Country report for Botswana

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Abstract

This chapter examines soil management and environmental governance in Botswana. It highlights key issues such as land degradation, overgrazing, and inadequate enforcement of environmental laws, particularly emphasising the limitations of existing legislation such as the Agricultural Resources Conservation Act. The chapter explores the implications of these challenges on sustainable land use and soil health, and how they impact key sectors such as agriculture, ecosystem health, and food security.

An analysis of the existing legal framework reveals several shortcomings, including the lack of specific legislation dedicated to soil protection and the ineffective regulation of dual grazing rights. Specific attention is given to the complexities arising from overlapping institutional mandates and the inadequate implementation of policies related to land use and waste management.

The chapter also presents key findings, such as the need for a dedicated institution to oversee soil resource management and the importance of strengthening public participation in land use planning. It offers recommendations aimed at improving soil conservation practices, enhancing the enforcement of environmental laws, and establishing clearer guidelines for waste management and forestry. It concludes by emphasising the urgent need for comprehensive soil legislation and legal reforms, particularly considering emerging trends including foreign investment in sustainable practices and the growing impact of land degradation on food security.

Chapter contents

Summary

This chapter highlights critical issues related to land use, soil management, and environmental protection in Botswana, emphasising the need for comprehensive legislation and stronger enforcement mechanisms.

Currently, Botswana lacks specific laws dedicated to soil management. While the Constitution allows for property rights to be taken for soil protection, and the Agricultural Resources Conservation Act provides some soil protection measures, these laws are limited. It is strongly recommended that Botswana develop a dedicated policy and legislation to ensure sustainable soil resource management. Additionally, overgrazing and land degradation, particularly due to overstocking, should be addressed by amending the Tribal Land Act to effectively restrict dual grazing rights.

Land use planning in Botswana has been criticised for its technocratic nature, with limited public participation and a top-down approach that prioritises national policies over local concerns. To improve this, greater accessibility to planning processes is necessary, including making plans available in both local languages and English.

The Agricultural Resources Conservation Act currently focuses more on corrective measures than on preventive approaches to land degradation. The Act should be

amended to incorporate preventive measures that protect agricultural resources. Furthermore, the mining sector suffers from a lack of regulations and standards to safeguard soil resources, highlighting the urgent need for regulations aligned with the provisions of the Mines and Minerals Act.

Waste management also presents significant challenges, with ineffective enforcement and widespread illegal dumping. The legal framework needs to be reviewed to clarify the responsibilities of waste generators and public authorities, as well as to introduce appropriate economic incentives.

Although Botswana has limited forest cover, its forests still play an important role in the environment. The Forest Act requires revision to align with sustainable forestry management principles, and the Forest and Range Resources Bill represents a positive step forward in this regard.

The chapter also identifies weaknesses in the enforcement and monitoring of environmental laws. The discontinuation of the Agricultural Resources Board has led to a lack of conservation orders and regulations. Additionally, multiple institutions with overlapping mandates hinder effective soil management. It is recommended that a dedicated institution for soil resource management be established, with access to relevant information and the capacity to build a comprehensive soil database.

Training and capacity-building for enforcement officers, both centrally and locally, are essential to strengthen the enforcement of natural resource laws. Additionally, improving public access to environmental information, including soil data and conservation reports, is necessary to enhance transparency.

Another area of concern is the limitation on public participation in legal proceedings. Botswana's Constitution restricts access to the High Court to individuals whose rights have been infringed, and public interest litigation is not permitted. Expanding public interest litigation and including the right to a healthy environment in the Constitution would address this issue.

The chapter also highlights the need to improve the criminal liability regime, particularly in the mining sector. Criminal prosecutions for environmental violations are rare, and an overreliance on criminal penalties is problematic. It is recommended that penalties be reviewed, and incentives for environmentally friendly practices be introduced.

Land rights in Botswana are governed by both statutory and customary law, but these laws fail to provide a comprehensive framework for sustainable land use practices. The lack of exclusive land use rights has contributed to the degradation of communal lands, particularly due to overgrazing. It is recommended that laws governing tribal land be amended to restrict dual grazing rights and prevent further degradation.

While foreign investment is crucial to Botswana's economy, it often lacks environmental safeguards. Comprehensive legal reform is needed to create a foreign investment code that includes environmental protection obligations. Alternatively, the government could encourage investment in the renewable energy sector through the

Botswana Investment and Trade Centre (BITC), diversifying the economy while promoting sustainable development.

In conclusion, the chapter stresses the importance of enacting comprehensive, enforceable policies to address land degradation, improve soil management, and ensure sustainable land use in Botswana. Developing a robust legal framework, supported by effective enforcement, public participation, and access to environmental information, is essential for the long-term health of the country's land and natural resources.

1 Country information

1.1 Size

Botswana is situated in southern Africa, with about two-thirds of its land within the Tropics. It is bisected by the Tropic of Capricorn. Botswana is a landlocked country with a land area of 581,730 km^2. It is bordered by Zambia and Zimbabwe to the northeast, Namibia to the north and west, and South Africa to the south and southeast. In the northern part of Botswana, four countries (Zambia, Botswana, Zimbabwe, and Namibia) meet at a single point in the middle of the Zambezi River. The country lies between longitudes 20°C and 30°C degrees east of the Greenwich Meridian and between the latitudes 18°C and 27°C approximately south of the Equator.

1.2 Population

The 2022 Population and Housing Census in Botswana estimates the population at 2,346,179.[1] The overall country population density in 2022 was 4.1 per square kilometre. However, generally cities and towns have the highest population densities compared to predominantly rural districts. Gaborone has the highest density of 1,444.4 persons per square kilometre followed by Francistown with 1,296.8. Selebi-Phikwe, Orapa and Sowa Town have low population densities, with the lowest record of 18.2 persons per square kilometre in the latter. The population of Botswana is still youthful with the mean age estimated at 28.1 years, while the median age is 26. There are more women than men, with 95 men for every 100 women.[2]

1 See https://www.statsbots.org.bw/sites/default/files/2022%20Population%20and%20Housing%20Census%20Preliminary%20Results.pdf, accessed 6 March 2024.

2 See https://www.statsbots.org.bw/sites/default/files/publications/Population%20%20Housing%20Census%202022-%20Key%20Demographic%20and%20Socio-Economic%20Indicators.pdf, accessed 6 March 2024.

1.3 Literacy

During the previous census, the literacy rate for the population aged 15-65 years in Botswana was estimated to be 88.7%. The female literacy rate was recorded at 89.8%, while males trailed behind at 87.4%. The highest literacy rate was observed among the 18-19 years age group, with 98.8%, whereas the 60-65 years age group had a lower rate of 50.7%. From a district perspective, Jwaneng had the highest literacy rate at 94.7%, while Ngamiland West recorded the lowest rate at 41.6%.[3] These statistics suggest a correlation between school attendance and poverty rates, as districts with low literacy rates also tend to have higher poverty levels.

1.4 Main economic activities

Botswana's economy is driven by mining, agriculture, tourism, services, and manufacturing, with mining as the dominant sector. The country is a leading diamond producer, with key mines at Orapa, Letlhakane, Jwaneng, and Lerala, alongside other minerals such as copper, nickel, and salt. Mining contributed 16.7% of gross domestic product (GDP) in the fourth quarter of 2023.[4] Tourism thrives on Botswana's rich wildlife, notably in Chobe National Park and the Okavango Delta, a United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Heritage Site. Agriculture, primarily livestock, contributes 1.7% of GDP, with cattle production being central.[5] Botswana is a major beef exporter to the EU. The manufacturing sector, including diamond and food processing, contributed 6% to GDP and is a focus for economic diversification.

1.5 National debt

Botswana's statutory debt[6] ceiling is 40% of the annual GDP.[7] This is equally divided between domestic and foreign debt. By the end of December 2023, the ratio of total

3 See https://www.statsbots.org.bw/sites/default/files/publications/Botswana%20Multi%20Topic%20Household%20Survey%20REPORT%202015%2016.pdf, accessed 6 March 2024.
4 See https://www.statsbots.org.bw/sites/default/files/Gross%20Domestic%20Product%20%20Quater%204%202023.pdf, accessed 17 April 2024.
5 See https://www.statsbots.org.bw/sites/default/files/Gross%20Domestic%20Product%20%20Quater%204%202023.pdf, accessed 17 April 2024.
6 Sec 20 of the Stock, Bonds, and Treasury Bills Act 13/2005.
7 As of 2022, the Gross Domestic Product was USD 18.50 billion, see https://www.bitc.co.bw/invest/key-facts-and-figures/#m, accessed 20 April 2024.

external debt to GDP stood at 9.5% while the domestic debt was 10.7% of the GDP. This resulted in a combined debt exposure amounting to 20.2% of the GDP.[8]

1.6 Foreign investments

According to the UN Trade and Development (UNCTAD), foreign direct investment (FDI) inflows into Botswana stood at USD 216 million in 2022,[9] while the total stock of FDI reached USD 5.21 billion, which is about 27.2% of the country's GDP, with the mining sector attracting the most FDI.[10] However, growth of foreign investments has been witnessed in the services industry, particularly insurance and banking. Most of the foreign investment comes from Europe and Southern Africa Customs Union (SACU) members.

1.7 Governance

Botswana follows a multi-party democratic system with national elections every five years. The President is the head of state, and the government is divided into the executive, legislature, and judiciary. It operates under a dual legal system combining Roman-Dutch law and traditional law.

Botswana has a unitary government with two tiers: national and local. Local government, guided by the 2012 Local Government Act, focuses on rural and socio-economic development. City and town councils are led by non-executive mayors, while district councils are headed by chairpersons. Administratively, councils are run by clerks or secretaries, and the District Administration is led by a district commissioner.

Local authorities handle rural development, community services, and local planning, with decision-making power and resource allocation within their jurisdiction. Traditional governance, led by a *Kgosi* (chief), works alongside councils. The *Kgosi* is an *ex officio* member of the district council, and the Department of Tribal Administration oversees tribal governance.

1.8 Competence of legislation

In Botswana, the Parliament holds the highest legislative power. It consists of two bodies: the National Assembly and the *Ntlo Ya Dikgosi* (House of Chiefs). Despite

8 GOB (2024).
9 UNCTAD (2023: 197).
10 See https://www.lloydsbanktrade.com/en/market-potential/botswana/investment, accessed 20 April 2024.

this, it operates under a unicameral system as only the National Assembly possesses the authority to enact laws that govern the nation.[11] The *Ntlo Ya Dikgosi*, on the other hand, serves as an advisory body, providing advice to the National Assembly on matters related to the Constitution, customary law, and land issues. Any bills concerning tribal affairs, customary law, and the administration of customary courts must first pass through the *Ntlo Ya Dikgosi* before they are deliberated in the National Assembly. Additionally, any review or amendment to the country's Constitution requires consultation with the *Ntlo Ya Dikgosi.*

The law-making process is very elaborate and involves numerous stakeholders. When a government ministry or department identifies a need for a new law or an amendment to an existing one, they first consult the Attorney General.[12] If approved, a proposal is prepared and circulated among all ministries, departments, and relevant parties for feedback. After incorporating the feedback, a memorandum is submitted to the Cabinet. If approved, a Presidential directive is issued for drafting the bill. Once the bill is drafted and approved by the concerned ministry, it is attached to a Cabinet memorandum and sent to the Cabinet for approval to be published in the Gazette and introduced in the National Assembly.

Upon Cabinet approval, a Presidential Directive is issued for the bill's publication and introduction in the National Assembly. The bill must be published at least 30 days before its introduction unless it is a bill of urgency. The bill goes through several stages in the National Assembly: First reading (title read out), second reading (general merits and principles debated), Committee stage (clause by clause examination and amendments), and third reading (formality, debate on content, no amendments). After being passed, the bill is sent to the President for approval. It becomes an Act of Parliament once the President signs it.

1.9 Competence of enforcement

The different acts of Parliament bestow enforcement powers to the respective Ministers/ministries depending on the subject matter. Issues relating to environmental protection are under the purview of the Ministry Responsible for Environment while agricultural issues are under the Ministry Responsible for Agriculture. Further enforcement mechanisms are derived from the respective acts. Under most acts creating criminal offences for certain conduct, the Botswana Police Service is the primary law enforcement entity. It works in conjunction with the Directorate on Corruption and Economic Crime (DCEC) and the Directorate of Public Prosecutions (DPP) to investigate

11 Sec 87(1) of the Constitution of Botswana, 1966.

12 There are two bills: Government Bills and Private Member Bills. The former is brought to the House by Ministers, and the latter is brought to the House by Private Members (Members of Parliament who do not have any Ministerial portfolio).

and prosecute criminal offences. Therefore, enforcement of laws is a collective responsibility of several entities.

In the context of soil management in Botswana, the Agricultural Resources Conservation Board established under the Agricultural Resources Conservation Act of 1974, is an important enforcement institution. The Board has several key functions that include issuing Conservation Orders and constructing works for the conservation and improvement of agricultural resources. This Board, in practice, has not been functioning, therefore, enforcement of this Act has been poor.

At the district level, the district councils are empowered to undertake physical planning and development of areas or settlements under their jurisdiction. This positions the councils as important players in the management of natural resources, including soils. In line with this, the Local Government Act of 2013 establishes a law enforcement office in every council to enforce by-laws made by the council and any other laws delegated to be enforced by the council. The number of law enforcement officers is determined by the council. These officers have the power to arrest, search, seize, detain, and impose fines for contravention of a by-law.

1.10 Role of traditional entities

Traditional authorities in Botswana derive their power from customs and laws, with recognition through legislation such as the Constitution, which establishes the *Ntlo Ya Dikgosi* (House of Chiefs). This body, consisting of 33 to 35 members, advises the government on matters related to the powers of traditional leaders, customary law, and tribal issues, though its advice is non-binding.

The *Kgosi*'s role, as outlined in the Bogosi Act of 2008 (Chapter 41:01), includes promoting tribal welfare, leading *kgotla* meetings, overseeing tribal ceremonies, resolving disputes, and preventing offences. Traditional leaders also administer justice through customary courts, although their jurisdiction is limited,[13] especially regarding conservation-related offences,[14] and must align with statutory law.[15]

Traditional authorities are key in managing indigenous knowledge, particularly in land and resource management. Their decisions on grazing, harvesting, and soil fertility are informed by traditional practices, some of which were confirmed by scientific

13 Sec 13 of the Customary Courts Act lists cases where the customary courts lack jurisdiction, and these include rape, robbery, and treason.

14 For instance, offences or disputes under the Wildlife Conservation and National Parks Act and the Agriculture Resources Act, the Magistrates' courts have jurisdiction.

15 Sec 2 of the Customary Law Act [Cap 16:01] and Customary Courts Act [Cap 04:05] defines "customary law", concerning any particular tribe or tribal community, as the customary law of that tribe or tribal community so far as it is not incompatible with the provisions of any written law or contrary to morality, humanity or natural justice.

studies.[16] However, the centralisation of governance has weakened the influence of traditional leaders, diminishing traditional practices as national priorities have taken precedence.

2 Soil degradation

2.1 The state of the environment

The environment in Botswana is influenced by various factors, including population dynamics, economic growth, climate, and geography. The agricultural activities of most of the population, despite the country's small size, contribute to land mismanagement and environmental degradation. Furthermore, Botswana's rapid economic growth, with a significant increase in per capita GDP over the years, has led to adverse effects on the environment such as land sealing for development purposes and industrial pollution.

Being classified as semi-arid and arid, Botswana experiences limited rainfall, with an average of 250 mm in the southwest and around 650 mm in the north. This makes the country vulnerable to severe droughts and flash floods. Additionally, the high evaporation rates of 2,200 mm per year result in low soil moisture content. Furthermore, average temperatures in Botswana have risen by 0.85°C since the 1960s.[17] These changing climatic conditions have significant implications for the country's environmental state.

The ecological condition map of Botswana classifies the country's land into three categories: natural, degraded, and not-natural.[18] According to the current map, 70.6% of Botswana's land remains in a natural state, unchanged significantly from its original condition. The degraded areas account for 22.2% of the country's total land area. Additionally, 7.2% of the land has been irreversibly transformed for urban use and other non-natural purposes. Most of these degraded and lost areas are concentrated in the southeastern parts of Botswana, where human population density is highest.

2.2 Soils profile

Botswana's soil can be categorised into four primary zones: the Hardveld, Sandveld, Lacustrine, and Alluvial. The Hardveld and Sandveld are primarily utilised for agricultural purposes, with the Hardveld being particularly suitable for mixed farming and the Sandveld extensively used for livestock production. Overall, the soils in Botswana

16 Cassidy et al. (2011: 84).
17 GOB (2022).
18 Ibid.: 70.

are not highly favourable for arable production due to their shallowness, crustiness, limited fertility, and inadequate soil moisture caused by low and erratic rainfall. Sandy soils, which cover about two-thirds of the country, are especially infertile. These sandy soils can be found in the red and grey desert soils of the Kalahari Desert.[19]

The characteristics of soils in Botswana are said to be as follows: about 50% of the country is dominated by soils with low moisture content; 44% by soils with low Cation Exchange Capacity; 15.4% by soils with low potassium reserves; 11.4% by soils with basic ions; 11.2% by saline soils; 11% by permanently dry soils; 8.1% by vertisols; 6.6% by acid soils; 5.2% by clayey soils; 4.7% by soils prone to erosion; 2.5% by shallow soils; 1.5% by nitric soils; and 0.5% by soils with aluminium toxicity.[20]

2.3 Drivers of soil degradation

The major drivers of soil degradation in Botswana are agriculture, mining, tourism, land use administration and management, deforestation, and urbanisation.

2.3.1 Agriculture

Agricultural land use is estimated at 45.9% of the country's entire land area,[21] and the main activities are crop production and livestock rearing. Some areas in the country exceed the permitted average livestock units, leading to land degradation through soil erosion and overgrazing. Overgrazing and overstocking result in trampling and soil compaction, which negatively impact water infiltration capacity. Consequently, there is an increased surface run-off, causing harm to soil in the semi-arid regions. Furthermore, unsustainable agricultural practices such as tilling not only result in low agricultural productivity but also affect soil micro-organisms and other underground biodiversity and lead to soil erosion. The use of fertilisers, pesticides, and herbicides to increase yields contributes to soil and water pollution.

2.3.2 Mining

The mining industry in Botswana occupies an estimated 325,278 hectares of land,[22] and its contribution to the country's GDP is substantial, accounting for approximately 80% of export earnings. Some of the issues in the mining sector include human

19 GOB (2017: 17).
20 GOB (2006).
21 GOB (2022: 36).
22 Ibid.: 35.

displacement, loss of fertile soils that support crop production, grazing, and livelihoods, pollution, and the impacts of abandoned mines such as burrow pits, acid mine drainage, and open wells, among others. Furthermore, the growth and diversification of the mining sector contribute to habitat destruction. Activities such as illegal river and sand pit mining and water extraction to supply mining activities may affect hydrological levels, impacting vegetation and other biodiversity. Other impacts include habitat modification for breeding and wildlife migration routes and corridors. Additionally, the expansion and diversification of the mining industry led to the destruction of habitats. The country is losing productive soils through illegal activities such as gravel and topsoil mining. Unregulated activities including river and sand pit mining, as well as water extraction for mining purposes, can disrupt hydrological levels, thereby affecting the vegetation and biodiversity in the area.

2.3.3 Land use and management

In Botswana, land use planning aims to balance social, economic, and resource conservation goals. It is mainly managed by decentralised Land Boards, with land categorised into tribal (71.3%), state (23%), and freehold (5.7%) tenure systems, as per the Tribal Grazing Land Policy of 1975.[23]

However, conflicts arise from unsustainable land practices, population growth, and increased livestock and wildlife numbers. These pressures cause encroachment on arable land, conversion of grazing areas, and conflicts between human settlements and wildlife habitats. Large-scale developments and harmful farming practices, such as conventional tilling and excessive pesticide use, also contribute to habitat loss, soil contamination, and land degradation.

Development planning is guided by the National Spatial Plan and National Development Plan (NDP), but their separate implementation and leadership lead to poor integration. This results in a lack of spatial components in economic plans and underfunded proposals in spatial plans, limiting effective land use management.[24]

2.3.4 Deforestation

Since 1987, Botswana has experienced an annual deforestation rate of 1%.[25] This is primarily driven by settlement expansion, encroachment of mining activities, and the expansion of livestock and agricultural practices. One example is the Integrated Support Programme for Arable Agriculture Development (ISPAAD) project, which began

23 Ibid.: 34.
24 Ibid.: 43.
25 Ibid.: 186.

in 2008 and has resulted in the clearance of over 300,000 hectares of land.[26] Unfortunately, this increase in deforestation has had detrimental effects on topsoil and biodiversity conservation, both of which are crucial components of the agro-ecosystem environment. Without vegetation cover, soil erosion becomes a major issue. Moreover, even when the cleared lands are converted for agricultural use, the replacement crops, such as soybean and wheat, often fail to stabilise the soil and can even exacerbate the erosion problem.[27]

2.3.5 Urbanisation – solid and chemical waste

The waste generation in Botswana has significantly increased due to various factors such as population growth, urbanisation, changing consumption patterns, industrialisation, technological advancements, economic growth, and higher incomes. Waste is usually disposed of in either landfills or dumpsites. The country currently has fourteen regulated landfills and 34 large dumpsites.[28] While landfills are subject to legal regulations, dumpsites are not, which may lead to environmental and public health problems. Dumpsites only accept general waste and are primarily used in areas where landfill sites are unavailable, such as villages or settlements.

Both landfilling and the use of dumpsites have negative environmental impacts. These include the emission of greenhouse gases, air pollution, and leachate contamination of groundwater and soil, which, in turn, affects the biodiversity below the ground. Due to poor design and construction, there have been incidents of gas and leachate escaping into the environment from waste disposal sites.[29]

Chemical waste from household cleaning detergents and agrochemicals poses a significant threat to the soils in Botswana. In 2000, an inventory conducted by the Department of Crop Production and Forestry identified over 18,000 metric tons of waste agrochemicals in six stockpile sites. This included 50 metric tons of toxic compounds, 1,400 metric tons of highly contaminated soils, and 16,000 metric tons of lightly contaminated soil.[30] Currently, there is limited capability to monitor and control the flow of pesticides both into and within the country, which is crucial in preventing the accumulation of new stocks of obsolete pesticides.

26 Ibid.: 68.
27 See https://www.worldwildlife.org/threats/soil-erosion-and-degradation#:~:text=The%20agricultural%20plants%20that%20often,the%20cycle%20of%20soil%20loss, accessed 10 March 2024.
28 GOB (2022: 149).
29 Landfills in Francistown, Pilane, Selebi Phikwe, Jwaneng, Orapa, and Lobatse have been deemed unsuitable due to flaws in their design and construction. Additionally, the closed Gaborone Landfill has negatively impacted nearby soils, with some leachate plumes migrating toward the Notwane River, posing environmental risks. See GOB (2022: 149).
30 Ibid.:159.

3 International frameworks relevant to soil protection

There are numerous international efforts to promote sustainable soil protection. These efforts are translated into guidelines, goals, and treaties. The discussion below examines some of the crucial international policy and treaty frameworks relevant to Botswana.

3.1 Treaties

Botswana has signed and ratified several significant international conventions and protocols that have influenced its environmental policies and practices. These are:

- Vienna Convention for the Protection of the Ozone Layer, 1985;
- Montreal Protocol on Substances that Deplete the Ozone Layer, 1987;
- United Nations Framework Convention on Climate Change, 1992;
- Kyoto Protocol, 1997;
- United Nations Convention to Combat Desertification and Drought, 1994;
- Convention on Wetlands of International Importance, especially in Waterfowl Habitat (Ramsar Convention), 1971;
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1973;
- United Nations Convention on Biological Diversity, 1992; and
- Waste Management and Pollution Control - Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal, 1989.

3.2 Soft law

3.2.1 Revised World Soil Charter 2015

The World Soil Charter (WSC), adopted by FAO members in 1981, highlights the vital role of soil in sustaining life and the need for sustainable soil management. It outlines ten principles, including recognising soil as a key resource, valuing soil diversity, and promoting sustainable practices. The Revised Charter calls for action at all levels, from individuals to governments and international organisations.

It encourages individuals and businesses to manage soil responsibly, ensuring its preservation for future generations. Governments are urged to integrate sustainable soil practices into policies, considering their role in addressing climate change and developing national soil information systems. International organisations are tasked with supporting soil management efforts, disseminating reports, and aiding governments in establishing relevant legislation and systems.

The Charter stresses collective action to ensure sustainable soil management for the benefit of current and future generations.

3.2.2 The 2030 Agenda for Sustainable Development

The 2030 Agenda for Sustainable Development is a global plan focused on people's well-being, planetary health, and economic prosperity, aiming to eradicate poverty and achieve peace. It outlines 17 Sustainable Development Goals (SDGs), with key dimensions of people, prosperity, planet, partnership, and peace.

Several SDGs address land and soil issues, crucial for achieving other goals. SDG 15, "Life on Land," focuses on sustainable land use, combating desertification, and restoring degraded land. SDG 2 targets land quality improvement for food security, while SDG 3 connects soil management to health by addressing pollution. SDG 12 emphasises sustainable consumption and the prevention of pollution.

Botswana has integrated the SDGs into its national plans, including Vision 2036 (2017-2036) and the National Development Plan (NDP), through SDG Planning Guidelines to ensure their systematic implementation.[31]

3.2.3 United Nations Convention to Combat Desertification (UNCCD) and the Land Degradation Neutrality Initiative

The United Nations Convention to Combat Desertification (UNCCD), adopted in 1995, is the only international agreement legally binding countries to address drought and desertification, particularly in Africa. It focuses on drylands and aims to promote sustainable development through integrated strategies that improve land productivity, conserve resources, and enhance community living conditions.

The UNCCD introduced the concept of Land Degradation Neutrality (LDN), adopted globally at the Rio+20 conference in 2012. LDN seeks to maintain or improve land resources to sustain ecosystem services and food security. Achieving LDN involves avoiding new degradation, implementing sustainable practices, and restoring degraded lands.

SDG 15 targets LDN, encouraging countries to combat desertification and restore degraded land by 2030. In March 2023, Botswana committed to LDN by submitting voluntary targets and is implementing projects including "Using Sustainable Land Management (SLM) to Improve the Integrity of the Makgadikgadi Ecosystem" and

31 For the extent of localisation of SDGs, see https://www.statsbots.org.bw/sites/default/files/special_documents/Botswana%20Domesticated%20SDG%27s.pdf, accessed 10 May 2024.

"Mainstreaming SLM in Ngamiland District" to improve livelihoods and rangeland management.

3.2.4 FAO Voluntary Guidelines for Sustainable Soil Management (VGSSM)

The Voluntary Guidelines for Sustainable Soil Management (VGSSM) were officially adopted during the 4th Global Soil Partnership[32] (GSP). The Plenary Assembly was held in Rome on 23 May 2016, and, subsequently endorsed by the 155th Session of the FAO Council on 5 December 2016. These guidelines offer both technical and policy recommendations to support the achievement of sustainable soil management practices. They complement the World Soil Charter by further elaborating principles and practices for incorporation into policies and decision-making. Some of the principles laid out in the VGSSM include minimising soil erosion, enhancing soil organic matter content, fostering soil nutrient balance and cycles, preventing and minimising soil contamination, and preserving and enhancing soil biodiversity.

3.2.5 Gaborone Declaration on Sustainability in Africa, 2012

The Gaborone Declaration recognises the importance of safeguarding soil resources from excessive exploitation and degradation, and when necessary, restoring and improving them. To achieve these goals, the Declaration outlines several actions that include enhancing knowledge, data, and capacity building; implementing measures to restore ecosystems and alleviate pressures on natural capital; adopting ecosystem restoration measures, as well as actions that mitigate stresses on natural capital; and building social capital and reducing poverty by transitioning agriculture, extractive industries, fisheries, and other natural capital uses to practices that promote sustainable employment, food security, sustainable energy, and the protection of natural capital through protected areas and other mechanisms; and engaging in effective communication and public education to raise awareness about the importance of protecting and enhancing soil resources and promoting sustainable development.

32 The Global Soil Partnership (GSP) was formed by the Food and Agriculture Organisation of the United Nations in December 2012. It is a coalition of willing partners to promote and implement sustainable soil management at all scales, from local to global.

4 Botswana domestic legal framework

4.1 Policy frameworks for soil protection

Botswana's public soil legislation is not comprehensive. Laws are found in different pieces of legislation and are not primarily meant to deal with soil management. There is specific legislation that provides the parameters for environmental impact assessments.

The following policies and strategies are relevant to the management of soil in Botswana: National Policy on Natural Resources Conservation and Development (1990); Botswana National Action Programme to Combat Desertification (October 2006); Tribal Grazing Land Policy (TGLP) (1975); National Biodiversity Strategy and Action Plan (2016); NDP (2017); and Climate Change Policy (2021). Although policies are not legally binding, they hold importance because they assist governments in accomplishing their political, social, and economic objectives. These policies are instrumental in addressing intricate issues such as poverty, inequality, and environmental degradation, while also fostering sustainable development.

4.1.1 Tribal Grazing Land Policy (TGLP) (1975)

The National Policy on Tribal Grazing Land was introduced in 1975 with several objectives. It aimed to decrease overgrazing by moving livestock from communal grazing areas to newly established ranches, providing incentives for ranch development along modern, commercial lines, and promoting income equality. The policy sought to reduce overgrazing in tribal land areas by demarcating and leasing ranches to either individuals or groups. The intention was to alleviate pressure on communal areas by relocating large cattle owners to the demarcated ranches, thus, allowing smallholder farmers to remain in the communal areas.

To achieve improved grazing control and increased productivity, the Land Boards were tasked with dividing tribal grazing areas into three zones: commercial farming areas, communal farming areas, and reserves. Commercial farming areas would grant individuals and groups exclusive leasehold rights in exchange for rental payments to the Land Boards. The lease grants the holder exclusive rights to specific areas of grazing land with boreholes and fencing. Communal lands would retain the existing land tenure system but impose stock limitations. Reserves would be designated for future use by those with few cattle at present, or for purposes such as wildlife conservation, mining, or cultivation.

Criticism has been directed towards this policy due to its reliance on flawed assumptions.[33] Firstly, it was assumed that Botswana had vast unoccupied land that could be converted into ranches. However, during the zoning survey, it was discovered that people were already residing in these areas, leading to the need to compensate these individuals. As a result, they relocated with their livestock to communal grazing areas, causing a net migration towards these areas.

Secondly, the lack of a requirement in the TGLP for ranchers to remove their livestock from communal areas resulted in many ranchers overgrazing their ranches and then returning their animals to communal areas. Since there were no obligations for ranch improvements, numerous ranchers showed no intention of building fences, constructing firebreaks, or adopting Western ranching techniques. This problem has not been solved yet, therefore, overgrazing remains an issue in the communal lands.

4.1.2 National Policy on Natural Resources Conservation and Development (1990)

This is Botswana's first comprehensive effort to address the conservation of natural resources. It recognises the importance of balancing development with minimising environmental and social impacts. Some of the major environmental issues identified include depletion of wood resources, soil pollution, and degradation of rangeland resources. To address these issues, the policy proposes a blended approach, which includes continuing the existing state intervention in resource management, implementing a system of resource allocation based on reasonable rationing and zonation, and promoting the multi-purpose use of resources. The strategy also emphasises the importance of maintaining a strong livestock industry.

However, the policy cautions against relying solely on legislation and highlights the need to persuade and encourage the public to adopt environmentally friendly practices. Efforts to improve the enforcement of the Tribal Land Act and Agricultural Resources Act are also recognised as important. To tackle the depletion of wood resources, the policy suggests making tree replanting and protection mandatory for all communities and promoting the use of wood substitutes. Subsidies may also be introduced to assist poorer sectors of the community in adopting these substitutions.

In terms of anti-pollution initiatives, the policy proposes investigating incentives for recycling and introducing legislation on the use, storage, labelling, and marketing of agricultural chemicals. Public awareness campaigns on pollution prevention and control will also be conducted. Overall, Botswana's policy involves a comprehensive and integrated approach to addressing conservation issues and aims to encourage

33 See https://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/5251/Tribal%20grazing%20in%20botswana%20and%20the%20tragedy%20of%20the%20commons.pdf?sequence=1&isAllowed=y, accessed 10 May 2024; Hitchcock & Nkwe (1986); Malope & Batisani (2008: 383-397); Mphinyane & Omphile (2016: 20-28).

sustainable practices in resource management and environmental protection. Nonetheless, there is no specific attention to soil management.

4.1.3 Botswana National Action Programme to Combat Desertification (2006)

The National Action Programme (NAP) was developed as a comprehensive tool to guide the implementation of the objectives of the UNCCD. It provides a detailed outline of the strategies and activities that will be undertaken to combat desertification and achieve sustainable land management. The goal of this NAP is to actively combat desertification and mitigate the effects of drought through the involvement and collaboration of various stakeholders, including communities. Its primary objective is to specifically target and address priority areas that have been identified through stakeholder workshops.

The NAP acknowledges that Botswana's soils are vulnerable to erosion and desertification. Therefore, it is of utmost importance to employ good soil management practices to ensure the protection and sustainability of soil resources. Consequently, the NAP identifies activities aimed at controlling and preventing land degradation. These activities include lobbying for the development of legislation to regulate dual grazing rights, facilitating the enforcement of all environmental legislation that aims to minimise land degradation, promoting appropriate cultivation practices, rehabilitating degraded land areas, promoting participatory land use planning, empowering local communities to manage natural resources in their respective areas, promoting efficient management of livestock production, promoting the use of alternative energy sources, particularly in government institutions, and promoting research to develop affordable alternative energy sources.

In March 2023, Botswana submitted its voluntary LDN targets and associated measures as an affirmation of its commitment to achieving LDN by 2030. Firstly, it commits to avoiding any new degradation, ensuring that all non-degraded land remains in its current state by 2030. Secondly, it aims to reduce existing degradation by improving land productivity and carbon stocks by 1% across all land types, as well as reducing forest degradation by 10%. Thirdly, the government plans to restore degraded land, with three restoration programs initiated in selected hotspots using appropriate technologies. Additionally, 5% of degraded grassland will be rehabilitated and an additional 5% of the national territory will be in a healthy state compared to 2015. To achieve LDN, associated measures include the implementation of the National Spatial Plan and the National Drought Management Plan, as well as public education and awareness. The government will also develop innovative funding mechanisms for LDN activities, including Payment for Ecosystem Services.

4.1.4 National Biodiversity Strategy and Action Plan (2016)

The NBSAP in Botswana is a comprehensive planning tool that spans multiple sectors and is specifically designed to safeguard and conserve biodiversity at the national level. Its primary objective is to contribute to the protection and preservation of Botswana's unique and valuable biodiversity. The NBSAP vision was developed based on the principles of sustainable development, integrated conservation and development, equity across generations, and biodiversity as the foundation of life and livelihoods. Its vision is that, by 2025, ecosystems, species and genetic diversity will be valued, protected, and used sustainably and equitably, through the involvement of all sectors of society and the provision of sufficient resources for its sound management. The NBSAP is developed to fulfil Botswana's obligations under the Convention on Biological Diversity (CBD), and specifically to align with the CBD 2011- 2020 Strategy and the Aichi Targets.

Regarding soils, Botswana's target is that by 2025, levels of soil pollution will be maintained below levels that would threaten ecosystem functioning and biodiversity. To fulfil this target, the suggested intervention is to prepare, by 2019, and enforce guidelines stipulating discharge and emission levels. However, the NBSAP falls short in having holistic interventions on sustainable soil management.

4.1.5 National Development Plan (2017-2023)

Botswana has made a sustainable environment a primary focus of its NDP (2017-2023). The plan recognises the importance of balancing economic development with environmental preservation. To achieve this, the government has outlined strategies for environmental protection and natural resource management. One of the key interventions is the strengthening and development of policy frameworks to address environmental health risks and promote prevention and mitigation.[34] The aim is to build a healthy environment by addressing the sources and impacts of these risks.

In terms of agricultural conservation, the government commits to working with local farming communities to harness their indigenous knowledge and utilise local resources for the efficient and effective management and conservation of agricultural resources. Furthermore, efforts will be made to rehabilitate degraded agricultural lands in collaboration with local communities, to increase agricultural production and ensure food security. The government also commits to increasing expertise in applied research and innovation to ensure a sustainable environment. Overall, the NDP highlights the importance of sustainable development and outlines a comprehensive approach to protect the environment and manage natural resources in Botswana.

34 GOB (2017).

4.1.6 Botswana Climate Change Policy (2021)

The policy aims to create a national vision that sets a course for climate-friendly development, enhancing the country's ability to withstand climate shocks and reduce our impact on global warming. It is inclusive in its coverage of environmental, social, and economic concerns, encompassing the following adaptation priority areas: agriculture and food security; water; human health; human settlement; forest management; land use/allocation; disaster risk management; biodiversity and ecosystems; infrastructure development; and gender-differentiated vulnerabilities.

As for forest resources, the policy recognises the value of forests and their dual role in adaptation and mitigation to the adverse impacts of climate change.[35] To enhance the integrity and sustainability of our forests and minimise the threats posed by human and induced interventions, the policy prioritises various interventions. These include conducting climate research and feasibility studies on forest conservation and ecosystem restoration, as well as utilising modern technologies to effectively control invasive species and prevent wildfires. Additionally, the policy promotes the use of indigenous knowledge and traditional forest management practices that contribute to increased forest cover and land rehabilitation. Furthermore, the policy also focuses on promoting alternative livelihood options and exploring mechanisms such as Reducing Emissions from Deforestation and forest Degradation (REDD+) to reduce pressure on forests.

To enhance the sustainability and resilience of land use, the policy outlines three key strategies for land use and allocation. Firstly, adopting an ecosystem-based land use planning approach will ensure that residential, agricultural, and industrial areas are strategically located away from sensitive ecosystems such as fields and watersheds. By avoiding regions prone to climate change-related disasters, such as floodplains, the potential risks and impacts on land use can be significantly minimised. Secondly, mainstreaming climate change development measures involves creating guidelines that integrate climate considerations into policies on rural development, wildlife management, and land use planning. This integrated approach will enable more effective land allocation and management by considering the long-term impacts of climate change. Lastly, establishing climate-focused decision-making systems will be prioritised. These systems will strive to balance food production, climate-smart agriculture, and developmental needs, ensuring that land allocation is conducted in a manner that preserves a balanced environment. By considering environmental factors alongside production and development requirements, these measures will help maintain ecosystem integrity while supporting sustainable growth.

35 GOB (2021).

4.2 Environmental provisions in the Constitution

Botswana's Constitution does not explicitly address environmental protection or the right to a clean environment; however, Section 8(1) protects against property deprivation while allowing land acquisition for soil conservation, natural resource conservation, or agricultural development.[36] The compulsory acquisition of property must be done following a written law[37] and accompanied by the prompt payment of adequate compensation.[38]

Compulsory acquisition and deprivation of property are permitted in other legislations for conservation purposes. For instance, the Waterworks Act allows for the acquisition of existing waterworks,[39] while the Wildlife Conservation and National Parks Act permits the President to designate land, including privately owned land, as a national park and extend the boundary of existing parks.[40] No property deprivations have been undertaken yet to conserve soil resources.

Botswana operates as a dualist state, meaning that international treaties do not automatically become legally binding without being incorporated into domestic law through an Act of Parliament.[41] Consequently, treaties ratified by Botswana do not immediately create enforceable rights and obligations in the courts. However, this does not completely prevent the influence and adoption of international norms and principles into the legal system. Section 24(1) of the Interpretation Act[42] serves as a tool for courts to consider relevant international treaties, agreements, or conventions when interpreting laws. Customary international law applies in Botswana to the extent that it is not inconsistent with any domestic legislation.[43]

36 Sec 8(5)(viii) of the Constitution.

37 The acquisition of immovable properties is governed by the Acquisition of Property Act (Cap 32:10).

38 Sec 8(1)(b)(i) of the Constitution. In the case of *Attorney-General v Western Trust (Pty) Ltd* 2006 (2) BLR 1 (HC), the court indicated that 'adequate compensation' was not the market value alone as such ignored the subjective value of the loss suffered by the expropriated. The only fair method of valuation was one based on the principle that the expropriate should be compensated adequately for the land and be restored to the same position in which he would have been had the land not been expropriated. It further indicated that the purpose of the expropriation was irrelevant in determining the value of the expropriated property.

39 Secs 7-8 of the Waterworks Act (Cap 34:03).

40 Sec 5 of the Wildlife Conservation and National Parks (Cap 38:01).

41 *Attorney-General v Dow* 1992 BLR 119, 152 – 154; *Kenneth Good v The Attorney-General* 2005 1 BLR 462.

42 Cap 01:04.

43 *Amadou Oury Bah v Lybian Embassy* 2006 BLR 22 25 (IC).

4.3 Legislation on land property/land ownership and land rights

Secure land rights are key to the conservation of natural resources. Studies have shown that communities are motivated to adopt soil conservation techniques such as terracing and irrigation where they have confidence in the national authorities' commitment to respecting their rights.[44] This confidence is fostered by secure land rights. This section examines public and traditional/customary law on land rights.

4.3.1 Constitution

Section 8 of the Constitution of Botswana does guarantee the property rights of any owner of property within the country. To this effect, it indicates that 'no property of any description shall be compulsorily taken possession of unless it is required for public purposes and that where such property is taken for public purposes prompt and adequate compensation shall be paid'.[45] Specific legislation has been enacted to deal with the compulsory acquisition of land under each tenure type.

The Tribal Land Act provides for the compulsory acquisition of tribal land while the Acquisition of Property Act (Cap 32:10) deals with the compulsory acquisition of state land and freehold land. As discussed above, the property right is restricted to conserve soil resources. Section 8 of Botswana's Constitution aims to strike a balance between individual property rights and the state's interests in soil conservation, natural resource conservation, and agricultural development or improvement. It serves as a potent mechanism to counter the risks associated with granting property rights to individuals or communities who do not prioritise the conservation of natural resources.

4.3.2 Botswana Land Policy, 2019

The 2019 Botswana Land Policy (BLP) aims to protect land rights, promote sustainable settlements, and ensure efficient land use. It focuses on access, equity, and transparency in land administration, while adapting to changing land use dynamics. The policy supports planned land allocations for residential, commercial, industrial, and agricultural purposes.

For residential land, all citizens are eligible for allocation, with additional plots available through the private market. Agricultural land allocation is limited to one plot per citizen, with integrated farming allowed on properly fenced plots. Mismanagement

44 See https://cdn.landesa.org/wp-content/uploads/Landesa-Land-and-Climate-Policy-Brief-June-2020.pdf, accessed 15 May 2024.

45 Regarding compulsory acquisition, see *Bruwer v President of the Republic of Botswana* 1997 BLR 477.

of commercial agricultural land can lead to repossession. Additionally, leases for all ranches should include a requirement for the lessee to relinquish any rights to use communal grazing land.[46]

The policy also addresses communal land use, emphasising collective grazing and proper management to prevent degradation. To ensure effectiveness, the policy recommends amendments to laws such as the Tribal Land Act and requires the surveying and planning of land before allocation. However, some objectives, such as limiting land ownership and enforcing dual grazing restrictions, require legal backing for proper implementation.

4.3.3 Statutory framework

Initially, all land in Botswana was communal land. However, with the establishment of a Protectorate over the territory in 1885, three distinct tenure systems surfaced: native land, which is presently referred to as tribal land; crown land, now known as state land; and freehold land. There are distinct laws that govern each tenure system.

4.3.3.1 State land

State land previously belonged to the colonial government as crown land. This land is vested in the President through the State Land Act of 1966. State land encompasses various areas such as townships, game reserves and national parks, forest reserves, urban state lands, and land acquired outside of Botswana. The responsibility for managing this land has been delegated by the President to the Minister in charge of the Land portfolio. The allocation of residential plots falls under the jurisdiction of local authorities. When allocating land, a 99-year lease (Fixed Period State Grant) is issued for residential purposes, and a 50-year lease is issued for business, civic, and community purposes. The lease may be renewed upon expiration, and only citizens are eligible to receive residential land allocations.

As the lease period draws to a close, the value of the land diminishes since potential buyers consider the remaining duration of the lease. The length of the lease does not encourage sustainable land utilisation as owners may hesitate to invest in a property that will soon change hands.

46 See https://mokoro.co.uk/wp-content/uploads/land_tenure_policy__practice_botswana.pdf, accessed 2 February 2024.

4.3.3.2 Freehold

Freehold land was created for settlers during the colonial era mainly for agricultural purposes. It is owned in perpetuity by individuals and companies. There are pockets of freehold land in urban centres for residential and commercial use. The law bestows on the owners of this type of land free and undisturbed possession and ownership of the defined piece of land.

The Land Control Act of 1975 provides for the control of transactions in freehold to agricultural lands. Under this Act, agricultural land excludes tribal lands and townships. It stipulates that no dealings in agricultural land, that is, sale, transfer, lease of more than five years, exchange partition, division, or other disposals shall be contracted with a person not being a citizen of Botswana unless the Minister has given their consent to that transaction.[47] In deciding to grant or refuse consent, the Minister, amongst other things, has to consider the effect that the grant or refusal of consent is likely to have on the economic development of the land concerned or on the maintenance or improvement of standards of good husbandry on the land concerned.[48] Additionally, the Minister has to act on the principle that consent generally ought to be refused where the transfer would likely lower the standards of good husbandry on that land.[49]

4.3.3.3 Tribal land

Tribal land was formerly referred to as native land. The Tribal Land Act of 2018 provides for the administration of tribal lands. Under this Act, all tribal lands are vested in the Land Boards. Under this Act, the allocation of tribal land can be done under both customary and common law. Customary land rights are granted for the perpetual use of land for residential, agricultural, and water-related purposes, without any charges. The Registrar of Deeds issues a Deed of Customary Land Grant to document these rights. On the other hand, land rights under common law are granted by the Land Board, and the terms and conditions of such allocations are determined by the Board. It is also worth noting that every citizen of Botswana is entitled to be allocated one residential plot of their choice, either on state land or tribal land. The duration of common law leases varies, ranging from as short as one year to longer terms. However, once the lease reaches its expiration date, the land will be returned to the Land Board. In this case, the lessee will not receive any compensation for any improvements or developments made on the property, as they have already benefited from their use of the land.

47 Sec 3 of the Land Control Act [Cap 32:11].
48 Ibid.: Sec 7(a).
49 Ibid.: Sec 7(c)(iii).

A Land Board has the authority to cancel a land grant if the grant holder does not adhere to the conditions or restrictions imposed by the Tribal Land Act or any laws related to town or country planning or good husbandry. If the land remains uncultivated, underused, or undeveloped within the Land Board's prescribed period, or if it is not utilised for its intended purpose, the Land Board may cancel the grant.[50]

The Tribal Land Act of 2018 Act recognises the acquisition of land through inheritance.[51] To ensure proper inheritance of land, individuals must undergo a process of regularisation with the Land Board. This involves confirming the inheritance under oath through the customary court and gaining witness accounts from family members and other interested parties. Only after these steps have been completed will the Land Board grant the necessary regularisation for the inherited land.

The Tribal Land Act of 2018 and the Land Control Act of 1975 emphasise the importance of adhering to laws related to good husbandry. Failure to comply may result in the cancellation of land grants for tribal lands and refusal to grant changes in ownership for freehold land. Good husbandry involves practising sustainable farming methods that prioritise soil and animal health.[52] However, both laws assume the existence of comprehensive laws related to good husbandry in Botswana, which is not the case.

A significant issue with tribal land allocations is the difficulty in determining ownership and boundaries in older parts of various settlements and areas reserved for farming. This is primarily due to the lack of written records kept by traditional leaders. Consequently, Land Boards are faced with the challenge of identifying vacant or unclaimed land that can be allocated to eligible households and for public use. To address this widespread issue, the government launched a comprehensive land titling and registration project, known as LAPCAS, in 2009. This project aims to identify, demarcate, adjudicate, issue certificates/titles, and register all customary land rights in tribal territories. Additionally, it will assist Land Boards in identifying unclaimed land suitable for allocation.

4.3.4 Traditional law

4.3.4.1 Pre-colonisation

Before colonisation, land in Botswana was managed by clans, tribes, or chiefdoms, with chiefs at the top of the land administration hierarchy. Chiefs allocated land for

50 Sec 43 of the Tribal Land Act of 2018.
51 Ibid.: Sec 38.
52 Manley, Foot & Davis (2019).

residential, arable, or grazing use but could not alienate land to outsiders without tribal consent or repossess land that was properly used.[53]

Residential land: Chiefs allocated areas to headmen, who distributed land to households. Families built homes within allocated areas, and additional land could be requested if needed. The land was inheritable, transferable within the family, and could not be sold to non-members. If a father lacked land for his sons, headmen or the chief provided additional allocations.

Arable land: Allocated based on ward size, families received generous portions for cultivation, considering future growth. If unsuitable, individuals could seek land elsewhere. Cultivation was restricted to allocated areas, and unclaimed land remained under the chief's control.

Grazing land: Communally held, grazing rights extended to all, with grazing stations (*meraka*) assigned to wards. Wells or dams for cattle watering required permission, and well-diggers gained exclusive grazing rights around their water sources. Wealthier individuals with large herds often enjoyed dual grazing rights in communal and well-developed areas.[54]

Overall, land management was communal and regulated, ensuring equitable access while preserving tribal ownership and use rights.

4.3.4.2 Post-colonisation

The system outlined above remained undisturbed until the passing of the Tribal Land Act of 1968. The Act established Land Boards for each tribal territory and transferred the authority of land management and administration from traditional authorities to the Land Boards.[55] Various reasons have been put forward to explain this power shift. It is argued that traditional leaders had become increasingly selfish and corrupt and that the government wanted to ensure that customary land was managed by experts on land and land use.[56] The Tribal Land Act of 1968 was repealed and replaced by the Tribal Land Act of 2018. However, customary law is still relevant in the allocation of tribal lands.

53 Ng'ong'ola (1992: 140-167); Schapera (1994).
54 Emoh & Kalabamu (2023: 52).
55 Secs 3 & 13 of the Tribal Land Act of 1968.
56 Mathuba (1989).

4.3.4.3 Conflicts and means of resolution

Land disputes in Botswana are solved by courts.[57] The Land Tribunal, established under the Land Tribunal Act 4 of 2014, is a specialised court that has the authority to handle appeals arising from decisions made by Land Boards and Physical Planning Committees of district councils. However, its jurisdiction is limited when it comes to land-related matters. The Land Tribunal cannot resolve disputes over compensation amounts, inheritance, transfer enforcement, or state and freehold land issues, except for planning matters, which are handled by the High Court. The Land Tribunal has the authority to either uphold, reject, or modify decisions made by public bodies. In situations where both parties involved in a dispute agree, the Land Tribunal can refer the dispute to arbitration for resolution.[58]

4.4 Public environmental law

In Botswana, the absence of specific legislation dedicated solely to soil issues, as well as comprehensive legislation on environmental matters, has been observed. Environmental issues are addressed in a silo-styled manner. Nevertheless, various legislations, both primary and subsidiary in nature, address environmental concerns and encompass provisions on soil. Notable examples of which include the Agricultural Resources Conservation Act of 1972, the Waste Management Act of 1998, and the Agrochemicals Act of 1999. Additionally, some by-laws govern the collection of natural resources including soil.

The Natural Resources Protection (Model) By-laws, 1992 govern the collection of natural resources at the district council level. The natural resources that fall under these regulations include firewood, gravel, sand, soil, stones, thatching grass, veld products, and river reeds. Removing any of these resources from the council area is strictly prohibited unless a removal permit has been obtained and the terms and conditions are followed.[59] To acquire a removal permit, an application must be submitted to the Council Secretary, who also serves as the Secretary of the Land Board. The application should clearly state the type and quantity of natural resource the applicant intends to remove, whether they reside in the council area if the resource is for use within the council area, and the purpose for which the resource is needed.[60]

The Council Secretary is not authorised to issue a removal permit if the destination of the resource is outside of Botswana. Additionally, the Council Secretary cannot grant a permit that allows the removal of more than five tons of firewood (or any other

57 See *Malete Land Board v The Registrar of Deeds Botswana* MAHGB-000819-17.
58 Sec 16 of the Land Tribunal Act of 2014.
59 By-law 3 of the Natural Resources Protection (Model) By-laws, 1992.
60 Ibid.: By-law 4.

quantity determined by the council with the Minister's approval) or an excessive amount of any other natural resource beyond what is reasonably necessary for the stated purpose in the application.[61]

Removal permits are valid for a period determined by the Council Secretary.[62] It is strictly prohibited to rent, assign, transfer, or otherwise relinquish a removal permit to another individual.[63]

4.5 Urban planning law

Several legal instruments guide urban planning. These include the National Settlement Policy, 2004; Botswana Land Policy, 2015; the Town and Country Planning Act, 2013; Immovable Property Act, 1967; the Land Survey Act, 1959; Sectional Titles Act, 2003; and the Deeds Registry Act, 1960.

4.5.1 Town and Country Planning Act

The Act aims to ensure orderly and progressive land development in urban and rural areas while preserving and enhancing amenities. It defines "land" to include buildings and "development" as building, engineering, mining, or other operations on or under land, or changes in land use.

Land use control is implemented through zoning, and designating areas for residential, agricultural, industrial, or other purposes. Planning occurs at national, regional, and local levels. The Minister oversees national land-use policies,[64] while local councils draft plans,[65] consult stakeholders, and ensure compliance with environmental assessments.[66] Local plans address zoning, building regulations, public services, and transportation infrastructure.[67] The Minister can direct or modify these plans and oversee regional planning for multi-district areas.[68] Regional plans include land use, public utilities, and environmental conservation, supported by data analysis.[69]

Urban planning in Botswana follows a centralised system, aligning national and sub-national plans.[70] National Development Plans (NDPs) guide local policies,

61 Ibid.: By-law 5.
62 Ibid.: By-law 7.
63 Ibid.: By-law 8.
64 Sec 3 of the Town and Country Planning Act of 2013.
65 Ibid.: Sec 5.
66 Ibid.: Sec 19.
67 Ibid.: Sch 2.
68 Ibid.: Sec 18(3).
69 Ibid.: Sec 17.
70 Molebatsi & Kalabamu (2018: 67 -68); GOB (2014).

requiring district plans to conform to regional and national frameworks. While efforts have been made to promote participatory planning through forums such as the National District Development Conference (NDDC), genuine public involvement is limited. Public consultation via *kgotla* meetings is hindered by low attendance, stigma, and restricted freedom of expression.[71] Moreover, the accessibility of draft plans is constrained by their technical language and limited availability, reducing public awareness and compliance.

4.5.2 Land Survey Act, 1959

The Land Survey Act of 1959 serves the purpose of surveying land and establishing recognised units of land measurement. It includes provisions for the appointment of a Director of Surveys and Lands[72] and the establishment of the Land Surveyors' Board. Under the Ministry of Land Management, Water, and Sanitation Services, the Department of Surveys and Mapping (DSM) is responsible for conducting cadastral, engineering, and geodetic surveys. The DSM also produce topographic and thematic maps and provides basic attribute and geospatial data to government, private, and public users.

The Director of Surveys and Lands supervises and controls the survey and charting of land for purposes of registration in the Deeds Registry. They are responsible for managing and preserving all records appertaining to land surveys, reviewing all general plans and diagrams before any registration is affected, and approving those plans and diagrams if they are satisfied that the surveys have been properly carried out. Land surveys were mainly conducted on state and freehold land, but with the introduction of the deed of customary land grants in tribal lands, land surveys have been extended to include tribal lands. Therefore, this Act is very crucial in the implementation of land policies through mapping, planning, and demarcation surveys.

4.5.3 Spatial planning law

Spatial plans are comprehensive documents that provide a roadmap for the development of a specific geographic area. They encompass policies, priorities, programs, and land allocations that will direct future growth and shape the distribution of people and activities across different scales. These plans are implemented at national, regional, and local levels. The main goal of spatial development planning is to effectively manage land use, ranging from the detailed design of individual sites in urban or rural areas to the distribution of activities across different regions of a country. As such, spatial

71 Maphosa, Ntau & Seleka (2019: 88); Molebatsi (2013: 9-14).
72 Sec 3 of the Land Survey Act [Cap 33:01].

planning in Botswana is guided by the Town and Country Planning Act of 2013; the National Spatial Plan 2036; and the National Settlement Plan (NPS) 2004.

The National Spatial Plan 2036 serves as a comprehensive guide for the development of spatial areas within Botswana for the next 20 years. The primary objective of the NPS is the establishment of a comprehensive set of guidelines intended to govern national physical planning. Its fundamental aim is to furnish a framework for the allocation of investments in a manner that harmonises with various determinants including the dimensions, population, economic prospects, level of infrastructure, and role as hubs for rendering services of distinct settlements. Moreover, the formulation of regional and local plans bolsters the implementation of the NSP. Currently, two regional plans and development plans for 100 settlements have been devised as integral constituents of this progression.

4.6 Cross-cutting issues

The Environmental Assessment Act of 2011 and the Environmental Assessment Regulations of 2012 provide for both Environmental Impact Assessment (EIA) and Environmental Strategic Assessment (ESA). An EIA is required for projects whose implementation will result in substantial use of a natural resource in a way that prevents the use or potential use of the resources for any other purpose, while SEAs are undertaken on district land use and structural plans, and national policies, legislation and development strategies and programmes. Furthermore, in terms of the Town and Country Planning Act, draft local plans prepared by the local planning authorities for submission and approval by the Minister, must be accompanied by an SEA prepared per the Environmental Assessment Act.

The Environmental Assessment Regulations of 2012 contain a list of projects that are required to undergo an EIA. These projects include activities in environmentally sensitive areas such as wetlands, waste management facilities, infrastructure development, and agricultural projects. The Environmental Assessment Act and the Regulations outline the procedures for conducting an EIA, developing environmental management plans, and making decisions regarding applications for environmental authorisation. Notably, an Environmental Management Plan (EMP) and Environmental Impact Statements (EIS) must include a comprehensive technical analysis of specific environmental impacts, such as pollution dispersal and soil erosion.

The right to receive and communicate information without interference is enshrined in the Constitution.[73] However, it does not impose an obligation on the state to provide information. Concerning EIAs, the Environmental Assessment Act provides for access to information and public participation. According to Section 7(2), an

73 Sec 12(1) of the Constitution.

applicant for environmental authorisation is required to engage a practitioner to conduct a scoping exercise as part of the EIA process. This exercise involves consultations with relevant government departments, local authorities, non-governmental organisations, members of the public, and any other interested party to determine the potential environmental impact of a proposed activity.[74] During the scoping exercise, the effects and benefits of the intended activity must be publicly advertised in the media using the official languages for a minimum period of 21 days.[75] Following this period, the practitioner must hold meetings with the affected individuals or communities to explain the nature of the activity and its potential effects.[76]

The primary objective of the scoping exercise is to provide interested and affected parties with the opportunity to delineate the scope of the study to focus on pertinent and significant issues. This exercise aids in the identification and communication of potential impacts stemming from the proposed activity to all relevant parties. After the scoping exercise, the production of a comprehensive Scoping Report is obligatory, capturing the matters addressed during said exercise. Since the interested and affected parties vary depending on each project, it is imperative to accurately identify and engage these parties. A range of methodologies can be utilised by the practitioner to ensure meaningful public participation within the community, such as surveys, polls, questionnaires, advertisements, leafleting, community presentations, personal contacts, public meetings, and public hearings.[77] In practice, the Department of Environmental Affairs emphasises that applicants should consider different methods for consulting various stakeholders.

In addition to public participation during the scoping exercise, the Environmental Impact Assessment Act provides for public review of the EIS report. [78] The EIS must evaluate the environmental impact of an activity concerning numerous factors, including health, safety, quality of life, environmental conditions, and natural resources. Once the competent authority receives the EIS, it will assess compliance with the required standards. If the EIS meets the requirements, a notification will be published in the Government Gazette and newspapers, inviting comments and objections from affected and interested individuals.[79] The notification must provide information about the activity, its location, anticipated environmental impact, and proposed mitigation measures. The competent authority must consider the comments and objections raised by affected and interested parties in its decision-making. Additionally, the competent authority may conduct a public hearing to allow for public input, if necessary, especially if the activity could have a significant adverse impact on the environment.[80] The

74 Sec 2 of the Environment Assessment Act of 2011.
75 Ibid.: Sec 7(2)(a).
76 Ibid.: Sec 7(2)(b).
77 Mathope & Toteng (2018: 85).
78 Sec 9 of the Environmental Assessment Act of 2011.
79 Ibid.: Sec 10.
80 Ibid.: Sec 11.

findings from the public hearing must be considered by the competent authority when determining the adequacy of the EIS.

Under the Environmental Assessment Act, a person who is dissatisfied with a decision made by the competent authority has the right to appeal to the Appeals Committee within 30 days of being notified of the decision.[81] This Appeals Committee is established by the Minister through the Environmental Assessment (Establishment of Appeals Committee) Order of 2019. The Appeals Committee has the power to uphold, modify, or overturn the decision of the competent authority. If the Committee decides to modify the decision, the modified decision will be considered the decision of the competent authority, unless the Committee specifies otherwise. A decision made by the Appeals Committee carries the same weight and can be enforced in the same manner as a decision made by a court of competent jurisdiction. Furthermore, such decisions are considered public records and can be inspected by any member of the public during normal working hours. Unless a party requests otherwise, the proceedings before the Committee are open to the public.

4.7 Specific instruments to control the behaviour of foreign investors

Botswana has signed Bilateral Investment Treaties (BITs) with several countries, including Belgium, Luxembourg, China, Germany, Ghana, Malaysia, Mauritius, and Switzerland. However, only the BITs with Germany and Switzerland are currently in force.[82] These BITs aim to facilitate and safeguard the interests of foreign investors and their investments in the country. The BITs provide for equal treatment of foreign investors and do not discriminate against them based on their nationality. In addition, Botswana has signed an Investment Inventive Agreement with the Overseas Private Investment Corporation (OPIC), an agency of the US government. This agreement offers guarantees and protections to private US investors operating in Botswana.

Botswana's BITs do not impose specific obligations on foreign investors. However, they typically include a legality clause that requires foreign investors to establish, maintain, and operate their investments in compliance with domestic laws. There is a wide consensus that the legality clause is an international legal principle, applicable even in cases where it is not explicitly mentioned in an investment treaty. It is regarded as a "tacit condition, inherent in every BIT, since it cannot be understood under any circumstance that a State is offering the benefit of protection through investment arbitration when the investor, to reach that protection, has committed an unlawful

81 Ibid.: Sec 13.

82 See https://investmentpolicy.unctad.org/international-investment-agreements/countries/26/botswana, accessed 25 June 2024.

action."[83] Consequently, foreign investors are expected to abide by Botswana's domestic laws, including those on the conservation of soil resources.[84]

Foreign investors are granted a range of incentives that serve to enhance their investment activities. This includes a considerable reduction in the applicable corporate tax rate, which stands at a mere 5% for the initial five-year period and subsequently increases to 10%, in contrast to the prevailing national tax rate of 22%. Additionally, foreign investors are exempted from customs duties on imported raw materials, thereby affording them significant cost advantages. Furthermore, rebates are provided for customs duties and value-added tax imposed on exports made outside SACU. Moreover, foreign investors enjoy extended land lease duration, as they are granted a minimum term of 50 years, rather than the standard lease term of 25 years.

4.8 Competences of enforcement entities

4.8.1 Agricultural Resources Board

The Agricultural Resources Board (ARB) was established in terms of the Agricultural Resources Conservation Act of 1972. Its primary function is to oversee the management of agricultural resources in Botswana. The ARB offers advice to the Minister on matters concerning the overall supervision of all agricultural resources, as well as the necessary legislation to ensure the proper conservation, utilisation, and enhancement of these resources. It also recommends measures to generate public interest in the effective preservation, utilisation, and improvement of agricultural resources. Additionally, the ARB has the authority to conduct independent investigations or inquiries into any issue on the conservation, use, or improvement of agricultural resources, either at its discretion or as directed by the Minister. It also issues orders on conservation, regulations related to conservation, and orders for the control of livestock.

The Act confers authority upon the Minister to establish conservation committees and subordinate conservation committees. The primary duties of said committees include conducting ongoing evaluations of agricultural resource conservation within their respective jurisdictions and making recommendations to the Board accordingly.

83 *SAUR International v Argentine Republic* ICSID Case No. ARB/04/4, Decision on Jurisdiction and Liability, 6 June 2012, para 306.

84 Art 5 of the BLEU (Belgium-Luxembourg Economic Union) - Botswana BIT (2006), acknowledges the sovereignty of each party in determining their levels of environmental protection and policies, as well as the authority to adopt or modify their environmental legislation accordingly. It is incumbent upon each party to endeavour towards enacting legislation that guarantees robust environmental protection and continuously enhances this legal framework. Moreover, the parties acknowledge the inappropriateness of incentivising investments by relaxing domestic environmental laws. Consequently, each party commits to ensuring that it refrains from waiving, derogating, or offering to waive or derogate from such legislation to encourage the establishment, maintenance, or expansion of investments within its jurisdiction.

Furthermore, they are tasked with persuading landowners and occupiers in their areas of jurisdiction to adopt farming or land use methods deemed necessary for the preservation of soil fertility and the protection of agricultural resources. These committees also aid in issuing notifications to affected landowners or occupiers regarding conservation orders, stock control orders, or conservation regulations. Additionally, they are empowered to propose to Land Boards the imposition of limitations on customary grants of land rights, and the attachment of restrictive conditions to grants of land rights under common law, when such limitations or conditions are deemed conducive to sound agricultural management. Moreover, the committees engage in promoting measures for the preservation, wise utilisation, and augmenting of agricultural resources within their areas of jurisdiction, as well as generating public interest in the conservation thereof. Lastly, they are responsible for examining, investigating, and submitting reports on matters referred to them by the Minister or the Board.

The function of a subordinate conservation committee is to perform any functions enumerated above as assigned to it by the conservation committee.

4.8.2 National Agrochemical Committee

The National Agrochemicals Committee (NAC), an advisory and review committee, is established by the Minister in terms of Section 6 of the Agrochemicals Act. NAC is composed of twelve members, and these are directors or representatives from departments of Crop Production and Forestry; Animal Production; Agricultural Research; Wildlife and National Parks; Quality Assurance, Botswana Bureau of Standards; Dean of Faculty of Agriculture, Botswana University of Agriculture and Natural Resources; Ministry of Health; Head of the Chemistry Department, University of Botswana; Chief Chemist, Department of Water Affairs; Representative of National Conservation Strategy (Coordinating) Agency (presently Department of Environmental Protection); representative of the farming community; and representative of the agrochemicals industry. The Minister may co-opt two other members who, in their opinion, have knowledge and experience likely to contribute to the carrying out of the Committee's functions.

The functions of the Committee are to control or regulate the importation, distribution, use, and disposal of agrochemicals; ensure compliance with the provisions of the Agrochemicals Act, including to make recommendations to and advise the Registrar, in respect of a certificate or licence sought to be issued in terms of this Act; and review the registration and licensing of agrochemicals.[85]

85 Sec 8 of the Agrochemicals Act of 1999.

4.8.3 Land Boards

The Tribal Land Act establishes Land Boards (and subordinate land boards) for each district.[86] Each Land Board is composed of eight appointed members; three *ex-officio* members, namely a *Kgosi* (chief) or *Moemela Kgosi*, one member representing the Ministry responsible for Trade, and one member representing the Ministry responsible for Agriculture. The chairperson is appointed by the Minister from the members of the Land Board while the deputy chairperson shall be elected by members from amongst their number.

Land Boards are mandated to manage and administer tribal land; make and execute grants or other dispositions of any such land or any interest therein; ensure the equitable distribution of land to citizens of Botswana in a manner that ensures sustainable development and the protection of natural resources; and advise government, whenever appropriate, in any matters relating to policies as may be necessary for, or incidental to, the attainment of the objectives of the Land Board. As far as issuing of grants and protection of natural resources is concerned, Land Boards play an important role since they can cancel a land grant if the grant holder does not adhere to good husbandry.

4.8.4 Ministry of Environment and Tourism

The Ministry of Environment and Tourism assumes the responsibility for safeguarding, preserving, and deriving value from natural and cultural resources, whilst promoting a sustainable environment for the nation's benefit. It takes charge of formulating, implementing, and monitoring policies and strategies on environmental conservation and sustainable utilisation of natural and cultural resources. The Ministry seeks to extract benefits and value from these resources, fostering a nation that is empowered, adaptive, and environmentally conscious, whilst building resilience to climate change. Crucial entities within this Ministry include the Department of Forestry and Rangelands Resources, as well as the Department of Environment Protection.

4.8.5 Department of Forestry and Rangelands Resources (DFRR)

This Department is charged with the conservation, protection, and management of vegetation resources in Botswana and ensures that these resources are used sustainably for the benefit of the present and future generations. According to the Botswana National Action Programme to Combat Desertification, this Department is responsible for

86 Sec 3 of the Tribal Land Act of 2018.

controlling and preventing land degradation and facilitating enforcement of all environmental legislation aimed at minimising land degradation. Further, it is tasked to build the capacity of local authorities and policymakers; provide information on desertification and drought to formal, non-formal, and informal sectors of education; and build the capacity of communities to help combat desertification.

4.8.6 Department of Environmental Protection

The Department of Environment Protection (DEP) is primarily responsible for environmental protection and is the competent authority on EIAs. In terms of the Botswana National Action Programme to Combat Desertification, DEP is the leading agency in mobilising resources to implement the NAP. In this role, it partners with the DFRR, Ministry of Finance and Development Planning, Ministry of Lands and Agriculture, and civil society organisations. It is further tasked to undertake research on the processes of drought and desertification and facilitate capacity building for stakeholders involved in combating desertification and mitigating the effects of drought.

Furthermore, DEP is responsible for providing policy direction and leadership in all matters of sanitation and waste management. It registers persons who manage controlled waste, and registers and licenses waste carriers, waste disposal sites, and waste management facilities. It also monitors the collection, disposal, and treatment of controlled waste by local authorities and waste management industries in the private sector. Additionally, it occasionally inspects land to detect whether the condition of any part of the land is likely to cause pollution of the environment or harm to human, animal, or plant life and to take such other steps as are necessary in regard thereto. The promotion and coordination of human resources development and institutional capacity within the local authorities to effectively implement sanitation and waste management programmes is another task of the DEP.

4.8.7 Ministry of Lands and Agriculture

The Ministry of Lands and Agriculture is responsible for managing land resources, promoting agricultural development, ensuring food security, overseeing land tenure and access, conducting agricultural research, and addressing the impacts of climate change on the farming sector. Its primary goal is to balance land use with sustainable agricultural practices to support the country's economy and enhance social well-being. Regarding the protection of soil resources, specific attention will be directed toward examining the activities and initiatives undertaken by the Department of Crop Production and the National Agricultural Research and Development Institution (NARDI).

4.8.8 Department of Town Country and Planning (DTCP)

The DTCP is mandated with the responsibility to facilitate orderly and sustainable spatial development of land in Botswana. The Department formulates National Physical Planning Policies, advises Ministries, local authorities, government departments, the private sector, and NGOs on town and country planning matters and determines the optimal use of land. Furthermore, the Department advises the Ministry of Land, Water, and Sanitation on town and country planning matters. In terms of the Botswana NAP, the DTCP is expected to promote participatory land use planning to control and prevent land degradation.

4.8.9 Department of Survey and Mapping

The Department serves as the nation's principal surveying and mapping organisation, entrusted with the responsibility of providing essential geospatial information and services to support socio-economic development. Its core objectives include the collection, management, and dissemination of geospatial data, employing technologies such as Remote Sensing, Global Navigation Satellite System (GNSS), Geospatial Information Systems (GIS), aerial photography, and satellite imagery. Furthermore, the Department administers the National Mapping Programme, facilitating mapping activities at various scales throughout the country, encompassing tasks such as village mapping, delineation of electoral boundaries, and the mapping of tourism and facilities (e.g., schools, healthcare facilities, wildlife management areas). Additionally, the Department exercises regulatory authority over cadastral surveying, topographic surveying, and mapping within the confines of Botswana. This involves conducting statutory examinations and granting approvals for cadastral surveys to assist in the registration of titles following the Land Survey Act (Cap 33:01) and Regulations.

4.8.10 Department of Lands

The Department of Lands serves as the central authority for matters regarding land governance, government immovable asset management, and conveyancing. Its mandate encompasses guiding government departments and stakeholders on policy and operational matters concerning the planning, acquisition, operation, maintenance, and disposal of government immovable property, including land. Furthermore, it undertakes the initiation, development, and implementation of policies and legislation related to land, as well as facilitating the coordination of programs and projects related to land and property development. The Department also has oversight over the

administration of state land and tribal land and provides advice to the government on land dispute resolution and general land management and administration.

4.8.11 Ministry of Minerals and Energy

The Ministry of Minerals and Energy (MME) assumes responsibility for the formulation, direction, coordination, development, and execution of national policies and programs on the minerals and energy resources industry. Additionally, the MME devises strategies for the effective execution of approved policies and programs concerning minerals and energy. A pivotal entity within this Ministry is the Department of Mines, which seeks to ascertain that mineral resources are harnessed and utilised sustainably. It assumes the duty of granting licenses and overseeing prospecting and mining operations, to ensure adherence to established environmental, health, and safety standards, as well as relevant laws and regulations.

4.8.12 Department of Crop Production (DCP)

The Department of Crop Production is responsible for enhancing competitiveness within the arable sub-sector and reducing the nation's dependence on imports. This is achieved by facilitating the adoption of innovative production technologies by the farming community and aiding farmers in upgrading their management practices and technological utilisation. The Department also takes charge of regulating pests that are considered significant at a national level. Additionally, it plays an advisory role in addressing concerns related to the conservation of agricultural resources.

4.8.13 National Agriculture Research Institute (NARDI)

The National Agriculture Research Institute (NARDI), established in 2015 through the consolidation of the Department of Agricultural Research (DAR), National Veterinary (NVL) and National Food Technology Research Centre (NFTRC), endeavours to undertake high-quality, innovation-intensive and needs-driven research and development. NARDI also engages in commercialisation and technology transfer endeavours along the agricultural value chain, intending to benefit consumers, farmers, industry, government, and the scientific community. The primary objectives of NARDI are to augment the agricultural sector's contribution to Botswana's GDP, enhance the utilisation of natural products and agricultural goods, promote inclusive practices and initiatives for knowledge transfer, and offer inventive solutions and adaptations in

response to the challenges posed by climate change, yield improvement, and the commercialisation of agriculture.

The National Agriculture Research Institute (NARDI) engages in research and development activities across seven thematic areas: field crops and horticulture, animal production and health, agricultural and biosystems engineering, food science and technology, agricultural economics and statistics, innovation, knowledge management and intellectual asset beneficiation, and technology transfer and commercialisation. Within NARDI, the Department of Field Crops and Horticulture focuses on research in the field and horticulture crops sectors, to improve agricultural efficiencies. The Department leads field crops programs, as well as the Climate Smart Crops program.[87]

Moreover, the Department of Natural Resources Management at NARDI conducts research on the intricate interactions between human beings and natural ecosystems, including rangelands, biodiversity, soils, and water, to promote sustainable management of natural resources and foster resilient livelihoods in the face of a changing climate. Research endeavours encompass various areas such as ecosystem services, assessment and monitoring of land degradation, sustainable land management, ecosystem rehabilitation to advance LDN and the evaluation, adaptation, and mitigation of climate change risks. Specifically, research efforts on land degradation assessment and rehabilitation concentrate on comprehending the dynamic processes governing rangelands, soils, and water, concerning the various management practices employed. The knowledge generated from this research is crucial in advocating for sustainable levels of natural resource utilisation, including rangeland carrying capacity, that are appropriate for diverse ecological zones. Additionally, the department is actively involved in the development of innovative technologies that facilitate the restoration of degraded ecosystems.

4.9 Availability and accessibility of environmental data

The Environment Statistics Unit in the Central Statistics Office is responsible for publishing statistics in the country. They use primary data pooled from different departments involved in environment and natural resources management and monitoring. The publications are readily accessible online. However, due to data paucity, not all the data environmental indicators are presented by the Central Statistics Office. Also, the statistics are not timeously published. Lamentably, even at the department level, statistics are not readily available.

Another challenge is that institutions are not willing to share available information with other departments.[88] The reluctance to share information, in the end, promotes

87 See https://www.nardi.org.bw/services/field-crops-and-horticulture-dfch/, accessed 20 May 2024.

88 GOB (2006: 25).

duplication of efforts and makes reporting processes cumbersome and difficult as there is limited information made available for the preparation of reports and any other reporting process for local consumption. As such there is a need to come up with an information-sharing structure to ease access to information.

Botswana's research institutes such as the University of Botswana/Harry Oppenheimer Okavango Research Centre (HOORC) and NARDI have been playing an important role in researching and disseminating information on issues of agriculture and natural resources. Research collaborations have been witnessed between these research institutions and environmental NGOs. Furthermore, the University of Botswana and Botswana University of Agriculture and Natural Resources have been, through their degree programmes, instrumental in developing human capital skilled in environmental issues, agriculture, and natural resource management. However, strengthening human capacity remains an issue.

Notably, there are currently two soil scientists at the Ministry of Lands and Agriculture and about five soil surveyors who were trained internally after completing Land Management.[89] There is a need for further training in soil science, as no institutions are currently producing soil scientists in the country.

5 Specific information on existing legislation concerning the main drivers of soil degradation

5.1 Agriculture

5.1.1 Agricultural Resources Conservation Act, 1972

The Agricultural Resources Conservation Act of 1972 aims to facilitate the preservation and enhancement of agricultural resources in Botswana. This Act defines agricultural resources as encompassing various essential components. These components include soil, water, plant life, vegetative products, animal life, fauna, and any other items that the Minister designates as agricultural resources through an official notice in the Gazette.[90]

The Act provides for the establishment of the Agricultural Resources Board, which plays a central role in conserving and improving agricultural resources.[91] This is achieved through the issuance of conservation orders and conservation regulations.[92] Conservation orders require landowners or occupiers to take necessary measures to conserve agricultural resources on their land or prevent harm to agricultural resources

89 See Rozanov & Wiese (2018).
90 Sec 2 of the Agricultural Resources Conservation Act 39 of 1972.
91 Ibid.: Sec 3.
92 Ibid.: Sec 16(1)–(2).

on other land caused by their actions or omissions. In contrast, conservation regulations regulate agricultural land-use practices in specific areas designated by the Agricultural Resources Board as necessary for conserving agricultural resources. One month after being published in the Gazette, conservation regulations become effective in any designated area.

These orders and regulations have the power to prohibit, regulate, require, or control various activities such as cultivation, grazing or watering of livestock, firing, clearing or destruction of vegetation, and protection against fire. Additionally, they can address afforestation or re-afforestation of land, protection of slopes or catchment areas, and drainage of land including the construction, maintenance, or repair of artificial or natural drains, gullies, contour banks, terraces, and diversion ditches. The purpose of these measures and requirements is to protect land against erosion or the deposit of sand, stones, gravel, or any other material. They also aim to prevent the silting up of dams, preserve vegetation, maintain soil fertility, and promote sound husbandry practices. Furthermore, conservation orders may restrict or control the use of insecticides, fertilisers, or any other chemical compounds on, in, or over land.[93]

Further, the law empowers the Board to make decisions regarding construction works on any land for the purpose of mitigating or preventing soil erosion, as well as for preventing or controlling bushfires through firebreaks or control burning. The costs of these works are typically covered by the government, but in certain cases, the Board may allocate the cost to the landowner or occupier.[94]

Additionally, the Board is empowered to issue stock control orders.[95] These orders prescribe the maximum number and class of stock that can be kept or pastured by any landowner or occupier in a specified area or watered at a designated point. The implementation of a stock control order is deferred for a reasonable period, allowing the stock owner time to find alternative grazing or dispose of the stock to comply with the order. A stock control order can apply to any cattle on the land or water at the specified point, regardless of whether all or some of the cattle are subject to a contract that prohibits selling or slaughtering them. The Act defines stock to include various animals such as cattle, horses, donkeys, mules, sheep, goats, ostriches, pigs, animals of the Bovidae family in captivity, domestic fowls, turkeys, geese, ducks, and any other domesticated or captive animal or bird specified by the Minister in a Gazette notice.

5.1.2 Agrochemicals Act, 1999

The primary objective of this legislation is to establish a framework for the registration and licensing of agrochemicals, as well as to implement measures for the control and

93 Ibid.: Sec 16(5).
94 Ibid.: Sec 18.
95 Ibid.: Sec 19.

regulation of their importation, manufacture, distribution, use, and disposal. These provisions are intended to prevent environmental pollution and safeguard human, plant, and animal life from potential harm. Agrochemicals, as defined under this Act, encompass any organic, inorganic, or live biological materials that are intended or offered for sale, with the purpose of either eliminating, controlling, repelling, attracting, or preventing any detrimental life forms that could impede plant and animal growth, or promoting or inhibiting plant growth through the use of fertilisers, growth regulators, hormones, defoliants, or legume inoculants.[96]

The possession, use, importation, manufacture, advertisement, distribution, or sale of agrochemicals is strictly prohibited unless the said agrochemical has been duly registered following the provisions outlined in this legislation.[97] Moreover, individuals must obtain a valid license under this Act to engage in activities such as manufacturing, importing, distributing, selling, or disposing of agrochemicals.[98]

When applying for the registration of an agrochemical, the applicant is required to provide a comprehensive summary of its potential effects on the environment, with specific emphasis on its toxicity to earthworms and soil micro-organisms. This summary must also include information regarding its behaviour, methods of degradation, degradation products in soil, major metabolites, DT50 (in days), mobility, adsorption, and the mobility of metabolites.[99]

Furthermore, a licensee must ensure that any agrochemical distributed by them complies with all legal requirements, including appropriate approval, accurate marking, secure packaging, and proper labelling following the law. The licensee must also ensure that the substance contained within the agrochemical aligns with the specifications stated on the label. Moreover, the directions for use and any other information provided on the label should be free from any misleading or false information.[100]

To ensure the safe and appropriate handling of agrochemicals, the Registrar is mandated to periodically organise a training course for individuals seeking a license under these Regulations but lacking the requisite qualifications. This course shall encompass several key areas, including the interpretation of labels; categorisation of agrochemicals into distinct groups; classification of toxicity levels and corresponding colour codes; storage and handling protocols for various types of agrochemicals, as well as those differing in toxicity; utilisation of protective clothing; and appropriate methods for disposing of agrochemicals.[101]

In accordance with Agrochemicals Regulations, it is mandatory to ensure the safe disposal of all agrochemicals. This involves the shredding of bags and boxes, breaking

96 Sec 2 of the Agrochemicals Act of 1999.
97 Ibid.: Sec 10.
98 Ibid.: Sec 15.
99 Reg 3 of the Agrochemicals Regulations of 2003.
100 Ibid.: Reg 7.
101 Ibid.: Reg 13.

of pallets, burning of lightly agrochemical-contaminated waste, or packing such waste in 200-litre steel drums for subsequent disposal as toxic waste.[102]

5.1.3 Town and Country Planning Act, 2013

This Act makes provisions for the orderly and progressive development of land in urban and rural areas and aims to preserve and improve the amenities thereof. Although the Act primarily focuses on planning, it also includes provisions for soil protection. This is more evident in the applications for land subdivisions and consolidations, which require the consent of planning authorities.[103] In cases where the land will be used for agriculture, the planning authority must consider the need for soil conservation.[104] Additionally, the Minister has the authority to issue orders that preserve trees, groups of trees, or woodland in any area.[105] These orders can prohibit the cutting down, topping, lopping, or intentional destruction of trees, and they may also require replanting. The preservation of trees and the practice of replanting are essential in managing soil degradation, as they help to prevent soil erosion.

5.1.4 Enforcement issues

The major constraint is that the Agricultural Resources Conservation Act is largely corrective rather than preventive and proactive. Actions can be taken when the land is degraded, but no tools are provided to prevent land degradation from occurring. Further, the implementation of the framework provided in this Act has been lacking due to the dissolution of the Agricultural Resources Board responsible for issuing conservation orders, regulations, and stock control orders. As a result, there is currently no institution with the authority to address the pressing issue of overstocking and promote sustainable soil management. This governance gap has hindered the effective management of land and livestock, potentially contributing to further environmental degradation. The Board must be revived to ensure the proper enforcement of conservation orders, regulations, and stock control orders to safeguard the country's soil health and mitigate the negative impacts of overstocking.

For inspection regarding agrochemicals, the Agrochemicals Act confers authority upon the Minister to designate an officer as an agrochemical inspector. These inspectors possess the power to lawfully enter any premises and conduct examinations, as well as obtain samples of any agrochemical or substance that is utilised or has the

102 Ibid.: Reg 12.
103 Secs 37-38 of the Town and Country Planning Act of 2023.
104 Ibid.: Sec 40(1).
105 Ibid.: Sec 41.

potential to be utilised in the manufacturing, production, processing, or treatment of an agrochemical. Inspectors may assess any process or activity occurring within said premises, relating to the agrochemical, or associated with its manufacturing, production, processing, or treatment. In addition, inspectors are entitled to examine any containers, facilities, or equipment employed in the context of agrochemicals, regardless of whether they are discovered on the premises, and are permitted to halt and search any motor vehicle used for the transportation of agrochemicals. However, to legally enter, inspect, or seize any agrochemical or its remnants, inspectors are required to possess a valid search warrant, along with written consent provided by the owner or occupant of the premises.[106] The necessity of obtaining this written consent and search warrant poses a hindrance to the inspectors, as it may prevent them from implementing the laws governing agrochemicals in a timely and effective manner, particularly if the owner or occupier elects to withhold their consent.

5.1.5 Monitoring

The Ministry of Lands and Agriculture is responsible for implementing all agricultural initiatives, based on the national policy frameworks. The Ministry operates through the Department of Agricultural Research, Statistics, and Policy Development (DARSPD), which is responsible for the monitoring and evaluation of agricultural programs. Moreover, DARSPD offers statistical information services to foster a competitive and sustainable agricultural sector while ensuring food security. Although DARSPD primarily focuses on the evaluation of agricultural programs, it does not prioritise the monitoring of soil resources. Additionally, the indicators used to compile agricultural statistics lack consideration for soil-related factors. In general, soil data is not readily accessible.

5.1.6 Climate smart agriculture

Botswana actively supports and implements climate-smart agriculture initiatives and programs as part of the Climate Smart Agriculture 2015-2025 program. Botswana showcases both traditional and research-based agricultural practices that promote climate resilience, including the adoption of minimum tillage, conservation agriculture measures, effective water and irrigation management techniques, and the introduction of new crop varieties.

Notably, the government has established specific programs to advance climate-smart agriculture, including the Integrated Support Programme for Arable Agriculture

106 Sec 9 of the Agrochemicals Act of 1999.

Development (ISPAAD) in 2008 and the Livestock Management and Infrastructure Development (LIMID) in 2006. ISPAAD aims to bolster the commercialisation of agriculture through mechanisation and facilitates access to farm inputs and credit, while also enhancing extension outreach. Among its various components, ISPAAD includes provisions for incentivising minimum tillage practices. However, the structure of these incentives undermines the intended climate-smart approach. Specifically, ISPAAD provides lower financial support for minimum tillage compared to conventional tillage, despite the potential for minimum tillage to increase crop yield through soil moisture conservation and simultaneously sequester soil carbon.[107]

The LIMID was implemented to enhance livestock and range resource management and conservation, specifically targeting resource-poor farmers. Its initiatives encompassed the provision of assistance in animal husbandry and fodder support, water development, the establishment of cooperative poultry abattoirs for small-scale poultry producers, as well as the promotion of small stock, guinea fowl, and Tswana chickens. To ensure effective oversight of the range lands, the Range Management Section (under the Ministry of Lands and Agriculture) collaborated with the Range Ecology Division (under the Ministry of Environment and Tourism) to undertake monitoring activities across each district. The resulting information obtained from these monitoring processes served to assess the adequacy of range resource management. The monitoring report, subsequently compiled, was presented to the district offices and the Ministry of Lands and Agriculture's headquarters for careful evaluation and consideration.[108]

The Temo Letlotlo Programme, 2023 as a successor to the ISPAAD initiative, aims to foster the adoption of climate-smart technologies. An overarching principle of this programme is the preservation of the environment. This entails the prudent management of agricultural activities to safeguard ecological integrity while simultaneously ensuring the financial sustainability of farming enterprises. Furthermore, it involves the preservation of biodiversity and the mitigation of farming practices that contribute to the emission of greenhouse gases.

The government provides a 50% subsidy through the Programme's tractor and implement scheme to facilitate the acquisition of minimum tillage equipment, and to promote the use of climate-smart-friendly minimum tillage practices instead of conventional tillage methods. This subsidy covers equipment for minimum tillage (including ripping, harrowing, and weeding), planting, weed and pest control, as well as harvesting and processing. Additionally, it includes the procurement of a tractor-trailer to facilitate equipment transportation.

Furthermore, the government has involved the private sector in providing extension services. To create opportunities for the private sector, the Ministry will no longer conduct soil testing and analysis for farmers. Plans are underway to appoint locally

107 FANRPAN (2017); GOB (2013); Morapedi (2016: 288-300).
108 GOB (2009); Moreki et al. (2010).

owned companies to provide extension services and complement public extension efforts. This development is timely, as the country is currently experiencing a shortage of extension workers. Presently, the Ministry has 268 extension officers nationwide, each responsible for an average of 438 farmers.[109]

Farmers are also eligible for seasonal loans, which are secured loans offered at a prime rate, up to a maximum of P8,300.00/ha, specifically intended for grain-producing farmers focusing on business. These loans will be utilised for working capital purposes, including the procurement of inputs, farm production services, and the acquisition of the Weather-based Agricultural Credit Guarantee Scheme (ACGS). A requirement for eligibility is the submission of soil test results from an accredited laboratory.

Implementation of the Temo Letlotlo Programme, 2023 initiatives will be crucial in preserving soil resources. However, it is essential to establish mechanisms that ensure soil test results are stored in a central database that is easily accessible to users. Engaging the private sector in extension services will address the existing weaknesses in the system, such as the lack of appropriate training among some extension workers and reliance on traditional and outdated methods. However, mechanisms must be established to ensure seamless collaboration between public and private sector extension workers.

5.2 Mining

Botswana's mining activities are subject to regulation under various laws[110] including the Mines and Minerals Act and its accompanying Regulations,[111] as well as the Petroleum (Exploration and Production) Act of 2012. All rights of ownership in minerals are vested in the Republic and the Minister responsible for mining shall ensure, in the public interest, that the country's mineral resources are investigated and exploited in the most efficient, beneficial, and timely manner.[112]

109 GOB (2023: 43).

110 Diamond Cutting Act of 1979; Precious and Semi-Precious Stones (Protection) Act [Cap 66:03]; Mines, Quarries, Work, and Machinery Act [Cap 44:02]; Environmental Assessment Act of 2011; Unwrought Precious Metals Act of 2003; Explosives Act [Cap 24:02]; Botswana Geoscience Institute Act of 2014; Botswana Energy Regulatory Authority Act of 2016.

111 Mines and Minerals (Prospecting and Leasing Charges) Regulations, 1969; Mines and Minerals (Health, Mortality and Labour Returns) Regulations, 1970; Mines and Minerals (Demarcation of Mining Lease Areas) Regulations, 1971; Mines and Minerals (Restriction of Prospecting Activity for Coal) Order, 2012.

112 Sec 3 of the Mines and Mineral Act [Cap 66:01].

5.2.1 Mines and Minerals Act, 1999

Environmental protection is a paramount consideration in the entire lifecycle of mining activities. The grant of a prospecting licence is contingent upon the submission of a comprehensive prospecting operations programme that adequately accounts for environmental protection.[113] Similarly, holders of mining licences[114] and minerals permits[115] are obligated to carry out mineral development and extraction activities following mining operations programmes that conform to good mining and environmental practices.

Detailed provisions regarding the environmental obligations of mineral concession holders are outlined in Section 65 of the Mines and Mineral Act. Such holders are required to conduct their operations in a manner that prioritises the preservation of the natural environment to the greatest extent possible. Additionally, they must minimise and control the wastage or undue depletion or degradation of natural and biological resources and promptly address pollution and contamination of the environment as necessary. To align with accepted international standards within the mining industry, applicants seeking mining licences, retention licences, or renewals thereof, must prepare and submit comprehensive EIAs as part of their Project Feasibility Study Reports. Moreover, the law imposes an obligation on mineral concession holders to periodically rehabilitate concession areas. It is a requirement that, upon the conclusion of operations, the topsoil of affected areas shall be restored or the land substantially restored to its pre-operations condition.

Section 82(f) stipulates that engaging in unlawful environmental damage, as prohibited by Section 65, or failing to rehabilitate an extraction site is considered an offence. Upon first conviction, the prescribed penalty is a fine that does not surpass P5 000, imprisonment for a duration not exceeding twelve months, or both. In the event of a second or subsequent conviction, the court retains the discretion to impose a penalty up to twice the previously mentioned penalty.

5.2.2 Petroleum (Exploration and Production) Act, 1981

The Act makes provisions relating to the exploration for and exploitation of petroleum resources in Botswana. Section 55 imposes a duty on holders of development licenses to conduct exploration and development activities in a manner that is proper, safe, and compliant with established oil field practices. License holders must take measures to prevent the contamination of water sources such as wells, springs, streams, rivers, lakes, reservoirs, and estuaries by substances including petroleum, salt water, drilling

113 Ibid.: Sec 14(b).
114 Ibid.: Sec 45(1)(b).
115 Ibid.: Sec 57(b).

fluids, chemical additives, gases (excluding petroleum), and any other waste products or effluents. In the event of pollution, license holders are required to treat or dispose of the contaminants in an environmentally acceptable manner.

5.2.3 The role of foreign investors

The primary concentration of FDI in Botswana occurs within the capital-intensive mining sector, notably through the significant investment by the Debswana Diamond Mining Company. This investment arises from the joint venture between the government of Botswana and De Beers of South Africa, with the government holding a 50% stake. Botswana's existing legal framework does not possess strong provisions for the treatment and protection of foreign investors' interests. It lacks a specific foreign investment law, and only two BITs with Germany and Switzerland are currently in effect.[116]

In 2001, the government proposed the introduction of a Foreign Investment Code aimed at enhancing the regulation of FDI in the country. This proposed code sought to impose minimum capital requirements and reserve certain sectors exclusively for national investors. The government put forward these proposals with the intent of appealing solely to "serious" foreign investors who would make substantial investments, admitting only "*bona fide*" foreign investors.[117] Additionally, the aims were to curb the entry of economic refugees who might deprive citizens of employment opportunities and safeguard the interests of small local investors by creating investment prospects for them. However, this proposal failed to materialise due to dissent surrounding the minimum capital requirements. Notably, the proposal did not address the regulation of investors' conduct or adequately address their role in environmental protection.

5.2.4 Monitoring

The Botswana Minerals Policy of 2022 addresses various concerns, including consumer concerns related to climate change, environmental issues, and ethics. It aims to promote sustainable mineral development that prioritises environmental conservation and protection. To achieve this objective, several strategies have been identified, including the implementation of the polluter pays principle. The government, specifically the Department of Mines, is responsible for monitoring and enforcing mineral laws and policies.

116 See https://investmentpolicy.unctad.org/international-investment-agreements/countries/26/botswana, accessed 30 May 2024.

117 See https://unctad.org/system/files/official-document/iteipcmisc10_en.pdf, accessed 30 May 2024.

Given the inherent nature of mining projects, they typically have a significant impact on the local environment, particularly concerning water and land resources, as well as causing pollution, dust, and noise. For instance, adverse environmental effects have been identified at Bamangwato Concessions Limited (BCL), a copper-nickel mine and smelting facility situated in Selebi Phikwe, located in northeastern Botswana. Studies conducted in this area have revealed that gaseous fumes and emissions resulting from mining activities have negatively affected respiratory health,[118] potentially impacting the pulmonary well-being of residents.[119] Additionally, these activities have contributed to vegetation destruction and soil contamination.[120]

Overall, the effectiveness of monitoring and enforcing environmental obligations outlined in Section 65 of the Mines and Minerals Act has been greatly hindered by inadequate legislation. Currently, there are no regulations, standards, or approved guidelines to govern the implementation of Section 65.[121] Additionally, the country lacks local expertise in environmental matters, especially in the mining field, which makes it challenging to address national needs in this area.[122] This issue is further exacerbated by high staff turnover in the Department of Mines.[123] Moreover, there is evidence that the government lacks adequate monitoring equipment. In the case of the BCL mine, the Selebi-Phikwe Town Council did not have sufficient monitoring facilities and relied on information provided by the mine itself.[124]

5.2.5 Diamond mining in Botswana

The discussion of mining activities in Botswana would be incomprehensive without acknowledging the significant role played by the diamond mining sector. Botswana holds the position of being the foremost global producer of diamonds in terms of value. Presently, there are eight operational diamond mines in Botswana, namely Orapa, Letlhakane, Jwaneng, Damtshaa, Lerala (previously referred to as Tswapong Mine), B/K11, A/K6, and Ghaghoo Mine (formerly known as Gope mine). The initial discovery of the diamond-yielding Kimberlite, recognised as the B/K1 pipe, transpired in Botswana approximately 15 kilometres north of Letlhakane in 1967, shortly following Botswana's attainment of independence from British colonial control over the then Bechuanaland Protectorate. In 1967, all Botswana tribal chiefs agreed with President Seretse Khama, relinquishing all mineral rights in the tribal regions to the

118 Asare & Darkoh (2001: 30-31).
119 Ekosse, van den Heever & Vermaak (2006).
120 Asare & Darkoh (2001: 30-31).
121 Abi (2006).
122 World Bank Group (2016).
123 See https://resourcegovernance.org/sites/default/files/RWI_Enforcing_Rules_Chapter2.pdf, accessed 1 June 2024.
124 Asare & Darkoh (2001: 31).

government.[125] This arrangement was made so that the potential wealth derived from minerals could be fairly distributed among all districts within Botswana.

The preeminent actor in this industry is Debswana Diamond Company (Pty) Limited (Debswana), which was established in 1969. It stands as a leading global diamond producer in terms of both value and volume. Debswana operates four diamond mines, namely Jwaneng, Orapa, Letlhakane, and Damtshaa Mines. The latter, known as Orapa, Letlhakane, and Damtshaa Mines (OLDM), consolidates four small diamond pipes discovered between 1967 and 1972 into a single mine. Debswana is a partnership of equal ownership between the government of Botswana and the De Beers Group of Companies. The diamonds extracted from these four mines are sold to De Beers and the Okavango Diamond Company, with Debswana as the primary contributor to the De Beers Group's rough diamond production.

Open pit mining is the predominant method used in the diamond industry for extraction, with mines such as Jwaneng, Orapa, Letlhakane, Karowe, and Damtshaa utilising this approach. Orapa stands as the world's largest conventional open-pit diamond mine. However, Ghaghoo Mine differs from this norm as it primarily employs underground mining techniques. The open pit method is generally favoured due to its perceived advantages in worker safety, extraction flexibility, and cost-effectiveness in development and maintenance. Nevertheless, this method is not without its drawbacks, as it has negative impacts on the environment and local communities both during production and afterwards.

The impact of mining activities on environmental degradation in Botswana has been extensively explored through research, with the Boteti sub-district serving as a notable case study. The area has long been recognised as one of the most severely degraded regions in the country. In 1993, Boteti was specifically selected as a case study for the Intergovernmental Convention to Combat Desertification (ICCD).[126] Consequently, since 2002, Boteti has been one of the sites for the Indigenous Vegetation Project (IVP), a five-year initiative funded by the government and the Global Environment Facility (GEF).

Research on the environmental impact of mining activities in Botswana, particularly in the Boteti sub-district, has shown significant changes in land use and land cover from 1968 to 2009. There is evident expansion of settlements from cattle posts to townships. This has translated to an increase in arable lands and grazing lands due to the growing population and its demand for agricultural production. Consequently, the grazing land has expanded into the shrub savanna land, as more people have entered the livestock farming sector. Further, local land use patterns have been witnessed in the Boteti area, resulting in considerable environmental degradation.[127] This degradation has primarily manifested in the form of displacement or constrained access to

125 Mineral Rights in Tribal Territories Act 31 of 1967.
126 Ringrose et al. (1994).
127 Engleton, Darkoh & Areola (2012: 25-42).

cultivable and grazing lands, as well as the depletion of natural resources. The conversion of formerly agricultural areas into mining sites has constituted a significant contributor to this phenomenon. Furthermore, the presence of borrow pits has the potential to exacerbate land degradation due to the elimination of vegetation, the creation of deep scars on the land surface, the persistence of overburden remnants, and disturbance of soil structure. The regions adjacent to the borrow pits are susceptible to erosion via both water and wind. The pits have altered the topography of the areas by excavating them below ground level. If not rehabilitated after use, the pits may degrade into unsightly blemishes on the landscape. While mining activities and their associated practices have directly and indirectly facilitated land degradation, engendering detrimental environmental effects in the Boteti district, other factors also contributed to land degradation. These include climatic fluctuations and other anthropogenic practices such as excessive grazing of rangelands, the establishment of fenced ranches on communal grazing lands, intensive cultivation of croplands, and deforestation.

In its 2022 Stakeholder Sustainability Report, Debswana has expressed its commitment to biodiversity conservation. The Biodiversity Management Program (BMP), which incorporates both international and regional legal frameworks, as well as domestic legal frameworks, guides the company's activities. Additionally, on a corporate level, the BMP adheres to several policy and administrative frameworks, including the Debswana Safety and Sustainability Development Policy of 2016 (revised in 2021), the De Beers Environmental Policy (2012, revised in 1999, version 4), and the De Beers Conservation Management Plan Guidelines.

One example of a biodiversity restoration project is the expansion of the Orapa Game Park by 28.328 hectares.[128] By fencing off this area, the land has been safeguarded against further destruction and plays a vital role in promoting biodiversity and ecosystem re-establishment. Furthermore, the Letlhakane Mine has undertaken rehabilitation initiatives to create a safe and stable landform for post-mining use. In 2022, the Letlhakane Mine initiated a rehabilitation project to establish grazing activities on an area previously utilised as waste rock dumps. This involved reshaping the dumps, applying topsoil cover, implementing slope-ripping techniques to prevent topsoil erosion, and revegetating the area with indigenous plant species. As a result, approximately 47 hectares of waste rock dumps were adequately rehabilitated.[129]

Another endeavour being explored involves waste rock segregation and strategic dumping. This approach enables easy access to targeted rock for progressive rehabilitation, production of aggregate materials, and tourism development, all of which contribute to the circularity program. Additionally, there are potential high-value projects, such as the exploration of opportunities for carbon sequestration using kimberlite waste and the improvement of soil fertility and water-holding capacity in semi-arid

128 See https://www.debswana.com/Media/Reports/DEBSWANA-RST-2022.pdf, accessed 1 June 2024.

129 Ibid.

environments. Although still in the early stages, it has been demonstrated that mineral waste holds potential for carbon dioxide absorption, offering opportunities for achieving carbon-neutral mining operations.

5.3 Urbanisation and land pollution

5.3.1 Waste Management Act, 1998

This Act makes provisions for the planning, facilitation, and implementation of systems to regulate the management of controlled waste. It aims to prevent harm to human, animal, and plant life, minimise environmental pollution, and conserve natural resources. The Act also ensures compliance with the Basel Convention. While the word "environment" is not defined in this Act, the Waste Management Strategy of 1998 indicates that the environment should be understood to include water, air, soil, and biodiversity, while natural resources include land and raw materials. The Act has three cardinal objectives: protection of human health, protection of the environment, and protection of natural resources.

Local authorities are mandated to prepare a local waste management plan and a waste recycling plan for their respective areas of control.[130] The waste management plan must include information on the types of waste the local authority handles and the methods by which they intend to manage controlled waste within a specified period. It should also prioritise different waste management methods for that period.[131] The recycling plan should provide information on the types and quantities of controlled waste that can be recycled and, as a result, would not be included in the waste collection and disposal process for the area. Additionally, the plan may consider the possibility of returning waste materials to the manufacturer to control pollution, conserve resources, and prevent harm to human, animal, or plant life.[132]

The law requires all waste carriers to be registered and licensed. It is a crime to cause or facilitate the movement of controlled waste within Botswana or across borders without being registered and licensed as a waste carrier.[133] It is also illegal to use an unregistered and unlicensed waste carrier. Additionally, waste disposal sites and waste management facilities must be registered.[134] A waste management facility license may include conditions related to the supervision of activities; concerning the land or plants,

130 Secs 9-10 of the Waste Management Act of 1998.
131 Ibid.: Sec 9.
132 Ibid.: Sec 10.
133 Ibid.: Secs 12-13.
134 Ibid.: Secs 15-16.

the necessary precautions and works to be carried out before or after the authorised activities, and the management of waste other than controlled waste, if applicable.[135]

A waste management facility licence may be suspended if the continuation of operations of the waste management facility would cause serious pollution or harm to human, animal or plant life; for failure to comply with the conditions of the license or where the operator or licensee of the waste management facility contravenes the conditions of the licence. Further, a waste management facility licence may be revoked by the Director of Environmental Protection where it is evident that the continuation of operations to which the waste management facility licence relates would cause pollution of the environment or harm to human, animal or plant life, and the pollution, danger or detriment that may result cannot be avoided by modifying the conditions specified in the waste management facility licence or be so seriously detrimental to the amenities of the locality affected by such operations that the continuation of them ought not to be permitted; the licensee has failed to comply with the directions of the Director and licensee is convicted under this Act.

A waste management facility licence may be suspended if the operations of the facility would cause significant pollution or harm to human, animal, or plant life. Suspension can also occur for non-compliance with the licence conditions or violations by the operator or licensee.[136] Additionally, the Director of Environmental Protection has the authority to revoke a waste management facility licence if the continuation of operations would result in environmental pollution or harm to human, animal, or plant life. The revocation may also be justified if the potential pollution, danger, or detriment cannot be prevented by modifying the licence conditions or if the operations would seriously impact the well-being of the affected community. Failure to follow the Director's directives and conviction under this Act can also lead to licence revocation.[137]

The collection and disposal of household waste is the responsibility of the local authorities.[138] After being collected, the waste must be sent to a licensed waste management facility for disposal, unless the local authority decides to recycle certain household waste. If waste is disposed of at unapproved locations, the occupier of that land is required to remove it. If they are unable to do so, the local authority will handle the removal.[139] Local authorities have the option to collaborate with private waste management companies to recycle waste, utilise it to produce heat or electricity, or handle the collection and disposal of controlled waste.[140]

A duty of care is imposed on all entities involved in waste management. To fulfil this duty, each local authority and any person involved in producing, carrying, keeping, treating, or disposing of controlled waste must take appropriate measures to prevent

135 Ibid.: Sec 18.
136 Ibid.: Sec 21.
137 Ibid.: Sec 22.
138 Ibid.: Secs 29–31.
139 Ibid.: Sec 32.
140 Ibid.: Sec 33.

the waste from escaping their control. Additionally, anyone handling waste must ensure that the person they are consigning the waste to is licensed to deal with it. Furthermore, any person who receives waste must also take necessary steps to prevent its escape from their control.[141]

Overall, this Act provides a framework for waste management. However, the actual handling of waste and its disposal is the responsibility of local authorities, who must develop and implement their waste management plans. It is expected that all local authorities have waste management plans in place, which should be regularly updated to meet the specific needs of each locality.[142]

5.3.2 Council by-laws

Under the Local Government Act, local authorities possess the authority to enact by-laws on matters deemed necessary or desirable for safeguarding the health, environment, safety, and well-being of the residents within their jurisdiction. This includes the establishment of regulations governing the collection, management, and disposal of waste. Consequently, local authorities have enacted by-laws prohibiting waste accumulation within their designated areas.[143]

5.3.3 Guidelines on Disposal of Waste by Landfill, 1997

In addition to legislation, waste management is also regulated by the Guidelines on Disposal of Waste by Landfill of 1997. These guidelines offer guidance on landfill site selection and design, waste classification, landfill operation, inspection, monitoring, restoration, and aftercare. The objectives of these landfill guidelines are to enhance waste disposal standards in Botswana, establish minimum requirements for environmentally acceptable waste disposal for various types and sizes of landfills, and provide a framework for sustainable waste disposal practices. The guidelines aim to safeguard public health, the environment, and local amenities through appropriate and cost-effective methods. They include numerous provisions aimed at protecting different environmental elements, including soils.

During landfill site selection, environmental factors such as topography, drainage, and soil characteristics must be considered. Fine to medium-grained soils with high

141 Ibid.: Sec 51.

142 See the Gaborone Waste Management Plan (2003-2009).

143 Jwaneng Town Council (General) By-laws, 1981; Gaborone City Council (General) By-laws, 1966; Selebi-Phikwe Town Council (General) By-laws, 1971; Francistown Town Council (General) By-laws, 1967; Lobatse Town Council (General) By-laws, 1967; Sowa Township Authority (General) By-laws, 1996; Ghanzi Township (Refuse) By-laws, 1978.

clay content and low permeability are preferred as they reduce the migration of pollutants. Landfill designs should minimise the risk of water pollution from leachate and adequately isolate the waste from the surrounding environment. When a landfill ceases operations, restoration work is typically required as part of the closure process. This includes shaping the land, applying a final cover, topsoiling, vegetating, and maintaining drainage.

Special attention is given to the treatment of sludge, as they tend to contain high nutrient levels. The optimal disposal method for sludge is land or soil improvement. However, certain characteristics of sludge, such as heavy metal concentrations (arsenic, chromium, nickel) and pathogen levels, must be monitored or controlled to protect human health and the environment. As for animal carcasses, although often left to undergo natural decomposition or burial, they require specific disposal methods in cases where a constant stream of carcasses is present, such as in intensive farming. This typically involves burial or burning. Also, clinical waste is burnt while tyres are shredded.

The guidelines also emphasise the importance of progressively restoring landfills by applying final cover and establishing vegetation to prevent soil erosion and enhance visual appearance. Where feasible, re-vegetation efforts should begin in areas where no further waste deposition will occur. The final cover should include topsoil capable of supporting vegetation. To prevent erosion and enhance aesthetics, re-vegetation should commence as soon as possible.

5.3.4 Monitoring

The oversight of controlled waste collection, disposal, and treatment falls under the purview of the Department of Environmental Protection (DEP), previously known as the Department of Sanitation and Waste Management. Per the Waste Management Act, local authorities have the executive responsibility of managing waste within their respective areas, including monitoring the activities of waste management operators.

One critical aspect of this monitoring is the operation of landfills, which necessitates regular inspections of air quality and leachate levels. District councils and the DEP collaborate in the monitoring of landfills, as outlined in the Landfill Operational Manual. The Senior Environmental and Health Officer (SEHO) is expected to visit the landfill site at least once a week to assess the landfill's operations and the performance of on-site staff. Monthly briefs are then compiled to update the Council Secretary for coordination purposes. Additionally, the DEP conducts inspections to ensure compliance with environmental regulations and submits reports to District Council Management for appropriate actions.

The Office of the Auditor General (OAG) has the authority to conduct performance audits of local authorities. One such performance audit focused on the Gamodubu

landfill, which is operated by the Kweneng District Council. The purpose of this audit was to assess whether the Gamodubu landfill was being appropriately managed by the Environmental Health Division of the Kweneng District Council. The audit objectives included evaluating the compliance of the landfill's operations with Waste Management Policies and Operational Guidelines, as well as environmental regulations aimed at mitigating the negative impacts of improper waste disposal on the environment and human health. This involved examining the landfill's practices in terms of waste compaction and covering, to reduce the adverse effects on the environment and human health. The audit also aimed to determine the extent to which the landfill management was monitoring its operations to ensure sustainable waste management practices.

The OAG Report in 2018 revealed inappropriate management practices at the Gamodubu landfill, including non-compliance with landfill frameworks (the landfill was not licensed to operate by DEP), inadequate waste compaction, poor aesthetics, insufficient monitoring of leachate and landfill gases, and the absence of emissions testing from incinerators. Consequently, the improper management of waste at the site poses adverse health effects through disease transmission and significantly impacts the environment, polluting air and soil, as well as surface and underground water sources.[144]

5.3.5 Enforcement issues

The Local Government Act establishes the provision of a law enforcement office and officers at each district council. These law enforcement officers are responsible for enforcing by-laws enacted by the Council, as well as any other laws that are delegated to them for enforcement. They possess the authority to make arrests, and, with a valid warrant, are permitted to enter and search premises or places to seize and detain items that they reasonably believe to be or contain evidence of a breach of a by-law. Additionally, law enforcement officers possess the discretion to impose fines for violations of by-laws, as determined by the council.

Nonetheless, the waste management practices in Botswana suffer from a lack of effective implementation of laws, thereby posing a significant threat to the environment and public health. This has contributed to the widespread issue of indiscriminate illegal dumping of waste. Furthermore, the existing legal framework is deficient in that it lacks distinct guidelines concerning the responsibilities of waste generators and public authorities, as well as associated economic incentives. The duty of formulating waste management plans has been delegated solely to local authorities, thus, giving rise to inconsistencies in policy. As a result, Botswana lacks a waste segregation system, making it challenging to implement recycling policies and initiatives. Other

144 Office of the Auditor General (2018).

concerns pertain to the inadequate design of infrastructures, particularly landfills. In general, many landfills in Botswana do not possess adequate engineering, lack appropriate lining, and operate without efficient sanitary measures. Studies conducted on the Gaborone Landfill in Botswana have revealed instances of seepage from the landfill to its surrounding subsurface environment, leading to subsurface contamination, as well as adverse effects on the surface and subsurface environments arising from leachate plumes in the unlined landfill.[145] Furthermore, there is insufficient maintenance of available machinery and equipment, resulting in a low or non-existent collection of waste.

5.4 Deforestation and veld fires

5.4.1 Forest Act, 1968

The Forest Act of 1968 establishes a framework for the regulation and protection of forests and forest produce in Botswana. Forest produce, which includes trees and earth,[146] is subject to specific restrictions under Section 12 of the Act. This section prohibits various activities within forest reserves, such as felling, cutting, taking, working, burning, injuring, or removing any forest produce. It also prohibits setting fire to grass or undergrowth, grazing livestock or allowing them to trespass, and clearing, cultivating, or breaking up land for cultivation or other purposes within these reserves.

Furthermore, on state land, it is strictly prohibited to cut, take, work, burn, injure, or remove any tree that is growing within ten meters of the bank of any river.[147] Exceptions to these prohibitions exist when the removal of forest produce is necessary for domestic purposes. In such cases, the removal is allowed if it is carried out by an individual belonging to a community that relies entirely on hunting, gathering foodstuffs, and gathering forest produce for their livelihood. This individual must also be personally dependent on these resources, and the removal must be for the reasonable requirements of the community members to whom they belong. Undertaking any of the prohibited activities mentioned above requires a license, which must be obtained to ensure compliance with the Forest Act.[148]

In addition to regulating the conduct of individuals, the Forest Act also establishes the legal responsibilities of employers and parents or custodians. Section 31 of the Act imposes vicarious liability on employers for the actions of their employees. This means that employers can be held accountable for offences committed by their employees concerning the Act. Section 32 of the Forest Act focuses on the liability of parents or

145 Mmereki (2018: 563); Mmereki, Machola & Mokokwe (2019: 1230-1246).
146 Sec 2 of the Forest Act of 1968.
147 Ibid.: Sec 13.
148 Ibid.: Secs 15-16.

custodians with respect to the conduct of their children. According to this provision, if a person who has authority over a child knowingly encourages or enables the child to engage in conduct that would be considered an offence under the Act if committed by an adult, or if the person fails to prevent the child from engaging in such conduct when it was reasonably possible to do so, they will be deemed to have committed an offence. The repercussions for this offence include a fine not exceeding P250, imprisonment for a maximum period of three months, or both.

The Forest Act needs revision and updating to address current issues and challenges, particularly concerning climate change and sustainable management of forestry resources. Issues of afforestation and restoration of forests are not provided in the Act. Additionally, the Act does not extend its coverage to tribal and freehold land, further limiting its effectiveness.

5.4.2 Herbage Preservation (Fire Prevention) Act, 1977

The Herbage Preservation (Fire Prevention) Act establishes a legal framework for the prevention and control of bush and other fires. Section 4 prohibits the intentional or negligent setting of fire to any vegetation on land not owned or lawfully occupied by an individual, if such fire causes damage, destruction, or poses a threat to another person's property. Moreover, in terms of Section 5 individuals who light a fire on land they do not own or lawfully occupy are required to extinguish it carefully and properly.

The Act also imposes obligations on landowners and occupiers regarding fire prevention. They are required to issue a notice to a police officer or headman before burning vegetation[149] and may be ordered by the Herbage Preservation Committee to construct and maintain firebreaks. The Committee will specify the extent and location of these firebreaks. Failure by owners or occupiers to fulfil these obligations may result in the Committee entering the land to construct and maintain boundary firebreaks, with the owner or occupier being liable for the reasonable cost of such actions.[150]

Various personnel, including members of the Herbage Preservation Committee, administrative officers, agricultural officers, fire rangers, forest officials, police officers, traditional authorities, and landowners or occupiers, are empowered to request assistance from any person present at or near a fire.[151] They may ask for necessary actions to control, extinguish, or prevent the spread of the fire. Moreover, any person acting in good faith may enter upon land to control, extinguish, or prevent the spread of a fire that is not under control or poses a threat to life or property. Counter-firing is allowed under Section 12 of the Act, provided that reasonable care is exercised to prevent the fire from spreading beyond what is necessary to prevent loss or injury.

149 Sec 6 of the Herbage Preservation (Fire Prevention) Act of 1977.
150 Ibid.: Secs 9–10.
151 Ibid.: Sec 11.

The Act also addresses the liability of servants. If a servant contravenes any provision of the Act or an order issued by the Herbage Preservation Committee while acting on the instructions or commands of their employer, the employer will be deemed to have also contravened that provision. As a result, the employer may be prosecuted under the Act for the contravention, either alone or together with the servant.[152]

5.4.3 Town and Country Planning Act, 2013

The Town and Country Planning Act of 2013 is an enactment that establishes regulations for the systematic and progressive development of land in both urban and rural areas, with the primary objective of safeguarding and enhancing the amenities of such territories. While the central focus of this legislation revolves around the field of planning, it also contains provisions regarding the protection of soil. This is evident in Section 41 of the Act, which confers upon the Minister the authority to issue orders that safeguard individual trees, groups of trees, or woodland within specified areas. These orders possess the capacity to prohibit actions such as the felling, topping, lopping, or deliberate destruction of trees, and they may additionally necessitate the replanting of vegetation. It is important to note that the preservation of trees and the implementation of replanting initiatives play a crucial role in the effective management of soil degradation, as they serve to mitigate the occurrence of soil erosion.

5.4.4 Monitoring

Botswana's forests, although occupying a limited geographic area, hold significant value in terms of safeguarding biodiversity and facilitating carbon dioxide sequestration. In response to the FAO's periodic requests for forest resource data to update the Global Forest Resources Assessment, Botswana has diligently monitored and provided information regarding its forest resources in recent years.[153] However, to enhance the monitoring of forest resources, it has been suggested that there is a need for the enhancement of GIS hardware and software systems at the district offices. Additionally, the implementation of a forest sector Master Plan is advocated, which would establish comprehensive mechanisms to ensure the efficient functioning of monitoring structures.[154]

Regarding fire management, it is noteworthy that Botswana does not currently have an operational fire early warning system, apart from periodic fire awareness campaigns

152 Ibid.: Sec 13.

153 See https://openknowledge.fao.org/server/api/core/bitstreams/2da4cd28-3ca5-4090-be5c-b49c22bf2965/content, accessed 30 May 2024.

154 See https://openjicareport.jica.go.jp/pdf/12301594_01.pdf, accessed 30 May 2024.

held at the onset of the fire season. The efficacy of fire monitoring is significantly hampered by inadequate reporting of fire-related information, attributable to incomplete documentation of field fire reports and deficient record-keeping practices. However, an appreciable development in recent times involves the utilisation of the MODIS satellite instrument, which has played a pivotal role in the detection of fires and estimation of burnt areas.[155] Also, among the different stakeholders involved in fire management, the Botswana Defence Forces (BDF) offers aerial support for reconnaissance purposes, assisting in firefighting operations such as fire line spotting and crew placement.

5.4.5 Enforcement issues

The Forest Act delineates the duties of forest officers and foresters. According to Section 3 of the Act, the forest officer, or any forester delegated by them, may issue licenses to individuals authorising activities such as cutting down trees. Additionally, forest officers and foresters possess the authority to perform searches on any land without a warrant for the purpose of investigating suspected violations. They are empowered to make arrests and seize any instruments employed in the commission of suspected offences.

Furthermore, forest officers and foresters bear the responsibility of taking charge of fire extinguishment or prevention efforts when such fires occur within their presence. In fulfilling this duty, they may employ precautionary measures deemed necessary or expedient for extinguishing or containing the fire. These measures may include the appropriate destruction of trees, grass, crops, or other vegetation through burning, cutting, or ploughing, and the enlistment of able-bodied individuals in the area to help or perform acts essential for controlling or quelling the fire. Non-compliance with instructions issued by forest officers constitutes an offence. The law offers protection from liability to forest officers for any loss or damage arising from the lawful exercise of their conferred powers. Moreover, no legal action may be initiated for trespass or damages incurred in good faith through operations carried out under this section or through the assistance provided therein.[156]

In the context of fire management, Section 3 of the Herbage Preservation (Fire Prevention) Act establishes the Principal Herbage Preservation Committee, as well as Subordinate Herbage Preservation Committees. These committees consist of individuals or groups designated by the Minister. The Principal Herbage Preservation Committee exercises jurisdiction over the entire territory of Botswana, while the area of authority for Subordinate Herbage Preservation Committees is specified by the Minister. The Principal Herbage Preservation Committee has the authority to appoint any

155 Dube (2013: 26–41).
156 Sec 30 of the Forest Act.

individual as a fire ranger. The Herbage Preservation Committee (HPC) has the authority to grant permission for the ignition of fire in vegetation and possesses the power to proscribe the burning of vegetation within its jurisdictional area. Moreover, in addition to mandating the establishment of firebreaks, HPCs also possess the authority to hear appeals about arrangements concerning the construction of firebreaks by landowners or occupants.

Generally, insufficient efforts have been made to adequately safeguard forests in Botswana. The country lacks a comprehensive and coordinated approach to sustainable forest management and lacks a strategic framework for guiding the development of the forest sector. Such strategic frameworks are essential for the successful implementation of REDD+ initiatives. In addition, inadequate forestry research has impeded informed decision-making concerning forest management, resulting in an undervaluation and underestimation of the direct and indirect benefits derived from forests. Consequently, limited resources, in terms of manpower and equipment, have been allocated by the government and other stakeholders.[157] In light of these deficiencies, the enforcement of laws related to forest protection is weak, and the penalties imposed for non-compliance are minimal.

Another challenge arises from the duplication of roles by different institutions, especially in fire management. The Agricultural Resources Board possesses the authority to mandate the construction of structures to prevent or manage bushfires through firebreaks. This same responsibility is also bestowed upon the Herbage Preservation Committee, which is empowered to issue orders necessitating the establishment and upkeep of firebreaks by landowners or occupants within its designated jurisdictional boundaries. This often leads to inefficiencies in the delivery of government policies and plans.

Additionally, Botswana lacks air-based firefighting capacity. It has limited human resources and inadequate coordination among key stakeholders. The Herbage Preservation (Prevention of Fires) Act mandates public participation in fire prevention efforts, yet there is a lack of systematic measures to recruit, train, and retain volunteers. Additionally, the prevalence of fires in communal lands, where resource utilisation is not exclusive, creates a disincentive for community engagement in fire management.

Nevertheless, the government has been working on the development of a Forest and Range Resources Bill to address some of the shortcomings. The Bill merges the Forest Act, Herbage Preservation Prevention of Fires Act, and the Agricultural Resources Conservation Act to create a comprehensive forest and rangeland resources legislation that encompasses all relevant aspects, including fire management and agricultural resources. The Herbage Preservation (Fire Prevention) Act and the Agricultural Resources Conservation Act are currently separate laws that provide specific regulations for fire prevention and agricultural resource conservation. The consolidation

157 See https://www.fao.org/4/x6774e/X6774E03.htm, accessed 28 May 2024.

and updating of these laws will help create a more streamlined and comprehensive legal framework for the management of forestry resources in Botswana.

6 Recommendations

6.1 Improvements of legislation and policies

There is currently no specific legislation in place for soil management. However, it is important to note that the Constitution does provide provisions for the taking of property to protect soil resources. Additionally, the Agricultural Resources Conservation Act does offer some measures for soil protection. However, these laws have certain limitations that have been identified. Considering these observations, it is strongly advised that Botswana establish a dedicated policy and legislation that specifically addresses the sustainable management of soil resources. This will ensure that comprehensive measures are in place to effectively protect and preserve the country's soil resources.

Botswana is currently grappling with severe land degradation issues resulting from overgrazing caused by overstocking practices. Despite the intentions of the Botswana Land Policy to restrict the practice of dual grazing rights, the lack of appropriate legislation has hindered the effectiveness of these interventions. Therefore, it is recommended that the legislation be amended to effectively regulate and restrict the practice of dual grazing rights.

Regarding land use planning, it has been observed that the planning process in Botswana is predominantly technocratic in nature, lacking genuine public participation, accessibility, and decentralised decision-making. This centralised approach prioritises national policies over local considerations, resulting in limited participation and a lack of awareness regarding development control requirements. As a result, land development plans are frequently violated, with non-compliance often attributed to this limited involvement. To address this issue, it is recommended that access to planning processes be enhanced by ensuring the publication of plans in both local languages and English, rather than solely in the Government Gazette.

The current Agricultural Resources Conservation Act primarily focuses on corrective measures rather than preventive and proactive approaches to land degradation. While actions can be taken to mitigate degradation after it occurs, there is a lack of provisions to prevent degradation in the first place. Consequently, it is suggested that this Act be amended to incorporate preventive and mitigation measures for the protection and development of agricultural resources.

In the mining sector, the absence of regulations, standards, or approved guidelines to govern the implementation of environmental obligations poses a significant obstacle

to the protection of soil resources. To address this, it is recommended that regulations be established to fulfil the aspirations outlined in the Mines and Minerals Act.

Botswana's waste management systems suffer from a lack of effective implementation of existing laws, posing a substantial threat to the environment and public health. This has led to widespread illegal dumping of waste. Furthermore, the current legal framework lacks clear guidelines regarding the responsibilities of waste generators and public authorities, as well as associated economic incentives. Hence, it is advised that the law be reviewed and amended to provide distinct duties for different waste generators.

While Botswana may have limited forest coverage, the significance of these forests should not be underestimated. However, the Forest Act requires revision to align it with sustainable forestry management principles. Commendably, Botswana is making efforts to enact the Forest and Range Resources Bill, which seeks to create comprehensive legislation that encompasses all relevant aspects of forest and rangeland resources, including fire management and agricultural resources.

6.2 Improvements concerning enforcement, monitoring, and access to environmental information

While Botswana may not have specific legislation on soil management, there is a range of existing laws that should, to some extent, offer legal protection. However, these laws have not been adequately enforced due to dysfunctional or non-existent institutions. For instance, the Agriculture Resources Board has been discontinued, resulting in a lack of conservation orders and regulations under the Agriculture Resources Conservation Act. Additionally, the enforcement of soil management laws is hindered by the presence of multiple institutions with overlapping mandates. Considering these deficiencies, it is recommended that a dedicated institution be established solely responsible for soil resource management in the country. This institution should be empowered to collaborate with other organisations, as soil is a cross-cutting issue. This institution needs to have access to relevant information and the capacity to disseminate it to the public. Crucially, part of its functions is to establish and maintain a soil database, which is easily accessible to everyone.

Furthermore, it is recommended that the government invest in the training and capacity-building of enforcement officers at both the central and local levels. These officers, established under the Local Government Act, play a crucial role in implementing laws related to the conservation of natural resources. Their specialisation in this area would enable them to more effectively identify violations of environmental laws. Additionally, investment in capacity-building is needed in the context of forests, where enforcement is currently weak in monitoring the illegal harvesting of forestry resources. Concerning the mining sector, the Department of Mines should be adequately

funded and staffed to ensure compliance with mining and environmental legislation. Furthermore, there is a need to educate and raise awareness among the general population through educational programs.

Access to environmental information is generally restricted, with limited avenues for the public to obtain such information. The Environmental Assessment Act is the only law that affirms the public's right to information and facilitates their participation in the EIA process. Early stages of the EIA process involve public consultations, where interested and affected parties are encouraged to provide input on the EIA report before authorisation is granted. These consultations serve to disseminate information to the relevant groups, empowering them to make well-informed decisions regarding matters that impact their environment. The EIA framework, overall, effectively promotes public participation[158] and the right to information. However, it is crucial to recognise that beyond this framework, there is no specific right to access environmental information. Moreover, the Constitution does not impose an obligation on the state to provide such information. Therefore, there is a need to improve access to information and this includes access to soil data.

Furthermore, while the Agricultural Resources Conservation Act imposes a duty on the Agricultural Resources Board to prepare and submit an annual report to the Minister, the information contained therein is not accessible to the public. This report must encompass all conservation orders, conservation regulations, stock control orders issued, a compilation of all works undertaken under the Board's guidance, and a detailed report of any investigations or inquiries conducted by the Board. It is additionally required to include a report on the directions provided to the Land Boards according to Section 9(h). It is important to note that this report is primarily intended for the government, rather than the public who may have a keen interest in the government's efforts to safeguard agricultural resources, as the custodian of all natural resources in Botswana.

Another area in need of improvement pertains to the issue of *locus standi*. Currently, Section 18 of the Constitution restricts access to the High Court solely to individuals whose rights have been infringed, without providing for the participation of others. This means that public interest litigation, which allows for one person or a group of individuals to advocate for public rights, is not recognised under the law. This limitation, coupled with the absence of an explicit right to the environment in the Constitution, presents significant obstacles to the protection of the environment, as many environmental issues affect the public interest rather than the interests of a specific complainant. To address this issue, Botswana should amend its Constitution to include the right to the environment and expand the requirements for *locus standi* to encompass public interest litigation.

158 Mathope & Toteng (2018: 85). The significance of public participation was underpinned in the case of *Quarries of Botswana (Pty) Ltd v Tlokweng Land Board* [2003] 1 BLR 113.

Additionally, the weak criminal liability regime poses a challenge to enforcement. For example, while the Mines and Minerals Act establishes criminal liability for holders of mining concessions who fail to adhere to environmental obligations, no criminal prosecutions have been brought forth thus far relating to environmental violations. Additionally, an overreliance on criminal penalties as an enforcement mechanism is problematic, as they are reactive, time-consuming, and costly. Recognising this, it is recommended that penalties in statutes be reviewed to align with the severity of the violations, and incentives should be introduced for corporations and individuals engaging in environmentally friendly activities.

6.3 Improvements concerning land rights

Land rights in Botswana are derived from statutes and customary law. The primary statutes are the Tribal Land Act, the State Land Act, and the Land Control Act. These laws emphasise the importance of adhering to laws related to good husbandry. Failure to comply may result in the cancellation of land grants for tribal lands and refusal to grant changes in ownership for freehold land under the Land Control Act. However, both laws assume the existence of comprehensive laws related to good husbandry in Botswana, which is not the case. Therefore, it is recommended that comprehensive laws on good husbandry be enacted, accompanied by necessary guidelines.

A significant issue with tribal lands is the access and use of communal lands. Policies and laws recognise that most citizens depend on communal lands for grazing purposes. However, due to a lack of exclusive privileges in their usage, communal lands have been degraded because of livestock overstocking. Also, land ownership disincentives local communities from engaging in fire management in communal lands. While the Land Policy of 2015 recognises the need to restrict the exercise of dual grazing rights, due to a lack of law this policy objective has not been achieved. It is, therefore, recommended that Botswana amend its laws on tribal land to include restrictions on dual grazing rights.

6.4 Improvements concerning the control of foreign investors

Foreign investors play a significant role in Botswana's economy, prompting the government to offer various incentives to attract and retain such investments. However, the current legal framework governing foreign investments in Botswana does not include obligations for investors to protect the environment. This is a common characteristic of countries that import capital, where domestic environmental laws may be inadequate to regulate the activities of foreign investors.

There are two potential approaches to addressing this issue. Firstly, Botswana could undertake a comprehensive domestic legal reform, which may involve the creation of a foreign investment code and broader reforms to environmental laws. Secondly, the government could leverage the Botswana Investment and Trade Centre (BITC) to attract foreign investment, specifically in the renewable energy sector. The National Energy Policy recognises the importance of developing clean coal technologies to capitalise on significant coal resources in an environmentally sustainable manner, contributing to economic diversification. Additionally, potential areas for investment include solar and wind energy, as well as biomass and waste energy. Nevertheless, the absence of a suitable legal and regulatory framework poses a challenge to potential investors, undermining confidence in the system.

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