# Executive summary

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## 1 Introduction

This executive summary provides an overview of key findings and reasoning behind the chapters of this book. As a core outcome of the project on *Model Law for Sustainable Soil Management in Africa* funded by the German Ministry for Development Cooperation (BMZ) and jointly led by Oliver C. Ruppel and Harald Ginzky, this summary first outlines the project's objectives and context before summarising the main results and arguments presented in the book.

The summary also serves as a foundational document for understanding the proposed *Model Law for Sustainable Soil Management in Africa*, which is set to be submitted to the Pan-African Parliament in 2025.

### 1.1 The Model Law for Sustainable Soil Management in Africa Project

The primary objective of this project, funded by the German Federal Ministry for Economic Cooperation and Development (BMZ), is to develop a comprehensive *Model Law on Sustainable Soil Management*. This model law is intended for adoption by the Pan-African Parliament (PAP) and to be recommended to national legislatures across Africa.

The law is being developed through extensive research and consultation, incorporating insights from in-depth studies conducted in multiple African countries to ensure regional representation. The process also involves collaboration with key international and regional partners, including the Food and Agriculture Organization of the United Nations (FAO), the United Nations Convention to Combat Desertification (UNCCD), the United Nations Environment Programme (UNEP), the African Union (AU), the African Ministerial Conference on the Environment (AMCEN) and the African Soil Partnership (ASP), several national parliaments, as well as representatives of national governemnts.

The project builds on the outcomes of *Mapping Out Options for a Model Legislation on Sustainable Soil Management in Africa*, which evaluated soil governance frameworks in Cameroon, Kenya, and Zambia. Findings from this earlier initiative, along with stakeholder engagements across Africa, were published in the *African Soil Protection Law* (2021, Nomos-Verlag). Jointly led by the authors of this chapter, the project consists of three key components:

- Country studies and legal proposals: Expanding legal research on soil management across Africa, including updated and new studies in Botswana, Burkina Faso, Cameroon, Kenya, Madagascar, Morocco, Mozambique, Namibia, South Africa, Uganda, and Zambia. Each study provides tailored recommendations for national legal and policy reforms.
- Development of the Model Law: Drafting a framework *Model Law on Soil Protection* with explanatory notes, alongside policy papers addressing critical areas such as urbanisation, agriculture, and mining. These papers outline regulatory options and specific legal measures to strengthen soil governance.
- Stakeholder engagement and policy integration: Conducting iterative consultations with the PAP and international institutions, including UNEP, FAO, UNCCD, the ASP, and the AMCEN, to refine and align the model law with regional and global sustainability goals.

By providing a legal blueprint for sustainable soil management, this initiative aims to strengthen soil governance across Africa, safeguarding the continent's agricultural productivity, environmental resilience, and long-term food security.

## 1.2 Purpose of this book

This book is the first major outcome of the *Model Law for Sustainable Soil Management in Africa* project. It presents the eleven country studies that form the foundation for developing a model law on sustainable soil management in Africa, alongside insights from extensive stakeholder consultations.

Each country study follows a consistent structure, covering:

- Country overview;
- Key drivers of soil degradation;
- Public law on soil management;
- Legislation addressing the main drivers of soil degradation; and
- Conclusions and recommendations.

Beyond the country studies, the book includes three additional chapters that provide broader policy and legal context:

- A comparative analysis of the AU's soil policy and the regulatory approaches of the European Union.

- An examination of the PAP's role and legal competencies in shaping continental soil governance.
- An exploration of the intersections between international trade regulations, food security, and soil health.

This book serves as an essential resource for understanding both the strengths and gaps in national soil governance frameworks across Africa, as well as the AU's approach to soil policy. It also provides the necessary background for engaging with the forthcoming *Model Law for Sustainable Soil Governance in Africa*.

By the end of 2025, the final proposal for the model law, along with explanatory notes, will be published as a next volume in this series.

## 2 The importance of soil for Africa

Soil is the foundation of life on Earth, supporting ecosystems, agriculture, economies, and human well-being. In fact, soil is an irreplaceable resource and it holds the planet's capacity to sustain life, making it one of our most vital resources. In Africa, where land and agriculture are central to livelihoods, culture, and economic development, the health of soils is particularly crucial.

Soil is the foundation of food security: Over 95% of global food production depends on soil, making healthy and fertile soil a fundamental requirement for eradicating hunger and ensuring long-term food security. In Africa, where millions depend on agriculture for their livelihoods, degraded soils directly threaten food production, drive up food prices, and increase vulnerability to malnutrition and poverty.

Soil is key to economic prosperity: Healthy soils underpin agricultural productivity, constituting approximately 20% of Africa's per capita gross domestic product (GDP) and employing 60% of the continent's workforce. Sustainable soil management is not just an environmental necessity—it is an economic imperative. Well-managed soils can boost national economies, enhance agricultural exports, and ensure that economic gains benefit local farmers and rural communities.

Soil plays a critical role in fighting climate change: Africa is highly vulnerable to climate change, experiencing rising temperatures and increasing extreme weather events such as droughts, floods, and heat waves. Soils act as one of the world's largest carbon sinks, helping to mitigate climate change by storing carbon and regulating greenhouse gas emissions. However, land degradation, deforestation, and poor agricultural practices reduce this capacity, worsening climate vulnerabilities.

Soil sustains biodiversity and ecosystem services: Soils host an incredible diversity of microorganisms, fungi, and invertebrates that drive essential ecological processes. These organisms support the nutrient cycle, improve plant health, regulate greenhouse gas emissions, and contribute to carbon sequestration. Maintaining healthy soils is

critical for sustaining Africa's rich biodiversity and ensuring the resilience of natural ecosystems.

Healthy soils are essential for human health and well-being: Soil health is directly linked to human health through food production, water filtration, and air quality. Degraded soils reduce crop nutritional value, contribute to water scarcity, and increase exposure to contaminants. Additionally, green spaces, supported by healthy soils, improve urban environments by cooling cities, enhancing mental well-being, and fostering social cohesion. Protecting soil health is not just about preserving nature—it is about safeguarding the well-being of present and future generations.

As Africa faces mounting challenges, including climate change, land degradation, and rapid urbanisation, protecting and restoring soil health must be a priority. Sustainable soil management is not just an environmental issue—it is a cornerstone of food security, economic stability, biodiversity conservation, and human resilience.

## 3 Soil degradation in Africa: Key drivers and players

The decline of soil health in Africa has far-reaching and severe consequences, not only for food production but also for economic stability, social cohesion, and environmental sustainability. Infertile soils lead to reduced agricultural yields, increasing poverty, exacerbating resource conflicts, and driving migration and instability. Soil degradation is not just an African issue—it has global repercussions, as the continent's ability to sustain its growing population and contribute to global food security is increasingly under threat.

With Africa's population projected to double by 2050, the need for healthy, fertile soils has never been more urgent. However, multiple factors are driving rapid soil degradation across the continent.

### 3.1 Key drivers of soil degradation in Africa

Agriculture and livestock: Agriculture remains the backbone of Africa's economy, employing most of the workforce and contributing significantly to GDP. However, despite its economic importance, Africa struggles to produce enough food to sustain its growing population. Soil degradation is a major factor behind this challenge. Approximately 65% of arable land, 30% of grazing land, and 20% of forests in Africa are already degraded. To meet food demand by 2050, agricultural productivity must increase by at least 70%. This pressure often leads to the overuse of synthetic fertilisers, which can cause soil acidification and pollution of nearby water bodies. Slash-and-burn agriculture destroys soil organisms and nutrients, while excessive ploughing

leads to erosion. Overgrazing by livestock strips vegetation, compacts the soil, and accelerates land degradation.

Mining and extractive industries: Africa is rich in mineral resources, with Sub-Saharan Africa holding approximately 30% of the world's critical mineral reserves. While mining is a major economic driver, its impact on soil health is often severe. Industrial mining operations clear vast areas of land, leading to deforestation, erosion, and chemical contamination from heavy metals. Conducted within local communities, artisanal and small-scale mining (ASM) often leads to widespread land degradation, soil contamination from mercury and cyanide, and displacement of farmers from arable land.

Industrialisation and pollution: Although industrialisation levels vary across African countries, nations such as South Africa, Morocco, Kenya, and Egypt have developed significant industrial sectors. However, industrial expansion poses a growing risk to soil health. The improper disposal of hazardous industrial waste leads to soil pollution, disrupting decomposition processes, and harming soil quality. Industrial development often encroaches on fertile land, leading to soil sealing and reducing agricultural space.

Foreign investment and land acquisition ("land grabbing"): Foreign direct investment (FDI) in Africa's agricultural sector has the potential to boost productivity, but poorly regulated investments can result in negative environmental and social impacts. Some foreign investors secure vast areas of arable land, depriving local communities of their livelihoods and access to natural resources. Large-scale plantations, often established for export crops, exhaust soil nutrients, leading to long-term degradation.

Urbanisation and infrastructure development: Africa's cities are growing rapidly, with urbanisation rates among the highest in the world. While economic opportunities expand, urbanisation puts immense pressure on soil resources. Expanding cities lead to the loss of fertile land as soils are covered by concrete and asphalt for buildings, roads, and infrastructure (known as "soil sealing"). Many African cities are located on prime agricultural land, reducing available space for food cultivation and increasing reliance on imported food.

Poverty and hunger: Poverty and food insecurity are both causes and consequences of soil degradation. When people struggle to meet basic needs, they may resort to unsustainable practices such as overharvesting, deforestation, or illegal mining, further degrading the land. In desperate situations, communities may allow unsanctioned mining, deforestation, or land transactions that contribute to further degradation.

Weak governance, policy implementation, and enforcement: Many African countries lack strong legal frameworks dedicated to soil protection. Conflicting interests, lack of political will, and weak institutional coordination hinder effective policy implementation. Many governments lack the technical expertise, personnel, and financial resources to enforce environmental regulations and promote sustainable land use.

Insecure land tenure and property rights: Land tenure insecurity is a major obstacle to sustainable soil management in Africa. Approximately 90% of rural land in Africa remains undocumented, leading to disputes and uncertainty over land rights. Without secure land rights, farmers are less likely to invest in soil conservation practices such as agroforestry, crop rotation, or soil regeneration techniques.

Multiple crises and global challenges: Africa's soil crisis is further aggravated by intersecting global crises that limit access to resources and hinder sustainable land management. Economic instability and supply chain disruptions increase the cost of fertilisers, seeds, and sustainable farming inputs. Conflicts, such as the wars in Ukraine and the Middle East, affect global trade, reducing African countries' access to essential agricultural inputs. The COVID-19 pandemic highlighted Africa's vulnerability to global shocks, reducing international development funding, and delaying critical agricultural projects.

## 3.2 Key players in soil protection and governance

Addressing soil degradation requires coordinated action from multiple stakeholders, including:

- Governments and policymakers: National governments must strengthen soil governance frameworks, enforce environmental laws, and invest in sustainable agricultural policies.
- Competent authorities: Responsible for the implementation of policies and legal provisions.
- Regional and continental institutions: The AU, the PAP, and regional economic communities (RECs) play a crucial role in harmonising policies and promoting best practices.
- International organisations: UNEP, the FAO, and the UNCCD, among others, support soil conservation through funding, research, and technical assistance.
- Farmers and local communities: Smallholder farmers are the frontline stewards of soil health. Their knowledge, participation, and access to resources are critical to restoring degraded lands.
- Private sector and foreign investors: Responsible investment in agriculture and land-use projects can support sustainable soil management, but strong regulatory frameworks are needed to prevent environmental harm.
- Research institutions and civil society: Universities, non-governmental organisations (NGOs), and advocacy groups play a key role in driving awareness, conducting research, and influencing policy reforms.

## 4 Current soil governance in Africa: Strengths, weaknesses, and gaps

This section outlines the strengths, weaknesses, and gaps in Africa's current soil governance. It focuses primarily on national policies and legislation, providing an overview based on eleven country studies. Governance is understood in its broadest sense, encompassing mechanisms that influence societal behaviour. The findings presented here also serve as the foundation for the recommendations on improving soil governance in the subsequent section.

### 4.1 Strengths of current soil governance

Growing awareness and initiatives: Many African governments recognise the critical role of healthy soils in ensuring food security and sustaining livelihoods. Increasing discussions on national soil strategies reflect this awareness. Additionally, international interest in Africa's natural resources, including soil, has led to substantial external support for sustainable soil management initiatives.

Deep cultural and emotional connections to land: In many African societies, land and soil hold profound cultural, historical, and personal significance. This intrinsic attachment can serve as a powerful motivator for soil conservation and sustainable management practices. When harnessed effectively, this emotional connection can encourage active participation of people, traditional leaders and communities in soil governance.

Community engagement and traditional knowledge: Local communities play an essential role in soil management. Traditional and indigenous knowledge, such as the use of Zai pits and half-moon techniques, has been instrumental in enhancing soil fertility and resilience. Integrating these practices with modern approaches can offer effective, context-specific solutions to soil degradation.

Momentum for building resilience: Many African countries are adopting resilience-building strategies to combat environmental degradation and climate change. Approaches such as conservation agriculture, integrated soil fertility management, agroecology, and regenerative agriculture are gaining traction. These methods help mitigate soil erosion, improve fertility, and ensure long-term agricultural productivity.

Existing legal frameworks: Most African nations have legal frameworks addressing environmental protection, which indirectly support soil conservation and sustainable land management. While these laws provide a foundation for governance, they often lack specificity in addressing soil health comprehensively.

## 4.2 Weaknesses and gaps in current soil governance

### 4.2.1 Economic challenges

Insufficient financial resources: Many African countries lack adequate funding to implement effective soil governance. Limited capital, technology, and financial incentives hinder the adoption of sustainable land management practices. Smallholder farmers, often viewed as high-risk by financial institutions, struggle to access credit, further limiting agricultural development.

Unregulated foreign investments: Large-scale foreign land acquisitions frequently lack transparency and fail to protect local tenure rights. Between 2010 and 2020, an estimated 7.3 million hectares of land in sub-Saharan Africa were leased or acquired under conditions that often disregarded local communities' interests and legal protections.

### 4.2.2 Institutional and political challenges

Fragmented responsibilities and weak institutions: Soil governance responsibilities are often divided among multiple ministries and agencies, leading to uncoordinated efforts. Centralised governance structures struggle with effective local implementation of soil management policies.

Limited public participation and access to justice: Legal frameworks frequently fail to guarantee meaningful public participation in soil governance. The use of colonial languages, such as English, French, and Portuguese, in official environmental policies creates barriers for rural communities, limiting their engagement in decision-making processes.

### 4.2.3 Legal challenges

Outdated and fragmented legal frameworks: While environmental laws exist in many countries, specific soil governance regulations are often outdated and inconsistent. The absence of a unified legal approach hampers effective soil management.

Conflicting land tenure systems: Legal uncertainty arises from overlapping customary and statutory tenure systems, leading to land disputes and insecure land rights. These conflicts disproportionately affect marginalised groups, often resulting in loss of land and reduced incentives for soil conservation. Foreign investors, supported by international legal expertise, frequently exploit these tenure insecurities.

### 4.2.4 Operational and knowledge gaps

Weak enforcement and monitoring: Governments often lack the financial and human resources to enforce soil protection regulations. Ministries responsible for soil governance frequently suffer from understaffing, limited technical expertise, and inadequate equipment. Agricultural extension services, essential for supporting sustainable practices, are similarly underfunded and under-resourced.

Limited expertise and outdated soil data: The lack of well-equipped soil laboratories and trained soil scientists in Africa is a significant barrier to effective soil governance. Soil maps are often outdated, and research funding is minimal. In 2020, Africa had only 285 soil laboratories, the lowest among surveyed global regions.

Science-policy gaps: Disconnects between scientific research and policymaking result in misaligned priorities and a lack of access to critical data. Addressing soil pollution, for example, requires a comprehensive, georeferenced soil information database. However, most African countries lack functional systems to provide this essential data.

Limited knowledge and education resources: While awareness of soil health's importance has grown, knowledge gaps persist in many African societies. Challenges such as inadequate agricultural extension services, limited veterinary support, and insufficient training programs hinder farmers' ability to adopt sustainable practices. Although agricultural policies exist, they often fail to integrate effectively with education and social protection initiatives, further limiting their impact.

## 5 Core recommendations for soil governance based on the country studies

Soil degradation in Africa is driven by multiple factors, including agriculture, mining, industrialisation, and foreign investment. While these activities may contribute to economic growth and poverty alleviation, they also pose significant threats to soil health. Urbanisation, for example, accounts for nearly 30% of Africa's per capita GDP growth, providing access to services and infrastructure that create economic opportunities.

To ensure long-term sustainability, it is crucial to develop and implement policies that promote responsible soil management. By doing so, African nations can maximise economic benefits while preserving soil health, mitigating the impacts of population growth, and fostering prosperity.

The following recommendations outline key strategies for achieving sustainable soil governance.

## 5.1 Establishing soil-specific policies and laws

A major gap in African soil governance is the absence of dedicated soil legislation. Countries should enact comprehensive soil laws that:

- Protect soil health across key sectors, including agriculture, land management, and mining.
- Introduce a permit system to regulate activities that may harm soil quality.
- Mandate that unavoidable soil degradation is offset through the rehabilitation or restoration of degraded land elsewhere.

Additionally, integrating soil impact assessments into broader environmental assessments will ensure that soil considerations are factored into all development projects. Governments should also develop soil-specific standards to guide sustainable land use and enable enforcement authorities to take decisive action.

As a first step, countries should adopt national soil strategies as a policy framework for soil law development. These strategies can align soil protection with climate policies, including Nationally Determined Contributions (NDCs) and Land Degradation Neutrality (LDN) commitments while promoting sustainable land management approaches such as agroecology.

## 5.2 Constitutional reforms for soil protection

A strong constitutional foundation is essential for environmental protection. African nations should:

- Recognise the right to a clean and healthy environment, explicitly including sustainable soil management.
- Establish a state obligation to implement soil protection measures.
- Develop soil-specific laws to ensure long-term legal commitments to soil conservation.
- Integrate soil education into national curricula and provide capacity-building programmes for farmers.

This approach acknowledges the interconnectedness of environmental and socio-economic rights, reinforcing the importance of soil management in sustainable development.

### 5.3 Linking soil management to climate mitigation and adaptation as well as biodiversity protection

The role of healthy soils in climate mitigation and adaptation as well as biodiversity conservation is often underestimated. A dedicated soil law should emphasise these linkages by:

- Requiring administrative decisions to consider soil's role in climate mitigation and adaptation and biodiversity protection.
- Ensuring compliance with international climate and biodiversity commitments.
- Recognising soil as a carbon sink, incorporating soil carbon sequestration into legal frameworks.

### 5.4 Strengthening international cooperation

Although international agreements such as the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention to Combat Desertification (UNCCD), the Convention on Biological Diversity (CBD), and the Convention on Wetlands (Ramsar) address aspects of soil management, none comprehensively cover soil protection. African countries should:

- Strengthen regional cooperation under the Revised African Convention on the Conservation of Nature and Natural Resources.
- Leverage non-binding FAO guidelines on soil health, pesticide use, and land tenure as best practices.
- Formally engage with neighbouring states to coordinate transboundary soil management efforts.

### 5.5 Sustainable soil management and agriculture

Agriculture remains the backbone of African economies, employing up to 90% of the population in some countries. However, poor soil management threatens food security and exacerbates hunger. Key recommendations include:

- Prohibiting unsustainable agricultural practices, such as excessive chemical use and slash-and-burn techniques.
- Enforcing existing pesticide and fertiliser regulations to prevent illegal practices and environmental harm.
- Expanding agricultural extension services to promote conservation farming.
- Providing financial incentives to support ecological fertilisers, including subsidies and certification systems.

- Strengthening seed independence through legal frameworks that protect farmers' rights.
- Implementing land-use planning measures to ensure food crops are prioritised alongside cash crops.

## 5.6 Soils and mining

Two categories of mining must be distinguished, both of which can have significant negative effects on soils. The first is industrial mining, and the second, often referred to as artisanal mining, is small-scale mining.

To enhance soil management and protection, mining laws must integrate soil aspects into their legal frameworks. While mining is inherently detrimental to natural resources, including soils, the provisions in mining codes must ensure that these negative effects are minimised and that the interests of local communities are recognised and valued. Periodic reviews and updates to mining codes, in line with international best practices, are therefore, essential.

Strict environmental standards, including soil standards, must be implemented. Furthermore, comprehensive regulations are needed regarding waste management, site rehabilitation, and biodiversity protection.

Encouraging responsible artisanal mining through training, financial support, and incentives is also crucial. Additionally, institutional capacity-building is necessary to ensure that government agencies can effectively enforce policies and legislation addressing the adverse effects of mining on soils.

## 5.7 Soils for climate adaptation in urban areas

Soils are fundamental to climate adaptation in urban areas. They provide the foundation for green infrastructure, support urban vegetation to cool cities, and enable water retention during heavy rainfall. This aspect of sustainable soil management is often overlooked in Africa, where soils are predominantly viewed in the context of food production and food security, which remain key priorities across the continent.

A core challenge in urban areas is to prevent further soil sealing while promoting unsealing efforts where possible. Town planning instruments are critical for:

- Avoiding unnecessary soil sealing.
- Protecting particularly valuable soils.
- Encouraging unsealing initiatives.

Town planning laws should explicitly incorporate these requirements. Additionally, it is recommended to:

- Train experts to conduct soil assessments.

- Establish appropriate administrative procedures for soil conservation.
- Introduce dispute resolution mechanisms, including courts or other forums.
- Ensure public participation in town planning processes to integrate community perspectives.

## 5.8 Land use planning

Land use planning and zoning can play a crucial role in protecting soils by:

- Preventing unnecessary soil sealing.
- Safeguarding particularly fertile soils.
- Ensuring coordinated and sustainable land use.

Land use planning should be understood as a regulatory process, requiring:

- Clear legal provisions outlining responsibilities.
- Public participation in decision-making.
- Transparency in planning and policy implementation.

For better land management, land use planning should also support the revitalisation of barren lands with a focus on sustainability.

Accurate soil data is essential for effective land use planning. Developing detailed and holistic soil maps would greatly enhance planning processes and enable more informed decision-making.

## 5.9 Foreign investment

While foreign investment is often seen as a driver of economic development in Africa, it can pose significant challenges to sustainable soil management. Therefore, regulatory mechanisms must be put in place, including:

- Transparency requirements for foreign mining contracts and financial transactions.
- Strict environmental compliance as a prerequisite for investment approval.
- Corporate social responsibility (CSR) obligations.
- Local participation to ensure that communities have a voice in decisions affecting their land.

A Foreign Investment Code could serve as a legal framework for these measures.

Public-private partnerships are also recommended to promote responsible resource management and equitable benefit-sharing.

Additionally, governments should consider:

- Introducing an environmental tax on foreign investors, particularly in sectors such as mining, to encourage responsible environmental practices.

- Limiting large-scale land acquisitions by foreign investors to prevent land grabbing.
- Holding investors accountable for their social and environmental impact.
- Establishing specialised soil courts or tribunals to address environmental disputes related to foreign investments, ensuring local communities have legal recourse.

## 5.10 Measures to increase awareness

Raising awareness about soil health is essential across various dimensions, including:

- The importance of healthy soils for African societies.
- The availability of sustainable agricultural practices.
- Expanding soil knowledge to improve conservation efforts.

Agricultural extension services are particularly vital for small-scale farmers, who rely heavily on soil health for their livelihoods. Providing access to up-to-date soil quality information will empower farmers to make informed decisions.

Promoting low-cost soil conservation techniques, such as afforestation, reforestation, and agroecological practices, should also be prioritised.

Women, particularly in rural areas, play a crucial role in land and soil management, yet their contributions are often overlooked. Increasing women's participation in soil research, policy development, and decision-making would be instrumental in promoting sustainable soil management.

Enhancing soil education and community engagement can foster a culture of environmental stewardship. Key recommendations include:

- Establishing specialised educational institutions focused on soil conservation and management to equip professionals with the skills to tackle soil degradation.
- Integrating soil conservation education into school curricula to raise awareness among younger generations and cultivate future environmental leaders. By increasing awareness and education, African nations can strengthen public support for soil sustainability and ensure long-term commitment to responsible soil management.

## 5.11 Clarity of tenure

Clarity of tenure is a prerequisite for sustainable soil management. The lack of exclusive land use rights has contributed to the degradation of communal lands, as insecure land rights discourage long-term investment in sustainable practices. Instead, land users often prioritise short-term profits over ecological preservation.

Land rights in most African countries are governed by both statutory and customary law, but their interplay is often unclear. Achieving clarity of tenure is essential. One mechanism could be recognising customary land rights as private property in land tenure laws, providing greater security for local communities and enabling sustainable soil management practices.

Addressing land rights conflicts requires fair, inclusive consultation processes to ensure the free, prior, and informed consent of local communities. Strengthening women's land rights and ensuring their meaningful participation in decision-making is crucial. Additionally, land demarcation, public awareness campaigns, and improved legal remedies are necessary to prevent conflicts and ensure equitable land rights distribution.

### 5.12 Institutional rearrangements: Effective implementation and enforcement

Implementation and enforcement are key to achieving tangible improvements. Institutional arrangements can either facilitate or hinder this process. Several dimensions must be regulated by legal provisions to ensure clarity in roles, functions, and responsibilities, which also avoids overlaps, strengthens accountability and reduces corruption risks.

- Clear responsibilities among ministries must be established to prevent overlaps and conflicts.
- The distribution of authority between central and regional/local levels should be defined, with central bodies focusing on strategic aspects and legislation, while regional/local entities handle implementation.
- A national soil authority should be considered to oversee soil information, planning, evaluation, and monitoring, working alongside expert advisory bodies.
- Community representation is essential for effective soil management, necessitating the empowerment of local governance structures to enforce soil protection laws.
- Traditional leaders, though not always formally recognised by law, play a significant role in land management. Their role should be formalised within the legal framework to promote sustainable soil practices and ensure community stability.
- Enhancing monitoring capacity through training, equipping regulatory bodies, and establishing anonymous reporting mechanisms for violations is crucial.
- A national public online platform should be created for transparent access to environmental impact reports, mining permits, and data on emissions, waste, and land degradation.

- Training and capacity-building for enforcement officers at both central and local levels must be prioritised.
- Strengthening corporate accountability through dissuasive sanctions and promoting public participation in monitoring and dispute resolution are key. The use of technologies such as drones and remote monitoring can significantly improve environmental oversight.

## 5.13 Economic means and mechanisms

Economic incentives are critical to promoting sustainable soil management. Mechanisms should be established to compensate for short-term income losses incurred by small-scale farmers and to encourage businesses to adopt ecologically responsible practices.

- Establishing an environmental protection fund to support projects that preserve natural resources and engage the private sector in sustainability efforts.
- Prioritising industrial decarbonisation to align with global climate goals and attract responsible investments.
- Supporting small and medium-sized enterprises (SMEs) in integrating into industrial value chains to promote regional equity and create sustainable jobs.
- If public funding is insufficient, private sector contributions should be mandated, particularly from companies whose activities negatively impact soil health. Specific financing mechanisms should be defined at the national level.

## 5.14 Penalties

A robust penalty system is necessary, particularly in the mining sector. Criminal liability for environmental violations remains rare but could serve as a strong deterrent. However, reliance on criminal penalties should be balanced with incentives for environmentally friendly practices. A review of existing penalties is recommended to enhance their effectiveness while promoting positive behaviour.

## 5.15 Science policy interface and soil data management

Reliable soil data is fundamental for effective governance. Without it, regulations cannot be properly implemented. It is strongly recommended that a national soil information system be established to consolidate fragmented data on soil health and degradation.

- Various ministries, such as those responsible for agriculture, lands, and natural resources, often operate separate soil mapping systems, leading to inefficiencies. A centralised system would improve soil management and policy alignment.
- Integrating customary law approaches and indigenous knowledge into soil policies would enhance their effectiveness, particularly in areas where traditional practices remain prevalent.
- Extension services must ensure that farmers and relevant stakeholders can access and utilise soil data.
- Soil data, including mapping, should be used to develop environmental standards for soil protection, covering contamination, compaction, erosion, and salinisation. These standards should inform competent authorities and land-use planning to safeguard valuable and fertile soils.

## 6 Soils governance concepts of the African Union

The AU has increasingly recognised environmental challenges, yet soil protection remains inadequately addressed in its treaties and conventions. The revised African Convention on the Conservation of Nature and Natural Resources is the only legally binding AU instrument that explicitly mentions soil protection. This gap underscores the urgent need for a dedicated and comprehensive soil governance framework. While other AU environmental agreements do not specifically target soil issues, they provide valuable mechanisms—such as stakeholder engagement, youth participation, and monitoring systems—that could inform future soil protection strategies.

Recognising the crucial role of sustainable soil management in Africa's development, the AU has launched initiatives such as the Draft Framework for the Soil Initiative for Africa (SIA) and its ten-year Action Plan. However, Africa faces the ongoing challenge of balancing sustainability with economic growth, and the ability to implement concrete measures remains uncertain. The tension between environmental stewardship and development priorities complicates efforts to translate policy into action.

### 6.1 The binding vs non-binding legal approach

While the AU has demonstrated commitment to soil health through soft law instruments, the absence of legally binding frameworks presents a major challenge. This raises the critical question: should soil protection provisions evolve into enforceable commitments?

Scientific evidence suggests that legally binding agreements typically enjoy high compliance rates, but their impact on real-world behaviour can be limited due to

enforcement challenges. Conversely, non-binding agreements, while more flexible and adaptable, often struggle with adherence and accountability. However, their voluntary nature allows for innovative, locally tailored solutions and can be agreed upon more swiftly at the international level.

This dynamic challenges the conventional preference for binding agreements. To maximise the effectiveness of a non-binding framework, compliance assessment mechanisms must be introduced to ensure that commitments translate into measurable action. Without such mechanisms, even the most ambitious non-binding policies risk becoming mere statements of intent without tangible impact.

## 6.2 Institutional and implementation challenges

The AU's strength lies in its long-term vision and its ability to collaborate with NGOs and international bodies, which play a critical role in resource mobilisation and knowledge-sharing. However, significant obstacles hinder effective soil governance:

- Funding constraints limit the AU's capacity to implement large-scale soil protection programmes.
- Capacity gaps prevent the effective enforcement of policies at national and local levels.
- Weak monitoring and evaluation systems make it difficult to track progress and refine strategies over time.

Although soil protection is integrated into broader AU priorities such as Agenda 2063, the transition from soft law to binding regulations remains challenging. The lack of supranational authority and the AU's inability to bind member states further complicate implementation.

## 6.3 Pathway to a stronger legal framework

Healthy soils are fundamental to food security, climate resilience, and sustainable development, yet land degradation continues to threaten Africa's agricultural productivity. While AU treaties broadly address environmental concerns, soil protection is often overshadowed by other priorities. The Draft Framework for the SIA and its ten-year Action Plan represent a shift towards integrated soil management, including regenerative agriculture—moving beyond earlier policies that focused primarily on fertiliser use.

To strengthen the AU's legal framework for soil protection, a dedicated protocol or convention should be developed, drawing from existing soft law instruments while incorporating:

- Clear legal definitions and soil health indicators for effective regulation.

- Specific legal mechanisms to foster sustainable soil management.
- Establishment of appropriate institutions.
- Stakeholder engagement and youth participation to ensure inclusivity.
- Robust monitoring systems to track compliance and impact.

These mechanisms need to be implemented at national level.

### 6.4 Institutional coordination and partnerships

Effective implementation requires a well-defined institutional framework. The AU Commission (AUC) leads the SIA, setting strategic direction while delegating responsibilities according to the principle of subsidiarity. Additionally, the AU collaborates with a wide network of partners, including CA4SH and TerrAfrica, which operate at both continental and national levels. These partnerships facilitate resource mobilisation and ensure that soil protection strategies align with the needs of African communities.

However, coordinating this broad spectrum of partners presents challenges. Without effective communication and streamlined coordination mechanisms, financial and oversight resources may become stretched. A more targeted approach may be necessary to optimise implementation and maximise impact.

For soil protection to become a cornerstone of Africa's environmental and development agenda, the AU must move beyond policy declarations and establish a more enforceable framework. Strengthening legal commitments, institutional coordination, and monitoring mechanisms will be essential to achieving this goal. By leveraging its existing initiatives and learning from international best practices, the AU has an opportunity to secure the future of Africa's soils—ensuring long-term food security, climate resilience, and economic stability for generations to come.

## 7 The role of the Pan-African Parliament

The PAP faces significant institutional challenges, including the long-standing struggle for legislative authority, inadequate funding, and limited autonomy over AU resources. These constraints weaken its ability to advocate for the ratification of the Malabo Protocol and other key legal instruments. Granting the PAP legislative powers could enhance its credibility, strengthen democratic governance across Africa, and reinforce its role as a driving force for continental reform.

Comparisons with the European Parliament often highlight the PAP's limitations, but such assessments overlook the distinct political and financial realities of Africa. Rather than striving for an identical model, the PAP must focus on maximising its existing framework. Since its establishment in 2004, it has issued numerous

recommendations and resolutions on critical continental issues, demonstrating its potential influence despite its limited legislative mandate. However, without substantial reforms, the PAP risks remaining an underdeveloped institution. The 2022 updates to its Rules of Procedure introduced some improvements, yet the failure to ratify the Malabo Protocol continues to create governance inconsistencies.

The PAP's long-term success depends on sustained political commitment from AU member states, effective implementation of its evolving mandate, and stronger engagement with African citizens. Two decades after its inception, the question of its value remains pressing. Conceived as a platform to promote African unity and cooperation on governance, development, and regional integration, the PAP holds both symbolic and practical significance. Yet, persistent obstacles—leadership crises, corruption allegations, weak legislative influence, and minimal public visibility—have eroded its credibility. Many perceive it as mirroring the inefficiencies of national parliaments across Africa, further diminishing confidence in its role. These shortcomings, coupled with its significant financial burden—approximately USD 15 million annually from the AU, in addition to member state and South African government contributions—raise concerns about its effectiveness, especially given the socio-economic challenges across the continent.

The PAP now stands at a crossroads. While it has made progress in expanding its responsibilities and fostering dialogue with African citizens and AU institutions, its impact remains limited. One of its most promising avenues for influence lies in model laws, which, if adopted at the national level, can drive meaningful legal reforms. In this context, a *Model Law on Sustainable Soil Management* would be a crucial step towards addressing the pressing issue of soil degradation. Healthy soils are fundamental to food security, climate resilience, and environmental sustainability, yet remain inadequately protected across Africa. By prioritising soil as a critical natural resource, the PAP could help catalyse stronger legal frameworks across member states, ultimately strengthening the continent's agricultural and environmental policies.

## 8 Food security, soil protection, and international trade

Food security remains a critical priority for nearly all African states. Over the past decades, multiple crises—including poverty, the COVID-19 pandemic, climate change, geopolitical tensions, and military conflicts—have disrupted agricultural trade and undermined efforts to achieve food security. These challenges not only exacerbate hunger but also threaten fundamental human rights, particularly the internationally recognised right to food, which is legally binding on all states and institutions.

Agriculture is inherently dependent on soil health and fertility, yet climate change is increasingly degrading soils and reducing agricultural productivity. This has serious consequences for global food systems. One often overlooked factor is the intersection

of international trade law and soil protection, especially regarding the agricultural commodity trade. Shifts in trade patterns—whether through increased, decreased, or restructured trade flows—can significantly affect agricultural land use, soil degradation, and fertility. Therefore, international trade frameworks must integrate soil protection to ensure long-term food security.

## 8.1 Reforming the WTO for more sustainable food security

The World Trade Organization (WTO) must adapt to the realities of climate change and food insecurity by embedding sustainable agricultural practices into its policies. A key area for reform is the Agreement on Agriculture (AoA), which currently focuses on market access, subsidies, and export measures but lacks a comprehensive strategy for food security and for climate change. The WTO's legal framework must prioritise the right to food and promote environmentally sustainable agricultural practices.

A major concern is the role of multinational corporations, particularly those dominating the grain trading and food processing sectors. These corporations wield immense market power, which can either support or undermine sustainable food security efforts, with indirect consequences for soil management. Their profit-driven practices often contribute to soil degradation, supply chain vulnerabilities, and inequitable access to food. The WTO must incorporate market regulation measures that balance corporate interests with the needs of vulnerable nations and smallholder farmers, who are essential to long-term food security.

## 8.2 A holistic approach to trade, soil, and food security

To address these challenges, the WTO must adopt a holistic approach that integrates sustainable development, the right to food, and soil conservation into trade policies. One key recommendation is the introduction of green trade agreements that incentivise sustainable farming, protect the environment, and promote food security amid rising global demand. This requires stronger coordination between the WTO and other international bodies, such as the FAO, to ensure that trade rules address the four dimensions of food security: availability, access, utilisation, and stability.

Moreover, global food systems must be restructured to prioritise soil health. While awareness of soil protection's role in food security is growing, it must translate into concrete action. International cooperation is crucial, as demonstrated by initiatives such as the G7's Global Alliance for Food Security. However, without effective implementation, such discussions will remain symbolic rather than transformative.

## 8.3 Key trade reforms for sustainable agriculture

Several regulatory issues must be addressed within the WTO framework:

- Agricultural subsidies: The WTO should phase out harmful subsidies that distort trade and damage the environment. Instead, green subsidies should be promoted to support sustainable farming practices that enhance productivity while preserving soil health. A revised "Green Box" under the AoA could direct financial support toward environmentally friendly agriculture.
- Market access and trade policies: A more balanced global food distribution system is needed, particularly for less-developed countries. Smallholder farmers, who form the backbone of food security, must have a stronger voice in international trade negotiations to ensure that their sustainable farming methods are recognised and supported.
- Export restrictions and food aid: Trade policies should prevent artificial shortages and price volatility that disproportionately impact low-income nations. A fairer, more transparent global food system is essential.

## 8.4 The WTO's role in securing the future of food and soil

The protection of fertile soils, one of the world's most valuable natural resources, must be a core consideration in international trade policies. While soil conservation strategies must be tailored to local contexts, a coordinated global effort is necessary to address food security challenges in the context of international trade.

Dr Ngozi Okonjo-Iweala, Director-General of the WTO, has emphasised that trade is key to solving food system challenges. To drive meaningful change, global trade policies must align with environmental sustainability goals. By implementing trade reforms that prioritise soil protection, sustainable agriculture, and the right to food, the WTO can play a decisive role in securing long-term food security while safeguarding vital soil resources.

Ultimately, a sustainable future requires an integrated approach—one that recognises the interconnectedness of trade, soil health, and food security. Through ambitious reforms, the WTO can help create a more resilient, equitable, and sustainable global food system.

# 9 Outlook

This summary underscores the vital role of soils in securing Africa's future, highlighting the key drivers of soil degradation and the challenges of establishing effective

governance for sustainable soil management. It also presents recommendations for appropriate legal mechanisms to address these issues.

However, this overview is only a starting point. The chapters of this book provide a more in-depth analysis and detailed recommendations. It is our hope that this summary serves as an entry point, encouraging deeper exploration of soil governance and its crucial role in sustainable development.

Recommendations for improving soil governance can be advanced at three key levels:

- International commitments: The AU could negotiate and adopt an international instrument that incorporates some or all the proposed mechanisms. This could take the form of a legally binding agreement or a non-binding framework, each with its advantages and limitations, as discussed earlier.
- Pan-African legislative framework: The PAP could take the lead by adopting a model law on sustainable soil management, as envisaged in its resolution. This model law would serve as a flexible framework, offering guiding principles and legal tools for national parliaments. Rather than a one-size-fits-all approach, it would allow for adaptation to the specific needs and contexts of each African nation.
- National legislative action: Individual national parliaments across Africa can use these recommendations to initiate or strengthen legislative processes that enhance soil protection and promote sustainable land management in their respective countries.

Urgency is key. Soil degradation is accelerating, threatening food security, deepening poverty, and worsening climate vulnerabilities across Africa. Without swift and decisive action, the challenges will become even more difficult to address.

Africa's soil governance landscape presents both opportunities and significant challenges. While growing awareness, cultural ties to land, community engagement, and existing environmental laws provide a strong foundation, gaps in financial resources, institutional coordination, legal frameworks, enforcement, and access to knowledge remain critical barriers. Overcoming these obstacles will require coordinated policy reforms, increased investment, enhanced community participation, and stronger integration between scientific research and governance structures.

By leveraging the opportunities at hand and acting decisively, Africa can secure a sustainable future for its soils—and, by extension, for its people and ecosystems. The time to act is now.