



Kingdom of Lesotho



**Statistical Report
No 8: 2019**

2017 Environment Report



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Mission: To coordinate the National Statistical System (NSS) and produce accurate, timely and reliable culturally relevant and internationally comparable statistical data for evidence-based planning, decision making, research, policy, program formulation and monitoring and evaluation to satisfy the needs of users and producers.

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CHAPTER 1: WATER AND SANITATION

1.0 Introduction

Water is a vital and an essential element of the world forms of life because it is a major constituent of the fluid of living things. Universal access to safe drinking water is a fundamental need and human right, for safe drinking water is important to humans and other forms. However, there are many people who drink water that is contaminated by pollutants such as mercury selenium and lack basic sanitation (Bath, 2018). Securing access for all will go a long way in reducing illnesses and deaths especially among children.

Water is Lesotho's most valuable and abundant natural resource. It is a key determinant of economic growth and also a resource that must be carefully managed as part of sustainable development. This makes Lesotho a relatively water-abundant country in the middle of the water-stressed area of Southern Africa. Thus, its management is the main challenge to meet human needs, sustain economic activities and achieve environmental goals, thus where water statistics plays a pivotal role in the realization of these goals. The statistics will be used in addressing the Sustainable Development Goal no. 6 which states: Ensure Availability and Sustainable Management of Water and Sanitation for All.

1.1 Scope and Coverage

Data collected is secondary and it is collected from Water and Sewage Company (WASCO) and Lesotho Highlands Development Authority (LHDA).

1.2 Results

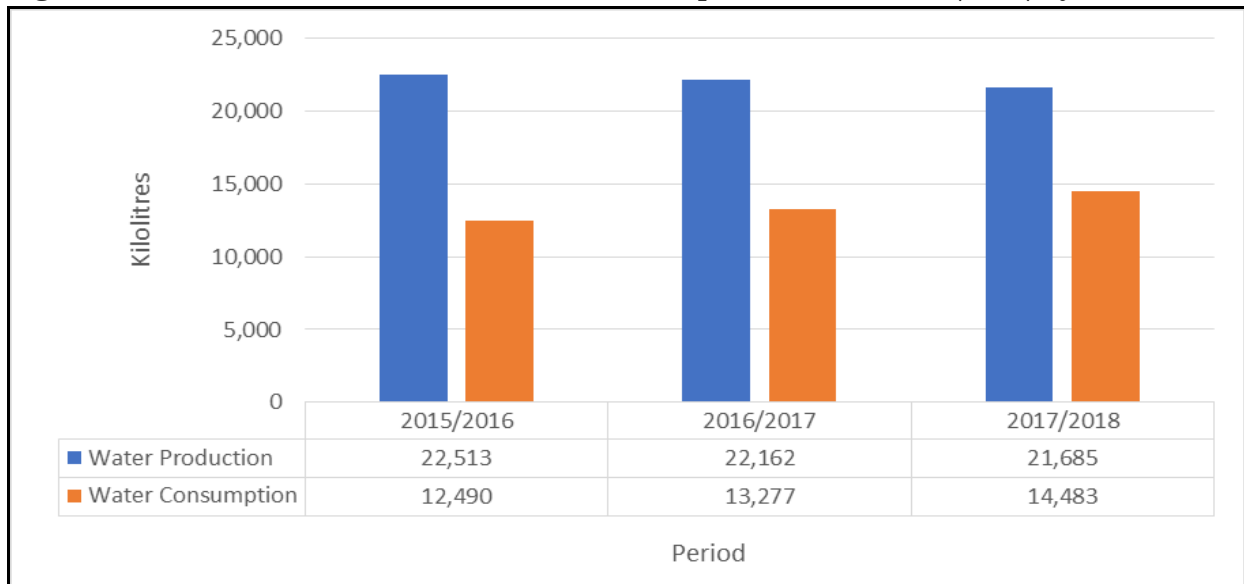
The results show water production and consumption, water export as well as water used by different sectors. The analysis on water statistics by charts and tables is presented in this section.

1.2.1 Water Production and Consumption

Water Production shows water abstracted and treated by Water and Sewage Company (WASCO) for final use by customers. Water abstraction is the process of extracting water from a natural source (rivers, lakes, groundwater aquifers etc) for various uses, such as drinking and irrigation (Cooper, 2018). Water Consumption shows water used by different customers.

The Annual Water Production and Consumption in kiloliters ('000) (kl) by Period is portrayed in figure 1.1. It is observed from the figure that more water was produced in 2015/2016 (22,513 kl) and the lowest production was in 2017/2018 with 21,685 kl. Additionally, water consumed has been increasing from 2015/2016 to 2017/2018.

Figure 1.1: Annual Water Production and Consumption in Kiloliters ('000) by Period



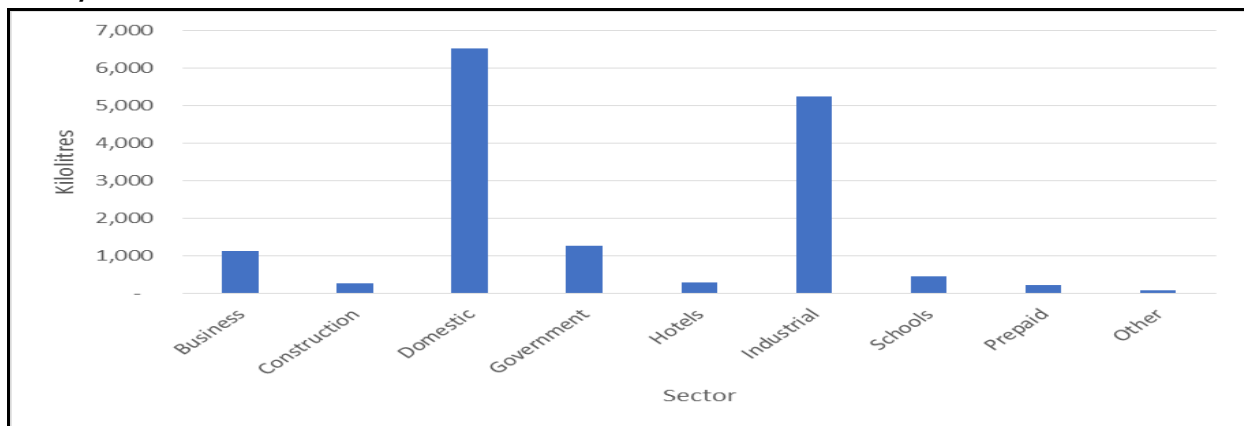
Source: WASCO

1.2.2 Water Consumption by Sector

This section shows water consumed by different sectors in the country in 2017/2018.

Figure 1.2 depicts annual water consumption in kiloliters ('000) (kl) by sector for the period 2017/2018. The figure illustrates that Domestic Sector consumes the largest part of water produced (6,539 kl) followed by Industries constituting 5,264 kl. “Other” (includes Standpipes, Sports Clubs and Religious) consumed the smallest amount of water produced with 81 kl.

Figure 1.2: Annual Water Consumption in Kiloliters ('000) by Sector for the period 2017/2018



Source: WASCO

Table 1.1 presents water consumption by year and number of customers. The table shows that the number of customers has been increasing over the years, thus from 55,355 in 2013 to 81,968 in 2016. For the kilolitres consumed, they increased from 2013 to 2015 (11,718 kl to 15,324 kl) then decreased from 2015 (15,324 kl) to 2016 with 12,490 kl.

Table 1.1: Water Consumption in Kiloliters (kl) by Year and Number of Customers

Year	Number of Customers	Kilolitres Consumed
2013	55,355	11,718
2014	69,375	12,333
2015	73,780	15,324
2016	81,968	12,490
Total	280,478	51,865

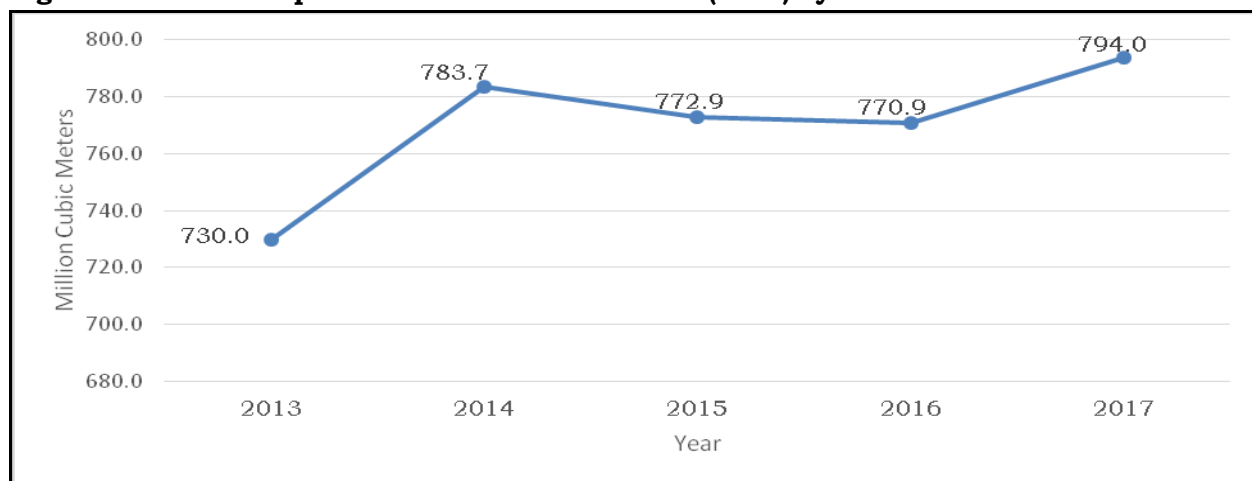
Source: WASCO

1.3 Water Exports

Water export is water that is transferred from one country to the other as a commodity through pipelines. However, in Lesotho, LHDA as the responsible source, exports water to the Republic of South Africa (RSA) through tunnels.

Figure 1.3 displays water exports in million cubic meters (mm³) by year. It is observed that water exports increased from 2013 (730 mm³) to 2014 (783.7 mm³). However, there was a decline of 12.8 mm³ in water exported to RSA from 2014 to 2016. An increment was then observed again in 2016 with 770.9 mm³ to 794.0 mm³ in 2017.

Figure 1.3: Water Exports in Million Cubic Meters (mm³) by Year



Source: Lesotho Highlands Development Authority (LHDA)

1.4 Sanitation

Sanitation refers to the provision of facilities and services for the safe management of human excreta from the toilet to containment and storage and treatment onsite or conveyance, treatment and eventual safe end use or disposal. Inadequate sanitation leads to the spread of disease that results to deaths of people. <https://www.who.int/topics/sanitation/en/>(Refer to Annex 1: table 4)

1.5 Summary

Water production has been declining over the years from 22,513 kl in the period 2015/2016 to 21,685 kl in 2017/2018 whereas water consumption increased over the same period. Domestic sector is the major consumer of water produced while sports clubs sector consumes the smallest amount of water produced. Water exported to RSA increased from 2013 (730 mm³) to 2014 (783.7 mm³) and again from 2016 with 770.9 mm³ to 794.0 mm³ in 2017.

CHAPTER 2: SOLID WASTE

2.0 Introduction

Solid Waste is defined as the useless and unwanted products in the solid state derived from the daily basic living activities of the society. The Environment Act 2001 of Lesotho, defines waste as any substance that may be prescribed as waste or any matter, whether liquid, solid, gaseous, or radio active, which is discharged, emitted or deposited in the environment in such volume, composition or manner as to cause an alteration of the environment.

Municipal Solid Waste is one of the burning issues that are highly deliberated among policymakers, as it affects public health especially in developing countries (Chalhoub, 2018). In most of these countries, solid waste is collected, transported and dumped without any treatment or processing. This affects people badly as pets and insects carry diseases to them resulting to infectious diseases especially those living nearby the dumping sites due to the potential of the waste to pollute water, food sources, land, air and vegetation. The poor disposal and handling of waste thus leads to environmental degradation, destruction of ecosystem and poses great risks to public health (Report on Dandora Waste Dump). Governments require urgent environmental regulations and standards in order to ensure public safety.

2.1 Scope and Coverage

Data collected is secondary and it is from the specified data sources. It covers Maseru district only.

2.2 Results

The results show municipal solid waste collected.

2.2.1 Municipal Waste Collected

Municipal waste collected is waste collected by or on behalf of municipalities. The waste collected is the Scrap Metal waste. Unlike other waste, scrap has significant monetary value.

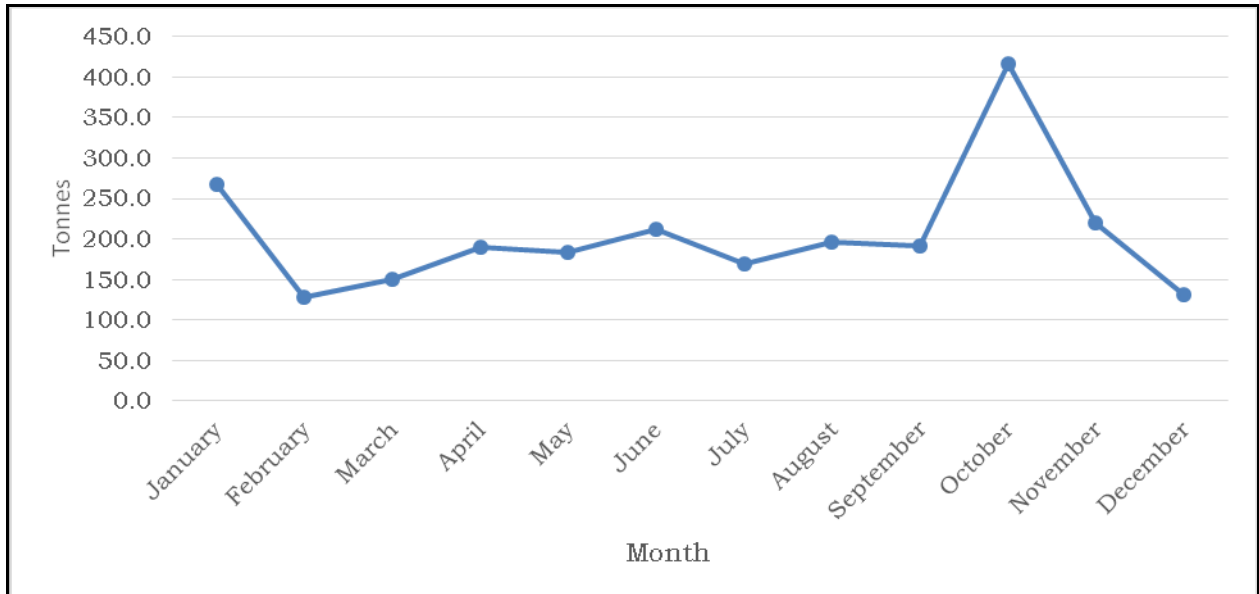
2.2.2 Scrap Metal Waste

Scraps are recyclable and are materials left over from product consumption, such as parts of vehicles, building supplies, and surplus materials.

Figure 2.1 portrays scrap metal waste collected (in tonnes) in Maseru by month for the year 2017. The highest scrap metal waste collected (416.6 tonnes) was recorded in

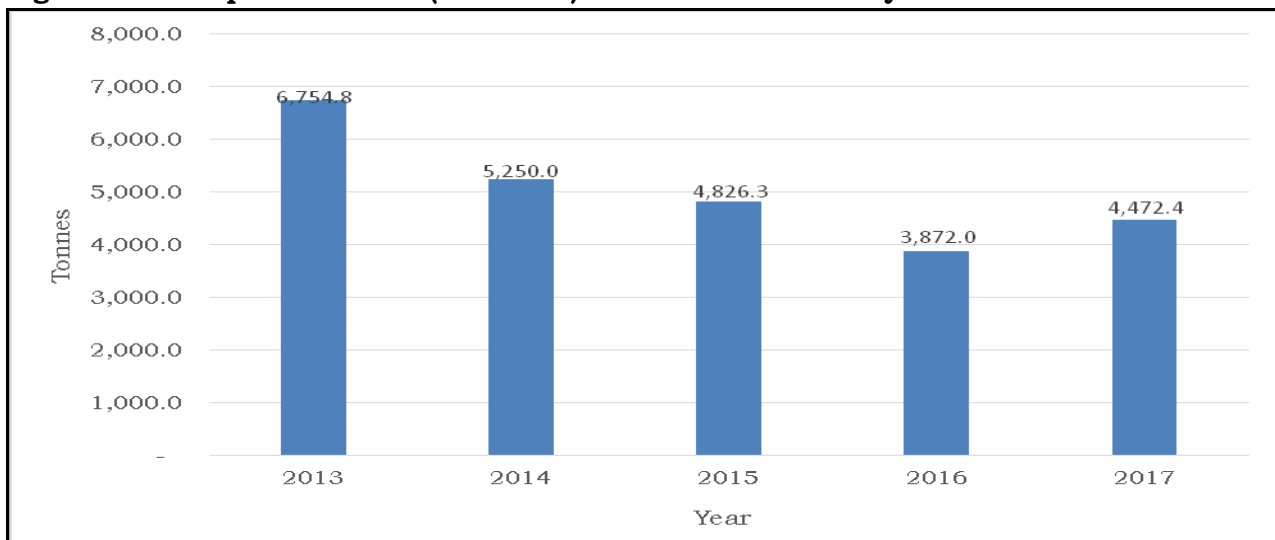
October, followed by 267.3 tonnes in January. The least amount of scrap metal waste was recorded in December with 130.4 tonnes.

Figure 2.1: Scrap Metal Waste (in tonnes) Collected in Maseru by Month for the Year 2017



Scrap metal waste collected (in tonnes) in Maseru by year is demonstrated in figure 2.2. The figure display that 2013 dominated all other years with a total of 6,754.8 tonnes of scrap metal waste collected and 2017 is second with 4,472.4 tonnes. The collection of scrap metal waste was the least in 2016 with a total of 3,872.0 tonnes.

Figure 2.2: Scrap Metal Waste (in tonnes) collected in Maseru by Year



2.3 Solid Waste/Garbage Disposal

Waste disposal refers to collection, processing, managing and monitoring of waste material produced by human activities. Solid waste dumps are extremely spoiling the environmental conditions in developing countries. Wet waste decomposes and release bad odor which affects the people settled next to the dumping site and can lead to chemical poisoning <https://www.britannica.com/technology/waste-disposal-system> **(Refer to Annex 2: table 2).**

2.4 Summary

The highest scrap metal waste collection (416.6 tons) in 2017 was recorded in October in Maseru district. The year 2013 dominated with a total of 6754.8 tonnes of scrap metal waste collected in Maseru and 2017 was second with 4,472.4 tonnes.

CHAPTER 3: LAND USE AND COVER

3.0 Introduction

Land is a unique environmental resource that delineates the space in which economic activities and environmental processes take place and within which environmental resources and economic assets are located. The two primary aspects of land are land cover and land use. These aspects are strictly related: while land cover describes the biophysical aspect of land, land use refers to the functional aspects of land.

Land use is the human use of land. Land use involves the management and modification of natural environment or wilderness into built environment such as fields, pastures and settlements. It also has been defined as the arrangements, activities and inputs people undertake in a certain land cover type to produce, change or maintain it (FAO/UNEP, 1999).

Shares of total land area for three different types of land use are: arable land – land cultivated for crops like wheat, maize, and beans that are replanted after each harvest; permanent crops - land cultivated for crops like citrus, coffee, and rubber that are not replanted after each harvest; includes land under flowering shrubs, fruit trees, nut trees, and vines, but excludes land under trees grown for wood or timber; other – any land not arable or under permanent crops; includes permanent meadows and pastures, forests and woodlands, built-on areas, roads, barren land, etc (CIA World Factbook, 2013).

Lesotho is divided into four geographical regions / ecological zones:

- The *mountain region* covers 18,037 km² (59% of the total area of the country) and is characterized by the bare rock outcrops of the Maluti range and deep river valleys, with elevations of 2,000 m and above;
- The *foothills region* covers 4,529 km² (15%) and lies at elevations from 1,800 m to 2,000 m between the lowlands and the Maluti mountains;
- The *lowland region* covers 5,094 km² (17%) and is situated along the western border and consists of a narrow belt of land with elevation of 1,800 m or less and width between 10 and 65 km;
- The *Senqu Valley* covers 2,690 km² (9%) and forms a narrow strip of land that flanks the banks of the Senqu (Orange) River and penetrates deep into the Maluti Mountains; elevations vary from mountains to lowlands.

http://www.fao.org/nr/water/aquastat/countries_regions/lesotho/index.stm

3.1 Scope and Coverage

This chapter consists of secondary data collected from different Government Ministries. The results covered are for the entire country and range from 2013/2014 to 2017/2018.

3.2 Results

The results show the land used for agriculture (area planted and fallow), land under forests and other wooded land. Land under build-up and related land (road lengths) is also covered.

3.3 Agricultural Land

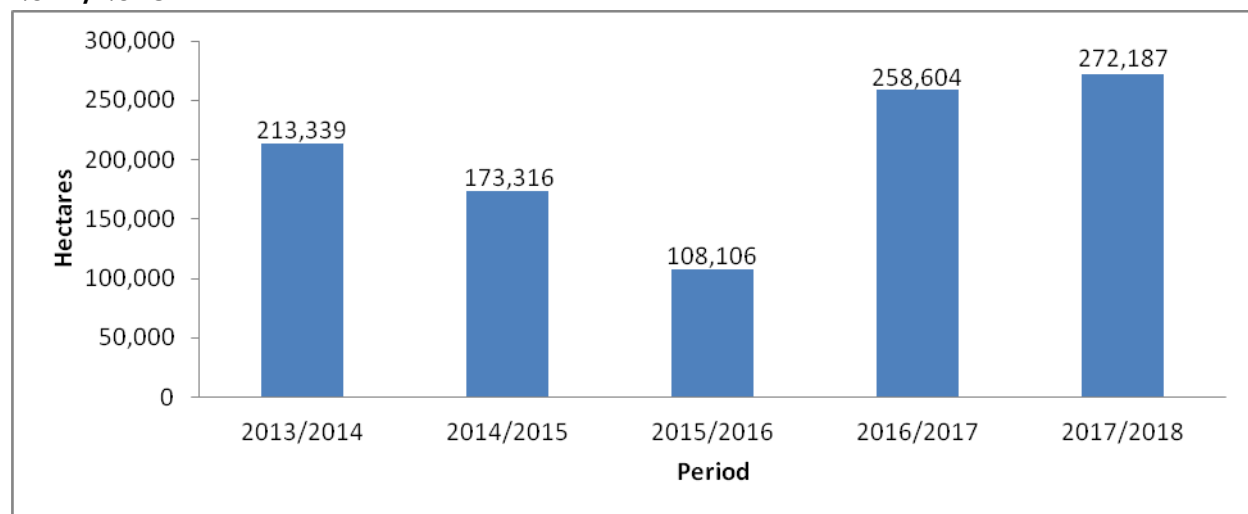
This refers to the major classes of land use on agricultural holdings. For classification the gross area is surveyed for each class. 'Agricultural land' includes land under scattered farm buildings, yards and their annexes, permanently uncultivated land, such as uncultivated patches, banks, footpaths, ditches, headlands and shoulders.

3.3.1 Area Planted

The area planted refers to all fields that were cultivated in a specified agricultural year which commence from the 01st August of the current year to the 31st July of the following year.

Figure 3.1 portrays area planted for all crops in hectares for the period 2013/2014 to 2017/2018. It is observed that there was a decrease of 49.3 percent from the period 2013/2014 to 2015/2016. The lowest area planted was in 2015/2016 with 108,106 hectares. The area planted increased by 139.2 percent from the period 2015/2016 (108,106ha) to 2016/2017 (258,604ha). The highest area planted was 272,187ha in 2017/2018.

Figure 3.1: Area Planted for all Crops in Hectares (ha) for the Period 2013/2014-2017/2018



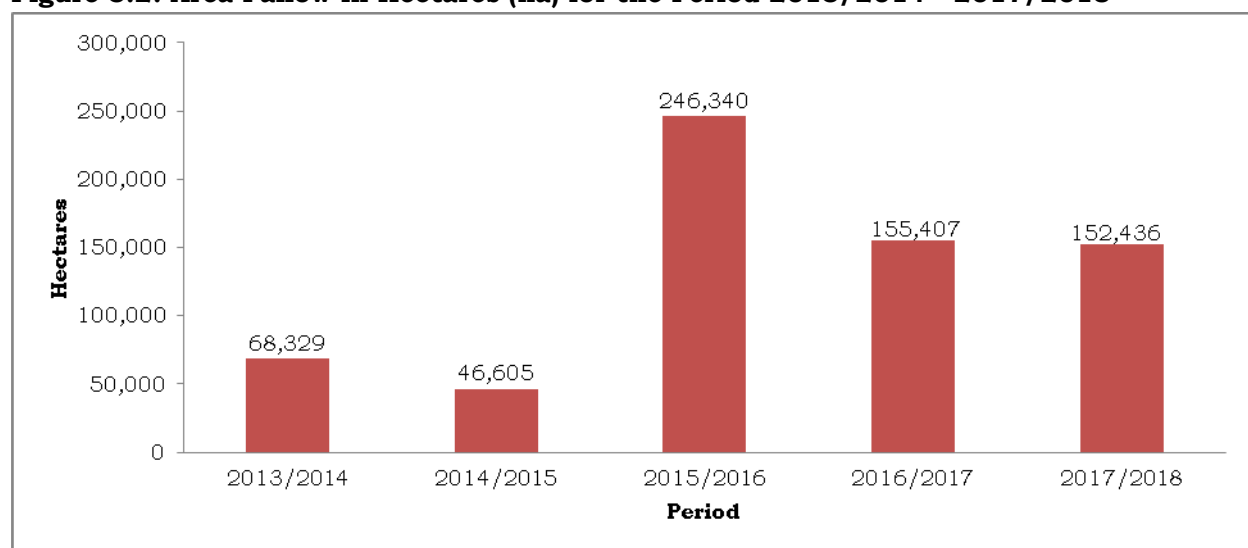
Source: Agricultural Production Survey

3.3.2 Area Fallow

Area fallow refers to the land that remained uncultivated for a period of no more than three years.

Figure 3.2 illustrates area fallow in hectares for the period 2013/2014 to 2017/2018. It is observed that the least area fallow (46,605ha) was in 2014/2015 period, while the highest was in 2015/2016 (246,340ha) reflecting an increase of 428.6 percent. There was a decrease of 36.9 percent from 2015/2016 (246,340ha) to 2016/2017 (155,407ha).

Figure 3.2: Area Fallow in Hectares (ha) for the Period 2013/2014 - 2017/2018



Source: Agricultural Production Survey

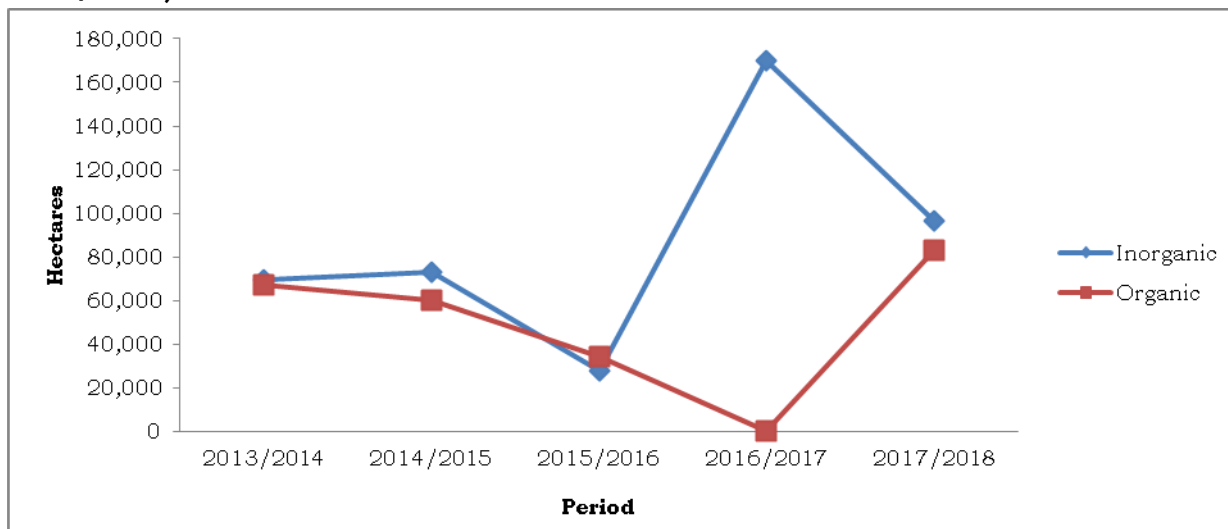
3.3.3 Inorganic and Organic Fertilizer Application

Fertilizer is either a chemical or organic compound that is applied to plant for the purpose of providing supplemental nutrition to enhance all or a number of the plants growth characteristics. Inorganic fertilizer is a chemical (synthetic) fertilizer used to improve plant growth by supplying nutrients. Organic fertilizer refers to natural material added to the soil to supply nutrients essential to the growth of plants.

Figure 3.3 portrays area applied fertilizers in hectares by type and period (2013/2014 to 2017/2018). Area applied with organic fertilizers was showing a decreasing pattern from the period 2013/2014 (67,070ha) to 2016/2017 (503ha), with the large decline of 98.5 percent from 2015/2016 (34,357ha) to 2016/2017 (503ha) and then increased by 164.0 percent in 2017/2018 (83,001ha).

It is also observed that large area (169,790ha) was applied with inorganic fertilizers in 2016/2017, followed by 96,402ha in 2017/2018. The least area applied inorganic fertilizers was 28,131ha in 2015/2016.

Figure 3.3: Area Applied Fertilizers in Hectares (ha) by Type and Period (2013/2014-2017/2018)



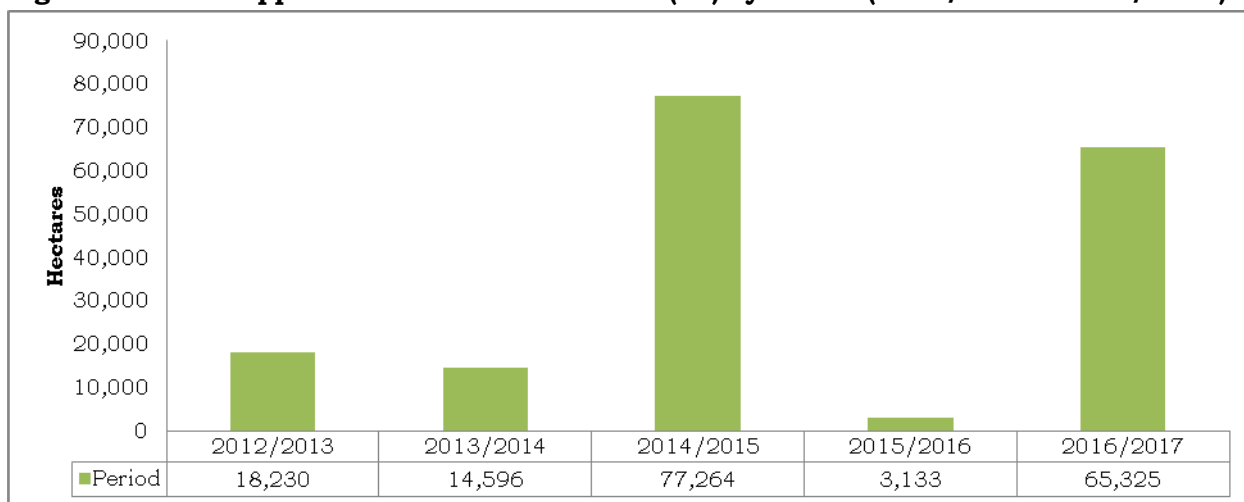
Source: Agricultural Production Surveys

3.3.4 Pesticide Application

In the process of plant growth, a pesticide is any substance or mixture of substances used to prevent, destroy, repel, or mitigate any pest. Pests are living organisms that occur where they are not wanted or that cause damage to crops or humans or other animals.

Figure 3.4 depicts area applied pesticides in hectares by period (2012/2013 to 2016/2017). The area applied pesticides was higher in 2014/2015 period with 77,264ha, followed by 65,325ha in 2016/2017. The least area 3,133ha applied with pesticides was in 2015/2016.

Figure 3.4: Area Applied Pesticides in Hectares (ha) by Period (2012/2013 - 2016/2017)



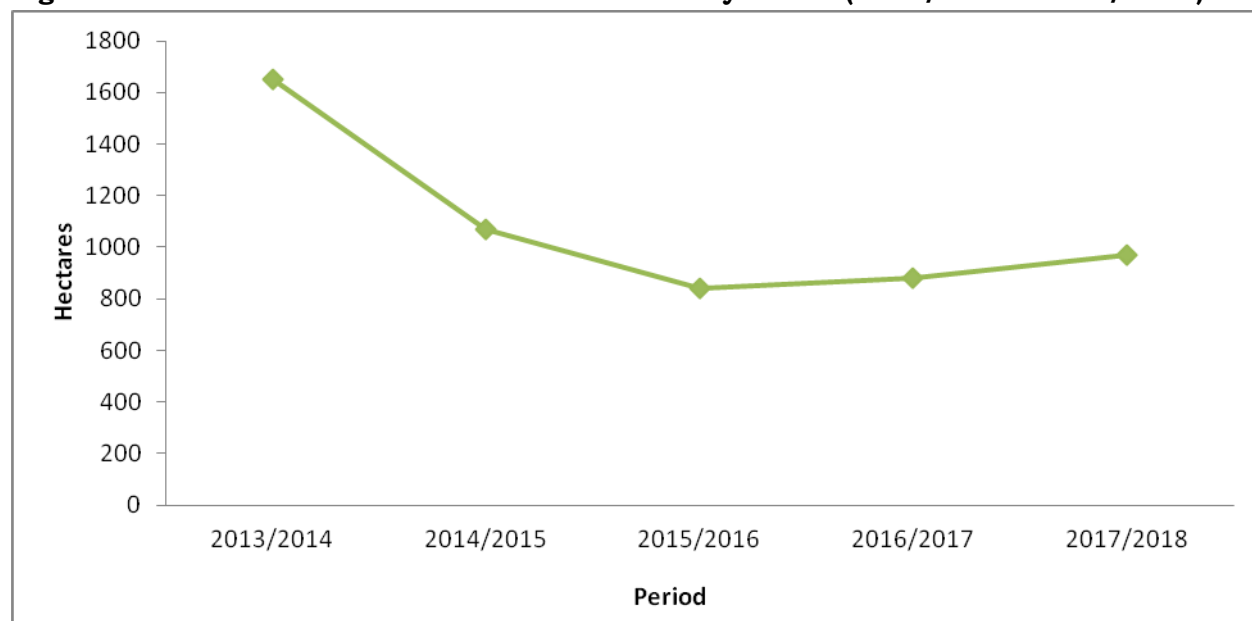
Source: Agricultural Production Surveys

3.4 Forests and other Wooded Land Area

Area covered by forests refers to land under forestry or no land use, spanning more than 0.005 km² (0.5 hectares); with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. Area covered by other wooded land refer to land under forestry or no land use, spanning more than 0.005 km² (0.5 hectares); with trees higher than 5 meters and a canopy cover of 5-10 percent, or trees able to reach these thresholds in situ; or with a combined cover of shrubs, bushes and trees above 10 percent.

Figure 3.5 illustrates area planted forest trees in hectares by period (2013/2014 to 2017/2018). The highest number of trees planted was observed in 2013/2014 covering an area of 1,653ha followed by 1,071ha in 2014/2015. The least area planted forest trees was 841ha in 2015/2016, it then increased to 972ha in 2017/2018.

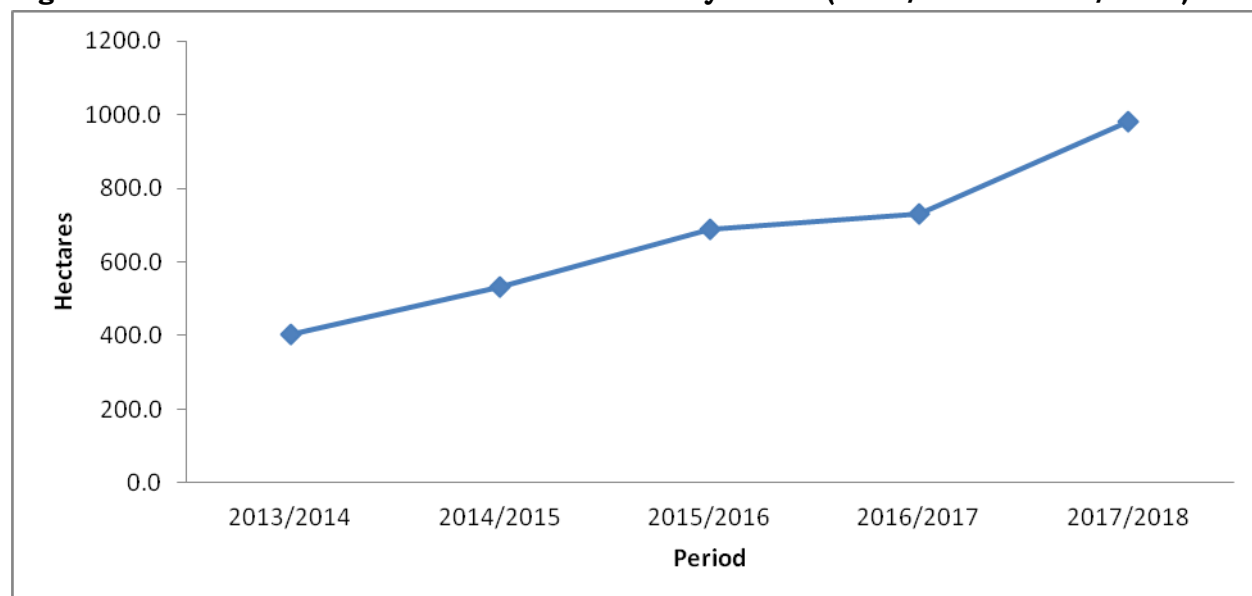
Figure 3.5: Area Planted Forest Trees in Hectares by Period (2013/2014 - 2017/2018)



Source: Ministry of Forestry and Land Reclamation

Figure 3.6 depicts area planted fruit trees in hectares by period (2013/2014 to 2017/2018). An increasing pattern was observed throughout the period. The minimum area planted fruit trees was 403.0ha in 2012/2013. The highest increase of 34.4 percent was observed from 2016/2017 to 2017/2018.

Figure 3.6: Area Planted Fruit Trees in Hectares by Period (2013/2014 – 2017/2018)



Source: Ministry of Forestry and Land Reclamation

3.5 Built-up and related land

This refers to land under houses, roads, mines and quarries as well as any other facilities, including their auxiliary spaces, deliberately installed for the pursuit of human activities. Included are also certain types of open land (non-built-up), which are closely related to these activities, such as waste tips, derelict land in built-up areas, junk yards, city parks and gardens. Land occupied by scattered farm buildings, yards and their annexes is excluded. Land under closed villages or similar rural localities are included.

3.5.1 Land under Roads

The lengths of roads were split into surfaced and un-surfaced (gravel and earth roads). These road lengths are for the roads that link the districts within the country (municipal roads are not included).

Table 3.1 shows road lengths in kilometers (km) by description for the years 2013 to 2017. It is observed that roads surveyed undergoing equipment-based maintenance showed increasing pattern from 2013 (2,001.79km) to 2016 covering 2,256.01km. It is also observed that longest road lengths surveyed undergoing labour-based maintenance were found in 2015 (2,106.55km). The longest lengths of roads not surveyed/not analyzed were in 2013 (2,966.31km), while the shortest covered 362.92km in 2015.

Table 3.1: Road lengths in Kilometers (km) by Description and Period (2013-2017)

Year	Roads surveyed undergoing equipment-based maintenance	Roads surveyed undergoing labour-based maintenance	Roads not surveyed /not analysed	Total kilometres
2013	2,001.79	896.44	2,966.31	5,864.54
2014	2,041.60	2,018.89	1,804.05	5,864.50
2015	2,155.28	2,106.55	362.92	4,624.75
2016	2,256.01	1,835.47	533.27	4 091.48
2017	2,095.29	1,813.61	1,956.01	5,864.91

Source: Roads Directorate

Table 3.2 presents road lengths in kilometers (km) by description for the year 2017. Gravel roads had the longest lengths of 3,029.60km followed by surfaced roads with 1,533.27km. The shortest roads were Tracks with 131.89km and were not surveyed/not analysed. Surfaced roads (1,369.70km) were the longest roads surveyed undergoing equipment-based maintenance.

Table 3.2: Road Lengths in Kilometers (km) by Description for the Year 2017

Roads Description	Roads surveyed undergoing equipment-based maintenance	Roads surveyed undergoing labour-based maintenance	Roads not surveyed/not analysed	Total kilometres (based on 2016 network)
Surfaced	1,369.70	0	163.57	1,533.27
Gravel	725.59	1,797.77	506.24	3,029.60
Earth	0	15.84	1,154.31	1,170.15
Tracks	0	0	131.89	131.89
Totals	2,095.29	1,813.61	1,956.01	5,864.91

Source: Roads Directorate

3.6 Summary

The highest area planted was 272,187ha in 2017/2018 and the minimum area planted was 108,106ha in 2015/2016. Area fallow was higher in 2015/2016 (246,340ha). The area applied organic fertilizers was showing a decreasing pattern from 2013/2014 (67,070ha) to 2016/2017 (503ha). The maximum area applied inorganic fertilizers was 169,790ha in in 2016/2017. The area planted forest trees was higher in 2013/2014 (1,653ha). The area planted fruit trees was showing an increasing pattern from 2013/2014 to 2017/2018. Longest roads in 2017 were gravel roads and all tracks were not surveyed/not analysed. Roads surveyed undergoing equipment-based maintenance showed increasing pattern from 2013 to 2016.

CHAPTER 4: AIR AND CLIMATE CHANGE

4.0 Introduction

According to the Lesotho's second National Communication Report to the Conference of Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC), November 2013, Lesotho is considered to be experiencing hot summers and relatively very cold winters. The highest maximum temperature ever recorded is 38.5°C and the lowest minimum temperature is -21°C. The yearly precipitation varies between about 500 millimeters in the Senqu River Valley to about 1200 millimeters over the northern highlands and along the Drakensburg range. Lesotho experienced heavy rains that affected its entire territory from the end of December 2010 to February 2011. The damage and loss of the property, assets and livelihoods due to those floods was estimated at M462.7 million, equivalent to 3.2 percent of the GDP.

The energy and land use forestry sectors were found to be emitting the highest amount of greenhouse gases in Lesotho, "First National Communication to the Conference of Parties to the UFCCC", April 2000.

All these adverse climatic changes have a lot of effect on socio economic life of the people. It is therefore imperative that data should be available to inform policy makers to address these issues; hence air and climate change statistics.

4.1 Scope and Coverage

The report consists of the following sections; temperature changes, rainfall changes and Ozone Depleting Substances (ODS) and or their Alternatives.

The report is comprised of secondary data on temperatures, precipitates and ODS from Lesotho Meteorological Service and primary refrigerants data collected from selected retails (outlets).

4.2 Climate Change

A region's climate means its usual weather patterns and conditions. A change in weather patterns and conditions is a change in climate. The results of maximum and minimum temperatures are discussed below as well as rainfall.

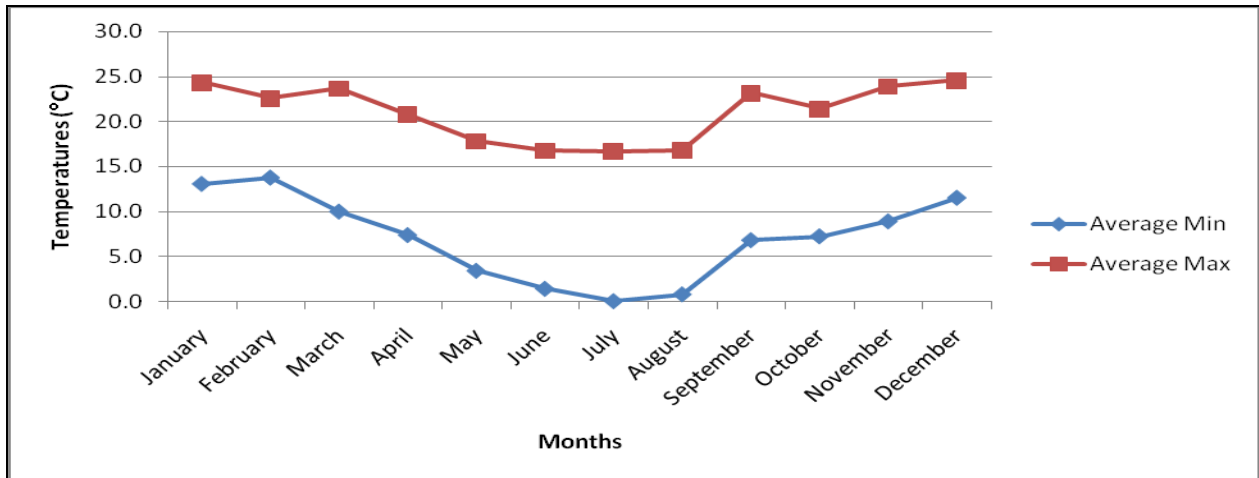
4.3 Maximum and Minimum Temperatures

Temperature is the state of a body with regard to heat or cold, as indicated by the thermometer; or the degree of free caloric which a body possesses, when compared with other bodies. Maximum and minimum temperatures are air temperatures observed at the site.

Figure 4.1 depicts Annual Average Maximum and Minimum Temperatures in degrees Celsius (°C) by months for the year 2017. The highest annual average maximum temperature was observed in December with 24.6 °C, followed by January with 24.3

°C. The lowest annual average maximum temperature was observed in June and July with 16.7 °C each. The lowest annual average minimum temperature was observed in July with 0.1 °C and the highest minimum annual average temperature was 13.7 °C in February

Figure 4.1: Annual Average Maximum and Minimum Average Temperatures (°C) for the Year 2017



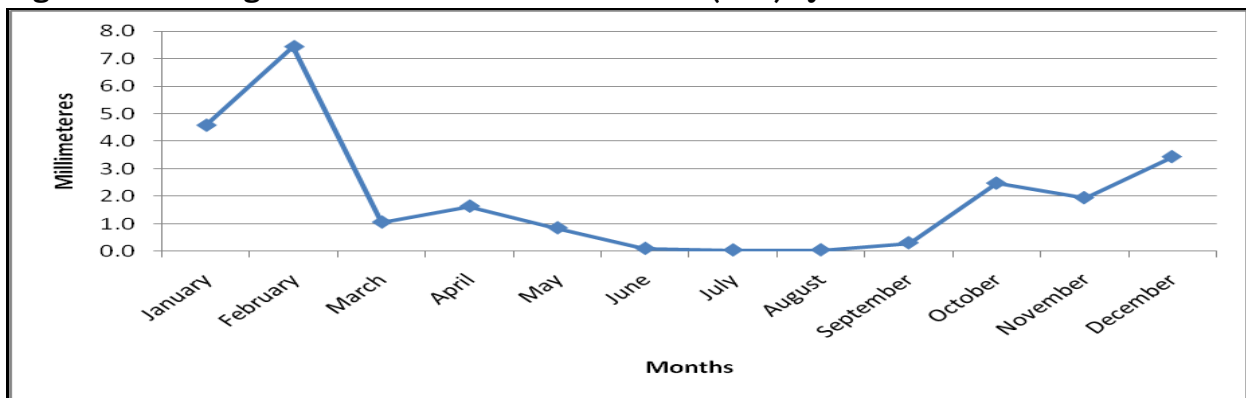
Source: Lesotho Meteorological Services

4.4 Average Annual Rainfall

Rainfall is the type of precipitation that occurs when water vapour in the atmosphere condenses into droplets that can no longer be suspended in the air.

Figure 4.2 depicts average annual rainfall in millimetres (mm) by months for the year 2017. The highest average annual rainfall was 7.4 mm in February, followed by January with 4.6 mm. In July and August there was no rain at all.

Figure 4.2: Average Annual Rainfall in Millimetres (mm) by Months for the Year 2017



Source: Lesotho Meteorological Services

4.5 Ozone Depleting Substances (ODS)

Emissions to air are gaseous and particulate substances released to the atmosphere by establishments and households as a results of production and accumulation activities. Ozone Depleting Substances (ODS) is another important category of emissions that is actively monitored by the Montreal Protocol (Revised Framework for the Development of Environment Statistics, 2012). However as emissions of these substances are difficult to measure directly, countries report on the apparent consumption of ODS. ODS are gases found in refrigeration and in air conditioning systems.

This section contains ODS data primarily collected from suppliers and technicians in selected districts in the country.

Table 4.1 shows the quantity (in grams) of Refrigerants/Charge imported by district and type of ODS (Gas) for the year 2017. The table shows that majority of all types of ODS (gases) were imported in Maseru district. R22 (4,471.0 grams) was mostly imported in Maseru, followed by Leribe with 92.0 grams. R290 (5.0 grams) was only imported in Maseru district.

Table 4.1: Quantity (in grams) of Refrigerants/Charge Imported by District and Type of ODS (Gas) for the Year 2017.

Districts	Type of Gas									
	R22	R134a	R404a	R406	R408	R407a	R410a	R290	R600a	R507
Botha-Buthe	6.4	13.7	0.0	0.0	0.0	0.0	0.0	0.0	8.0	0.0
Leribe	92.0	218.0	138.0	0.0	0.0	0.0	0.0	0.0	19.0	0.0
Maseru	4,471.0	1,851.0	2,726.9	109.2	65.6	99.0	2,289.5	5.0	200.0	79.0
Mohale'sHoek	0.0	40.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Quthing	13.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0
Total	4,582.4	2,135.7	2,880.9	109.2	65.6	99.0	2,289.5	5.0	242.0	79.0

4.6 Summary

The highest average annual maximum temperature was 24.6 °C in December and the lowest average annual minimum temperature was 0.1 °C observed in July. The highest annual rainfall was 7.4 mm in February while in July and August there was no rain at all. It was also observed that the type of ODS (gas) that was mostly imported in the country was R22 with the total of 4,582.4 grams which was mostly consumed in Maseru (4,471.0 grams).

CHAPTER 5: BIODIVERSITY

5.0 Introduction

The expression or phrase biological diversity (or biodiversity) refers to the numbers and variability existing among living organisms and life supporting systems found in the living world (McNeely *et al.*, 1990). The phrase encompasses all species of plants, animals and microorganisms, together with the ecosystems and ecological process within which the species and organisms are found. The phrase includes natural wild types, as well as domesticated varieties of crops and livestock.

Lesotho is a party to the Convention on Biodiversity and as such has been active in implementing of the Convention, particularly article 6.¹ Lesotho had a group of concerned persons who met and drafted the first National Environmental Action Plan within which are measures to conserve the country's biodiversity. This effort and many others that followed were the impetus for environmental planning in Lesotho. Currently the awareness and implementation is nationwide, spread in the villages through decentralization, local societies, and a group of young experts in the Integrated Catchment Management programme.

The vision of Lesotho in biodiversity planning is to have a country rich in diversity of life and life forms, economically prosperous, environmentally conscious, and people who are in balanced existence with their natural environment, caring, appreciating and understanding the complexities of nature, while deriving benefits from the conservation and sustainable use of diversity lives.

The Drakensberg-Maloti Mountains are important for their high altitude flora, estimated at 3,094 species; of which 30% is endemic to the mountains. The eastern alpine areas of Lesotho also support a network of unique high altitude bogs and sponges, a system of wetlands found nowhere else in the world.
<http://www.cbd.int.>world>ls-ns-01-en>

¹ Article 6. General Measures for Conservation and Sustainable Use.

Each contracting party shall, in accordance with its particular conditions and capabilities: (a) Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, inter alia, the measures set out in this Convention relevant to the contracting party concerned and (b) integrate, as far as possible and as appropriate the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.

5.1 Scope and coverage

The results covered in this report are for the entire country. Also, data used is secondary as it was collected from specified sources.

Although there are a number of gaps existing in knowledge, understanding and conserving Lesotho’s biodiversity, this report reveals some of the key issues of interest mostly compiled with data from Lesotho Highlands Development Authority (LHDA) and other sources.

5.2 Results

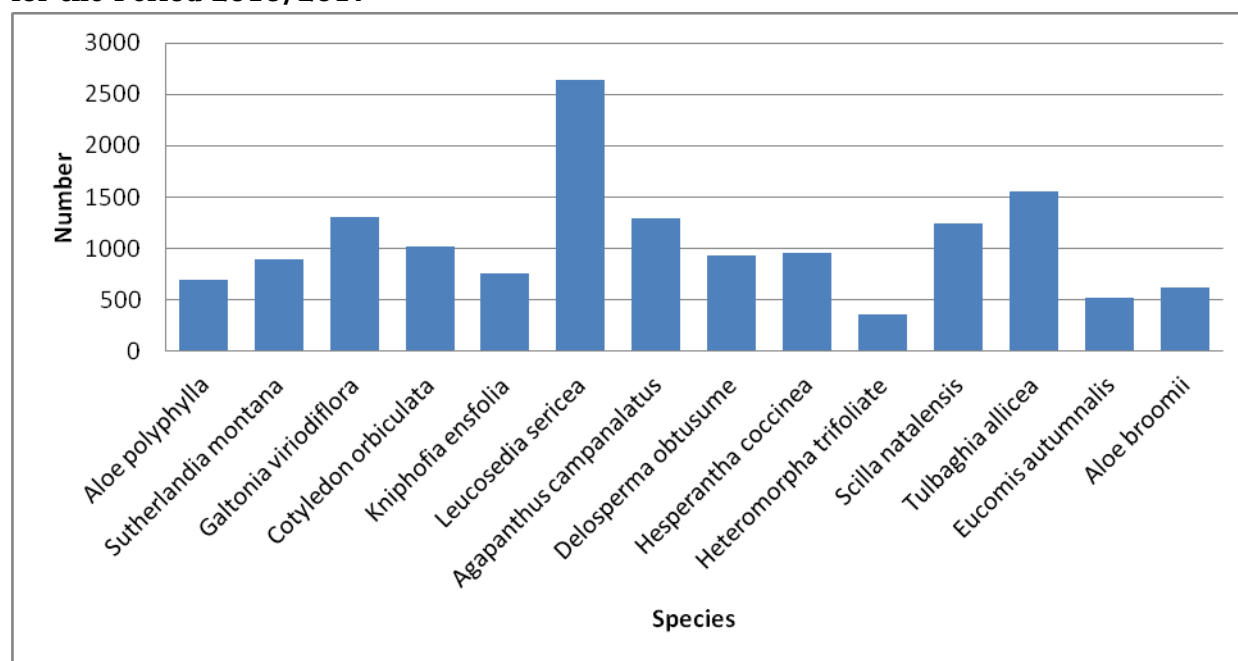
The results indicate the number of different animal species, plant species, protected area, conserved catchment areas and wetlands.

5.3 Botanical Garden

A botanical garden (or botanic garden) is a garden dedicated to the collection, cultivation and display of a wide range of plants labeled with their botanical names. It may contain specialist plant collections such as, herb garden, plants from particular parts of the world, and so on.

Figure 5.1 portrays propagation of rare and threatened plant species in the Katse Botanical Garden (KGB) nursery site. The most abundant plant species was *Leucosedia sericea* (2,637) followed by *Tulbaghia allicea* (1,558) and the most rare species is *Heteromorpha trifoliata* (358).

Figure 5.1: Propagation of Rare and Threatened Plant Species in the KGB Nursery Site for the Period 2016/2017



Source: LHDA

5.4 Species

For the combined flora species records please **refer to Annex 3 (tables 2)**. The inventory of species is from Katse Botanical Garden.

5.5 Protected Areas

At present, there are nature reserves areas in Lesotho legally established specifically to protect biodiversity. These are the Sehlabathebe National Park and the Masitise Nature Reserve. Four other nature reserves were established in Lesotho, within the Lesotho Highlands Water Project Phase 1A area at Bokong, Ts'ehlanyane, 'Muela and Liphofung. In addition, the Roma campus of the National University of Lesotho includes a botanical garden for teaching purposes.

Table 5.1 shows Lesotho's protected areas by area (ha). It is indicated in the table that Sehlabathebe National Park has the largest area (6,475ha) followed by Ts'ehlanyane nature reserve (5,300ha) while Bokong has the lowest area (1,972ha). Among the small protected areas the least area is of the National University of Lesotho with 1.5ha. 'Muela nature reserve has a bigger area of 45ha.

Table 5.1: Lesotho's Protected Areas by Area (ha)

Protected Area	Area (ha)
Sehlabathebe national park	6,475
Masitise nature reserve	20
Bokong nature reserve	1,972
National University of Lesotho (botanical garden)	1.5
Ts'ehlanyane nature reserve	5,300
Muela nature reserve	45
Liphofung national monument and reserve	4

5.6 Wetlands

A wetland is a land area that is saturated with water, either permanently or seasonally, such that it takes on the characteristics of a distinct ecosystem. Primarily, the factor that distinguishes wetlands from other land forms or water bodies is the characteristic vegetation that is adapted to its unique soil conditions. Wetlands consist primarily of hydric soil, which supports aquatic plants.

Table 5.2 shows Percentage Coverage of sub catchments at Mohale for 1993, 2005 and 2013. In 1993 the sub catchment with the highest coverage was Jorotane (4.13 percent) followed by Bokong (2.78 percent) and the lowest was Likalaneng with 0.18 percent. In 2013, the sub catchment with the highest coverage was still Jokotane with 3.8 percent followed by Bokong (2.88 percent). The least coverage was Senqunyane down- stream with 0.58 percent.

Table 5.2: Percentage Coverage of Sub Catchment at Mohale for 1993, 2005 and 2013.

Sub Catchment	Year		
	1993	2005	2013
Bokoaneng	1.43	1.31	1.27
Bokong	2.78	2.84	2.88
Jorotane	4.13	3.94	3.80
Likalaneng	0.18	0.67	0.64
Senqunyane upstream	2.06	1.31	1.86
Senqunyane down stream	0.75	0.63	0.58

5.7Summary

Data revealed that all the three LHDA Dams, Muela, Katse and Mohale propagated species in nature reserves and botanical gardens to conserve nature. The most abundant plant species was *Leucosedia sericea* (2,637) followed by *Tulbaghaia allicea* (1,558) and the most rare species is *Heteromorpha trifoliata* (358). Generally the percentage coverage of sub catchments decreased over years; most catchments had bigger coverage's in earlier years and became smaller in the latter years. Jokotane decreased its coverage with a share of 0.33 percent from 1993 to 2013. Protected areas differ in sizes and fall under either big or small category where among the big ones, Sehlabathebe National Park had the largest area of 6,475 ha.

ANNEX 1: WATER AND SANITATION

Table 1: Water Production and Consumption by Period

Period	Water Production	Water Consumption
2015/2016	22,513,206	12,490,734
2016/2017	22,162,517	13,277,812
2017/2018	21,685,238	14,483,402

Table 2: Water Exports in Million Cubic Meters (mm³) by Year

Year	Million Cubic Meters
2013	730.0
2014	783.7
2015	772.9
2016	770.9
2017	794.0
2018	811.0

Table 3: Water Production and Consumption by Different Operating Centre's for the Year 2016

Operation Centre	Number of Customers	Kilolitres Produced	Kilolitres Consumed
Hlotse	3,147	467,421	301,177
Maputsoe	6,798	1,034,249	586,188
Mafeteng	5,117	603,740	348,624
Mohale's Hoek	3,247	503,420	229,762
Maseru	48,371	17,972,779	9,924,620
Quthing	1,518	247,994	134,732
Qacha's Nek	1,435	243,767	135,125
Thaba-Tseka	1,204	185,258	155,114
Botha Bothe	5,376	364,563	204,139
Peka	1,061	168,024	125,270
TY	4,694	501,992	345,983
Total	81,968	22,293,207	12,490,734

Table 4: Number of Households by Main type of Sanitation, Census 2016

Main Type of Sanitation	Number of Households
Flush to piped sewer system	13,433
Flush to septic tank/Biogas digester	5808
Flush to pit latrine	2317
Ventilated Improved Pit Latrine (VIP)	212943
Unimproved Pit Latrine	167402
Bucket toilet	940
Public/Neighbour toilet	29240
Open Defecation (Bush/field)	105374
Total	537,457

Table 5: Annual Water consumption by different sectors for the period 2017/2018

Urban centres	Sector										
	Business	Construction	Domestic	Government	Hotels	Industrial	Sports Clubs	Stand Pipes	Religious	Schools	Prepaid
Maseru	841,294	239,332	4,196,712	869,980	171,820	5,205,337	12,786	7,535	32,990	106,803	230,265
Leribe	45,390	4,344	204,037	40,719	12,110	-	-	16	1,931	10,332	-
Maputsoe	35,599	5,247	351,126	14,886	-	53,381	22	194	260	545	-
TY	35,330	836	303,343	26,895	783	-	-	3,927	278	9,471	-
Mafeteng	41,320	-	371,537	44,275	9,394	5,358	-	1,443	2,921	13,080	-
Mohales' Hoek	27,596	2,578	201,322	21,376	1,392	-	-	1,062	548	9,195	-
Buth-Buthe	37,886	69	147,498	22,806	2,569	-	-	2,072	811	9,697	-
Quthing	10,590	765	93,780	28,030	352	-	-	406	442	6,744	-
Peka	543	2,249	55,430	3,262	231	-	-	506	26	42	-
Mapoteng	3,651	-	80,737	402	37,614	-	-	640	20	1,484	-
Morija	3,311	86	36,149	1,414	27,643	-	4	285	1,583	5,240	-
Thaba-Tseka	20,725	4,776	75,210	19,364	15,037	-	-	-	728	12,275	-
Qacha's Nek	15,513	173	78,235	26,511	4,134	-	-	-	1,000	5,998	-
Mokhotlong	11,711	9,261	98,538	45,448	2,854	-	-	-	785	3,670	-
Roma	4,813	-	114,559	394	10,677	-	-	-	1,368	262,122	-
Mazenod	1,374	-	110,514	104,634	-	-	-	-	19	333	-
Semonkong	1,191	-	20,865	1,190	640	-	-	-	5,024	143	-
Total	1,137,837	269,716	6,539,592	1,271,585	297,247	5,264,076	12,812	18,085	50,733	457,173	230,265

ANNEX 2: SOLID WASTE

Table 1: Scrap Metal Waste (in tons) collected in Maseru by Month and Year

Month	Year				
	2014	2015	2016	2017	2018
January	390.0	151.3	81.4	267.3	176.1
February	283.0	261.3	129.8	128.0	257.1
March	376.0	252.7	73.5	149.7	160.3
April	312.0	258.2	244.0	189.2	178.7
May	315.0	247.1	253.2	184.1	155.1
June	323.0	335.6	128.8	212.6	266.2
July	233.0	337.7	177.3	169.5	214.7
August	295.0	287.8	204.6	195.9	190.2
September	272.0	231.9	243.8	192.1	187.3
October	150.0	190.7	157.6	416.6	191.3
November	169.0	200.9	154.4	220.0	297.5
December	118.0	56.0	7.7	130.4	72.1
Total	5250.0	4826.3	3872.0	4472.4	4364.4

Table 2: Number of Households by Solid Waste method of Disposal, Census 2016

Method of Disposal	Number of Households
Burnt	296,427
Own refuse dump	187,387
Burying/pit	31,670
Municipal collected/Private	21,496
Communal collected	9,813
Roadside dumping	8,742
Communal refuse dump	8,172
Other	750
Total	537,457

ANNEX 3: BIODIVERSITY

Table 1: Dominant Species and Area (m²) of Wetlands Monitored in Mokhotlong and Semonkong in Winter Season for the Year 2013

Location	Domant Species	Area (m ²)
Mokhotlong	Sehala-hala & Festuca caprina (Joang)	1,117,683.94
Semonkong	Scirpus spp (Roro) & Eragrostis curvula (Tsa'ane)	430,698.87

Table 2: Number of Seedling Propagation of Rare and Threatened Plant Species in the KBG Nursery Site, 2017/2018

Seed Sown	Total
Eucomisautomnalis	767
Delospermaobtusome	9
Aloe broomii	322
Aloe polyphylla	4,046
Tulbaghiaaalliancea	1,347
Kniphofiacaulescence	128
Kniphofiaensfolia	18
Agapanthus campanalatus	19
Heteromorphatripholiata/aboresence	38
Galtoniaveridiflora	1,631
Cotyledon orbiculata	289
Sutherlandia montana	146
Elephantinaelephantoriza	68
Diarma spp.	269
Asparagus asparagoides	5,977
Diospyros austro-africana	177
Dicomaanomala	47
Phygeliuscapensis	788
Leucosidea sericea	1,202
Hesperanthacoccinea	1,014
Aloe ferox	56
Boophane disticha	10
Brunsvigia grandiflora	23
Olea Africana	13
Euphobiaclavaroides	12
Total	18, 416

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