# Country report for South Africa[1]

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Abstract

This chapter focuses on soil conservation and land management in South Africa. It highlights the challenges of soil degradation and the country's efforts to address these issues, particularly emphasising the fragmented policy landscape and the complex land tenure systems, including communal land under traditional authorities. The chapter explores the implications of soil degradation on food security, ecosystem health, and the broader agricultural sector, noting how ineffective soil management exacerbates the nation's reliance on imports and hampers sustainable development.

An analysis of the existing legal frameworks and policies reveals several shortcomings, including limited enforcement capacity, insufficient resources for research and innovation, and inadequate integration of soil protection measures into broader environmental and agricultural policies. Specific attention is given to the Conservation of Agricultural Resources Act (CARA) and its implementation challenges, as well as the complexities arising from the coexistence of formal municipal and traditional land management systems.

The chapter also presents key findings, such as the need for greater stakeholder education, better integration of soil scientists into policymaking, and enhanced support for smallholder farmers. Recommendations are offered to improve soil protection, including strengthening legal frameworks, securing land rights, and promoting sustainable farming practices. It concludes by emphasising the urgent need for a dedicated soil protection law in South Africa, particularly considering the country's projected population growth and the critical role of soil health in achieving food security and national development goals.

1 This chapter partly draws from the book chapter authored by Ruppel, Ruppel-Schlichting, Houston & Afua (2021). See also Ruppel et al. (2020).

Chapter contents

## Summary

South Africa faces significant challenges related to soil degradation, but it has also made considerable progress in addressing these issues. The country has introduced comprehensive policies and legislation recognising the importance of soil health. Monitoring systems are in place, and efforts are underway to develop a national soil health database. Integrated land use planning offers an opportunity to prioritise soil health, and sustainable agricultural practices such as conservation agriculture and agroforestry can improve soil quality and reduce erosion. Empowering stakeholders through training and technical support is crucial for effective soil conservation.

However, South Africa's efforts to combat soil degradation also reveal several key shortcomings. A lack of awareness and education about soil conservation among key stakeholders hampers effective mitigation. Smallholder farmers face challenges such as low soil fertility, limited access to equipment, and insufficient income. In addition, they often struggle to access climate information and lack basic agronomic knowledge. Insufficient investment in research and innovation limits the development of new soil conservation technologies, and fragmented land management prioritises short-term economic gains over long-term soil health. Policy fragmentation isolates soil

conservation from broader environmental and agricultural policies, weakening the holistic approach needed. Incentive mechanisms to encourage soil-friendly practices are also lacking, and farmers often must take the initiative without sufficient support. Limited capacity among managers, farmers, and extension workers hinders the successful implementation of conservation practices. The insecure tenure system, particularly in communal land areas, exacerbates soil degradation, with unregistered land tenure rights and land grabbing posing significant challenges.

Looking ahead, several recommendations are put forward to enhance soil conservation in South Africa. With the projected growth in population, the country faces diminishing arable land per person, which will increase its reliance on food imports and foreign aid. Sustainable land management, which can transform soils into carbon sinks, is essential for aligning with national development goals and the Sustainable Development Goals (SDGs). However, soil degradation continues due to inadequate legislation and challenges surrounding land tenure. Strengthening policies to reduce emissions, expand carbon sinks, and enforce soil protection measures is critical. Legal education on soil protection, formalising communal land rights, and improving land tenure systems are key steps towards creating a more effective framework for soil management.

South Africa's land management system is complex, with multiple systems in place. The formal municipal system, which is primarily urban-focused, often neglects areas under traditional authority, where land is allocated by traditional leaders. Tensions between traditional leaders and local government persist, with challenges in ensuring compliance with the Spatial Planning and Land Use Management Act (SPLUMA) in areas under traditional management. This complexity highlights the need to address the parallel land management systems in the country.

Historically, Soil Conservation Committees played a vital role in promoting agricultural resource conservation and implementing the Conservation of Agricultural Resources Act (CARA). Their success was dependent on skilled staff and knowledgeable farmers who could identify land degradation and apply appropriate conservation measures. Reintroducing these committees with appropriate funding could strengthen the implementation of soil protection strategies. Reinstating dedicated soil legislation might help integrate soil issues more effectively into broader land management policies.

To enhance soil conservation, it is essential to secure clear rights to communal land by working with traditional authorities and communities. Support for sustainable farming practices, particularly for small-scale farmers, should be prioritised. Inclusive land use planning, with input from local communities, farmers, and leaders, is also vital. A nuanced approach to land tenure, such as issuing title deeds for agricultural fields and grazing land while establishing separate tenure arrangements for homesteads, could help balance the benefits of secure land rights with the risk of displacement.

Finally, integrating soil scientists into policymaking, conducting comprehensive land surveys, and establishing a centralised, accessible soil and land use database are vital steps forward. Municipalities should develop detailed land use plans for various land types, and the enforcement of existing laws should be strengthened. Promoting sustainable land use practices and incorporating climate change adaptation measures will be essential for safeguarding soil health and ensuring long-term sustainability in South Africa.

## 1 Country information

South Africa, situated at the southern tip of the African continent, is a land of remarkable diversity, rich in natural resources, cultural heritage, and historical significance.

### 1.1 Geography and climatic conditions

South Africa borders Namibia, Botswana, Zimbabwe, Mozambique, Eswatini, and Lesotho, with coastlines on the Atlantic and Indian Oceans. Key boundary landmarks include Beitbridge (Zimbabwe), the Orange River (Namibia), the Limpopo River (Zimbabwe), the Drakensberg Mountains (Lesotho), and Rooiberg Mountain (Botswana). Strategically, South Africa serves as a trade hub for landlocked countries in Southern Africa.[2]

Spanning 1,221,037 square kilometres, South Africa's geography includes plateaus, the Drakensberg Mountains, Highveld grasslands, the Lowveld wildlife reserves, and coastal plains.[3] Its climate is diverse, ranging from Mediterranean in the Western Cape to arid in the Karoo and Kalahari.[4] Seasons vary, with warm summers, mild autumns, cooler winters, and blooming springs.[5] Rainfall varies, with the Western Cape receiving winter rain and the eastern coast getting year-round rainfall.[6] Droughts in the interior affect agriculture and winds such as the Berg winds influence soil erosion rates. Coastal areas are cooler and more humid due to ocean proximity.

2 Lesotho Country Profile Report (2017: 8-9); Ministry of Finance: Policy and Planning Unit: Eswatini Financial Inclusion Refresh (2020: 11); See https://www.tralac.org/news/article/16255-tralac-daily-news-19-december-2023.html, accessed 8 May 2024.

3 See https://southafrica-info.com/land/how-big-is-south-africa/#:~:text=South%20Africa's%20total%20surface%20area,a%20region%20of%2055%20states, accessed 8 May 2024; https://www.thornybush.com/lure-of-the-lowveld/, accessed 8 May 2024; https://www.capenature.co.za/land-and-freshwater-ecosystems, accessed 8 May 2024.

4 See Herbert & Fitchett (2022).

5 Minister of Science and Technology, South African Risk and Vulnerability Atlas 2 ed (2017: 9-12).

6 Ibid.: 9.

## 1.2 Economy

South Africa wields significant influence in Africa and globally through its leadership in the African Union (AU), the Southern African Development Community (SADC), and BRICS. As one of Africa's largest economies, it leads regional diplomacy, and peacekeeping, and represents African interests in forums on trade, climate change, and development.[7] South Africa promotes African integration initiatives such as the African Continental Free Trade Area (AfCFTA) and the New Partnership for Africa's Development (NEPAD).[8]

Its economy, the continent's most industrialised, is diversified across mining, manufacturing, agriculture, finance, and services.[9] Rich in resources including gold, platinum, and coal, South Africa has shifted towards a service-based economy, emphasising retail, tourism, finance, and technology.[10] Ranked 84th for ease of doing business, it faces challenges in bureaucracy and infrastructure but remains a key investment destination, hosting the continent's largest stock exchange (Johannesburg Stock Exchange).[11]

The economy, valued at ZAR 6.64 trillion (USD 363 billion), has faced recent disruptions from global conflicts, natural disasters, and infrastructure issues, notably electricity shortages.[12] Inflation and high interest rates add to these challenges.[13] In December 2023, South Africa's gross national income (GNI) stood at USD 95.5 billion, with an external debt of USD 158.1 billion.[14] Public debt, at 71.1% of gross domestic product (GDP) in 2022, poses long-term risks, impacting government spending and economic stability.[15]

7 Zondi (2012: 17); Ruppel & Borgmeyer (2018: 284); Jordaan (2012).
8 Soko & Qobo (2021: 419).
9 South Africa Investment Conference Booklet (2023: 1).
10 See Department of Science and Technology, Innovation Towards a Knowledge-Based Economy: Ten-Year Plan for South Africa (2008-2018).
11 See https://archive.doingbusiness.org/en/data/exploreeconomies/south-africa, accessed 8 May 2024; https://www.weforum.org/organizations/johannesburg-stock-exchange/#:~:text=JSE%20offers%20the%20investor%20a,terms%20of%20market%20capitalization%20worldwide., accessed 8 May 2024.
12 South Africa Investment Conference Booklet (2023: 2-3); https://www.worldbank.org/en/country/southafrica/overview, accessed 8 May 2024.
13 See https://www.worldbank.org/en/country/southafrica/overview, accessed 8 May 2024.
14 For respective data see https://databank.worldbank.org/metadataglossary/world-development-indicators/series/NY.GNP.MKTP.KD, accessed 8 May 2024; https://www.ceicdata.com/en/indicator/south-africa/gross-national-product, accessed 8 May 2024; https://databank.worldbank.org/metadataglossary/international-debt-statistics/series/page/5, accessed 8 May 2024; https://www.ceicdata.com/en/indicator/south-africa/external-debt#:~:text=South%20Africa%20External%20Debt%20reached,bn%20in%20the%20previous%20quarter., accessed 8 May 2024.
15 See https://www.cia.gov/the-world-factbook/field/public-debt/country-comparison/, accessed 8 May 2024; https://www.focus-economics.com/country-indicator/south-africa/public-debt/#:~:text=Public%20debt%20in%20South%20Africa%20averaged%2054.1%25%20of%20GDP%20in,information%2C%20visit%20our%20dedicated%20page., accessed 8 May 2024.

## 1.3 Society

As of 2022, South Africa's population exceeds 62 million, with a density of around 50 people per square kilometre.[16] Gauteng and KwaZulu-Natal are the most populous provinces, while the Northern Cape has the fewest residents. By 2023, 69% of the population (41.7 million) lived in urban areas.[17]

Known as the "Rainbow Nation," South Africa is culturally diverse, with twelve official languages and communities of indigenous African, European, Indian, and Asian descent.[18] The 1996 Constitution (amended to 2023) guarantees freedom of religion, with Christianity, Islam, Hinduism, and traditional African religions widely practised.[19]

The literacy rate was 95.33% in 2021, though rural education faces challenges.[20] Education is compulsory up to grade nine, with upper secondary enrolment at 46% for 15–19-year-olds, but 50% of adults aged 25–34 lack secondary qualifications.[21] Education spending accounted for 17% of government expenditure in 2021.

Unemployment stood at 32.4% in 2023, with informal employment common.[22] Employment was distributed as 21.3% in agriculture, 17.3% in industry, and 61.5% in services in 2021, while skills shortages remain a challenge.[23]

16 See https://www.worldometers.info/world-population/south-africa-population/, accessed 8 May 2024; See https://www.gov.za/about-sa/south-africas-people, accessed 8 May 2024.

17 See https://www.worldometers.info/world-population/south-africa-population/, accessed 8 May 2024.

18 Turok et al. (2021: 71); Buqa (2015); See https://www.sa-venues.com/sa_languages_and_culture.htm, accessed 8 May 2024.

19 See https://www.gov.za/about-sa/south-africas-people, accessed 8 May 2024.

20 See https://www.globaldata.com/data-insights/macroeconomic/literacy-rate-in-south-africa/#:~:text=Literacy%20Rate%20in%20South%20Africa%20Overview&text=The%20literacy%20rate%20reached%2095.33,South%20Africa%20decreased%20by%203.3%25., accessed 8 May 2024; https://www.amnesty.org/en/latest/news/2020/02/south-africa-broken-and-unequal-education-perpetuating-poverty-and-inequality/, accessed 8 May 2024; International Monetary Fund, Struggling to Make the Grade: A Review of the Causes and Consequences of the Weak Outcomes of South Africa's Education System (2019).

21 See https://gpseducation.oecd.org/CountryProfile?primaryCountry=ZAF&treshold=5&topic=EO, accessed 8 May 2024.

22 See https://www.worldbank.org/en/country/southafrica/overview#:~:text=The%20achievement%20of%20progress%20in,already%20high%20pre%2Dpandemic%20levels., accessed 8 May 2024.

23 See https://www.statista.com/statistics/578944/employment-by-economic-sector-in-south-africa/#:~:text=In%202021%2C%2021.3%20percent%20of,percent%20in%20the%20service%20sector., accessed 8 May 2024; See https://www.statssa.gov.za/?p=16848, accessed 8 May 2024.

Poverty affects 18.2 million South Africans, with the poverty line set at ZAR 1,058 (USD 57.85) per month in 2023.[24] Rural poverty (81.3%) is far higher than urban poverty (40.7%), highlighting stark inequalities.[25]

### 1.4 Information on the organisational structure of South Africa

South Africa's government comprises three branches: the executive, led by the President, who appoints ministers; the legislature, consisting of the National Assembly (NA) and National Council of Provinces (NCOP) in Parliament, which oversees the executive and represents provincial interests; and the judiciary, headed by the Constitutional Court, with the Supreme Court of Appeal and High Courts handling general cases, and Magistrates' and Regional Courts managing minor offences. Specialised courts include the Competition Appeal Court, Electoral Court, and Labour and Labour Appeal Courts. The new Land Court and its Court of Appeal, established by the Land Court Act 6 of 2023, address land reform cases and aim to resolve a 30-year backlog.[26]

The Constitution ensures supremacy and accountability (Section 1), with the Bill of Rights obligating the state to uphold rights (Section 7(2)). South Africa is divided into nine provinces, each with legislatures and executive councils overseeing services including education and health, while local governments manage municipal services. Operating under a multi-party system (Section 1(d)), South Africa's new (2024 onwards) national unity government includes the African National Congress (ANC), the Democratic Alliance (DA), the Inkatha Freedom Party (IFP), the Pan Africanist Congress (PAC), the GOOD party, the Freedom Front Plus, the Patriotic Alliance (PA), the United Democratic Movement, Al Jama-ah, Rise Mzansi, and the United Africans Transformation.

#### 1.4.1 Legal system and legal tradition

South Africa's legal system blends Roman-Dutch civil law, English common law, and customary law, reflecting its colonial history and indigenous customs. The Constitution, which emphasises fundamental rights and freedoms, including equality and the rule of law, guides the legal framework. Section 8(1) mandates that the Bill of Rights

24 See https://www.statista.com/statistics/1263290/number-of-people-living-in-extreme-poverty-in-south-africa/#:~:text=As%20of%202023%2C%20around%2018.2,into%20poverty%20compared%20to%202022., accessed 8 May 2024.

25 Department of Statistics South Africa, National Poverty Lines (2023: 3); EDWRG Working Paper Series (2022: 3).

26 Land Court Act 6 of 2023; Moosa (2024).

applies to all laws and entities of the state, while Section 8(2) ensures that rights apply to individuals and entities according to their nature and obligations.

### 1.4.2 Competence of legislation

In South Africa, Parliament holds the authority to enact laws under the Constitution (Section 43(a)), following the separation of powers among the executive, legislative, and judicial branches. Parliament includes two houses, the NA and the NCOP (Section 42(1) of the Constitution), which legislate on various national matters, including agriculture, housing, environment, and public transport (Section 44 and Schedule 4 Part A of the Constitution). Provincial legislatures can also make laws on specific regional issues, provided they align with national laws (Sections 104(1), 114(1), 146-148, and Schedules 4 Part A and 5 Part A of the Constitution).

Municipal councils govern local matters such as water, sanitation, and municipal planning (Sections 151(2), 156(1), and Part B of Schedules 4 and 5 of the Constitution). The legislative process requires public participation, with opportunities for public input and consultation to ensure transparency and accountability (Sections 59(1)(a), 72(1)(a), 116(1)(b), 118(1)(a), and 160(4)(b) of the Constitution). Once a bill is passed, the President or provincial Premier signs it into law, and all acts are published in the Government Gazette for public access in one or more of the main languages spoken (Afrikaans, English, Xhosa) (Sections 79(1), 84(2), and 121(1) of the Constitution).

### 1.4.3 Competence of law enforcement

In South Africa, enforcing laws is a collaborative effort among various government agencies. The South African Police Service (SAPS) maintains public order and investigates crime, while the National Prosecuting Authority (NPA) prosecutes criminal cases. The South African Revenue Service (SARS) enforces tax laws,[27] and the Department of Labour oversees workplace standards. The Competition Commission promotes fair competition,[28] and the Department of Forestry, Fisheries, and the Environment (DFFE) enforces environmental regulations, with support from the Environmental Management Inspectorates (EMIs), or "Green Scorpions."[29]

27 South African Revenue Service Act 34 of 1997.

28 Competition Act 89 of 1998.

29 See https://www.dffe.gov.za/fighting-environmental-crimes, accessed 8 May 2024. As per Sec 31D of the National Environmental Management Act 107 of 1998 (NEMA), EMIs are empowered to oversee various environmental sectors. These include protecting biodiversity-rich areas, managing pollution, waste, and Environmental Impact Assessments (EIAs), and ensuring the sustainable management of coastal resources and ecosystems.

The judiciary plays a key role in interpreting laws and ensuring legal consistency.[30] Chapter 9 institutions, such as the Public Protector[31] and Human Rights Commission,[32] uphold democracy and citizens' rights. However, challenges persist, including corruption, resource shortages, and judicial backlogs.[33]

### 1.4.4 The Constitution, statutory, and customary law

Customary law, prevalent in South Africa's rural areas and among indigenous communities, governs crucial aspects such as marriage, inheritance, and conflict resolution, drawing from community customs and traditions.[34] The Constitution recognises and protects the rights of individuals under customary law, prohibiting discrimination based on culture (Section 9(3)), affirming the right to language and cultural participation (Section 30), and acknowledging the rights of cultural communities (Section 31). Courts must interpret legislation and develop common law in line with the Bill of Rights (Section 39(2)), resolving conflicts between public and customary law by aligning both with the Constitution. Customary law rights are upheld if they adhere to constitutional principles (Section 39(3)), and Section 211(3) mandates its application when relevant while ensuring compliance with the Constitution and relevant legislation.

Traditional leaders and structures, operating under Chapter 12 of the Constitution, have defined roles in upholding cultural, religious, and linguistic rights. These entities, including leaders and councils, manage traditional communities, preserving customs and mediating disputes. The White Paper on Traditional Leadership and Governance (2003) sets out the national framework, norms and standards that define the role and place of the institution of traditional leadership in South Africa. The Traditional Courts Act 9 of 2022 governs traditional courts, which operate under customary law to resolve disputes, including family matters and minor criminal offences. However, this Act has not yet entered into force.

30 Ruppel (2022b: 663); van Coller (2023).
31 Sec 182 of the Constitution read with Act 23 of 1994.
32 Ibid.: Sec 184 read with the corresponding Act 40 of 2013.
33 See https://www.corruptionwatch.org.za/the-terrible-consequences-of-police-corruption/, accessed 8 May 2024; https://www.corruptionwatch.org.za/police-corruption-an-ongoing-problem/, accessed 8 May 2024; Civilian Secretariat for Police Service, Analysis of Resource Allocation in the South African Police Service (2017); https://www.businesslive.co.za/bd/national/2024-04-22-courts-not-always-to-blame-for-backlogs-says-deputy-justice-minister/#google_vignette, accessed 8 May 2024.
34 See Moore & Himonga (2018).

## 2 Soil degradation

### 2.1 The state of the environment

South Africa faces serious environmental challenges, including pollution, water scarcity, biodiversity loss, and climate impacts.[35] Industrial activities, poor waste management, and acid mine drainage heavily pollute air, soil, and water.[36] Ranked as the 14th largest emitter of greenhouse gases (GHG), South Africa faces significant environmental challenges, with more than 75% of its drinking water resources threatened by droughts and insufficient wastewater treatment.[37]

Biodiversity loss is severe, with threats to 22% of terrestrial ecosystems and over 50% of marine ecosystems.[38] Climate change is exacerbating issues with rising temperatures and more frequent extreme weather, especially in vulnerable areas.[39]

Economic activities such as urbanisation, mining, and agriculture strain land resources, leading to widespread erosion and land degradation.[40] About 25% of soil is severely degraded, particularly in communal areas where overgrazing and erosion affect local farmers.[41] Limited government support has worsened soil erosion, affecting food production in some regions.[42]

35 See https://www.greenpeace.org/africa/en/blog/54600/air-pollution-in-south-africa-the-silent-killer-that-demands-urgent-action/#:~:text=The%20vast%20majority%20of%20South,South%20Africans%20are%20exposed%20to., accessed 8 May 2024; Shezi et al. (2022); https://www.greenpeace.org/africa/en/blogs/51757/water-crisis-in-south-africa/, accessed 8 May 2024.

36 Laker (2023).

37 See https://gitnux.org/air-pollution-in-south-africa-statistics/#:~:text=South%20Africa%20ranks%2030th%20in,largest%20contributor%20in%20the%20world., accessed 8 May 2024; Haywood et al. (2021); See https://gitnux.org/water-pollution-in-south-africa-statistics/#:~:text=More%20than%2075%25%20of%20the,water%20deficit%20of%20around%2017%25., accessed 8 May 2024.

38 See https://www.greenpeace.org/africa/en/blogs/53486/threats-to-biodiversity-biodiversity-loss-climate-change/#:~:text=Habitat%20destruction%20renders%20entire%20habitats,true%20in%20South%20Africa%20also., accessed 8 May 2024; Skowno et al. (2021: 3); Department of Forestry, Fisheries, and the Environment, South African Environment (2023: 45).

39 University of Cape Town, Climate Change Impacts in South Africa (2024); World Bank Group, Climate Risk Country Profile: South Africa (2021: 3); See https://pta-gis-2-web1.csir.co.za/portal/apps/GBCascade/index.html?appid=b161b2f892194ed5938374fe2192e537, accessed 8 May 2024.

40 Byaro et al. (2023); Mani et al. (2021); See https://mg.co.za/the-green-guardian/2021-06-14-over-exploitation-has-degraded-billions-of-hectares-of-land/, accessed 8 May 2024; Department of Forestry, Fisheries, and the Environment, South African Environment (2023: 98).

41 du Preez & van Huyssteen (2020: 2); Ebhuoma et al. (2022).

42 Hoffman & Ashwell (2012: 89).

## 2.2 Different types of soil and their vulnerability in terms of degradation

### 2.2.1 Types of soil

Geography and climate shape South Africa's diverse soil types, each with distinct characteristics and vulnerabilities.[43] Organic soils in wetlands, drained for farming, face ecological risks, including peat mining.[44] Humic soils in high-rainfall areas support crops but may lack nutrients.[45] Vertic soils, with swelling properties, challenge agriculture due to dry-wet extremes.[46] Fertile Melanic soils need irrigation and are unsuited for commercial forestry.[47] Silicic soils, requiring mechanical treatment, support agriculture but complicate post-mining restoration.[48] Calcic soils in arid zones suit grazing, while Duplex soils need careful management to prevent degradation.[49] Podzolic soils, acidic but useful for forestry, require irrigation for farming.[50] Plinthic soils, with limited productivity, support specific crops, while red Oxidic soils face compaction and drainage issues.[51] Gleyic soils in wetlands need artificial drainage for farming, though conservation is preferable.[52] Cumulic soils, nutrient-rich but difficult to till, are suitable for cultivation.[53] Lithic soils on slopes support ranching and conservation with precise irrigation.[54] Anthropic soils, altered by human activity including mining, pose unique land-use challenges.[55]

### 2.2.2 Forms of soil degradation

Soil erosion poses a significant global environmental threat, with different regions facing distinct challenges. Coastal areas contend with wind erosion, where loose particles are carried away by strong winds, while regions with heavy rainfall and steep terrain are susceptible to water erosion, dislodging soil particles and leading to significant soil loss.[56] This reduction in crop yields exacerbates the impacts of drought. Additionally, silt entering watercourses leads to the siltation of storage dams and damages pumps

43 Soil Classification Working Group (1991).
44 Fey et al. (2012: 19-24).
45 Ibid.: 25-34.
46 Ibid.: 35-44.
47 Ibid.: 45-52.
48 Ibid.: 53-62.
49 Ibid.: 63-82.
50 Ibid.: 83-92.
51 Ibid.: 93-114.
52 Ibid.: 115-122.
53 Ibid.: 123-134.
54 Ibid.: 135-142.
55 Ibid.: 143-146.
56 du Preez & van Huyssteen (2020: 5-6).

and other infrastructure. Estimates indicate that the cost of addressing siltation-related issues in South Africa exceeds ZAR 850 million (USD 46 million) annually.[57]

In South Africa, water erosion affects over 70% of the surface area, exacerbated by factors such as overgrazing, which concentrates livestock and leads to soil compaction, reducing water infiltration and increasing runoff.[58] Croplands, especially bare land, are highly vulnerable to water erosion, as seen in the pineapple industry of the Eastern Cape province.[59]

Wind erosion rates are elevated by disturbances such as grazing, fire, and tillage, particularly in arid and semi-arid regions with limited soil cover.[60] In South Africa, areas such as the western parts of the summer rainfall cropped fields, and the sandy coastal belt are highly susceptible to wind erosion.

Soil compaction, exacerbated by machinery use and intensive cropping, is widespread, particularly in regions with low soil organic matter content and high soil moisture.[61] This issue affects rainfed grain-producing regions in the Western Cape, high-potential cropland areas of Mpumalanga, and forestry areas across the region, reducing water and nutrient storage, increasing fertiliser requirements, and diminishing plant growth.

Soil acidification, a result of prolonged cultivation and excessive nitrogen fertiliser use, is widespread across South Africa, especially in regions with mining activities such as KwaZulu-Natal.[62] Salinisation, caused by salt accumulation in poorly drained soil exacerbated by irrigation, affects approximately 10% of irrigated land in South Africa, impacting soil quality and crop productivity.[63] Soil organic matter loss, due to various land use activities, is a concern, as it is crucial for soil health, water retention, nutrient storage, and erosion control.[64]

## 2.3 Main drivers of soil degradation

### 2.3.1 Agriculture

Section 27(1)(b) of the Constitution guarantees South Africans the right to sufficient food and water. With 96 million hectares of agricultural land, the country's fertile soils

57 Hoffman & Ashwell (2012: 82).
58 du Preez & van Huyssteen (2020: 11-12).
59 Ibid.: 5.
60 Ibid.: 5-6.
61 Ibid.: 2-5.
62 Ibid.: 7; Helberg (2019: 26).
63 du Preez & van Huyssteen (2020: 7).
64 Ibid.: 8.

and diverse climates support a thriving sector.[65] South Africa has two main farming types: subsistence farmers in rural areas and large-scale commercial farmers.[66] The nation produces grains, fruits, sugar, nuts, vegetables, and livestock, contributing USD 14.98 billion to the economy in 2023, with exports reaching USD 2.8 billion in Q1 2023.[67]

However, agriculture faces challenges. Over the past century, up to 50% of soil carbon has been lost, with erosion removing thirteen tons of topsoil per hectare annually.[68] Over 61% of the landscape is moderately to highly degraded.[69] Expansion into low-potential areas leads to crop failures, while commercial farmers struggle with rising costs and debt, prioritising short-term survival over soil conservation.[70] Unsustainable practices reduce soil fertility, biodiversity, and water management efficiency.[71]

Due to high inorganic fertiliser costs, manure and wastewater are increasingly being used as fertilisers, but they risk soil and food chain contamination.[72] Climate change and water scarcity are pushing farmers toward alternative irrigation methods, with some Western Cape boreholes becoming too saline for use.[73]

Commercial farmers benefit from better resources for soil conservation, unlike small-scale farmers, who face barriers such as limited training, invasive plants, illegal grazing, and wildfires.[74] Mentorship programs and skills development are urgently needed to help these farmers adopt sustainable soil management practices.

### 2.3.2 Mining

South Africa boasts abundant mineral resources, including precious metals, base metals, coal, and industrial minerals.[75] The mining sector plays a significant role,

65 Ministry of Foreign Affairs and Trade and the New Zealand Government, South Africa: Agriculture Opportunities (2023: 1).
66 Lidzhegu & Kabanda (2022: 1).
67 See https://www.trade.gov/country-commercial-guides/south-africa-agricultural-sector, accessed 8 May 2024; See http://www.investsa.gov.za/key-sectors/agribusiness/, accessed 8 May 2024; Ministry of Foreign Affairs and Trade and the New Zealand Government, South Africa: Agriculture Opportunities (2023: 1).
68 See https://www.farmersweekly.co.za/agri-news/south-africa/sa-soils-extremely-degraded-by-unsustainable-farming/, accessed 8 May 2024.
69 See https://mg.co.za/article/2019-09-24-00-repairing-ecosystems-is-costly-but-doing-nothing-is-criminal/, accessed 8 May 2024.
70 Ruppel et al. (2020: 311); Department of Forestry, Fisheries, and the Environment, South African Environment (2023: 89); Hoffman & Ashwell (2012: 84).
71 Ruppel et al. (2020: 311); Mani et al. (2021: 983).
72 Bhattacharyya et al. (2015); Bogunovic et al. (2019); Moswetsi et al. (2017: 55); Rusănescu et al. (2022).
73 Ruppel et al. (2020: 316); Pili & Ncube (2022: 102).
74 Baade et al. (2024: 358-359).
75 Pocket Guide to South Africa (2012/2013: 150).

contributing over 40% of global production in ferrochromium, platinum group metals, and vanadium.[76]

Mining is pivotal to South Africa's economy, dating back almost two centuries. In the first half of 2023, exports of mined materials totalled ZAR 575 billion (USD 31.50 billion), making up 58% of total exports.[77] The sector is a significant employer, with 477,000 people formally employed in 2023, contributing R 425.6 billion (USD 23.32 billion) to the GDP and ZAR 89.9 billion (USD 4.92 billion) in taxes.[78]

Mining activities contribute to soil pollution and habitat destruction, primarily through topsoil removal, toxic substance use in processing, and landscape disruption.[79] Mining often contaminates soil, as chemicals from mineral processing seep into the soil, endangering vegetation and wildlife.[80] Soil erosion and degradation are also common, particularly in regions with open-cast mining.[81] Poor mine closure practices worsen soil degradation, leaving landscapes unsuitable for productive use.[82]

Over 200,000 hectares of South African land are covered by mine wastes, notably in Gauteng, Mpumalanga, Limpopo, the North West, and the Northern Cape.[83] These wastes diminish soil productivity by reducing fertility and causing contamination, with the annual cost of neutralising acid rain effects estimated at around ZAR 25 million (USD 1.37 million) in Mpumalanga alone.[84]

### 2.3.3 Deforestation

Forests are vital for capturing carbon dioxide, mitigating climate change, and providing habitats for diverse species.[85] When trees are cleared, the soil is exposed to drying conditions, reducing its water retention capacity and increasing the risk of erosion and surface runoff.

Forests in South Africa encompass natural forests, woodlands, and plantation forests, covering a vast area of over 40 million hectares.[86] The forestry sector contributes significantly to the economy, with an export value of around ZAR 38.4 billion (USD

76 Ibid.: 151.
77 PWC, SA Mine: Adapt to Thrive (2023: 4).
78 Minerals Council South Africa, Facts and Figures: Pocketbook (2023: 1).
79 Laker (2023).
80 Thomas et al. (2023).
81 Ramli et al. (2020).
82 HRW, The Forever Mines (2022).
83 Department of Forestry, Fisheries, and the Environment, South African Environment (2023: 99).
84 Ibid.: 100.
85 Alemu (2014); See https://mg.co.za/the-green-guardian/2023-06-05-unpacking-deforestation-forest-loss-and-carbon-sinks/#:~:text=From%202015%20to%202021%2C%20South,Tsitsikamma%20forests%20over%2012%20days., accessed 8 May 2024.
86 Department of Forestry, Fisheries, and the Environment, State of the Forests Report (2018: 14).

2.10 billion).[87] This includes timber harvesting, processing, trade, and non-timber forest products such as medicinal plants and eco-tourism. Moreover, the forestry sector creates employment for approximately 85,900 people and supports rural development and income generation.[88]

Deforestation is a pressing issue in South Africa, with a loss of 12.3 kilo hectares of tree cover recorded in 2023.[89] From 2015 to 2021, South Africa lost about 5% of its total primary forest area—over 6,000 hectares, which is equivalent to approximately 6,373 rugby fields.[90] Agricultural expansion, urbanisation, infrastructure development, mining, and unsustainable logging practices are the main drivers of deforestation.[91] Additionally, wood harvesting for energy in areas without electricity, such as Bushbuckridge in Limpopo, KwaZulu-Natal, and the Eastern Cape, contributes to this problem.[92]

### 2.3.4 Weather and climate factors

South Africa generally experiences a semi-arid to arid climate, with an average annual precipitation of around 460 mm, considerably lower than the global average of 860 mm.[93] There is significant variation in rainfall distribution across the country, with southern and eastern regions receiving more rain compared to western and northern areas, leading to fluctuating soil moisture levels and vegetation cover.[94]

Water scarcity in South Africa is a significant issue influenced by climate variability, population growth, urbanisation, and inefficient water management, exacerbating soil degradation, especially in arid regions.[95] Natural hazards, such as floods and wildfires are common, worsening soil erosion and degradation. The peak fire season typically spans 22 weeks starting in mid-June, with wildfires burning over two million hectares in 2021 in provinces such as the Free State, North-West, Northern Cape, and Eastern Cape.[96] South Africa experiences distinct wind patterns, with southeasterly

87 See https://www.forestrysouthafrica.co.za/economic-contribution/, accessed 8 May 2024.
88 Department of Forestry, Fisheries, and the Environment, State of the Forests Report (2018: 14).
89 See https://www.globalforestwatch.org/dashboards/country/ZAF/, accessed 8 May 2024.
90 Gatticchi (2023).
91 See https://earth.org/deforestation-in-africa/, accessed 8 May 2024.
92 Department of Forestry, Fisheries, and the Environment, South African Environment (2023: 94).
93 du Preez & van Huyssteen (2020: 9).
94 Ibid; Naorem et al. (2023).
95 See https://www.greenpeace.org/africa/en/blogs/51757/water-crisis-in-south-africa/#:~:text=South%20Africa%20is%20already%20a,are%20distributed%20in%20the%20country.https://earth.org/water-crisis-in-south-africa/, accessed 8 May 2024; Donnenfeld et al. (2018: 15).
96 See https://www.globalforestwatch.org/dashboards/country/ZAF/?category=fires&location=WyJjb3VudHJ5IiwiWkFGIl0%3D, accessed 8 May 2024; https://www-dailymaverick-co-za.webpkgcache.com/doc/-/s/www.dailymaverick.co.za/article/2021-10-04-the-burning-season-

trade winds bringing moisture and rainfall during summer from the Indian Ocean to the east and southeast, while westerly winds from the Atlantic Ocean lead to dry conditions in the interior during winter.[97]

Climate change exacerbates existing challenges by altering rainfall patterns and increasing the frequency of extreme weather events. Reports such as the Intergovernmental Panel on Climate Change's Global Warming of 1.5°C (2018) and Climate Change and Land (2019) highlight human-induced land use changes that store atmospheric carbon in plants and soil, distinct from natural carbon dioxide storage. Climate change disrupts natural ecosystems, reducing freshwater availability, species loss, biodiversity decline, and landscape degradation.[98] Rising temperatures can desiccate soil, reduce organic matter content, and diminish fertility, while changes in precipitation affect soil moisture, leading to salinisation, erosion, and reduced fertility.[99] Additionally, climate change exacerbates wind erosion and dust emissions.

### 2.3.5 Urbanisation and infrastructure development

Urbanisation and infrastructure development are significant factors shaping South Africa's socio-economic landscape, as it ranks among the most urbanised nations in Africa.[100] With administrative, legislative, and judicial capitals in Tshwane, Cape Town, and Bloemfontein, respectively, the country has witnessed rapid urbanisation, with over 68.34% of its population residing in urban areas by 2022.[101] This trend is expected to persist, straining urban infrastructure and services. Rapid urban expansion also leads to the conversion of natural habitats, loss of vegetation, ecosystem fragmentation, and heightened pressure on land resources.[102]

Johannesburg, positioned as the 26th largest urban agglomeration globally, is the nucleus of South Africa's largest economic hub in the Gauteng province, which still maintains 52.5% of its natural or semi-natural cover.[103] In contrast, the predominantly arid Northern Cape province conserves a significantly higher proportion, with 98.6%

wildfires-sweeping-across-south-africa-and-namibia-have-left-devastation-in-their-wake/, accessed 8 May 2024.

97 Reason (2017).

98 Muluneh (2021: 2).

99 Ibid.: 7.

100 Turok (2012).

101 See https://www.statista.com/statistics/455931/urbanization-in-south-africa/#:~:text=Urbanization%20in%20South%20Africa%202022&text=In%202022%2C%20over%2068.34%20percent,total%20population%20of%20a%20country., accessed 8 May 2024.

102 Gillson et al. (2012).

103 See https://www.statssa.gov.za/?p=13821, accessed 8 May 2024; https://www.urbanet.info/infographics-urbanisation-in-south-africa/, accessed 8 May 2023.

of its natural or semi-natural cover intact.[104] This contrast reflects diverse environmental characteristics and land use patterns.

The DFFE highlights urban and rural sprawl, housing demand, transportation, and basic service infrastructure as the most significant environmental impacts.[105] Urbanisation and infrastructure development frequently entail land clearing, soil compaction, and alteration of natural drainage patterns, causing soil degradation and fertility loss.[106]

### 2.3.6 Invasive alien species

Alien plant invasion stands as a major environmental challenge in South Africa, causing vegetation degradation and land productivity loss.[107] In 2021, South Africa witnessed a 15% rise in established alien species, reaching 1,880, posing a significant ecosystem threat.[108] The ecological toll of invasive plants and animals exceeds ZAR 6.5 billion (USD 356 million) yearly, mainly due to decreased water availability, grazing land, and agricultural crop losses. Invasive species often create dense monocultures, deplete soil moisture, and diminish biodiversity, leading to soil erosion, nutrient depletion, and habitat loss.[109]

### 2.3.7 Topographic constraints

South Africa's diverse landscape encompasses flat high plateaus, steep mountains, and varied coastlines. Despite this diversity, long-term erosion rates remain consistent.[110] Interestingly, these erosion rates do not show a straightforward correlation with topography. For instance, steep mountains in the Cape erode at similar rates to the lowlands in Kruger National Park, which have a much gentler slope. This discrepancy suggests that differences in rock type and erodibility are balanced by other factors.

104 Ibid.
105 Department of Forestry, Fisheries, and the Environment, 2nd South Africa Environment Outlook (2016: Chapter 5).
106 See https://eos.com/blog/soil-degradation/, accessed 8 May 2024.
107 Department of Forestry, Fisheries, and the Environment, South African Environment (2023: 98).
108 See https://www.sanews.gov.za/south-africa/sa-sees-increase-alien-species, accessed 8 May 2024.
109 Rai (2022).
110 Baade et al. (2024: 338).

### 2.3.8 Other causes or drivers of soil degradation

Various other drivers contribute to soil degradation in South Africa, including industrial activities across sectors such as food and beverage, tanneries, and pharmaceuticals. These industries can significantly impact soils through pollution, with air pollution being one avenue.[111] Chemical emissions such as sulphate and nitrate aerosols can result in acid rain, affecting the pH of sandy or loamy soils.[112] Industrial effluents present significant challenges to soil health. Effluents from metal and certain chemical industries are non-biodegradable and toxic, directly polluting soils. They inhibit plant growth and degrade soil quality, posing serious environmental concerns.[113]

In South Africa, brownfields are abandoned or underutilised industrial or commercial properties with potential environmental contamination.[114] These sites, remnants of past activities, may pose risks to public health and the environment due to hazardous soil, groundwater, or air substances. While brownfields are seen as vital for managing urban sprawl, improving infrastructure, and fostering sustainable development, their exact number and associated risks are unclear.[115]

Soil degradation, primarily caused by poor land management practices, is a pressing global issue surpassing the soil formation rate.[116] In South Africa, pre-1994 land policies concentrated people into rural 'homelands', communal areas characterised by shared land access.[117] Over time, neglect and mismanagement led to overgrazing, overharvesting, and soil erosion, exacerbating degradation.[118] Almost seventeen million people, roughly a third of South Africa's population, reside in the former homelands (communal areas).[119] Land reform in South Africa aims to rectify historical injustices and promote equitable access to land, but it can inadvertently contribute to soil degradation.[120] Redistribution of land may lead to changes in land use practices, such as converting natural habitats to agriculture, resulting in soil erosion and loss of fertility.[121] Restitution efforts may cause land fragmentation and inefficient land use, further degrading soils and ecosystems. Insecure land tenure arrangements discourage soil conservation practices and can lead to conflicts, exacerbating degradation.[122]

111 Ruppel et al. (2020: 312); Stockholm Environment Institute & the University of York (2020: 33).
112 Ibid; Yadav et al. (2020).
113 Ibid; Chhonkar et al. (2000).
114 Venter (2020: 44-45).
115 Potts & Cloete (2012).
116 Gomiero (2016).
117 Kloppers & Pienaar (2014); Strauss (2019).
118 See https://theconversation.com/17-million-south-africans-live-on-communal-land-new-study-of-a-rural-valley-offers-insights-on-how-to-manage-it-222107, accessed 8 May 2024; Hoffman & Ashwell (2012: 84).
119 Clark & Luwaya (2017: 3).
120 Mfune (2022: 247-248).
121 Pienaar (2004: 278).
122 Manjunatha et al. (2012).

Land grabbing in South Africa encompasses two distinct scenarios. The initial scenario involves individuals grappling with pressing issues such as poverty and lack of shelter, resorting to seizing land for residential purposes out of urgent necessity.[123] However, this action inadvertently leads to soil degradation as unsustainable land management practices ensue, including deforestation, haphazard construction of informal settlements lacking adequate infrastructure or planning, and improper waste disposal. The second scenario pertains to governmental entities, local elites, and foreign corporations progressively acquiring extensive agricultural land holdings.[124] Although noteworthy, this situation carries less urgency in contrast to the immediate and frequent challenges experienced in the previous scenario.

Furthermore, several behavioural practices have contributed to soil deterioration, including a lack of public awareness, inadequate enforcement of environmental legislation, a shortage of skilled labour, and insufficient funding for soil conservation. To illustrate, a survey of schoolchildren aged thirteen to fifteen in Ghana, South Africa, and Zimbabwe highlighted significant soil illiteracy.[125]

## 2.4 Key actors in soil degradation

Soil degradation in South Africa involves key actors, such as investors, government entities, and farmers, each with distinct roles:

Investors in agriculture, mining, and infrastructure can contribute to soil degradation through land conversion, deforestation, and intensive land use. However, they can also invest in sustainable land management practices and technologies that promote soil conservation and restoration.

Responsible for developing and implementing policies and regulations related to land use and environmental protection, government entities play a crucial role. Effective governance and enforcement of these policies are vital for addressing soil degradation.

Small and large-scale farmers directly impact soil health through agricultural practices. Overgrazing, monocropping, excessive tillage, and improper irrigation can degrade soil quality. However, farmers can also adopt sustainable practices such as crop rotation, conservation tillage, agroforestry, and organic farming to improve soil quality and resilience.

123 See https://dullahomarinstitute.org.za/multilevel-govt/local-government-bulletin/archives/volume-17-issue-4-november-2022/land-grabbing-municipalities-must-uphold-the-constitution-when-dealing-with-unlawful-occupiers, accessed 8 May 2024.

124 Stenberg & Rafiee (2018); Lazarus (2013).

125 Johnson et al. (2023).

## 2.5 Conclusion

Soil degradation presents a critical environmental challenge in South Africa, driven by agricultural activities, mining operations, urbanisation, deforestation, and unsustainable land management practices. This degradation threatens food security, water quality, biodiversity, and ecosystem services.

Addressing soil degradation requires concerted efforts from various stakeholders, including government agencies, industries, urban planners, landowners, researchers, civil society organisations, and local communities. Additionally, robust policies, regulations, and enforcement mechanisms are needed to prevent further soil degradation, mitigate existing damage, and restore degraded soils. Integrated approaches that consider social, economic, and environmental dimensions are essential for achieving long-term soil conservation goals and ensuring the well-being of present and future generations.

# 3 General information on public soil legislation

## 3.1 Policy frameworks, government strategies, action plans, etc.

### 3.1.1 International policies relevant to soil protection

#### 3.1.1.1 Revised World Soil Charter

The Revised World Soil Charter (2015) is a comprehensive document that outlines principles, guidelines, and recommendations for the sustainable management and conservation of soils globally. Building upon the original World Soil Charter established by the Food and Agriculture Organization (FAO) in 1981, the revised version underscores the critical importance of soils for food security, ecosystem health, climate regulation, and sustainable development. It emphasises the need for urgent action to protect, restore, and sustainably manage soils to ensure their long-term productivity and resilience. While non-binding, South Africa's endorsement of the revised Charter as an FAO member carries significant symbolic and political weight.

#### 3.1.1.2 The 2030 Agenda for Sustainable Development instituting the Sustainable Development Goals

The global 2030 Agenda for Sustainable Development, adopted by the United Nations (UN) General Assembly, comprises seventeen Sustainable Development Goals (SDGs) with 169 associated targets. Goal 15 focuses on protecting terrestrial

ecosystems, managing forests sustainably, combating desertification, and halting land degradation and biodiversity loss. Target 15.3 aims for a land degradation-neutral world by 2030, making it crucial for soil protection. Other relevant goals include Goal 12 for sustainable consumption and production, Goal 13 for climate action, and Goal 17 for partnership and implementation support. Soil conservation aligns with climate change mitigation efforts, as soil serves as a carbon sink. South Africa is committed to achieving targets related to land degradation neutrality, biodiversity conservation, and ecosystem restoration.

#### 3.1.1.3 The land degradation neutrality initiative

During its 12th Conference of the Parties (COP), the UN Convention to Combat Desertification (UNCCD) defined land degradation neutrality (LDN) as maintaining or improving the quantity and quality of land resources to support ecosystem functions, enhance food security, and maintain stable or increasing levels within specified temporal and spatial scales and ecosystems.[126] The primary goal of LDN is to preserve and enhance natural land and its associated ecosystem services, including soil protection. The UNCCD serves as the international framework for LDN, with efforts to operationalise it through the Scientific Conceptual Framework for Land Degradation Neutrality, offering a model for planning, implementing, and monitoring LDN initiatives.[127] Sustainable land management practices, such as preventing degradation and restoring degraded lands, are crucial for LDN achievement. Implementation occurs through integrated land-use planning at the landscape level, aiming to avoid further net loss of land-based natural capital. South Africa began a national LDN target-setting process in 2017/2018 in response to the UNCCD's call for countries to commit to LDN voluntarily.[128]

#### 3.1.1.4 Global Soil Partnership

The Global Soil Partnership (GSP), led by the FAO, is dedicated to addressing global soil-related challenges by promoting sustainable soil management practices, enhancing soil data collection and monitoring, and raising awareness about soil health's critical role in ensuring food security, ecosystem services, and climate change

126 See https://www.unccd.int/land-and-life/land-degradation-neutrality/overview, accessed 8 May 2024.

127 See https://www.unccd.int/resources/reports/scientific-conceptual-framework-land-degradation-neutrality-report-science-policy, accessed 8 May 2024.

128 von Maltitz et al. (2019); See https://biodiversityinvestment.co.za/land-degradation-neutrality, accessed 8 May 2024.

adaptation.[129] Established in 2011, the GSP provides a voluntary platform for countries, international organisations, academia, civil society, and the private sector to collaborate on improving governance and promoting sustainable soil management practices globally. Through knowledge exchange and collaborative initiatives, the GSP facilitates efforts to tackle soil degradation and loss of fertility. A key initiative of the GSP is the development and implementation of the Voluntary Guidelines for Sustainable Soil Management (VGSSM), which offers structured guidance for policymakers, land managers, and stakeholders to promote soil health, enhance productivity, and strengthen resilience within soil ecosystems.[130]

#### 3.1.1.5 International Code of Conduct for the Sustainable Use and Management of Fertilisers

The International Code of Conduct for the Sustainable Use and Management of Fertilisers (2019) serves as a crucial framework for responsible fertiliser use in agriculture, aiming to promote sustainable soil management, address nutrient imbalances, and mitigate soil pollution. It also emphasises the need for regulations governing fertiliser products' sale, distribution, and labelling, as well as capacity development and education programs for stakeholders in the fertiliser value chain. Endorsed by the 41st Session of the FAO Conference, this Code supports global efforts toward sustainable agriculture and environmental preservation, complementing initiatives such as the VGSSM.

#### 3.1.1.6 African Union Agenda 2063

Agenda 2063, known as 'the Africa We Want', serves as a visionary roadmap within the AU, guiding the continent's development and transformation.[131] Adopted in 2015, it reflects Africa's collective aspirations for achieving inclusive and sustainable growth, emphasising unity, self-determination, freedom, progress, and collective prosperity. While soil protection may not be explicitly mentioned, it is inherently tied to key components, particularly within the aspiration for inclusive growth and sustainable development (Aspiration 1). This aspiration underscores the importance of valuing and protecting Africa's natural environment and ecosystems, recognising that healthy soils

129 See https://www.fao.org/global-soil-partnership/en/, accessed 8 May 2024.

130 See https://www.fao.org/policy-support/tools-and-publications/resources-details/en/c/1027927/, accessed 8 May2024.

131 See also the Comprehensive African Agricultural Development Programme (CAADP), which is an Agenda 2063 continental initiative designed to promote agricultural development and food security across Africa. It was established by the AU in 2003 as part of the New Partnership for Africa's Development (NEPAD) and is endorsed by African heads of state and government.

are vital for agricultural productivity, biodiversity conservation, and climate resilience. Additionally, the Agenda commits to ensuring effective territorial planning and land tenure, use, and management systems, promoting techniques such as agroforestry, conservation agriculture, and land-use planning to minimise soil degradation and erosion.[132]

#### 3.1.1.7 The Regional Implementation Plan for the African Soil Partnership

The African Soil Partnership (AfSP), established in 2015, aims to maximise the potential of African soils for sustainable development, focusing on food security and agricultural productivity.[133] With member nations from Sub-Saharan Africa, the AfSP acknowledges the diversity of African soils and aims to enhance agricultural productivity, promote sustainable land management practices, and achieve broader development goals.

The Regional Implementation Plan for the AfSP (2016) highlights the critical role of soil for rural communities in Sub-Saharan Africa, especially as the region's population is projected to increase significantly by 2030. To address these challenges, the implementation plan focuses on enhancing food production and security, restoring land, and building agricultural resilience to climate change. It outlines specific activities, budgets, and timelines for achieving sustainable soil management, calling for collaboration from national governments and entities involved in natural resource management.

#### 3.1.1.8 Framework and Guidelines on Land Policy in Africa

The Framework and Guidelines on Land Policy in Africa, introduced in 2010 through collaboration between the AU, the UN Economic Commission for Africa, and the African Development Bank (AfDB), aim to drive Africa's socio-economic development by addressing land policy issues. It provides a comprehensive overview of the historical, political, economic, and social context of land in Africa, stressing its importance for economic growth and poverty reduction.

While not directly focused on soil management, the Framework and Guidelines indirectly contribute to soil conservation and sustainable land use practices. By promoting secure land tenure and recognising soil as a vital natural resource crucial for ecosystem health and socio-economic development, it fosters an environment conducive to soil management and conservation efforts.

132 See by Sheppard et al. (2020).

133 See https://www.fao.org/global-soil-partnership/regional-partnerships/africa/en/, accessed 8 May 2024.

#### 3.1.1.9 Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods

The Malabo Declaration, ratified by the AU in 2014, is a pivotal policy initiative outlining agriculture goals to attain by 2025. It underscores agriculture's pivotal role in fostering economic growth, poverty reduction, and food security across Africa. Emphasising sustainable agricultural practices, the declaration aims to elevate productivity, improve food accessibility, and uplift livelihoods continent-wide.

#### 3.1.1.10 Sirte Declaration on the Challenges of Implementing Integrated and Sustainable Development on Agriculture and Water in Africa

The Sirte Declaration on the Challenges of Implementing Integrated and Sustainable Development of Agriculture and Water in Africa, originating from the 2004 AU Summit in Libya, is a seminal policy document. Highlighting the interdependence of agriculture and water for food security, economic growth, and environmental sustainability, the declaration advocates for holistic approaches. Moreover, it acknowledges the importance of leveraging scientific research in agricultural planning to tackle challenges such as desertification, soil and water conservation, and environmental preservation.

#### 3.1.1.11 African Union Climate Change and Resilient Development Strategy and Action Plan

The AU Climate Change and Resilient Development Strategy and Action Plan (2022-2032) is a pivotal framework aiming to address climate change challenges and foster sustainable development across Africa. The strategy focuses on enhancing the resilience of African communities, ecosystems, and economies while supporting regional adaptation efforts. It outlines key strategic intervention axes, including strengthening governance and policy, adopting transformative climate-resilient development pathways, enhancing means of implementation, and leveraging regional flagship initiatives. One suggested action involves promoting soil biodiversity and managing soil organic carbon, crucial for ensuring land productivity, water storage, erosion control, stability during extreme weather events, and carbon mitigation.

#### 3.1.1.12 Soil Initiative for Africa

In 2020, at the Alliance for a Green Revolution in Africa Forum (AGRF), the AU proposed the establishment of the Soil Initiative for Africa (SIA) as a comprehensive, long-term effort to systematically enhance the health and productivity of Africa's soils.[134] The initiative involves implementing policies, programs, and institutional structures to establish an effective soil management system across Africa. Both the SIA Framework Document, focusing on the long-term vision, and the Africa Fertiliser and Soil Health Action Plan, covering a ten-year horizon, were officially endorsed and launched at the Africa Fertiliser and Soil Health Summit in 2024.

#### 3.1.1.13 Africa Fertiliser and Soil Health Summit

During the Africa Fertiliser and Soil Health Summit held in Nairobi, Kenya, on 9 May 2024, the heads of state and government of the AU addressed crucial issues related to fertiliser use and soil health. The Summit concluded with the endorsement of the Nairobi Declaration, which outlines key commitments by African leaders to enhance agricultural sustainability, improve smallholder farmer livelihoods, and increase local fertiliser production across Africa. The Summit's theme, "Listen to the Land", highlighted the importance of combating soil degradation to boost agricultural productivity and ensure food security. The implementation of the ten-year Action Plan, which details specific steps for leaders and stakeholders to take over the next decade, is a critical aspect to watch.

#### 3.1.1.14 Other regional and sub-regional commitments of South Africa relevant to sustainable soil management

The SADC has developed Vision 2050 as a strategic framework to achieve a peaceful, inclusive, competitive, and middle-to high-income industrialised region by 2050. Under the pillar of Industrial Development and Market Integration (1), the goal is to cultivate a transformed agricultural sector that embraces sustainable management of the environment and its natural resources. Within the pillar of Social and Human Capital Development (3), a key objective is to enhance food and nutrition security to promote socio-economic well-being throughout the region. Additionally, there is a focus on addressing climate change impacts.

The SADC Climate Change Strategy and Action Plan (2020-2030) is a comprehensive framework aimed at addressing climate change challenges in the region. The

134 See https://faraafrica.org/soil-initiative-for-africa/, accessed 8 May 2024.

strategy underscores the importance of collaborative efforts, capacity-building, and innovative approaches to effectively address climate change challenges.

The SADC Protocol on Forestry, established in 2002, serves as a regional policy framework for fostering cooperation in forestry within the region. By promoting sustainable forestry practices, the protocol indirectly addresses soil health. Healthy forests play a crucial role in maintaining soil health and fertility by preventing erosion, preserving soil structure, and facilitating nutrient cycling.

The Regional Agricultural Policy of SADC, adopted in 2014, serves as a strategic framework to harmonise and enhance agricultural practices across the region. To address soil degradation, proposed interventions include promoting integrated soil fertility management programs tailored to soil diversity, facilitating private and public sector initiatives to optimise fertiliser production and distribution, and harmonising guidelines for the appropriate use and disposal of fertilisers and agrochemicals.

### 3.1.2 National policies relevant to soil protection

#### 3.1.2.1 Conservation Agriculture Policy

In 2017, the Department of Agriculture, Land Reform, and Rural Development (DALRRD) drafted a Conservation Agriculture (CA) Policy to promote sustainable soil management practices. Grounded in principles of farmer empowerment and sustainable agriculture, CA encourages minimum or no tillage practices, which reduce mechanisation and input costs for commercial farmers.[135] Recognising soil as a dynamic ecosystem vital for sustaining life, the Policy aims to establish ecologically and economically sustainable agricultural systems to enhance food security and mitigate national security risks. As part of South Africa's UNCCD LDN Targets, 60,000 $km^2$ of cultivated land must be converted to CA systems by 2030.

#### 3.1.2.2 Policy on Agriculture in Sustainable Development

The Policy on Agriculture in Sustainable Development (eighth draft) is a comprehensive framework designed to guide agricultural practices toward sustainability, covering production, environmental conservation, socio-economic development, and climate resilience.[136] It emphasises integrating sustainable agriculture principles into policy development and fostering collaboration between government agencies, stakeholders, and the private sector. Recognising the critical role of effective soil management,

135 Baade et al. (2024: 345).

136 See https://www.dalrrd.gov.za/index.php/publications/34-policies, accessed 8 May 2024.

the Policy aims to mitigate substantial soil degradation, salinity, and acidity issues in South Africa. Approved for public consultation, the draft Policy aligns strategically with the Strategic Plan for South African Agriculture (2020-2025), a blueprint for the sector.

#### 3.1.2.3 Climate Smart Agriculture Strategic Framework

The Draft Climate Smart Agriculture Strategic Framework (2018) outlines strategies for climate-smart agriculture, covering adaptation and mitigation in sectors such as agriculture, aquaculture, forestry, and fisheries. It recommends practical techniques such as mulching, intercropping, conservation agriculture, and improved water management to enhance sustainable productivity, reduce GHG emissions, and promote carbon sequestration. These practices are closely linked to soil health and quality, supporting soil conservation and resilience while mitigating climate change impacts.

#### 3.1.2.4 National Water Resource Strategy

The National Water Resource Strategy Third Edition (2023) primarily focuses on water resource management and ensuring water security for socio-economic growth and development. However, its implementation can indirectly contribute to maintaining healthy soil ecosystems by promoting sustainable water use and conservation practices.

#### 3.1.2.5 White Paper on Environmental Management Policy

The White Paper on Environmental Management Policy (1998) is a crucial national government policy outlining the strategic framework for environmental management in South Africa.[137] It aims to integrate environmental considerations across sectors, promote sustainable development, and address environmental challenges while balancing economic growth with conservation. Recognising soil health as integral to ecosystem sustainability, the Policy emphasises the importance of maintaining soil fertility for long-term environmental health.

137 GN R 395 in GG 18894 of 15-05-1998.

#### 3.1.2.6 National Framework for Sustainable Development

The National Framework for Sustainable Development (2008) is a strategic blueprint guiding sustainable development efforts in South Africa. It underscores stakeholder engagement, research investment, capacity building, and rural infrastructure development to promote sustainable agricultural development. Regarding soil, the Framework underscores the importance of sustainable land management practices to preserve soil health and quality. It acknowledges soil as vital for economic development, poverty alleviation, and environmental sustainability. It advocates for decoupling unsustainable resource use from material consumption growth and poverty alleviation strategies, prioritising soil conservation and sustainable land use practices in South Africa's development journey.

#### 3.1.2.7 Nationally Determined Contribution of South Africa

South Africa's First Nationally Determined Contribution (NDC) was submitted in 2015 ahead of the UNFCCC's 21st Conference of the Parties (COP 21) and formally adopted upon ratifying the Paris Agreement in 2016. An updated NDC was submitted in 2021[138], outlining objectives for mitigating GHG emissions and adapting to climate change impacts. The mitigation component focuses on reducing emissions by 2030 compared to business-as-usual scenarios. South Africa aims to maintain annual emissions within a range of 398-510 Mt CO2-eq from 2021-2025 and further reduce them to 350-420 Mt CO2-eq by 2030. Implementation is planned in five-year periods, with a peak expected between 2020 and 2025, followed by a plateau for about a decade, then a decline.

Healthy soils play a crucial role in carbon sequestration, biodiversity conservation, and sustainable agriculture, aligning with climate change strategies.[139] Therefore, the successful implementation of South Africa's INDC supports soil health by promoting sustainable land management practices, soil conservation, and agricultural resilience.

#### 3.1.2.8 National Action Plan for the Fight Against Desertification

The Second National Action Programme for South Africa to Combat Desertification, Land Degradation, and the Effects of Drought (2018-2030) is a strategic framework

138 https://unfccc.int/sites/default/files/NDC/2022-06/South%20Africa%20updated%20first%20NDC%20September%202021.pdf, accessed 8 March 2025.

139 De Gama (2023).

addressing desertification, land degradation, and drought.[140] It identifies contributing factors and implements measures to combat desertification while mitigating its effects, with a focus on government, local communities, and land users. Objectives include strengthening policy frameworks, supporting research, enhancing communication among stakeholders, and restoring degraded ecosystems to contribute to ecosystem services and climate change adaptation.

#### 3.1.2.9 National Biodiversity Framework and Action Plan

The National Biodiversity Framework (2019-2024) is a crucial document that coordinates efforts to conserve and manage biodiversity in South Africa. Aligned with the National Biodiversity Strategy and Action Plan (2015-2025), it prioritises conservation actions and protected area establishment. Notably, the Framework's focus on biodiversity conservation directly benefits soil health by safeguarding soil ecosystems and promoting ecosystem restoration.

#### 3.1.2.10 National Climate Change Response White Paper

The National Climate Change Response White Paper (2011) outlines South Africa's vision for addressing climate change by transitioning to a climate-resilient, lower-carbon economy. It focuses on two main objectives: managing climate change impacts to enhance resilience and contributing to global efforts to stabilise GHG concentrations.

The White Paper highlights the importance of sustainable agriculture and acknowledges agriculture's vulnerability to climate change. It proposes small-scale, labour-intensive farming methods to preserve soil quality and biodiversity while ensuring food security. Research investment in water, nutrient, and soil conservation technologies is emphasised. Additionally, urban management challenges exacerbated by climate change are addressed. Vulnerabilities in small-scale and subsistence farming are recognised, with a focus on monitoring climate impacts and implementing adaptation measures.

#### 3.1.2.11 National Adaptation Strategy

The draft National Climate Change Adaptation Strategy (2018) aims to address the challenges posed by climate change, particularly focusing on increased temperatures

140 See Department of Environment and Tourism, Building on the National Action Programme Combating Land Degradation to Alleviate Rural Poverty (2004).

and rainfall variability. It covers sectors such as agriculture and forestry, which are closely tied to soil health and management. As a foundational framework for adaptation efforts, the strategy guides government departments, sectors, and stakeholders in integrating climate change adaptation priorities into development initiatives.

#### 3.1.2.12 Mine Water Policy

The Mine Water Management Policy (2022) focuses on mitigating challenges related to mine water impacts, including acid mine drainage, and their risks to water resources. While not explicitly addressing soil, it is crucial to acknowledge the connection between soil health and water quality, especially regarding contamination from mining. Contaminated mine water can harm soil quality, hinder vegetation growth, and compromise overall ecosystem health.

#### 3.1.2.13 Strategic Framework and Overarching Implementation Plan for Ecosystem-Based Adaptation

The Strategic Framework and Overarching Implementation Plan for Ecosystem-Based Adaptation (2016) aims to bolster climate resilience through ecosystem-based approaches. Recognising the vital role of healthy soils in supporting biodiversity, water retention, and carbon sequestration, the Plan indirectly influences soil health. It advocates for sustainable land management practices, restoration of critical ecosystems such as rangelands and wetlands, and integration of biodiversity considerations into development planning.

#### 3.1.2.14 Other relevant national policy instruments for soil protection in South Africa

The Soil Protection Strategy (2005), though pending completion, aims to identify priority areas for integrated soil rehabilitation programs. These programs are determined through extensive modelling and mapping exercises focused on land capability and predicted soil erosion.

The Draft Policy on the Preservation and Development of Agricultural Land (2016) aims to ensure sustainable use of agricultural land for long-term food security. It focuses on preserving, developing, and sustainably using agricultural land to safeguard food production. The policy addresses land subdivision, changes in land use, and overall management of agricultural land to support the agricultural sector and food security.

South Africa is in the process of developing a National REDD+ Strategy. A commissioned study titled 'Addressing Specific Elements of REDD+ in South Africa' (2020) outlines key components necessary for establishing a robust national program for REDD+ (Reducing Emissions from Deforestation and Forest Degradation). This global initiative aims to combat deforestation and forest degradation to reduce GHG emissions.

The National Development Plan (2012) is a comprehensive strategy addressing environmental sustainability and natural resource management. It recognises soil degradation, such as erosion and loss of fertility, as significant threats compromising soil health and productivity. The plan outlines DFFE's initiative to establish a standardised framework for assessing soil quality, aiming to issue annual reports on soil conditions.

The National Policy on Food and Nutrition Security (2014) is vital for addressing food security challenges by prioritising access to safe and nutritious food. Healthy soils are crucial for sustainable food production. Thus, implementing the policy indirectly promotes soil health through sustainable agricultural practices and land management strategies.

The White Paper on Land Policy (1997) outlines principles and strategies for land reform to address historical injustices and promote equitable access to land resources. It emphasises sustainable land use practices, community participation, and protecting vulnerable groups' land rights to rectify apartheid-era land dispossession and foster social cohesion. The Policy recognises that land degradation and soil erosion in South Africa stem from landlessness, overcrowding in former homeland areas, and inappropriate farming methods.

The National Spatial Development Framework (NSDF) (2022) is a strategic planning document that charts a long-term vision and spatial development plan for South Africa. Through its recommendations on land use patterns, urbanisation, rural development, and natural resource management, the NSDF indirectly impacts soil health and sustainability.

The Working for Water (WfW) program, launched in 1995, focuses on poverty alleviation by providing work to marginalised groups and rehabilitating wetland systems. By removing invasive plants, WfW contributes to biodiversity conservation, improves soil health, reduces soil erosion, and restores ecological balance. However, the program's strict employment criteria limit its monitoring and evaluation due to high potential costs, despite ample funding.[141] Reviews note the absence of a clear strategy and advise assessing the project's viability.

The Implementation Framework for the LandCare program (1999) establishes LandCare South Africa as a community-driven initiative supported by public and private sectors through partnerships. By raising awareness and providing education, LandCare aims to instil a conservation ethic and address rural poverty by generating

141 van Wilgen & Wannenburgh (2016: 11-12).

sustainable job opportunities, fostering economic empowerment, and promoting environmental stewardship in local communities. However, the program has seen mixed applications across the provinces. For example, in Gauteng, only two officials were assigned to this program, leading to poor implementation.[142] Similarly, in Limpopo, there were issues with service delivery and job creation, with a common trend of poor spending across the board.

### 3.2 Relevant international law for the protection of soils

National legislation and policies in South Africa are crafted to align with the country's international commitments, spanning global, regional, and subregional levels. These commitments encompass a range of environmental, social, and economic issues, shaping domestic laws and policies accordingly.

Soil governance has historically received less international attention compared to other environmental concerns.[143] This has led to fragmented efforts in addressing soil-related challenges, with initiatives spread across various institutions and processes, each with limitations. In South Africa, the transposition of international law into the national legal framework involves incorporating international legal principles, treaties, agreements, and norms into domestic legislation.

Section 232 of the Constitution affirms that customary international law applies unless it conflicts with the Constitution or an Act of Parliament, requiring no further implementing statute for its legal effect. Regarding international treaties, Section 231(2) mandates ratification by both the NA and NCOP, except for technical, administrative, or executive agreements, without specific criteria provided for these exceptions. However, parliamentary ratification alone does not ensure domestic applicability. Section 231(4) of the Constitution requires additional national legislation to transform treaty provisions into municipal law unless the treaty is self-executing. Incorporation methods may include embodying provisions in the legislation, scheduling the agreement to a statute, or authorising executive action via publication in the Government Gazette, granting treaty provisions equal legal status to domestic laws.

Moreover, Section 39(1)(b) of the Constitution directs courts to consider international law when interpreting the Bill of Rights. Although courts are not obligated to apply international law, they must prefer interpretations consistent with it over those inconsistent, as per Section 233 of the Constitution.

142 See https://pmg.org.za/committee-meeting/35429/, accessed 8 May 2024.
143 Ruppel (2022a); Bodle (2022).

### 3.2.1 Relevant international soft law commitments

While not legally binding, soft law instruments often serve as influential precursors to binding international agreements. South Africa has signed several pertinent international soft law instruments for soil protection, including the Stockholm Declaration (1972),[144] the Rio Declaration on Environment and Development (1992),[145] Agenda 21,[146] the Future We Want outcome document of the UN Conference on Sustainable Development (Rio+20 Conference) (2012),[147] the 2030 Agenda for Sustainable Development, instituting the SDGs (2015),[148] and the Johannesburg Declaration on Sustainable Development (2002), to name a few.[149]

These soft law instruments offer guiding principles and frameworks for promoting sustainable development and environmental conservation, indirectly contributing to soil protection efforts.

### 3.2.2 Relevant international hard law instruments[150]

South Africa is a signatory to various international hard law instruments aimed at protecting soil, including:

- The UN Convention to Combat Desertification, 1994 (ratified in 1997).
- The Convention on Biological Diversity, 1992 (signed in 1993).
- The UN Framework Convention on Climate Change, 1992 (ratified in 1997).
- The Kyoto Protocol to the UN Framework Convention on Climate Change, 1997 (acceded to in 2002).
- The Paris Climate Change Agreement, 2015 (ratified in 2016).
- The Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 1998 (acceded to in 2002).
- The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal, 1989 (acceded to in 1994).
- The Stockholm Convention on Persistent Organic Pollutants, 2001 (ratified in 2002).

144 Held 5-16 June 1972, A/CONF.48/14/Rev.1.
145 Held 3-14 June 1992, A/CONF.151/26 (Vol. I).
146 A/CONF.151/26 (Vol. I). New York: United Nations, 1993.
147 Rio de Janeiro, Brazil, 20-22 June 2012.
148 A/RES/70/1, 2015.
149 Held 2-4 September 2002, A/CONF.199/20.
150 Ruppel (2022b).

- The African Convention on the Conservation of Nature and Natural Resources, 1968 (revised by the Maputo Convention in 2003) (acceded to in 2013).
- The Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and their Destruction, Geneva, 1992 (ratified in 1995).
- The Ramsar Convention on Wetlands of International Importance, especially as Waterfowl Habitat, 1971 (signed in 1975).
- The Cartagena Protocol on Biosafety to the Convention on Biological Diversity, Montreal, 2000 (acceded to in 2003).
- The Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region, 1981 (ratified in 2002).
- The Protocol Concerning Co-operation in Combating Pollution in Cases of Emergency, 1981 (ratified in 2002).
- The International Plant Protection Convention, 1951 (ratified 1956).
- The African Charter on Human and Peoples' Rights, Banjul, 1981 (ratified 1996).

These international agreements provide a framework for cooperation and action to address various aspects of soil protection and environmental conservation on a global scale.

## 3.3 Relevant national legal provisions for the protection of soil

### 3.3.1 Constitution

While not explicitly addressing soil protection, the Constitution emphasises environmental rights, sustainable development, and cooperative governance, providing a framework for policies and regulations promoting soil conservation and sustainable land management.[151] Soil protection falls within the broader environmental context addressed by Section 24 of the Constitution, part of the Bill of Rights. Subsection (a) establishes the environmental right, ensuring individuals an environment free from harm. Subsection (b) places responsibility on the government to protect the environment for present and future generations through legislative and other measures. These measures include preventing pollution, promoting conservation, and securing

151 Secs 152(1)(c) and 153(a) stipulate that municipalities are mandated to prioritise the basic needs of the community and promote social and economic development. Sec 184(1)(b) provides that the SAHRC is tasked with promoting the protection and development of human rights. Sec 195(1)(b)-(c) states that public administration must adhere to democratic values, including the efficient and effective use of resources, and must be development-oriented.

ecologically sustainable development, and natural resource use while fostering justifiable economic and social development.

These provisions highlight the multifaceted approach necessary for environmental protection and sustainable development, including soil resource conservation and responsible management. NEMA serves as a cornerstone of South Africa's environmental legal framework, establishing regulations and standards to safeguard the environment and promote sustainable practices.

Various clauses in South Africa's Bill of Rights, such as those addressing access to courts (Section 34), just administrative action (Section 33), access to information (Section 32), property rights (Section 25), and limitations (Section 36), can be invoked in environmental matters, albeit indirectly. Section 36 of the Constitution specifies that fundamental rights may only be restricted by a law applicable to all, and such restrictions must be reasonable and justifiable in a democratic society founded on human dignity, equality, and freedom. When evaluating the reasonableness and justifiability of a limitation, factors such as the nature of the right, the purpose's significance, the restriction's scope, the connection between the limitation and its aim, and less restrictive alternatives that still achieve the objective must all be considered.

Section 41 of the Constitution underscores the importance of cooperative governance among the national, provincial, and local spheres of government, as well as with traditional leadership institutions. This provision promotes collaboration and coordination in implementing environmental policies and regulations, including those related to soil protection and management.

Local governments are mandated by the Constitution and relevant legislation to ensure environmental protection, including soil management, as outlined in Sections 152(1)(b) and (d). This responsibility is further articulated in the Local Government: Municipal Systems Act 32 of 2000, Sections 4(2)(d) and (i), and 73(1)-(2).

### 3.3.2 Legislation on land tenure (land ownership, access, and users' rights), as an anchor point for soil protection

#### 3.3.2.1 Historical overview of landownership

The land holds immense significance in Africa beyond its economic value, encompassing cultural, spiritual, and symbolic importance for communities.[152] It sustains livelihoods, agricultural production, and social structures, influencing identity and social status. Traditionally, land rights were governed by communal stewardship and

152 Mailula (2011: 73-74).

customary practices, allocating land based on needs and contributions to the community.[153]

In South Africa, land tenure laws reflect a complex history shaped by colonialism, apartheid, and racial segregation. Understanding this historical context is vital for grasping the current socio-economic landscape.

Before European colonisation, indigenous African communities in South Africa governed land ownership according to diverse systems. Some practised communal ownership, while others recognised individual or family ownership.[154]

Communities were governed by traditional chiefs hailing from specific lineages, and their influence was established by providing security to attract followers.[155] Control was based on loyalty rather than fixed boundaries, leading to diverse leadership structures. Some households recognised multiple leaders. In areas without centralised authority, homesteads enjoyed autonomy, with local councils playing crucial roles in decision-making.

European colonisation, starting with the Dutch East India Company in 1652 and later British colonisation, introduced significant changes to land ownership.[156] During colonial and apartheid periods, traditional leaders assumed governmental roles, diverting accountability away from the people.[157] Traditional structures were co-opted by the apartheid regime to regulate land and labour. The Black Authorities Act 68 of 1951 formalised traditional authorities' functions, reinstating chiefly control. Land allocation within households followed generational lines, often with subordinate leaders' consent. Traditional authorities, especially after the enactment of the Black Authorities Act, wielded significant influence over land allocation.

The Natives Land Act 27 of 1913 prohibited indigenous Africans from occupying or acquiring land outside designated areas (homelands).[158] Sharecropping contracts between white landowners and indigenous farmers were also banned.

The Development Trust and Land Act 18 of 1936 established the South African Native Trust to manage land for indigenous Africans, replacing individual ownership with trust tenure.[159] It transferred specific land, including areas from the Natives Land Act to the Trust. The Act limited indigenous Africans to approximately 13% of total land, comprising former homelands (Ciskei, Gazankulu, Kangwane, KwaNdebele, KwaZulu, Lebowa, Qwaqwa, Transkei, Venda, and Bophuthatswana).[160]

153 du Plessis (2011: 49).
154 Mailula (2011: 78-80).
155 du Plessis (2023: 3-5).
156 Oliver & Oliver (2017).
157 du Plessis (2023: 6-8).
158 Beinart & Delius (2014).
159 Hay (2012); The Trust was dissolved in 1994 after the end of apartheid. Its land holdings were transferred to the DALRRD for the land reform program.
160 Kloppers & Pienaar (2014: 683).

The Act introduced a permission to occupy (PTO) system for land use, where magistrates could grant permission if allocated by traditional authorities. PTOs were granted for one residential unit with arable land, primarily to married individuals under customary law. This granted the holder the right to stay on the land until their death and to nominate someone to receive the site after their passing. However, failure to occupy the land within a year or demonstrate beneficial use for two years could result in forfeiting this right. Despite aiming to secure rights, PTO holders were vulnerable to government withdrawal, often for development projects.[161] These PTOs are not registered in the Register of Deeds. Thus, it does not confer full ownership rights but only the right to occupy the land.[162]

The Group Areas Act 41 of 1950 segregated residential areas and regulated property acquisition by classifying people into ethnic groups. Each group was allocated designated areas for exclusive use and ownership.[163] The Group Areas Act 36 of 1966 continued the segregation of residential areas and property acquisition based on ethnic classification.[164]

The Abolition of Racially Based Land Measures Act 108 of 1991 abolished apartheid-era laws, allowing all South Africans to own and occupy land across the country regardless of race.[165]

#### 3.3.2.2 Modern landownership

In the post-apartheid era, South Africa has pursued significant reforms to address historical injustices and promote equitable access to land, guided by various laws and policies. The Constitution affirms the property right (Section 25(1)), stating that property can only be expropriated for public purposes or in the public interest, with compensation (Section 25(2)). The public interest includes land reform and equitable access to natural resources (Section 25(4)), mandating the state to enact measures to facilitate such access (Section 25(5)).

The South African government's land reform policy, adopted in 1994, comprises three key components. First, the Restitution of Land Rights Act 22 of 1994 aims to restore land rights to those forcibly dispossessed due to racial discrimination. It established the Commission on Restitution of Land Rights and the Land Claims Court. Over

161 du Plessis (2023: 8).
162 See *Maduna v Daniel* (2001) JOL 9186 (TK). In this case, the court upheld the notion that PTOs confer rights akin to real rights, despite their personal nature.
163 Mabin (1992).
164 Kloppers & Pienaar (2014: 685-686).
165 Ibid.: 687.

83,000 land claims have been settled to date.[166] A lesser-known fact is that 57.8% of these claims were for urban land rather than rural areas.[167] Additionally, 93% of those who filed land claims expressed a preference for monetary compensation over owning agricultural land.

Second, land redistribution aims to provide land to those forcibly removed or dispossessed. The goal in 1994 was to redistribute 30% of the land within five years, however, by 2011, only 4.1% of the land had been redistributed, primarily state-owned.[168] Progress in redistributing productive land has been slower, with only 3.7% of agricultural land redistributed since 1994.

Third, laws such as the Land Reform: Provision of Land and Assistance Act 126 of 1993 ensure the security of tenure for farm workers, labour tenants, and rural residents. The Land Reform (Labour Tenants) Act 3 of 1996 and the Extension of Security of Tenure Act 62 of 1997 (ESTA) protect tenure rights and regulate eviction procedures. The Prevention of Illegal Eviction from and Unlawful Occupation of Land Act 19 of 1998 prohibits unlawful eviction and outlines eviction procedures.

Other relevant laws include: The Expropriation Act 13 of 2024, which repeals the Expropriation Act 63 of 1975 and allows for land expropriation in the public interest, including cases where nil compensation may be deemed just and equitable, aiming to redress historical land inequalities. Assented to on 24 January 2025, the Act has not yet commenced but has already reignited intense debates over land reform, property rights, and economic stability. While the South African government insists that expropriation will be carried out responsibly to support land reform and economic growth, critics warn of potential risks to investor confidence, property rights, and food security.[169] Internationally, the Act has contributed to strained US-South Africa relations, with President Donald Trump cutting foreign aid to South Africa at the start of 2025, citing concerns over property rights and US business interests. The aid freeze has had tangible impacts, particularly on South Africa's healthcare sector, which has long relied on US funding for critical programs such as HIV treatment.[170] The broader implications of the Act will also intersect with South Africa's soil governance framework,

166 See https://www.sanews.gov.za/south-africa/over-83-000-land-claims-settled#:~:text=Agriculture%2C%20Land%20Reform%20and%20Rural,Programme%20in%201995%20to%202023., accessed 8 May 2024.

167 AfriForum, Land in South Africa: A Geospatial Perspective (2018: 30).

168 National Planning Commission, Our Future Make It Work: National Development Plan 2030 (2012: 140).

169 See https://www.sanews.gov.za/features-south-africa/sas-land-expropriation-act-constitutional, accessed 3 March 2025; https://agrisa.org.za/media-releases/private-property-is-the-cornerstone-of-agricultural-sustainability-and-food-security/, accessed 3 March 2025; https://mg.co.za/politics/2025-02-10-unconstitutional-and-procedurally-flawed-says-zille-in-expropriation-act-court-challenge/, accessed 3 March 2025.

170 See https://www.bbc.com/news/articles/c77887npl2mo, accessed 3 March 2025; https://www.aljazeera.com/news/2025/2/28/africa-hiv-deaths-to-mount-as-trump-stops-funding-heres-why, accessed 3 March 2025; https://www.unaids.org/en/resources/presscentre/featurestories/2025/february/20250225_south-africa-fs, accessed 3 March 2025.

as equitable land redistribution must be accompanied by strong policies to prevent degradation, promote sustainable land use, and ensure long-term soil health.

The Upgrading of Land Tenure Rights Act 112 of 1991 facilitates the conversion of certain land tenure rights, particularly within customary or informal systems, into full ownership. The Upgrading of Land Tenure Rights Amendment Act of 2021, which came into effect on 1 June 2024, introduces regulations governing the conversion of a land tenure right into an ownership right.[171] This amendment addresses a 2018 Constitutional Court ruling that found subsection 2(1) of the original statute violated women's rights.[172] The original statute operated under the assumption that a man headed any affected household, automatically holding any deed of grant or right of leasehold to be converted into ownership, thus, excluding women from these rights.

The Land Titles Adjustment Act 111 of 1993 resolves disputes and adjusts land titles where multiple parties claim ownership without registered deeds. The Land Administration Act 2 of 1995 delegates land administration to provinces, aiming for effective regional management. The Transformation of Certain Rural Areas Act 94 of 1998 transfers land to municipalities and legal entities, empowering them for local development.

The Spatial Planning and Land Use Management Act 16 of 2013 (SPLUMA) establishes a comprehensive framework for spatial planning and land use. It promotes inclusive, equitable, and efficient planning, addressing past imbalances and ensuring consistency in land use decisions. The establishment, functions, and operations of municipal planning tribunals are also defined, along with provisions for the facilitation and enforcement of land use and development measures. The legal framework for land issues in South Africa allows provinces and municipalities significant autonomy to customise land use planning policies and regulations to their unique circumstances. This includes laws such as Spatial Development Frameworks, regulations, and policies such as Integrated Development Plans, tailored to each province and municipality.

#### 3.3.2.3 Acquiring land under statutory law

##### 3.3.2.3.1 Acquiring land from the state

The South African government oversees various properties, including national parks, administrative buildings, and state-owned enterprises. The Department of Public Works and Infrastructure manages government immovable assets across all levels, ensuring their effective use to support operations and public services. State land can be

171 Upgrading of Land Tenure Rights Act (112/1991): Regulations relating to the Conversion of Land Tenure Rights GN R4886 in GG 50705 of 24-05-2024.

172 *Rahube v Rahube* 2019 2 SA 54 (CC).

transferred according to the Deeds Registries Act 47 of 1947 when it is no longer needed for its intended purpose.

Acquisition of state land is regulated by statutes such as the State Land Disposal Act 48 of 1961, which prohibits acquisition through prescription. The Distribution and Transfer of Certain State Land Act 119 of 1993 facilitates land redistribution to eligible beneficiaries. National parks land can only be leased or transferred with Parliament's consent under the National Parks Act 57 of 1976.

The Government Immovable Asset Management Act 19 of 2007 standardises immovable asset management. Municipal land sales are governed by the Local Government: Municipal Finance Management Act 56 of 2003 (MFMA), allowing sales if surplus to basic service needs. Acquisition methods include direct negotiation, public auction, tendering, and public/private partnerships under Section 120 of the MFMA.

#### 3.3.2.3.2 Acquiring the private land of an individual

In South Africa, private land transactions primarily involve the transfer of ownership or subdivision processes. The transfer of ownership begins with negotiation and agreement on terms, documented in an agreement of sale. A conveyancer manages the legal aspects, submitting transfer documents and obtaining necessary clearances. Once verified, the Deeds Registry office registers the transfer, making the buyer the new owner upon payment to the seller.

Subdivision divides larger land into smaller portions, subject to approval from the local authority. The landowner applies, and if approved, the land is divided into portions with individual title deeds. The SPLUMA certificate certifies compliance with relevant regulations. Agricultural land subdivision follows the Subdivision of Agricultural Land Act 70 of 1970 (SALA), requiring ministerial approval and meeting specified conditions. Both processes adhere to laws such as the Alienation of Land Act 68 of 1981 and municipal by-laws.

### 3.3.2.4 Traditional law

In South Africa, customary law has gained constitutional recognition as a fundamental legal source alongside legislation and common law.[173] It distinguishes between 'living' customary law, practised by the people, and 'official' customary law, established by the state through legislation and court interpretation.[174]

173 *Alexkor Ltd v Richtersveld Community* 2004 5 SA 460 (CC) para 51.

174 Customary law, as defined in Sec 1 of the Recognition of Customary Marriages Act 120 of 1998, encompasses the "customs and usages traditionally observed among the indigenous

Section 25(6) of the Constitution grants individuals or communities affected by past discriminatory laws the right, as determined by Parliament, to secure land tenure or receive compensation. Similarly, Section 25(7) ensures those dispossessed of property after 19 June 1913, due to discriminatory laws, the right to reclaim property or receive compensation. Subsection (8) permits legislative measures to address land reforms, subject to Section 36(1) conditions. Parliament is mandated to enact such legislation as per Section 25(9).

The Interim Protection of Informal Land Rights Act 31 of 1996 (IPILRA) aims to safeguard informal land rights, particularly in former homelands. It acknowledges rights such as occupancy, usage, or access to land previously held by entities such as the Native Trust. It also recognises beneficiaries under specific parliamentary trusts, such as the Ingonyama Trust. The IPILRA covers individuals living on the land since 1993 continuously and those with rights under the Upgrading of Land Tenure Rights Act. However, it excludes tenants, labour tenants, sharecroppers, and those with temporary permissions.

The Ingonyama Trust, covering about three million hectares (40%) in KwaZulu-Natal, was established in 1994 through an agreement between the former KwaZulu leader and the then-state President. Initially, the Zulu King was the sole trustee, but this proved impractical.[175] The KwaZulu-Natal Ingonyama Trust Amendment Act 9 of 1997 established the Trust Board, chaired by the King or his nominee, and exempted the Trust from private trust legislation.[176]

The KwaZulu Land Affairs Act 11 of 1992 governs land-related matters in KwaZulu-Natal. It addresses issues such as land tenure, allocation, and administration, particularly focusing on rural areas. This legislation plays a crucial role in regulating land rights and management within the province, including provisions for the issuance and revocation of PTOs and other forms of land tenure. A PTO grants the right to use rural, un-surveyed land.

The Communal Land Rights Act 11 of 2004 aimed to secure communal land ownership, including the significant Ingonyama land in KwaZulu-Natal, through either land transfer or compensation for historical injustices. However, it was declared unconstitutional by the Constitutional Court in 2010 and has not been replaced.[177] The Draft Communal Land Tenure Bill (2016) is the latest attempt to address communal land governance.

The Communal Land Tenure Policy (2014) seeks to reform communal land tenure to ensure land rights and production relations security for residents. It proposes

African peoples of South Africa", which are integral to the culture of those peoples; Moore & Himonga (2018: 61).

175 Lynd (2021).

176 See KwaZulu-Natal Ingonyama Trust Board Annual Report (2022/2023).

177 *Tongoane v National Minister for Agriculture and Land Affairs* 2010 6 SA 214 (CC).

institutionalised use rights administered by traditional councils or communal property institutions.

The Communal Property Associations Act 28 of 1996 (CPA Act) enables communities to form legal entities called Communal Property Associations (CPAs) to collectively acquire, hold, and manage property.

The White Paper on Traditional Leadership and Governance (2003) outlines the role of traditional leaders, emphasising their accountability to communities rather than to the government.[178] It guides land tenure reform policies in communal areas and defines the responsibilities of traditional councils, including community engagement for development planning, conveying community needs to government bodies, promoting indigenous knowledge systems, and participating in local policy development.

The Traditional Leadership and Governance Framework Act 41 of 2003 recognised traditional communities, established and recognised traditional councils, provided a statutory framework for leadership positions within traditional leadership, defined the functions and roles of traditional leaders, established houses of traditional leaders, and provided mechanisms for dispute resolution through the Commission on Traditional Leadership Disputes and Claims. It also established a code of conduct for traditional leaders. The Traditional and Khoi-San Leadership Act 3 of 2019, which replaced it, was deemed unconstitutional in 2023 due to the lack of community input during its drafting process.[179] Communities were dismayed because the legislation empowered traditional leaders to exert control over communal land, leading to abuses of power. Parliament has been tasked with drafting new legislation within a two-year period.

The Protection, Promotion, Development, and Management of Indigenous Knowledge Act 6 of 2019 safeguards, advances, nurtures and oversees indigenous knowledge. It outlines the roles of the National Indigenous Knowledge Systems Office, governs the rights of indigenous knowledge communities, defines the duties of the Advisory Panel on Indigenous Knowledge, regulates access to indigenous communities' knowledge, recognises prior learning, and facilitates innovation rooted in indigenous knowledge.

#### 3.3.2.5 Conflicts and means of conflict resolution

According to the most recent land audit, about 24.5% of land in South Africa is state-owned.[180] The majority, approximately 75.95%, is privately owned, with significant holdings by individuals, companies, and trusts.[181]

178 GN R 459 in GG 25438 of 10-09-2003.
179 *Mogale v Speaker of the National Assembly* 2023 6 SA 58 (CC).
180 Department of Rural Development and Land Reform, Land Audit Report (2017); AfriForum, Land in South Africa: A Geospatial Perspective (2018).
181 Ibid.

The challenges in communal areas arise from the interplay of population growth, unclear land use systems, and unregulated livestock ownership. The increasing population, particularly among young people, has heightened the demand for land to build homes. Communal land offers security and a sense of belonging, with many viewing urban migration as temporary while maintaining strong connections to their ancestral lands.[182] This land holds profound spiritual and cultural importance, especially for first-born males who feel a responsibility to preserve their family legacy.

At the same time, the lack of clarity in allocating grazing areas and cultivated fields often leads to conflicts between farmers and those seeking land for shelter. While these areas fall under municipal planning, customary law frequently governs land use, creating overlapping authority and potential disputes between municipal bodies and traditional chiefs.

Additionally, unrestricted livestock ownership exacerbates the problem of overgrazing, as the available land cannot support the growing number of animals. Chiefs, who are often tasked with mediating these issues, face significant challenges due to limited resources and insufficient training. These difficulties hinder their ability to plan settlements, designate agricultural fields, and establish sustainable grazing practices.

Grazing rights in South Africa involve a complex interplay of land ownership, legislation, and court rulings. While the landowner retains the ultimate authority to permit grazing on their property, the ESTA provides security of tenure to qualifying occupiers in rural and communal areas. A significant 2022 development in *Moladora Trust v Mereki* suggested ESTA rights might extend to grazing rights based on historical use with tacit consent.[183] However, the Supreme Court of Appeal clarified in 2024 its earlier rulings, including *Adendorff's Boerdery v Shabalala*, and *Loskop Landgoed Boerdery (Pty) Ltd v Petrus Moeleso*, that the right to graze livestock on another's land is not inherently derived from ESTA.[184] Instead, it is considered a personal right arising from consent or agreement between the occupier and the landowner or person in charge.[185] ESTA ensures the security of tenure in various contexts but specific grazing rights depend on mutual consent between the parties involved. Overgrazing happens when the number of livestock introduced into a field exceeds what the land can naturally support. This issue is often exacerbated by overstocking cattle in poorly managed agricultural practices, making it a primary cause of overgrazing.

The current state of land tenure in South Africa highlights a legislative gap, especially in rural areas where communities still face historical injustices. The lack of comprehensive legislation leaves these communities vulnerable, leading to land degradation.[186] Incorporating African indigenous land tenure into the formal registration

182 Sihlobo (2018).
183 2023 3 SA 209 (LCC).
184 2017 ZASCA 37 (29 March 2017); 2022 ZASCA 53 (12 April 2022).
185 2024 ZASCA 37 (3 April 2024).
186 Mani et al. (2021).

system poses a significant challenge due to the differences between ownership concepts.[187]

Municipalities are responsible for managing land use, from planning new developments to regulating existing ones, as directed by SPLUMA. Oversight of these tasks, including development application approval, falls under municipal planning tribunals established by SPLUMA. While the role of traditional authorities in these tribunals remains unclear despite their previous land management roles, Section 23(3) mandates their involvement in areas with traditional councils. SLUMA Regulations allow for service-level agreements between municipalities and traditional councils, defining agreed-upon functions.[188]

However, the situation is multifaceted. In cases such as *Baleni v Minister of Mineral Resources* and *Council for the Advancement of the South African Constitution v The Ingonyama Trust*, the courts highlighted the complexities of land ownership and management under customary law.[189] While residential and agricultural land is allocated to individuals, entities such as the Ingonyama Trust do not hold unrestricted rights over such land; it becomes family property, necessitating their involvement in decisions.[190] Under customary law, these rights are safeguarded and not easily revocable by traditional leaders, demanding land management practices that respect them. Traditional leaders often rely on natural landmarks for boundary demarcation, and land rights follow a social hierarchy, complicating management, especially in rural areas where both traditional authorities and local governments assert control. This dual system of land management, with traditional and local authorities involved, lacks uniformity across the country, contrary to SPLUMA's mandate for standardised spatial planning and land use management.

The power disparity between traditional leaders and councillors poses a challenge to local government's developmental focus.[191] Despite the urgent need for service delivery, municipalities and traditional authorities often struggle to reach a consensus. Since the country's independence, the relevance and importance of indigenous authority in South Africa have been hotly debated. Traditional leaders, according to critics, are remnants of colonial and apartheid systems and tools for indirect authority, making them incompatible with a contemporary democratic society. However, scholars in favour thereof argue that traditional leaders should be recognised as a special interest group that must be included in democratic governance. Furthermore, traditional leaders should be acknowledged as a special interest group deserving of consultation and active involvement in local administration, rather than being treated as ordinary citizens under a uniform democratic system.

187 du Plessis (2011).
188 Spatial Planning and Land Use Management Regulations: Land Use Management and General Matters, 2015 GN R 239 in GG 38594 of 23-03-2015 Reg 19.
189 2019 2 SA 453 (GP) para 10; 2021 8 BCLR 866 (KZP) para 80.
190 du Plessis (2023: 19-20).
191 Ramolobe (2023).

Resolving the complexities of traditional leadership requires clarifying their roles, powers, and functions, especially concerning land matters within communities. Without clear decision-making guidelines, traditional councils navigate compliance with customary law independently. A potential solution involves legislative mechanisms enabling communities to hold leaders accountable and ensuring transparent decision-making processes.[192] Clear guidelines should also be established if local governance functions are delegated to traditional leaders.

### 3.3.3 Public environmental law

#### 3.3.3.1 History of soil protection

South Africa has a history of soil conservation laws dating back to the early 20th century.[193] Initial steps were influenced by the Drought Investigation Commission reports (1922-1923) and the 1929 Soil Erosion Conference, emphasising the urgent need to conserve soil.[194] Early regulations addressed forest management, fencing, and loans for agricultural improvements, with the government providing extension services and loans tied to erosion prevention.[195]

In 1939, South Africa established the Division of Soil and Veld Conservation within the Department of Agriculture, leading to the Forest and Veld Conservation Act 13 of 1941, the country's first comprehensive anti-erosion law.[196] This Act enabled land expropriation for erosion control and created Conservation Areas. Efforts to curb soil erosion included field surveys, research on soil and vegetation, and public mobilisation through initiatives including the National Veld Trust.[197]

The Soil Conservation Act 45 of 1946 introduced a National Soil Conservation Board and local committees to enforce conservation. Programs such as the Grass Ley Crop Scheme and the Stock Reduction Scheme provided subsidies for soil conservation measures.[198] By the end of March 1971, 3,356 farmers participated in the latter scheme, covering an area of 11,681,000 hectares. In all these cases, the recovery of the veld was notable, with treated areas withstanding severe droughts much better and responding more rapidly to rain compared to the untreated veld. The Act was amended multiple times, ultimately leading to the creation of the National Division of Soil Protection in 1969.

192 du Plessis (2023: 19-20).
193 For the history, refer to Rabie (1974).
194 Beinart (1984: 58-60); Dodson (2004: 49); Union of South Africa, Final Report of the Drought Investigation Commission (1923: 12).
195 Beinart (1984: 60); Penzhorn (1972: 179); Dodson (2004: 50).
196 Ibid.: 51-52.
197 Penzhorn (1972: 179).
198 Baade et al. (2024: 343-344).

The Conservation of Agricultural Resources Act 43 of 1983 (CARA) replaced the Soil Conservation Act in 1983, initially applying only to white-owned agricultural land but later expanding to include former homeland areas.[199] Other laws, such as the Mountain Catchment Areas Act 63 of 1970, support soil conservation in sensitive areas by authorising government actions to control erosion and protect vegetation.

#### 3.3.3.2 Environmental law, relevant provisions concerning soils

The National Environmental Management Act 107 of 1998 (NEMA) has replaced the Environment Conservation Act 73 of 1989 (ECA) and, alongside CARA, serves as the primary legislation for soil conservation in South Africa. CARA remains the sole agricultural legislation governing natural resource use and protection of agricultural land (until the new statute is signed into law, as discussed further on). NEMA offers a comprehensive framework with precise guidelines and enforceable regulations for sustainable environmental management. It establishes principles of cooperative environmental governance and procedures for administering and enforcing environmental laws.

In Section 1, NEMA expansively defines the environment, covering land, water, atmosphere, microorganisms, plant and animal life, and their interrelationships. It includes their physical, chemical, aesthetic, and cultural properties that affect human health and well-being. Section 2 outlines principles for all state organs significantly affecting the environment. These principles, considered with other relevant factors, guide environmental management plans, state decision-making, conciliation recommendations, and the interpretation of NEMA and related laws.

Section 2 of NEMA emphasises prioritising people and their diverse needs, ensuring equitable consideration of their physical, psychological, developmental, cultural, and social interests. Development must be sustainable across social, environmental, and economic dimensions, with environmental justice ensuring fair distribution of impacts, especially among vulnerable groups. Equitable access to environmental resources is essential, with measures to address discrimination.

Moreover, Section 2(4)(o) establishes that the environment is held in the public trust, requiring its beneficial use to serve the public interest and safeguarding it as the shared heritage of the people.

Section 24 details principles and procedures for obtaining environmental authorisation to mitigate negative impacts and environmental degradation, addressing pollution or degradation by responsible parties. The EIA regime, governed by Chapter 5 of NEMA and its regulations, is pivotal in mitigating the environmental impacts of new

199 Ruppel et al. (2021: 470-471); Baade et al. (2024: 344); Falayi et al. (2022); For the history see Cooper (1996: 67 & 116); Seneque (1982); McAllister (1991: 116).

developments.[200] The EIA Regulations of 2014, amended in 2017, govern Basic Assessment (BA) and EIA processes. These regulations identify various activities requiring environmental authorisation, classified in three listing notices. Activities include clearing indigenous vegetation over specific areas, altering virgin soil for agricultural or afforestation purposes, extracting peat or peat soils, and clearing vegetation within critically endangered ecosystems or conservation areas.[201] These regulations ensure thorough identification and management of potential environmental impacts during development processes. Failure to obtain required authorisations is an offence under the NEMA (Section 49A), with penalties specified in Section 49B.

Chapter 3 of NEMA outlines procedures for cooperative governance, mandating national and provincial government departments to create and enforce environmental implementation and management plans for activities impacting the environment. These plans aim to coordinate environmental policies, programs, and decisions across departments to foster sustainable environmental practices.

#### 3.3.3.3 Nature conservation

##### 3.3.3.3.1 Water

The National Water Act 36 of 1998 (NWA) provides a framework for sustainable water management, aiming to balance development and ecological preservation. The national government, through the Minister of Water and Sanitation, acts as the public trustee to ensure equitable and sustainable water use. The Act manages water resources, defines rights and responsibilities, regulates licensing, and establishes managing institutions.[202] Landowners must prevent and remediate water pollution, with Catchment Management Agencies (CMAs) able to issue directives and recover costs for non-compliance.

CMAs, established under Chapter 7 of the NWA, manage water resources at the catchment level, overseeing planning, implementation, and management. Initially, 19 CMAs were planned, but only two were set up by 2000.[203] By 2024, plans were made

200 Environmental Impact Assessment Regulations GN R 982 in GG 3822 of 04-12-2014, amended by GN R 326 in GG 40772 of 07-04-2017.

201 Environmental Impact Assessment Regulations Listing Notice 1 GN R 983 in GG 38282 of 04-12-1014, amended by GN R 327 in GG 40772 of 07-04-2017; Environmental Impact Assessment Regulations Listing Notice 2 GN R 984 in GG 38282 of 04-12-2014, amended by GN R 325 in GG 40772 of 07-04-2017; Environmental Impact Assessment Regulations Listing Notice 3 GN R 985 in GG 38282 of 04-12-2014, amended by GN R 324 in GG 40772 of 07-04-2017.

202 See Regulations for the Establishment of a Water Resource Classification System GN R 810 in GG 33541 of 17-09-2010.

203 Munnik (2020: iii).

to create an additional six CMAs.[204] Agricultural and mining operations requiring water licenses must comply with regulations, as failure can lead to penalties under Section 151 of the Act.[205]

Although primarily focused on water, the NWA indirectly addresses soil concerns, particularly concerning irrigation. Soil suitability assessments are needed for irrigation licenses, and the Department of Water and Sanitation (DWS) works with soil scientists to develop relevant guidelines.[206] The Water Services Act 108 of 1997 also ensures equitable access to water services, with municipalities responsible for delivery and quality standards.

#### 3.3.3.3.2 Biodiversity

The National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA) focuses on environmental conservation and biodiversity management, aiming to protect species, ecosystems, and habitats of ecological significance. It promotes sustainable use of indigenous resources and fair benefit-sharing from bioprospecting. The Act establishes the South African National Biodiversity Institute for Research and Conservation and designates the state as a trustee of biodiversity. The Minister can publish a national list of threatened ecosystems and impose duties on landowners to control invasive species, with penalties for non-compliance.[207]

While not directly addressing soil, NEMBA's focus on ecosystem health supports soil fertility and conservation. The National Environmental Management: Protected Areas Act 57 of 2003 (NEMPAA) complements NEMBA by protecting ecologically significant areas including national parks and nature reserves, indirectly benefiting soil quality.[208] It regulates the extraction of soil from protected areas, with penalties for violations.

204 See https://www.sanews.gov.za/africa-south-africa/new-catchment-management-agencies-ensure-good-water-governance, accessed 3 August 2024.

205 Water Use Licence Application and Appeals Regulations GN R 267 in GG 40713 of 24-03-2017; Regulations on Use of Water for Mining and Related Activities Aimed at the Protection of Water Resources GN R 704 in GG 20119 of 04-06-1999.

206 Department of Water Affairs and Forestry, A Practical Field Procedure for Identification and Delineation of Wetlands and Riparian Areas (2005); Water Research Commission, Hydropedological Assessment Guidelines: Theory and Application in the Context of Wetland Management in South Africa (2023).

207 National List of Ecosystems Threatened and in Need of Protection GN R 1002 in GG 34809 of 09-12-2011; Alien and Invasive Species Regulations GN R 1020 in GG 43735 of 25-09-2020.

208 Department of Environmental Affairs, National Protected Areas Expansion Strategy for South Africa (2016).

#### 3.3.3.3.3 Forestry

The National Forests Act 84 of 1998 governs forest conservation and sustainable use, establishing the South African National Forests Advisory Council to advise the Minister.[209] It outlines management procedures for state forests, including activities such as plantation management and infrastructure.[210] Some state forests are designated to prevent soil erosion or sand drift (Section 2(b)(iv)).

The Act promotes sustainable forest management, emphasising the conservation of natural forests and woodland types, as well as preserving soil and water. The Minister determines conservation areas based on scientific advice.[211]

Challenges in enforcement include resource limitations, inadequate personnel, and lack of awareness among law enforcement.[212] Despite issuing thousands of licenses and conducting training, compliance remains a challenge, particularly in remote areas.

#### 3.3.3.3.4 Climate change

The key objectives of the Climate Change Act 22 of 2024 include facilitating a just transition to a climate-resilient, lower-carbon economy and society (Section 2). It mandates adaptation objectives in Section 16, integrated into national planning instruments. Section 17 outlines the development of adaptation scenarios, and Section 18 establishes a National Adaptation Strategy and Plan, to be created in consultation with relevant Ministers. Section 20 empowers the Minister of the Environment to compile data for the National Climate Change Response White Paper and publish a Synthesis Adaptation Report. Sections 23 and 24 require the publication of a list of specific GHGs, allocate carbon budgets to activity operators, and mandate the submission of mitigation plans. Section 27 empowers the Minister to formulate regulations for the Act's implementation, while Section 28 outlines consultation requirements.

While the Act may not explicitly focus on soil protection, it is relevant to soil health and resilience within the broader context of climate change adaptation and mitigation efforts.

209 Department of Agriculture, Forestry, and Fisheries, Forestry 2030 Roadmap: Forestry Strategy (2009-2030).
210 Regulations Under the National Forests Act GN R 466 in GG 32185 of 29-04-2009.
211 See Ministry of Water Affairs and Forestry, Sustainable Forest Development in South Africa: The Policy of the Government of National Unity White Paper (1997).
212 Department of Forestry, Fisheries, and the Environment (2018: 54-55).

#### 3.3.3.4 Waste

The National Environmental Management: Waste Act 59 of 2008 (NEMWA) focuses on waste management to protect the environment and promote sustainable development. It sets standards for land remediation and landfill waste disposal (Sections 7(2)(d) and 7(1)(c)) and outlines responsibilities, prohibitions, and penalties for non-compliance (Sections 16, 17, 21-22, 26, and 67-68).[213] NEMWA complements NEMA's duty of care provisions to prevent environmental harm. It also provides guidelines for hazardous waste classification and handling through South African National Standards (SANS) 10234.[214]

Exemptions from NEMWA include radioactive waste and residue regulated by the Hazardous Substances Act 15 of 1973; the National Nuclear Regulatory Act 47 of 1999 and the Nuclear Energy Act 46 of 1999; residue deposits and residue stockpiles regulated under the Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA); and the disposal of explosives regulated by the Explosives Act 15 of 2003. Waste management activities are classified as requiring different levels of oversight, from BA processes to ministerial norms.[215]

In 2020, South Africa generated 12.7 million tonnes of waste, with significant amounts being dumped illegally, posing challenges for municipalities.[216]

#### 3.3.3.5 Air pollution

Air pollution, caused by chemicals or compounds in the air at unsafe levels, leads to environmental issues such as acid rain and crop damage.[217] In South Africa, major pollution sources include industry, mining, vehicles, and biomass burning.

The National Environment Management: Air Quality Act 39 of 2004 (NEMAQA) mandates air quality monitoring, emission measurements, and annual reports (Chapter 2). Section 21 sets emission standards and requires licenses for activities with significant atmospheric emissions.[218] Sections 32-33 focus on dust control and mining

213 National Norms and Standards for Remediation of Contaminated Land and Soil Quality GN R 331 in GG 37603 of 02-05-2014; National Norms and Standards for Disposal of Waste to Landfill GN R 636 in GG 36784 of 23-08-2013; National Norms and Standards for the Assessment of Waste for Landfill Disposal GN R 635 in GG 36784 of 23-08-2013.

214 Waste Classification and Management Regulations GN R 634 in GG 36784 of 23-08-2013.

215 List of Waste Management Activities that Have, or are Likely to Have, a Detrimental Effect on the Environment GN R 718 in GG 32368 of 03-07-2009, amended by GN R 1094 in GG 41175 of 11-11-2017; National Norms and Standards for the Remediation of Contaminated Land and Soil Quality GN R 467 in GG 36447 of 10-05-2013.

216 UNEP, South African Municipal Waste Management Systems: Challenges and Solutions (2020: 5).

217 Tshehla & Wright (2019: 1).

218 See GN R 893 in GG 37054 of 22-11-2013, amended by GN R 421 in GG 43174 of 27-03-2020.

operations, while Sections 36-42 govern atmospheric emission licenses for municipalities.[219]

Despite these regulations, air quality management is poorly implemented, with many local authorities failing to integrate air quality management plans (AQMPs) into their development plans.[220] Regulatory authorities often neglect compliance oversight, root-cause analysis, and trend analysis.

### 3.3.4 Environmental monitoring

Environmental monitoring is crucial for managing and protecting soil, involving regular soil sampling to assess ecological health, evaluate hazardous impacts, ensure regulatory compliance, and support policymaking. In South Africa, environmental monitoring is guided by EIA Regulations under Chapter 5 of NEMA, which establish procedures for environmental authorisations.[221] Activities listed in Notices 1 and 3 follow a Basic Assessment (BA),[222] while those in Notice 2 require full Scoping and EIA processes.[223]

A BA Report (BAR) is required for smaller-scale activities with manageable impacts, involving public participation, impact assessment, and mitigation measures. For activities specified in Listing Notice 2, a comprehensive Scoping and Environmental Impact Report (EIR) is necessary. These activities pose higher risks due to their scale or nature and may lead to increased pollution and environmental degradation. The Scoping Report includes a detailed description of the proposed activity, an assessment of the affected environment, an identification of environmental issues, and a Plan of Study for the EIA, which includes a comprehensive soil study report. This report covers soil types, land capability, present land use, and rehabilitation considerations, following standard procedures outlined in the published soil classification system for South Africa.[224]

In 2014, South Africa introduced a unified system, requiring activities such as mining or waste management to undergo the EIA process under NEMA, overseen by the Minister of Environment or Mineral Resources and Energy. *The State v Stefan Frylinck* case highlights the importance of thorough EIA procedures; an overlooked wetland

219 See GN R 827 in GG 36974 of 01-11-2013.
220 Tshehla & Wright (2019: 2).
221 Environmental Impact Assessment Regulations GN R 982 in GG 3822 of 04-12-2014, amended by GN R 362 in GG 40772 of 07-04-2017.
222 Environmental Impact Assessment Regulations Listing Notice 1 GN R 983 in GG 38282 of 04-12-2014, amended by GN R 327 in GG 40772 of 07-04-2017; Environmental Impact Assessment Regulations Listing Notice 3 GN R 985 in GG 38282 of 04-12-2014, amended by GN R 324 in GG 40772 of 07-04-2017.
223 Environmental Impact Assessment Regulations Listing Notice 2 GN R 984 in GG 38282 of 04-12-2014, amended by GN R 325 in GG 40772 of 07-04-2017.
224 Soil Classification Working Group (1991).

during an EIA led to construction issues, underscoring the need for science-based soil studies.[225]

A 2018 study found 205 government soil scientists available to cover local municipalities, with more needed in the private sector and research to support soil assessment and management.[226]

#### 3.3.4.1 Execution of the law

Enforcement bodies can act under Chapters 5 and 7 of NEMA to address environmental non-compliance, imposing penalties and mandating corrective actions. Chapter 5, especially Section 23, mandates Integrated Environmental Management (IEM) to ensure decisions with significant environmental impacts align with principles in Section 2 of NEMA.

The Promotion of Administrative Justice Act 3 of 2000 (PAJA) promotes fair and transparent decision-making, requiring explanations for actions, hearing opportunities, and judicial review options for those affected by NEMA-related non-compliance. Access to information is crucial for resolving environmental conflicts; Sections 2(4)(k), 24(4), and 31 of NEMA support information accessibility, though challenges in obtaining data persist. After Section 31's partial repeal in 2009, access is now primarily governed by Section 2(4)(k) and supported by Section 24(4), which mandates public participation and transparency in environmental authorisations.

The Promotion of Access to Information Act 2 of 2000 (PAIA) provides additional channels for accessing environmental data. Open data initiatives are suggested to enhance public participation and accountability in environmental management.[227] Creating a dedicated open data framework for South Africa would require a political commitment to ensure transparency.

EIA regulations require consulting affected parties for EIA report approval, though communities report instances of limited public participation. Barriers to effective public engagement include time, funding, literacy, language, and presentation modes.[228] In some cases, companies consult only traditional leaders, risking bias. Addressing these challenges is essential to achieving inclusive soil protection.

225 Case no 14/1740/2010 of 11 April 2011 (North Gauteng Regional Court).
226 Rozanov & Wiese (2018: 34).
227 Adams & Adeleke (2016).
228 Maphanga et al. (2023).

#### 3.3.4.2 Enforcement issues

Environmental monitoring and enforcement in South Africa face challenges, including limited follow-up on EIAs and compliance monitoring.[229] Government agencies struggle to effectively implement legal mandates.

Enforcement falls under the authority of EMIs, known as the Green Scorpions, who require expertise in environmental law and compliance enforcement.[230] Established under NEMA, they consolidate efforts across various sectors into a unified compliance and enforcement framework.

In the 2022/2023 financial year, there was a significant increase in inspections conducted.[231] Most were related to illegal dumping, waste, water pollution, and poaching incidents. Conviction results also showed a positive trend, with an increase in successful convictions.[232] The total number of non-compliances identified during inspections rose from 4987 to 5421, and 4128 inspection reports were finalised.[233] However, there was a decrease in the overall number of EMIs nationally, with South Africa having 3215 EMIs (386 municipal and 2829 national and provincial).[234]

Additionally, the focus on government institutions and departments in inspections and directives raises questions about the effectiveness of internal environmental management systems and compliance with regulations within these entities.[235]

Per the 2023 report, 328 sites, which constitute 60% of operational landfill sites, have been inspected.[236] However, in three provinces–Eastern Cape, Northern Cape, and Free State–less than 50% of the landfill sites have been inspected. Additionally, most of the inspected sites were non-compliant with legislative requirements. Sand mining is prevalent in the Eastern Cape and KwaZulu-Natal, leading to considerable ecological harm to local ecosystems. Along the Wild Coast, there are more than 150 illegal sand mining sites.[237]

### 3.3.5 Cross-cutting issues

The EIA Regulations under Sections 24(2) and 24D of NEMA mandate EIAs for certain listed activities, requiring environmental authorisation. Section 24 specifies that

229 Chigwanhire (2021); Botha (2018); Nortje (2017); Dyers (2022).
230 See https://www.dffe.gov.za/environmental-management-inspectorate-emi-basic-training, accessed 8 May 2024.
231 Department of Forestry, Fisheries, and the Environment, National Environmental Compliance & Enforcement Report (2023: 4).
232 Ibid.: 5.
233 Ibid.: 4.
234 Ibid.: 8.
235 Ibid.: 61-62.
236 Ibid.: 61.
237 Ibid.: 74.

such activities, including coal-fired power stations, need approval from the Minister of the Environment. In *Earthlife Africa Johannesburg v Minister of Environmental Affairs*,[238] environmental authorisation for a power station was suspended pending climate impact review, underscoring the importance of aligning domestic decisions with climate goals.[239]

Environmental authorisation is complex, influenced by political factors and often leaning toward economic development.[240] Public participation, required by NEMA's EIA Regulations, is key to addressing public concerns. The *Fuel Retailers Association of Southern Africa v Director-General: Environmental Management, Department of Agriculture, Conservation and Environment, Mpumalanga Province* case highlights the role of public input.[241]

The National Appeal Regulations give a 20-day appeal period for environmental authorisations.[242] However, public participation is often limited, especially in marginalised communities that face resource constraints and power imbalances.[243] Customary land rights are frequently overlooked, with traditional leaders endorsing extractive projects for economic gain without genuine community involvement.[244] In Xolobeni, activists opposed a titanium mine supported by traditional leaders but resisted by locals, highlighting conflicts between traditional authority and community rights.[245]

The government emphasises poverty reduction through agricultural expansion, though economic growth often overshadows environmental concerns.[246] Integrating

238 2017 2 All SA 519 (GP).

239 Ruppel (2022b).

240 See https://www.dailymaverick.co.za/article/2023-06-16-deep-dives-into-the-underworld-our-dysfunctional-capital-city-and-the-karpowership-saga/, accessed 8 May 2024; https://www.iol.co.za/news/environment/wild-coast-seismic-survey-saga-shell-impact-africa-and-mantashe-seek-to-appeal-judgment-6cc34c88-dbee-4e10-a217-45c80a6caaca, accessed 8 May 2024; https://groundup.org.za/article/constitutional-court-rejects-coal-mining-companys-attempt-appeal/, accessed 8 May 2024.

241 2007 6 SA 4 (CC).

242 National Appeal Regulations GN R 993 in GG 38303 of 08-12-2014, amended by GN R 205 in GG 38559 of 12-03-2015.

243 See https://www.theafricareport.com/309464/south-africa-supreme-court-of-appeal-to-consider-eskom-richards-bay-gas-case/, accessed 8 May 2024; See https://www.dailymaverick.co.za/article/2023-12-05-first-isizulu-environmental-impact-assessment-guide-a-public-participation-game-changer-for-rural-communities/, accessed 8 May 2024; Maphanga et al. (2023). *Baleni v Regional Manager: Eastern Cape DMR* 2021 1 SA 110 (GP) confirmed that mining-affected communities can access information about mining projects affecting them. Specifically, it grants these communities or their representatives access to the content of mining rights applications concerning the land where they live and work.

244 Buthelezi & Yeni (2016); See https://news.mongabay.com/2023/08/community-members-decry-traditional-leaders-power-amid-south-african-mine-plans/, accessed 8 May 2024.

245 See https://amabhungane.org/xolobeni-the-mine-the-murder-and-the-dg/, accessed 8 May 2024.

246 Department of Environmental Affairs, South African National Carbon Sink Assessment: Review of Existing Policy Section Three (2015: 85-86).

sustainable practices with job creation is essential for resource protection, while a focus on food security risks soil depletion.

The Protection of Investment Act 22 of 2015 seeks to balance the interests of both the public and investors by ensuring compliance with South African laws, though it does not include specific environmental provisions. South Africa's taxation system, which is based on source-based income tax, and the Carbon Tax Act 15 of 2019, are key tools supporting the country's commitment to achieving net-zero emissions by 2050.[247] Foreign investments in renewable energy and sustainable agriculture have the potential to contribute significantly to improving soil health and promoting conservation efforts.[248]

### 3.3.6 Access to justice

Section 34 of the Constitution guarantees fair resolution of disputes about rights and violations by independent courts or dispute resolution bodies. This ensures access to justice and due process for individuals and organisations facing threats to their rights. Section 38 grants expansive rights to seek judicial recourse for constitutional violations, allowing individuals, representatives, groups, entities acting in the public interest, and associations to approach courts. These provisions empower diverse stakeholders to enforce environmental standards effectively.

Section 32 of NEMA provides broad legal standing for enforcing environmental laws. It allows individuals to act against direct violations, represent others unable to do so, advocate for affected groups, and challenge actions for broader societal benefit. This framework aims to safeguard and preserve the environment.

Despite these provisions, instances of non-compliance with environmental laws, leading to issues such as water contamination and questionable mining authorisations, persist. While legal standing is broad, the necessary tools are underutilised.[249] Environmental litigation faces challenges due to the complexity of scientific and legal issues, high costs, lengthy procedures, lack of awareness about environmental rights, and limited expertise among legal practitioners and potential plaintiffs. These factors, compounded by limited accessibility to courts in rural areas, contribute to the infrequency of environmental cases in South Africa and could also hinder future soil protection efforts.

247 See https://www.climatechangenews.com/2020/09/16/south-africa-aims-reach-net-zero-emissions-2050-still-burning-coal/#:~:text=The%20South%20African%20cabinet%20has,net%20zero%20economy%20by%202050%E2%80%9D., accessed 8 May 2024; South Africa's Low-Emission Development Strategy 2050 (2020).

248 Bathaei & Štreimikienė (2023); Majeed et al. (2023).

249 Kidd (2010).

The Hermanus Environmental Court, established in 2003, successfully prosecuted abalone poaching and other environmental crimes.[250] However, it was inexplicably closed in 2006. Potential reasons for its closure include political interference, insufficient funding, and a limited understanding of environmental law at the time. The increased prominence of environmental law since then suggests that specialised environmental courts or tribunals could effectively address critical issues such as soil protection. These entities would provide focused expertise and expedite complex environmental cases. By dedicating resources to such institutions, South Africa could enhance environmental law enforcement and protect vital natural resources.

## 3.4 Relevant departments and state institutions and their responsibilities

### 3.4.1 Department of Agriculture, Land Reform, and Rural Development

The DALRRD oversees policies and programs concerning agricultural practices, land use, and rural development, which impact soil management and protection. The Minister supervises entities such as the Agricultural Research Council (ARC), the National Agricultural Marketing Council, Onderstepoort Biological Products, the Perishable Products Export Control Board, and Ncera Farms.

As of July 2024, the DALRRD will be separated into distinct departments: one focusing on agriculture and another on land reform and rural development. Despite this restructuring, for clarity and ease of reference, the term DALRRD may still be used to encompass their previous combined responsibilities until fully transitioned.

### 3.4.2 Department of Environment, Forestry, and Fisheries

The DFFE is responsible for environmental protection, including soil and biodiversity conservation, and promoting sustainable land management practices.

### 3.4.3 Department of Water and Sanitation

The DWS plays a crucial role in managing South Africa's water resources. While its primary focus is on water resource management, the department also addresses soil erosion, sedimentation control, and water quality issues related to soil management practices.

250 Chohan (2013).

### 3.4.4 Department of Mineral Resources and Energy

The DMRE oversees mining activities in South Africa, regulating an industry that can profoundly affect soil quality and land rehabilitation post-mining.

As of July 2024, the DMRE will be split into two separate departments: one focusing on mineral and petroleum resources, and another on electricity and energy. Despite this restructuring, for ease of reference, the term DMRE may still be used to refer to their previous combined responsibilities until fully transitioned.

### 3.4.5 Department of Cooperative Governance and Traditional Affairs

The DCGTA oversees the coordination of cooperative governance and traditional leadership in South Africa.

### 3.4.6 Department of Higher Education, Science, and Innovation

The DHESI oversees higher education, scientific research, and technological advancements. As of July 2024, the Department will be split into two separate departments: one focusing on higher education and another on science, technology, and innovation.

### 3.4.7 Department of Trade, Industry, and Competition

The DTIC oversees policies related to commerce, industry, and competition, impacting economic growth and industrial development.

### 3.4.8 Department of Public Works and Infrastructure

The DPWI manages infrastructure projects involving soil-related activities such as land development and construction.

### 3.4.9 Department of Human Settlements

The DHS plans and implements housing policies, impacting soil management in urban development projects.

### 3.4.10 Council for Scientific and Industrial Research

The CSIR, under the Department of Higher Education, Science, and Innovation, drives scientific and technological innovation for socio-economic growth.[251] It conducts research across sectors, including agriculture and environmental science.

### 3.4.11 Agricultural Research Council

The ARC, under the DALRRD, conducts research, collaborates with partners, and fosters innovation to strengthen South Africa's agricultural sector.[252]

### 3.4.12 Council for Geoscience

The Council for Geoscience, under the DMRE, is a national science council with origins dating back to 1912.[253] Its mandate includes promoting research and providing specialised geoscientific services.

### 3.4.13 Soil Society of South Africa

The SSSSA provides a platform for soil scientists to share research and information.[254]

### 3.4.14 Non-governmental organisations

NGOs are crucial partners alongside governments, particularly where governments face limitations in fulfilling their mandates. In South Africa, there are 200,000 NGOs actively contributing to bridging gaps left by government shortcomings, thereby, helping to fulfil the social contract with citizens.[255] Their role remains pivotal in ensuring comprehensive service delivery and societal development, as well as supporting parties in litigations.

251 Scientific Research Council Act 46 of 1988.
252 Agricultural Research Act 86 of 1990.
253 Geoscience Act 100 of 1993.
254 See https://soils.org.za/, accessed 8 May 2024.
255 Tshiyoyo (2022).

## 3.5 Provincial and local levels

South Africa consists of nine provinces, encompassing forty-four districts, 205 local municipalities, and eight metropolitan municipalities. The eight metropolitan municipalities are as follows: Buffalo City (Eastern Cape); City of Cape Town (Western Cape); Ekurhuleni Metropolitan Municipality (Gauteng); City of eThekwini (Kwazulu-Natal); City of Johannesburg (Gauteng); Mangaung Municipality (Free State); Nelson Mandela Metropolitan Municipality (Eastern Cape); and the City of Tshwane (Gauteng).

Besides national public environmental law, the primary regulatory instruments for environmental conservation in the respective regions are the provincial conservation ordinances/acts:

The Transvaal Nature Conservation Ordinance 12 of 1983 is implemented in the Gauteng, Limpopo, North West, and Mpumalanga provinces. Supplemented by the Gauteng Draft Nature Conservation Bill of 2014; Limpopo Environmental Management Act 7 of 2003; Gazankulu Nature Conservation Act, 5 of 1975; Venda Nature Conservation Act 10 of 1973; Mpumalanga Nature Conservation Act 10 of 1998; and the North West Biodiversity Management Act 4 of 2016.

The Nature and Environmental Conservation Ordinance 19 of 1974 (Cape Ordinance): Implemented in the Western Cape, Eastern Cape, Northern Cape, and North West provinces. Augmented by: Western Cape Biodiversity Act 6 of 2021 (not yet fully in force); Northern Cape Nature Conservation Act 9 of 2009; Draft Eastern Cape Environmental Management Bill of 2019; Nature Conservation Act 10 of 1987 (Ciskei); and the Environmental Conservation Decree 9 of 1992 (Transkei).

The Natal Nature Conservation Ordinance 15 of 1974 was implemented in the KwaZulu-Natal province and supplemented by: the KwaZulu-Natal Nature Conservation Management Act 9 of 1997 and the KwaZulu-Natal Nature Conservation Act 8 of 1975.

The Free State Nature Conservation Ordinance 8 of 1969 was implemented in the Free State province and supplemented by the Boputhatswana Nature Conservation Act 3 of 1973 and the QwaQwa Nature Conservation Act 5 of 1976.

These laws govern activities affecting the environment and wildlife, promoting collaboration among government bodies to meet environmental responsibilities. While they do not specifically address soil conservation, they cover offenses related to wildlife, land trespassing, and specimen possession. Additionally, they regulate hunting practices, conservation measures, wildlife management, delegation of responsibilities, appeals procedures, and the establishment of recreational sites.

Additionally, municipal by-laws cover topics ranging from air quality to land use planning, contributing to comprehensive environmental regulation.

### 3.6 Conclusion

In South Africa, arable land comprises only 11-15% of the total land area, with about a quarter classified as high potential.[256] Soil degradation is a significant issue driven by natural and human factors, including agricultural practices, deforestation, mining, urbanisation, invasive species, water scarcity, and climate variability. These factors, combined with socio-economic dynamics, exacerbate soil erosion, nutrient depletion, and salinisation, threatening agricultural productivity and ecosystem resilience.

National policies, legislation, and institutional frameworks guide soil management and conservation in South Africa, aligning with global commitments. Tailored approaches are needed for both commercial and small-scale farming sectors to ensure sustainable land use and agricultural productivity. Collaborative efforts involving government, research institutions, civil society, communities, and stakeholders are essential to address soil degradation effectively. Integrated approaches focusing on soil conservation, sustainable land use, and ecosystem resilience promote social equity, economic development, and environmental sustainability. Investing in soil protection, restoration, and rehabilitation is crucial for securing soil resources, ensuring food security, and sustainable national development.

## 4 Legislation on main drivers of soil degradation: Strengths and weaknesses

### 4.1 Agriculture

#### 4.1.1 Relevant legal provisions

##### 4.1.1.1 Subdivision of Agricultural Land Act 70 of 1970

SPLUMA provides some protection to agricultural land, even extending to areas under traditional authorities' control. It prioritises spatial sustainability, emphasising the safeguarding and sustainable use of prime agricultural land (Section 7(b)). SPLUMA repealed several parallel planning legislations upon enactment but did not revoke SALA. This leads to conflicts between SPLUMA's requirement for comprehensive land use schemes and SALA's prohibition on imposing such schemes on agricultural land (Section 24(2)(a)).[257]

SALA defines agricultural land under Section 1 as all land in South Africa, with certain exclusions such as land under local councils or boards, townships, state-owned land, or land excluded by the Minister. It aims to prevent the fragmentation of

256 FAO, Status of the World's Soil Resources (2015: 266).
257 Barichievy (2022: 13).

agricultural land by regulating its subdivision, thereby, promoting efficient land use and enhancing agricultural productivity.

The SALA Repeal Act 64 of 1998 received assent on 16 September 1998, but a commencement date has not been established. Consequently, the Preservation and Development of Agricultural Land Act (discussed further on) has been introduced to address this issue.

#### 4.1.1.2 Conservation of Agricultural Resources Act 43 of 1983

Defined in Section 1, "natural agricultural resources" encompass soil, water sources, and vegetation, excluding weeds and invasive plants. CARA is designed to address erosion, protect water sources, preserve vegetation, and manage invasive plants through a range of measures outlined in Section 3.[258]

Section 2 of CARA outlines its scope across various types of land and areas. Subsection (1) specifies exceptions, urban areas, land vested in the Native Trust, and land designated as mountain catchment areas under the Mountain Catchment Areas Act. However, subsection (2) expands CARA's coverage by applying provisions regarding weeds and invader plants to urban areas. It also clarifies that veld burning regulations do not encompass private forests defined by the Forest Act, subject to specific conditions. Subsection (3) grants the Minister authority to designate plants as weeds or invader plants through regulations, enabling adaptive responses to ecological changes or emerging threats from invasive species.

Specific regulations govern the cultivation of virgin soil, land utilisation, and irrigation (Section 6). Virgin soil, defined as uncultivated or inactive for ten consecutive years, requires official approval for cultivation, which entails a review process, including soil observation pit assessments. Restrictions on cultivation extend to maximum permissible slopes, typically ranging from 12% to 20%, contingent on locality and soil properties.[259]

CARA facilitates financial assistance schemes for land users affected by natural disasters (Sections 8-9), prohibiting soil degradation and mandating erosion mitigation measures (Section 12).[260] It mandates the establishment of local and Regional Conservation Committees (Sections 15-16), with members appointed by the Minister. CARA also creates a Conservation Advisory Board (Section 17) to secure support from the farming community and Organised Agriculture. Additionally, the executive officer is

258 Conservation of Agricultural Resources Act Regulations GN R 1048 in GG 9238 of 25-05-1984, amended by GN R 280 in GG 22166 of 30-03-2001.

259 Ibid.: Regulation 3.

260 Weed Control Scheme GN R 1044 in GG 9238 of 25-05-1984; Flood Relief Scheme for Flood Disaster Areas GN R 47 in GG 11097 of 15-01-1988; Irrigation Improvement Scheme: Establishment GN R 1487 in GG 16686 of 29-09-1995; Soil Conservation Scheme: Establishment GN R 1047 in GG 9238 of 25-05-1984.

empowered to issue directives to non-compliant landowners, with penalties including fines and/or imprisonment (Sections 7 and 23).

Section 29 of CARA introduced the Regulations: Declared Weeds and Invader Plants in 1984, focusing on soil protection, erosion prevention, and weed management.[261] These regulations address cultivating land, especially on slopes (Regulation 3), protecting cultivated land from erosion (Regulations 4-5), preventing waterlogging and salination of irrigated land (Regulation 6), and managing grazing on veld (Regulations 9-11). They also cover preventing wildfires (Regulation 12), restoring eroded land (Regulations 13-14), combating declared weeds and invader plants (Regulation 15), and designating biological control reserves (Regulation 15D).

After 1994, many sections of CARA became inactive, and funding for soil Conservation Committees ceased, although some committees remain semi-active through farmers' initiatives.[262]

#### 4.1.1.3 White Paper on Agriculture 1995

The White Paper on Agriculture (1995) underscores sustainable agriculture's importance, defining it as a system balancing productivity with environmental conservation. It highlights shared responsibility between national and provincial governments in agriculture policy and resource stewardship. Fragile soils and erosion are acknowledged, with government support pledged for rehabilitation and responsible land management. Soil moisture and rainfall variability are noted as critical factors in land suitability. Secure land tenure is deemed essential for long-term investment and sustainability. Environmental damage concerns from incorrect practices and invasive species are addressed, with laws to protect biodiversity promised. The Paper also advocates for nationwide data systems, integrating provincial and national databases, to monitor food security and establish an Early Warning System for Food and Water Security, aiding planning and disaster response.

#### 4.1.1.4 Preservation and Development of Agricultural Land Act 39 of 2024

The Preservation and Development of Agricultural Land Act 39 of 2024 (PDAL), signed into law in January 2025, introduces a comprehensive framework for regulating agricultural land management in South Africa. The Act implements progressive measures to promote agricultural development while ensuring the preservation of valuable farmland.

261 Declared Weeds and Invader Plants Regulations GN R 1048 in GG 9238 of 25-05-1984, amended by GN R 280 in GG 22166 of 30-03-2001.

262 Baade et al. (2024: 344-345).

Key provisions include the establishment of evaluation and classification systems to assess agricultural land capability, suitability, potential, and use at national, provincial, and local levels. This initiative aims to support sustainable agricultural development and conservation. Additionally, agricultural areas will be spatially delineated based on shared characteristics such as capability, suitability, potential, use, and location (Section 5 and Chapter 5).

The Act mandates the Minister to prescribe criteria for provincial agricultural sector plans, ensuring that they are science-based, promote sustainable agriculture, enhance food security, preserve agricultural land, foster synergy between provincial plans, and are developed through a participatory process (Chapter 2, Part 3). These provincial plans will coordinate and harmonise agricultural land-use policies, plans, and decisions across government entities, reducing duplication and ensuring consistency in governance.

To further safeguard agricultural land, the Minister may declare specific geographic areas as nationally protected agricultural areas via notice in the Government Gazette and other media. Such areas will be designated to protect high-value agricultural land that supports high-yield and sustainable production, including land with above-moderate capability and potential, unique agricultural land, and irrigated farmland (Chapter 2, Part 4).

The Act enhances governance and enforcement by allowing the Minister to establish an Advisory Appeal Panel for appeals related to agro-ecosystem authorisations (Chapter 6, Part 1). It also empowers authorities to appoint inspectors for compliance inspections and issue directives for corrective action when violations are found or anticipated. Failure to comply may result in direct intervention, cost recovery, or legal action, ensuring effective land protection (Chapter 6, Part 2).

Under Section 4(1), the Act establishes core principles for agricultural land management, focusing on agro-ecosystem productivity, stability, resilience, viability, and equity. These principles will guide agro-ecosystem authorisations, the setting of norms and standards, the development of provincial agricultural plans, and the declaration of protected agricultural areas.

The Act also strengthens the DALRRD by ensuring that provincial governments provide the necessary resources and comply with prescribed norms and standards, while local governments align their policies to support the Department's mandate.

Finally, the Act addresses deficiencies in SALA, which has historically been administered solely by the DALRRD, failing to uphold constitutional principles of cooperative governance by excluding provincial and local governments.[263] Moreover, SALA's applicability is limited to privately owned agricultural land, limiting its applicability to state-owned and communal agricultural land. The new Act seeks to rectify these gaps, ensuring a more inclusive and sustainable approach to agricultural

263 Olivier (2024).

land governance. However, while the PDAL Act provides a foundational framework for protecting agricultural land, it does not address the specific requirements for soil management and restoration.[264] This gap highlights the need for dedicated soil legislation to ensure the long-term health and productivity of South Africa's soils.

#### 4.1.1.5 Additional complementary statutes

The Fertilisers, Farms Feeds, Agricultural Remedies, and Stock Remedies Act 36 of 1947 regulates the registration and control of agricultural products and services such as fertilisers, farm feeds, and remedies for agricultural and stock use. Misuse of these substances can lead to pollution and health issues, making the Act's standards and regulations vital for environmental and public health protection. Sections 2, 3, and 7(1) outline that only individuals registered under the Act are authorised to sell fertilisers, farm feed, agricultural or stock remedies. Additionally, the Minister is mandated to appoint a registrar within the Department responsible for registering pest control operators and pesticides. Section 23 grants extensive regulatory powers to the Minister concerning fertilisers, farm feeds, and agricultural and stock remedies. This includes the authority to establish regulations covering various aspects related to these products. Moreover, any application for registering a remedy, including pesticides, must be submitted to the registrar before it can be sold. The registrar is required to evaluate applications based on specific criteria outlined in the Act before granting registration.

There is a pressing need to modernise the Act to incorporate new technological advancements and prioritise sustainability. The current administrative system is plagued by delays and significant backlogs in processing applications.[265]

The Agricultural Pests Act 36 of 1983 aims to prevent the introduction and spread of pests in South Africa by regulating the importation of controlled goods. It protects agricultural production from the negative impacts of pest infestations and diseases, with implications for environmental conservation and economic stability.

The Genetically Modified Organisms Act 15 of 1997 promotes responsible development, production, and use of genetically modified organisms (GMOs) in South Africa. It addresses environmental, economic, and social concerns associated with GMOs, aiming to ensure their safe introduction and minimise negative environmental impacts.

264 Ibid.
265 Sihlobo (2023).

### 4.1.2 Enforcement issues

CARA and its accompanying regulations provide substantial protection for agricultural resources, but their effectiveness relies on implementation and enforcement. Unfortunately, operational Conservation Committees and Resource Auditors are scarce, resulting in infrequent penalties for non-compliance.[266] CARA is one of the most neglected statutes, facing strategic planning and enforcement challenges.[267] Policies to improve agricultural practices often originate from the DALRRD rather than the DFFE. The DALRRD focuses primarily on land reform and food security, with environmental concerns often sidelined.[268] Enhanced collaboration between departments is necessary to address environmental concerns within agriculture, including improved reporting and enforcement measures within DALRRD. Consequently, compliance with agricultural laws, particularly those protecting soil, faces challenges such as limited resources and competing priorities.[269]

Under NEMA, EMIs are authorised to investigate various offences related to environmental regulations. However, the National Environmental Compliance and Enforcement Report (NECER), published annually by DFFE, primarily focuses on the activities of environmental authorities such as the DWS, offering limited insight into compliance and enforcement efforts in other sectors such as agriculture. While the NECER mentions criminal arrests made in collaboration with DALRRD, it lacks specific details. Additionally, DALRRD's annual reports do not include information on enforcement activities.

The *Eloff Landgoed (Pty) Ltd v Minister of Forestry, Fisheries, and the Environment* case highlights the complexities of environmental decision-making, particularly regarding the interaction between mining activities and agricultural resources.[270] Despite concerns raised during the EIA process, DFFE granted environmental authorisation and a mining right to Eloff Mining Company. The court ruled against the granted mining right, emphasising the importance of comprehensive agronomic assessments in understanding the impact of mining on surrounding farmland. This case underscores the need for robust EIAs and thorough consideration of agricultural impacts in environmental decision-making to protect soil health and local communities.

While existing legislation such as CARA provides a framework for environmental protection, ongoing efforts are necessary to strengthen the legal framework and ensure effective implementation. Transparent reporting of enforcement measures by DALRRD is crucial for accountability and effective enforcement of environmental

266 Barichievy (2022: 11).
267 Department of Environmental Affairs, South African National Carbon Sink Assessment: Review of Existing Policy Section Three (2015: 99).
268 See Department of Agriculture, Land Reform, and Rural Development, Annual Performance Plan (2022/2023).
269 Tsheko (2020).
270 2023 ZAGPPHC 434 (19 June 2023).

regulations. Currently, challenges in accessing scattered policies and documents hinder efforts to promote sustainable agricultural practices effectively.[271]

### 4.1.3 Monitoring

The ARC's mission revolves around conducting research, forming partnerships, nurturing talent, and fostering innovation in the agricultural sector to promote sustainability, aligning with the objectives of the Agriculture and Agro-Processing Master Plan (2020) led by the DALRRD. By providing scientific solutions, the ARC contributes to growth, transformation, employment generation, and other developmental challenges in the agri-food environment.[272]

While the DALRRD and DFFE oversee compliance, the ARC assists with scientific monitoring in South Africa. However, the absence of a national soil database poses a challenge, as soil data is scattered, outdated, and not readily accessible.[273] Currently, only the DALRRD and the ARC have access to this data, and there is no communication between the two.

## 4.2 Mining

To manage the environmental and social impacts of mining effectively, South Africa has established a robust framework of laws and regulations. These include the NEMA, the NWA, the NEMAQA, and the MPRDA, which govern various aspects of mining operations such as EIAs, water usage, air quality management, and rehabilitation.

### 4.2.1 Relevant legal provisions

The MPRDA prioritises the sustainable development of mineral and petroleum resources to promote economic and social progress (Section 2), granting the state, through the DMRE, control over these resources (Section 3). Environmental authorisation is mandatory for all mining and petroleum operations (Section 5A(a)), with Chapter 6 detailing the processes for obtaining exploration and production rights, as well as permits. Sections 70-71 empower the Minister to manage application reviews and evaluate environmental reports.

Applications for exploration and production rights must include consultation outcomes and comply with NEMA guidelines (Chapter 5). Environmental authorisation

271 Khwidzhili & Worth (2017).
272 See ARC, Annual Performance Plan (2023/2024); ARC, Annual Report (2022/2023).
273 van der Westhuizen (2024).

must be granted by the Minister before rights are issued (Section 80(1)(c)). Renewal of rights requires evidence of compliance with authorisation conditions (Section 81(2)(c)), and rights holders must meet Environmental Management Plan (EMP) standards (Section 82(2)(d)).

Section 43 mandates closure certificates for operations, holding rights holders responsible for environmental obligations until certification confirms adherence to health, safety, and pollution management standards. The Minister can intervene in activities causing environmental harm (Section 46) and suspend or revoke rights for non-compliance (Section 47).

Rights holders must submit operational reports (Section 88), while Sections 91-92 provide authorities with inspection powers. Sections 98-99 establish penalties for non-compliance, ensuring accountability under the Act.

The One Environmental System (OES) introduced in 2014 aims to integrate planning and enforcement between DFFE, DWS, and DMRE. DFFE establishes the regulatory framework, while the DMRE implements it. Mining companies must now submit an EMP to the DMRE for environmental authorisation under NEMA Section 24C(2A) and 24N. OES mandates consultation with stakeholders, EIAs, and EMP submissions.[274]

Financial provisioning under the MPRDA has been replaced by NEMA Section 24P, requiring mining rights holders to ensure adequate funds for rehabilitating environmental impacts. This covers various aspects such as pollution treatment and closure of operations. In 2015, the Regulations for Financial Provision for Mining were introduced, which the DMRE implements while DFFE oversees.[275] This Regulation mandates three plans per mine/permit: rehabilitation, final rehabilitation, decommissioning, and closure, along with an environmental risk assessment. These plans require financial provision, which can be fulfilled through a guarantee, deposit, or contribution to a trust fund. An independent expert must compile, review, and assess these reports to ensure adequate environmental rehabilitation and remediation funds.

### 4.2.2 Monitoring

Mining activities directly impact soil quality, making strong enforcement of environmental laws crucial to prevent degradation.[276] In 2016, the Centre for Environmental Rights (CER) exposed the lack of oversight by mining and water authorities in

274 Amendments to the Mineral and Petroleum Resources Development Regulations for Implementation GN R 420 in GG 43172 of 27-03-2020 Part III; Regulations for Petroleum Exploration and Production GN R 466 in GG 38855 of 03-06-2015 Chap 7.
275 Financial Provisioning Regulations GN R 1147 in GG 39425 of 20-11-2015.
276 Laker (2023).

Mpumalanga, where 239 active and 788 abandoned mines exist.[277] Regulatory bodies had minimal staff, with only five officials monitoring compliance at the DMRE and two overseeing water management at the DWS.

This lack of enforcement extends across South Africa. The SAHRC raised concerns about nationwide mining compliance and monitoring, noting municipalities' exclusion from mining license processes, leaving them unaware of potential local impacts.[278] The *Maccsand (Pty) Ltd v City of Cape Town* case highlighted the tension between local and national governments over mining regulation, reinforcing the need for respect of both levels of authority in municipal planning.[279] The SAHRC also reported mining starting before land use agreements are in place and inadequate protection for strategic environmental areas.[280] Mining continues in protected zones, posing environmental risks.[281]

Post-closure planning for derelict and ownerless mines is also problematic, with unclear restoration plans and inconsistent rehabilitation costs.[282] The DMRE has initiated a rehabilitation program for Derelict and Ownerless Mines, with around 6,000 mines currently undergoing continuous rehabilitation.[283] To date, only 0.7% of them have been rehabilitated.[284]

Soil contamination near gold mine tailings has led to dangerous levels of heavy metals in school gardens and residential areas, posing health risks.[285] For example, high soil lead levels were linked to increased blood lead levels in children in Johannesburg.[286]

Practical challenges in implementing OES include pending regulatory amendments, capacity issues within the DMRE, and disputes over departmental responsibilities.[287] The *Mineral Sands Resources (Pty) Ltd v Magistrate for the District of Vredendal, Kroutz NO* case highlighted confusion over jurisdiction between the DMRE and

277 CER, Zero Hour: Poor Governance of Mining and the Violation of Environmental Rights in Mpumalanga (2016).
278 SAHRC, National Hearing on the Underlying Socio-economic Challenges of Mining-affected Communities in South Africa (2016).
279 2012 4 SA 181 (CC).
280 SAHRC, National Hearing on the Underlying Socio-economic Challenges of Mining-affected Communities in South Africa (2016: 14-15 & 23).
281 See Blackmore (2022).
282 SAHRC, National Hearing on the Underlying Socio-economic Challenges of Mining-affected Communities in South Africa (2016: 26).
283 Ibid.: 28.
284 See https://law.uct.ac.za/mineral-law/articles/2022-11-10-rehabilitation-and-closure-mines-failure-protection-human-rights, accessed 8 May 2024; https://www.dailymaverick.co.za/article/2022-06-08-6000-health-and-environmental-time-bombs-still-to-be-defused-govt-decades-behind-schedule/, accessed 8 May 2024.
285 Kootbodien et al. (2012).
286 Mathee et al. (2018).
287 SAHRC, National Hearing on the Underlying Socio-economic Challenges of Mining-affected Communities in South Africa (2016: 44).

DFFE.[288] Despite both departments conducting compliance inspections at the Tormin Mine, legal disputes arose over jurisdiction for environmental monitoring and enforcement. The court invalidated the warrant issued to DFFE for inspecting the mine due to procedural irregularities, sidestepping the broader issue of jurisdiction.

### 4.2.3 The role of foreign investors

Foreign investors are key players in South Africa's mining sector, bringing capital, technology, and expertise. While South Africa boasts robust mining legislation, implementation challenges persist due to corruption and mismanagement.[289] The DMRE's Exploration Implementation Plan, released in 2022, aims to increase exploration activity to boost the sector's contribution to the GDP, aligning with national economic objectives.[290]

In contrast, the issue of foreign investment in South Africa's agricultural sector has been less pressing. While global land grabbing involves significant foreign acquisition of arable land across Africa, foreign ownership in South Africa amounts to a mere 2% of total farms and agricultural holdings.[291] Despite this, the government attempted to address land distribution and ownership issues through the Regulation of Land Holdings Bill of 2017. This Bill aimed to ensure equitable land distribution to rectify colonial and apartheid legacies, set a land ownership ceiling of 12,000 hectares, restrict foreign ownership to long-term leases, establish a public register of land holdings, and create the Office of the Land Commission to manage this register. However, due to changing political priorities favouring economic growth, the Bill was scrapped in 2023, shifting the focus back to encouraging foreign investment.[292]

### 4.2.4 What is more?

The National Norms and Standards for the Remediation of Contaminated Land in South Africa provide guidelines for managing polluted sites, but inconsistencies in contamination thresholds, particularly for copper and manganese, can lead to natural soils being wrongly classified as polluted.[293] This imposes remediation costs on

288 2017 2 All SA 599 (WCC).
289 Corruption Watch, Research Report on Mining for Sustainable Development (2017).
290 GN R 2026 in GG 46246 of 14-04-2022; South African Economic Reconstruction and Recovery Plan (2020).
291 Department of Rural Development and Land Reform, Land Audit Report (2017: 2).
292 See https://www.iol.co.za/mercury/news/bill-on-land-ownership-by-foreigners-mooted-5ef66baf-6d70-46f8-a433-9963ae37ac48, accessed 3 August 2024.
293 GN R 331 in GG 37603 of 02-05-2014; Pienaar-Blaauw, 2024, *Soil Governance in South Africa and Beyond*. DROP Workshop.

landowners and developers. Challenges also arise in analysing sulphate levels, as the threshold may not reflect true salt pollution, and commercial labs lack standardised methods. South Africa processes 400,000 to 600,000 soil samples annually across 60 labs.[294]

The MPRDA's definition of topsoil may not fully reflect soil complexities, as it only considers the upper layer for seed germination and water penetration, overlooking variations in soil properties during mining.[295] The Land Rehabilitation Guidelines for Surface Coal Mines (2019) recommend salvaging usable soil, but the 60 cm salvage depth may not meet restoration needs. Stockpiles, while intended to maintain biological activity, are often higher than recommended.

Oversimplified land classifications, such as those in the Chamber of Mines Guidelines, categorise land by soil depth, but international standards consider additional factors including climate and topography, leading to potential misuse of land and further soil degradation.[296] These issues highlight the need for standardised soil management practices and comprehensive rehabilitation guidelines to ensure soil preservation and environmental stability.

### 4.3 Industrial development

Industrialisation involves shifting from agrarian to manufacturing economies, driving employment and global market presence. The South African Economic Reconstruction and Recovery Plan (2020) addresses economic challenges heightened by COVID-19 and structural issues. Environmental considerations are central, with investments in climate-resilient infrastructure, a shift toward a green economy, and efforts to conserve natural resources and biodiversity, aligning with SDGs.

The Industrial Development Act 22 of 1940 establishes industrial development corporations to promote industrialisation and provide financial assistance. The Broad-Based Black Economic Empowerment Act 53 of 2003 advances economic transformation. The Special Economic Zones (SEZs) Act 16 of 2014 governs SEZs, which aim to attract foreign investment, promote exports, and generate employment through incentives and streamlined regulations.

However, South Africa lacks specific legislation solely for regulating the industrial sector, relying instead on various laws and regulations governing other sectors.

294 Rozanov & Wiese (2018: 27).

295 GN R 331 in GG 37603 of 02-05-2014; Pienaar-Blaauw, 2024, *Soil Governance in South Africa and Beyond*. DROP Workshop; Feng et al. (2019).

296 Namugize (2017: 64); Rethman (2006: 6-7); Chamber of Mines of South Africa, Guidelines for the Rehabilitation of Mined Land (2007: Appendix 3); Pienaar-Blaauw, 2024, *Soil Governance in South Africa and Beyond*. DROP Workshop; Barichievy (2022).

Compliance with NEMWA is essential to ensure proper management and disposal of hazardous waste, preventing environmental harm.[297]

### 4.4 Demographic growth, urban sprawl, and land-planning regulatory frameworks

Urban population growth accelerates environmental degradation, including soil erosion, as human activities intensify. In South Africa, 60% of the population lives in urban areas, a number expected to rise to 70% by 2030.[298] This rapid urbanisation leads to the conversion of forests and wetlands into residential, industrial, and agricultural zones, stressing ecosystems and increasing soil vulnerability.

In the *Philippi Horticultural Area Food & Farming Campaign v MEC for Local Government, Environmental Affairs and Development Planning: Western Cape* case, the Phillippi Horticultural Area Food and Farming Campaign (PHA Campaign) challenged urban development plans in Cape Town, citing concerns over an aquifer crucial for irrigation.[299] The court ruled for reconsideration, emphasising the need for updated studies on water and climate impact.[300]

Urban planning laws such as SPLUMA and the NDP guide municipalities to develop Spatial Development Frameworks (SDFs) for sustainable growth.[301] Local governments are empowered to enact by-laws and regulations on land use and development, with a focus on safeguarding soil and environmental resources. Provincial Spatial Development Frameworks (PSDFs) align provincial priorities with national and municipal plans.

Despite progress, funding constraints and a lack of proactive government involvement hinder effective urban planning, which often favours physical design over addressing socio-economic factors.[302] The River Club development in Cape Town exemplifies the tension between development, heritage, and community rights, highlighting the influence of private developers and the complexities of balancing environmental and societal concerns.[303]

297 See National Waste Management Strategy (2020).
298 National Planning Commission, Our Future Make It Work: National Development Plan 2030 (2012: 29).
299 2020 3 SA 486 (WCC).
300 Ruppel (2022b).
301 See Spatial Planning and Land Use Management Regulations: Land Use Management and General Matters GN R 239 in GG 38594 of 23-03-2015; National Planning Commission, Our Future Make It Work: National Development Plan 2030 (2012: 34).
302 Ruhiiga (2014: 619).
303 Rahl-Botha (2023); See https://www.news24.com/news24/community-newspaper/peoples-post/river-club-development-saga-ends-with-out-of-court-settlement-20230704, accessed 8 May 2024.

## 4.5 Climate change law and soil degradation

The Climate Change Act 22 of 2024 aims to establish a comprehensive legal framework to regulate the impacts of climate change, aligning with international agreements such as the UNFCCC and the Paris Agreement. While the Act primarily focuses on mitigating climate change and adapting to its impacts, it does not directly address soil health. However, some strategies proposed therein, such as sustainable land management practices, may indirectly contribute to soil health (Chapter 4).

Under existing regulations, industries such as coal mining in South Africa are required to submit annual progress reports on approved pollution prevention plans to the Minister of the Environment. This mandate applies to industries emitting GHG specified in the Declaration of Greenhouse Gases as Priority Air Pollutants under NEMAQA.[304]

South Africa has formulated various policies and strategies concerning climate change, energy, waste management, and agriculture. These include the White Paper Energy Policy (1998), the National Waste Management Strategy (2010), the National Climate Change Response Strategy (2004), the Renewable Energy Policy White Paper (2004), the Electricity Regulation Act 4 of 2006, the Carbon Tax Act 15 of 2019, the Disaster Management Act 57 of 2002, the National Disaster Management Framework (2005), the Long-Term Mitigation Scenarios (2007), the National Adaptation Strategy (2019), and the Bio-fuels Industry Strategy (2007).

Recognising the importance of soil health goes beyond its agricultural benefits; it also plays a significant role in addressing climate change. Unfortunately, current climate laws in South Africa do not explicitly acknowledge the critical role of soil health in climate change mitigation.

## 4.6 Land tenure insecurity: Relevant legal provisions and associated problems

In South Africa, around 25% of the population still resides in former homeland areas, with 78% acquiring land from traditional authorities.[305] Approximately 18 million hectares of communal land are government-owned but managed by traditional

304 Declaration of Greenhouse Gases as Priority Air Pollutants GN R 6 in GG 39578 of 08-01-2016; See also National Pollution Prevention Plans Regulations GN R 712 in GG 40996 of 21-07-2017; National Greenhouse Gas Emission Reporting Regulations GN R 275 in GG 40762 of 03-04-2017.

305 See https://www.businesslive.co.za/bd/life/2022-08-30-big-read-however-we-try-to-wish-them-away-the-homelands-are-still-very-much-with-us/, accessed 8 May 2024.

authorities.[306] The Constitution's Section 25 and the IPILRA safeguard land rights in these areas, though critics argue that tenure insecurity remains unaddressed.[307]

The CPA Act allows communities to collectively own and manage land but faces challenges including internal conflicts, poor governance, and misuse of funds.[308] The White Paper on Land Policy emphasises tenure reform to rectify past injustices, but previous laws such as the Land Rights Bill (1998) and the Communal Land Rights Act faced setbacks due to concerns over tenure security and power imbalances.[309]

The Communal Land Tenure Bill proposes a system where communities can choose management by traditional councils, CPAs, or the Ingonyama Trust, but critics highlight flaws, including its treatment of women's land rights and insufficient land administration.[310]

Despite efforts to improve tenure security, legislative confusion and overlapping land claims from apartheid-era policies continue to fuel conflicts, overcrowding, and land invasions. These invasions, such as those in Bloemfontein and Tugela, often involve illegal occupation of land driven by housing shortages and economic inequality, further complicating land management and legal authority in communal areas.[311]

### 4.6.1 Traditional law

Traditional law in South Africa is complex, reflecting the nation's historical and cultural challenges. As of June 2018, the country recognises fourteen kingships and 844 senior traditional leaders.[312] In 2018, the government spent around ZAR 250 million annually on their salaries, with kings and queens receiving nearly ZAR 1.4 million per year in 2024.[313] In November 2023, ZAR 55 million was spent on vehicles for traditional leaders.[314]

Environmental rights in the Constitution have created tensions between property rights and environmental protection, as seen in the *Diepsloot Residents' and*

306 See https://www.wylie.co.za/Articles/Read/144/Current-status-of-permission-to-occupy, accessed 8 May 2024; https://www.foodformzansi.co.za/the-curse-of-farming-on-communal-land/, accessed 8 May 2024.
307 Mfune (2022: 219).
308 Communal Property Associations, Annual Report (2022/2023: 22-25).
309 Clark & Luwaya (2017: 10-12).
310 Weinberg (2014).
311 See https://www.iol.co.za/thepost/community-news/land-grabs-tugela-farms-under-attack-d346da43-4d32-437d-90a1-797c50a77c67, accessed 3 August 2024; Delius & Beinart (2021: 90).
312 See https://businesstech.co.za/news/government/263191/south-africa-has-a-huge-number-of-traditional-leaders-heres-how-much-they-get-paid/, accessed 3 August 2024.
313 See https://businesstech.co.za/news/government/783805/this-is-what-kings-queens-and-traditional-leaders-get-paid-in-south-africa-in-2024/, accessed 3 August 2024.
314 See https://irr.org.za/media/government-spending-on-traditional-leaders-sparks-controversy-biznews, accessed 3 August 2024.

*Landowners' Association v Administrator Transvaal* case.[315] Traditional authorities in South Africa manage land through user rights, with chiefs distributing land to headmen.[316] While grazing and hunting areas remain communal, individuals' land entitlements depend on their social and political community membership.

Land administration varies, with some areas, such as KwaZulu-Natal and the Eastern Cape, relying on local leadership. Chiefs, however, have faced criticism for abuses, such as Chief Matlala's control over land and its use for political gain.[317] In regions including the North West and Limpopo, land under customary tenure has been alienated for mining, with local chiefs transferring land for state-granted mining licenses.[318]

Concerns have also arisen about the financial management of the Ingonyama Trust, with allegations of corruption and mismanagement.[319] The Trust's conversion of PTOs into rental agreements has led to insecurity in land tenure, with residents now required to pay rent.[320] The *Council for the Advancement of the South African Constitution v Ingonyama Trust* case affirmed that customary land rights are protected by the Constitution.[321] The Trust's actions, by converting PTOs into leases, infringed upon residents' customary, statutory, and constitutional property and tenure rights.[322]

Public trust in traditional leaders has declined, with only 14% of South Africans contacting a traditional leader, and only 31% expressing trust in them.[323] Many believe traditional leaders are involved in corruption, and public support for their political involvement is limited. This raises questions about the high salaries and the effectiveness of traditional leadership amidst mixed public perception.

### 4.6.2 Conflicts and means of resolution

The role of traditional leaders in South Africa's land governance is unclear in both the Constitution and policy documents, complicating land allocation in communal

315 1994 2 All SA 299 (A).
316 Mhlongo (2021: 75); Weideman (2004: 308-309).
317 Claasens (2001: Chapter 2); Weideman (2004: 315).
318 Delius & Beinart (2021: 90).
319 Bellamy (2024).
320 See https://www.dailymaverick.co.za/article/2023-06-04-the-battle-between-the-zulu-king-and-his-prime-minister-over-the-ingonyama-trust-is-likely-to-divide-kzn-voters-in-2024/, accessed 8 May 2024; https://www.businesslive.co.za/bd/opinion/2023-09-25-ingonyama-trust-has-misconstrued-customary-communal-land-tenure/, accessed 8 May 2024; https://www.businesslive.co.za/fm/features/cover-story/2019-11-07-how-communities-are-defying-the-ingonyama-trusts-land-grab/, accessed 8 May 2024; https://www.timeslive.co.za/ideas/2023-09-23-ingonyama-trust-furore-highlights-insecure-land-tenure-for-millions-in-rural-areas/#google_vignette, accessed 8 May 2024.
321 2022 1 SA 251 (KZP).
322 See Manona & Kepe (2023).
323 Nkomo & Kambule (2023: 2).

areas.[324] While traditional leaders have authority over land distribution, their effectiveness is hindered by insufficient state support, particularly in enforcing land rights over communal resources such as rangeland. This lack of support diminishes their local legitimacy and leads to resistance from some communities.

Democratically elected institutions, such as ward councillors and farmers' organisations, also influence agrarian development but must seek approval from traditional leaders for land use projects. Disputes often arise between traditional councils and local government over land allocation, especially when traditional land is located in municipal boundaries.[325]

A study in Thulamela Municipality highlights ineffective land use management.[326] Traditional authorities oversee rural land under customary tenure, but the municipality controls spatial planning, which can misclassify agricultural land for development, risking exploitation and loss of high-potential arable land.[327]

The Limpopo High Court's ruling in the *Lepelle Nkumpi Local Municipality v the Bakgaga Ba Ga-Mphalele Traditional Authority* case reinforced the need for coordination between traditional authorities and local governments in land allocation.[328] While traditional leaders are key in regions without local government, there are calls to integrate traditional authorities into the state structure to improve service delivery and development.[329]

Policymakers must address socio-economic disparities, engage diverse legal systems, and update laws to better align with the Constitution and resolve conflicts between customary and statutory law.[330]

### 4.6.3 Land tenure legislation and associated land-grabbing

In South Africa, land remains a contentious issue, with private land ownership governed by well-established legislation, while customary land law in rural areas lacks regulation. Political leaders struggle to implement effective policies within secure legal frameworks.[331] Land-grabbing, the unlawful occupation of state-owned and private land for housing, has led to conflicts between authorities and residents, reminiscent of

324 Ramolobe (2023); Mhlanga (2012: 36); SAHRC, National Hearing on the Underlying Socio-economic Challenges of Mining-affected Communities in South Africa (2016: 34).
325 Ramantsima (2022).
326 Lidzhegu & Kabanda (2022: 6-7); Thulamela Local Municipality, Spatial Development Framework (2019).
327 Lidzhegu & Kabanda (2022: 6-7).
328 2021 ZALMPPHC 42 (5 August 2021).
329 Weideman (2004: 312); Rautenbach & Ferreira (2023).
330 Ubink & Duda (2021).
331 See https://www.dailymaverick.co.za/article/2019-05-19-anxious-wait-continues-for-district-six-claimants-as-minister-nkoana-mashabane-appears-before-land-claims-court/, accessed 8 May 2024.

apartheid-era displacements.[332] Land grabbers, often facing poverty and homelessness, seek urgent housing solutions.[333]

To illustrate, in 2022, an opposition political party took to social media, announcing the availability of free land in Olievenhoutbosch, City of Tshwane Metropolitan Municipality.[334] This led to over 3,000 people flocking to the area and promptly erecting informal housing. Many of the land occupants cited the high cost of rent in the area as a reason for their actions, stating that they were unable to afford it due to unemployment.[335] Despite initial evictions, some individuals returned to the area, resulting in illegal land occupation. In response to their subsequent eviction, these illegal occupants staged protests.[336] Legal cases, such as the *South African Human Rights Commission v City of Cape Town*, highlight municipalities' legal recourse, such as counterspoliation, but also underscore the importance of upholding the rule of law when repossessing property.[337]

The Constitution guarantees secure land tenure under Section 25, emphasising the importance of land ownership for economic development and social cohesion. However, the prevalence of land-grabbing underscores the inadequacy of current land reform policies in addressing the land needs of marginalised communities and ensuring equitable access to land resources.[338]

### 4.6.4 Relationship between landownership and environmental responsibility

In South Africa, historic conservation practices marginalised communities from protected areas, leading to displacement and limited involvement in decision-making. As a result, conservation is often seen as an elite concern.[339] According to the 2021 South African Social Attitudes Survey, environmental issues rank lower in national priorities, with few willing to make personal sacrifices for environmental protection.[340]

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332 Sauti & Lo Thiam (2018: 91); See https://dullahomarinstitute.org.za/multilevel-govt/local-government-bulletin/archives/volume-17-issue-4-november-2022/land-grabbing-municipalities-must-uphold-the-constitution-when-dealing-with-unlawful-occupiers, accessed 8 May 2024.

333 See https://www.france24.com/en/live-news/20240306-land-grab-underlines-housing-crisis-ahead-of-south-africa-poll, accessed 8 May 2024.

334 See https://www.timeslive.co.za/news/south-africa/2022-12-29-land-grab-in-tshwane-highlights-challenges/, accessed 8 May 2024.

335 See https://www.timeslive.co.za/news/south-africa/2022-08-31-tshwane-municipality-condemns-olievenhoutbosch-land-invasions/, accessed 8 May 2024.

336 See https://www.iol.co.za/pretoria-news/news/protesting-illegal-land-occupiers-in-olievenhoutbosch-burn-school-to-ashes-89a7d121-0820-4b4e-a10a-10c5908aa223, accessed 8 May 2024.

337 2021 2 SA 565 (WCC).

338 See https://www.news24.com/news24/community-newspaper/bloemnuus/lourierpark-land-grab-more-people-arrested-20240307-2, accessed 8 May 2024.

339 van der Sijde (2020: 165-166).

340 HSRC, SASAS Attitudes to the Environment (2021).

South African law requires landowners to practice environmental stewardship, but enforcement often occurs only during property changes, such as sales or rezoning.[341]

Farmers in the Free State report soil degradation, with barriers in traditional and government systems hindering soil management.[342] A 2022 study in the Macubeni catchment found that nearly half of the land was either abandoned or underused, and much of it was highly degraded, increasing erosion.[343] Misapplication of land tenure in KwaZulu-Natal under the Ingonyama Trust also undermines communal land rights, affecting sustainable land use.[344]

Youth participation in agriculture is limited due to poor pay, low productivity, and barriers such as land ownership, access to credit, and infrastructure.[345] Agricultural extension services are inadequate, with many farmers unaware of their extension officers. South Africa has only one-third of the required extension officers, and most lack sufficient training.[346]

### 4.7 Wildfires

Uncontrolled wildfires exacerbate soil erosion by removing vegetation, leaving soil vulnerable to wind and water erosion.[347] South Africa is highly susceptible to wildfires, worsened by alien vegetation and climate change-driven hot, dry weather.[348] In 2021, wildfires damaged over one million hectares of grazing land,[349] and in 2023, fires in multiple regions caused losses exceeding ZAR 1 billion (USD 55 million).[350]

The National Veld and Forest Fire Act 101 of 1998 outlines fire management responsibilities, requiring landowners to create firebreaks to prevent fire spread and soil erosion. The Act also includes penalties for offences including igniting fires against warnings or failing to control fires.

The Fire Brigade Services Act 99 of 1987 and the Disaster Management Act ensure coordinated firefighting services and disaster response. Despite regulations, human

341 van der Sijde (2020: 165).
342 Baade et al. (2024: 346).
343 Sibiya et al. (2023).
344 See https://theconversation.com/zulu-land-dispute-ingonyama-trust-furore-highlights-the-problem-of-insecure-land-tenure-for-millions-of-south-africans-in-rural-areas-211365, accessed 8 May 2024; https://www.farmersweekly.co.za/agri-business/empowerment/smallholders-can-help-to-regenerate-farming/, accessed 8 May 2024.
345 Finca et al. (2023: 57).
346 Ibid.
347 Santín & Doerr (2016).
348 See https://theconversation.com/the-table-mountain-fire-what-we-can-learn-from-the-main-drivers-of-wildfires-159477, accessed 8 May 2024.
349 See https://www.farmersweekly.co.za/agri-news/south-africa/one-million-hectares-of-grazing-destroyed-by-wildfires/, accessed 8 May 2024.
350 See https://www.news24.com/news24/southafrica/news/many-farmers-are-devastated-fires-cost-sa-farmers-over-r1bn-of-livestock-says-agri-sa-20230925, accessed 8 May 2024.

error causes 99% of wildfires, and some rural communities continue to burn vegetation outside safe periods, intensifying the risk of wildfires.[351]

### 4.8 Conclusion

South Africa's soil governance framework lacks comprehensive, dedicated legislation, relying instead on agricultural and environmental laws. This fragmented approach creates gaps in soil protection and management. While CARA remains relevant, it requires updating to align with new philosophies such as holistic management, carbon sequestration, and conservation agriculture.[352] While the DALRRD bears primary responsibility for soil conservation, other sectors indirectly influence soil governance, highlighting the need for a comprehensive set of soil-related laws.

To advance knowledge of sustainable land use practices, tangible partnerships between research institutes, farmers, and government are crucial. Embracing a holistic approach is essential, i.e., viewing soil degradation within the broader context of agricultural and non-agricultural activities. Effective soil conservation and sustainable agricultural practices are intertwined with preserving high-potential agricultural land, conserving natural ecosystems such as wetlands, practising good catchment management, and safeguarding water resources.[353]

Overall challenges encompass inconsistent enforcement, inadequate monitoring, institutional fragmentation, land tenure issues, urban sprawl, and industrial development. Shortages in soil conservation expertise, differential treatment of landowners, land use mismatches, and conflicting interests.

## 5 Lessons learnt and recommendations

### 5.1 Positive lessons learnt and opportunities for soil protection

South Africa grapples with soil degradation challenges, yet it also presents positive strides and opportunities for soil protection. The nation has enacted comprehensive policies and laws recognising soil's significance. Stringent monitoring measures are prevalent, while efforts to establish national soil health databases are in progress.[354] Integrated land use planning can prioritise soil health, while sustainable agricultural practices such as conservation agriculture and agroforestry can bolster soil health and

351 Zvomuya (2012: 6); See https://www.foodformzansi.co.za/fire-farmers-regenerative-tool-for-livestock-grazing/, accessed 8 May 2024; Kepe (2005).
352 Baade et al. (2024: 348).
353 Ibid.: 361.
354 Colette, 2024, *Soil Governance in South Africa and Beyond*. DROP Workshop.

minimise erosion. Empowering stakeholders through training and technical support can facilitate effective soil conservation measures.

## 5.2 Negative lessons learnt

South Africa's efforts to address soil degradation also reveal several shortcomings. Key stakeholders lack awareness and education about soil conservation, hindering effective mitigation efforts. Smallholder farmers cultivate in soils with low fertility, possess insufficient farm equipment, and face limited income.[355] They encounter challenges in accessing climate information and frequently lack fundamental agronomic knowledge. Insufficient investment in research and innovation limits the development of new soil conservation technologies. Fragmented land management prioritises short-term economic gains over long-term soil health, perpetuating degradation. Policy fragmentation isolates soil conservation from broader environmental and agricultural policies, undermining holistic approaches. Inadequate incentive mechanisms fail to promote soil-friendly practices among landowners and farmers. Farmers who are eager to enhance soil health must take the initiative themselves.[356] Limited capacity among managers, farmers, and extension workers hampers the successful implementation of conservation practices. Continued reliance on unsustainable agricultural methods worsens soil degradation. Communal land in South Africa, mostly rural and administered by traditional leaders, is often registered in the state's name or remains unregistered, making the state the legal owner.[357] The insecure tenure system, characterised by unregistered land tenure rights, is protected by the Interim Protection of Informal Land Rights Act. Rights holders may receive a PTO, leases, or receipts, but many rights are undocumented. Additionally, land grabbing by illegal occupants seizing privately owned agricultural land is a significant issue.

## 5.3 Recommendations

South Africa's projected population growth rate indicates that by 2050, there will be an average of only 0.2 hectares of arable land available per person.[358] This falls well below accepted international norms and diminishes the country's prospects for achieving food security. With declining self-sufficiency in food production, South Africa's reliance on costly imports and foreign aid is expected to rise. Sustainable land

355 Myeni & Moeletsi (2020: 1).
356 See https://www.farmersweekly.co.za/agri-business/empowerment/smallholders-can-help-to-regenerate-farming/, accessed 8 May 2024.
357 Ramantsima (2022).
358 Hoffman & Ashwell (2012: 81).

management in South Africa can transform soils into carbon sinks, aligning with national development goals and SDGs. However, challenges such as soil degradation persist due to inadequate legislation and land tenure issues. Enhancing existing policies to reduce emissions and expand carbon sinks is crucial, but enforcement lacks manpower and expertise. Legal education on soil protection is vital, alongside formalising communal land rights for comprehensive land management.

South Africa's land management landscape is complex, comprising multiple systems. The formal municipal system, primarily urban-focused and governed by constitutional and provincial laws, often neglects areas under traditional authority.[359] The Ingonyama Trust independently manages land for its purposes, often marginalising local municipalities. Meanwhile, traditional land allocation, rooted in customary law, persists alongside formal management, where individuals request land from local leaders, pay fees for PTO certificates, and sustain traditional leaders financially.[360]

Tensions between traditional leaders and local government are longstanding, with SPLUMA potentially exacerbating them. While SPLUMA allows traditional leaders to continue land allocation, compliance remains a challenge, with some municipalities disregarding SPLUMA in areas under the Ingonyama Trust.[361]

This highlights the complexities and challenges surrounding soil protection in South Africa. It underscores the importance of recognising and addressing the parallel land management systems administered by traditional leaders and local governments.

Soil Conservation Committees played a crucial role in promoting agricultural resource conservation and implementing CARA.[362] While their success varied, clear legislative guidelines were in place, requiring farmers to take responsibility for interventions and ideally share the costs. Effective implementation relied on capable staff and knowledgeable farmers to swiftly identify land degradation and apply appropriate soil conservation measures. Historically, there was significant emphasis on training a skilled workforce, encompassing technical, academic, and managerial aspects. Such measures could be reintroduced with appropriate funding. While soil protection is currently fragmented, reinstating dedicated soil legislation might improve integration and harmonisation, bringing soil issues out of agriculture and land management's shadow.

To enhance soil protection, it is essential to secure clear rights to communal land by involving traditional authorities and communities. Support and incentives for sustainable farming practices should be provided, particularly for small-scale farmers. Inclusive land use planning with input from local communities, farmers, and leaders is vital. While granting title deeds could unlock credit markets, it also risks potential

359 Dubazane & Nel (2016: 229-230).

360 See https://dullahomarinstitute.org.za/multilevel-govt/local-government-bulletin/archives/volume-14-issue-2-december-2019/land-use-management-where-traditional-and-municipal-governance-meet-in-rural-areas, accessed 8 May 2024.

361 Ibid; eThekwini Municipal Spatial Development Framework (2022-2023).

362 Baade et al. (2024: 347).

displacement if people lose their homes to banks, leading to increased homelessness.[363] A more nuanced approach might involve issuing title deeds for fields and grazing land while establishing separate tenure arrangements for homesteads. This could promote positive attitudes towards land management and minimise displacement risks.

To improve soil protection, it is crucial to integrate soil scientists into policymaking, addressing the current lack of scientific input in South Africa's environmental legislation.[364] Implement comprehensive land surveys and establish a centralised, accessible database for soil and land use information. Municipalities should develop clear, detailed land use plans for various land types. Additionally, enhancing the enforcement of existing laws, promoting sustainable land use practices, and incorporating climate change adaptation measures are essential. These actions highlight the need for collaborative efforts and robust legislative frameworks to safeguard soil health and support sustainable management practices across South Africa.

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363 Sihlobo (2018).
364 von der Heyden et al. (2016).

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