



Kingdom Of Lesotho



Statistical Report No 6: 2019

2017 Energy Report



Bureau of Statistics
P.O. Box 455
Maseru 100
Lesotho
Tel: +266 22 323 852/22 326 393
Fax: +266 22 310 177
E-mail: ees@bos.gov.ls
Website: www.bos.gov.ls

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.

Table of Contents	Page
Table of Contents.....	i
List of Tables	ii
List of Figures	ii
1.0 Introduction.....	1
1.1 Coverage and scope	1
2.0 Results	1
3.0 Electricity	1
3.1 Generated Electricity	1
3.1.1 Muela Generation	2
3.1.2 Mini-Hydro Electric Power Generation	2
3.1.3 Total Electricity Produced	4
3.2 Electricity Purchased	4
3.3 Electricity Sales to LEC.....	5
3.4 Electricity Imports and Exports	6
3.5 Electricity Distribution.....	6
3.5.1 LEC Consumers.....	6
3.5.2 Electricity Consumed.....	7
3.5.3 Economic Sectors Consumption	8
3.5.4 Distribution Losses.....	8
3.6 Lesotho Load	9
4.0 Petroleum Fuel	10
4.1 Petroleum Fuel Costs.....	10
4.2 Petroleum Fuel sales.....	10
4.3 Aviation Gasoline Purchase.....	11
4.4 Aviation Gasoline Consumption.....	12
4.5 Gas Imports.....	13
4.5.1 Liquefied Petroleum Gas	13
4.5.2 Acetylene	13
5.0 Charcoal	14
6.0 Summary.....	15
ANNEX 1	16

REFERENCES	22
------------------	----

List of Tables

Table 1: Electricity Generated from Semonkong and Mantsonyane in Megawatt hours (MWh) for the financial year 2017/2018	3
Table 2: Electricity Generated from Muela, Semonkong and Mantsonyane in MWh for the Year 2017	4
Table 3: Total Electricity Imports and Exports in GWh by Year	6
Table 4: Number of LEC Consumers by Sector for the period 2013/2014 to 2017/2018.....	7
Table 5: Amount and Percentage Distribution of Electricity Consumed by LEC consumers for the financial year 2017/2018	7
Table 6: Quantity of Electricity Consumed by Economic Sectors in Megawatt hours for the financial year 2017/2018	8
Table 7: Petroleum Fuel cost in Maloti per litre for the year 2017	10

List of Figures

Figure 1: Electricity Generated in Gigawatt hours (GWh) for the Years 2013 to 2017.....	2
Figure 2: Electricity Generated from Semonkong Mini Hydro power Station in KWh for the financial year 2017/2018	3
Figure 3: Electricity purchased in GWh from Muela, Eskom and EDM by LEC for the period 2013/2014 to 2017/2018.....	5
Figure 4: Electricity Sales from Muela to LEC in Gigawatt hours for the years 2013 to 2017	5
Figure 5: Distribution Losses for the period 2013/2014 to 2017/2018	9
Figure 6: Yearly Load curve in Gigawatt hours for the year 2017	9
Figure 7: Petroleum Fuel sales in Megalitres for the Year 2017	11
Figure 8: Aviation gasoline Purchase by MAF in Litres for the Years 2015 to 2017.....	12
Figure 9: Aviation Gasoline Consumption by MAF in Kilolitres for the years 2013 to 2017	12
Figure 10: Volumes of LPG imports in tonnes for the years 2014 to 2017	13
Figure 11: Volumes of Acetylene imports in tonnes for the years 2014 to 2017.....	14
Figure 12: Quantity of Charcoal produced in Kilograms (kg) for the years 2015 to 2017 ...	14

1.0 Introduction

Energy statistics refers to collecting, compiling, analyzing and disseminating data on commodities such as coal, crude oil, natural gas, electricity, or renewable energy sources (biomass, geothermal, wind or solar energy), when they are used for the energy they contain” https://en.wikipedia.org/wiki/Energy_statistics

“In addition to the hydropower abundance in Lesotho, the country also relies heavily on biomass fuels to meet its major rural population basic needs of cooking and heating space. The country does not have any proven fossil fuels sources, hence it does not produce any crude oil, and consequently there is a huge dependency on imported fossil fuels. Most of the electricity produced is based on hydro sources; however the country requires energy imports from neighbouring countries to meet its demand.”
https://energypedia.info/wiki/Lesotho_Energy_Situation

1.1 Coverage and scope

The report comprises secondary data for grid electricity from Lesotho Highlands Development Authority (LHDA) and Lesotho Electricity Company (LEC). It includes petroleum fuels data from Petroleum Fund and Mission Aviation Fellowship (MAF). It also includes Liquefied Petroleum Gas (LPG) and charcoal production data.

2.0 Results

Electricity generation data from LHDA is for the years 2013 to 2017 and electricity distribution from LEC is for the financial years 2013/2014 to 2017/2018. LEC data also includes electricity generation from mini hydro-electric power stations and diesel powered generator for the financial year 2017/2018. Petroleum fuels from Petroleum Fund and aviation data is for the year 2017. Charcoal production data is for the years 2015 to 2017 and LPG imports data is for the years 2014 to 2017.

3.0 Electricity

Electricity is an energy carrier with a very wide range of applications. It is used in almost all kinds of human activity ranging from industrial production, household use, agriculture, commerce for running machines, lighting and heating, (IEA Energy Statistics manual, December 2010).

3.1 Generated Electricity

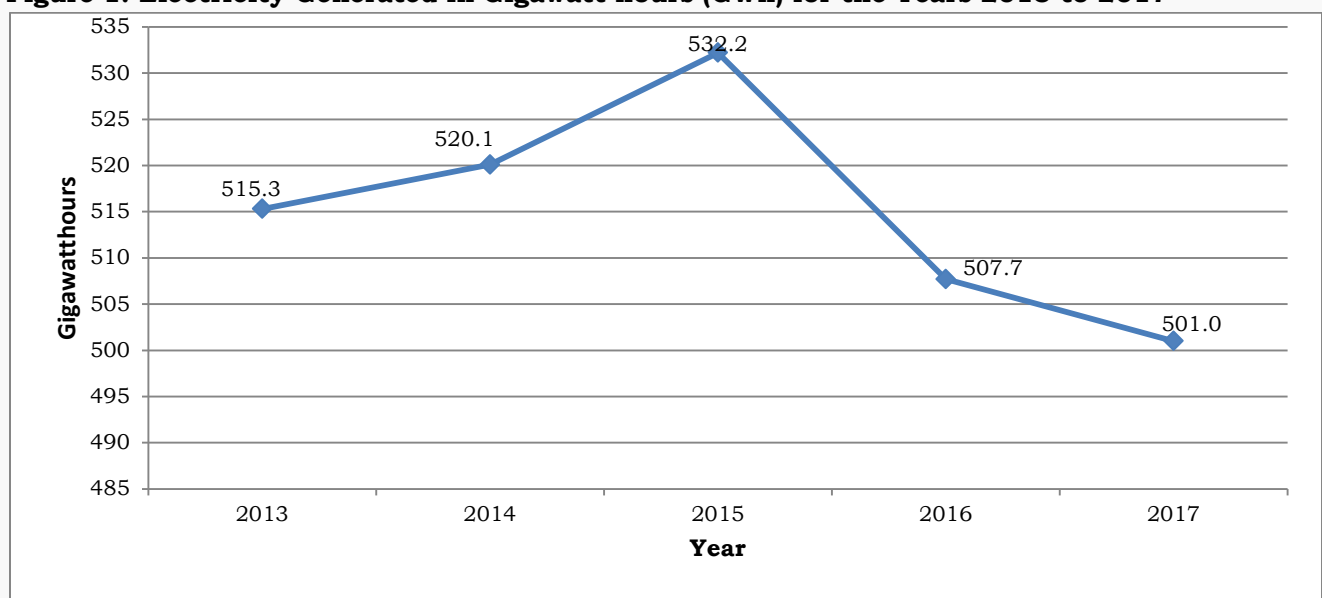
The electricity supply industry in Lesotho is dominated by two state owned entities, namely the Lesotho Electricity Company (LEC), which is the monopoly transmitter, distributor and supplier of electricity, and the Lesotho Highlands Development Authority (LHDA), which is the main generator of electricity through its ‘Muela Hydro Power Station. The generating station is part of the Lesotho Highlands Water Project’.
<http://www.lewa.org.ls/sectors/default.php>

3.1.1 'Muela Generation

“Electricity in Lesotho is supplied by Muela’s hydroelectric power station (72MW), with some small hydro projects also providing generation capacity”
<https://www.usaid.gov/powerafrica/lesotho>

Figure 1 depicts electricity generated in Gigawatt hours for the years 2013 to 2017. There was an increase in generated electricity from the year 2013 to 2015 and thereafter a drop in production was experienced up to 2017. From 2014 to 2015 there has been an increase of 2.3 percent (520.1GWh to 532.2GWh). The highest generation was observed in 2015 with 532.2GWh. There was a decline of 4.6 percent in 'Muela generated electricity from 2015 (532.2GWh) to 2016 (507.7GWh). 2017 generation was the lowest (501.0GWh) with a decline of 1.3 percent from 2016.

Figure 1: Electricity Generated in Gigawatt hours (GWh) for the Years 2013 to 2017



Source: Lesotho Highlands Development Authority

3.1.2 Mini-Hydro Electric Power Generation

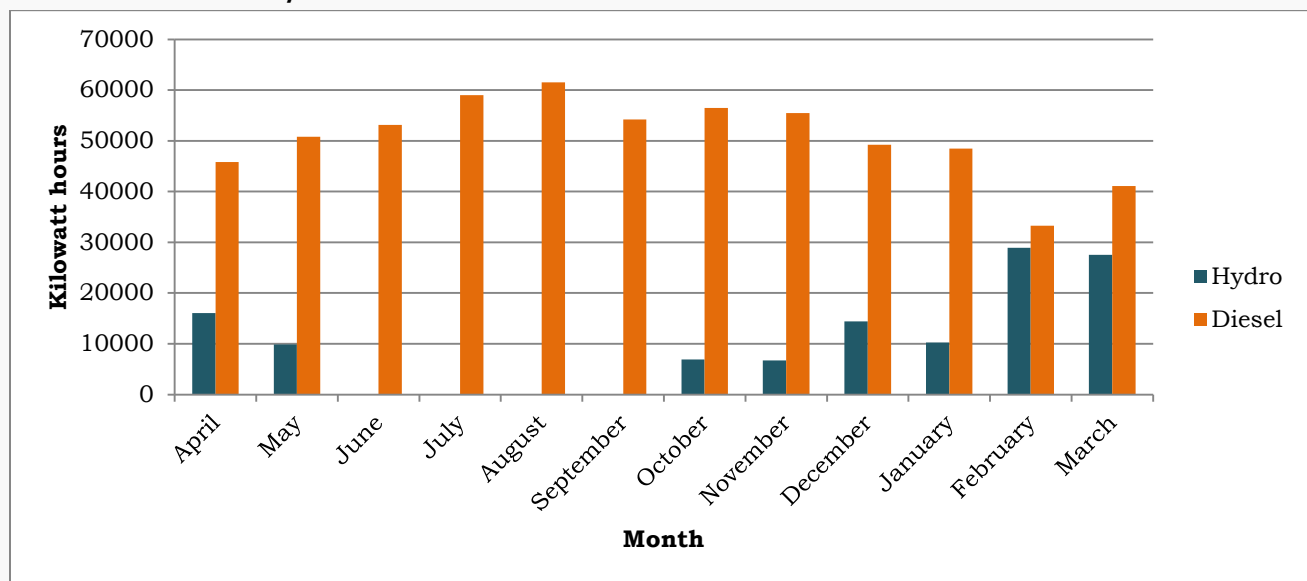
“Lesotho Electricity Company (LEC) generates, transmits, and distributes electricity. The company also owns and operates hydro power stations”.
https://energypedia.info/wiki/Lesotho_Energy_Situation

LEC has two Mini hydro-power stations of Mantsonyane and Semonkong. Mantsonyane Hydro power plant is a 2MW generation plant, consisting of two units, (500KW and 1500KW). Semonkong hydro power station is a Diesel Hydro hybrid power generation station, which consists of 180KW Hydro Generator and 500KVA Diesel Generator.

Figure 2 depicts electricity generated from Semonkong mini-hydro power station in KWh for the financial year 2017/2018. Generation was mostly by Diesel whereby there was no hydro generation in June, July, August and September. The highest generation by Diesel was in August with 61,549 KWh followed by July with 59,003 KWh. The lowest generation

was in February with 33,274 KWh. Hydro generation was the highest in February (28,937.4 KWh) and lowest in November with 6,721 KWh.

Figure 2: Electricity Generated from Semonkong Mini Hydro Power Station in KWh for the Financial Year 2017/2018



Source: Lesotho Electricity Company

Electricity generated from Semonkong and Mantsonyane in Megawatt hours (MWh) for the financial year 2017/2018 is presented in table 1. Mantsonyane produced more electricity than Semonkong with 915.43 MWh. More electricity was produced in February (438.10 MWh) in Mantsonyane and less in June with 14.16 MWh. In Semonkong the highest production was in March (68.66MWh) and the lowest in June (53.13 MWh).

Table 1: Electricity Generated from Semonkong and Mantsonyane in Megawatt hours (MWh) for the Financial Year 2017/2018

Month	Mantsonyane	Semonkong	Total
April	22.12	61.86	83.99
May	29.21	60.66	89.87
June	14.16	53.13	67.29
July	0.00	59.00	59.00
August	0.00	61.55	61.55
September	0.00	54.18	54.18
October	84.30	63.35	147.66
November	72.91	62.18	135.09
December	58.16	63.65	121.81
January	61.36	58.70	120.06
February	438.10	62.21	500.31
March	135.11	68.66	203.77
Total	915.43	729.14	1,644.58

Source: Lesotho Electricity Company

3.1.3 Total Electricity Produced

This section comprises electricity produced by Muela, Mantsonyane and Semonkong generation power plants.

Table 2 shows electricity generated from Muela, Semonkong and Mantsonyane in MWh for the year 2017. Total electricity generated by the three power plants was 503,376.68 MWh. Muela generation was highest in July (46,787.06 MWh) and lowest in January (33,488.70 MWh). Mantsonyane generation was high in January with 472.24 MWh and lowest in June (14.16 MWh).

Table 2: Electricity Generated from Muela, Semonkong and Mantsonyane in MWh for the Year 2017

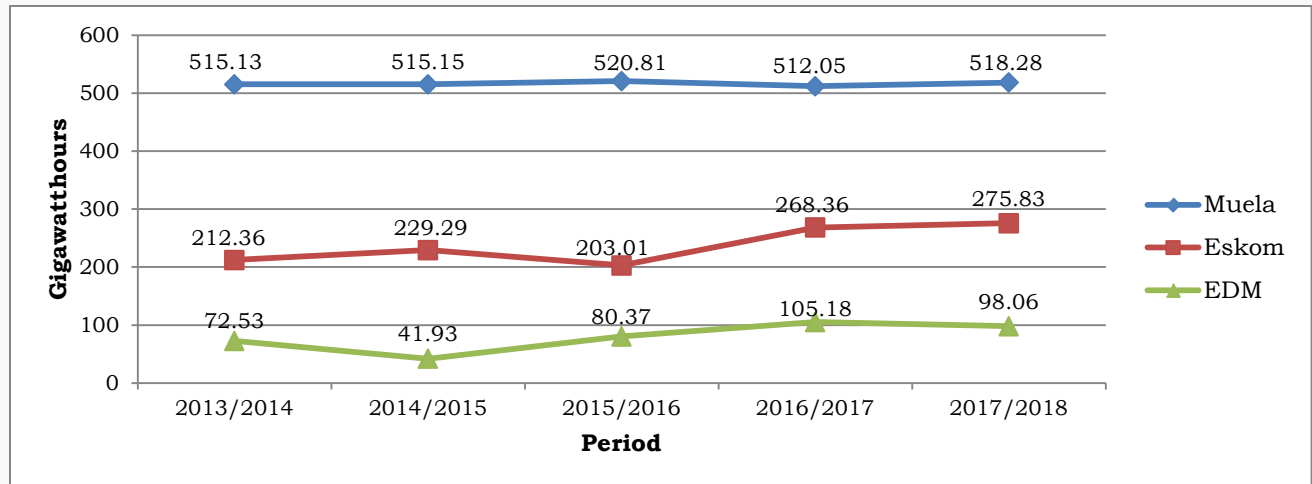
Months	Muela	Semonkong	Mantsonyane	Total
January	33,488.70	62.03	472.24	34,022.97
February	34,757.52	58.06	753.72	35,569.30
March	38,484.11	63.49	158.66	38,706.26
April	44,296.42	61.86	22.12	44,380.40
May	42,655.39	60.66	29.21	42,745.26
June	46,024.26	53.13	14.16	46,091.55
July	46,787.06	59.00	0.00	46,846.06
August	45,852.91	61.55	0.00	45,914.46
September	43,719.32	54.18	0.00	43,773.50
October	44,405.95	63.35	84.30	44,553.61
November	44,951.05	62.18	72.91	45,086.14
December	35,565.37	63.65	58.16	35,687.18
Total	500,988.05	723.15	1665.48	503,376.68

3.2 Electricity Purchased

Lesotho produces about 72MW from hydropower (Muela). It has about 150MW peak power demand and imports more than 70MW mainly from Mozambique and South Africa” https://energypedia.info/wiki/Lesotho_Energy_Situation

Figure 3 demonstrates electricity purchased in Gigawatt hours from Muela, Eskom and Electricidade De Mozambique (EDM) by LEC for the period 2013/2014 to 2017/2018. The highest purchases made from Muela were 520.81 GWh in 2015/2016, while the lowest were 512.05 GWh in 2016/2017. Electricity purchases were 518.28 GWh in 2017/2018. LEC purchased more electricity from Eskom in 2017/2018 (275.83 GWh) and the least in 2015/2016 (203.01 GWh). The highest and lowest purchases from EDM were made in 2016/2017 and 2014/2015 with 105.18 and 41.93 GWh respectively.

Figure 3: Electricity Purchased in GWh from 'Muela, Eskom and EDM by LEC for the Period 2013/2014 to 2017/2018



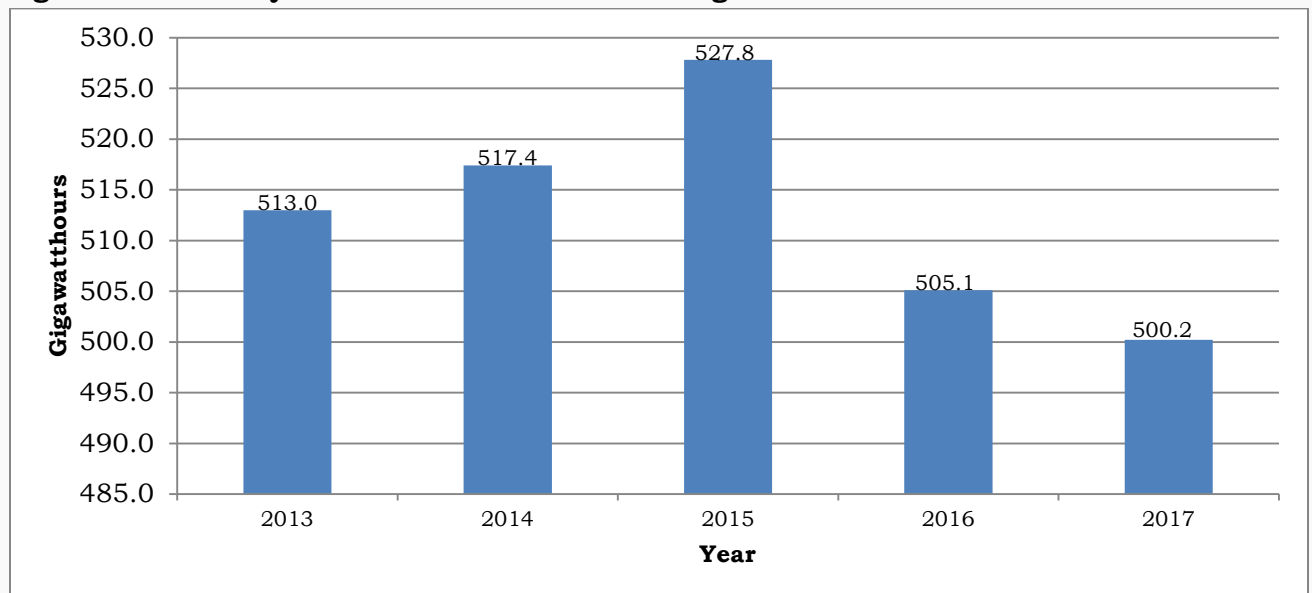
Source: Lesotho Electricity Company

3.3 Electricity Sales to LEC

'Muela generates electricity for Lesotho. It then sells to Lesotho Electricity Company, which is the monopoly transmitter and distributor.

Figure 4 illustrates electricity sales from 'Muela to LEC in GWh for the years 2013 to 2017. It is observed that electricity sales to LEC increased from 513.0 in 2013 to 527.8 in 2015. The elevated electricity sales were in 2015 with 527.8 GWh while the lowest sales were in 2017 (500.2 GWh). From 2014 to 2015, the sales increased by 2.0 percent. Electricity sales decreased from 2015 to 2016 by 4.3 percent.

Figure 4: Electricity Sales from Muela to LEC in Gigawatt hours for the Years 2013 to 2017



Source: Lesotho Highlands Development Authority

3.4 Electricity Imports and Exports

Lesotho exports excess electricity produced by Muela Hydropower station to Eskom, when electricity demand is low since electricity cannot be stored. It also imports electricity from Eskom and EDM to meet its high electricity demand.

Table 3 shows total electricity imports and exports in GWh by year. The highest electricity imports were observed in 2017 with 386.9 GWh followed by 2016 with 372.6 GWh while the lowest were in 2015 with 260.6 GWh. LHDA exported more electricity in 2015 and less in 2017 with 4.4 and 0.8 GWh respectively.

Table 3: Total Electricity Imports and Exports in GWh by Year

Year	2013	2014	2015	2016	2017	Total
Imports (GWh)	280.8	335.5	260.6	372.6	386.9	1,636.4
Exports (GWh)	2.2	2.8	4.4	2.6	0.8	12.8

Source: Lesotho Highlands Development Authority

3.5 Electricity Distribution

“The role of Transmission and Distribution (T&D) is to provide safe and reliable electricity supply to Lesotho residents and businesses as a whole. The Transmission network evacuates power from the generation sources namely 'Muela Hydropower (LHDA), Eskom (South Africa) and EDM (Mozambique) to LEC load centres”.
<https://www.lec.co.ls/transmission>

3.5.1 LEC Consumers

LEC consumers include anyone who is supplied with electricity by LEC. They are classified into different categories depending on their electricity needs. It is important to note the number of LEC consumers and how much they consume as this can help assess the electricity demand of the country.

Table 4 represents the number of LEC consumers by sector for the period 2013/2014 to 2017/2018. It is observed that Prepaid Domestic contributes a greater share of LEC consumers, followed by Prepaid General Purpose throughout the years. Domestic Consumers have constantly been 5 and decreased to 4 in 2017/2018 and were the lowest. The table further shows that General Purpose consumers decreased to 23 in 2017/2018. Prepaid Domestic Consumers increased by 10.0 percent in 2017/2018.

Table 4: Number of LEC Consumers by Sector for the Period 2013/2014 to 2017/2018

Sector	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
Domestic Consumers	5	5	5	5	4
General Purpose	27	26	24	24	23
Commercial HV	39	40	40	41	42
Commercial LV	191	200	199	200	192
Industrial HV	35	40	39	45	48
Industrial LV	137	152	162	172	171
LHDA	10	9	10	9	11
Pre-Paid Domestic	149,034	172,795	186,658	200,770	220,878
Pre-Paid General Purpose	8,652	9,179	9,966	10,821	12,166
Street Lights	128	130	133	133	133
Total	158,258	182,576	197,236	212,220	233,668

Source: Lesotho Electricity Company

3.5.2 Electricity Consumed

Electricity consumed is the amount of electricity that is used by all LEC consumers. It includes electricity purchased locally and imported from other countries.

Table 5 presents amount and percentage distribution of electricity consumed by LEC consumers for the financial year 2017/2018. Prepaid Domestic consumers consumed more electricity with a share of 32.0 percent followed by Industrial High voltage consumers with 31.3 percent. The least consuming consumers were Domestic Consumers with 531.38 MWh. The total consumption of electricity for 2017/2018 was 772,953.51 MWh.

Table 5: Amount and Percentage Distribution of Electricity Consumed by LEC Consumers for the Financial Year 2017/2018

Sector	Consumption (MWh)	Percent
Domestic Consumers	531.38	0.1
General Purpose	1,844.31	0.2
Commercial HV	82,953.33	10.7
Commercial LV	58,347.23	7.5
Industrial HV	241,832.21	31.3
Industrial LV	41,057.69	5.3
LHDA	7,217.70	0.9
Pre-Paid Domestic	247,629.58	32.0
Pre-Paid General Purpose	89,440.51	11.6
Street Lights	2,099.56	0.3
Total	772,953.51	100.0

Source: Lesotho Electricity Company

3.5.3 Economic Sectors Consumption

This section comprises consumption of electricity by different sectors of the economy.

Table 6 shows the quantity of electricity consumed by economic sectors in megawatt hours for the financial year 2017/2018. The manufacturing sector consumed more electricity with a total consumption of 280,395.97MWh followed by Real estate, renting and business activities with 36,872.16MWh. The least consuming sector was “Other community, social and personal service activities” with a total consumption of 81.01MWh. The total consumption for economic sectors for 2017/2018 was 524,568.12MWh.

Table 6: Quantity of Electricity Consumed by Economic Sectors in Megawatt hours for the Financial Year 2017/2018

Economic Sectors	Consumption (MWh)
A - Agriculture, hunting and forestry	1,445.70
C - Mining and quarrying	27,288.08
D - Manufacturing	280,395.97
E - Electricity, gas and water supply	16,422.93
F - Construction	1,323.43
G - Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	19,874.34
H - Hotels and restaurants	11,835.63
I - Transport, storage and communications	22,391.29
J - Financial intermediation	12,072.51
K - Real estate, renting and business activities	36,872.16
L - Public administration and defence; compulsory social security	9,396.30
M - Education	21,684.86
N - Health and social work	29,490.48
O - Other community, social and personal service activities	81.01
Q - Extraterritorial organizations and bodies	33,993.41
Total	524,568.12

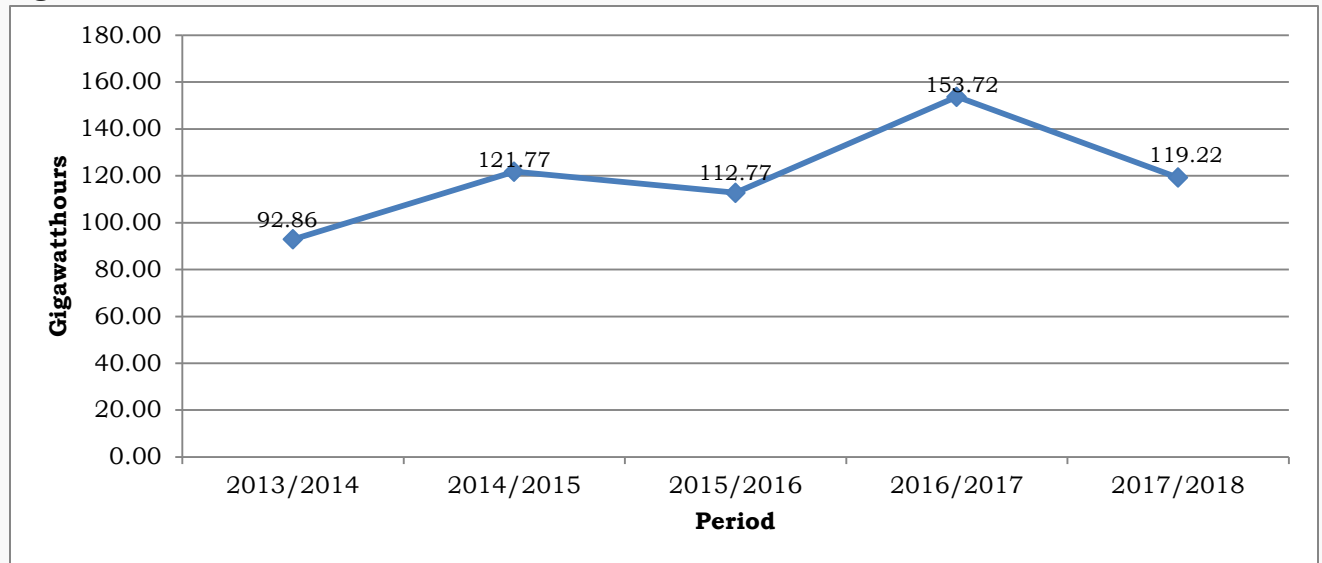
Source: Lesotho Electricity Company

3.5.4 Distribution Losses

These are electricity losses incurred by LEC in the distribution of electricity to its customers. They are technical losses due to energy dissipated in the conductors, equipment used for transmission line, transformer, sub-transmission line and distribution line and magnetic losses in transformers.

Figure 5 displays distribution losses for the period 2013/2014 to 2017/2018. It is observed that most losses were incurred in 2016/2017 (153.72 GWh). There was a decline of 22.4 percent (153.72 GWh to 119.22 GWh) of distribution losses from 2016/2017 to 2017/2018. The least losses incurred were in 2013/2014 amounting to 92.86 GWh.

Figure 5: Distribution Losses for the Period 2013/2014 to 2017/2018



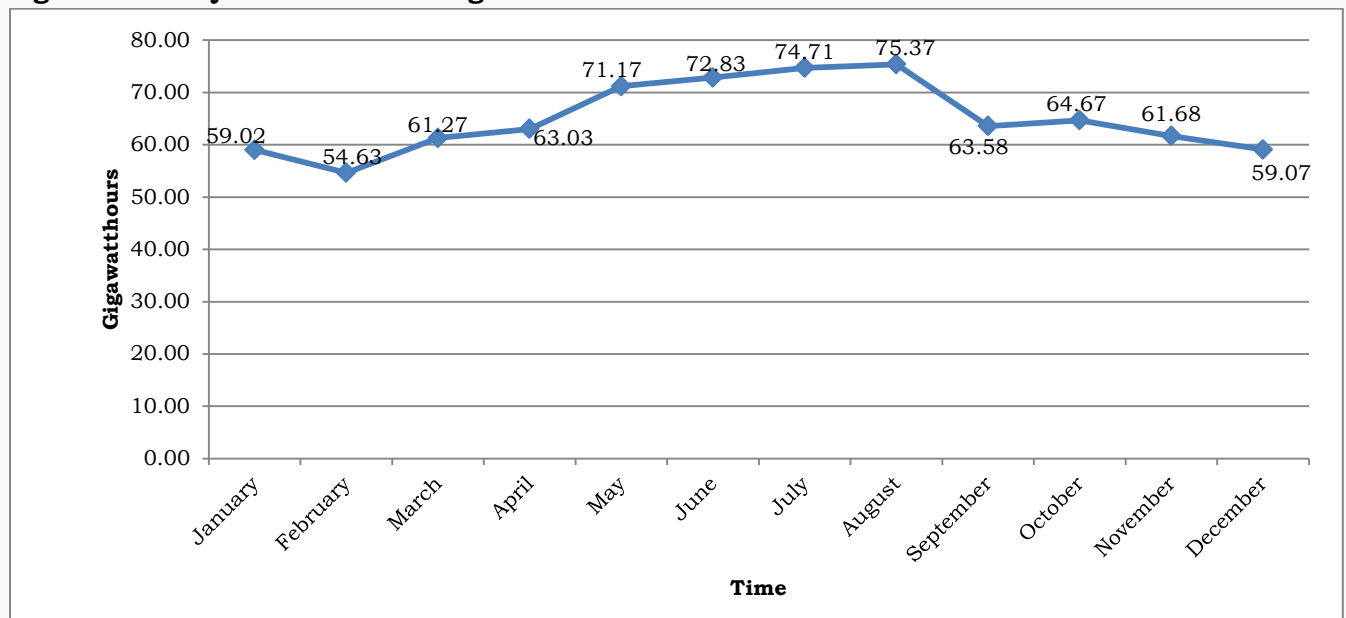
Source: Lesotho Electricity Company

3.6 Lesotho Load

Load is the amount of electricity on the grid at any given time, as it makes its journey from the power source to all the homes, businesses and industries within a utility's territory <https://www.directenergy.com/blog/what-is-electricity-load/>

Figure 6 displays the Yearly load curve in Gigawatt hours for the year 2017. The highest load was experienced in August (75.73 GWh) while the lowest load was experienced in February with 54.63 GWh.

Figure 6: Yearly Load Curve in Gigawatt hours for the Year 2017



Source: Lesotho Highlands Development Authority

4.0 Petroleum Fuel

Petroleum is a complex mixture of liquid hydrocarbons, chemical compounds containing hydrogen and carbon, occurring naturally in underground reservoirs in sedimentary rock, (IEA, Energy Statistics Manual, December 2010).

4.1 Petroleum Fuel Costs

“Crude oil prices have risen dramatically over the last few years, driven by strong global demand, limited spare oil production capacity, and continuing political instability in certain oil producing regions. This is the greatest single factor influencing petroleum prices. Market place forces of supply, demand and competition also have a significant effect on the price of petroleum”(<http://www.thepriceoffuel.com/>)

Table 7 portrays petroleum fuel costs in Maloti per litre for the year 2017. The average fuel price for 2017 was M10.32 (Unleaded), M10.40 (Diesel 500ppm), M10.61 (Diesel 50ppm) and M7.21 for Illuminating Paraffin (IP). Highest prices of petroleum fuels were observed in December with the highest being Diesel 50ppm with M11.80 followed by Diesel 500ppm, Unleaded Petrol (ULP) and IP with M11.70, M11.60 and M8.50 respectively. The lowest prices were observed in July with Diesel 50ppm (M9.85), Diesel 500ppm (M9.60), ULP (M9.50) and IP with M6.45.

Table 7: Petroleum Fuel Cost in Maloti per Litre for the Year 2017

Months	Unleaded	Diesel 500 ppm	Diesel 50ppm	Illuminating Paraffin
January	10.35	10.30	10.55	7.25
February	10.40	10.30	10.55	7.25
March	10.25	10.30	10.55	7.15
April	9.55	9.60	9.85	6.55
May	10.45	10.40	10.70	7.20
June	10.05	10.25	10.10	6.95
July	9.50	9.60	9.85	6.45
August	9.85	10.00	10.25	6.80
September	10.40	10.30	10.55	7.10
October	10.65	10.90	11.15	7.60
November	10.80	11.10	11.40	7.75
December	11.60	11.70	11.80	8.50
Average price	10.32	10.40	10.61	7.21

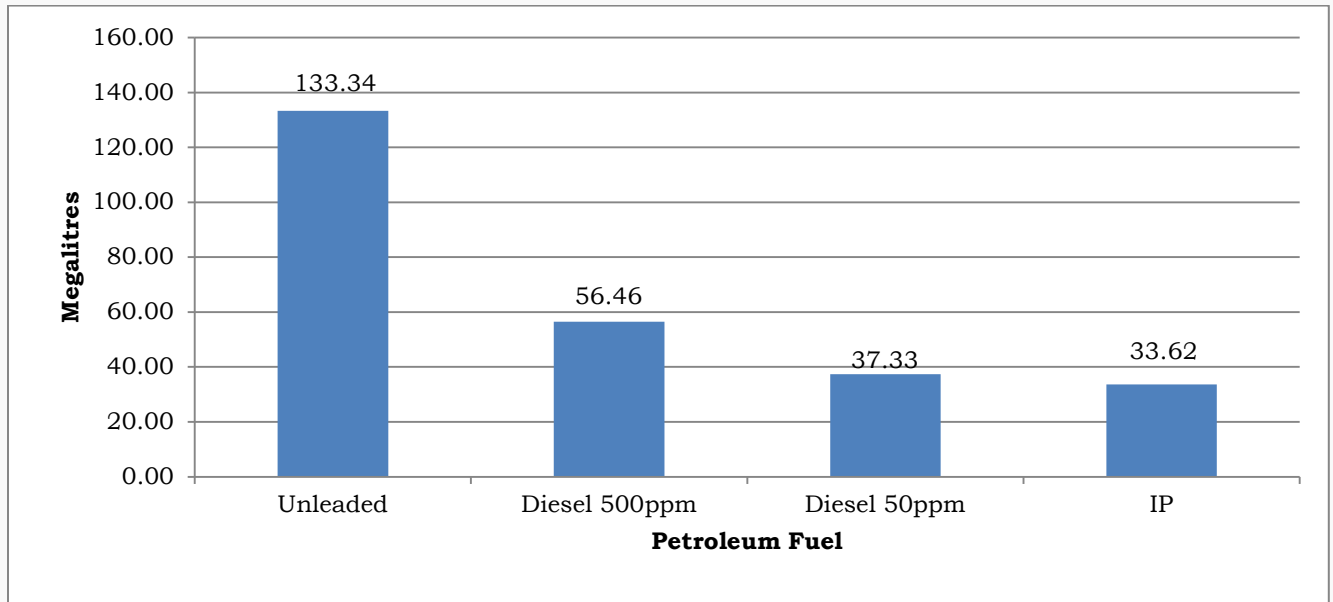
Source: Petroleum Fund

4.2 Petroleum Fuel sales

All Lesotho's imported oil products come from South Africa, with three multi-national companies operating in Lesotho in that field, as they import and store the products in bulk storage facilities before they redistribute them throughout the country. https://energypedia.info/wiki/Lesotho_Energy_Situation

Figure 7 displays petroleum fuel sales in megalitres for the year 2017. It is observed that ULP sales were the highest with 133.34 megalitres followed by Diesel 500ppm (56.46 megalitres). The least sales of petroleum fuels were for Illuminating paraffin with 33.62 megalitres.

Figure 7: Petroleum Fuel Sales in Megalitres for the Year 2017



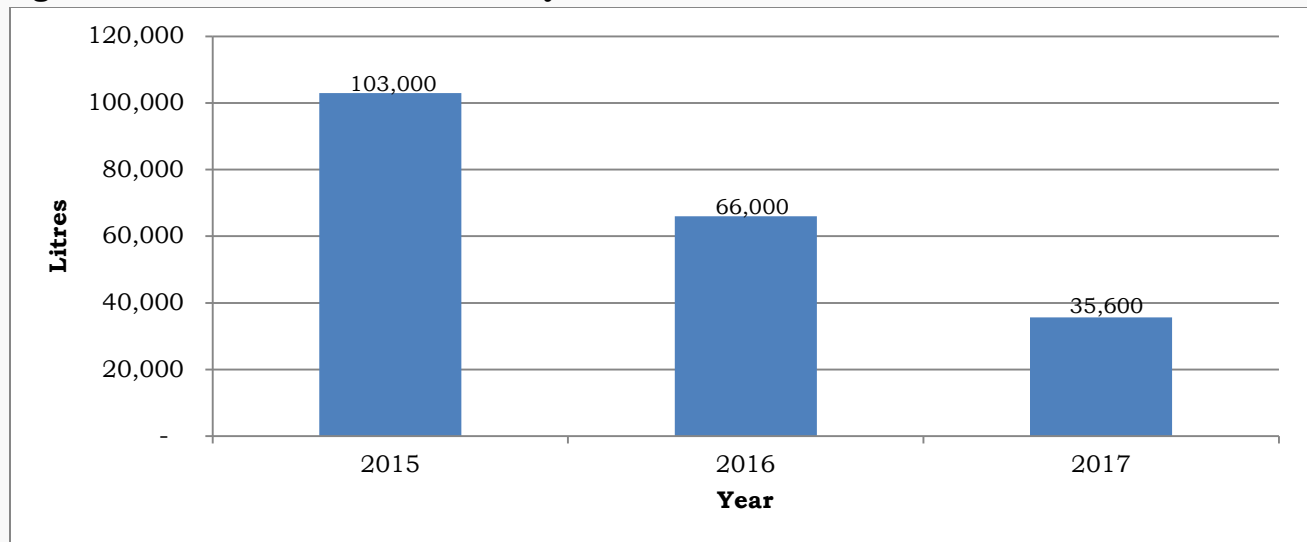
Source: Petroleum Fund

4.3 Aviation Gasoline Purchase

“Avgas (aviation gasoline, also known as aviation spirit in the UK) is an aviation fuel used in spark-ignited internal-combustion engines to propel aircraft” (en.wikipedia.org/wiki/Aviation_fuel)

Figure 8 depicts aviation gasoline (Avgas) purchase by Mission Aviation Fellowship (MAF) for the years 2015 and 2017. The figure displays that gasoline purchases had been declining till 2017. More imported gasoline was purchased in 2015 (103,000 litres) and less in 2017 (35,600 litres). Avgas purchases declined by 35.9 percent from 2015 (103,000 litres) to 2016 (66,000 litres) and by 46.1 percent from 2016 to 2017.

Figure 8: Aviation Gasoline Purchase by MAF in Litres for the Years 2015 to 2017

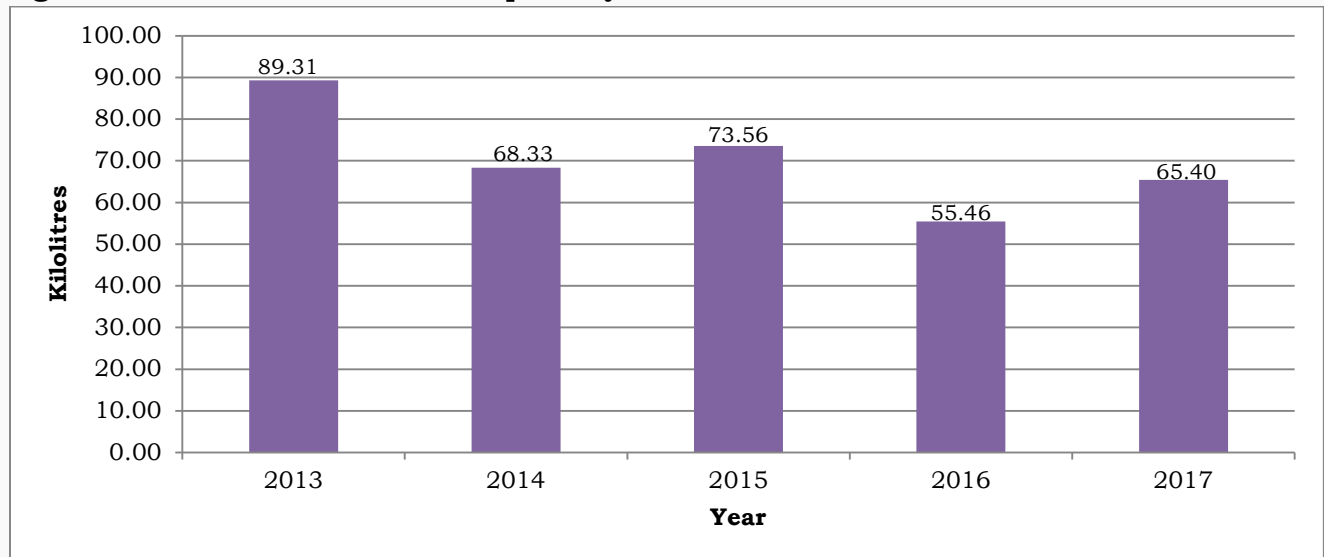


Source: Mission Aviation Fellowship

4.4 Aviation Gasoline Consumption

Figure 9 demonstrates aviation gasoline consumption by MAF in kilolitres for the years 2013 to 2017. MAF consumed more gasoline in 2013 (89.31 kilolitres) and consumed less (55.46 kilolitres) in 2016. Aviation gasoline consumption decreased by 24.6 percent from 2015 (73.56 kilolitres) to 2016 (55.46 kilolitres). Avgas consumption increased by 17.9 percent in 2017.

Figure 9: Aviation Gasoline Consumption by MAF in Kilolitres for the Years 2013 to 2017



Source: Mission Aviation Fellowship

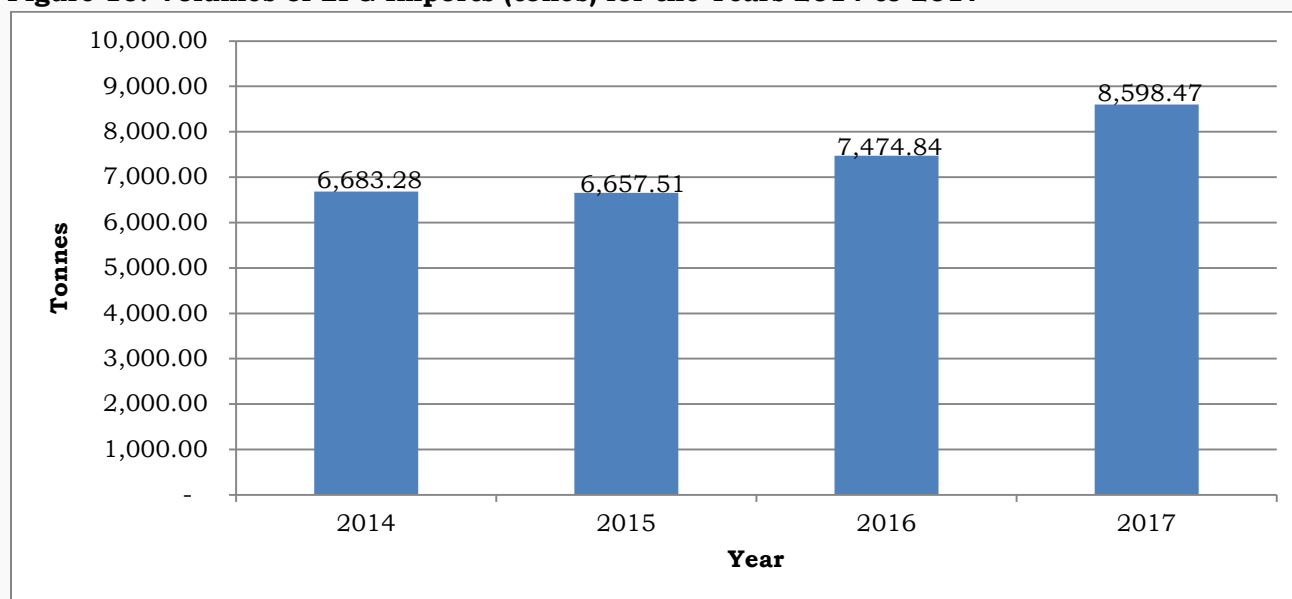
4.5 Gas Imports

4.5.1 Liquefied Petroleum Gas

Liquefied Petroleum Gases (LPG) are light paraffinic hydrocarbons derived from the refinery processes, crude oil stabilization and natural gas processing plants, (IEA Energy Statistics manual, 2010).

Figure 10 illustrates volumes of LPG imports in tonnes for the years 2014 to 2017. It is observed that LPG imports were highest in 2017 (8,598.47 tonnes) and were lowest in 2015 (6,657.51 tonnes). There was a 15.0 percent increase of LPG imports from 2016 to 2017 (7,474.84 to 8,598.47 tonnes).

Figure 10: Volumes of LPG Imports (tonnes) for the Years 2014 to 2017

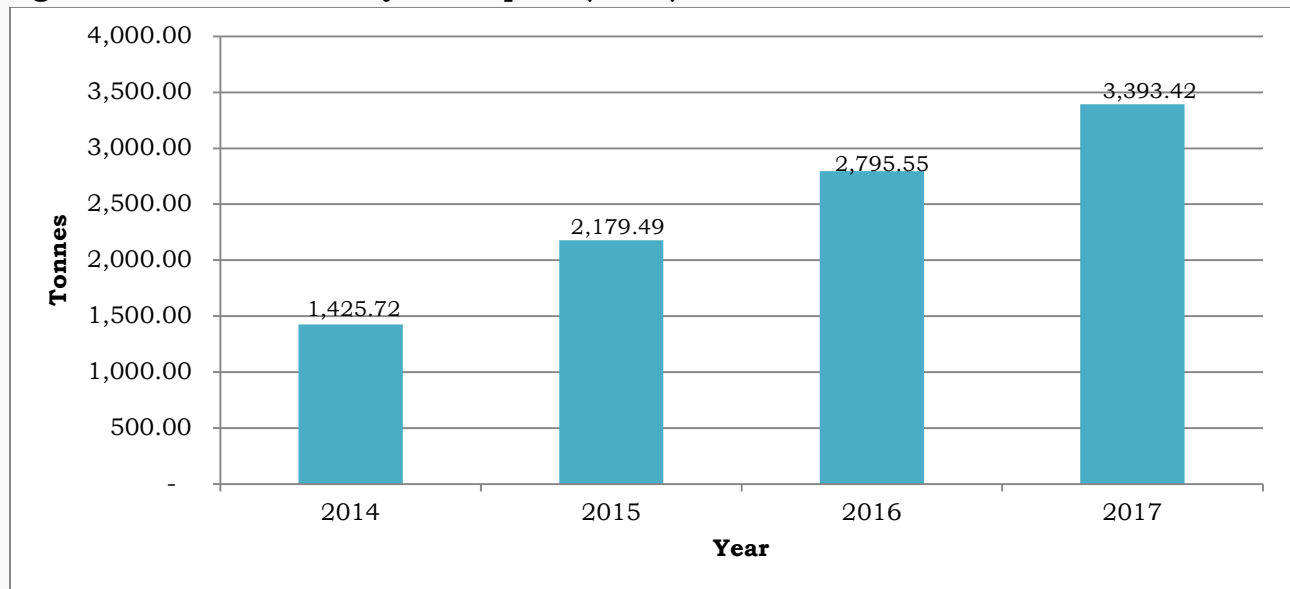


4.5.2 Acetylene

Acetylene is a colourless pungent smelling hydrocarbon gas, which burns with a bright flame, used in welding and formerly in lighting. <https://www.dictionary.com>

Figure 11 portrays volumes of acetylene imports in tonnes for the years 2014 to 2017. It is observed acetylene imports increased from 2014 to 2017. The largest imports were in 2017 (3,393.42 tonnes) and the lowest were in 2014 with a total of 1,425.72 tonnes.

Figure 11: Volumes of Acetylene Imports (tonnes) for the Years 2014 to 2017

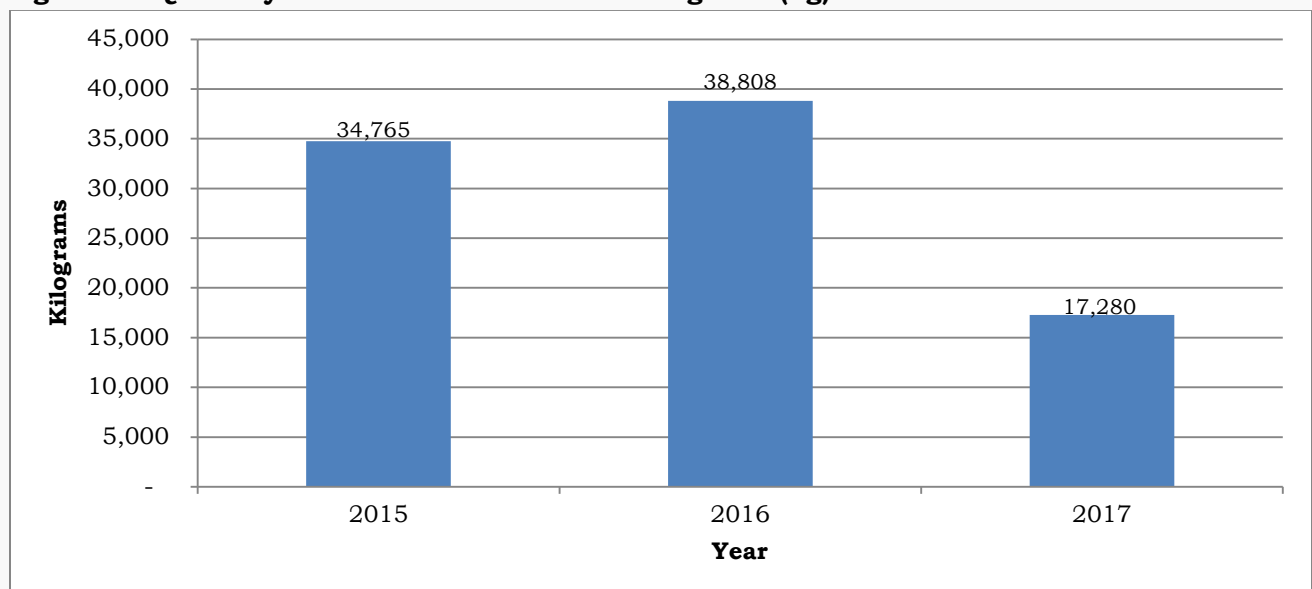


5.0 Charcoal

Charcoal covers the solid residue of the destructive distillation and pyrolysis of wood and other vegetal material (IEA, Energy Statistics manual, December 2010)

Figure 12 displays quantity of charcoal produced in kilograms (kg) for the years 2015 to 2017. It is studied that the highest production was observed in 2016 (38,808kg) followed by 2015 with 34,765kg. The smallest production was in 2017 with 17,280kg.

Figure 12: Quantity of Charcoal Produced in Kilograms (kg) for the Years 2015 to 2017



6.0 Summary

The highest electricity generation was recorded as 532.2 GWh in 2015 and the lowest was 501.0 GWh in 2017.. Semonkong generation was mostly by Diesel whereby there was no hydro generation in June, July, August and September. The highest generation for Semonkong was by diesel amounting 61,549 KWh. Total electricity generated by Muela, Semonkong and Mantsonyane was 503,376.68 MWh. Electricity sales from Muela to LEC were 500.2 GWh in 2017. LHDA exported more electricity in 2015 and less in 2017 with 4.4 and 0.8 GWh respectively. The most consuming sector is the Manufacturing sector with a total consumption of 280, 395.97 MWh of electricity. Lesotho load was the highest in August 2017 with 75.37 GWh.

The average petroleum fuel price for 2017 was M10.32 for Unleaded, M10.40 (Diesel 500ppm), M10.61 (Diesel 50ppm) and M7.21 for Illuminating Paraffin. Unleaded sales were the highest in 2017 (133.34 Megalitres). Aviation gasoline consumption increased by 17.9 percent from 2016 to 2017 (55.46 Kilolitres to 65.40 Kilolitres). LPG and Acetylene were mostly imported in 2017 amounting to 8,598.47 and 3,393.42 tonnes respectively. Charcoal was mostly produced in 2016 with 38,808 Kilograms and less in 2017 (17,280 Kilograms).

ANNEX 1

Table 1: Electricity Generation and Sales to LEC in Gigawatt hours

Year	Generation	Sales to LEC
2013	515.3	513.0
2014	520.1	517.4
2015	532.2	527.8
2016	507.7	505.1
2017	501.0	500.2

Source: Lesotho Highlands Development Authority

Table 2: Electricity Purchases by LEC in MWh from 'Muela, Eskom and EDM, 2013/2014 to 2017/2018

GWh	Muela	Eskom	EDM	Total
2013/2014	515.13	212.36	72.53	800.01
2014/2015	515.15	229.29	41.93	786.36
2015/2016	520.81	203.01	80.37	804.18
2016/2017	512.05	268.36	105.18	885.59
2017/2018	518.28	275.83	98.06	892.17
Total	2,581.42	1,188.85	398.07	4,168.31

Source: Lesotho Electricity Company

Table 3: Electricity Produced by Mantsonyane and Semonkong Power Plants in Kilowatt Hours for the Financial Year 2017/2018

Month	Mantsonyane	Semonkong		Total
	Hydro	Hydro	Diesel	
April	22,124.3	16,054	45,807	83,985.3
May	29,208.6	9,861.4	50,801	89,871
June	14,161	0	53,131.6	67,292.6
July	0	0	59,003	59,003
August	0	0	61,549	61,549
September	0	0	54,180.7	54,180.7
October	84,303	6,899	56,454	147,656
November	72,906	6,721	55,459	135,086
December	58,158	14,407	49,245	121,810
January	61,364	10,237	48,461	120,062
February	438,099	28,937.4	33,274	500,310.4
March	135,111	27,538.9	41,123	203,772.9
Total	915,434.9	120,655.7	608,488.3	1,644,578.9

Source: Lesotho Electricity Company

Table 4: Electricity Generated from ‘Muela, Semonkong and Mantsonyane in MWh for the Financial Year 2017/2018

Months	Muela	Semonkong	Mantsonyane	Total
January	33,488.70	62.03	472.24	34,022.97
February	34,757.52	58.06	753.72	35,569.30
March	38,484.11	63.49	158.66	38,706.26
April	44,296.42	61.86	22.12	44,380.40
May	42,655.39	60.66	29.21	42,745.26
June	46,024.26	53.13	14.16	46,091.55
July	46,787.06	59.00	0.00	46,846.06
August	45,852.91	61.55	0.00	45,914.46
September	43,719.32	54.18	0.00	43,773.50
October	44,405.95	63.35	84.30	44,553.61
November	44,951.05	62.18	72.91	45,086.14
December	35,565.37	63.65	58.16	35,687.18
Total	500,988.05	723.15	1665.48	503,376.68

Table 5: Total Electricity Imports and Exports for the period 2012 to 2016

Year	2013	2014	2015	2016	2017	Total
Imports (GWh)	280.8	335.5	260.6	372.6	386.9	1,636.4
Exports (GWh)	2.2	2.8	4.4	2.6	0.8	12.8

Source: Lesotho Highlands Development Authority

Table 6: Number of LEC Consumers by Sector for the Period 2013/2014 to 2017/2018

Sector	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
Domestic Consumers	5	5	5	5	4
General Purpose	27	26	24	24	23
Commercial HV	39	40	40	41	42
Commercial LV	191	200	199	200	192
Industrial HV	35	40	39	45	48
Industrial LV	137	152	162	172	171
LHDA	10	9	10	9	11
Prepaid Domestic	149,034	172,795	186,658	200,770	220,878
Pre-Paid General Purpose	8,652	9,179	9,966	10,821	12,166
Street Lights	128	130	133	133	133
Total	158,258	182,576	197,236	212,220	233,668

Source: Lesotho Electricity Company

Table 7: Consumption of LEC Consumers in Megawatt Hours for the Financial Year 2017/2018

Sector	Consumption (MWh)
Domestic Consumers	531.38
General Purpose	1,844.31
Commercial HV	82,953.33
Commercial LV	58,347.23
Industrial HV	241,832.21
Industrial LV	41,057.69
LHDA	7,217.70
Pre-Paid Domestic	247,629.58
Pre-Paid General Purpose	89,440.51
Street Lights	2,099.56
Total	772,953.51

Source: Lesotho Electricity Company**Table 8: Percentage Share of Kilowatt Hours Allocated to Economic Sectors and Consumption in Megawatt Hours (MWh) for 2017/2018**

Economic Sectors	Allocated Share (%)	Consumption (MWh)
A - Agriculture, hunting and forestry	0.28	1,445.70
C - Mining and quarrying	5.20	27,288.08
D - Manufacturing	53.45	280,395.97
E - Electricity, gas and water supply	3.13	16,422.93
F - Construction	0.25	1,323.43
G - Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	3.79	19,874.34
H - Hotels and restaurants	2.26	11,835.63
I - Transport, storage and communications	4.27	22,391.29
J - Financial intermediation	2.30	12,072.51
K - Real estate, renting and business activities	7.03	36,872.16
L - Public administration and defence; compulsory social security	1.79	9,396.30
M - Education	4.13	21,684.86
N - Health and social work	5.62	29,490.48
O - Other community, social and personal service activities	0.02	81.01
Q - Extraterritorial organizations and bodies	6.48	33,993.41
Total	100.00	524,568.12

Source: Lesotho Electricity Company**Table 9: Distribution Losses in Gigawatt Hours for the Period 2012/2013 to 2016/2017**

Period	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
Gigawatt hours	80.71	92.86	121.77	112.77	153.72

Source: Lesotho Electricity Company

Table 10: Lesotho Electricity Load for the Year 2017

Months	GWh
Jan-17	59.02
Feb-17	54.63
Mar-17	61.27
Apr-17	63.03
May-17	71.17
Jun-17	72.83
Jul-17	74.71
Aug-17	75.37
Sep-17	63.58
Oct-17	64.67
Nov-17	61.68
Dec-17	59.07
Total	781.03

Table 11: Petroleum Fuel Cost in Maloti per Litre for the Year 2017

Months	Unleaded	Diesel 500 ppm	Diesel 50ppm	Illuminating Paraffin
January	10.35	10.30	10.55	7.25
February	10.40	10.30	10.55	7.25
March	10.25	10.30	10.55	7.15
April	9.55	9.60	9.85	6.55
May	10.45	10.40	10.70	7.20
June	10.05	10.25	10.10	6.95
July	9.50	9.60	9.85	6.45
August	9.85	10.00	10.25	6.80
September	10.40	10.30	10.55	7.10
October	10.65	10.90	11.15	7.60
November	10.80	11.10	11.40	7.75
December	11.60	11.70	11.80	8.50
Average price	10.32	10.40	10.61	7.21

Source: Petroleum Fund**Table 12: Petroleum Fuel Consumption in Kilolitres for the Year 2017**

Period	Petrol	Diesel 500ppm	Diesel 50ppm	IP	Total
January	10,741.97	4,537.13	2,876.95	1,810.84	19,966.90
February	9,228.93	3,963.62	2,775.01	1,893.87	17,861.44
March	10,905.15	4,768.35	3,197.01	1,982.43	20,852.94
April	10,505.46	4,337.34	3,102.57	3,284.11	21,229.48
May	11,861.52	5,129.48	3,271.54	4,265.91	24,528.46
June	10,502.11	4,576.85	2,926.56	4,663.25	22,668.77
July	10,556.57	4,368.12	2,818.19	3,945.53	21,688.42
August	11,617.57	4,842.79	3,199.36	3,899.40	23,559.11
September	11,009.17	4,393.59	3,181.76	2,066.50	20,651.03
October	11,640.08	4,676.33	3,348.09	2,051.85	21,716.35

November	11,223.24	5,377.40	3,187.22	1,810.09	21,597.95
December	13,543.72	5,486.62	3450.18	1,946.56	24,427.07
Total	133,335.50	56,457.62	37,334.45	33,620.34	260,747.91

Source: Petroleum Fund

Table 13: Aviation Fuel Purchase and Consumption by MAF in Litres for the Year 2017

Months	Purchase	Consumption
January		5,895.5
February		4,647.5
March		6,539
April		5,512
May	33,000.00	5,512
June		6,298.5
July		5,414.5
August		7,840.6
September		5,031
October	2,600	3,848
November		2,983.5
December		5,882.5
Total	35,600.00	65,404.60

Mission Aviation Fellowship

Table 14: Volumes of LPG Imports in Tonnes for the Years 2014 to 2017

Months	2014	2015	2016	2017	Total
January	386.51	678.68	404.45	589.90	2,059.54
February	404.82	766.22	540.46	575.48	2,286.98
March	393.41	778.16	350.69	572.42	2,094.68
April	141.45	582.25	519.21	740.23	1,983.14
May	797.43	463.98	402.49	579.61	2,243.51
June	852.27	406.87	954.81	756.84	2,970.79
July	607.91	578.07	602.22	714.00	2,502.20
August	775.81	508.80	704.60	950.50	2,939.71
September	486.72	544.58	752.00	843.98	2,627.28
October	482.88	695.26	821.76	738.68	2,738.57
November	517.00	340.95	584.32	569.84	2,012.10
December	837.07	313.72	837.83	967.00	2,955.62
Total	6,683.28	6,657.51	7,474.84	8,598.47	29,414.11

Table 15: Volumes of Acetylene Imports in Tonnes for the Years 2014 to 2017

Months	2014	2015	2016	2017	Total
January	0.10	153.31	191.59	188.64	533.63
February	0.19	106.19	205.00	209.76	521.15
March	0.19	152.56	201.90	229.00	583.64
April	0.10	194.93	157.47	254.56	607.05
May	157.87	199.09	181.83	262.23	801.02
June	187.41	252.29	283.14	312.50	1,035.33
July	202.83	139.00	262.25	293.32	897.40
August	177.63	172.85	291.04	347.73	989.25
September	166.01	196.29	264.19	314.14	940.62
October	179.97	239.10	226.64	314.77	960.48
November	138.56	163.52	214.41	292.68	809.16
December	214.87	210.37	316.10	374.11	1,115.45
Total	1,425.72	2,179.49	2,795.55	3,393.42	9,794.17

Table 16: Quantity of Charcoal Produced in Kilograms for the Years 2015 to 2017

Months	2015	2016	2017	Total
January	-	3,528	-	3,528
February	-	3,528	-	3,528
march	-	3,528	-	3,528
April	-	3,528	-	3,528
May	-	3,528	-	3,528
June	-	3,528	-	3,528
July	-	3,528	3,456	6,984
August	6,550	3,528	3,456	13,534
September	6,550	-	3,456	10,006
October	6,550	-	3,456	10,006
November	6,550	-	3,456	10,006
December	6,550	-	-	6,550
Total	32,750	28,224	17,280	78,254

REFERENCES

1. IEA, Energy Statistics Manual, December 2010
2. https://en.wikipedia.org/wiki/Energy_statistics
3. <http://www.mbendi.com/notices/copyright.htm>.
4. <http://www.lewa.org.ls/sectors/default.php>
5. <https://www.usaid.gov/powerafrica/lesotho>
6. <https://www.lec.co.ls/generation>
7. https://energypedia.info/wiki/Lesotho_Energy_Situation
8. <http://www.thefreedictionary.com/Petroleum-based+fuel>.
9. <http://www.thepriceoffuel.com/>.
10. en.wikipedia.org/wiki/Aviation_fuel
11. <https://www.directenergy.com/blog/what-is-electricityload/>
12. <https://www.dictionary.com>