be carefully planned and implemented with alternative livelihoods provided to affected communities and groups, which is a central tenet of sustainable management of any resource. Bans or prohibitions that are likely to face widespread public opposition create the potential for unrest and undermining the rule of law.

Some countries issue permits or quotas to manage logging. In China, the *Forestry Law of 2019* strictly limits forest harvest and requires provincial states to prepare annual quotas under the principle that consumption must be lower than growth (Article 54). Such a quota system can also differentiate between forests in nature reserves, public forests, and commercial forests. Harvest in nature reserves is banned completely, and harvest in public forests is only allowed to the extent necessary to carry out tending and regenerative functions, except for felling for protective purposes (Article 55). In Cambodia, the *Law on Forestry of 2002* requires permits to be obtained for harvesting forest products and by-products for commercial purposes(Article 24),

and an environmental and SIA plan must be prepared prior to the issuance of such harvest permits (Article 19). As an exception, local communities do not need permits to sell forest by-products if the activities "do not cause significant threat to the sustainability of the forest" (Article 40). Permit structures such as these are less punitive and can allow for sustainable harvesting of timber that can be essential for rural livelihoods. While logging bans may be more in line with conservation goals, harvesting quotas and exceptions for local community use are a better fit for SLM if implemented equitably.

The REDD+ forest management or legislation that prohibits activities through bans or licensing and enforcement may not be enough to address drivers of deforestation and forest degradation. Adequate legal instruments should be designed to contribute to relieving human pressure on forests without compromising poverty alleviation and economic development targets. Economic incentives provided by REDD+ certainly contribute to that purpose. In Viet Nam, in addition to allocating lands, the Government of Viet Nam also establishes civil contracts with owners over forested lands, which could contribute to harmonizing interests in land use (*Decree 01/CP of 1995* as amended in 2005 into the *Decree 135/2005/ND-CP*). These decrees regulate the assignment of land for the purposes of agriculture, plantations, agro-forestry and aquaculture farming (FAO, UNDP and UNEP, 2013a).

Box 31. Endorsing land-use reforms to reduce deforestation and degradation in Peru in the context of the UN-REDD Programme

It is widely acknowledged that the Agriculture, Forestry and Other Land Use (AFOLU) sector plays a central role in food security and sustainable development in every country. At the same time, the sector is responsible for almost one-quarter of global greenhouse gas emissions. The *Paris Agreement* requires individual countries to reduce emissions through climate action plans, called Nationally Determined Contributions (NDCs). The fact that more than 85 percent of developing countries refer to AFOLU measures for climate change mitigation and adaptation in their NDCs, clearly reflects the importance of this sector in national efforts to tackle climate change. Indeed, a number of NDCs include measures to reduce deforestation and forest degradation, which are to be implemented outside of the forestry sector. These include actions such as investing in sustainable, inclusive and productive agricultural development, agroforestry, and rural finance, and in managing natural resources more sustainably. The area of policy and legal reforms is one example where intersectoral collaboration is fundamental. For instance, in Peru, evidence suggests forests are more vulnerable to conversion where forests are not classified.

In Peru, land is zoned based on its Major Use Capacity (*Capacidad de Uso Mayor de Tierras* or CUM in Spanish). Under the *Forest and Wildlife Law* adopted in 2000, land-use changes are prohibited in areas where its Major Use Capacity is forestry (e.g. protected forest lands). Regulations and procedures have been established to ensure these prohibitions.

A country analysis covering the period from 2000 – 2014 confirms that 50 percent of the deforestation in Peru occurs in forest areas where the tenure regimes are unclear; this involves approximately 20 million hectares. However, despite the adoption of the *Forest and Wildlife Law*, there are still several challenges ahead for tenure provisions to be effectively implemented. The Ministry of Environment (MINAM), Ministry of Agriculture (MINAGRI), the Forest Service (SERFOR), and Regional Governments (GORES) have joined efforts to overcome these challenges. Significant progress has been made, thanks to the latest collaboration between these organizations and the Food and Agriculture Association of the United Nations (FAO) through the United Nations–Reducing Emissions from Deforestation and Forest Degradation (UN-REDD) Programme. The collaboration supported the development of an in-depth analysis of land-use legislation focusing on the administrative acts/permits authorizing land-use changes from forest areas to other purposes such as mining, expansion of agricultural lands, and infrastructure. The interagency panel (MINAM, MINAGRI, SERFOR, FAO) has played an important role in ensuring the validation of the results of this analysis by key national counterparts. The analysis collected relevant data and information from the regions of Ucayali and Loreto.

Source: Felicani-Robles, F. 2018. *Endorsing Land Use Policy Reforms to Reduce Deforestation and Degradation in Peru.* UNREDD Programme Blog. Available at: https://www.un-redd.org/news/endorsing-land-use-policy-reforms-reduce-deforestation-and-degradation-peru. Accessed on 6 May 2025.

Box 32. Forest cover change definitions

Afforestation is the conversion from other land uses into forest, or the increase of the canopy to above a 10 percent threshold.

Reforestation is the re-establishment of forest formations after a temporary condition of less than 10 percent canopy cover due to human or natural effects.

Forest improvement is the increase of the canopy cover or stocking within a forest.

Both logging bans and permitting schemes are unlikely to fully halt illegal deforestation. Enforcement of permitting and quota systems is central to their success. Countries that require clearing permits typically penalize offenders who conduct unauthorized logging. In China, under the *Forestry Law*, illegal logging is punished by a fine and by making the perpetrators replant no less than one time but no more than five times the number of trees felled illegally (Article 76). In Cameroon, logging without authorization or in a communal forest may attract a fine or imprisonment. While punitive enforcement measures are one important tool, it is also important that enforcement occur in a timely manner and be widely publicized to ensure its effectiveness (FAO, 2005).

Enable or encourage afforestation and reforestation. When implementing SLM, restoration of lands to forest uses is an important tool. Many countries incorporate afforestation and reforestation into their forestry laws and policies. These frameworks articulate who has responsibilities to afforest/reforest, what land should be afforested/reforested, and what measures should be taken to afforest or reforest. In the Philippines, *Presidential Decree No. 705 of 1975* required that certain public forest lands should be reforested (Section 33) (Philippines, 1975). In Bulgaria, under the *Regulations for Implementation of the Law for the Forests of 2004*, afforestation is regulated according to a ratio between area covered by forest and the total area of the territory (Article 25).

As forestry is intertwined with legal and social issues, afforestation programmes need to take into consideration factors such as land tenure, communal rights, and livelihoods of different stakeholders (Haupt and von Lupke, 2007). In the Philippines, under the Enhanced National Greening Program,[7] the Department of Environment and Natural Resources (DENR) adopts a "family approach" in which it signs contracts with individual families to develop a parcel of forestland between 1 to 10 hectares for three years (Start Here PH Web Portal Services, 2020). In Pakistan, the *National Forest Policy* promotes the implementation of nationwide mass afforestation programmes (see Section 2). The Khyber Pakhtunkhwa government successfully implemented the "Billion Tree Tsunami Afforestation Project", which restored 350 000 hectares of classified forests and privately-owned lands working with communities and stakeholders (Lang, 2020). Such projects can, however, have unintended consequences, such as disadvantaging pastoralists or planting of non-indigenous species, so they do need to be planned with SLM principles in mind.

Strengthen institutions and policies governing forests. Institutional weakness in forest governance is linked to insufficient enforcement capacity, lack of accountability and transparency, and susceptibility to rent seeking and corruption. For example, the failure to address illegal logging and forest conversion continues to be an issue in many countries due to regulatory and institutional inadequacies, including the absence of direct accountability of law enforcement agents and lack of judicial retribution (Blaser, 2010). In Russia, an FAO assessment found that up to 20 percent of all timber in Russia and 50 percent of timber in its Far East region had been illegally harvested without proper permits due to corruption (van Hensbergen, 2016).

[7] The Enhanced National Greening Program is a national programme designed to rehabilitate all the remaining unproductive, denuded, and degraded forestlands estimated at 7.1 million hectares from 2016 to 2028. It was established pursuant to *Executive Order No. 193 of 2015*.

In such cases, countries with weak governance are especially susceptible to the influence of corporations and elites, likely falling short of protecting both forest resources and local communities. Finally, high domestic or export market demand for timber and non-timber forest products exacerbate the challenges by creating incentives to circumvent rules (Blaser, 2010).

To effectively monitor logging activities, the Government of Suriname requires that each log felled must be tagged with a unique number and reported on a cutting register according to the *Forest Management Act of 1992* (Government of Suriname, 1992). Felled timber is then tracked by the number and transported with documentation, which will be required at check posts, mills, and ports (Forest Legality Initiative, 2016). While the intention of such a system is to closely control the removal of timber, it is important to be aware that such complexity may give rise to corruption and rent-seeking at every step of the monitoring system and requires devotion of resources and political will to implement successfully.

Forest-dependent farmers, local communities, and Indigenous Peoples have the most to lose in weak forest governance situations. In the context of global recognition of rights and justice for local communities and Indigenous Peoples in forest tenure and the shift in conservation to recognize the value local people bring to sustainable use of resources and conservation, it is necessary for legislatures in forest management to consider a bottom-up approach – the needs of local people and their potential for SFM should be at the centre of decisions around forest governance.

Inconsistency in forestry policies or legal frameworks is another common problem (Blaser, 2010). Forest tenure issues are typically complex, where formal law and customary law overlap with contradictory rules or discrepancies. As a result, statutory laws often fail to adequately address ownership, user rights, and concession rights to forests, leaving forests prone to disputes. Forest laws can also impose excessive regulations that create high transaction costs, making it difficult for local communities and stakeholders to comply. For example, technical literacy required to apply for forest user rights, or the review and approval requirements for harvesting permits, can be unrealistic rules for poorly equipped local communities or smallholder operators to adhere to.

Climate change as well as conservation commitments and initiatives have compounded the complexity of forest governance in recent years. Effective forest management is both increasingly difficult as well as increasingly essential to SLM.

Creating a supportive environment for legally harvesting timber can be a key element in creating a viable international timber market. Australia, the European Union, Japan, and the United States have enacted legislation banning importation of certain illegally logged products. Several international efforts are underway, such as the Forest Law Enforcement, Governance, and Trade Action Plan in the European Union and Forest Legality Initiative, to assist countries in enforcing their domestic timber laws. In addition, by promoting the consumption of "deforestation-free" products and reducing the EU's impact on global deforestation and forest degradation, the new Regulation (EU) 2023/1115 on deforestation-free products is expected to bring down greenhouse gas emissions and biodiversity loss.

Box 33. Forest law enforcement, governance and trade

The European Union sponsors a programme designed to assist timber producing countries to comply with European laws and regulations aimed at ending importation of illegally logged timber. Countries can enter into Voluntary Partnership Agreements (VPAs). The VPAs are legally binding trade agreements aiming to ensure that timber and timber products exported to the European Union come from legal sources, and to help timber-exporting countries stop illegal logging by improving regulation and governance of the forest sector.

Source: **Eurepean Union.** 2025. Voluntary partnership agreements on forest law enforcement, governance and trade. EUR-Lex. Available online at: https://eur-lex.europa.eu/EN/legal-content/summary/voluntarypartnership-agreements-on-forest-law-enforcement-governance-and-trade.html?fromSummary=12 Accessed on 14 March 2025.

Box 34. Key messages | Forest management

- Develop clear and equitable forest tenure laws that provide clarity on land ownership and use rights and establish mechanisms for community participation in forest management.
- Sustainable forestry is a microcosm of SLM and requires application of the same SLM principles of community engagement, attention to social, economic, and ecological factors, and strategic, informed, and involved planning.
- Establish multilevel and intersectoral administrative structures to ensure effective implementation of SLM principles at all levels of forest management and between complementary administrative bodies.
- Integrating agriculture and landscape approaches into forest policies and programmes is essential for addressing drivers of deforestation and forest degradation.
- Develop laws that enable or encourage afforestation and reforestation.
- Adopt a community-based forest management approach where possible.
- Take steps to manage and slow deforestation, such as strengthening tenure rights, tightening enforcement measures, or establishing logging bans or quotas.
- Consider economic incentives for sustainable forest management, such as Payments for Ecosystem Services.

4.5 Sustainable agriculture

Thirty-seven percent of the earth's surface is classified as "agricultural area" by FAO (FAO, 2021c). Sustainably managing agricultural land is critical to increasing yields to meet the demands of a growing population with higher standards of living and to combat food scarcity without negatively affecting the sustainability of the climate, forests, oceans, habitats, or other land uses. Moreover, agriculture should provide living incomes to agricultural workers and farmers. With these goals in mind, FAO has been leading work on sustainable agriculture for decades.

FAO has defined sustainable agricultural development as:

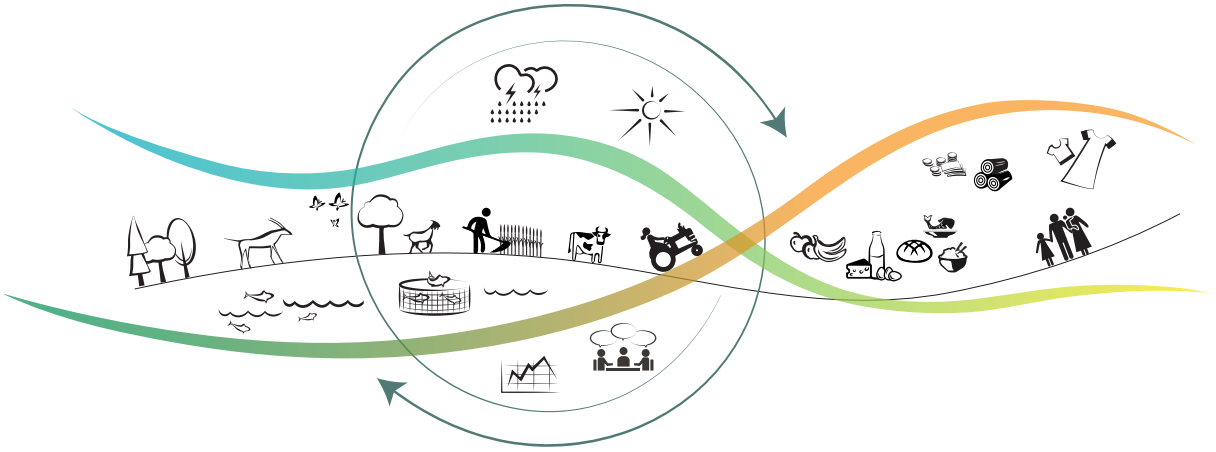
> the management and conservation of the natural resource base, and the orientation of technological change in such a manner as to ensure the attainment of continued satisfaction of human needs for present and future generations. Sustainable agriculture conserves land, water, and plant and animal genetic resources, and is environmentally non-degrading, technically appropriate, economically viable and socially acceptable (FAO, 1988).

Box 35. What is agroecology?

Agroecology is a holistic and integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of sustainable agriculture and food systems. It seeks to optimize the interactions between plants, animals, humans and the environment while also addressing the need for socially equitable food systems within which people can exercise choice over what they eat and how and where it is produced. Agroecology is concurrently a science, a set of practices and a social movement and has evolved as a concept over recent decades to expand in scope from a focus on fields and farms to encompass the entirety of agriculture and food systems. It now represents a transdisciplinary field that includes the ecological, socio-cultural, technological, economic and political dimensions of food systems, from production to consumption.

Source: FAO. 2022f. *European good practices on land banking – FAO study and recommendations.* (Veršinskas, T., Hartvigsen, M. & Gorgan, M. eds. Budapest, FAO. https://doi.org/10.4060/cb8307en

Figure 10. The five principles of sustainable food and agriculture



1 PRINCIPLE
Improving efficiency in the use of resources is crucial to sustainable agriculture

2 PRINCIPLE
Sustainability requires direct action to conserve, protect and enhance natural resources

3 PRINCIPLE
Agriculture that fails to protect and improve rural livelihoods, equity and social well-being is unsustainable

4 PRINCIPLE
Enhanced resilience of people, communities and ecosystems is key to sustainable agriculture

5 PRINCIPLE
Sustainable food and agriculture requires responsible and effective governance mechanism

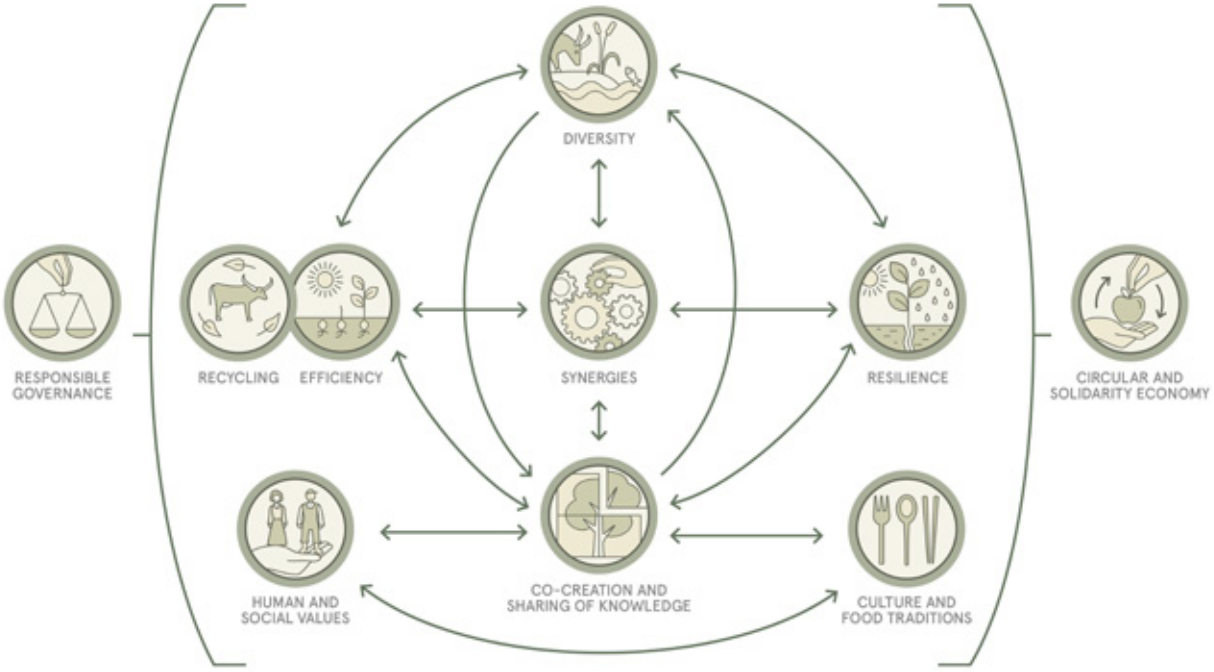
Source: FAO, 2017d. *Strategic work of FAO for Sustainable Food and Agriculture.* Rome. https://www.fao.org/3/i6488en/i6488en.pdf

There are several distinct approaches to agriculture – regenerative agriculture, organic agriculture, agroecology, and climate-smart agriculture, among others – that are often associated with ideas of sustainability. This section will focus only on key sustainable agriculture practices as identified by FAO, including a genetically diverse portfolio of crop varieties, conservation agriculture, responsible and prudent use of organic and inorganic fertilizers, improved soil moisture management, improved water productivity, precision irrigation, and integrated pest management. It will approach questions of agricultural management through the principles of sustainable agriculture listed in Box 35.

Some agricultural techniques that align with these principles include intercropping and mixed farming, polycultures, mixed rice-fish systems, crop-livestock systems, agroforestry, swidden agriculture or crop rotations, and green infrastructure such as hedgerows, windbreaks, shelterbelts, and living fences.

Sustainable agriculture's key principles align clearly with those of SLM, as they both aim to improve outcomes for both communities and ecosystems in a balanced approach. Recognition of customary land-use systems and tenure rights in relation to agriculture are key building blocks of sustainable agriculture. Policies that fail to recognize the importance of local knowledge and prioritizing indigenous and local farmers risk falling short of sustainability goals (OECD, 2019).

Figure 11. The ten elements of agroecology



Source: FAO, 2018. *The 10 Elements of Agroecology - Guiding the transition to sustainable food and agricultural systems*. Rome. https://www.fao.org/3/i9037en/i9037en.pdf

In many countries, agriculture is overseen by a centralized administrative agency that focuses specifically on agriculture and sometimes livestock. These agencies typically have agriculture extension officers down to the local level, helping to shape policy and implementation of various agriculture regulations and improve agricultural practices and knowledge. Depending on the makeup of the agricultural agency, a sustainable approach to agriculture may also require coordination with agencies that focus on environmental protection, indigenous rights, women's rights, and/or health, as those areas are integral to a cohesive agriculture system.

Many sustainable agriculture methods cannot be mandated by a central authority without an extremely efficient and effective administrative structure. Instead, laws and policies supporting sustainable agriculture often focus on creating an enabling environment for farmers to make sustainable choices, encouraging uptake of sustainable practices and offering programmes to support farmers in learning sustainable agriculture methods and their benefits. Policymakers can create such an enabling environment in law and policy through comprehensive agricultural policies that integrate sustainable agriculture targets, goals, and guidance for practice; funding mechanisms and programmes that provide financial incentive to farms utilizing sustainable agriculture practices; agricultural research support; and agricultural extension services. The rest of this section will address how sustainable methods can best be encouraged.

Remove barriers to crop diversification and choice. Laws that promote monocropping and prohibit polycultures or crop diversification are problematic for environmental sustainability. Degraded lands push farms further into forested and peat areas, converting the land from its natural state. Some countries have permit and license requirements, for example, which discourage crop diversification, making it harder for farmers to adapt to market pressures and climate change (OECD, 2017). Indonesia's *Rule No. 39 on Plantations of 2014* has modified the plantation structure used in Indonesia to be less detrimental to soil conservation. It provides guidelines on managing and developing resources optimally for responsible and sustainable use. Such approaches need to include clear guidance on sustainable approaches to help landowners implement them.

Enabling legal frameworks that allow farmers to choose crops can give farmers space to make decisions for their crops based on market pressures and climate change considerations. Such a framework should facilitate diverse planting methods and agricultural techniques, refrain from restricting the types of crops farmers can produce or the varieties of seeds that farmers have access to, and avoid the use of crop quotas. Sustainable agriculture systems can also reduce input cost as well as environmental harm, as IPM reduces the need for pesticides that are often harmful to the ecosystem. Viet Nam, Laos, Cambodia, and Thailand all have successful rice–corn cropping systems supported by enabling legal frameworks (Nguyen, 2013). China and India have found crop diversification to be suitable to geographically diverse farmland (Menxiao, 2001; Dawe, 2015). These systems demonstrate the utility of crop diversification, as it helps to increase and stabilize incomes, promote efficient adaptation to climate change, and in some cases, increase the yield of farms.

Allow and promote conservation agriculture practices such as fallowing and crop rotations. Conservation agriculture is a sustainable crop management system requiring minimal soil disturbance, permanent soil surface cover with crop residues and cover crops, and crop rotations that include diverse species. Rotational and integrated agriculture systems such as conservation agriculture often align with traditional farming methods including those used by Indigenous Peoples. These can be threatened by traditional, monoculture-driven approaches to agriculture. While some legal frameworks identify conservation agriculture specifically as a goal, many more provide farmers with flexibility to make decisions in line with conservation agriculture. Approximately 60 percent of Brazil and Argentina's cropland is under no-tillage cultivation, and Argentina's farmers are increasingly choosing crop rotation methods (Derpsch, 2008; Lima, Harfuch and Palauro, 2020). These choices are enabled by laws and policies that facilitate diverse planting methods and do not restrict the types of crops farmers can produce. Tax exemptions and payment regimes for adopting practices that support sustainability further support these choices. Some states also recognize the benefits of crop rotation and fallowing to allow land to regenerate.

Going beyond allowing crop rotation and fallowing to mandating these systems, as some states have done, requires strong administrative bodies and enforcement regulations. For instance, Switzerland's *Federal Act on Agriculture of 1998* requires landowners to tolerate fallowing without claiming compensation for up to three years if fallowing is deemed to be in the public interest (Article 165(b)). The Act stipulates that a public interest arises "in particular if land must be left fallow in order to maintain agricultural use, to protect against natural threats or to conserve flora and fauna that require special protection."

Incentivize uptake of sustainable practices. Some countries encourage their farmers to take up sustainable practices by providing incentives. Taiwan's *Agricultural Development Act of 1973* stipulates that authorities must reward environment-friendly activities such as setting aside agricultural activity or reforesting agricultural lands (Article 55). The *Swiss Federal Act on Agriculture* requires the government to pay for public and ecological services provided by farms through direct subsidies (Article 2(b)). Ecological actions that give rise to direct payments include appropriate conditions for livestock, balanced use of fertilizers, adequate proportion of land set aside for biodiversity, regulated use of nature and cultural heritage objects, regular crop rotation, appropriate soil protection, and specific choice and application of plant protection products (Article 70(a)(2)). The Act also provides social support measures for farmers (Title 4), promoting the sustainable agriculture principle of improving social well-being and rural livelihoods. Land sparing, or the setting aside of land for biodiversity purposes, can benefit ecosystem resilience. However, setting aside agricultural land can require intensification of production elsewhere to compensate for the land that is set aside. This requires careful management, as intensification can increase potential for adverse environmental impacts (Henry, Murphy and Cowie, 2018).

Some subnational governments have also started programmes to incentivize sustainable farming. In Germany, one regional government gives farmers an "a la carte" menu of sustainable technologies to choose from, each earning them eco-points that translate to a certain payment per hectare (FAO, 2002c). Brazil

has a number of programmes supporting payment for environmental services,[8] with a National Policy for Payment for Environmental Services enacted in 2021 under *Law No. 14,119*. State and federal authorities support various initiatives that work with farmers to improve or maintain sustainability for pay. In one such initiative, the Agriculture, Cattle Breeding, and Food Supply Secretariat of the State of Minas Gerais distributed beehives and honeycomb wax to encourage beekeeping in one municipality (Bonamin, *et al*., 2020); the ability of states and localities to carry out such programmes is limited by administrative capacity and finances. Countries that can financially reward farmers for choosing sustainable agriculture methods can more easily ensure widespread uptake of these methods.

Since farms are typically, though not always, held by private individuals or entities, the government cannot easily mandate how farming is carried out on each farm. Instead, farmers often must choose to manage their land sustainably, with both government and non-government programming introducing the technologies and tools needed to effectively build sustainability principles into their farm. The incentive structures listed above can also help address this problem, but this option is only open to countries with the financial means to provide such incentives. Similar market incentives may apply, as consumers choose to purchase sustainable products over competitors. Strict regulations are another option, but effective enforcement across such vast areas typically relies upon harsh punishments for bad actors, which can unduly burden smallholder or customary farmers, especially if access to information is limited.

Provide education and extension services for interested farmers. Some states use education and agricultural extension programmes to ensure that farmers are aware of sustainable practices and their benefits. Viet Nam's *Decision No. 899/2013/QD-TTg on Agricultural Restructuring towards Raising Added Value and Sustainable Development of 2013* requires the support of "training, agricultural extension, and counseling services to improve planting, cultivation, and harvesting techniques." The Republic of Korea's *Framework Act on Agriculture, Rural Community and Food Industry of 2015* similarly prioritizes increasing farmer income through education and training. Improving farmers' knowledge of these principles can build grassroots support for SLM that could be more durable than a singular government project.

Any change in agricultural law requires a thorough information campaign to ensure that all farmers are aware of the new regulations. Without this safeguard, well-meaning farmers can break laws and regulations they have no knowledge of, which does little to improve rural livelihoods, equity, and social well-being as required in sustainable agriculture principles. While sustainable agriculture practices can be guided by law, policies that allow farmers to make their own informed decisions about their crops can be the best solution for improving resilience and equity for farmers. As a result, a strong emphasis on education about SLM practices as well as learning from farmers and Indigenous Peoples what practices work locally may result in significantly advancing food production, ecological sustainability, and livelihoods.

Prioritize community needs and interests in planning sustainable agriculture initiatives and developing agricultural regulations. Sustainable agriculture is, in many ways, a return to indigenous systems of agriculture that prioritized biodiversity and ecosystem balance. As such, the inclusion of Indigenous Peoples and other communities in the management of sustainable agriculture is paramount to success. Indonesia's *Rule No. 39 on Plantations of 2014* has a provision focusing on the economic benefit that plantations can bring to local communities, with the goal of increasing community welfare and prosperity by providing jobs and business opportunities. The Rule also provides provisions protecting the land rights of Indigenous Peoples.

Mexico's (Nayarit) *Law for Sustainable Agricultural Development of 2012* calls for the identification of priority areas for efficient sustainable production in consultation with local and indigenous populations in those areas (Article 21). Brazil's (Mato Grosso) Law establishing the *State Policy on Sustainable Rural Development*

[8] For instance, "Foresta+", a Brazilian programme regulated by *Decree No. 11.332 of 2023*.

of Family Farming of 2017 also prioritizes access of family farmers and indigenous and local communities to infrastructure, health services, and social services. These programmes are required to protect biodiversity and cultural heritage, respect social and ethnic diversity, and ensure gender equity and inter-generational equity.

Meaningful consultations and joint decision-making with local, and especially indigenous populations are a key tenet of sustainable agriculture and should be incorporated into any laws on this subject. The ultimate challenge in sustainable agriculture is balancing ecosystem needs with food security and community needs. There are many organizations offering creative approaches to solve these challenges at the ground level, but these initiatives are often difficult to scale or capture in legislation. Ensuring that agricultural development planning incorporates land user participation can create an enabling environment for such local initiatives to flourish.

Regulate fertilizers and pesticides to encourage responsible and prudent use and incentivize integrated pest management approaches. Efforts to regulate key inputs to agriculture – such as fertilizers and pesticides – can also affect SLM by limiting pollution or encouraging nature-friendly practices. The *International Code of Conduct on Pesticide Management*, developed by WHO and FAO and last updated in 2014, establishes "voluntary standards of conduct for all public and private entities engaged in or associated with the management of pesticides" (Article 1.1). While the Code of Conduct is aimed at areas in which national legislation on pesticides is lacking, the Code's contents can be used to help develop responsible pesticide regulations in a sustainable agriculture framework. The *Guidance on Pesticide Legislation – Second edition* provides concrete recommendations for regulators to develop pesticide legislation that supports the implementation of the Code of Conduct (FAO and WHO, 2020). The *International Code of Conduct for the Sustainable Use and Management of Fertilizers*, developed by FAO in 2019, provides a similar model for how laws can implement the VGSSM (discussed at length in the following section on SSM).

Belize with its *Registered and Restricted Pesticides (Uses, Restrictions, and Precautions) Regulations, 1990* regulates various pesticides based on their chemical composition in addition to the toxicity of the compound and its use. This legal provision is similar to Newfoundland's *Pesticides Control Regulations of 2012*, that in addition to regulatory information on pesticide chemicals, outlines the requirements for licences to distribute and use pesticides commercially. This legislation also provides guidelines on protective clothing to be worn around chemicals, disposal and storage regulations, and other administrative specifications, aligning with sustainability principles that support good governance structures protecting workers. As a final example, Switzerland passed an *Ordinance implementing the federal legislation on chemicals* in 2009 which enforces the *Fertilizer Ordinance of 2001* and the *Plant Protection Ordinance of 2005* to provide environmental regulation to the Solothurn municipality. This Ordinance enforces the guidelines created in other laws to ensure they are properly carried out. It specifies which local authorities are responsible for certifying enforcement, as well as including provisions relating to plant protection and fertilizer usage (FAO, 2014a).

Legal provisions regulating the certification process for organic foods are also becoming more common, which can boost SLM by reducing use of pesticides that can harm ecosystems. Morocco's *Rule No. 39-12 on the organic production of agricultural and aquatic products of 2013* provides conditions for organic production and how products can be marketed. The purpose of this provision is to ensure consumers receive quality organic products and that the income improvement for producers will incentivize more sustainable agriculture choices. Likewise, Tunisia's *Decree No. 409 of 2000* provides regulation for organic plant and animal products by establishing control measures on production, processing, and packaging. One common difficulty with certifying and promoting organic agriculture is that start-up costs can be quite high for smallholder farmers who don't have easy access to organic fertilizers or to agricultural extension services about organic practices and requirements. The IPM approach can be a low-cost solution to reduce reliance on harmful pesticides while improving yields, food quality, and incomes.

Balance the harms and benefits of livestock integration when regulating land use and livestock feed. Livestock makes up a complex area of sustainable agriculture because livestock, especially cattle, can be major contributors to greenhouse gas emissions and are responsible for pasture, grassland, and forest degradation where overgrazing reduces plant cover and exposes the soil. Livestock can also require a great deal of feed, which can have a negative impact on food security. Yet limited foraging and grazing of livestock can also be an important provider of fertilizer and help to clear crop residue or other unwanted ground cover. Animal husbandry also contributes to FAO sustainable agriculture principles of improving livelihoods, increasing food and nutrition security, and fostering economic growth.

One example of legislation that mitigates the harmful effects of livestock is Chile's *Resolution No. 1.771 of 2009* which regulates the grazing of cattle on cordillera grazing fields in order to prevent the transmission of exotic diseases. Having livestock graze rotationally on mountain land increases the soil's capacity to fix carbon and fosters increased plant growth. FAO recommends that countries implement policies to: boost efficiency of livestock production and resource use; intensify recycling efforts and minimize losses for a circular bioeconomy; capitalize on nature-based solutions to ramp up carbon offsets; and strive for healthy, sustainable diets and accounting for protein alternatives (FAO, 2019b).

Regulate the use of antimicrobials to prevent antimicrobial resistance (AMR). Antimicrobial resistance occurs when bacteria, viruses, fungi and parasites no longer respond to antimicrobial agents. As a result of drug resistance, antibiotics and other antimicrobial agents become ineffective and infections become difficult or impossible to treat, increasing the risk of disease spread, severe illness and death. For more information see *Regulatory frameworks to address antimicrobial resistance in the food and agriculture sectors* (Gobena, Bullon and Viinikainen, 2024).

On the other hand, as discussed in Section 4.5, soil microorganisms are the most abundant of all the biota in soil and responsible for driving nutrient and organic matter cycling, soil fertility, soil restoration, plant health and ecosystem primary production. In addition to the human and animal health risks of overuse of antimicrobials, they may also cause harm to soils, which rely on complex ecosystems of lifeforms, including bacteria (FAO, ITPS, GSBI, SCBD and EC, 2020).

Take a One Health regulatory approach. Ensuring a One Health approach is essential for progress to anticipate, prevent, detect and control diseases that spread between animals and humans, tackle AMR, ensure food safety, prevent environment-related human and animal health threats, as well as combatting many other challenges.

A One Health approach is also critical for achieving the SDGs. A One Health approach to sustainable land management requires a comprehensive consideration of the potential impact of land management decisions on the health and well-being of all living entities and their ecosystems. Incorporating this holistic approach

Box 36. One Health approach

One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems. It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and interdependent.

The approach mobilizes multiple sectors, disciplines, and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for healthy food, water, energy, and air, taking action on climate change and contributing to sustainable development.

Source: **One Health High-Level Expert Panel (OHHLEP), Adisasmito, W.B., Almuhairi, S., Behravesh, C.B., Bilivogui, P., Bukachi, S.A. *et al.*** 2022. One Health: A new definition for a sustainable and healthy future. PLoS Pathog 18 (6): e1010537. https://doi.org/10.1371/journal.ppat.1010537

Box 37. Key messages | Sustainable agriculture

- Examining laws for provisions that bar sustainable practices or encourage unsustainable practices, such as monocropping or expansion into protected areas, can be a good start to removing barriers to crop diversification.
- Develop comprehensive agriculture policies that integrate sustainable agriculture targets and guidance for sustainable land management (SLM) practices, such as crop diversification, agroecology, conservation agriculture, and integrated pest management.
- Establish funding mechanisms or loan programmes that provide financial incentives to farmers adopting SLM practices, such as through direct subsidies, tax exemptions, low-interest loans, Payments for Ecosystem Services, or social support measures.
- Allow and promote conservation agriculture practices such as fallowing and crop rotations.
- Regulate the use of antimicrobials, pesticides and fertilizers to protect human, animal and environmental health and increase uptake of sustainable agriculture techniques for pest management and soil health.
- Provide education and extension services for interested farmers.
- Prioritize community needs and interests in planning sustainable agriculture initiatives and developing agricultural regulations.

to decision-making empowers regulators to seek a judicious balance across various sectors and competing interests. Under the One Health principle of **equity** and **sociopolitical and cultural parity**, all populations should enjoy equal rights to participate in decision-making processes. Guided by the One Health principle of **stewardship**, regulators are called upon to base land management decisions on the rights of present and future generations. The One Health principles of **transdisciplinarity** and **multisectoral collaboration** underpin the need for regulators to facilitate inclusive stakeholder consultations, ensuring the involvement not only of entities representing different sectors but also of all legitimate rights holders.

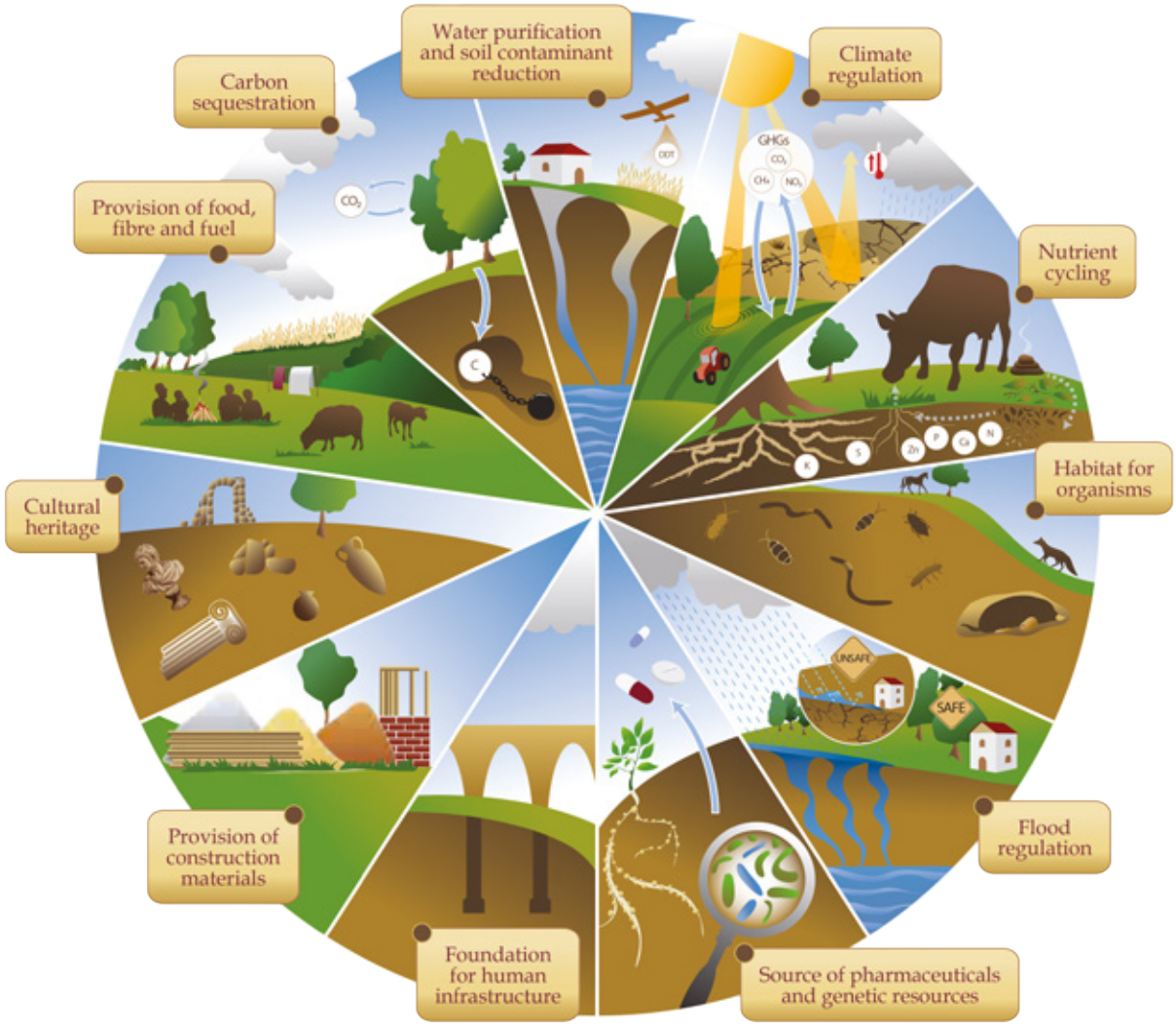
For more resources on sustainable agriculture laws, see FAO's Legislative Study *Legislative approaches to sustainable agriculture and natural resources governance* (see FAO and UNEP, 2020a).

4.6 Sustainable soil management

Safeguarding and improving soil fertility, correcting soil degradation, and preventing environmental damage are crucial to SLM (Tugrul, 2019). In 2011, FAO estimated that 33 percent of land suffered from moderate to high degradation owing to erosion, salinization, compaction, and chemical pollution of soils (FAO and ITPS, 2015). Soil health is defined by the Intergovernmental Technical Panel on Soils (ITPS) as "the ability of the soil to sustain the productivity, diversity, and environmental services of terrestrial ecosystems" (FAO and ITPS, 2020). Failure to consider soil health in a broader land management context can add to the cycle of degradation and even lead to desertification, which can be very difficult to reverse. According to FAO, "Annual cereal production losses due to erosion have been estimated at 7.6 million tonnes" (VGSSM, section 1).

The *Voluntary Guidelines for Sustainable Soil Management (VGSSM)*, were prepared under the framework of the GSP, the FAO Committee on Agriculture and the FAO Council in 2016. They provide guidance and policy recommendations that states can build on as they develop the necessary legal framework for sustainable soils. The Guidelines are in line with the revised *World Soil Charter*, which was endorsed by all FAO Members. For more specific guidance, the *International Code of Conduct for the Sustainable Use and Management of Fertilizers* is a VGSSM implementing tool that offers recommendations for fertilizer use to diminish detrimental impacts on soil biodiversity and environmental pollution (soil, water, and air).

Figure 12. Soil ecosystem services and their functions



Source: FAO, 2023b. *Climate Smart Agriculture Sourcebook. In: FAO.* [Cited 27 September 2023]. https://www.fao.org/climate-smart-agriculture-sourcebook/production-resources/module-b7-soil/b7-overview/en

While overarching soil legislation exists in some countries, soil is typically regulated by a patchwork of laws, given geographical differences in soil conditions as well as soil's relevance to multiple areas of law, such as mining, waste management, environmental conservation, and agriculture. Soil management is typically administrated locally, while broader goals may be outlined in a higher-level law or policy.

Soil management is typically overseen by ministries of agriculture, environment, or conservation at the national level. Given the importance of soil protection to food security, ministries of food and health are sometimes involved. Since soil management is often relevant to the missions of multiple state bodies, various institutions must work together to achieve effective administration. Typically, SSM policies are carried out by extension workers and policymaking officials at regional and local levels, who set more specific standards for their area's soil types and needs. Private sector firms also help farmers manage soil issues around the world.

The VGSSM outline ten guidelines for properly managing soil:

1. Minimize soil erosion.
2. Enhance soil organic matter content.
3. Foster soil nutrient balances and cycles.
4. Prevent, minimize, and mitigate soil salinization and alkalization.
5. Prevent and minimize soil contamination.
6. Prevent and minimize soil acidification.
7. Preserve and enhance soil biodiversity.
8. Minimize soil sealing.
9. Prevent and mitigate soil compaction.
10. Improve soil water management.

Sustainable soil management is largely dependent on individual actors and can be difficult to regulate effectively. As such, many laws regulating soil set out guidelines for sustainable use and restoration of soil and mandate public awareness programmes that seek to increase understanding of the ecological and economic benefits of healthy soil and encourage uptake of sustainable practices, including through financial incentives.

To ensure sustainability, soil laws should apply across sectors to all uses of land that can lead to soil degradation, including agriculture, grazing, mining, waste management, and urban uses. Some states have adopted overarching soil laws that successfully demonstrate an integrated approach to SSM. Others adopt a patchwork of laws and policies addressing various aspects of soil management as they arise in each sector. While both approaches are viable, establishing a multi-sectoral body or guiding legal or policy instrument to address fragmentation issues can help to reduce gaps in administration.

Box 38. European Union soil standards and enforcement measures

In 2006, the European Commission adopted a *Thematic Strategy for Soil Protection* and recommended a *Soil Framework Directive* to prioritize soil governance, which suffered from a high level of fragmentation. The Thematic Strategy identifies key soil threats in the European Union as: erosion, floods and landslides, loss of soil organic matter, salinization, contamination, compaction, sealing, and loss of soil biodiversity – all in alignment with the VGSSM. It was updated in 2021 as the *EU Soil Strategy for 2030* in line with the *EU Biodiversity Strategy for 2030*.

The European Commission also sets Good Agricultural and Environmental Condition (GAEC) requirements as part of a cross-compliance mechanism in coordination with the Soil Thematic Strategy that help set standards for soil health. Minimum GAEC requirements, which Member States are responsible for defining and implementing at the national or regional level, include minimum soil cover, site specific conditions to limit erosion, maintenance of soil organic matter through appropriate practices, and other measures.

Failure to comply with GAEC standards jeopardizes direct payments to European farmers as well as some higher-level payments for rural development, including payments for agri-environmental measures. *Natura 2000*, which is a network of sites for rare and threatened species, measures for protected areas, afforestation measures, forest environmental payments, agroforestry, and organic farming. Payments to farmers can be reduced or stopped entirely for failure to adhere to "cross-compliance" rules as stipulated in Title VI (Cross-Compliance) of *Regulation (EU) No. 1306/2013 of the European Parliament and of the Council on the financing, management and monitoring of the common agricultural policy.*

Box 39. Namibia and erosion prevention

In Namibia, the *Soil Conservation Act (Act No. 76 of 1969)* and the *Communal Land Reform Act (Act No. 5 of 2002)* require holders of customary land rights or rights of leasehold to use and manage land in such a way as to prevent erosion or any other disturbance of the soil which creates or may create conditions that could cause erosion or pollution of water by silt or drift-sand.

Soil health can vary greatly across geographies within an administrative unit, resulting in difficult regulatory environments. To ensure that targets are met in local contexts, centralized administrative bodies should share policymaking authority with local officials. Some soil management regimes, such as the *Soil Protection Acts* in Austria that govern five provinces with different measurements and classifications, decentralize soil regulation to enable policymakers to tailor regulations to the ground situation. This decentralized approach can also be chosen out of necessity if a centralized government fails to act, and a local authority sees a need for regulatory measures. Regulatory soil management instruments are found less frequently in lower-income countries due to the technical nature of soil health.

States have adopted a variety of strategies to translate the VGSSM principles into law and policy. As these are foundational to soil health, and therefore SLM, they are reviewed below.

Minimize soil erosion. Soil health is severely reduced by erosion, as it implies the loss of the most fertile topsoil layer, organic matter is exposed to air, and the soil's carbon sink potential is damaged (Radstake and Critchley, 2017). Soil erosion can also have detrimental effects on water quality, causing turbidity, increased chemical runoff, and eutrophication.

In any soil-related legislation, soil erosion is a common topic, raised to varying degrees of detail. Some countries' soil laws only briefly mention soil erosion and assert the importance of preventing erosion from occurring. These national laws do not establish standards or guidelines for prevention, instead relying on local authorities and private individuals to fill in the gaps. Without clear goals and relevant local expertise, vague provisions can be difficult to implement or enforce. Other countries go into more detail about how to ensure that soil erosion minimization occurs, setting protection measures for certain high-impact activities or banning soil cultivation technologies that lead to erosion. The *Soil Conservation Protocol of the Alpine Convention* adopted in 1998, involving the European Union and eight states, requires that Parties use sound practices in agriculture, pasture farming, and forestry that are adapted to suit local conditions to ensure protection against erosion (Article 12(1)). This treaty, though not setting out specific standards or guidelines, takes an integrated approach to soil erosion mitigation, increasing the chance of policy success.

Box 40. Bulgaria soil law

In order to build a comprehensive soil law, Bulgaria's *Soils Act of 2007* uses an ecosystem integrated approach with sustainable-use principles, precautions to limit or prevent the future destruction of soil, and recommendations of good practices. The law sets out duties of several ministries to ensure that soil is considered across government programming and industry, rather than sequestered in the agriculture sector or overlooked entirely. The law further gives responsibility to regional governors and municipal mayors for developing and implementing programmes for soil protection, sustainable use, and restoration, recognizing the importance of soil management at all levels of government. The law, well-aligned with the *Voluntary Guidelines for Sustainable Soil Management (VGSSM)*, identifies processes that degrade soil and should be managed appropriately. Since soil types vary greatly across Bulgaria, the law does not set out specific standards or processes, but rather sets a framework to be applied in different conditions to aid in soil management.

Bulgaria's *National Climate Change Adaptation Strategy and Action Plan (2019-2030)* aligns with the *United Nations Convention to Combat Desertification (UNCCD)* goals for sustainable management of soils and soil remediation and include plans for the implementation and evaluation of these goals.

Enhance soil organic matter content. Organic matter content refers to the part of the soil that consists of plant and animal tissue and includes all microbial biomass (Fenton, Albers and Ketterings, 2008). Soil organic matter content is the key player in soil health and functioning, and as such it is essential to prevention of soil degradation and damage of soil functions. Soil organic matter is an important reservoir of soil pollutants, such as heavy metals, and healthy microbial communities in soil may help degrade pollutants over time (Henry, Murphy and Cowie, 2018).

Soil organic matter content is difficult to regulate. While many states recognize the importance of conserving the soil's humus content and maintaining the soil's ability to store pollutants, the laws involve very little specificity for how to carry this out. Some laws protect areas with rich organic matter content, such as protective forest belts, or ban practices harmful to organic matter content. In lieu of specific regulations, programmes to encourage SSM practices among farmers can be beneficial. According to the VGSSM, fire should be avoided except where integral to land management in order to maintain soil organic matter content. Since stable organic matter is a major driver of soil productivity and has physical, chemical, and biological benefits, it is fundamental to good soil management.

Foster soil nutrient balances and cycles. Few countries have established provisions related to soil nutrient balances in national laws or policies, as this is a highly technical area. Local soil management plans may contain this topic.

Prevent, minimize, and mitigate soil salinization and alkalization. Soil salinization and alkalization, which can result in arid land, usually occur in "irrigated soils in semi-arid and arid regions (less than 500 mm annual rainfall) where rainfall or irrigation isn't sufficient to leach accumulated salts out of the root zone [and] intrusion of saltwater into low-lying areas near oceans and seas" (Peace Corps, 1986). Both seawater intrusion and saline groundwater can lead to overly saline soil.

Some areas have higher risks related to soil salinization, particularly those with long coastlines. Legislative measures to address the unique risks of soil salinization and saltwater incursion are more relevant in these areas. Some laws mandate monitoring of soil salinity and alkalinity that can trigger remediation measures if certain levels are achieved. For instance, the *Law No. 1389-XIV on land reclamation*, the *Water Code of 1995*, and decisions of the Cabinet of Ministers of Ukraine require agro-ecological monitoring that includes soil salinity and alkalinity. Data obtained in monitoring helps determine the state of irrigated lands (FAO and Lomonosov Moscow State University, 2018). In Myanmar, where low-lying farmland near the sea has suffered from saltwater intrusion, programmes to replant mangrove forests have importance for their ability to protect the interior farmlands; no laws stipulate protections against salinization (Thein, 2019).

Box 41. China's patchwork of soil-related laws

The *Law of the People's Republic of China on Prevention and Control of Soil Contamination of 2018* governs issues of soil pollution, while the Water and Soil Conservation Law of 1991 governs other sustainable soil issues. Further provisions on soil management are found in the *Environmental Protection Law, Law on the Prevention and Control of Environment Pollution Caused by Solid Wastes, Atmospheric Pollution Prevention and Control Law, Law on Prevention and Control of Water Pollution, Agricultural Law, Grassland Law, and Decree No. 49 on Quality and Safety of Agricultural Products.* Taken together, these distinct legal frameworks offer both a significant soil management system through the soil-focused legislation, as well as integration of soil considerations across many sectors. However, the fragmentation of the laws can lead to confusion and increased difficulty in coordination, implementation and enforcement.

Source: Li, T., Liu, Y., Liu, Y. & Xie, Y. 2019. Soil Pollution Management in China: A Brief. *Sustainability, 11*(3).

Box 42. Fertilizer, herbicide, and pesticide standards in the Alpine Convention

The *Soil Conservation Protocol of the Alpine Convention of 1998* calls for Parties to elaborate and implement shared standards for sound expert practices on the use of fertilizers, herbicides, and pesticides and ensure that the type, quantity, and time of fertilization is suited to the needs of the plants and the soil conditions (Article 12(2)). The Protocol further requires the minimization of mineral fertilizers and synthetic herbicides and pesticides in Alpine pasture areas and prohibits the use of sewage sludges (Article 12(3)).

Prevent and minimize soil contamination. To mitigate and manage soil pollution, risk control is widely accepted as a fundamental principle of soil management, and maximum permissible concentrations (MPC) of pollutants are frequently employed. These standards are typically designed to trigger intervention plans when the MPC is exceeded.

Soil pollution prevention and remediation measures are of great interest to developers and other agriculture and industry stakeholders, as many sites are already contaminated, and clean-up can be extremely costly. To give an idea of scale, the aborted *EU Soil Framework Directive* would have obligated Member States to remediate more than three million contaminated sites across Europe, including old industrial areas and mining sites (Montanarella, 2015). Pollution remediation in countries that lack strong soil governance can require incentives through integrating remediation projects with value-adding measures like food production, erosion control, or carbon sequestration (Haller, Flores-Carmenate and Jonsson, 2020).

Prevent and minimize soil acidification. Most soil laws do not address soil acidification, as it is a technical issue better addressed in regulation, at the local level, or in educational programming. Liming is one technique that can lower the acidity of soil. In the United States, North Carolina's *Agricultural Liming Materials and Landplaster Act of 1979* requires that lime meets certain requirements in order to be sold in the state.

Preserve and enhance soil biodiversity. FAO defines soil biodiversity as "the variety of life belowground, from genes and species to the communities they form, as well as the ecological complexes to which they contribute and to which they belong, from soil micro-habitats to landscapes" (FAO, ITPS, GSBI, SCBD and EC, 2020). Soil biodiversity can be negatively affected by using chemical pesticides and fertilizers that harm soil organisms. Few laws or policies directly address the issue of soil biodiversity conservation and sustainable use. Some relevant laws limit the application of fertilizers and pesticides to those that are approved by

Box 43. A few figures on soil biodiversity

Nowhere in nature are species so densely packed as in soil communities. Soil biodiversity is characterized by:

- Over 1 000 species of invertebrates may be found in a single m^2 of forest soils.
- Many of the world's terrestrial insect species are soil dwellers for at least some stage of their life cycle.
- A single gram of soil may contain millions of individuals and several thousand species of bacteria.
- A typical, healthy soil might contain several species of vertebrate animals, several species of earthworms, 20–30 species of mites, 50–100 species of insects, tens of species of nematodes, hundreds of species of fungi and perhaps thousands of species of bacteria and actinomycetes.
- Soil contains the organism with the largest area. A single colony of the honey fungus, *Armillaria ostoyae*, covers about 9 km^2.

Source: FAO, 2023h. Facts and Figures – FAO Soils Portal. In: FAO. [Cited 6 October 2023]. https://www.fao.org/soils-portal/soil-biodiversity/facts-and-figures/en

regulatory bodies, utilized in defined ways, or meet certain standards. Conservation schemes or reforestation programmes, such as the Billion Tree Tsunami for soil and biodiversity conservation in Pakistan (Hutt, 2018), can also have a positive impact on soil biodiversity. Many states have national biodiversity strategies in line with the CBD, and some have biodiversity-specific administrative bodies that address soil biodiversity to varying degrees, but few focus explicitly on the issues unique to soil biodiversity.

Minimize soil sealing. Sound land-use planning should consider the impact of soil sealing in growing urban and peri-urban areas. To limit soil sealing, the *Soil Conservation Protocol of the Alpine Convention of 1998* requires Parties to provide for space-saving construction and an economical use of soil resources. Where possible, Parties should seek to keep development of human settlements within existing boundaries and to limit settlement growth outside those boundaries (Article 7(2)).

Prevent and mitigate soil compaction. Soil compaction is more common in soils exposed to increased human activity or significant sun without rain. Laws addressing compaction typically require uptake of sound practices and the addressing of excessive tillage, vehicular traffic, and trampling from livestock, to ensure protection against harmful soil compaction as much as possible. Enforcement of such provisions is difficult.

Improve soil water management. Soil and water are inextricably linked, as soil degradation can often be caused by poor irrigation or weather events, and water pollution can often be caused by soil degradation. Maximizing soil water retention is essential to the efficient use of water in agriculture and requires soil to be healthy. Soil cover, including through mulching materials such as leaves, can help to maintain soil moisture content.

Some states tackle both soil and water issues in a single statute. Nepal's *Soil and Water Conservation Act of 1982* requires consent of watershed commission officers for actors to carry out any acts with potential negative impacts on the land and soil (Article 10). Other states keep soil and water-related instruments separate but include provisions to manage the interactions in relevant laws and regulations. Sri Lanka's *Soil Conservation (Amendment) of 1996* includes "the conservation of water and watersheds, in so far as it is necessary for the conservation of the soil and the maintenance of its productivity" in its enumeration of the responsibilities of the Soil Conservation Board (Article 2(1)(a)(iv)). The Board is also responsible for prevention of soil erosion resulting from non-agricultural activities that could lead to "siltation of water bodies and irrigation systems capable of supporting agricultural productivity" (Article 2(1)(b)(ii)). Integrated soil and water laws and distinct legal instruments can both be suitable approaches, as long as they recognize the importance of water and soil interactions. *For more on water management, see Section 4.6.*

Incentives and capacity-building for land users. Widespread success in SSM is dependent on the interest and action of many stakeholders, such as private individuals and entities, in addition to actions by local states. While regulations and enforcement measures can change actions, incentives and education can similarly create durable solutions without as much need for oversight by the government.

Box 44. The Niger and attracting beneficial insects through crop residue

In the Niger, a case study found that leaving crop residue on the soil's surface to attract beneficial insects helped to enhance infiltration. Leaving the land fallow for flat to moderately sloping areas that have good infiltration was found to be the most energy-efficient strategy for coarse sand fraction accumulation. Using stone bunds or stone lines on moderate slopes with minor erosion history can help stop surface runoff from streams as well. However, legislative prohibitions on cutting trees limit the flexibility of land management practitioners to transfer biomass within the watershed. Without integrated sustainable land management legislation, attempts to sustainably manage one element of the environment can come up against attempts to conserve or differently manage other elements.

The VGSSM recommends offering positive incentives to stakeholders who implement SSM principles. The GSP recently launched the Recarbonization of Global Soils (RECSOIL) to recarbonize soils. The programme offers financial incentives for carbon mitigation and sequestration (FAO, 2019c). Payments for Ecosystem Services schemes can also extend to soil quality improvement measures; when states are unable to fund PES schemes themselves, non-governmental organizations (NGOs) and other funders can help to incentivize SSM through joint projects. *For more on PES schemes, see Section 4.12.*

Education and training are often more effective tools in encouraging soil health rather than following regulations. One helpful development has been the information technology revolution (including mobile phones, smartphones, and artificial intelligence.

Implementation and enforcement issues. Implementation and enforcement of provisions regarding soil are labour-intensive. Some laws create "soil conservation boards", which manage soil erosion concerns for new projects and construction, among other things. Such provisions must be implemented equitably in order to protect smallholders and Indigenous Peoples from outsized financial burdens or targeted enforcement, but the assignment of rehabilitative responsibility to large-scale developers could be beneficial in areas particularly affected by erosion or other soil degradation issues. Section 4.10 discusses EIAs, which can include site rehabilitation plans.

Local soil regulations are often much more detailed regarding standards and enforcement mechanisms. Some regulatory bodies prescribe the type of land use allowed in an area and what steps must be taken to prevent soil degradation. This approach can be overly restrictive of farmer choice, which can be problematic for overall sustainability considerations as farmers are unable to react to different economic and climactic pressures without administrative approval. On the other hand, guidance on necessary steps to prevent soil degradation and to conserve water can be beneficial to the longevity of the land. Any such regulations should be carefully considered for potential negative impacts.

Challenges. As this is an emerging area of law, there have been a few noted challenges (Hatfield and Sauer, 2011). One major challenge has been balancing the need for increased production of food, feed, fuel, and fibre with the need for enhanced environmental quality (Hatfield and Sauer, 2011). Water and air quality concerns are major problems linked to soil management, especially between agricultural practices and nitrate, nitrogen, and phosphorous moving into nearby water bodies or carbon dioxide, nitrous oxide, and methane being released into the atmosphere (Hatfield and Sauer, 2011). Soil management practices pose unique challenges in that soil problems are regionally specific and can range with different topographies and microclimates. A systemic lack of resources, including technological tools and technical staff, adds to the difficulty of addressing wide-ranging and technical soil management issues.

Especially with growing climate change concerns and with the transition from oil to biofuels, understanding the role of soil management in changing the greenhouse gas exchange is crucial. Overall, there is a steep learning curve in this emerging area and enhancing soil management practices to address concerns is a major challenge.

Managing administrative overlap and underlap between agencies and levels of government and funds to conserve and remediate soil is a difficult part of SSM administration. While some laws stipulate specific funding sources and parties responsible for the administration of those funds, many other states face budget shortfalls and rely on independent actors to carry out soil management regulations. This can lead to problems of disparate approaches to soil management, little to no oversight, and failure to implement the relevant legal provisions. In some instances, bodies responsible for carrying out soil management oversight are not created, either due to lack of funds or political will (Amarasekara, 2013).

Box 45. Key messages | Sustainable soil management

- Drawing on the Voluntary Guidelines for Sustainable Soil Management, adopt regulations that promote sustainable soil practices, such as: minimize soil erosion; enhance soil organic matter content; foster soil nutrient balances and cycles; prevent, minimize, and mitigate soil salinization and alkalization; prevent and minimize soil contamination; prevent and minimize soil acidification; preserve and enhance soil biodiversity; minimize soil sealing; prevent and mitigate soil compaction; and improve soil water management.
- Adopt policies that promote sustainable agricultural practices, such as organic farming, crop rotation, or the use of compost or organic fertilizers.
- National governments can maintain and enhance soil health by providing scientific guidance, education, and support to local officials and land users in undertaking this task.
- Regulate the use of chemical inputs such as fertilizers, herbicides, and pesticides.
- Provide agricultural extension services that train interested farmers in organic fertilizers and integrated pest management strategies.
- Land-use planning should consider soil health as a key criterion when encouraging or directing urban and peri-urban development.
- Set soil management targets in an adaptive approach that involves local officials in setting targets to ensure local context and soil condition is considered.
- Provide incentives and capacity-building for land users to adopt sustainable soil management practices.
- Integrate legal frameworks for soil management, water management, and environmental protection.

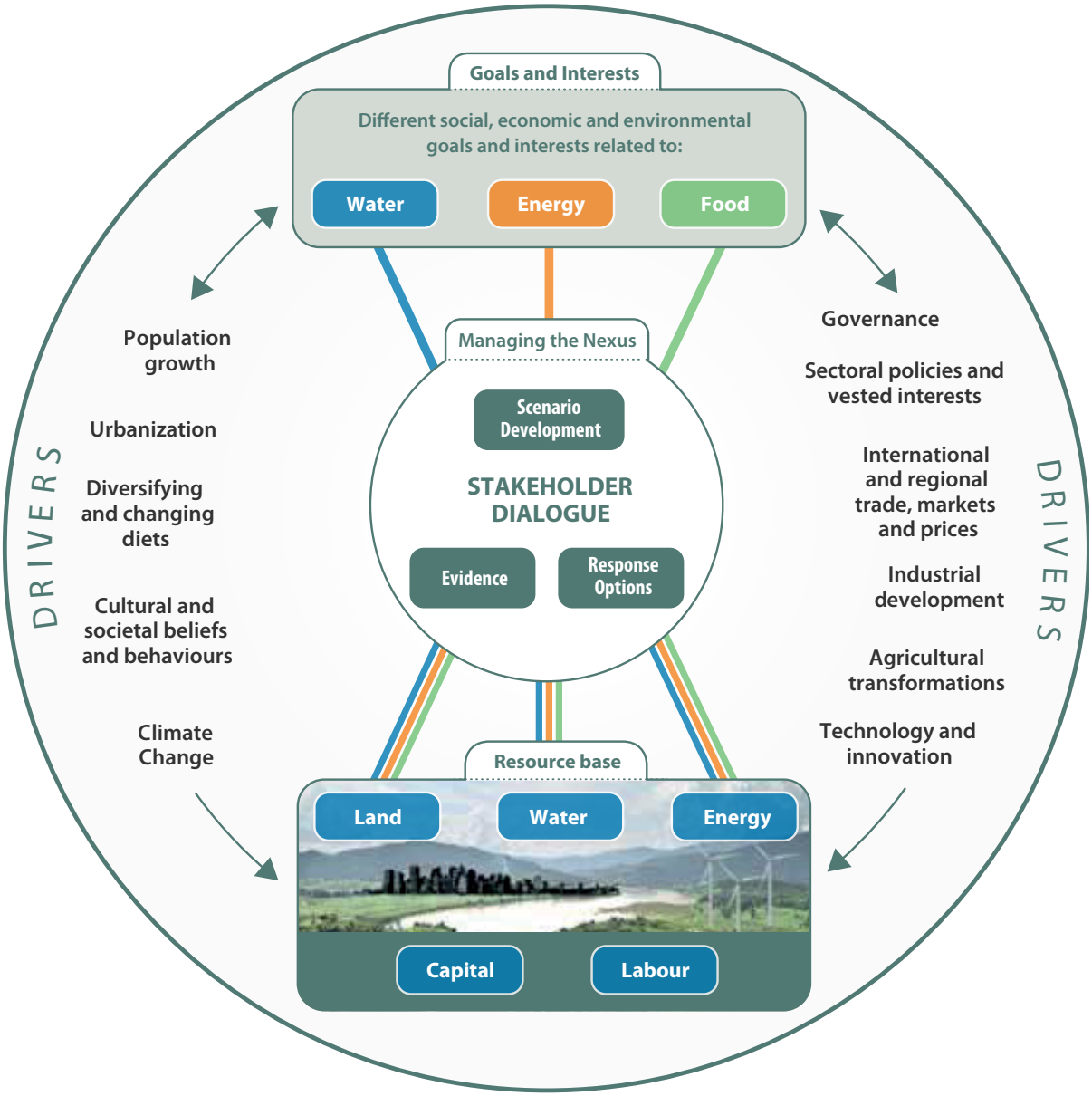
4.7 Sustainable water management

Land and water are interdependent: land cannot be fertile without water, and water cannot be cleaned and stored without land. Water management plays an important role in many aspects of SLM, including food production, human health, ecological diversity, and industry. As urbanization and land degradation put acute stresses on water supplies, increased water-use efficiency for agriculture is critical to food production (Henry, Murphy and Cowie, 2018). With the exacerbating impacts of climate change and population growth, water-related challenges are becoming more prevalent, and change occurs more quickly (Henry, Murphy and Cowie, 2018). An integrated water governance approach is essential to managing these risks and pressures effectively and providing for SLM.

While some countries have updated their water laws, many of the laws are decades old and water-related challenges may have changed. Since most water resources are owned and managed by the state, administrative decisions can have a great deal of bearing on the effectiveness of water-related initiatives. However, in order to achieve sustainability, governance regimes should include deliberative stakeholder involvement down to the community level as well as prioritization of rural livelihoods. Strong institutions are also essential to successful water management systems.

Water rights governance is complex and varies greatly between states and regions, as vastly different climates have diverse water-related pressures and different states employ different government structures that often reflect cultural values and past practices. FAO's legislative study on *The Right to Water for Food and Agriculture* offers a detailed analysis of water rights and tenure (Morgera *et al.*, 2020). The study highlights the importance of prioritizing agriculture, subsistence and/or traditional agriculture, and pastoralism in national laws when determining water-use rights to prevent starvation and to secure livelihoods and cultural practices. These considerations are directly relevant to SLM, as local community well-being is at the centre of sustainability.

Figure 13. The water-food-energy nexus to support integrated water resources management



Source: FAO, 2022a. *The State of the World's Land and Water Resources for Food and Agriculture – Systems at breaking point. Main report.* Rome. https://doi.org/10.4060/cb9910en

Given the complexity of water management, many states develop bodies specific to water management that are responsible for intersectoral management of water resources. Sustainable water management duties fall to ministries of water as well as agriculture and environment and other bodies. Decentralization of water governance, in which local states manage water resources at the level of catchment areas or aquifers under the guidance of national-level water policies or strategies, is an important element of sustainable water management. For transboundary water resource management, foreign policy actors and state security strategists can be involved in addition to a state's traditional water management authority structures.

Box 46. Emphasis on water efficiency in Uttar Pradesh (India)

The Uttar Pradesh *Water Management and Regulatory Commission Act of 2008* in India states in its prefatory note that "water scarcity and its deteriorating quality is becoming apparent" and that it is incumbent on the State to "put the limited and scarce water resources in most economical, efficient, and sustainable use to promote its optimal use for drinking water, agro and non-agro industries, irrigation, hydro-power, ecology, navigation, and other uses."

Recognizing the importance of an integrated approach, many states have cross-cutting bodies that determine water regulations across sectors. Armenia's National Water Council comprises representatives from state governance bodies responsible for "environment protection, agriculture, urban development, state property management, public health, finance, and economy" (Morgera *et al*., 2020). The integration of water management with other natural resources and environmental management is essential to effective SLM.

Other states have administrative bodies that handle different levels and sectors of water management; for this approach, policymakers should carefully consider gaps or overlap in administration as well as address resource shortfalls that may arise due to financial or personnel constraints. A stakeholder mapping exercise could be beneficial for policymakers taking this approach.

Some states govern water management at the basin or aquifer level. In order for this approach to fit into an SLM framework, there should be consideration of the interplay between different bodies of water and each other as well as different bodies of water and other resources. Local water resources committees offer deep understanding of the factors that affect a particular water source, but without broader collaboration a committee's efforts can be negated by other stakeholders' decisions.

Using water efficiently. Efficient water use in agriculture is increasingly important in a water-stressed world. Accordingly, integrated water resources management has grown in popularity across water laws and policies. Integrated water resources management seeks to increase rainfall infiltration, reduce runoff, and lessen the risk of moisture stress and erosion in the soil through improved soil moisture conditions (Henry, Murphy and Cowie, 2018). It requires decentralized management and the creation of river basin organizations, with an emphasis on economic efficiency as well as issues of equity and environmental sustainability, to ensure sound and systematic knowledge of the water resources in question (Connor, 2015). An Organisation for Economic Co-operation and Development (OECD) survey in 2012 found that 13 Latin American and Caribbean countries had coordination mechanisms to support integrated water governance across different sectors and levels of government. While the survey also identified implementation gaps, the policy frameworks are supportive of better water management.

States adopt different strategies to manage limited water resources. Some states use a tiered licensing system to provide more stringent checks and controls on high-impact water users. Other states choose to set benchmarks for water quality and availability, taking steps to mitigate issues as they arise. This approach requires effective monitoring and agility on the part of the government administration; inability to accurately assess and react to information regarding water resources has contributed to water management failures in a number of cases (Connor, 2015). It is also possible to use a combination of these approaches.

Some states set benchmarks and standards for water quality and availability that are monitored for problems. Argentina's *Law No. 25.688 on Environmental water management of 2002* gives the national environment authority the power to set maximum pollution levels and other guidelines and standards concerning water quality; it also governs minimum environmental protection standards for water usage. The law further includes a list of actions that might affect water quality or availability and are thus subject to government authorization or permit schemes (Law Library of Congress, 2013). If monitored properly, this can be a less resource-intensive management system.

Box 47. Sustainable water management principles in Zambia

Zambia's *Water Resources Management Act of 2011* states in Article 6:

The management of water resources in Zambia shall be governed by the following principles–

(a) water resources shall be managed in an integrated and sustainable manner;

(b) water is a basic human need and as such domestic and non-commercial needs shall enjoy priority of allocation use;

(c) the environment is a water user and shall enjoy second priority of allocation use to the human need;

(k) there shall be equity between both genders in accessing water resources and, in particular, women shall be empowered and fully participate in issues and decisions relating to the sustainable development of water resources and, specifically, in the use of water;

(p) Zambia's water resources shall be protected, used, developed, conserved, managed and controlled sustainably, beneficially, reasonably and equitably for the needs of the present and future generations; and

(q) the management, development and utilisation of water resources shall take into account climate change adaptation.

Multilevel systems to avoid administrative gaps. Multilevel water management systems are widely recognized as an effective way to manage shared resources, with participation of local communities in decision-making being essential (Morgera *et al*., 2020). Brazil's *National Water Resources Policy of 1997* calls for water use plans to be developed at the country, state, and river basin levels (Article 8).

Some water management structures are complex, and institutional fragmentation can lead to gaps in management. Regularly updating a national strategy and taking stock of existing water resources and use plans can help to ensure that water-related regulations can react to changing needs and technologies and can help to clarify responsibilities. Kenya's *Water Act of 2016* requires the Cabinet Secretary to create a National Water Resource Strategy every five years in a process that includes public participation and contains details of existing water resources; updates measures for protection, conservation, and management of water resources and approved land uses in riparian areas; and sets functional responsibilities for national and county states in relation to water resources management, among others (Article 10).

Box 48. Kenya's integrated and inclusive approach to water management

Kenya's *Master Plan for the Conservation and Sustainable Management of Water Catchment Areas in kenya of 2012* states,

> Our country realizes that our economy, society and environment are founded on services provided by ecosystems. Water, biodiversity, quality soils, and air are fundamental to economic productivity and social wellbeing and must be protected to provide every Kenyan's constitutional right to a clean and healthy environment and if Kenya is to become a middle-income county by 2030 as set out in the country's development blueprint Vision 2030.

The Master Plan further recognizes the importance of indigenous knowledge to successful, sustainable management of water resources. Acknowledging that Indigenous Peoples have long depended on water resources for their well-being and survival, leading to accumulated knowledge on the water resources, indigenous involvement is identified as invaluable to decision-making on resource use, conservation and development. In Kenya, water management involves a number of institutions, and weak institutional linkages and synergies have been identified in the Master Plan as a main problem for conservation and protection of water resources. The Master Plan recommends strengthening structures that incorporate all stakeholders at national, county, and community levels to strengthen synergy and adoption of conservation technologies and innovations across the country. The Master Plan further recognizes that gender dimensions in the use of water catchments influence their conservation, and that gender mainstreaming in water management policies, plans, and budgets should be prioritized.

Local governance should be guided by national policy to ensure that fragmentation and policy incoherence do not plague water management. This can be through broad policy setting at the national level, or through centralized decision-making guided by decentralized advisory bodies. Centralized decision-making can help to manage resources more efficiently in cases of capacity constraints, as low level of administration can give inputs and information to experts at the national level; however, decentralized decision-making can give local users more autonomy, leading to empowerment and engagement of communities (Morgera *et al*., 2020). Both approaches can work effectively, but local, public consultation is essential to effective administration.

Regulating equitably. States should consider impacts on smallholders, Indigenous Peoples, and local communities across water management plans. Such groups should be exempted from required permit schemes when water use is for domestic or subsistence use. In countries that set strict top-down regulations on water use, smallholder farmers and other local communities can be particularly affected due to low legal literacy, inability to easily monitor water use, and government resource constraints that allow remote areas to fall outside of normal administration.

The Lao People's Democratic Republic, recognizing these potential drawbacks, provides in the *Law on Water and Water Resources of 1996* that small-scale use of water may be undertaken for family use, fishing and raising fish, collecting materials around a water source, and use in agricultural and forestry production and for raising livestock at the household level (Article 15). This provision protects farmers against potential fines or other penalties that could arise without basic knowledge of the law, and the right can be restricted by the relevant ministry or local administrative authority if water quality issues arise. The Law further delineates between medium and large-scale use of water, noting different requirements for each type. While both large and medium-scale projects need registration and approval, only large-scale projects require a feasibility study, EIA, and detailed measures to respond to the EIA's findings (Article 18). This system promotes sustainability through its recognition of different constraints and needs of water users and the water resources.

Inclusive decision-making. User-driven and participatory approaches are key principles of SLM (FAO, 2023a). Accordingly, decision-making at any level should include comprehensive consultation with all water users and sectors that will be affected. Indigenous Peoples and local communities have long depended on water resources for their well-being and survival, leading to accumulated knowledge on water resources that is invaluable for effective management planning.

In determining representation in administrative bodies, it is important to consider gender, regional, and ethnic diversity. Administrative bodies should include water resource users and CSOs in governing bodies at all levels of administration, recognizing their unique perspectives and the importance of widespread buy-in to policy success. Water use and conservation also have substantial gender dimensions that should be considered and prioritized across water management policies, plans, and budgets, such as in the *Master Plan for the Conservation and Sustainable Management of Water Catchment Areas in Kenya of 2012*.

Participatory management is another way to include local water users in decision-making that maintains government control over the process. The inclusiveness of this model can also serve to incentivize local communities to support water management plans and to conduct water management activities, as they are planned by the communities themselves.

The State of *Gujarat in India enacted the Gujarat Water Users' Participatory Irrigation Management Act of 2007*, which established Water Users Associations that govern participatory irrigation management and other water management functions (Article 10). An Association is comprised of holders of land using the water in question for irrigation purposes as well as persons residing on or carrying out business in areas that use the water, and the Association is entrusted with the duties of determining water demands, ensuring proper apportionment of the water, and investigating and acting on complaints regarding water

Box 49. Measuring benefits of participatory management in the Philippines

The Philippines reformed its National Irrigation Administration to reflect a participatory approach after finding that local communities had little incentive to support irrigation management and that many irrigation canals had been abandoned or rerouted without approval. The changes included the introduction of motivated, mostly female, community organizers; increased accountability to water users; increased agency for newly established local irrigators' associations; and restructuring of site assessments to reflect diverse conditions on the ground. The changes led to increased rice yields, increased farmer contributions to irrigation costs, and increased percentage of systems in which farmer suggestions were incorporated into irrigation designs.

Source: FAO, 2002c. National integrated policies: Progress on SARD within Countries. In: *Land and Agriculture: Challenges and perspectives for the World Summit on Sustainable Development Johannesburg 2002*. FAO. http://www.fao.org/3/y3951e/y3951e07.htm

distribution (Article 19). In Rajasthan, India, the creation of similar watershed user groups was found to lead to higher uptake of sustainable practices based on indigenous and biological technologies that have led to improved yields across the state (FAO, 2002c). In other areas, however, water user groups have had less success (Hodgson, 2009). Strong and accessible grievance mechanisms for both users in formal water user groups as well as those outside of the group are important to ensure equitable results from this model.

Enforcement and incentivization strategies. Some states take a prohibitive approach to managing conservation of water resources. In Myanmar, the *Conservation of Water Resources and Rivers Law of 2006* aims to conserve and protect water resources "for beneficial utilization by the public" as well as to contribute to economic development "through improving water resources and river systems" (Article 3). While these aims are positive and well-designed, the law's only provisions relating to farmers and other members of the public are a set of prohibitions aimed at protecting water (Chapter V and VI). South Africa's *National Water Act of 1998* takes a more measured approach, considering four water-related activities to be controlled at all times including irrigation using waste or water containing waste from certain sources, modification of atmospheric precipitation, altering the flow regime of a water resource as a result of power generation, and aquifer recharge using waste or water containing waste. The Act also allows the minister to declare other activities having a detrimental effect on water resources, to be controlled activities as the need arises; however, such determinations require public consultation (Part 5). This serves as a beneficial check on overregulation. Some states fail to recognize the important partnership opportunities available in local communities; given the difficulty of monitoring and enforcing protective provisions in every water source, structures that include education and incentives for compliance can be more successful than those that only penalize non-compliance.

Incentivizing water-saving techniques through financial benefits can encourage their uptake. For instance, the *Gujarat Water Users' Participatory Irrigation Management Act of 2007* encourages Water User Association members to adopt water saving techniques or devices, and the Association can recommend those members to the State Government for remission of water rates (Article 22(7)).

Education and agriculture extension programmes that focus on improving water management practices across small farms and communities can also have a beneficial impact on water use across the country. FAO offers a Participatory Training and Extension Programme in Farmers' Water Management to assist technical staff and other stakeholders to transfer water management responsibilities at the field and irrigation level (FAO, 2023i).

Challenges. There are many common challenges for managing water within an SLM framework including: weak institutional linkages and synergies; conflicting institutional mandates; lack of clear funding mechanisms for water management; lack of integrated monitoring and evaluation systems; low levels of

awareness and capacity of stakeholders; degraded watersheds; land degradation and soil erosion in water catchment areas; water insecurity; poor waste management; livelihood insecurity; overdependence on biomass energy; and limited involvement of women and youth in water management activities. These challenges are all identified in Kenya's *Master Plan for the Conservation and Sustainable Management of Water Catchment Areas in Kenya of 2012*.

A continual challenge for water management is the need to reconcile human water-use needs with the water resources available. In many areas, water scarcity is getting worse, largely due to socioeconomic development (Tunnicliffe, 2018). To adapt to the socioeconomic and climatic changes, more equitable and effective governance is needed, along with increased investment in technology and facilities (Tunnicliffe, 2018). Since water availability is also dependent on weather patterns, it is crucial to prepare for significant seasonal variability through improved planning in reservoir operations and adjusted irrigation periods in agriculture. Importantly, women and youth are disproportionately impacted by water scarcity and the lack of safe drinking water (Connor, 2015), which should be taken into consideration when designing policy instruments.

With regard to irrigation management, advisory services are increasingly stepping in to fill the role of public agencies regarding new techniques and technologies for efficient water use. However, overreliance on these commercial agencies can be problematic for stable irrigation management if the work is found to not be financially sustainable for the company. This is a major challenge in many countries. Ensuring local participation or control in irrigation management can help to quickly identify when such shortfalls occur, and government intervention is needed. Impact gaps, achievement gaps, and procedural gaps in irrigation management can also indicate a need for internal reforms or transfer of decision-making responsibilities to local stakeholders (Vermillion and Sagardoy, 1999).

Infrastructure is critical to successful water management alongside non-structural investments in watershed management and land-use planning (Connor, 2015). However, funding for water infrastructure in most countries is neither adequate nor sustainable, according to the United Nations. Water services remain low on the scale of policy priorities in many cases (Connor, 2015).

Across water management legislation, countries should ensure that attention is paid to traditionally underrepresented groups that rely on water for subsistence and livelihoods. In particular, specific provisions may be needed to ensure women's access to decision-making processes concerning water resources. Indigenous Peoples' and local communities' rights should be considered, as well as pastoralists, and consent should be sought for any decisions regarding management of waters traditionally used, owned, or occupied by those groups. Furthermore, environmental and social impact assessments should require provisions regarding FPIC for any water-related developments in such areas.

Many countries have struggled with the administration of water rights, both for use of water and for discharge of waste and wastewater into water bodies or soil (van Koppen, Butterworth and Juma, 2005). Another challenge is monitoring and enforcement of compliance, especially in terms of licences and permits (van Koppen, Butterworth and Juma, 2005). A leading cause is that legislative drafters often fail to assess institutional capacity to carry out prescribed activities (van Koppen, Butterworth and Juma, 2005). Pluralistic legal frameworks, including formal and customary laws that overlap, cause more confusion in areas of low institutional capacity and control (van Koppen, Butterworth and Juma, 2005).

Preparing for the exacerbating impacts that climate change will have on access to clean, safe, water sources, and improving the water infrastructures, is critical.

Box 50. Key messages | Sustainable water management

- Adopt regulations and develop infrastructure to promote the efficient use of water, through prohibitions on unsustainable use as well as incentives for water-saving techniques.
- Adopt inclusive decision-making and community participation, such as through establishment of Water Users Associations for participatory water management at a local level.
- Enact grievance mechanisms for water use that ensure equal access to safe and accessible water.
- Ensure that multilevel water administration systems are in place to avoid gaps in implementation.
- Develop national policies that are devolved to local level for implementation.
- Consider education and incentives as enforcement techniques.
- Ensure that regulations are equitable in effect, as well as design.
- Invest in enhancing water infrastructure to withstand climate change.

4.8 Conservation and protected areas

Biodiversity, a central element of sustainability, has suffered from unsustainable use and degradation of ecosystems around the world. Maintaining biodiversity is critical for the health of the planet, humans, and land, in addition to the health of the species themselves. Protection of species habitat, through conservation measures or creating protected areas, is a central approach to maintaining biodiversity. Sometimes referred to as "land sparing," the practice of conserving high-value ecosystems as opposed to practising sustainable use of those areas in a "land sharing" system can be essential to the integrity of the ecosystem, especially if it is degraded, stressed, or particularly fragile (Henry, Murphy and Cowie, 2018). However, Indigenous Peoples and local communities can be harmed in the execution of "land sparing" when legitimate land tenure rights are not respected (Boyd and Keene, 2021). As such, while conservation approaches and protected areas can help to balance areas of more rigorous land use or degradation in an SLM system, SLM principles can also help with the design of more equitable, effective conservation schemes. A balance between sustainable use and conservation calls for decisions that benefit both biodiversity and local communities.

Since the World Parks Congress in Durban in 2003, there has been growing attention to community rights and interests, FPIC principles, and mechanisms for participation and benefit-sharing in the management of protected areas (Rights and Resources Initiative, 2015b). Research from the International Union for Conservation of Nature (IUCN) has found that environmental degradation and increased competition over resources exacerbate gender-based violence, which should be addressed in working towards conservation goals (IUCN, 2020). In 2008, IUCN and CBD also recognized the Indigenous and Community Conserved Areas (ICCAs) as key governance actors in nature conservation, encouraging states to formally recognize ICCAs in their legislations on protected areas and conservation (Secretariat of the CBD, 2012b).

An efficient protected area system must be supported by well-defined legal infrastructure. Currently, most national frameworks provide for the establishment of different categories of protected areas, and government retains the power to allow and prohibit certain activities in the interests of conservation. When it comes to communities, there are variations regarding communities' rights to, management of, and access to the land and resources inside protected areas. Nevertheless, studies have shown that community-based initiatives to preserve natural habitats can significantly complement government efforts, suggesting that devolution of management to communities is a valuable option.

Box 51. The Kunming-Montreal Global Biodiversity Framework and sustainable conservation

In 2022, the signatories to the *Convention on Biological Diversity (CBD)* agreed on the *Kunming-Montreal Global Biodiversity Framework*, which has 23 action-oriented global targets for urgent action over the decade to 2030. A number of targets are of particular relevance to sustainable land management, including:

TARGET 3 – "Ensure and enable that by 2030 at least 30 per cent of terrestrial and inland water areas, and of marine and coastal areas, especially areas of particular importance for biodiversity and ecosystem functions and services, are effectively conserved and managed through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures, recognizing indigenous and traditional territories, where applicable, and integrated into wider landscapes, seascapes and the ocean, while ensuring that any sustainable use, where appropriate in such areas, is fully consistent with conservation outcomes, recognizing and respecting the rights of indigenous peoples and local communities, including over their traditional territories."

TARGET 10 – "Ensure that areas under agriculture, aquaculture, fisheries and forestry are managed sustainably, in particular through the sustainable use of biodiversity, including through a substantial increase of the application of biodiversity friendly practices, such as sustainable intensification, agroecological and other innovative approaches, contributing to the resilience and long-term efficiency and productivity of these production systems, and to food security, conserving and restoring biodiversity and maintaining nature's contributions to people, including ecosystem functions and services."

TARGET 22 – "Ensure the full, equitable, inclusive, effective and gender-responsive representation and participation in decision-making, and access to justice and information related to biodiversity by indigenous peoples and local communities, respecting their cultures and their rights over lands, territories, resources, and traditional knowledge, as well as by women and girls, children and youth, and persons with disabilities and ensure the full protection of environmental human rights defenders."

State Parties have undertaken to start monitoring and reporting on the traditional knowledge indicator (HI 22.1) as of 2026.

Source: Kunming-Montreal Global Biodiversity Framework. Adopted by the Conference of the Parties to the CBD, December 2022. CBD/COP/DEC/15/4.

Clearly define institutional arrangements. The institutional arrangements for conservation and protected areas vary across nations due to the differences in forms of government, social norms, and conservation objectives. The responsibility to designate and manage protected areas and conservation schemes at the central level often lies with the head of state or the central ministry in charge of environment, tourism, or natural resources. Some conservation laws establish their own management bodies to oversee the relevant duties.

At local levels, many countries with recognized community rights to land have established local conservation bodies to govern and receive revenues from management of wildlife resources in protected areas. Regardless of the form of government, it is important that the assignment of power and responsibility over conservation areas is clearly defined in legislation and policies to establish accountability.

Multiple governance approaches for conservation may exist simultaneously in one protected area site or across a country's protected area network. The IUCN has named four broad types of governance approaches, namely the conventional state-controlled governance, governance by indigenous and local communities (also characterized as ICCAs), governance by private property owners (known as private protected areas [PPAs]), and shared governance among actors such as NGOs and companies (IUCN, 2013). The ICCAs and PPAs can form ecological corridors or buffer zones that complement public protected areas and enable significant conservation benefits. Therefore, they should be recognized and encouraged by protected areas legislation and be further brought in line with the formal protected areas system on legal considerations such as goals, standards, responsibilities, monitoring, and breach punishment.

Ensure that land slated for protection is free of conflicting land claims. It is critical that the state carefully considers how protected areas are drawn on communal or private lands. Legislators should be cognizant of the legitimate tenure rights of the individuals, local communities, and Indigenous Peoples to the land and resources, addressing the communities' right to co-manage and benefit from protected areas, even in areas that are not visibly held. Community forums and other efforts to engage communities in conservation planning can help to clarify customary tenure and use rights and avoid conflicts.

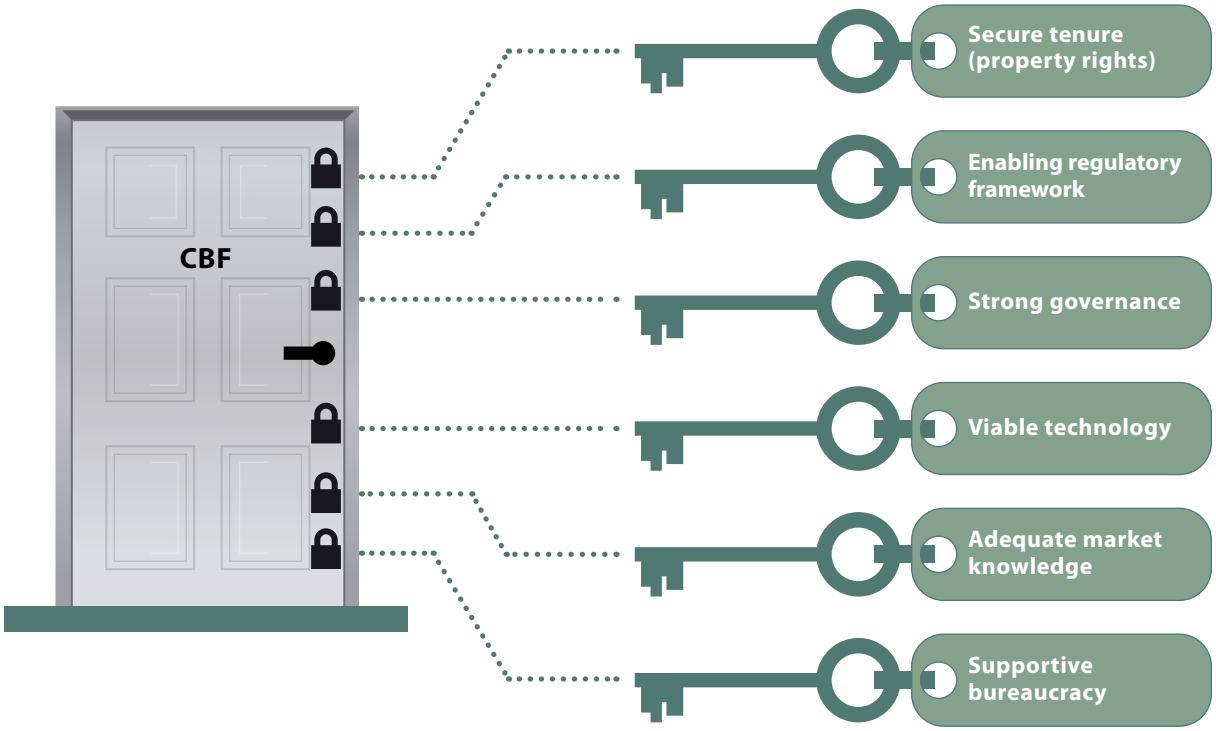
Communal or customary land rights on the land of protected areas creates complex problems due to the large spatial overlap between communal land and protected areas. In some countries, customary rights to land and land-related resources are not recognized by the formal legal framework. When protected areas are drawn on communal or ancestral land, local communities and Indigenous Peoples who hold claims to these areas of land may be further marginalized or have their rights extinguished. The International Institute for Environment and Development (IIED) report listed conservation initiatives as one of the notable threats to the territories and resources of local communities and Indigenous Peoples (Jonas, Roe and Makagon, 2014).

In the Philippines, the *National Integrated Protected Areas System Act of 1992* lays the foundation for the establishment of a protected area system (Section 2). In many cases, areas protected under this Act overlap with ancestral claims of Indigenous Peoples that are recognized under the *Indigenous Peoples Rights Act of 1997*. According to one estimate, 69 of the 99 protected areas overlap with ancestral domains covering about 1 million hectares (Secretariat of the CBD, 2012b). A Joint Memorandum Circular issued by the DENR and the National Commission on Indigenous Peoples in 2007 requires the DENR to closely coordinate with local Indigenous Peoples to define protected area boundaries where they overlap with ancestral claims. The Joint Memorandum provides that Indigenous Peoples "shall have primary responsibility to maintain, develop, protect and conserve such overlapped areas" with assistance from the DENR. Upkeep costs for such schemes can be prohibitive and disincentivize rigorous protection of the resources if communities are not directly benefitting from the conservation efforts (La Viña, Kho and Caleda, 2010).

Prioritize and incentivize local participation in conservation objectives. Conservation efforts have frequently been carried out to the exclusion of local communities, sometimes on lands commonly used or owned by other land users. Conservation schemes that draw in local participation through participatory decision-making or income generation opportunities are more sustainable, as communities will be more supportive and conservation plans can benefit from local knowledge. Studies have shown that participation from local communities and collaborative management is critical for the sustainable success of protected areas (Andrade and Rhodes, 2012; Mbile, 2005).

Forest conservation frameworks often rely on community-based conservation in order to achieve sustainable, and equitable, conservation goals. In Zambia, the *Forests Act of 2015* requires the minister to work with local communities, chiefs, and other forest stakeholders to declare forests as national or local forests, for conservation means. Malawi's *National Forest Policy of 2016* provides incentives for community-based conservation and sustainable use and production. The Policy uses forest resources as a way to achieve poverty alleviation. Moreover, it encourages women to actively participate in forest and tree resource utilizations and management. The *Guyana Forests Act of 2009* similarly promotes sustainable forestry through participation of local communities. It includes a consultation requirement to receive a licence for mining or petroleum extraction. In India, the *Chhattisgarh State Forest Policy of 2001* seeks enhancement of environmental stability through preservation and deploys conservation strategies that include promotion of forest education, recognition of traditional rights and concessions, and application of technology to develop a state-wide forest database.

Figure 14. Keys to effective community-based forestry



Source: FAO, 2017e. *Voluntary Guidelines for Sustainable Soil Managment*. Rome. https://www.fao.org/3/bl813e/bl813e.pdf

Protected areas can support the socio-economic development of the communities and residents living on or adjacent to them as well. When well planned, protected areas can generate benefits that have direct and immediate economic value for these stakeholders, including revenues for local livelihoods flowing from tourism. As noted in the Kunming-Montreal Global Biodiversity Framework of the CBD, to achieve sustainable management of biodiversity, it is important to acknowledge the important roles and contributions of Indigenous Peoples and local communities as custodians of biodiversity and as partners in its conservation, restoration and sustainable use. It further states that in accordance with international law and human rights law, conservation measures such as the creation of protected areas must ensure that the rights, knowledge – including traditional knowledge – associated with biodiversity, innovations, values and practices of Indigenous Peoples and local communities are respected, documented and preserved with their FPIC, and with their full and effective participation in decision-making. In addition, the implementation of a human rights-based approach can ensure that these rights are respected, protected and promoted.

Namibia possesses one of the largest protected area networks in Africa. The *Nature Conservation Ordinance No. 4 of 1975* as amended by the *Nature Conservation Amendment Act No. 5 of 1996* establishes the legal basis for protected areas, management objectives, and the roles of residents and local communities. According to Act No. 5, any group of people residing on communal land may apply to the Ministry of Environment and Tourism (MET) to have the area they inhabit, or part of that area, declared a conservancy (Section 24). Under the institutional framework for community conservancies, rights entitled to communities are not subject to arbitrary adjustments and can be defended in court. While these conservancies ostensibly protect the rights of Indigenous Peoples, in practice Namibia's Indigenous communities have found little protection against encroachment (UN, 2013). Competing interests must be carefully managed and the rights of communities to access and use resources in protected areas must be properly enforced in order to maintain sustainability.

The *Policy on Tourism and Wildlife Concessions on State Land of 2007* in Namibia requires the MET to allocate tourism concessions in protected areas directly and preferentially to local communities living adjacent to or inside protected areas (Para. 4.1.4). This is because there is a consensus among Namibia's high-level decision-makers that emphasizing the inclusion of local communities in planning and decision-making in protected areas helps to provide economic incentives for local communities to use land and other natural resources in a more sustainable way (Nelson, 2010). As a result, communal conservancies have been a major driving force for the expansion of protected areas in Namibia, where roughly 40 percent of the country is now dedicated to wildlife conservation (Namibia Ministry of Environment and Tourism, 2010).

A community-based natural resource management (CBNRM) policy adopted by the Botswana Parliament in 2007 has provided for community use rights for natural resources. It states that the "Government will promote the involvement of communities in the management of protected areas and identify socio-economic needs of neighboring communities to be reconciled with the management objectives of the adjacent protected areas" (Jones, 2008). Where feasible, communities may be allowed to use specified natural resources and perform certain cultural practices in protected areas. In order to obtain the rights to natural resources such as wildlife and fish, communities must form a Representative Accountable Legal Entity and develop a land-use management plan (Buzwani *et al*., 2007). Communities also need to monitor progress and report on it. In terms of revenue distribution, the CBNRM communities can access 35 percent of the revenue while the other 65 percent is deposited in a National Environmental Fund for CBNRM and ecotourism use in the entire country (Pienaar, Jarvis and Larson, 2013). This measure promotes balanced development among communities with high or low value resources.

Regulated safari hunting in protected areas such as parks and reserves was the main activity for Botswana's tourism industry. Communities also heavily engaged with safari hunting based on the premise that improved livelihoods from safari tourism would in turn facilitate local communities to support wildlife conservation (Mbaiwa, 2018). An estimate in 2010 shows that safari hunting generated 72 percent of income for CBNRM programmes in Botswana (Lindsey, 2010), and illegal wildlife exploitation had decreased in CBNRM areas (Mbaiwa, 2018). Studies also show that where regulated and monitored safari hunting is carried out, the positive livelihoods outcome have resulted in better attitudes towards conservation and stronger involvement in CBNRM by local communities (Mbaiwa, 2018). However, the Government of Botswana issued a hunting ban in 2014, citing wildlife decline as the major reason, which replaced safari hunting with non-consumptive tourism (Mbaiwa, 2018). Since national parks, game reserves, wildlife management areas and controlled hunting areas account for 41 percent of Botswana's surface area, the ban has affected a significant portion of land where wildlife utilization is the main form of land use, and of local communities who depend on hunting tourism for income, jobs, and related social services. While there is not yet conclusive evidence linking the quota-based safari hunting with wildlife decline, negative impacts of the ban have emerged including loss of livelihoods for local people, deteriorating conservation attitudes and incentives, rising incidents of poaching, and escalating human–wildlife conflicts (Centre for Applied Research, 2016). Botswana subsequently reversed elements of the hunting ban.

Creating an enabling environment for private conservation efforts can avoid some of the administrative burdens of enforcing conservation schemes. With the relevant legal structures in place, individuals and communities can choose to conserve natural, biological, agricultural, or heritage aspects of areas by using easements. This legal approach allows the dedication of land to a specific purpose or limits the land's uses to a specified set of uses to protect critical aspects of the land. Known as conservation easements in some areas, these legal restrictions on land can create tax benefits to the grantor and ensure that land under an easement is managed for a specific use, such as wildlife habitat or low-density use, in perpetuity. These can be created by private parties without government intervention (Land Trust Alliance, 2023). Setting up a conservation easement is one way for land users to participate actively in conservation decisions and benefit financially in addition to the indirect benefits from higher biodiversity in the area.

Some states have applied the easement approach in national law. In Botswana, the *Wildlife Conservation and National Parks Law of 1992* allows owners of private land to have their land declared a private game reserve for the protection and preservation of wildlife.

Likewise, a study in northern Peru showed that many rural communities were actively promoting or participating in conservation initiatives with significant impacts, including land protection, hunting control, and reducing deforestation (Shanee, N., Shanee, S. and Horwich, 2015). Peru's private conservation scheme allows privately-owned titled family plots or community land to be registered with the Ministry of the Environment as a private conservation area for an unlimited period, but the government does not compensate landowners for this restriction. Although some of the private conservation areas are relatively small, they complement the national protected area network and provide connectivity.

However, protected areas that are created through conservation easements face some challenges as well. Because they are usually created by private citizens, they do not necessarily reflect community preferences nor input. There have been allegations of conservation easements being used to perpetuate tax evasion, and there may be little coordination between areas under easement, thus reducing the usefulness of these areas from an ecological perspective. Finally, these easements claim to be perpetual, which calls into question future land-use management and planning as the climate changes.

Consider local management of conservation as a low-cost compliance tool. Local management is a common tool to ensure that the actors carrying out conservation activities and ensuring compliance are those who benefit from and are connected to the land in question. In Sierra Leone, the *Conservation and Wildlife Policy of 2010* requires partnership, coordination, and integration among diverse sectors, government entities, non-government institutions, and individuals. In particular, the Policy advocates for actors to engage in strategic land use and coastal and marine resource planning at national, regional, and local levels to resolve conflicting interests and ensure effective wildlife conservation. Mutually beneficial cooperation with neighbouring countries and international organizations on wildlife conservation issues is encouraged where such collaboration promotes implementation of the Policy. However, the policy has yet to be reflected in law despite a recent amendment to the *Wildlife Conservation Act in 2022*.

Public awareness campaigns can help to inform local communities and invite participation in planned conservation schemes. Some countries rely upon the public to uphold conservation principles through public awareness campaigns. In Nepal, the *National Wetlands Policy of 2003* requires the state to disseminate information to raise public awareness about wetlands and to conduct seminars, trainings, and discussion programmes on wetlands in different parts of the country. The Policy also builds knowledge and skills of decision-makers from local bodies, NGOs, private organizations, and the general public for the conservation, management, and wise use of wetlands resources. In Sri Lanka, the *National Policy on Protection and Conservation of Water Sources of 2014* requires the state to take action to educate all the stakeholders, including the general public and students through the school curriculum, on the importance of protection and conservation of the areas related to water sources. The Policy encourages private sector participation in protection and conservation of water sources and implementation of programmes through Public Private Partnerships.

While both of these laws offer strong foundations for informing communities about the benefits and requirements of conservation, they fail to offer opportunities for local communities and the general public to identify concerns prior to the implementation of the planned conservation. An SLM approach to conservation requires greater collaboration with local communities and land users.

Conservation schemes should consider local needs and impacts. Some conservation schemes require permits to regulate use. In Belize, under the *Private Forests Conservation Act of 1965*, no person can fell a tree without first submitting an application to the Chief Forest Officer and obtaining a permit. However, applications do not need to be submitted if a person is felling a tree under 2 meters in girth for agriculture and not selling the timber. This legal structure allows for use by smallholder farmers that balances the overall integrity of the forest and the needs of the local communities, creating a more sustainable system. However, tree felling permit systems under strict conservation schemes are often subject to corruption and abuse. Strong rule of law and enforcement capability is required for these systems to work effectively in the absence of other safeguards.

Conservation efforts remain vulnerable to exploitation. Extraction is lucrative and enforcement capacity is typically low. Permit schemes can raise the likelihood of abuse and corruption in resource-constrained contexts. Both protected areas and other conservation schemes face competing claims for uses from the extractive, agricultural, and forest industries. States that face budget shortfalls can find it difficult to reject the quick economic benefits that can flow from resource extraction instead of preservation. When designing a conservation scheme, consider enforcement capacity before finalizing. Poorly enforced restrictions can cause local communities to suffer from lack of access while bad actors continue to benefit, and biodiversity gains are minimal.

Conservation schemes can be used to facilitate restoration of degraded areas. Part of biodiversity conservation is restoration of areas that have lost much of their biodiversity. Degraded areas are becoming more common, and states are increasingly including restoration provisions in their laws. In Sri Lanka, the *National Policy on Protection and Conservation of Water Sources of 2014* promotes rehabilitation of degraded lands in the areas related to water sources. In Malaysia, the *Land Conservation Act of 1960* empowers the Ruler in Council or the Yang di-Pertuan in Council of a state to acquire hill land for purposes of preventing soil erosion once land has been degraded or is at risk of degradation. It also requires owners of land on which the danger of landslides exists to comply with notices served by the Land Administrator requiring them to undertake certain acts or prohibiting them. In China, the *Water and Soil Conservation Law of 1991* seeks to reduce water and soil loss and requires local people's states at all levels to take measures such as rehabilitating nature, encouraging the planting of trees and grass, enlarging the areas covered by trees and grass, and conserving water resources in order to combat the deleterious effects of degradation.

Box 52. Key messages | Conservation and protected areas

- Ensure that the legal framework incorporates the principles and targets outlined in international agreements, including those of the *Kunming-Montreal Global Biodiversity Framework.*
- Protected areas are a key sustainable land management (SLM) tool but they must be created in the context of overall SLM goals and in direct, regular engagement with local land users. An integrated approach can help to take into account diverse interests and perspectives.
- Conservation measures must be in line with international human rights law, ensuring that the rights, knowledge – including traditional knowledge – associated with biodiversity, innovations, values and practices of Indigenous Peoples and local communities are respected, documented and preserved with their free, prior and informed consent, and with their full and effective participation in decision-making.
- Clearly define institutional arrangements to allow for transparency and avoid gaps.
- Consider local management of conservation through devolving management responsibilities to communities.
- Provide incentives to local community for active participation in conservation, such as revenue-sharing arrangements, tourism concessions, income generation opportunities, and Payments for Ecosystem Services.
- Recognize the often-heterogeneous nature of local communities, in particular when some of them are Indigenous Peoples under pressure from other local communities.

4.9 Environmental law and pollution

Sustainable land management relies on environmental laws that protect the integrity of natural resources, human health and biodiversity from pollution, overexploitation, and abuse. Framework environmental laws often contain sustainability considerations and create bodies that oversee environmental protections that include SLM practices. Similarly, other frameworks in the land management system, such as sustainable agriculture, forestry, and water management, reduce pollution loads in both soil and water, which complements environmental laws. Healthy soil contains adequate levels of organic matter and biodiversity that contribute to immobilize and degrade pollutants in soil over time reducing contaminants leaching to groundwater, and good soil management decreases erosion, thus reducing water pollution as fewer pollutants can travel from soil to water.

Attaining zero pollution, however, is unlikely as pressures on land resources continue to grow alongside climate change effects. Toxic waste and heavy metal pollution, side effects of increased industrialization, land disturbance, and mining operations, continue to plague most countries in one way or another. Unsustainable land use is another major issue that environmental laws can help to address. As such, legal instruments that govern environmental protections, the disposal of waste, monitoring of pollutant levels, and remediation of polluted water bodies, soil, and air, are indispensable to a well-functioning land management system.

In recent years, great progress has been made across the globe in recognition and protection of the right to a clean and healthy environment in the spirit of sustainable development. As of 2017, 176 countries have environmental framework laws; 150 countries have enshrined environmental protection or the right to a healthy environment in their constitutions (UNEP, 2019).

Pollution of land can be integrated into framework legislation that regulates the environment across a diverse range of activities and agencies, or pollution of land can be regulated in targeted legislation that focuses solely on pollution concerns. In either event, it is important that the law provides regulators with guidance on how to control pollution as it relates to SLM. Overly broad laws, though effective in granting agencies flexibility to address evolving technological and scientific understanding, may also lack sufficient direction through which the agency can know it is effectively achieving the goals of the law and may contribute to harmful and arbitrary decision-making or regulatory capture. Environmental laws also need to be crafted with local communities in mind. If the laws prioritize conservation of the ecosystem over the urgent needs of land users, they may lead to greater damage to the environment as desperate or determined land users act outside of the law despite risk of penalty.

Figure 15. Environmental law and sustainable practices are needed to ensure cleaner soil, water and air

Source: Authors' own elaboration.

Box 53. The human right to a clean, healthy and sustainable environment

In 2022, the United Nations General Assembly unanimously affirmed through *Resolution A/RES/76/300* that a clean, healthy and sustainable environment is a human right.

The UN Secretary-General, António Guterres, welcomed the 'historic' decision and said the landmark development demonstrates that Member Nations can come together in the collective fight against the triple planetary crisis of climate change, biodiversity loss and pollution.

"The resolution will help reduce environmental injustices, close protection gaps and empower people, especially those that are in vulnerable situations, including environmental human rights defenders, children, youth, women and indigenous peoples", he said in a statement released by his Spokesperson's Office.

He added that the **decision will also help States accelerate the implementation of their environmental and human rights obligations and commitments.**

Guterres underscored that however, the adoption of the resolution 'is only the beginning' and urged nations to make this newly recognized right 'a reality for everyone, everywhere'.

Source: United Nations, 2022. UN General Assembly declares access to clean and healthy environment a universal human right. In: UN News, 28 July 2022. [Cited 10 December 2022]. https://news.un.org/en/story/2022/07/1123482

Design multilevel, multistakeholder structures for decision-making. Typically, a central agency is responsible for managing the enforcement of most environmental and pollution-related laws. In some jurisdictions, environmental regulation can involve the creation of new positions or departments within existing agencies to implement the provisions of the law. Ministries of agriculture and energy are often involved in environmental management too, as agricultural inputs, livestock, and radioactive materials are major sources of pollution. Since pollution of drinking water and air can negatively affect human health, ministries of health can also be involved in administration of environmental protections. In the United Republic of Tanzania, the *Environmental Management Act* of 2004 creates a National Environmental Advisory Committee, a Director of the Environment, a National Environment Management Council, and an environmental section within each sectoral ministry to ensure thorough consideration of environmental issues across the national government. The highly technical aspects of pollution, such as detection, monitoring, and standard-setting, require technical expertise, including environmental scientists and other experts.

In Ghana, one part of its environmental protection administrative structure under the *Environmental Protection Agency Act of 1994* establishes a Hazardous Chemical Committee. The Committee is comprised of local government officials, representatives from other federal agencies, and scientists, that is charged with monitoring the use of hazardous chemicals by collecting information on the use and disposal of hazardous chemicals and to advise the Environmental Protection Agency on specific regulations that should be passed regarding dangerous pollutants. The Hazardous Chemical Committee is a good example of utilizing SLM principles in establishing decision-making bodies.

In some states, environmental protection laws establish local entities in charge of licensing and monitoring alongside larger national-level agencies in charge of setting national standards. In the United Republic of Tanzania, several local government structures participate in environmental management. The administrative structure includes standing committees in townships, wards, villages, and *vitongoji*[9] (neighbourhoods); environment management officers at the township, ward, village, mtaa (urban cluster), and *kitongoji* (neighborhood) levels; and environment management committees at the city, municipal, district, township, ward, village, mtaa, and *kitongoji* levels.

[9] *Vitongoji* (neighbourhoods) is the plural of *kitongoji* (neighbourhood).

Prioritize relationships with local communities for monitoring and agenda-setting. A major challenge for effective environmental regulation is the need for frequent and detailed monitoring of soil, water, and air quality. Partnering with local communities and Indigenous Peoples to monitor changes in natural resource quality based on relevant environmental indicators can help close implementation gaps.

Environmental justice issues are prevalent in pollution management, as disadvantaged communities are often disproportionately exposed to waste disposal, polluted waterways, poor air quality, and degraded and polluted soil in addition to occupational toxins (Alderete, Sonderegger and Perez-Stable, 2018). Ensuring meaningful participation of local communities in decision-making around environmental regulations and permits for waste discharge can help to abate outsized impacts on vulnerable groups. Ensuring that environmental permits do not result in disproportionate impact to vulnerable groups is another important step.

Enable public participation in environmental protection through access to information and access to justice. To ensure that environmental protection measures are sustainable and relevant to the population and ecosystem that will be affected, public participation must be ensured through access to information, public participation in decision-making and access to justice in environmental matters (UNEP, 2019). Access to information allows members of the public to make informed choices regarding their own actions related to the environment and to know how to protect their environmental rights. Public participation in decision-making helps to ensure both feasibility and durability of government decisions, as members of the public can both learn about the project as well as voice concerns and provide local knowledge that can improve plans. Access to justice requires citizens and CSOs to be able to use administrative or judicial actions to raise environmental concerns.

Viet Nam's *Law on Environmental Protection of 2020* stipulates that environmental protection is the responsibility and obligation of every agency, organization, family household, and individual (Article 4(1)). It further recognizes that environmental protection serves as a basis, key factor and prerequisite for sustainable socioeconomic development. Environmental protection activities are associated with economic development and natural resource management, and considered and assessed in the process of carrying out development activities (Article 4(2)). The Law stipulates that involvement of organizations, family households, and individuals is necessary to environmental protection activities, and that raising awareness of environmental protection in association with administrative punishments is important to any regulatory policies (Article 5(1), Article 5(2)). Land use planning is defined as one of the activities that require strategic environmental assessment (Article 25(2).

In addition to monitoring pollution levels, a requirement to report them can also be an effective mitigation technique. Reporting helps communities and other stakeholders know what is being emitted into their environment, and it has been shown to have a deterrent effect on polluters, who do not like the attention drawn to their emissions (GAO, 1991).

Regulate pesticide use to promote responsible and prudent use. Pesticide use is a major issue for soil and water pollution as well as sustainable agriculture (see Section 4.4 for more information). The international codes of conduct for fertilizers and pesticides recommend regulating for the responsible use of different chemical options, and strong consideration of organic alternatives. Nearly half of Ghana's *Environmental Protection Agency Act* focuses on pesticide control. All pesticides used or sold in Ghana must be registered through the Agency and classified into three categories: safe for general use, restricted use, and banned. Sale or use of pesticides also requires a licence, as per regulations under the Act. Agency investigators are empowered to enter private property in order to ensure that pesticides are being stored in a safe manner or to respond to complaints that pesticides have damaged land or livestock. Failure to cooperate with investigators or to comply with any lawful demand of the Agency can result in a fine, imprisonment, or both. Similarly, the United Republic of Tanzania's *Environmental Management (Soil Quality Standards) Regulations*

of 2007 set limits for soil contaminants in agriculture and habitat and enforce minimum soil quality standards prescribed by the National Environmental Standards Committee (Article 3). While contravening soil standards can result in fines or imprisonment (Article 35), the Regulations also stipulate appeals procedures for those who are aggrieved by the decision of an environmental protection government body (Article 37, 38). Robust appeals mechanisms are essential for ensuring fair and just application of the law.

Identifying sustainability goals within pollutant monitoring regulations makes clear the ramifications of allowing pollutant levels to rise too high. The *Environmental Management (Soil Quality Standards) Regulations of 2007* in the United Republic of Tanzania prescribe measures designed to maintain, restore, and enhance the sustainable productivity of the soil as well as set minimum soil quality standards to maintain, restore, and enhance the inherent productivity of the soil in the long term (Article 3(c, d)).

Remediation of polluted sites can benefit SLM. Ideally, states will have stringent waste management practices in place to avoid land pollution altogether. However, when pollutant levels become unhealthy, steps must be taken to stop further degradation, and if possible, remediate the damage. The United Republic of Tanzania's *Environmental Management Act of 2004* establishes the principle that all citizens have a right to a clean and healthy environment and are therefore able to bring legal actions to enforce those rights (Articles 4, 5). Under this provision, citizens may ask the court to stop a polluting activity, compel public officers to take action to prevent or discontinue a pollution, require polluters to take remedial measures, or provide compensation for any person whose land is harmed by pollution (Part II).

The revised *World Soil Charter of 2015* calls for states to facilitate remediation of contaminated soils that exceed established levels to safeguard human health and well-being where they pose a threat to humans, plants and animals. The "polluter pays" principles are increasingly common soil remediation tools. In the Netherlands, if contamination is found at a site, the *Soil Protection Act of 1986* stipulates that the polluter pays for remediation, so long as they knew of the pollution or could reasonably suspect contamination to be caused by their actions. Under Mexico's *General Law on Ecological Equilibrium and Environmental Protection of 1988* and the *General Law on the Prevention and Comprehensive Management of Waste of 2003*, parties responsible for soil contamination are responsible for carrying out or paying for remedial actions to clean up the contaminated areas under a polluter pays principle. Owners or occupiers of real estate property affected by soil contamination are also jointly and severely liable for remediation of the contaminated areas. If a previous owner or possessor of land was responsible for contamination and it can be proved that they were the source of the contamination, they can also be held liable for clean-up costs.

Box 54. Robust public notice and participation requirements in Croatia's Regulation for Integrated Environmental Protection

Croatia's *Regulation on the Procedure for Determining Integrated Environmental Protection Requirements of 2008* sets out the procedures for new facilities that must determine the requirements for integrated environmental protection. The procedures involve public participation throughout the processes, including through notice of application (Article 8); notice of how the procedure to determine integrated environmental protection requirements aligns with EIA procedures (Article 10); notice to the public of another state that may be affected by the facility (Article 13); participation of the public in the procedure for determining integrated environmental protection requirements through a public debate (Article 14); consideration of opinions, objections, and suggestions of the public submitted in the course of public debate and consultations in the final decision on integrated environmental protection requirements (Article 15(1)); and notice to the public of the decision made (Article 15(2)). Decisions on integrated environmental protection requirements and use permits include obligations to inform the public as well (Article 16, 18). Some critics consider these consultations to be *pro forma* rather than substantive, but 86 percent of respondents in a 2017 survey indicated a strong belief that individuals can play a role in protecting Croatia's environment.

Box 55. Key messages | Environmental law and pollution

- Environmental laws can implement many sustainable land management (SLM) practices through regulation, monitoring, reporting, and education.
- Environmental laws should incorporate metrics and guidelines to protect long-term soil and water health and protect against ecosystem degradation as well as protecting human health.
- Design multilevel, multistakeholder structures for decision-making.
- Prioritize relationships with communities for monitoring and agenda-setting.
- Enable public participation in environmental protection through access to information and access to justice.
- Regulate pesticide use to promote responsible and prudent use.
- Remediation of polluted sites can benefit SLM.

Some states also allow cost recovery to restore damage to natural resources such as parks, beaches, and other areas; damages may be sought for a variety of impacts ranging from lost use of the resource to its restoration. The United Republic of Tanzania's *Environmental Management Act of 2004* requires dischargers of hazardous substances to either pay the cost of removal (including environmental restoration costs) or pay the cost of third parties in the form of reparation, restoration, restitution, or compensation as determined by the court (Article 110).

In some countries, the government pays for pollution remediation and environmental monitoring. In areas of widespread poverty, this can be a more equitable and effective payment regime. It can, however, lead to local states shielding themselves from liability by failing to conduct appropriate soil pollution assessments (Haller, Flores-Carmenate and Jonsson, 2020).

4.10 Energy and resource extraction

Energy and resource extraction play a significant role in the development of SLM policy.[10] Mineral and resource extraction are necessary and beneficial to the economic welfare of a country (Popovic *et al*., 2015). Despite advancements in alternative energy sources, fossil fuels such as coal, oil, and natural gas continue to be dominant energy sources (UNCCD and IRENA, 2017). In many parts of the world, countries recognize the need to decrease wood fire as a residential energy source to protect forest cover and indoor air quality (for example in Ethiopia's *REDD+ Strategy (2016–2030) of 2018* and Ghana's *Forest Development Master Plan 2016–2036 of 2016)*. Efforts to increase access to distributed, rather than centralized, power sources as well as to obtain sustainable energy for all, are needed to reduce reliance on carbon-intensive energy sources (SEforAll, 2021). No matter the source of energy, however, land governance is involved and SLM principles can be applied.

Further, the unique geography of a country may yield mineral resources that are valuable for trade within the global economy. Operations that locate and mine such resources not only provide the nation with larger trading power, they can also provide jobs and economic growth to the local community in which they are located, which in turn can increase national living standards and reduce the portion of the population that relies directly on land for their livelihoods (ICMM, 2018; Moritz, 2017).

[10] Although there are myriad forms of resource extraction, for simplicity's sake and to maintain coherence with the dominant terminology used in legislation, this study refers to them all simply as "resource extraction."

Box 56. Avoiding agency capture

Some countries designate environment and natural resource agencies as the implementing agencies for resource extraction, while others create free-standing agencies to implement these laws. One theory is that by combining responsibilities, resource extraction will be done more sustainably. Another theory is that this can lead to capture of the agency by industry (UNEP, 2019). No matter the approach taken, it is good practice to divide responsibility between awarding of concessions, collection of revenue, and legal enforcement to help avoid capture.

However, the economic benefits obtained through mineral and energy resource extraction must be balanced with the long-term goals of SLM. The location and extraction of energy and mineral resources involves a myriad of techniques that affect the land. Traditionally, coal is obtained through subsurface mining, in which large caverns are dug beneath the surface of the land, or strip mining, in which large portions of land are sequentially removed from the natural surface. Both methods have long-term impacts on the land (Popovic *et al*., 2015). Oil and gas extraction does not remove or modify the surface area of the land to the same extent as in mining, but nevertheless impacts land use because it often fractures land use, results in significant greenhouse gas emissions, uses significant amounts of fresh water, and has the potential for pollution runoff and migration (Holloway and Rudd, 2013).

Resource extraction methods share similar SLM concerns. Before resource extraction begins, operators, local communities, and national states should consider the impact of the resource extraction operation on the land in balance with the economic interests at stake. Effective SLM legislation on resource extraction will integrate requirements to develop a participatory environmental and SIA plan; will consult with or, if appropriate, obtain FPIC from the local community in which it will operate; will take affirmative actions during operations to protect surrounding areas from operationally related pollutants; and will create a robust reclamation plan to return the land to sustainable use by the local community.

Develop a multilevel administrative structure for effective management of natural resource extraction. Typically, resource extraction laws create centralized regulatory bodies and executive office positions charged with implementing the law. For instance, Romania's *Mining Law of 2003* and Serbia's *Mining Law of 2009* both establish mining agencies to govern issuance of mining licences (Article 3; Articles 17, 93). Although these entities often exist on the national level, ideal legislation will also integrate local input by establishing regional offices with the power and ability to engraft the local perspective on the operations of national resource extraction policy. In one such system, the *Philippine Mining Act of 1995* charges the DENR, a pre-existing department that performs a large variety of tasks, to manage and enforce the provisions of the Act. The Department includes regional offices that are tasked with implementing regional supervision of mining applications and operations. Under the *Local Government Code of 1991*, local provinces are then granted the ability to also supervise and enforce mining laws and regulations within their area (Section 17(3)(iii)). This multilevel administrative approach ensures some uniformity of policy while recognizing the importance of local dynamics for sustainability.

Resource extraction agencies and administrators cannot operate in a vacuum. Often, resource extraction officials will be experts within their own subject matter, but successful SLM requires knowledge and expertise across a variety of fields. Resource extraction agencies should be encouraged and required to regularly communicate and collaborate with other agencies charged with spatial planning, agricultural development, forest and wildlife protection, social development, and environmental monitoring.

Include considerations of social impact and broader development context when designing the requirements for EIAs. Environmental impact assessments, discussed more in the next section, offer a valuable opportunity to insert SLM considerations into the resource extraction planning process. In

addition to looking at SLM indicators, EIAs should consider the impacts on local communities, particularly Indigenous Peoples. It is also important to consider the impact of a proposed extraction on the wider area, as other development projects could put additional stress on the ecosystem and exacerbate the harmful effects of the mine in question.

Most mining laws require applicants to identify environmental risks and submit some sort of plan to mitigate environmental harms that arise during the permitted activities, including EIAs. The Romanian *Mining Law of 2003* requires an environmental impact study, an environmental rehabilitation plan including technical specifications for its operation, an SIA mitigation plan, and a plan for cessation of the mining activity in the future (Article 20). The *Philippine Mining Act of 1995* requires both an Environmental Impact Statement (Section 70) and compliance with Sections 26 and 27 of the *Local Government Code of 1991*, which require agencies to maintain ecological balance within the country and consult with local states and people's organizations within areas affected by national planning. Both laws require environmental and SIAs, but the Philippines Act further integrates SLM principles by requiring consideration of the broader ecosystem rather than the individual site and also by requiring consultation with local organizations.

Safeguard significant sites from extraction projects. Some land should not be subject to mining because the land is either more productive under other uses or possesses other inherent sociological, cultural, or ecological value. Under the *Philippine 2010 Revised Regulations for the Implementation of the Mining Act of 1995*, the following areas are excluded for mining operations: old growth or virgin forests, proclaimed watershed forest reserves, wilderness areas, mangrove forests, mossy forests, national parks, provincial/municipal forests, tree parks, greenbelts, game refuge, bird sanctuaries and areas proclaimed as 201 marine reserves/ marine parks and tourist zones as defined by law and identified initial components of the National Integrated Protected Areas System (NIPAS) pursuant to R.A. No. 7586 and such areas expressly prohibited thereunder, as well as under Department Administrative Order No. 25, Series of 1992, and other laws (Section 15(2)). In Australia, under the *South Australia Mining Act of 1971*, a mining applicant must publicly advertise the application and give actual notice to the owner and occupier of the land affected. The community or local government may object to the grant of any licence within 21 days after the advertisement of the land, and the minister must consider public comments before issuing a licence.

To safeguard cultural artifacts and indigenous land, similar restrictions arise. Under the *Mining Law of 2003*, Romania will not issue permits to mine on lands that contain historical, cultural, or religious monuments; archaeological sites of important interest; natural reservations; sanitary protection areas; or hydrogeological protection perimeters (Article 11).

Require FPIC prior to any resource extraction activities. Within the context of resource extraction, FPIC requires a good faith, socially appropriate, and respectful consultation with individuals and communities whose land will be affected by mining before the government will grant a licence or permit (Butzier and Stevenson, 2014). Australia requires applicants to obtain FPIC of Indigenous Peoples, but it does so indirectly through the provisions of the *Native Title Act of 1993*. Applicants for mining licences in Australia must comply with the Act, including entering into an Indigenous Land Use Agreement with any Indigenous Peoples

Box 57. Free, prior, and informed consent requirements in Sierra Leone

In Sierra Leone, *The Customary Land Rights Act of 2022* creates explicit requirements for obtaining free, prior and informed consent (FPIC) before investing on any land subject to customary law (Article 28). Any investment must obtain informed consent from at least 60 percent of the male and female adult members of an impacted household or from a "fair representation of the community with rights to the land" (Article 28). The FPIC must also be obtained before any investment-based displacement or resettlement occurs (Article 43(6)).

who hold title to the land to be mined. Chapter II of the *Philippine Mining Act of 1995* specifically obligates the DENR to recognize and protect the rights of indigenous cultures and ancestral lands when analysing applications and issuing permits. It is forbidden to mine on ancestral land without the FPIC of the indigenous community (Sections 16-17). These approaches seek to balance the interests of local communities with the economic benefits of extraction.

These measures should also ensure inclusion of women, youth, and disadvantaged populations in the consultation. Successful legislation will give the community a meaningful ability to impact the decision beyond merely submitting comments and will seek to ensure that the procedures allow genuine FPIC, meaning a community has the opportunity to say "no" and stop a project they oppose.

Plan for the long-term sustainability of the land. States utilize various methods to plan for the long-term sustainability of land. Under the Romanian *Mining Law of 2003*, before mining begins, licensees must obtain funding for the reclamation project as described in the application and keep those funds in a national trust for use at the conclusion of mining (Article 3). In the Philippines, if an indigenous community consents to mining operations, the operators must make a royalty payment to the community. The royalty is kept as part of a national trust, and payments from the trust are made for the socioeconomic well-being of the Indigenous People who grant the mining access.

Require regular consultation with affected communities. Regular consultation with local communities and government agencies is often a requirement of mining licensure. For instance, in Victoria (Australia), under its *Mineral Resources (Sustainable Development) Act of 1990*, licensees are under an ongoing obligation to consult with the community throughout the period of the licence. Included within this obligation is the duty to share information about activities that may affect their land and the duty to create opportunities for the community to express their views on those activities (Section 39). As part of a required Work Plan, the licensee must identify any risks posed on the environment and law and specific ways that the operator is minimizing those risks "so far as reasonably practicable" (Section 40). However, this approach does not allow communities to stop a project they oppose.

Protect land users from negative effects of mining. The Ugandan *Mining Act of 2003* balances the interests of land owners and legal occupiers with those of miners by giving them the continued right to graze livestock or grow crops on land under a mining lease (Clause 80). However, the right to grow crops or graze is subordinate to the mining right, and the land owner-occupier is required to cease activity if it interferes with the mining operations or endangers the health and safety of the livestock. If, during the course of mining, the operation causes damage to the land or interferes with the owner-occupiers' right to use the land, the operator must directly pay any owner-occupiers of land the fair market value for any such disturbance (Clause 82). It is the responsibility of the owner-occupier to affirmatively demand compensation, and without such demand, the mining operator is not required to make payments under the mining law. Putting the duty on the owner-occupier is a problematic design, as the owner-occupier has less information than the mining operator and is likely less skilled in environmental impact analysis.

Box 58. Actions may be legal but still improper

Australian mining company Rio Tinto followed Australian law in developing an iron ore mine in Western Australia. They consulted with Aboriginal people who asked the mining company not to destroy a 46 000-year-old Aboriginal cave system. The company went ahead anyway, as permitted by law, only to face swift and severe political and social condemnation that resulted in the sacking of top management and an order to rebuild the cave system. The laws that allowed this to happen are being re-examined (BBC News, 2020).

Mining agreements in the Philippines require the operator to effectively use anti-pollution technology to protect the environment during the operation of mining activities (Section 35). Operators must also pay a semi-annual "mine waste and tailing fee" to the federal government (Section 85). Such funds are to be used exclusively for payment for damaged lands, agriculture, forest, and the cost of revegetation of any of those lands. Any royalties paid to the DENR from the mining operation are to be shared with the local states in accordance with the *Local Government Code of 1991* (Section 82).

Consider a profit-sharing model to benefit local communities. Sustainable land management suggests that those who occupy or own the land should obtain the economic benefit of its use (Popovic *et al*., 2015). Some countries provide no specific legal requirements for the government to distribute or use the funds from mining payments in any specific manner. Others, by contrast, specifically require payments from mining be allocated between the national government and impacted local communities or states.

In Uganda, under the *Mining Act of 2003*, royalties must be paid on revenue generated by mining operations and all funds must be shared between the federal government, local government, and owner–occupier of land (Clause 98). The Act of 2003 was repealed by the *Mining Act of 2022*, which instead, in Section 61(2) stipulates that applications for a mining licence must submit written proof that he or she has obtained surface rights from the landowner or lawful occupant of the area the applicant intends to mine, and contain a plan for co-existence with customary landowners or communities owning the land in the area Section 108 (2)(s). Legislation that gives federal states control over funds that are meant to be shared with local communities may leave room for ineffective implementation and abuse by federal officials in mismanaging funds, underreporting income, or delaying payments to localities. Uganda's *Mining Act of 2003* solves this problem by mandating that the fees first be divided then directly sent to the federal government, local government, and landowners or occupiers.

Set clear requirements and safeguards for reclaiming land after extraction project ends. When mining is complete and operators are ready to close the mine, many states require mining companies to prepare the land for future use through reclamation processes. Legislative mandates for land rehabilitation should be specific, focus on the production of sustainable land, and integrate the community's feedback and participation. Conventional land management plans require operators to return the land to a state of "naturalness" (Limpitlaw and Briel, 2014). Returning land to its natural state may not be possible in many mining sites because of the extensive nature of land changes and introduction of persistent artificial features. Instead of assuming the best use of the land is to return it to its pre-mining state, the land should be considered within the context of the broader regional setting and strategic land-use planning in consultation with local communities. For example, re-use of mined land for wood production may allow the region to conserve other native, intact woodland ecosystems from fuel wood harvesting.

The Serbian *Mining Law of 2009* requires permit holders to create a Mine Closure Program (Article 47a), which must include a plan to solve the environmental issues raised by the extraction project, solutions to any problems faced by the local community over the mine closure, and calculations of the amount of funds necessary to recultivate the land. The land recultivation requirement obligates the operators to rehabilitate the environment and water to protect the life and health of people and property (Article 48). The funding for the implementation and completion of the Mine Closure Program is provided for by the federal government (Article 47a).

Local community interests should be considered in reclamation plans. Under Romanian and Australian mining law, the rehabilitation and restoration measures taken after mining must consider the local community's opinion about post-closure usage (Article 3; Section 40). In the Philippines, the government has discretion to use permit holders' trust funds for the physical and social rehabilitation of a mining area and the local community post-operations. Funds can be used to fund research on the technical and preventative aspects of mine rehabilitation for future enterprises as well (Section 71).

Special attention should be paid to how the reclamation process will be funded. The cost of environmental reclamation can be large, requiring anywhere from several hundred thousand dollars to millions (Gerard, 2000). Under the traditional sustainability principle of the "polluter pays", the financial burden of reclamation should fall to the operators. However, if the costs of reclamation are too high, and legislation does not provide sufficient mechanisms to enforce the rehabilitation requirements, operators may be economically incentivized to abandon projects without performing the reclamation required by law (Gerard, 2000). One nation, Serbia, avoids the issue of enforcing rehabilitation requirements by legislatively mandating that the federal government will finance all rehabilitation measures. Although this avoids the possibility that operators will default on their reclamation obligations, it shifts the entire burden of the cost onto the public.

Many countries use some form of trust or bond mechanism to ensure that adequate financial resources are available for rehabilitation. There is academic debate over whether bonding is the most effective way to ensure that mining operators return land to a productive state, but several studies indicate that bonding mandates are more likely to lead to rehabilitation of land rather than default on the operators' legal obligations (Gerard, 2000). However, bonding itself is not a perfect solution and poses some economic concerns. Bonding requires the use of banks and financial institutions that add additional costs to the management of rehabilitation and impose high up-front costs to operators. The effects of such costs may be to restrict the granting of extractive licences to larger corporate operations that have financial liquidity but less connection to the local area. Additionally, regulators may be incentivized to judge reclamation as insufficient if the result would be to keep the entirety of the bond for itself.

In Victoria (Australia), under the *Mineral Resources (Sustainable Development) Act of 1990*, the government holds the licensee's bond until it is satisfied with the rehabilitative measures taken. If the licensee fails to rehabilitate the land properly, the minister may use the funds to perform the rehabilitation and pursue any excess cost from the licensee in legal proceedings (Part 7). Section 112 of Uganda's *Mining Act of 2003 (now repealed)* gave the commissioner the ability to request the holder of a mining lease to maintain a bond for the cost of future environmental restoration, but the law does not make any such requirement mandatory. The use of legislatively mandated reclamation bonds is a popular mechanism to shift the cost of reclamation onto the operators and ensuring that the funds necessary for reclamation are present before extraction has started. Uganda's *Mining and Minerals Act of 2022* obliges a mineral operator to rehabilitate the land (Section 70(1)(j)), imposes a strict liability on mining operators (Section 163(2)), demands rehabilitation plans (Section 60(2)(v)), and allows the Minister to seize assets to cover costs in case of failure by the operator to rehabilitate (Section 164(4)).

Many countries use liability-based rehabilitation methods in which either the government or private landowners may sue for the costs of repairing damaged land. Liability-based financing for rehabilitation should be an option used in addition to the requirement to maintain a trust or bond. However, systems that rely solely on liability drive up the cost and time required to rehabilitate the land as claims work their way through the court system and may also falter if a company declares bankruptcy. Successful SLM will utilize a combination of funding structures – governmental, bond, and liability – in order to ensure that land is timely returned to the desired state.

Reclamation planners should consider the conversion of former mining sites into possible land uses that fit within the regional needs. Understanding what the most sustainable use of land will be after mining requires the active participation of the community in analysing how land is used in the present, and the most efficient ways to use the mining land within the greater context of the region in the future. The grant of mine leases should be conditioned on a closure plan that integrates the community's participation, divides the future reclaimed into a number of land-use precincts depending on the unique topography of the area, and provides specific and technical plans and goals on how to achieve the rehabilitation.

Box 59. Key messages | Energy and resource extraction

- Critical examination of resource extraction laws to ensure they integrate sustainable land management (SLM) principles or require adherence to laws that contain SLM principles, is imperative.
- Community consultation requirements and benefit-sharing are key elements of creating a sustainable extraction framework.
- Include considerations of social impact and broader development context when designing the requirements for environmental impact assessments.
- Safeguard significant sites from extraction projects.
- Require free, prior, and informed consent prior to any resource extraction activities.
- Plan for long-term sustainability of the land.
- Require regular consultation with affected communities.
- Protect land users from negative effects of mining.
- Set clear requirements and safeguards for reclaiming land after extraction project ends.
- Scrutinize green energy projects just as conventional energy projects would be examined.

Remember that not all green energy is green. With the rapid expansion of renewable energy projects around the world, some project developers have failed to follow sound SLM practices when siting solar, wind, geothermal, and other renewable projects. Although renewable energy provides many climate and environmental benefits, impacts to SLM being practiced by Indigenous Peoples and local communities can be as severe as mining and conventional energy extraction. Therefore, good practices such as FPIC, conducting EIAs, planning for decommissioning, and land-use planning are critical when permitting "green" projects.

4.11 Environmental and social impact assessments

Environmental impact assessments are widely used environmental planning and management tools (UN Environment, 2018). The goal of EIAs is to ensure that all critical information to predict future impact on the environment is supplied and considered in the decision-making process (UN Environment, 2018). The EIAs aim to prevent the implementation of any activity with significant negative impacts on the environment, as well as enhance the positive impacts (UN Environment, 2018). Social aspects are also increasingly being integrated into these processes and are then referred to as ESIAs.

The EIAs should include key SLM elements for evaluation and consideration; otherwise EIAs risk being costly bureaucratic procedures that do little to protect the environment while at the same time constraining commerce (UN Environment, 2018). Effective EIAs require clear objectives and standards against which the environmental impact of the project in question can be assessed. In keeping with SLM principles, legislators should ensure that EIAs require special attention towards agricultural, fisheries, forestry, and other practices that could have an impact on biodiversity or long-term sustainability of the area, as well as potential impacts on Indigenous Peoples and local communities' ability to sustainably use nearby land both during and following the proposed project period.

Box 60. Environmental impact assessment components

Generally, environmental impact assessments include:

- consideration of existing environmental and related social conditions;
- consideration of impacts from prior to commencement of the planned activity, through to its completion;
- informed predictions of both positive and negative impacts of the planned activity on the environment and humans;
- evidence-driven consideration of trade-offs between policy goals;
- participation of the public in supplying information and in reviewing and commenting upon all relevant information; and
- comprehensive information to assist decision-making on whether a specific activity should go ahead, or not, and how it should be undertaken if allowed to continue.

Source: UN Environment, 2018. *Assessing Environmental Impacts - A Global Review of Legislation.*

A higher-level cousin of EIAs, strategic environmental assessments (SEAs) are gaining popularity for their ability to inform strategic response to a group of actual or possible developments rather than considering one development on its own. The SEA is a useful approach for integrating SLM principles into planning processes and ensuring more system-level thinking. The IAIA defines SEA as:

> the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects associated with existing or new economic activities under a particular plan or program, within a particular sector, or within an identified physical area or region (FAO, 2009b).

While many countries first introduced EIAs through executive or administrative orders, EIA systems have moved towards being based on legislation (Abaza, Bisset and Sadler, 2004). Whereas, SEA systems emerged over the last two decades, and as of 2016, 40 countries have SEA systems in place, including all members of the European Union (Hipondoka, Dalal-Clayton and van Gils, 2016). In most countries, the basic legal requirements related to EIA or SEA processes are included in environmental framework laws, while more detailed requirements are either stipulated in specific EIA and SEA laws or in one or several executive or administrative implementing regulations (Doelle and Sinclair, 2006).

Although depth and coverage of legislation on EIAs and SEAs varies from country to country, the overall aim of introducing requirements through law is to make EIAs and SEAs legally binding requirements, thus resulting in the potential to apply administrative and/or criminal sanctions in case of violation. Other benefits of legislating EIA requirements include reducing the risk of corruption influencing decisions, enhancing procedural certainty, clarifying authority, and creating clear rights and responsibilities (Doelle and Sinclair, 2006).

Box 61. Steps in environmental impact assessment processes

The steps are:

- **screening** to categorize the project and determine if a full environmental impact assessment is needed;
- **scoping** to determine the most critical issues to study;
- **prediction and mitigation studies** to determine potential impacts and remedies;
- **management and monitoring** to track environmental impacts during and after implementation; and
- **audit** to provide useful feedback and learning, following implementation.

Designed to assess a planned development prior to its commencement, EIAs are the perfect opportunity to assess whether the activity will have a sizable impact on the surrounding land, and if so, to design mitigating measures to be carried out during a project or pursue other alternatives. The EIA requirements for planned developments are an important SLM tool, as they require the consideration of the long-term viability of the land on which the development is to take place. An EIA can be required prior to major land-use transformations, such as clearing forests or changing one type of forest to another. For example, Kenya's *Forest Conservation and Management Act of 2016* allows any person to petition the National Assembly or Senate for variation of forest boundaries, however, such petition shall be subjected to an independent EIA (Section 34).

Require communication and consultation with relevant sectors. Administrative structures vary between states. The EIA decision-making process can be centralized, with some consultation of sectoral agencies; specialized – with one agency created to oversee EIAs; or sectoral – with each sectoral agency consulting environmental agencies as they manage their own EIA structures (UN Environment, 2018). Any of these options can work with an SLM framework as long as there is sufficient communication and consultation between different levels of government, sectors, and affected communities about the anticipated impacts of the project in question.

The structures required for EIAs generally include different stakeholders in the assessment, planning, and implementation process including government, independent technical experts, NGOs, affected communities, and the general public (Esteves, Franks and Vanclay, 2012). A common body charged with enforcing the EIA legislation in different countries is the Environmental Protection Agency, Ministry of the Environment, and similar bodies. Depending on the level of decentralization of a country, competences related to EIAs may be shared between the different levels of government. International bodies that carry out development projects, such as FAO, and international lenders and funding institutions also often have internal EIA procedures that go beyond government requirements.

Include local communities and Indigenous Peoples, in decision-making processes. Sustainable land management requires participation of land users in decisions, and development projects are no exception. The FAO Governance of Tenure Technical Guide No. 3, *Respecting free, prior and informed consent*, encourages governments to "carry out participatory social and environmental impact assessments and share the findings with the affected communities" (FAO, 2014b). An EIA can provide valuable information to local communities and provide a baseline against which to measure impacts of the development project.

To aid in carrying out EIAs in Indigenous Peoples lands, the *Convention on Biological Diversity* developed the *Akwé: Kon Voluntary Guidelines* in 2004. These voluntary guidelines provide a collaborative framework to help states develop more inclusive and responsive impact assessment regimes in areas of importance to indigenous and local communities. They "provide general advice on the incorporation of cultural, environmental, including biodiversity-related, and social considerations of indigenous and local communities into new or existing impact-assessment procedures" (Section I(2)). The guidelines aim to help states, indigenous and local communities, decision-makers, and managers of developments work together to ensure the incorporation of indigenous and local community concerns, traditional knowledge, and interests throughout the process. These guidelines should be consulted whenever an impact assessment is to be conducted on land relevant to indigenous or local communities. Countries can incorporate the guidelines into their impact assessment frameworks. Only a limited number of countries' national EIA legislation includes specific provisions related to the participation of Indigenous Peoples (Marara *et al*., 2011).

The international community widely recognizes that public participation is not only a goal of EIAs, but also that it is key to accurate and effective environmental assessments (Salomons and Hoberg, 2014; Bruch *et al*., 2007). However, while there is a consensus on the need for public participation, there are differing opinions on what mechanisms fulfil the requirements for public participation as well as who "the public" is (Glucker *et al*., 2013). To learn from the local communities and to allow for greater transparency overall,

public participation should be built into each stage of an EIA as much as is feasible. While long comment periods and extensive response requirements could overburden applicants, well-structured public comment periods and local consultations are necessary to the successful completion of any assessment.

Legislation varies as to what stage or stages of the process must involve public participation. Most legislation requires parties to publish information on the project when an application is submitted; the public is then invited to submit comments (UN Environment, 2018). In some countries, EIA law requires that the government provide interested members of the public the opportunity to provide input through comments on the project report, which are then put on display relating to the conclusions and recommendations made. The reviewing agency must take the comments into consideration before issuing the screening decisions. However, by the time the opportunities for public participation occur in practice, agencies and decision-makers may have committed to a particular course of action, thus limiting the potential for actual influence on the EIA (Agbazue and Ehiemobi, 2016).

A number of countries also require public participation at the scoping stage, or generally state that public participation should take place at all stages of the EIA (UN Environment, 2018). National legislation that includes a requirement for public participation at the screening or scoping stage generally requires public participation at the review and decision-making stage as well. The mechanisms for public participation at the review and decision-making stage may include:

- making the draft report publicly available and providing the opportunity to submit comments;
- requiring a summary of the report, including in local language(s);
- presenting and discussing the report face-to-face at public meetings or workshops;
- establishing a committee composed of different stakeholders and potentially equipped with the power to call on people/witnesses; and
- combinations of some or all of the above.

Gathering robust public input into EIA processes can be challenging. The level of public participation is sometimes low, the public may have limited capacity for providing technical inputs, and preliminary EIA reports may change following commenting (Stec, 2014). Remedies can include providing technical support grants to communities that need access to expert consultants and ensuring public outreach takes culturally relevant forms, such as through radio, TV, and public theatre (UNEP, 2019). A meaningful opportunity for the

Box 62. Common challenges to providing for meaningful public participation

According to the *Convention on Biological Diversity* of 1992, some common challenges to providing for meaningful public participation are:

- deficient identification of relevant stakeholders;
- people cannot afford to spend time away from livelihoods to participate;
- increased distances in rural settings and costs of communication;
- illiteracy or lack of command of local languages;
- barriers in behavioural or cultural norms;
- divergent interests among communities and interest groups; and
- confidentiality concerns of the proponent.

public to participate must be accompanied by the political willpower to implement public consideration in the decision-making process in order to maintain trust. When comments received from the general public are not taken into account by the EIA agency, people may refrain from formally participating in EIAs and make use of informal forms of participation instead (such as protest marches, boycotts, etc.) (Glucker *et al*., 2013). Further obstacles include the inability of the public to understand the information, failure to provide proper notice or availability of the data, a short time period for the submission of comments, or politicization of the EIA process (Nwoko, 2013).

The Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean, adopted in March 2018 by members of the Economic Commission for Latin America and the Caribbean, offers a framework for guaranteeing the "rights of access to environmental information, public participation in the environmental decision-making process and access to justice in environmental matters" (p. 2), all important elements of designing EIAs effectively within an SLM framework.

Link environmental and social considerations in assessments. Many systems explicitly include social considerations in pre-development assessments. These are often referred to jointly as environmental and social impact assessments (UN Environment, 2018). Social impact assessments are broader than EIAs and include more criteria than those surrounding the environment. An SIA can include considerations of demographics, gender, social and economic rights, human rights, cultural geography, community, and other social dimensions of development (Esteves, Franks and Vanclay, 2012). Both EIAs and SIAs should include measures to mitigate the potential negative impacts of activities that are identified in the study. Since SLM requires understanding and balancing the impacts of human and environment interactions, any EIAs used in an SLM framework should integrate a social impact component.

Consider broader land management implications when considering a project's impact. The *Voluntary Guidelines on Biodiversity-Inclusive Impact Assessments* suggest that activities leading to a change in land-use above a certain, defined threshold size should be mandatory screening criteria in EIAs. The SEAs are well-suited to this broader analysis, but individual project-level assessments can also consider impacts that extend beyond the boundaries of the project area itself (Commission for Environmental Assessment , 2006).

Integrate SLM considerations into every phase of an EIA. An EIA typically has several key phases, with approvals needed before moving forward. Incorporating SLM principles and inquiries into each element of an assessment of the environmental and social impacts can help to ensure that there is meaningful consideration of the relational impacts of a project. A one-time assessment has limited utility, as it cannot properly control for all possibilities nor changes to the overall ecosystem that affect the impact of the project during its implementation.

Anticipate capacity constraints. The inability to implement and enforce EIA requirements can be the biggest barrier to successful SLM involving development projects. Legislation that requires the use of SLM approaches is only as effective as the government is able to enforce (Capion and Essel, 2013). Clarifying responsibilities and mapping competencies between different government institutions can help to address gaps in implementation caused by conflicting or overlapping approaches. Planned mitigation measures will not be successful if there is no follow-up regarding implementation.

Government and private capacity for meaningfully carrying out EIAs can develop over time and EIA legislation may serve as a catalyst, empowering the government or other actors to acquire capacity from different sources. Building capacity, however, is dependent on the will to do so (Marara *et al*., 2011). Incentives for well-implemented development projects could be beneficial in this regard.

Box 63. Key messages | Environmental and social impact assessments

- Integrate sustainable land management (SLM) principles into environmental and social impact assessment (ESIA) and strategic environmental assessment (SEA) frameworks to help ensure their consideration and uptake throughout a development project.
- Ensure that project impacts to long-term SLM such as soil quality and land use are considered.
- Require communication and consultation with relevant sectors.
- Include local communities, particularly Indigenous Peoples, in decision-making processes.
- Link environmental and social considerations in assessments.
- Consider broader land management implications when considering a project's impacts.
- Anticipate capacity constraints and plan accordingly.

4.12 Land abandonment and fragmentation

Two forms of land-use change that require significant legal response are land abandonment and land fragmentation. Both present opportunities for implementing SLM practices, as land can be put to more beneficial use or rewilded, but both also present challenges to SLM if not carefully managed.

Land abandonment is increasingly common as rapid urbanization draws farmers away from unprofitable agricultural labour and farming populations age and shrink (Veršinskas *et al*., 2020). In addition, companies awarded large land concessions can fail or not utilize the entire concession, leaving significant land unused, and ultimately, abandoned (Prishchepov, Low and Schierhorn, 2020). Abandonment can have a beneficial impact on land health, as soil and vegetation are able to regenerate, but it can also have a detrimental effect on "biodiversity loss, fire frequency and intensity, soil erosion and desertification, loss of cultural and/or aesthetic values, reduction of landscape diversity and reduction of water provision" (Benayas *et al*., 2007).

As countries increase their economic output, there is often a pull of young people to urban centres to find higher paying jobs and better standards of living, particularly from mountainous regions and those farthest from urban centres (Pazur *et al*., 2020). These population shifts can result in abandonment of forested and agricultural lands, as well as underutilization of agricultural lands because of a change in labour force (Bhawana and Digby, 2020). Farmlands left unattended, particularly those on terraces or on slopes, can quickly degrade and be damaged (Chaudhary *et al*., 2020).

Critically, not all land that seems unused is actually abandoned. Fallowing, a common SLM practice, can help to regenerate soil by allowing the land to rest; land abandonment policies that are too quick to revert land to the state or to revoke use rights from farmers can be problematic.

Land fragmentation, the existence of multiple plots of land in different locations but farmed by the same farmer, has obvious efficiency issues. Land consolidation is the most common tool to address land fragmentation. The *FAO Legal Guide on Land Consolidation* provides recommendations for policymakers on developing good legal frameworks that facilitate effective land consolidation. It defines land consolidation as follows:

> Land consolidation is a legally regulated procedure led by a public authority and used to adjust the property structure in rural areas through a comprehensive reallocation of parcels, coordinated between landowners and users in order to reduce land fragmentation, facilitate farm enlargement and/or achieve other public objectives, including nature restoration and construction of infrastructure (Veršinskas *et al*., 2020).

Pilot area for land consolidation in Egri, North Macedonia (September 2017).

Protect fallowing practices in any efforts to address land abandonment. It is also important to recognize that some fragmentation can be beneficial to risk reduction and crop diversification (Veršinskas *et al*., 2020; FAO and UNCCD, 2022). When developing legal solutions to land abandonment issues, it is essential to draw a distinction between land that is left fallow for agricultural purposes and land that is truly abandoned. As fallowing land is a proven sustainable agriculture technique, any laws affecting abandoned land should clearly explain how the definitions of fallowed land and abandoned land differ. If farmers fear that their land will be considered abandoned if they practice fallowing, they will be less likely to use this beneficial practice in their farm management system.

In Uganda, for instance, ranches are left to regenerate as the animals feed in other areas; this land is sometimes mistaken for abandoned land. Also in Uganda, absentee landlords who fail to use their lands can lose their rights to encroachers whose continual use of the land can qualify them as legitimate rights holders under the *Uganda National Land Policy of 2013* (Yirrah, 2020).

Enable management tools such as land consolidation and land banking. Land consolidation and land banking are tools that can improve the structure of agricultural holdings and build resilience into the land-use systems, thus enhancing SLM. FAO has been involved in land consolidation projects in Eastern Europe and Central Asia over the last few decades following the fragmentation of use and ownership of the 1990s land reforms. Land consolidation can help eliminate inefficiencies that have emerged out of historical, political, economic, or environmental changes (Veršinskas *et al*., 2020).

Land consolidation instruments can be used to reduce fragmentation of land use and ownership that hampers agricultural and rural development through increased production costs and inefficiencies. The VGGT recommends using land consolidation and land banks to improve the structure of fragmented smallholder family farms and forests where consolidation would be beneficial. Land consolidation can only take place

after an inventory of rights and rights holders. The key principle of land consolidation according to the VGGT is that everyone involved must be "at least as well off" as they were before land consolidation (Paragraph 13.1). If, as part of the land consolidation, farmers are bought out, these farms and their land can be used to enlarge other farms to ensure a more viable future. These potential impacts align with the sustainable agriculture principles of increased efficiency and improvement of rural livelihoods, equity, and social well-being. Land consolidation can be driven by, or in combination with, other projects, such as nature restoration, flood mitigation, large public infrastructure development, or rural development. Land consolidation can be useful to enable those who want to continue farming to do so, bearing in mind local and domestic food security and sovereignty. Land consolidation has often been used alongside unsustainable land management and agricultural practices, giving this tool a negative connotation, but it can be useful to SLM as well.

Land consolidation tools can be standalone legal instruments or they can be created under property laws. In Finland, land consolidation is mainly governed by the *Real Estate Formation Act of 1995*, while Denmark has a standalone *Law on Land Consolidation and Public Purchase and Sale of Real Property for Agricultural Purposes of 2017*.

Land consolidation can be voluntary, majority-based, or mandatory. Voluntary land consolidation schemes allow each land user to freely decide whether and under what conditions to consolidate their land. Majority-based schemes require voting by land users to determine whether consolidation will occur; land consolidation must be approved by a legally defined qualified majority of landowners. Mandatory schemes are initiated by state, regional, or local authorities and there is no voting involved, while in most cases consultations with landowners are undertaken. The choice of approach should correspond to the country context, but mandatory schemes come at high risk of contravening the rights and interests of local communities (Versinskas *et al*., 2020). Voluntary land consolidation is generally considered best practice, as it is most respectful of the tenure rights of all users and rights holders. Majority-based schemes can be suitable as well (Versinskas *et al*., 2020).

In addition to land consolidation, the VGGT recommend that environmental safeguards "be established to prevent or minimize degradation and loss of biodiversity and reward changes that foster good land management, best practices and reclamation" (Paragraph 13.6). Under the *Act containing rules regarding the development of rural areas (Rural Area Planning Act) of 2006*, the Netherlands takes an "area-specific" approach to comprehensive spatial planning and implementation at the regional level, combining urban and rural interests. This change in scope broadened the land management options well beyond agricultural interests, decreasing the law's utility as an exemplary case for most rural areas (Versinskas *et al*., 2020).

An FAO study (2022) on good practices on land banking defines it as follows:

> Land banking is a set of systematic activities implemented by an institution with public purpose, performing the intermediate purchase, sale, exchange or lease of land in rural areas in order to increase land mobility, to facilitate development of agricultural land markets, and to pursue public policy objectives related to agricultural and rural development, sustainable land use and implementation of public projects related to nature restoration, environmental protection, climate change and construction of largescale infrastructure (FAO, 2022g).

The FAO study provides recommendations on how the tool of land banking has been used effectively in Europe and notes how it can be effectively used in tandem with land consolidation, as reserved land can increase possibilities for re-allotment of land within the consolidation project area. Land banks can be used to buy out land in advance when market conditions are favourable in areas of prospective infrastructure projects (Hartvigsen, 2015). However, the FAO study also notes that land banking is vulnerable to corruption risks and effective oversight is required to prevent misuse. Land banking is also gaining importance as land users are displaced by climate change impacts and need new land for their livelihoods.

Combining readjustment tools such as land consolidation with land banking is also recommended in the VGGT. For example, land banking is used with land consolidation in Denmark, Germany, and the Netherlands, among many other countries, to increase land mobility during the re-allotment planning. Land banks can also be used to compensate displaced agricultural land users with land instead of money.

Consider land needs and local interests when creating a land bank. Land banks can be a useful tool for both addressing land abandonment and urbanization and preparing for land-related shocks. When creating a land bank, policymakers should take care to include robust processes for consultation with local communities and experts to ensure that the land will be sustainably utilized or conserved as needed by the ecosystem and the local community. Without local consultations, land banking could increase mistrust between the community and the government entity managing the land bank. Consultation with experts can help to protect against future land abandonment for reasons of poor productivity or other location-specific problems.

When considering whether abandoned land is suitable for reallocation, development, or sale to other land users, it is important to determine the cause of the previous land abandonment. Some land abandonment can be due to parcels being ill-adapted to their intended use, such as small agricultural plots in forested areas being difficult to use for modern, mechanical agriculture or for grazing (Kumm and Hessle, 2020). Particularly in Europe and North America, land abandonment opens possibilities for reverting lands to more appropriate forest or protected area uses (Conniff, 2019).

Build an enabling or incentivizing framework for rewilding where feasible. If land has been used for a purpose that is no longer needed, it may be most practical to create an enabling legal framework for that land to be rewilded either organically or with human assistance. Whether or not the land should be rewilded should be determined by a robust participatory analysis with the local communities, officials, and others who could be affected by the land-use change, as well as careful consideration of the land's interaction with other parts of the ecosystem. In most cases, rewilding will have a beneficial effect on neighbouring lands, but land needs of the local community could potentially outweigh those benefits. Incentivizing frameworks could take the form of PES schemes, which offer financial remuneration for protecting environmentally important areas and will be discussed in the next section.

Land abandonment can reflect social, economic, and environmental pressures that are beyond the power of land managers and/or land users. But managers and/or users can harness the potential of abandoned lands for carbon sequestration, biodiversity, or intensified agricultural purposes, which is an often-overlooked policy option for states. Sustainable land management requires a response to land abandonment in order to ensure protection of arable land and intentional use of land that may be well-suited for conservation or other uses, thus relieving land pressures elsewhere. Unused land can result from poor land-use management as well, such as overallocation of land for concessions by government.

Prioritize landless farmers and marginalized communities. In determining how to use abandoned land, the needs and interests of landless farmers and marginalized communities should be prioritized. Principles to consider in such cases include giving preference to active farmers to purchase additional land, giving preference to young farmers, or giving preference to local farmers. A key governing principle throughout re-allotment is local consensus regarding the rules of allotment preference in addition to the "at least as well off" baseline rule. This is a key consideration for applying the SLM principle of land-user-driven and participatory approaches, and it also arrives to equity issues that are important to the long-term sustainability of any scheme.

Ensure respect for legitimate tenure rights throughout land consolidation processes. If employing a land consolidation approach, it is important to ensure proper safeguards for efficiency and respect of legitimate tenure rights. Overreliance on records of formalized land rights for land management projects can further entrench societal inequalities. Informal land rights and customary users should also be considered in order

Box 64. Key messages | Land abandonment and fragmentation

- Enable management tools such as land consolidation and land banking where appropriate.
- Prioritize respect for legitimate tenure rights throughout land consolidation processes.
- Land consolidation should be done with great care and with clear systematic procedures in accordance with relevant laws, as it can create insecurity in land tenure and discourage investment.
- Land abandonment should be studied in context for possibilities of adapting lands to more sustainable uses.
- Protect fallowing practices in any efforts to address land abandonment.
- Consider land needs and local interests when creating a land bank.
- Build an enabling or incentivizing framework for rewilding where feasible.
- Prioritize landless farmers and marginalized communities.
- Ensure respect for legitimate tenure rights throughout land consolidation processes.

to accurately reflect the tenure situation on the ground. The VGGT establish that all legitimate tenure holders and their rights should be recognized and respected, whether their rights have been formally recorded or not (Paragraph 3.1). States are responsible for defining legitimate rights and should widely publicize the criteria.

Participatory and gender-sensitive approaches should be used in any land consolidation scheme. In Lithuania, interviews with landowners are carried out and public meetings organized within the legal framework of the *Law on Land of 1994*. In a series of public consultations, participants are informed about the project, allowed to express their concerns and preferences, and vote on the proposed land consolidation plan. The Lithuanian system requires 75 percent of landowners to vote in favour for the land consolidation plan to be approved.

Land consolidation and land banking present particular risks to disadvantaged and Indigenous Peoples that must be recognized. There is a risk that people could be dispossessed of their rightful lands under the guise of land consolidation or land banking if they do not have secure tenure rights. It is also one area of many where corruption may be introduced into a land system without transparency and accountability. As noted by FAO and Transparency International "Corruption in the land sector can be generally characterized as pervasive and without effective means of control" (FAO and Transparency International, 2011). Therefore, the use of land consolidation and land banking should be tied to effective oversight, with safeguards tailored to the specific risks of a country or region.

For a thorough analysis of land consolidation and land banking, see the recently published *FAO Legal Guide on Land Consolidation* and the FAO study on *European Good Practices on Land Banking*.

4.13 Payment for Ecosystem Services

Payment for Ecosystem Services (PES) is a conservation approach that is being applied to an increasing number of sectors and ecosystems (Ferraro, 2017). A PES scheme can include a number of SLM practices, such as conservation of biodiversity, green infrastructure for water storage or management, afforestation or reforestation, and soil health improvement projects. A PES scheme is also in line with SLM principles of participatory approaches to conservation and prioritization of land user well-being, as well as environmental health.

A PES is a market-based means for delivering financial or other benefits to farmers, forest dwellers, and other land and natural resource users to incentivize provision of ecosystem services as a means to protect the environment. In PES schemes, public or private parties engage in transactions to secure the provision of ecosystem services. Criteria common to PES transactions include: a voluntary, legally binding transaction; a clearly defined and valued ecosystem service (or land use); at least one service buyer and one service seller/provider; and payments conditioned on providing the ecosystem service. Central to the transaction is a payment arrangement where "those who pay are aware that they are paying for an ecosystem service that is valuable to them or to their constituencies," while "those who receive the payments engage in meaningful and measurable activities to secure the sustainable supply of the ecosystem services in question". Such transactions are based on the ability to set an appropriate price for ecosystem services, after internalizing environmental externalities (Grieber, 2009).

In incentivizing environment protection, a PES approach both complements and shifts away from command-and-control approaches that use a punitive approach to discourage activities harming the environment. Rather, PES takes an incentivizing approach to encourage the continuation or uptake of beneficial activities that protect or enhance the health of the environment (Jack, Kousky and Sims, 2008).

Usually, PES schemes require an enabling legal and regulatory environment. They come in three types: private schemes, public schemes, and trading schemes. Private schemes (which are often local in nature) do not need a legal framework specific to PES, but only basic contract law and rule of law. Public schemes need a legal foundation and a mandate enabling regulatory authorities to make agreements for PES. Payments may go to individuals, or where this proves too complicated, to local development for a community. Trading schemes also require an adequate legal framework and can cover various ecosystem services.

The scale of PES schemes can vary greatly, placing different demands on legal frameworks. For example, PES schemes related to water are often more local and can often function through enabling provisions of existing sectoral law. Alternatively, REDD+ schemes are complex and can span international, national, and local levels (Grieber, 2009). In addition to any specific legal provisions to establish a PES scheme, effective PES systems require a broader legal framework, not only to regulate contracts but also land tenure, payment mechanisms, data collection, and monitoring. It also requires integrating relevant legal and institutional frameworks, such as alignment of land and forestry laws to authorize inventories and to valuate resources and ecosystem services (Grieber, 2009).

Box 65. Sample PES Projects Relating to SLM

Uganda: The Global Environment Facility (GEF) funded a project called "Developing an Experimental Methodology for Testing the Effectiveness of Payment for Ecosystem Services to Enhance Conservation in Production Landscapes in Uganda" from 2010 to 2014 that provided empirical evidence of the effectiveness of the PES scheme for conservation (UNEP, 2016).

The Bolivia and Viet Nam: Center for International Forestry Research (CIFOR) carried out a PES project funded by the Swiss Development Corporation called "Stakeholders and Biodiversity at the Local Level: Building on Opportunities" in 2005 that aimed to strengthen local peoples' capacity to plan and implement locally relevant and viable forest landscape management, focusing on implementation of a watershed protection payment scheme in the Bolivia and comparative study in Viet Nam (CIFOR, 2005).

Across law and policy contexts, definitions of ecosystem services vary, though in a general sense:

> Ecosystem services are the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfill human life. They maintain biodiversity and the production of ecosystem goods, such as seafood, forage, timber, biomass fuels, natural fiber, and many pharmaceuticals, industrial products and their precursors. The harvest and trade of these goods represent an important and familiar part of the human economy. In addition to the production of goods, ecosystem services are the actual life-support functions, such as cleansing, recycling, and renewal, and they confer many intangible aesthetic and cultural benefits as well (Daily, 1997).

Ecosystem services may cover "provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational and cultural benefits; and supporting services such as nutrient cycling that maintain the conditions for life on Earth" (Ziadat, Bunning and De Pauw, 2017).

Laws and policies supporting PES schemes may address ecosystems and their services broadly through constitutional recognition or holistic regulation of multiple ecosystem services or narrowly through focus on specific ecosystems or a specific site. Regardless of whether the policy and legal focus is overarching or site-specific, there are three critical considerations. First, the scale of the ecosystem service must be delineated. Scale includes: (1) geographical or spatial scale both in terms of the relevant ecosystem's geographic extent and the relevant population it reaches; and (2) temporal scale (or the time period for distributing benefits and costs) (Feldman and Blaustein, 2007). Second, the ecosystem service must be valued, which requires significant expertise and a negotiated agreement. Third, good governance and rule of law must be present so that the PES agreements and systems can run transparently and efficiently (Grieber, 2009).

Build supportive structures into relevant levels of government and ensure adequate coordination. Public institutions play a critically important role in supporting PES schemes. National institutions can provide vision, coordinate policies, and fill gaps not already performed by sub-national level institutions. Regional institutions can bridge administrative boundaries. Local institutions can ensure PES schemes are adapted to ground-level realities (Grieber, 2009). The government plays multiple key roles and can supply funding from national and local levels. States are beneficiaries in terms of their demand for the provisions of ecosystem services as well as suppliers who own or manage the land. Government also plays the role of intermediary, linking stakeholders and enabling and supporting PES schemes (Grieber, 2009). To address the multi-sectoral nature of PES, some states have developed national funds, managed by one or more ministries, to ensure adequate coordination.

Create an enabling legislative environment for PES. While constitutional recognition of PES is not necessary, constitutions should enable PES schemes. Where constitutions expressly value the environment or ecosystem services, this can provide an enabling environment for the development of PES schemes (Grieber, 2009). The *Constitution of Ecuador of 2008* provides a robust example. Ecuador was the first country to recognize rights of nature in a constitution (Global Alliance for the Rights of Nature, 2008). The Constitution also contains an explicit reference to PES by stating that financial policy will provide the means for PES to effectively operate (Article 302).

Box 66. Coordinating and financing Costa Rica's Payment for Ecosystem Services system

Costa Rica's Forest Conservation Certificate Program provides the legal foundation for landowners to supply compensable ecosystem services. The financial incentive system was revised to enable direct payments to small-scale landowners. The *Forest Law 7575 of 1996* establishes the institutional framework for implementing and initially financing the PES program (Porras *et al*., 2013). Annual presidential decrees set priorities for PES, other instruments like regulatory plans and regulations set buffer and conservation areas, and a PES Operational Manual offers guidance throughout PES scheme development (Porras *et al*., 2013). According to one source, following Costa Rica's implementation of PES, "an average of 60,000 hectares of private property have been conserved each year" (Hansen, 2018).

The National Fund for Forest Financing "has become the central management hub for the Costa Rican PES, and all activities relating to the program are coordinated through that organization, except for the budget, which is managed by the Ministry of Finance." At the start of the PES program, the budget was about USD 2.87 million and has increased to over USD 25 million (Hansen, 2018).

Other legal instruments can more expressly support PES schemes as well. Costa Rica has a well-known PES programme that has served as an example for other countries. In addition to prohibiting the conversion of forests, *Forest Law 7575 of 1996* also establishes the PES programme (Programa de Pago Por Servicios Ambientales). The law recognizes four ecosystem services – carbon mitigation, hydrological services (including protection of water catchment areas), biodiversity protection, and natural beauty preservation – providing a detailed framework for each.

Specific PES provisions can also be woven into existing sectoral laws. In such cases, consideration is needed around how PES integrates into existing legal and institutional frameworks in addition to delineating the scale of the ecosystem service, valuing the ecosystem service, and providing adequate economic incentives (Grieber, 2009; Feldman and Blaustein, 2007). For example, Mexico substantially reformed the *General Act for Sustainable Forestry Development of 2018* to promote the provision of environmental services and an integrated ecosystem approach to management of forests (alongside recognizing community forest management initiatives, consolidating social and environmental safeguards, reforming the forestry sector to align with NDCs, and ensuring women and youth inclusion in forestry activities) (International Conservation Caucus Foundation Group, 2018). At the national level, government is responsible for developing and adopting methodologies for the valuation of environmental services and developing instruments to provide compensation for services (Article 10). At the local level, government is responsible for promoting compensation and PES schemes (Article 11). Proper valuation is crucial to success, as demand for fruits like avocado and profit margins in Mexico outweigh the benefits of the PES system currently (Hansen, 2018).

Incentivizing the improvement of water management is also beneficial to SLM, and water laws can also enable PES. Bhutan's *Water Act of 2011* enables a PES system for water by requiring that downstream water users share the cost of water conservation in upper watershed areas. In Brazil (Roraima), the *Law No. 733 providing for the Environmental Service Farmer using means for preserving and recovering water sources, springs and related resources of 2009* obliges farmers providing ecosystem services to preserve forests within their agricultural areas, to preserve water resources, and to use agroecological practices. While PES schemes relating to water do not require PES-specific laws in many cases, enabling provisions that cut across water, environmental, forest, agricultural, or other laws can be beneficial.

Private PES schemes can also rely solely on general contract law and principles. In southwest Cambodia, the Cardamom Mountains Conservation Agreements scheme implements community-led contracts that involve participatory land-use planning and incentivize the prevention of deforestation. The scheme is implemented in partnership between the community, a supporting NGO, and the Forestry Department (Milne, 2012).

Consider tenure security in developing PES schemes. Tenure insecurity can negatively affect a land user's ability to engage in a PES scheme, diverting intended benefits from the local community. Clear tenure rights allow parties the means to contract for PES and support PES schemes' sustainability. Without such rights, issues can include "Conflicts between statutory and customary law, unclear or not existing property rights legislation, and ambiguous property rights arrangements on the ground" (Grieber, 2009). For example, water-related PES schemes in the Bolivia are challenged by the lack of legal, documented rights to property in the upstream areas. De facto rights to land range from "gentlemen's agreements" to open access to land, including areas where land clearance and conversion is the sole means to evidence possession. Farmers participating in PES schemes may mistake their participation for recognition of land rights, creating confusion (Porras and Neves, 2006).

Relatedly, as clear tenure rights are a means to participate in PES schemes, there may be gender and social inclusion challenges where women's property rights and/or local communities' and Indigenous Peoples property rights are not adequately recognized in law or in practice. This may exclude these groups from accessing and benefitting from PES schemes (Landesa, 2015).

Preventing elite capture in the implementation of PES schemes is also a challenge. For example, in Costa Rica, participation in PES is increasingly tilting towards legal entities. In 1997, legal entities enjoyed 25 percent of the funding; by 2012, they enjoyed almost 50 percent of the funding. Some of this shift is due to landowners incorporating for tax purposes, and legal entities on average possess larger properties than individual owners. "One hypothesis is that increasing participation of legal entities is happening at the expense of smaller, individually owned (and potentially less wealthy) landowners. A more worrying aspect of legal entities is the difficulty of tracking social impacts, because of the anonymity conferred by their legal status" (Porras *et al*., 2013). Costa Rican law requires the PES programme to be accountable for its social impact, and the National Fund for Forest Financing "must be able to explain transparently how payments are distributed, who benefits and who loses" (Porras *et al*., 2013).

Box 67. Key messages | Payment for Ecosystem Services

- Build supportive structures into relevant levels of government and ensure adequate coordination.
- Consider tenure security in developing Payment for Ecosystem Services (PES) schemes.
- Create an enabling legislative environment for PES.
- Ensure that gender equality and social inclusion, particularly regarding inclusion of Indigenous Peoples and local communities, are prioritized throughout design of PES rules and regulations.

5. Conclusion

Sustainable land management is central to achieving many important outcomes, such as food security, economic development, climate resilience, social harmony, land conservation, biological diversity, and seeking to meet the Sustainable Development Goals. This conclusion briefly summarizes the study and provides guidance on identifying implementation priorities for legislation to support SLM practitioners.

5.1 Legal approaches to sustainable land management

Sustainable land management, as mentioned in Section 1.3, consists of "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" (FAO, 2023a). Although SLM is clearly defined, "sustainable land management law" does not exist as a clear and defined set of legal instruments. Instead, like sustainable development, a legal framework that promotes SLM is composed of many diverse laws, policies, plans, and approaches that cut across many areas of law.

Sustainable land management is also not limited to legal frameworks. It is taking form, in part, through integrated landscape management. A number of multistakeholder approaches to integrated landscape management have arisen, and more are being organized. Practitioners seeking to implement sustainable land management should consider both legal frameworks and integrated land management approaches.

This legislative study has identified many ways in which legal frameworks can enable SLM without prescribing a specific approach. Each country's priorities and existing set of laws, regulations, and policies need to be examined to determine how to best promote sustainable land management across all levels of government.

Successful incorporation of SLM into legal frameworks requires:

- targeted policy and institutional support, including the development of incentive mechanisms for sustainable land management adoption and income generation at the local level;
- land-user-driven and participatory approaches;
- integrated use of natural resources on farms and at the ecosystem scale; and
- multilevel, multistakeholder involvement and partnerships at all levels – land users, technical experts and policymakers (FAO, 2020d).

Countries can begin to incorporate SLM into their legal frameworks by surveying existing SLM requirements across international instruments to which they have acceded. This legislative study provides a roadmap of such principles found in many of them. These range from treaties addressing climate change, biodiversity and chemical management to land tenure, fisheries, and forest management guidelines, as well as human rights instruments. Regional instruments are also an important source for identifying SLM principles.

National legal frameworks may already contain a multitude of SLM principles and practices. Constitutional provisions regarding environmental rights, for example, can be a key source of authority for pursuing sustainable land management. Existing laws and regulations may already provide significant provisions that support SLM, and that should be built upon. As a result, practitioners should review existing legislation and policies for provisions that are helpful or harmful in promoting SLM practices. This study provides many examples to help practitioners identify such provisions in their own countries. As with treaties, these provisions may be found in a diverse collection of areas including land use and spatial planning, sustainable or regenerative agriculture, soil management, water management, protected areas, environmental law, and energy and resource extraction.

5.2 Implementation priorities

When deciding on how best to ensure that legal frameworks enable sustainable land practices, the diversity of areas that touch upon SLM offers both an opportunity and a roadblock. It can be daunting to seek to review such a wide set of legal frameworks. On the other hand, practitioners can use this study to identify those areas most likely to present an opportunity for high impact in inculcating SLM principles into legal frameworks. The approach does not need to be comprehensive nor exhaustive but it should be sustained over time to identify opportunities to capitalize on existing provisions or add new ones when legal frameworks are being revised, updated, or created. This study highlights areas where practitioners can look to craft such provisions within their own countries.

Observing good rule of law practices when implementing SLM is a critical step as discussed throughout this study. Many well-intended legal instruments have unintended consequences. The study seeks to provide concrete guidance when dealing with these legal instruments to help practitioners learn from past experiences to make even more effective decisions in the future.

In order to build a successful SLM legal and policy framework, states should establish clear institutional frameworks to prevent administrative overlap or gaps in coverage. States should also be proactive in offering opportunities for meaningful consultation between communities, local authorities, national policymakers, and other stakeholders in creating the framework and within the framework itself. These priorities should be emulated in any SLM policy.

The following two subsections discuss these crucial areas of SLM policy and lawmaking: inclusive public consultation, and effective administration and enforcement.

5.2.1 Inclusive public consultation

Land management cannot be sustainable unless the public plays a central role in formulating land laws, regulations, and policies. Public consultation allows legislators to be responsive to the needs of local stakeholders and communities, and also helps to ensure that the policies are well-designed to achieve their goals on the ground. The public often have insights and experiences regarding local land uses that can both inform national laws and policies and ensure that, when implemented, these policies are relevant to the local context and accepted by local populations (UNEP, 2019).

Public participation must consider inclusiveness. The processes should be suitable to reach a wide array of stakeholders, including disadvantaged populations, women, rural communities, Indigenous Peoples, and those who are illiterate or lack access to the internet. The public is heterogenous and with insufficient care, there is danger that the more powerful segments of society will be heard to the detriment of others.

Any efforts to implement SLM principles and practices should consider local and indigenous knowledge alongside other evidence. Not only is respect of local knowledge essential to cultural identity and food sovereignty, but incorporation of local knowledge also recognizes unparalleled understanding of environmental context, resource-use patterns, seasonal needs, and overlapping land uses. Co-creation and sharing of knowledge help to ensure that the local context is well-considered, and that complete information is being used to make decisions (FAO, 2018). Collaboration can also build trust and buy-in, both of which are important for the longevity of any SLM intervention, as land users are the ultimate implementers of SLM.

Sharing knowledge can happen through a variety of participatory processes, as policymakers design laws and policies, research needs of land users, and roll out enforcement measures. Land users should have transparency regarding relevant information, including around laws and decisions that affect their tenure rights, government-held data on the state of the environment and development projects that could affect their lands (UNEP, 2019). *FAO Governance of Tenure Technical Guide No. 12* offers best practices for strengthening civic spaces in spatial planning processes, which can inform many forms of public engagement, not just spatial planning (FAO, 2020d).

In many societies, women and men typically play different roles in land management. Ensuring that both women and men are given equal opportunities to participate in decision-making around SLM projects is essential for mainstreaming gender equality as well as helping to ensure that differentiated, often gendered, knowledge is considered in project design (FAO, 2018).

The importance of inclusivity and public consultation to SLM cannot be overstated. Especially in administrations with low institutional bandwidth and enforcement capability, public interest in SLM can be the key to success by creating local allies who will help to ensure SLM implementation.

5.2.2 Effective administration and enforcement

Sustainable land management is governed by a patchwork of laws and policies, and there is usually no centralized or coordinated implementation and enforcement authority. While SLM needs national coordination, its ultimate administration and enforcement are often fundamentally local or regional because land is local. This can make SLM administration and enforcement particularly challenging in resource-constrained environments. In addition, lack of political will is a significant barrier to effective SLM implementation of many of the relevant legal frameworks. As stakeholders are often opposed to SLM requirements that will cost more and slow processes, government officials can be incentivized to maintain a low regulation environment. While some SLM principles can still be carried out locally without enabling legal frameworks, the barriers to successful integration of the various systems involved are much higher. Similarly, in areas with low rule of law, corruption can be a major contributor to unsustainable permit structures and lack of enforcement.

Because of these challenges, it can be helpful for agencies and stakeholders to create an overarching SLM strategy or policy that lays out current requirements and outlines processes for collaboration across agencies, sectors, and geographies (UNEP, 2019). Such efforts can be done at national, regional, departmental, landscape, or other levels as appropriate. Including overlap and underlap analyses to determine needed legal and policy changes can counteract fragmentation issues.

Many countries lack resources to focus on monitoring, implementation, enforcement, and legal literacy education (UNEP, 2019). Innovative low-cost solutions and co-financing can be important tools for effective administration in areas with limited financial and personnel resources. Examples of these solutions include community-driven conservation, public–private partnerships, and involvement in transnational programmes focused on related issues. Incentives for long-term investments in SLM, such as securing long-term tenure rights or offering tax incentives for improved sustainability, can also improve uptake without requiring a great deal of government resources. As with all natural-resource governance, administrative implementation and enforcement capacity needs to be considered when any new SLM measure is proposed.

Capacity development and training of administrative officials, including extension officers, to better carry out SLM technologies and techniques is important to improving a country's SLM outcomes. Non-governmental organizations, civil society groups, academia/researchers, and private sector actors can contribute specialized expertise to the development of such training. Training community members to monitor and report SLM problems or violations can also provide a low-cost, high return approach to implementing SLM requirements in areas without a strong government presence.[11]

Institutionalizing effective dispute resolution bodies and ensuring meaningful access to justice help to decrease costs of administration and enforcement, as bad actors are disincentivized and smallholders and other local land users can raise issues of unsustainable land use with hope of remedy. Local and customary courts can be legitimate structures for dispute resolution, and states can recognize these authorities in order to give their decisions weight. Lack of dispute resolution and access to justice avenues can decrease trust in government, contribute to conflict, and lead to powerful actors taking control without consequence.

Some countries try to balance low administrative capacity with high penalties in order to dissuade bad actors. These strategies risk being overly punitive and unenforceable, and they can erode relationships between local communities and government bodies. Tailoring penalties to target large holdings and repeat offenses can be effective if enforced properly. Concessions can be made subject to SLM, with financial consequences or loss of licence, or both.

Institutional fragmentation – where an issue is covered by a patchwork of organizations with divergent characters, constituencies, geographic and temporal scopes, and subject matters (Zelli, 2015) – is one of the largest challenges facing SLM administration. Because SLM cuts across so many topics and areas and often lacks a central champion within government or among stakeholders, there is significant risk for overlap and underlap in creating and maintaining SLM laws and policies. An integrated and cooperative approach that considers all relevant sectors, stakeholders, and scales is necessary to make SLM uptake as effective and efficient as possible (FAO, 2017a).

Disparate government bodies and instruments, with competing and sometimes conflicting mandates, can leave gaps in land management administration as they each address the SLM considerations in their areas of responsibility. Administrative authorities that fail to consider SLM in their ESIA processes, agricultural extension programmes or investment promotion can unintentionally cause negative impacts that create a heavier burden for other SLM practitioners and policymakers. Similarly, agencies may have overlapping mandates that implicate forest, agricultural or other lands and may find their mandates to be duplicative or contradictory, thus frustrating their own objectives, other stakeholders and perhaps SLM.

[11] For example, see the Namati organization who train paralegals and individuals on social and environmental legal systems at https://namati.org and the Kumacaya group who provide a system of independent monitoring by civil society organizations and community members at https://www.kumacaya.org.

Stakeholder diversity is another challenge. As many diverse government, NGO, private industry, and civil society groups seek to improve SLM, failure to coordinate and complement one another's work can lead to missed opportunities to amplify positive effects and even acting in contradiction to each other. An overarching SLM strategy can incentivize partnerships and provide avenues for these various stakeholders to share best practices and to collaborate. Non-governmental organizations, private sector actors and civil society can play a role in bringing various partners together, but barriers to institutional exchange and collaboration can make this very difficult. Therefore, states should create enabling environments for various institutions and other stakeholders to collaborate more easily on cross-cutting issues.

Many SLM policies are set at the national level and implemented at local levels. Failure to communicate between these levels can lead to a host of problems. Creation and consultation of local management plans, developed in cooperation with local communities and Indigenous Peoples, can help with this communication and planning gap, as centralized policymakers can better understand local context and clear expectations can be set for implementers.

5.3 Concluding thoughts

Adopting a holistic and participatory approach to sustainable land management can pay important dividends to countries and communities. Sustainable land management has the potential to help safeguard food security and sovereignty, foster cultural heritage preservation, and reverse land degradation. This legislative study provides a framework for states and practitioners to determine how to carry forward sustainable land management through law and policy change. By integrating SLM principles into existing and new legal frameworks, states can provide enabling and incentivizing environments for land users to take up sustainable practices that can safeguard both livelihoods and ecosystems.

Annex: Sustainable Development Goal targets relevant to sustainable land management

1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.

1.B Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions.

2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, Indigenous Peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.

2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.

3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.

5.A Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws.

6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.

6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.

6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.

7.2 By 2030, increase substantially the share of renewable energy in the global energy mix.

8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead.

8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.

9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.

9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.

10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 percent of the population at a rate higher than the national average.

10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard.

11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.

11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage.

11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.

11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.

11.A Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning.

12.1 Implement the 10-year framework of programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries.

12.2 By 2030, achieve the sustainable management and efficient use of natural resources.

12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.

12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.

13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

13.2 Integrate climate change measures into national policies, strategies and planning.

14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.

14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.

15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.

15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.

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

15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.

15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.

15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.

15.A Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.

15.B Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation.

16.3 Promote the rule of law at the national and international levels and ensure equal access to justice for all.

16.6 Develop effective, accountable and transparent institutions at all levels.

16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels.

16.B Promote and enforce non-discriminatory laws and policies for sustainable development.

17.5 Adopt and implement investment promotion regimes for least developed countries.

17.14 Enhance policy coherence for sustainable development.

17.15 Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development.

17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.

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This legislative study aims to fill a knowledge gap by exploring various legal frameworks that can support Sustainable Land Management (SLM) to promote land stewardship while supporting respect and safeguard of all legitimate tenure rights and rights holders, such as women, Indigenous Peoples and local communities. The study provides guidance to strengthen the capacities of governments and stakeholders globally to adopt and propose regulatory measures that can be conducive to SLM both as a good in itself and as a means to support the achievement of several other fundamental objectives such as sustainable agricultural development, protection of the environment and protection of livelihoods.

The study explores cross-cutting issues such as land use conversion, tenure security of rural populations, biodiversity protection, climate change and investment in land. Varied sectoral legislation are then explored to identify entry points for SLM strategies, from spatial planning and tenure legislation, through agriculture, forestry, water legislation, as well as approaches to tackle land fragmentation and abandonment, to broader environmental legislation, such as pollution control, environmental and social impact assessments and payment for ecosystem services.

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