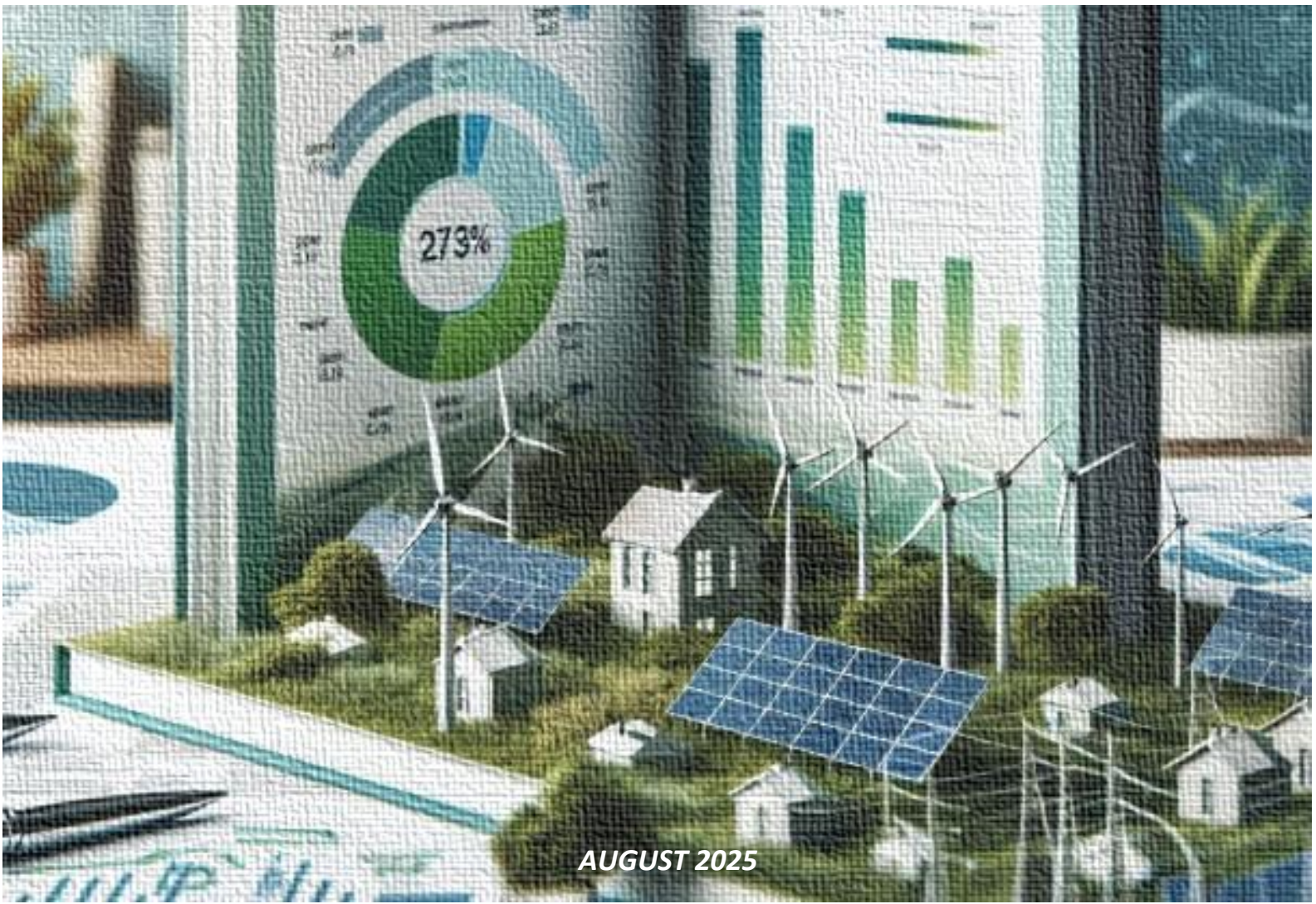
MINISTRY OF ENERGY AND PUBLIC UTILITIES

Energy Efficiency Management Office

ENERGY OBSERVATORY REPORT 2021 - 2022



AUGUST 2025

FOREWORD

This observatory report presents a comprehensive analysis of the current energy efficiency landscape in Mauritius, reflecting the ongoing efforts and progress made under the Ministry of Energy and Public Utilities. As part of our commitment to fostering a sustainable energy future, this report highlights key achievements, challenges, and opportunities in the pursuit of enhanced energy efficiency across various sectors. It is our hope that the insights provided will serve as a valuable resource for policymakers, industry leaders, and the public, driving collective action towards a more energy-efficient and resilient nation.

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CHAPTER 1 - ENERGY SUPPLY

1.1 Introduction

The energy supply of Mauritius is divided into:

- imports of primary energy (*Fossil fuels: Fuel Oil, Liquefied Petroleum Gas, Gasolene, Diesel, Kerosene, Aviation fuel and Coal*);
- production of primary energy (*Local resources: Bagasse, hydro, wind, landfill gas, fuelwood, charcoal and photovoltaic*);
- primary energy re-exports and bunkering; and
- variation of stocks.

1.2 Imports

The imports of primary energy sources in 2021 and 2022 totalled 1,866.3 ktoe and 1922.6 respectively, as shown in Table 1.1.

Table 1. 1 - Imports of energy sources

Fossil Energy	Imports 2021		Imports 2022	
	ktonne	ktoe	ktonne	ktoe
Coal	763.8	473.5	586.2	363.4
Gasolene	186.8	201.7	181.0	195.5
Diesel oil	312.8	315.9	311.5	314.6
Aviation fuel	68.6	71.3	210.7	219.2
Kerosene	1.6	1.7	3.9	4.0
Fuel oil	748.7	718.8	756.7	726.5
Liquefied Petroleum Gas (LPG)	77.1	83.3	91.8	99.1
Charcoal	0.2	0.1	0.3	0.2
Fuelwood	0	0	0.1	0.0
TOTAL	**2159.6**	**1866.3**	**2142.2**	**1922.6**

DataSource: Statistics Mauritius

The distribution of fossil fuel imports in 2021 and 2022 are shown in Figure 1.1 and 1.2.

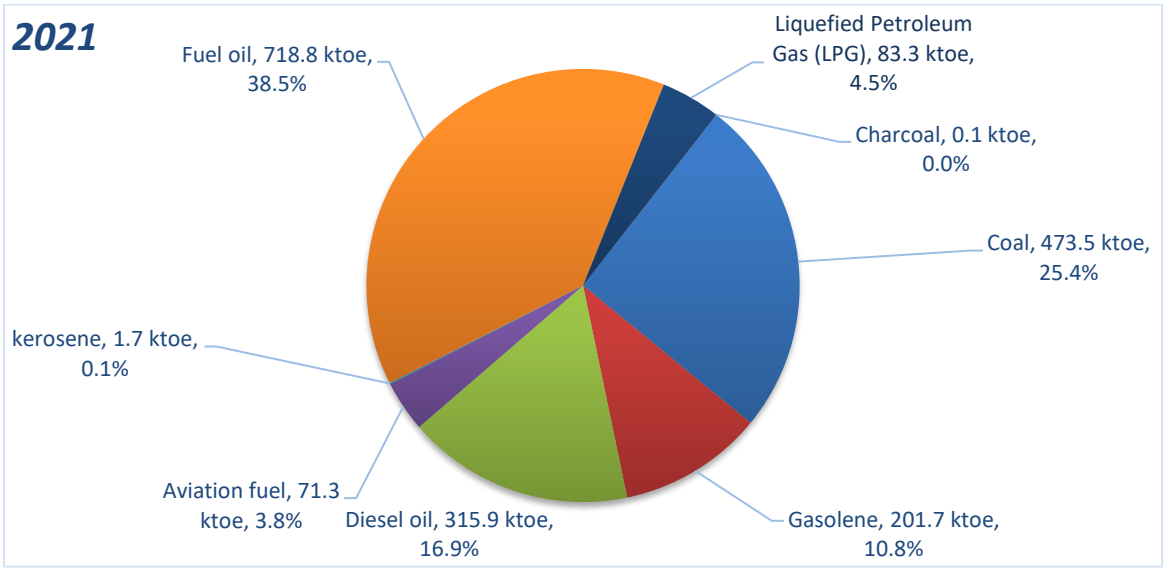


Figure 1. 1 Fossil Fuel 2021 Imports

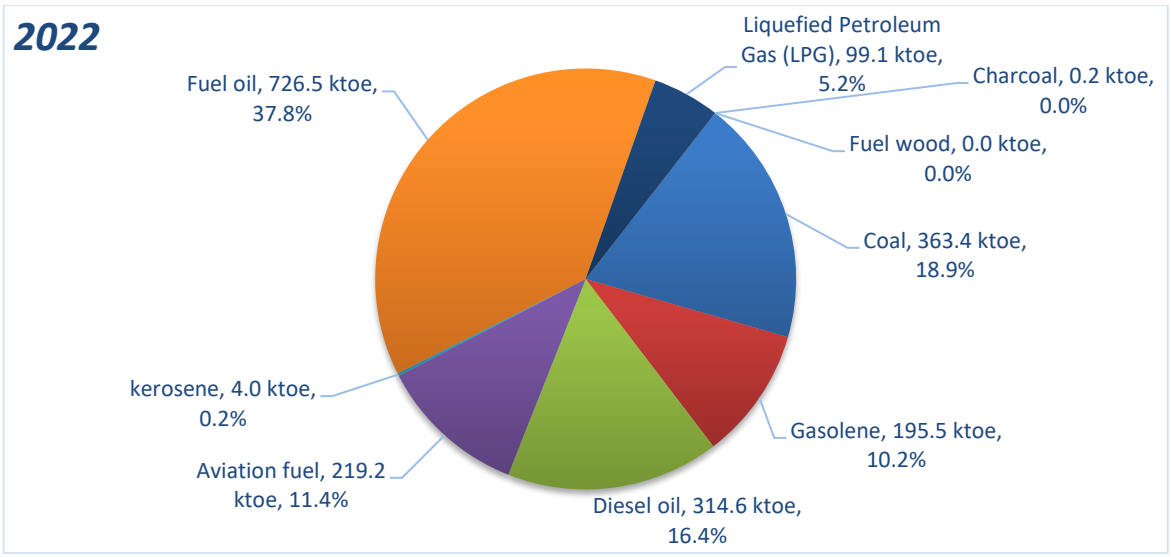
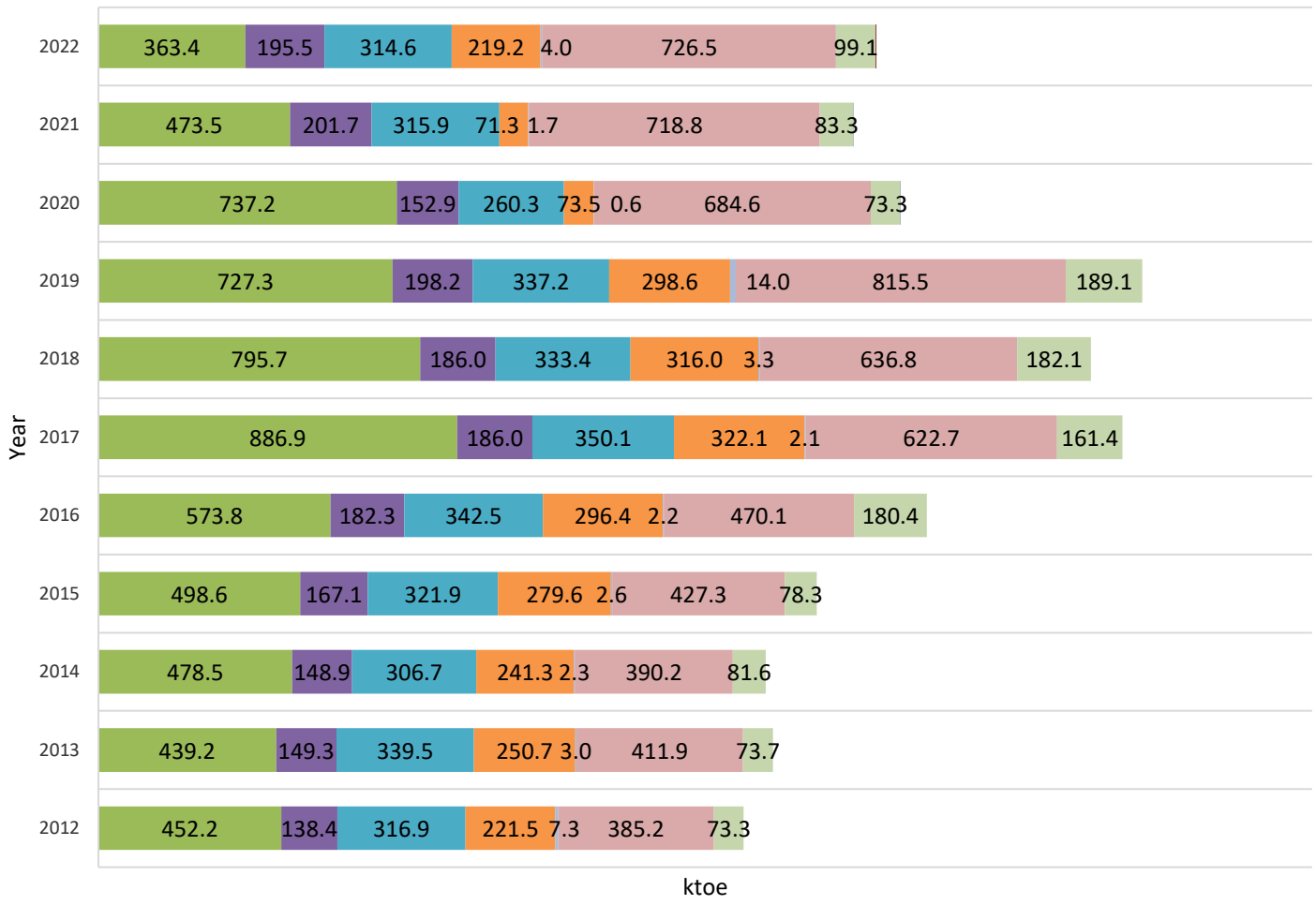


Figure 1. 2 Fossil Fuel 2022 Imports

Petroleum products are intended mostly for the sectors of transport, electricity generation, manufacturing as well as in the household, commercial and agricultural sectors. Coal is used primarily for power generation from thermal coal/bagasse power plants with a small fraction being used in the manufacturing sector. Liquefied Petroleum Gas (LPG) is used mainly as cooking and water heating fuel, to a lesser extent as fuel for vehicles. Figure 1.3 shows the trend of fossil fuel import –over the last 10 years.



Data Source: Statistics Mauritius

Figure 1.3- Trend of fossil fuel imports, 2012 – 2022

In 2021, the amount of fossil fuels imported decreased by 5.86 % compared to 2020. However, the total import bill of petroleum products and coal for 2021 amounted to Rs 35,882 M compared to Rs 24,090 M in 2020, representing an increase of 49%. This is attributed to increases in the average import prices of petroleum products as follows: gasolene (+32%), diesel oil (+38%), dual purpose kerosene (+21%), fuel oil (+27%) ,LPG (+31%) and coal (+173%).

In 2022, however, the amount of fossil fuels imported increases by 3.02 % as compared to 2021.

1.3 Petroleum products

The State Trading Corporation (STC) is responsible for the importation of all the country's requirements of petroleum products. These include the demands for the running of public transport, industrial and commercial activities, private motor vehicles, the needs of the Central Electricity Board in fuel oils for its power plants, the needs for aircraft refuelling at the SSR International Airport and the needs of bunker fuels for international shipping.

Upon arrival at the Port Louis Harbour, the petroleum products are pumped out of the tankers and delivered through pipelines into fuel tanks, owned by local oil companies, in the port Area. The capacity of the fuel tanks are as follows:

(i) Gasolene – 12,603 tonnes;
(ii) Diesel – 15,170 tonnes; and
(iii) LPG – 18,840 tonnes.

Joint Utility Hydrant Installation (JUHI), a consortium of four local oil companies, owns and operates a Jet Fuel tank of capacity 23,900 tonnes near SSR Airport.

The oil companies market, distribute and retail the products through their respective networks of fuel pump stations across the country. Some also operate barges to carry out their bunker supply operations at sea.

Table 1.2 shows the imports of petroleum products over the period 2013 to 2022. It may be noted that annual demand in petroleum products to meet domestic demand and bunkering increased by 11.5 % from 1,251.6 ktonnes in 2020 to 1,395.6 ktonnes in 2021. For 2022, the domestic demand and bunkering is increased again by 11.5% from 1,395.6 ktonne in 2021 to 1,555.7 ktonne in 2022.

Table 1. 2 - Import of petroleum products, 2013 – 2022

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Gasolene	138.2	137.9	154.7	168.8	172.2	172.2	183.5	141.6	186.8	181.0
Diesel oil	336.1	303.6	318.7	339.1	346.7	330.1	333.9	257.7	312.8	311.5
Aviation fuel	241.1	232.0	268.8	285.0	309.7	303.8	287.1	70.7	68.6	210.7
Kerosene	2.8	2.2	2.5	2.1	2.0	3.1	13.5	0.6	1.6	3.9
Fuel oil	429.1	406.4	445.1	489.7	648.7	663.4	849.5	713.1	748.7	756.7
Liquefied Petroleum Gas (LPG)	68.2	75.6	72.5	167.0	149.4	168.6	175.1	67.9	77.1	91.8
TOTAL (ktonnes)	**1,215.5**	**1,157.7**	**1,262.3**	**1,451.7**	**1,628.7**	**1,641.2**	**1,842.6**	**1,251.6**	**1,395.6**	**1,555.7**

Data Source: Statistics Mauritius

Kerosene is used at the Nicolay power station for electricity generation. It was also used in the household sector for cooking purposes. In 2020, 0.6 ktonnes of kerosene was imported while in 2021, this stood at 1.6 ktonnes representing an increase of 166.7%. For 2022, kerosene imports amounted to 3.9 ktonnes, which amounted to an increase of 143.8% as compared to 2021.

1.4 Primary energy re-export and bunkering

Primary energy re-export and bunkering in 2021 and 2022 is shown in Table 1.3 and Table 1.4 respectively.

Table 1. 3 - Primary energy re-export and bunkering 2021

Energy Source	ktonne	ktoe
Diesel oil	110.5	111.6
Aviation fuel (foreign aircraft)	30.9	32.2
Fuel oil	507.7	487.4

Data Source: Statistics Mauritius

Table 1. 4– Primary Energy Re-Exports and Bunkering 2022

Energy Source	ktonne	ktoe
Diesel oil	106.1	107.2
Aviation fuel (foreign aircraft)	102.4	106.5
Fuel oil	386.4	370.9

Data Source: Statistics Mauritius

1.5 Stock variation

The variations in stock in 2021 and 2022 are provided in the Table 1.5 and Table 1.6.

Table 1. 5- Variation in Stock Year 2021

	2021							
	Import		Export		Primary energy requirement		Stock variations (import - export - primary energy requirement)	
	ktonne	ktoe	ktonne	ktoe	ktonne	ktoe	ktonne	ktoe
Coal	763.8	473.5	-	-	736.6	456.7	27.2	16.8
Gasolene	186.8	201.7	-	-	167.1	180.5	19.7	21.3
Diesel oil	312.8	315.9	110.5	111.6	190.0	191.9	12.3	13.5
Aviation Fuel	68.6	71.3	30.9	32.2	31.3	32.5	6.4	7.8
Kerosene	1.6	1.7	-	-	0.6	0.7	1.0	1.0
Fuel oil	748.7	718.8	507.7	487.4	258.2	247.9	-17.2	-36.8
LPG	77.1	83.3	0.0	-	81.7	88.3	-4.6	-5.0
Charcoal	0.2	0.1	-	-	0.2	0.1	0.0	0.0

Data Source: Statistics Mauritius

Table 1.6– Variation in Stock Year 2022

	2022							
	Import		Export		Primary energy requirement		Stock variations (import - export - primary energy requirement)	
	ktonne	ktoe	ktonne	ktoe	ktonne	ktoe	ktonne	ktoe
Coal	586.2	363.4	-	-	579.5	359.3	6.6	4.1
Gasolene	181.0	195.5	-	-	191.2	206.5	-10.2	-11.0
Diesel oil	311.5	314.6	106.1	107.2	212.2	214.3	-6.8	-6.9
Aviation Fuel	210.7	219.2	102.4	106.5	120.7	125.6	-12.4	-12.9
Kerosene	3.9	4.0	-	-	0.8	0.8	3.1	3.2
Fuel oil	756.7	726.5	386.4	370.9	346.5	332.6	23.8	22.9
LPG	91.8	99.1	0.0	-	89.2	96.4	2.6	2.8
Charcoal	0.3	0.2	-	-	0.3	0.2	0.0	0.0

1.6 Dependency on Imported Energy Carriers

The trend of the dependency rate from 2013 to 2022 is shown in Table 1.7. In 2021, the dependency rate on imported energy carriers was 87.7%. and 2022, it was 89.9%.

Table 1.7- Import energy dependency rate, 2013 – 2022

2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
84.9%	85.8%	83.6%	85.4%	86.6%	87.1%	87.2%	86.7%	87.7%	89.9%

Data Source: Statistics Mauritius

1.7 Primary energy requirement

The primary energy requirements are met from imported sources and from local renewable sources as shown in Table 1.8 and Table 1.9.

Table 1. 8 - Primary energy requirement 2020 – 2021

	Energy source	Primary energy requirement (ktoe)		% change
		2020	2021	
Imported fuels	Coal	409.5	456.7	11.5 %
	Gasolene	184.1	180.5	-2.0 %
	Diesel Oil	185.8	191.9	3.3 %
	Aviation Fuel	58.4	32.5	-44.3 %
	Kerosene	0.3	0.7	145.7 %
	Fuel Oil	236.4	247.9	4.9 %
	LPG	82.0	88.3	7.6 %
	Sub Total	1156.5	1198.5	3.6 %
Local resources	Bagasse	146.8	139.2	-5.2 %
	Fuelwood	4.4	4.2	-3.8 %
	Photovoltaic	12.5	13.0	3.8 %
	Landfill gas	2.1	1.6	-23.2 %
	Hydro	10.0	9.2	-7.8 %
	Wind	1.6	1.3	-14.9 %
	Sub Total	177.4	168.5	-5.0 %
TOTAL		**1,333.9**	**1367.5**	**2.5 %**

Data Source: Statistics Mauritius

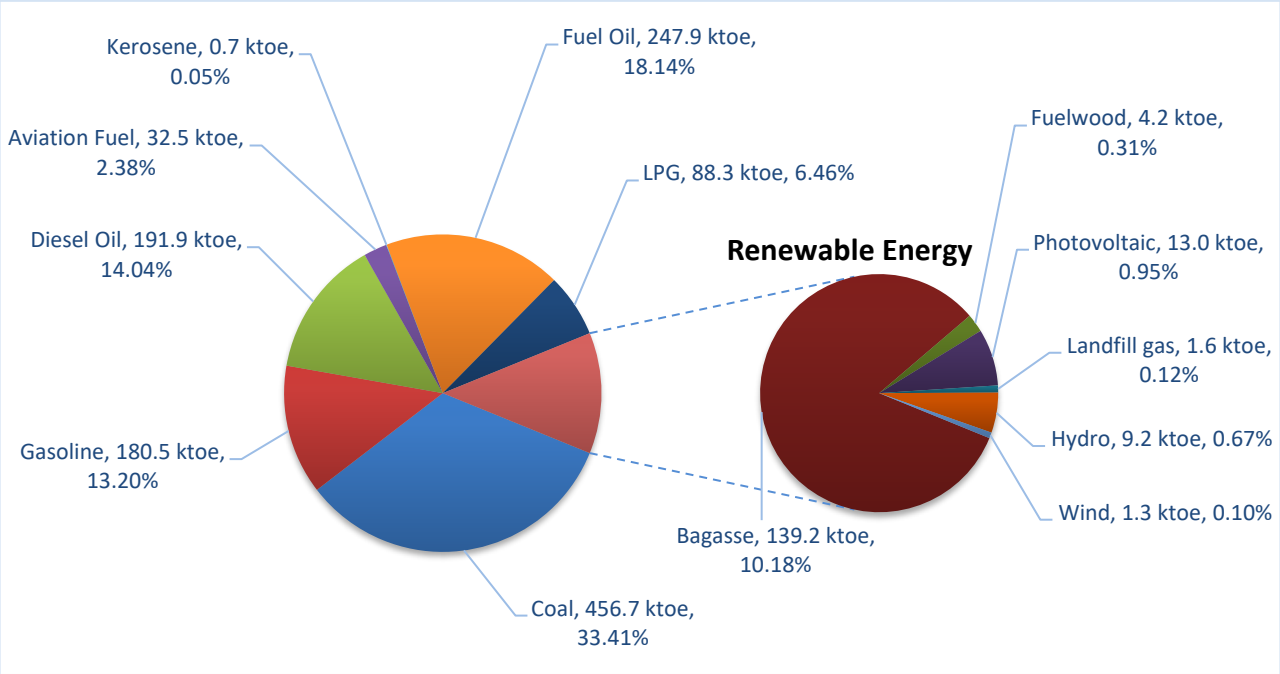
In 2021, the total primary energy requirement for the Republic of Mauritius amounted to 1,367.5 ktoe representing an increase of 2.5% compared to 2020.

Table 1. 9– Primary Energy Requirements 2021 – 2022

	Energy source	Primary energy requirement (ktoe)		% change
		2021	2022	
Imported fuels	Coal	456.7	359.3	-21.3%
	Gasolene	180.5	206.5	14.4%
	Diesel Oil	191.9	214.3	11.7%
	Aviation Fuel	32.5	125.6	285.9%
	Kerosene	0.7	0.8	23.5%
	Fuel Oil	247.9	332.6	34.2%
	LPG	88.3	96.4	9.2%
	Sub Total	1199.0	1335.9	11.4%
Local resources	Bagasse	139.2	117.9	-15.3%
	Fuelwood	4.2	4.2	0.4%
	Photovoltaic	13.0	13.3	2.1%
	Landfill gas	1.6	1.5	-9.6%
	Hydro	9.2	11.0	20.1%
	Wind	1.3	1.3	0.6%
	Sub Total	168.5	149.2	-11.4%
TOTAL		**1367.5**	**1485.1**	**8.6%**

In 2022, the total primary energy requirement for the Republic of Mauritius amounted to 1,485.1 ktoe representing an increase of 8.6% compared to 2021.

Figure 1.4 shows the share of fuel sources in the primary energy requirement for the year 2021. It is to be noted that 33.41% of the primary energy requirement for the year 2021 has been met through coal.



Data Source: Statistics Mauritius

Figure 1. 4 - Primary Energy Requirement 2021

Figure 1.5 shows the share of fuel sources in the primary energy requirement for the year 2022. It is to be noted that 24.20% of the primary energy requirement for the year 2022 has been met through coal.

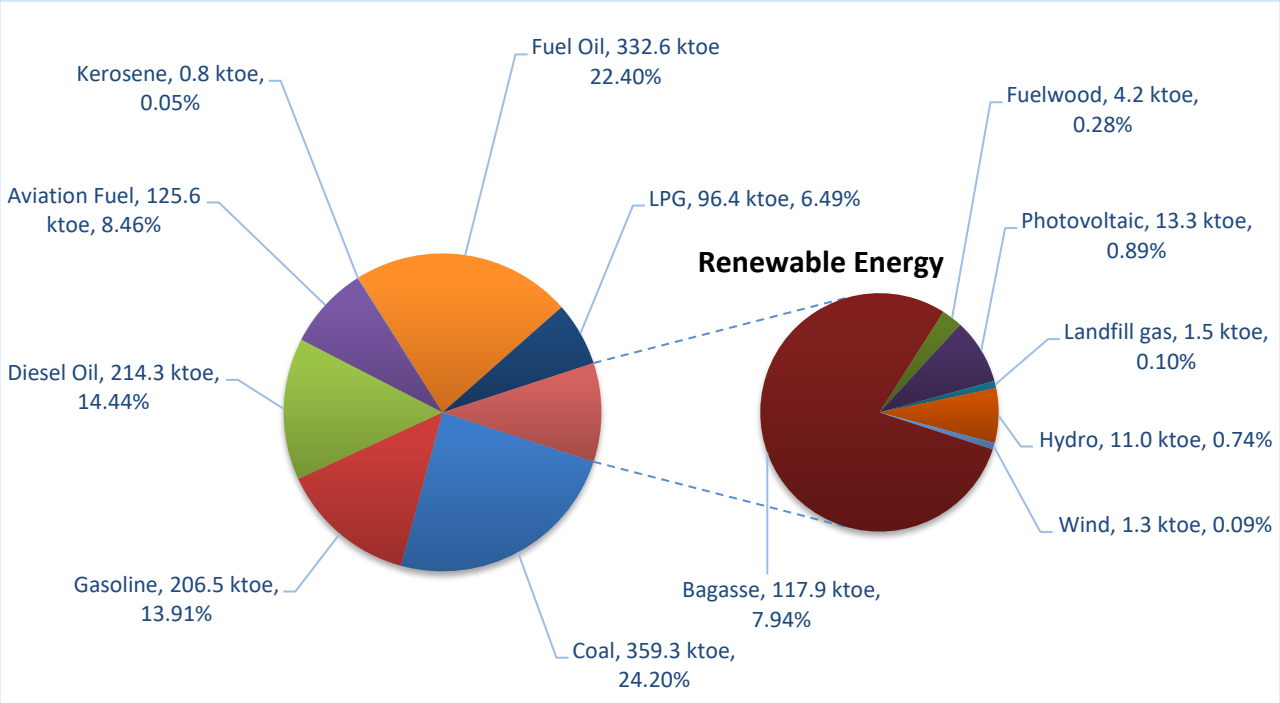
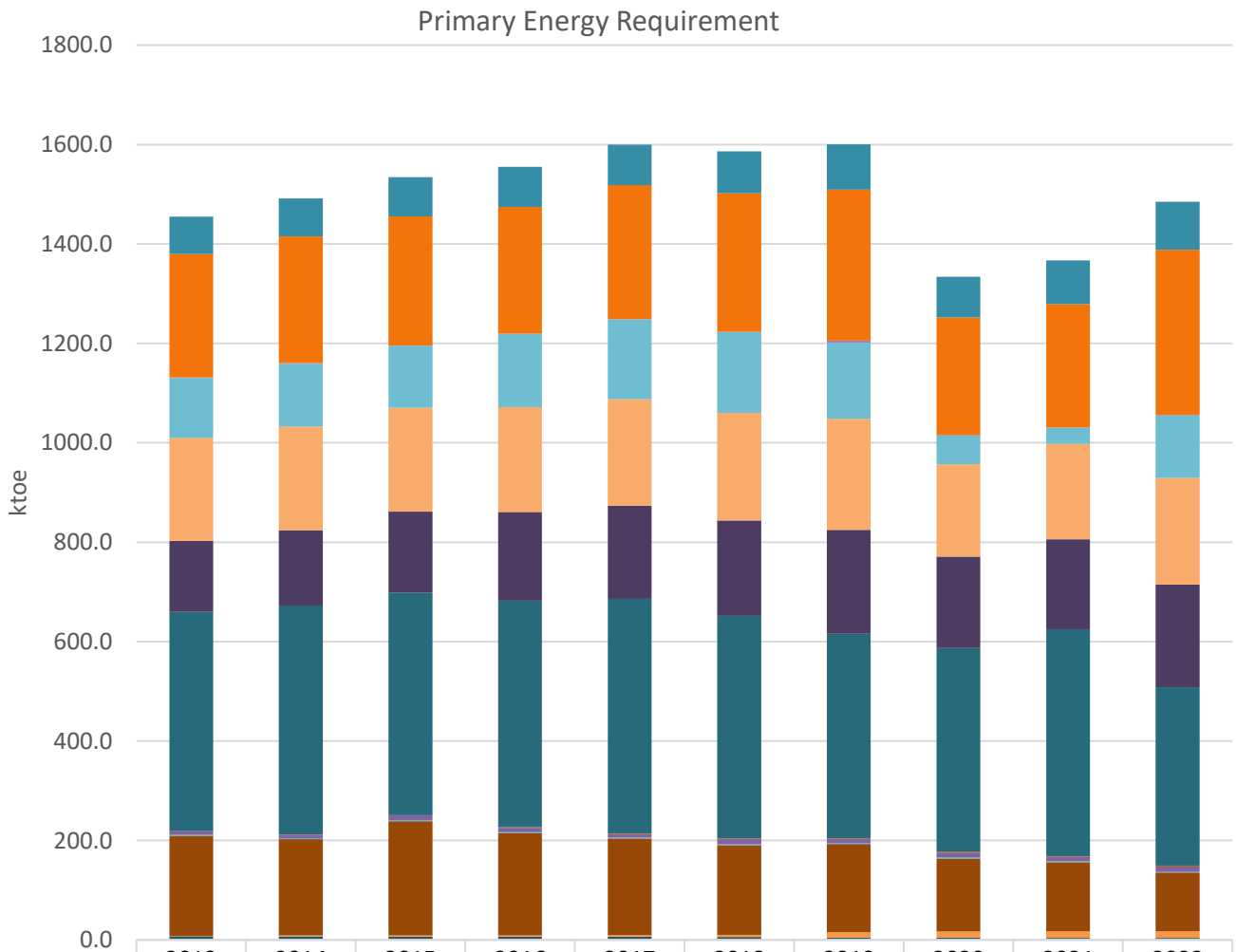


Figure 1. 5 - Primary Energy Requirement 2022

The evolution of primary energy requirement over the period 2013 to 2022 is shown in Figure 1.6.



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
LPG	74.9	76.7	79.2	80.9	81.3	84.2	91.1	82.1	88.3	96.4
Fuel oil	248.5	254.8	259.2	254.4	269.3	278.7	303.8	236.4	247.9	332.6
kerosene	0.9	0.9	0.9	0.8	1.0	0.7	3.9	0.3	0.7	0.8
Aviation fuel	120.7	126.8	124.3	147.6	160.2	162.5	152.7	58.4	32.5	125.6
Diesel oil	207.0	208.0	209.6	210.5	214.4	216.6	223.7	185.8	191.9	214.3
Gasoline	142.7	151.7	163.0	178.9	187.7	191.5	208.9	184.1	180.5	206.5
Coal	440.6	460.3	446.9	455.3	471.3	447.7	411.6	409.5	456.7	359.3
Wind	0.3	0.3	0.2	1.5	1.3	1.3	1.3	1.6	1.3	1.3
Hydro	8.2	7.8	10.5	8.6	7.7	10.7	8.5	10.0	9.2	11.0
Landfill gas	1.7	1.8	1.8	1.6	1.5	1.9	1.7	2.1	1.6	1.5
Bagasse	201.7	193.4	230.1	206.1	194.3	180.1	177.0	146.8	139.2	117.9
Photovoltaic	0.2	2.1	2.2	2.6	3.4	4.2	11.1	12.5	13.0	13.3
Fuelwood	7.3	6.9	6.5	6.4	6.4	6.1	4.9	4.4	4.2	4.2

Data Source: Statistics Mauritius

Figure 1. 6 - Primary Energy Requirement, 2013 – 2022

1.8 Production of Primary Energy – Local Renewable Sources

Examples of renewable energy sources are wind, solar, geothermal, wave, tidal, hydro energy including energy derived from biomass, landfill gas, sewage gas, and biogas. In Mauritius, the main sources of renewable energy exploited are biomass, in the form of sugar cane bagasse[1], hydro, photovoltaic (PV), wind, landfill gas and fuel wood. A total of 168.5 ktoe of local resources was tapped in 2021, as shown in Table 1.10.

Table 1. 10 - Primary energy supply in 2021 – Local resources

Local Resources	ktonne	GWh	ktoe
Bagasse	869.7		139.2
Fuelwood	11.0		4.2
Photovoltaic		151.3	13.0
Landfill gas		19.0	1.6
Hydro		106.9	9.2
Wind		15.4	1.3
Total	880.7	292.6	168.5

Data Source: Statistics Mauritius

In constrast, a total of 161.0 ktoe of local resources was tapped in 2022, as shown in Table 1.11 below. The Primary energy from local resources decreased by 4.5% as compared to 2021.

Table 1. 11– Primary Energy Supply in 2022 – Local Resources

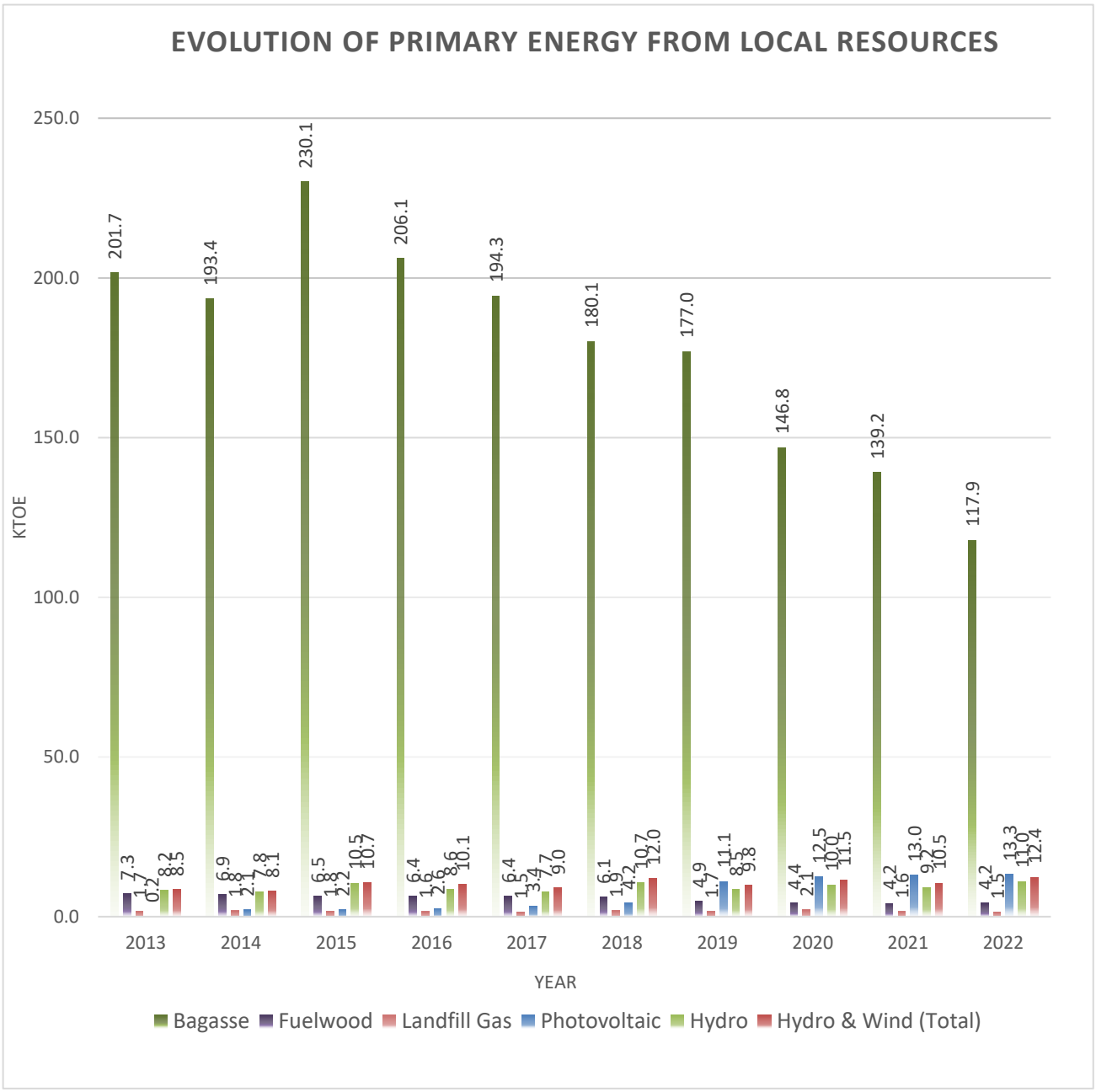
Local Resources	ktonne	GWh	ktoe
Bagasse	736.8		117.9
Fuelwood	11.1		4.2
Photovoltaic		154.5	13.3
Landfill gas		17.2	1.5
Hydro		128.3	11.0
Wind		15.5	1.3
Total	747.9	315.5	149.2

Bagasse is the main source of primary energy from local resources and contributed 139.2 ktoe of electricity in 2021 compared to 146.8 ktoe in 2020 representing a drop of 5.2%. The same trend is observed in 2022, with a decrease of 15.3 % observed as compared to 139.2 toe in 2021.

[1] In this document, unless specified otherwise, bagasse includes cane trash.

Nevertheless, as far as electricity generation from photovoltaic systems is concerned, an increase of 3.8% has been observed from 12.5 ktoe in 2020 to 13.0 ktoe in 2021 and another subsequent increase of 2.3% in 2022.

Figure 1.7 shows the trend of primary energy obtained from local resources for the past 10 years:



Data Source: Statistics Mauritius

Figure 1. 7 - Trend of primary energy from local resources, 2013 – 2022

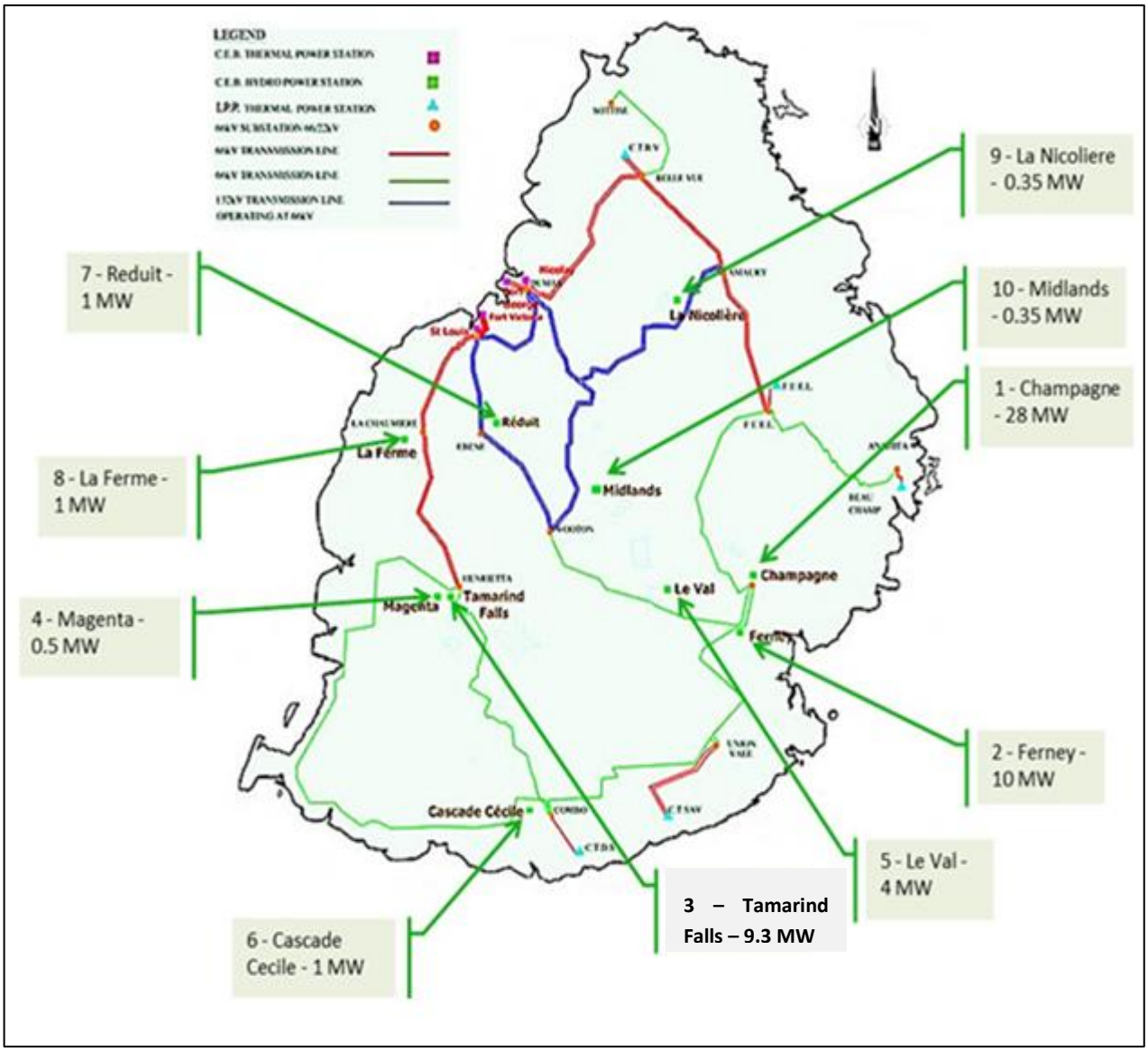
1.8.1 Hydroelectricity

The use of hydropower for electricity generation dates as far back as 1899 when electricity was first produced in Mauritius. It was the major renewable energy source for power generation contributing as much as 50-60% of the electricity mix in 1968.

The amount of hydropower generated is dependent on several factors such as rainfall, water storage levels and water demand from mainly agricultural and potable use. However, climate change with prolonged dry periods and reduction in rainfall poses a significant challenge to the availability of water resources and hence, for hydropower generation.

Hydropower is harnessed through the gravitational force of falling or flowing water. There are two types of hydropower plants, namely conventional and non-conventional ones. The conventional power stations can be further sub-categorised into impounded and diversion, of which the impounded facility is the most common. These hydropower plants vary in size, ranging from small systems to large utility scale projects, of capacities of ≤30 MW and >30 MW respectively. The small hydro systems can be further sub-divided into mini (100 - 1000 kW), micro (<100 kW) and pico (<5 kW) systems.

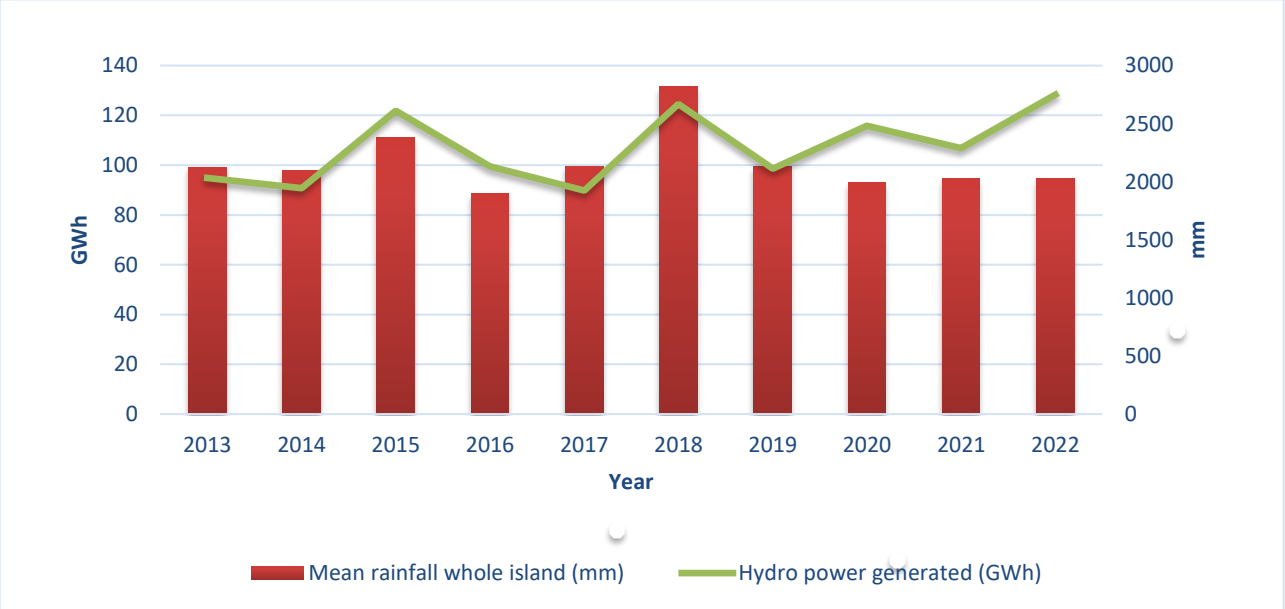
Currently, there are 10 hydroelectric power stations, ranging in size from 0.35 MW to 28 MW, in operation in Mauritius, as per Figure 1.8.



Data Source: CEB

Figure 1. 8- Hydropower stations in Mauritius

Hydroelectric power generation accounted for 3.5% and 4.1% of total electricity produced in 2021 and 2022 . Fluctuations in hydroelectric power generation tend to follow annual rainfall levels as shown in Figure 1.7 . The electricity generated from all the hydropower plants was 106.9 GWh in 2021 and 128.3GWh in 2022. In a rainy season, the annual production can be as high as 125 GWh, while in a dry season, it can drop to 57 GWh. Therefore, an annual hydroelectric power generation of 90 GWh can be considered as a rough average in a normal rainfall year.



Data Source: Statistics Mauritius

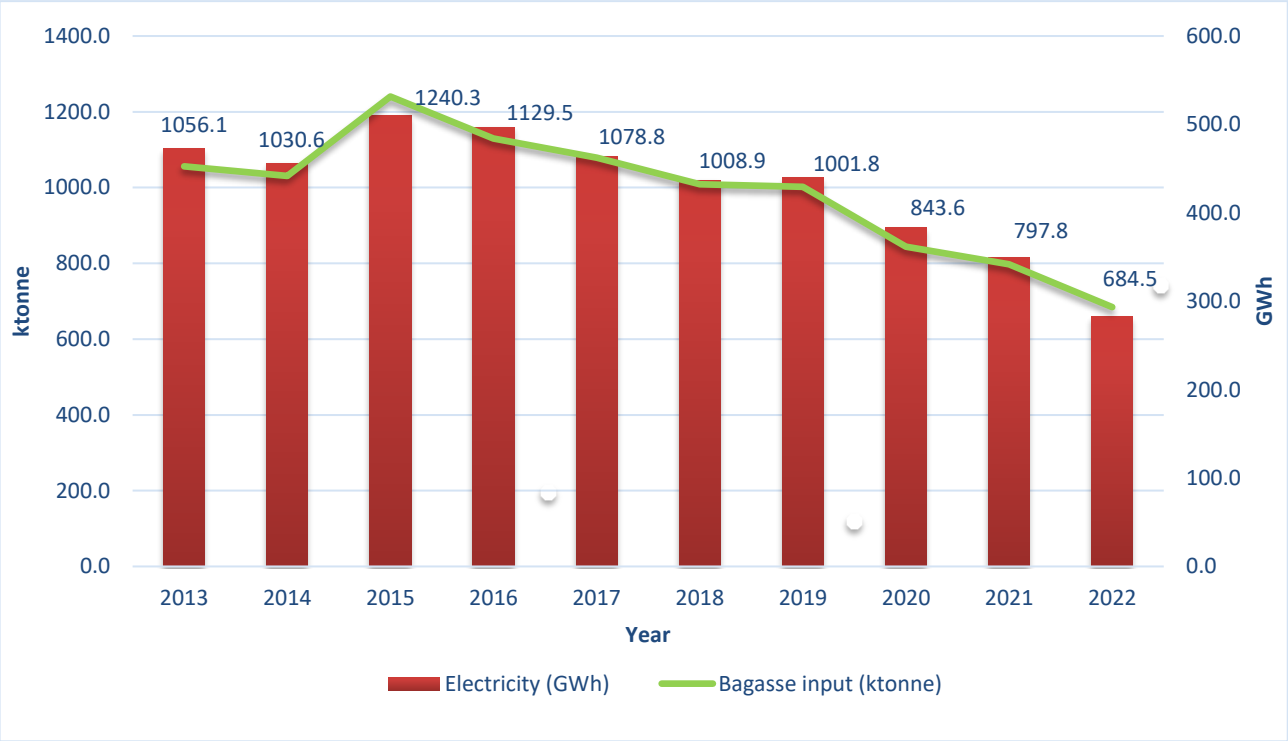
Figure 1. 9- Trend of hydro-electric generation, 2013 to 2022

1.8.2 Bagasse

Bagasse, a by-product of sugarcane, is the prime source of biomass in Mauritius. In year 2021, sugarcane plantation covering about 45,939 hectares of land generated around 0.80 million tons of bagasse upon harvest and crushing. Bagasse is almost entirely used by the sugar industry to meet all their energy requirements in terms of heat and electricity generation. The surplus power is fed into the national grid.

There are currently three main bagasse/coal power plants at the sugar factories of Alteo Energy Ltd, Terragen Ltd and Omnicane Thermal Energy Operations (La Baraque and Saint Aubin) Ltd. During the off-crop season, the three main power plants use coal to generate electricity, which account for about 70% of the electricity production of each plant. Overall, in the year 2021 and 2022, the sugar industry Independent Power Producers (IPPs) exported about 349.7 GWh and 283.0 GWh from bagasse.

Figure 1.10 gives the bagasse input for electricity generation and the amount generated over the period 2013 to 2022. In 2021, 797.8 ktonnes of bagasse was used for electricity generation compared to 843.6 ktonnes in 2020. This was due to a decrease of 5.2 % in the production of bagasse from 917.8 ktonnes in 2020 to 869.7 ktonnes in 2021. In contrast for 2022, 736.8 ktonnes of bagasse was used which represents a decrease of 7.6% in production as compared to 2021.



Data Source: Statistics Mauritius

Figure 1. 10 - Trend of electricity generation from bagasse, 2013 to 2022

Table 1.12 shows the ratio of electricity produced per tonne of bagasse over the period 2013 to 2022. The ratio varies in the range of 0.411 MWh/tonne to 0.455 MWh/tonne. In 2021 and 2022, the ratio of electricity produced per tonne of bagasse was 0.438 and 0.413. In 2021, 11.6 % of total electricity production in Mauritius was from bagasse, representing an decrease of 1.7 % compared to 2020. In 2022, 9.1% of total electricity production was from Bagasse, representing another decrease of 2.5% as compared to 2021.

Table 1. 12 - Ratio of electricity produced per tonne of bagasse, 2013 - 2022

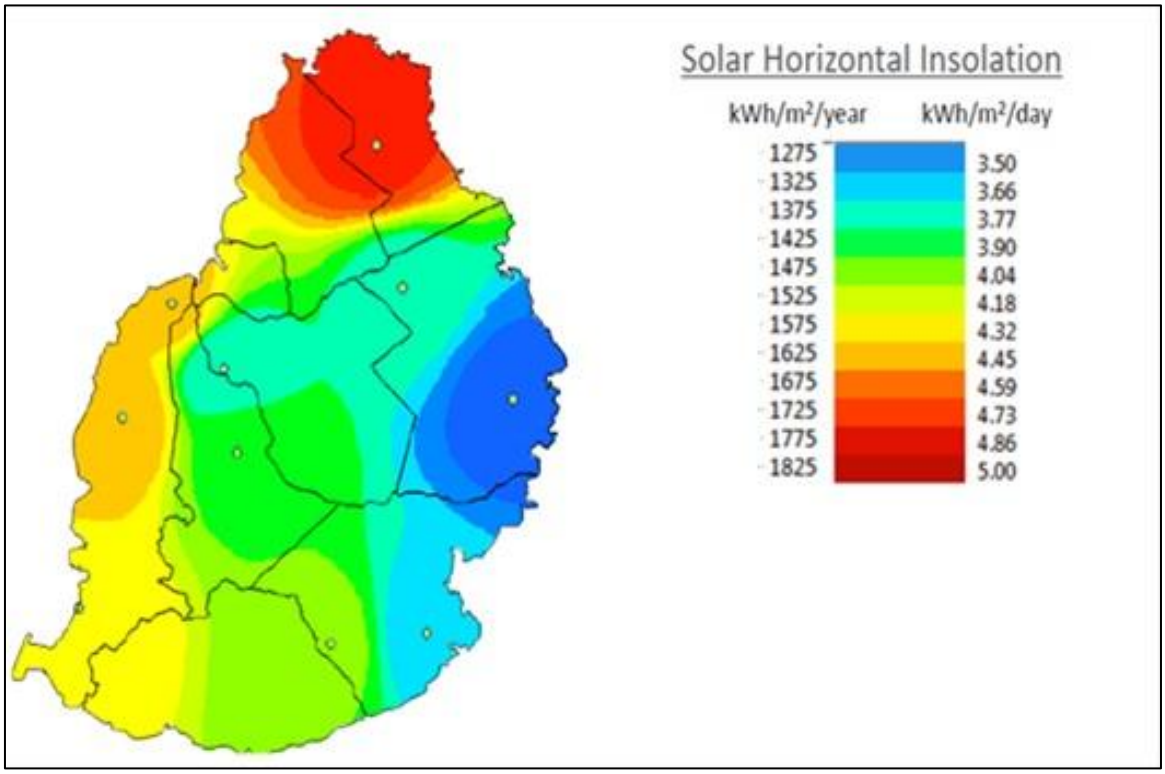
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Area under Sugar Cane Cultivation (Hectares)	56,391	57,081	56,872	55,560	54,182	51,454	48,819	45,805	45,939	42,154
Ratio electricity produced to bagasse input (MWh/tonne)	0.448	0.443	0.411	0.440	0.429	0.433	0.439	0.455	0.438	0.413

Data Source: Digest of Energy and Water Statistics , Statistics Mauritius

1.8.3 Photovoltaics (PV)

Mauritius, being a tropical island, enjoys a sunny climate all year round. The Mauritius Meteorological Services has key stations located at Medine, Pamplemousses (Ferret), FUEL, Plaisance and Vacoas to collect data.

Figure 1.11 gives the solar potential by region.



Data Source: Ministry of Energy and Public Utilities

Figure 1. 11- Solar potential by region

Photovoltaic (PV) systems play a crucial role in Mauritius, contributing significantly to the country's efforts in sustainable energy development and environmental conservation. The importance of PV systems in Mauritius can be outlined in several key aspects:

Renewable Energy Generation: Mauritius, like many other nations, is increasingly recognizing the importance of shifting towards renewable energy sources to reduce dependence on fossil fuels. PV systems harness solar energy to generate electricity, providing a clean and sustainable alternative to traditional power sources.

Reduced Environmental Impact: Photovoltaic systems generate electricity without emitting greenhouse gases or other pollutants, contributing to a reduction in carbon footprint. Given Mauritius' commitment to environmental conservation and addressing climate change, PV systems align with the country's goals for sustainable development.

Energy Independence: Investing in solar power helps Mauritius reduce its reliance on imported fossil fuels, promoting energy independence. This is crucial for economic stability and resilience, as it mitigates the impact of fluctuating global energy prices.

Diversification of Energy Sources: PV systems enables Mauritius to diversify its energy mix, making the power generation sector more resilient and adaptable to changes in energy demand and supply.

As a result of Government’s commitment to promote renewable energy, in particular, PV system and following the introduction of various attractive schemes and incentives, the PV electricity generation increased by 3.8% from 145.7 GWh in 2020 to 151.3 GWh.

Tables 1.13 and 1.14 provide information about PV installations under the Small/Medium Scale Distributed Generation (SSDG/MSDG) and other schemes up to the year 2021 for the Islands of Mauritius and Rodrigues respectively.

Table 1. 13- SSDG and MSDG summary, Island of Mauritius, 2021

Scheme	Total Capacity of PV systems connected to the CEB grid (kW) (cumulated)	Total kWh Produced during the year 2021	Total kWh Exported to the CEB grid during the year 2021
SSDG FIT Scheme	2,064	2,299,734	1,523,602
SSDG PECR Scheme	1,570	1,387,214	643,341
SSDG Net metering Scheme-Phase 1	3,057	4,037,508	2,462,118
SSDG Net metering Scheme-Phase 2	1,400	1,849,700	1,275,448
SSDG Net metering Scheme-Phase 3	1,558	1,915,960	1,326,431
MSDG Net metering Scheme	6,654.60	7,731,376	302,721
MSDG Gross metering Scheme	69.96	42,100	9,706
Public Sector Entities (PSE) scheme	61.215	42,513	4,148
Cooperative Net Metering Scheme MRU	29	36,834	23,518
Home Solar Project	912	910,505	910,505
Green Energy Scheme for SMEs	1908	2,015,804	2,015,804
MOBEC/MSME	196	81,847	81,847
CEB Buildings	115	59,289	13,557
No Tariff Category-SSDG	144	105,697	10,399
No Tariff Category-MSDG	464	629,414	33,674
Total	**20,203**	**23,145,495**	**10,636,819**

Data source: CEB

Table 1. 14 - SSDG summary, Island of Rodrigues

Scheme	Total Capacity of PV systems connected to the CEB grid (kW) (cumulated)	Total kWh Produced during the year 2021	Total kWh Exported to the CEB grid during the year 2021
SSDG FIT scheme	172	208,417	163,890
SSDG Net metering Scheme	28	42,570	25,647
SSDG PECR scheme	58	65,368	32,793
Cooperative Net metering Scheme	3	5,876	4,904
Home Solar Project (HSP)	91	68,832	68,832
Green Energy Scheme for SMEs	92	101,631	101,631
Total	**444**	**492,694**	**397,697**

Data source: CEB

Tables 1.15 and 1.16 provide information about PV installations under the Small/Medium Scale Distributed Generation (SSDG/MSDG) and other schemes up to the year 2022 for the Islands of Mauritius and Rodrigues respectively.

Table 1. 15 - SSDG and MSDG summary, Island of Mauritius, 2022

Scheme	Total Capacity of PV systems connected to the CEB grid (kW) (cumulated)	Total kWh Produced during the year 2022	Total kWh Exported to the CEB grid during the year 2022
SSDG FIT Scheme	2064	2,073,519	1,365,986
SSDG PECR Scheme	1570	1,472,040	647,314
SSDG Net metering Scheme-Phase 1	3080	4,010,774	2,499,871
SSDG Net metering Scheme-Phase 2	1410	1,857,374	1,295,044
SSDG Net metering Scheme-Phase 3	1582	2,112,035	1,479,831
SSDG Scheme for Domestic Households (Gross Metering)	1373	476,538	382,952
SSDG Scheme for Domestic Electric Vehicles (Gross Metering)	67	13,094	13,094
MSDG Net metering Scheme	6655	8,457,300	232,596
MSDG Gross metering Scheme	1930	1,271,145	156,377
Public Sector Entities (PSE) scheme	145	113,622	26,714
Cooperative Net Metering Scheme MRU	29	35,825	22,209
Home Solar Project	912	825,486	825,486
Green Energy Scheme for SMEs	1968	2,166,919	2,166,919
MOBEC/MSME	246	276,099	276,099
CEB Buildings	115	116,714	17,332
CEB PV	25	37,107	0
No Tariff Category-SSDG	144	76,111	12,086
No Tariff Category-MSDG	464	576,851	19,632
Total	**23,779**	**25,968,553**	**11,439,542**

Table 1. 16 - SSDG summary, Island of Rodrigues

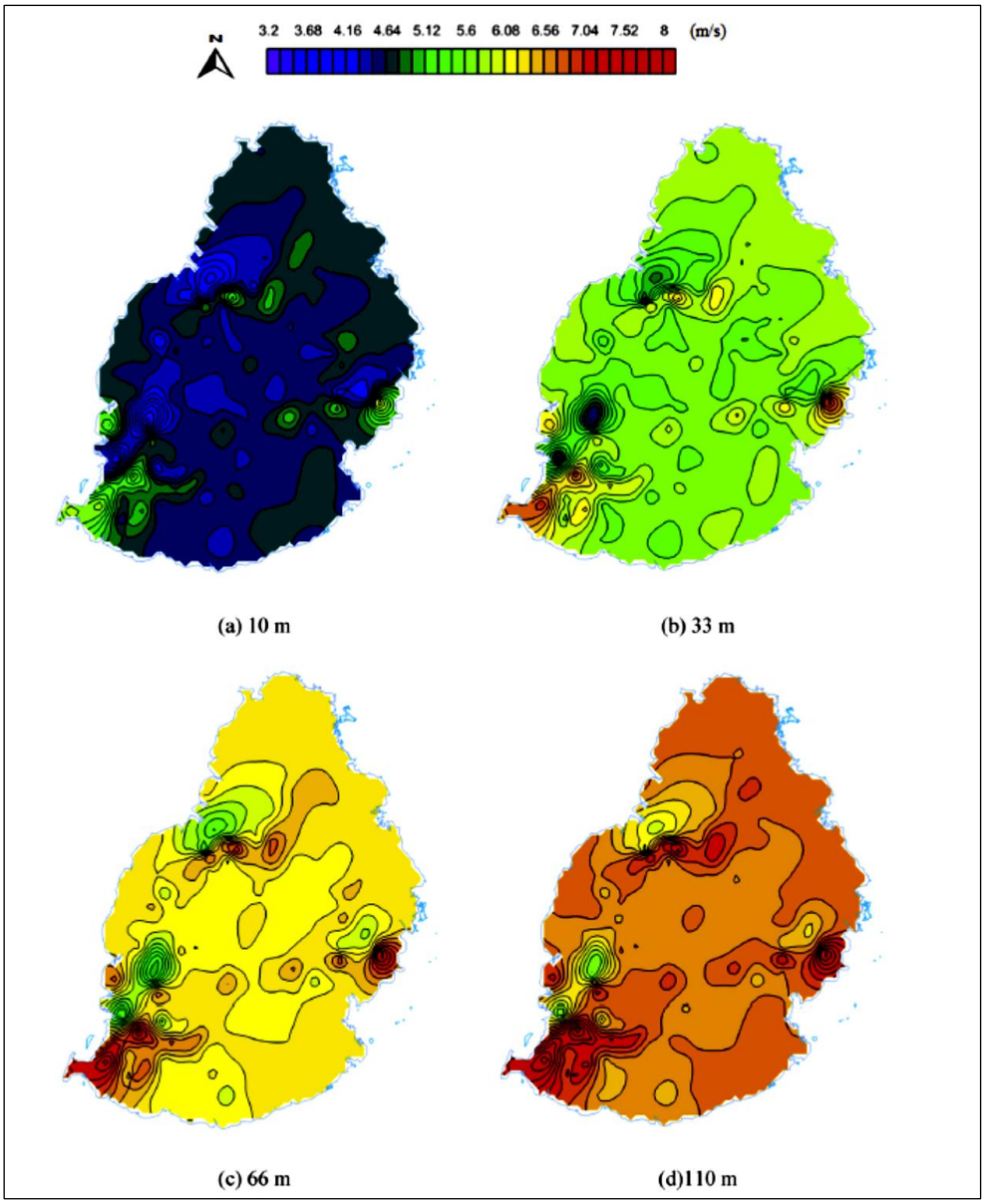
Scheme	Total Capacity of PV systems connected to the CEB grid (kW) (cumulated)	Total kWh Produced during the year 2022	Total kWh Exported to the CEB grid during the year 2022
SSDG FIT scheme	172	169,420	127,529
SSDG Net metering Scheme	28	48,092	27,101
SSDG PECR scheme	58	69,621	29,707
Cooperative Net metering Scheme	3	5,579	4,852
Home Solar Project (HSP)	91	72,822	72,822
Green Energy Scheme for SMEs	92	95,811	95,811
CEB PV	90	67,235	1
MSDG Riv. Coco	100	160,176	160,176
Total	**634**	**688,756**	**517,999**

1.8.4 Electricity from Wind energy

Trade winds dominate the weather of Mauritius. The trade winds are continuous throughout the year and blow from the subtropical high-pressure zone from the South-East towards Mauritius. This means that the wind has a much greater impact on the south eastern coastal areas compared to the western coastal areas, which are somewhat protected by the central plateau and some mountains. Furthermore, cloud formation is favoured on the South-East side of the mountains, thus leading to more rain and less sunshine hours per day.

The Wind Energy Resource Assessment Study carried out by the UNDP in the 1980s showed that wind speed in Mauritius varies between 7m/s to 4m/s at a height of 10m. In a more recent research carried out by Dhunny and Lollchund (2017) of the University of Mauritius, they computed a yearly mean wind speed map at multiple heights above ground. Based on this wind speed map, it can be observed that wind power potential of Mauritius is best in the South-East, lower in central plateau and South-West region in a typical year. Regions in the South-East may be best suited for this source of power.[2]

[2] *Data Source: Ministry of Energy and Public Utilities*



Data Source: Ministry of Energy and Public Utilities

Figure 1. 12 - Computed yearly mean wind speed map at multiple heights above ground

Wind power is the conversion of wind energy into a useful form of energy, such as using wind turbines to generate electricity, windmills for mechanical power, wind pumps for water pumping or sails to propel ships.

In Mauritius, a wind farm with a total installed capacity of 9.35 MW, has been set up by Eole Plaines des Roches Ltd and has generated 12.54 GWh and 13.55GWh of electricity in 2021 and 2022. The power is injected into the national grid at CEB's Amaury sub-station.

A Power Purchase Agreement for a 29.4 MW wind farm has been set up by Consortium Suzlon-Padgreen Co. Ltd at Curepipe Point (Plaine Sophie) was signed in August 2012. The generated

electricity will be procured by the CEB for a period of 20 years. However due to legal constaints, this project has not been able to come about.

As for Rodrigues Island, 2.84 GWh and 1.9 GWh of electricity was produced from wind energy in 2021 and 2022.

1.8.5 Electricity from Landfill gas

The amount of waste generated in Mauritius is currently around 460,000 tonnes per annum and this amount is expected to increase in the coming years. The wastes are disposed in the sole landfill of the island at Mare Chicose. Since 2011, electricity is generated from landfill gas which is constituted mostly of methane, produced by the fermentation of organic waste in landfills in the absence of oxygen. The effective capacity is 3 MW and in 2021, an amount of 19.0 GWh of electricity was generated.

1.8.6 Electricity from biogas

Data on biogas production through mesophilic anaerobic digestion and electricity production used to partially meet the electricity requirements of the St Martin Wastewater Treatment Plant over the period 2013 to 2022 are provided in Table 1.17 and 1.28. No electricity was generated as from year 2018 - 2022, given that the Gas Generator Set was not operational since February 2017.

Table 1. 17 - Volume of biogas produced over the last 10 years

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Volume (Nm3)	1,141,327	1,704,956	1,289,681	797,536	826,867	919,914	903,520	901,109	948,969	313,459

Data source: Wastewater Management Authority

Table 1. 18 - Electricity produced from biogas over the last 10 years

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Electricity generated (kWh)	965,616	950,773	644,031	783,883	27,461	0	0	0	0	0

Data source: Wastewater Management Authority

1.8.7 Solar Thermal – Solar Water Heaters (SWH) in Mauritius

According data from the Housing Census 2022[3], 118 913 households uses Solar Water Heaters in Mauritius and 2112 in Rodrigues which represents 32.9% for the Republic of Mauritius

Grants were provided to subsidize the purchase of 73,480 solar water heaters up to 2016, under the four phases of the Solar Water Heater Grant Scheme (SWHGS). No updated figures are available currently for the year 2021.

Assuming that these solar water heaters have displaced electric water heaters and gas water heaters in the ratio of 1 : 5, the avoided electric energy is estimated at 12.96 GWh and the avoided LPG mass is estimated at 15,835 tonnes. The avoided CO_2 emissions, using the grid emission factor of 954.3 gCO_2/kWh for year 2021, and assuming 1.51 kg of CO_2 per litre of LPG, would be approximately 36,278.5 tCO_2.

The avoided CO_2 emissions, using the grid emission factor of 810.1 gCO_2/kWh for year 2022, and assuming 1.51 kg of CO_2 per litre of LPG, would be approximately 34,409.7 tCO_2.

It is to be noted that large scale solar water heaters are used in other sectors of the economy such as the tourism sector and manufacturing sector to preheat water for swimming pools and boilers respectively.

[3] *Date Source: Statistics Mauritius,*

Chapter 2 - ELECTRICITY PRODUCTION CAPACITY

The capacity of power plants connected to the grid in 2021 and 2022 is shown in Table 2.1.

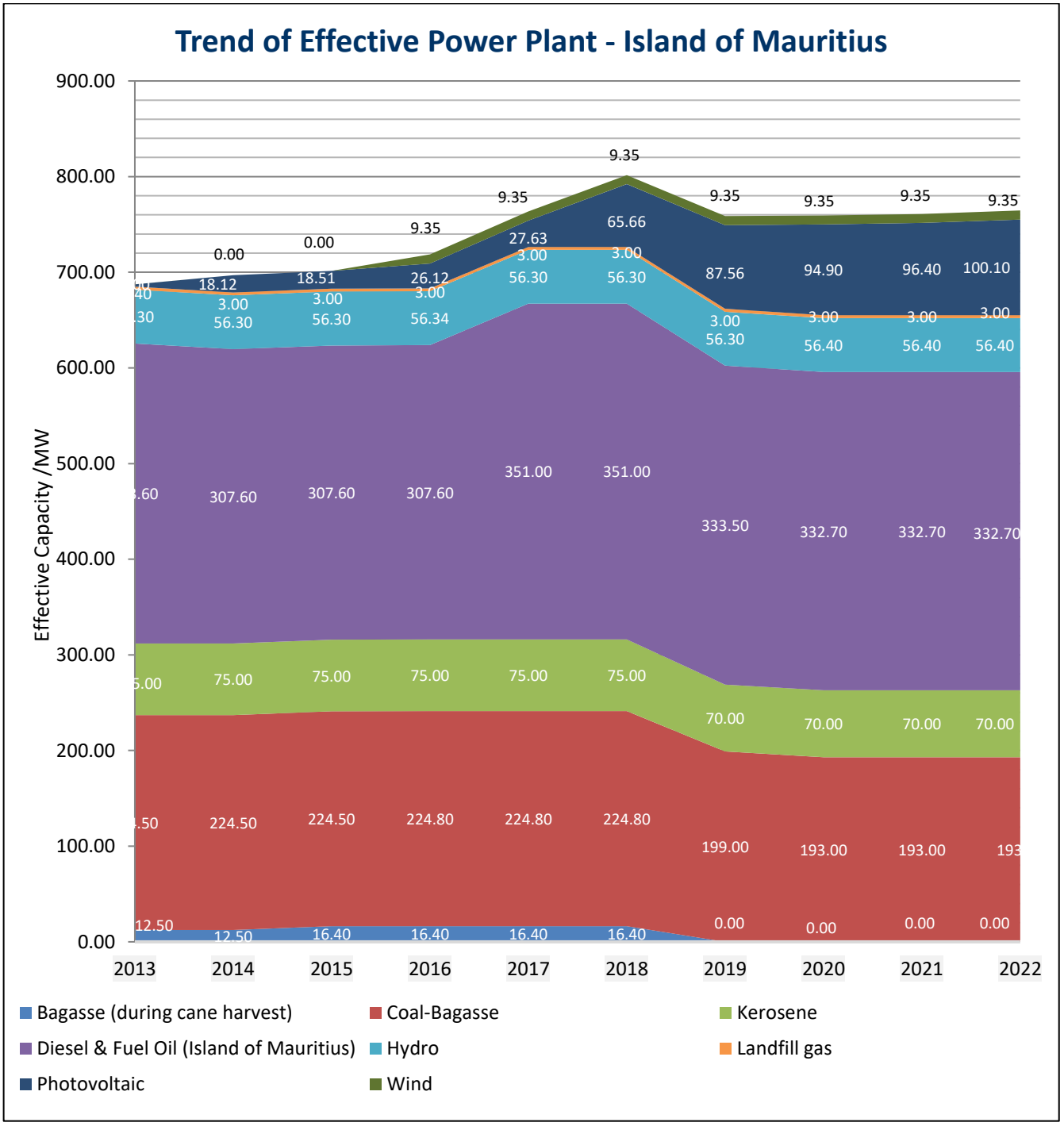
Table 2. 1 - Capacity of power plants in 2021 and 2022

Type of power plant		2021				2022			
		Installed plant capacity (MW)	Total Installed plant capacity (MW)	Effective plant capacity (MW)	Total effective plant capacity (MW)	Installed plant capacity (MW)	Total Installed plant capacity (MW)	Effective plant capacity (MW)	Total effective plant capacity (MW)
COAL-BAGASSE	Alteo Energy Ltd (formerly F.U.E.L.)	36.70	230.40	27.00	193.00	36.70	230.40	27.00	193.00
	Terragen Ltd (formerly Compagnie Thermique de Belle Vue)	71.20		62.00		71.20		62.00	
	Omnicane Thermal Energy Operations (St Aubin) Ltd (formerly Compagnie Thermique du Sud)	32.50		30.00		32.50		30.00	
	Omnicane Thermal Energy Operations (La Baraque) Ltd (formerly Compagnie Thermique de Savannah)	90.00		74.00		90.00		74.00	
HYDRO	Champagne	30.00	60.50	28.00	56.40	30.00	60.50	28.00	56.40
	Ferney	10.00		10.00		10.00		10.00	
	Tamarind Falls	11.40		9.50		11.40		9.50	
	Le Val	4.00		4.00		4.00		4.00	
	Reduit	1.20		1.00		1.20		1.00	
	Cascade Cecile	1.00		1.00		1.00		1.00	
	Magenta	1.00		1.00		1.00		1.00	
	Midlands Dam	0.35		0.35		0.35		0.35	
	La Nicoliere	0.35		0.35		0.35		0.35	
	La Ferme	1.20		1.20		1.20		1.20	
LANDFILL GAS	Sotravic Ltd	3.45	3.45	3.00	3.00	3.45	3.45	3.00	3.00

Type of power plant		2021				2022			
		Installed plant capacity (MW)	Total Installed plant capacity (MW)	Effective plant capacity (MW)	Total effective plant capacity (MW)	Installed plant capacity (MW)	Total Installed plant capacity (MW)	Effective plant capacity (MW)	Total effective plant capacity (MW)
KEROSENE	Nicolay	78.40	78.40	70.00	70.00	78.40	78.40	70.00	70.00
DIESEL & FUEL OIL	St Louis	110.00	359.60	102.70	332.70	110.00	359.60	102.70	332.70
	Fort Victoria	109.60		103.00		109.60		103.00	
	Fort George	140.00		127.00		140.00		127.00	
PHOTOVOLTAIC	Island of Mauritius (IPP)	102.18	107.35	91.58	96.4	105.70	111.00	95.10	100.1
	Fort George	0.005		0.005		0.005		0.005	
	Fort Victoria	0.020		0.020		0.020		0.020	
	CEB GREEN	2.010		1.700		2.010		1.700	
	SSDG/MSDG CEB Generation	3.130		3.130		3.260		3.260	
PHOTOVOLTAIC	Island of Rodrigues (IPP)	0.44	0.63	0.44	0.63	0.54	1.728	0.543	1.728
	CEB-PV Plant	0.09		0.09		0.09		0.085	
	MSDG(PV Riv Coco)	0.10		0.10		0.10		0.10	
	Grenade PV Farm					1.0		1.0	
WIND	Island of Mauritius (IPP)	9.35	9.35	9.35	9.35	9.35	9.35	9.35	9.35
WIND	Island of Rodrigues	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
DIESEL & FUEL OIL	Island of Rodrigues	12.30	12.30	11.40	11.40	12.30	12.30	11.40	11.40
Total power available on grid (Island of Mauritius) (MW)		849.045	849.045	760.89	760.89	852.695	852.695	778.94	778.94
Total power available on grid (Island of Rodrigues) (MW)		14.208	14.208	13.308	13.308	14.308	14.308	14.408	13.408
Total (MW)		**863.253**	**863.2533**	**774.193**	**774.193**	**867.003**	**867.003**	**793.351**	**791.351**

Data Source: Statistics Mauritius

The trend of effective power plant capacity from 2013 to 2022 (Island of Mauritius) is shown in Figure 2.1.

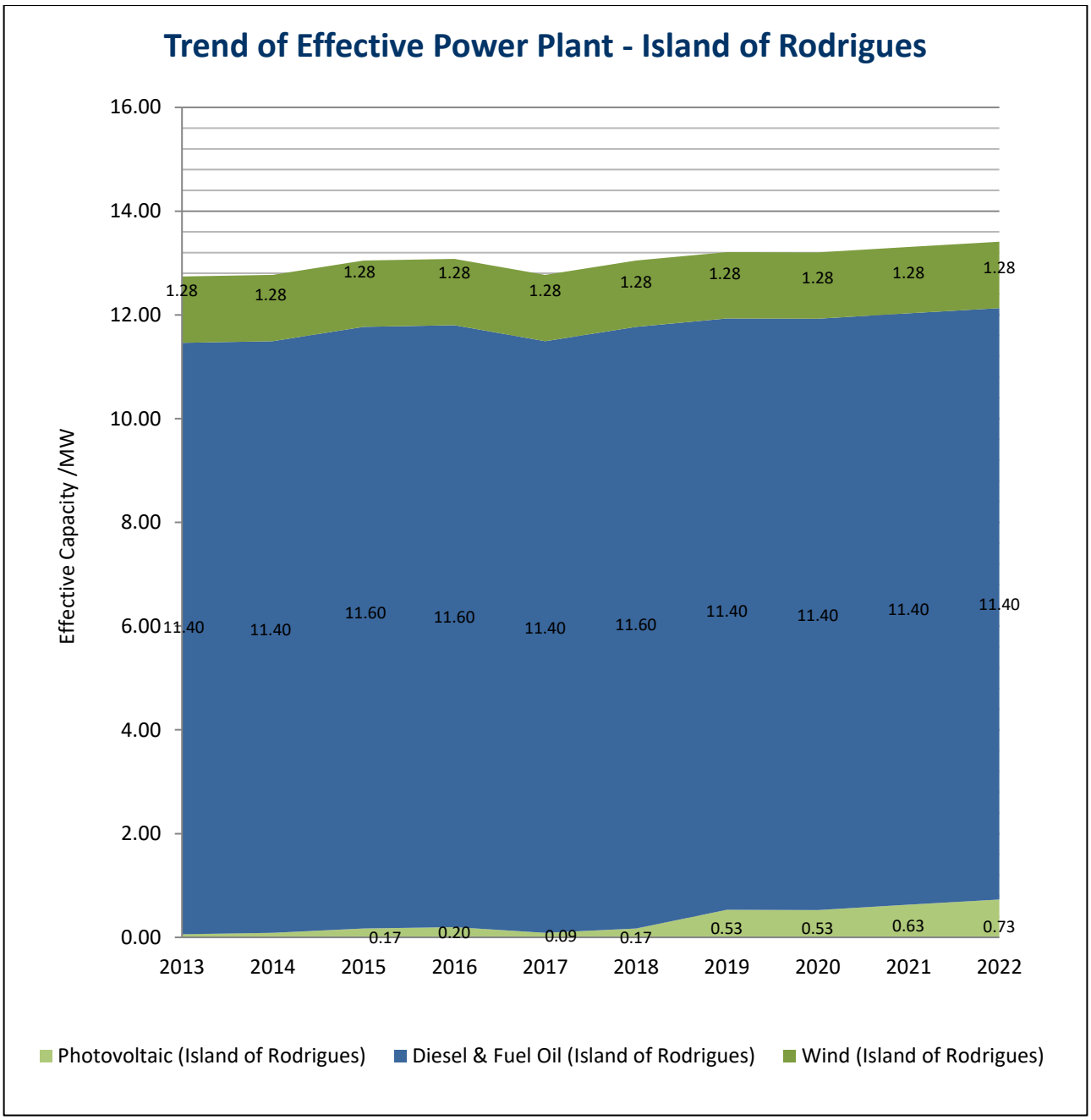


Data Source: Statistics Mauritius

Figure 2. 1- Trend of effective power plant capacity, 2013 – 2022 (Island of Mauritius)

From Figure 2.1, it can be seen that diesel and fuel oil power plants and coal bagasse power plants represent 44.5% and 24.9% of the total effective power plant capacity for the Island of Mauritius.

Note the Bagasse (during cane harvest) was initially used at Medine.

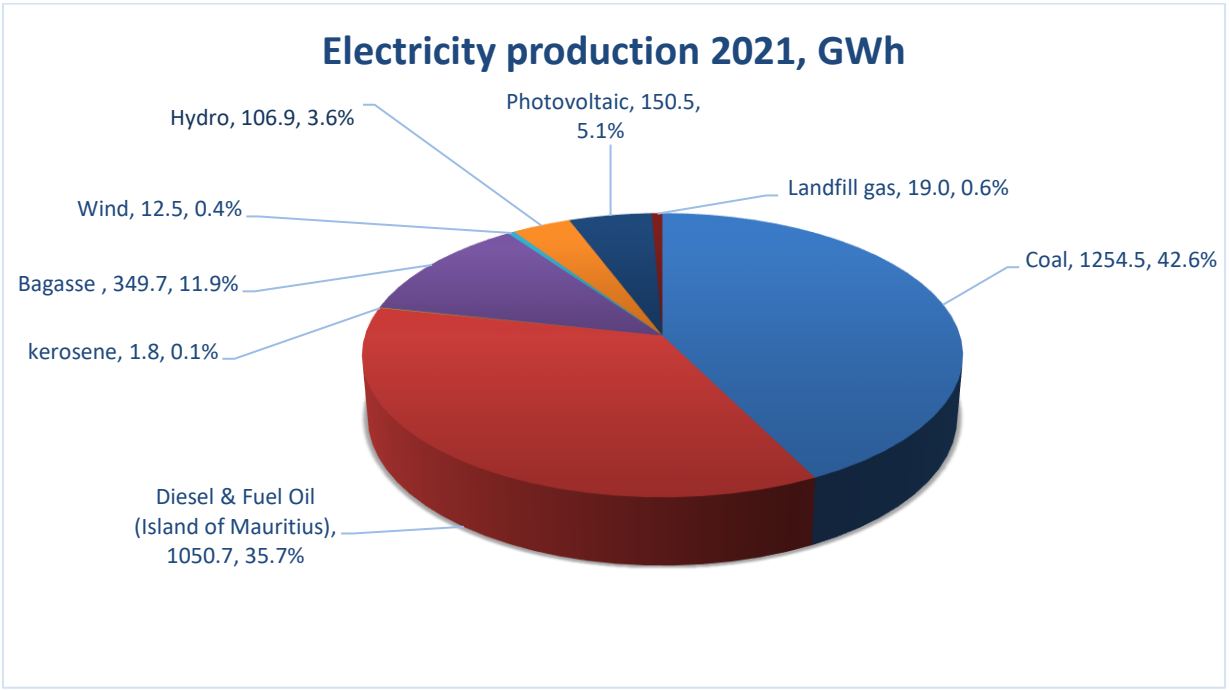


Data Source: Statistics Mauritius

Figure 2. 2- Trend of effective power plant capacity, 2013 – 2022 (Island of Rodrigues)

Chapter 3 - ELECTRICITY PRODUCTION

Figure 3.1 and 3.2 shows the share of electricity production by fuel type in 2021 and 2022.



Data Source: Statistics Mauritius

Figure 3. 1- Share of electricity production by fuel type, 2021 (Island of Mauritius)

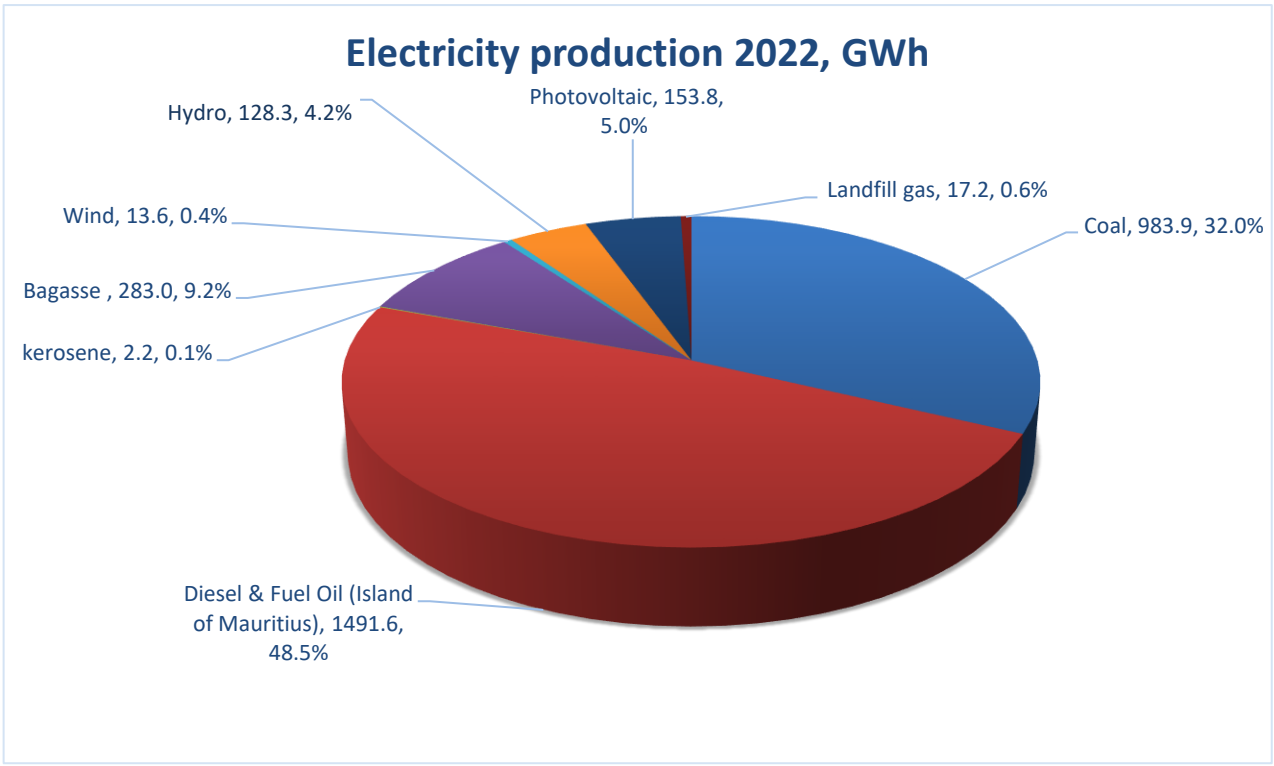
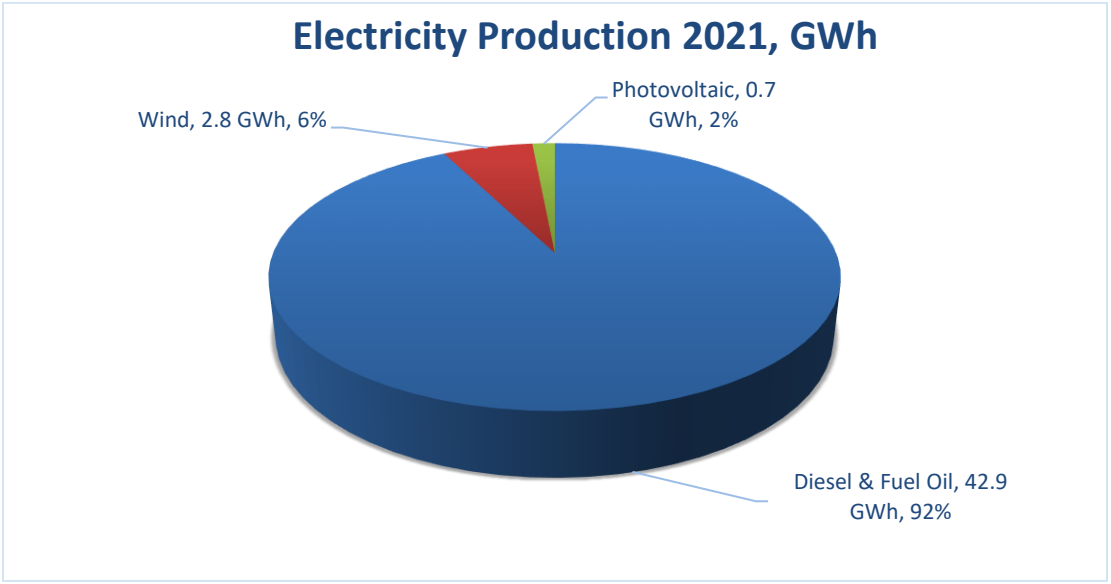
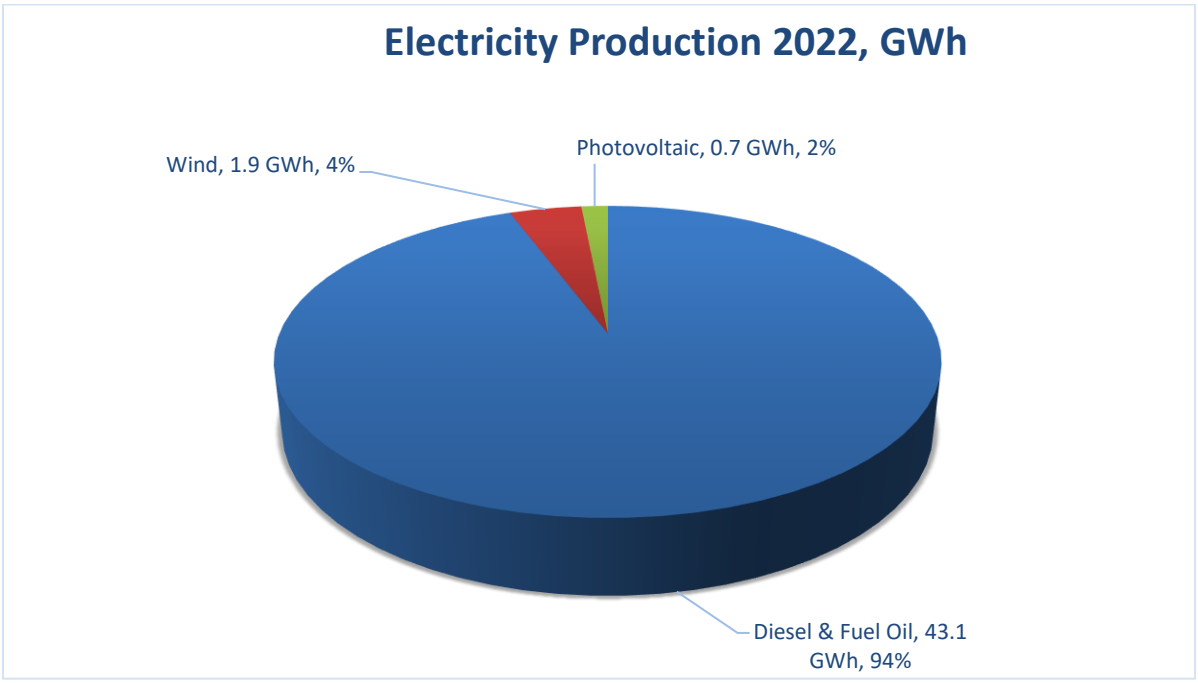


Figure 3.2- Share of electricity production by fuel type, 2022 (Island of Mauritius)



Data Source: Statistics Mauritius

Figure 3.3 - Share of electricity production by fuel type, 2021 (Island of Rodrigues)



Data Source: Statistics Mauritius

Figure 3.4 - Share of electricity production by fuel type, 2022 (Island of Rodrigues)

3.1 Share of Renewable Energy in Electricity Mix

The actual renewable energy in the electricity mix in 2021 and 2022 for Island of Mauritius and Island of Rodrigues are given in Table 3.1 and Table 3.2 respectively.

Table 3. 1- Share of renewable energy in electricity mix for Island of Mauritius

Renewable energy source	2021			2022		
	Installed Capacity (MW)	Total RE (GWh)	% Share in Electricity Mix	Installed Capacity (MW)	Total RE (GWh)	% Share in Electricity Mix
On-shore wind	9.35	12.54	0.5	9.35	13.56	0.47
Solar Energy - SSDG	12.953	14.70	0.5	14.576	15.51	0.54
Solar Energy - MSDG	7.25	8.45	0.3	9.194	10.42	0.36
Solar Energy – Utility and CEB PV	87.23	127.40	4.7	1.725	3.15	0.11
Solar Energy - IPP	-	-	-	74.59	124.69	4.32
Biomass - Bagasse*	126.7	245.20	9.0	131.5	275.62	9.55
Biomass - Cane trash*		5.61	0.2		7.38	0.26
Landfill Gas	3.45	19.05	0.7	3	17.2	0.6
Hydro	60.5	106.86	3.9	56.4	128.3	4.45
Total	307.433	539.81	19.8	300.34	595.84	20.66

Data Source: CEB

*During the crop season, the bagasse IPPs supply steam and electricity directly to the annexed sugar mills. Thus, the guaranteed power is less than the installed capacity.

Table 3. 2- Share of renewable energy in electricity mix for Island of Rodrigues

Renewable energy source	2021			2022		
	Installed Capacity (MW)	Total RE (GWh)	% Share in Electricity Mix	Installed Capacity (MW)	Total RE (GWh)	% Share in Electricity Mix
On-shore wind	1.280	2.84	6.10	1.28	1.921	4.2
Solar Energy - SSDG	0.444	0.493	1.06	0.443	0.461	1.01
Solar Energy - MSDG	0.100	0.16	0.34	0.1	0.160	0.35
Solar Energy – Utility*	0.090	0.15	0.32	0.090	0.067	0.15
Total	1.914	3.643	7.82	1.913	2.609	5.71

Data Source: CEB

*Includes PV plant at CEB Admin bldg., Port Mathurin and Pointe Monnier Power Stations.

The overall conversion efficiencies of the power plants in 2021 and 2022 are given in Table 3.3 and Table 3.4.

Table 3. 3- Conversion efficiency of power plants (2021)

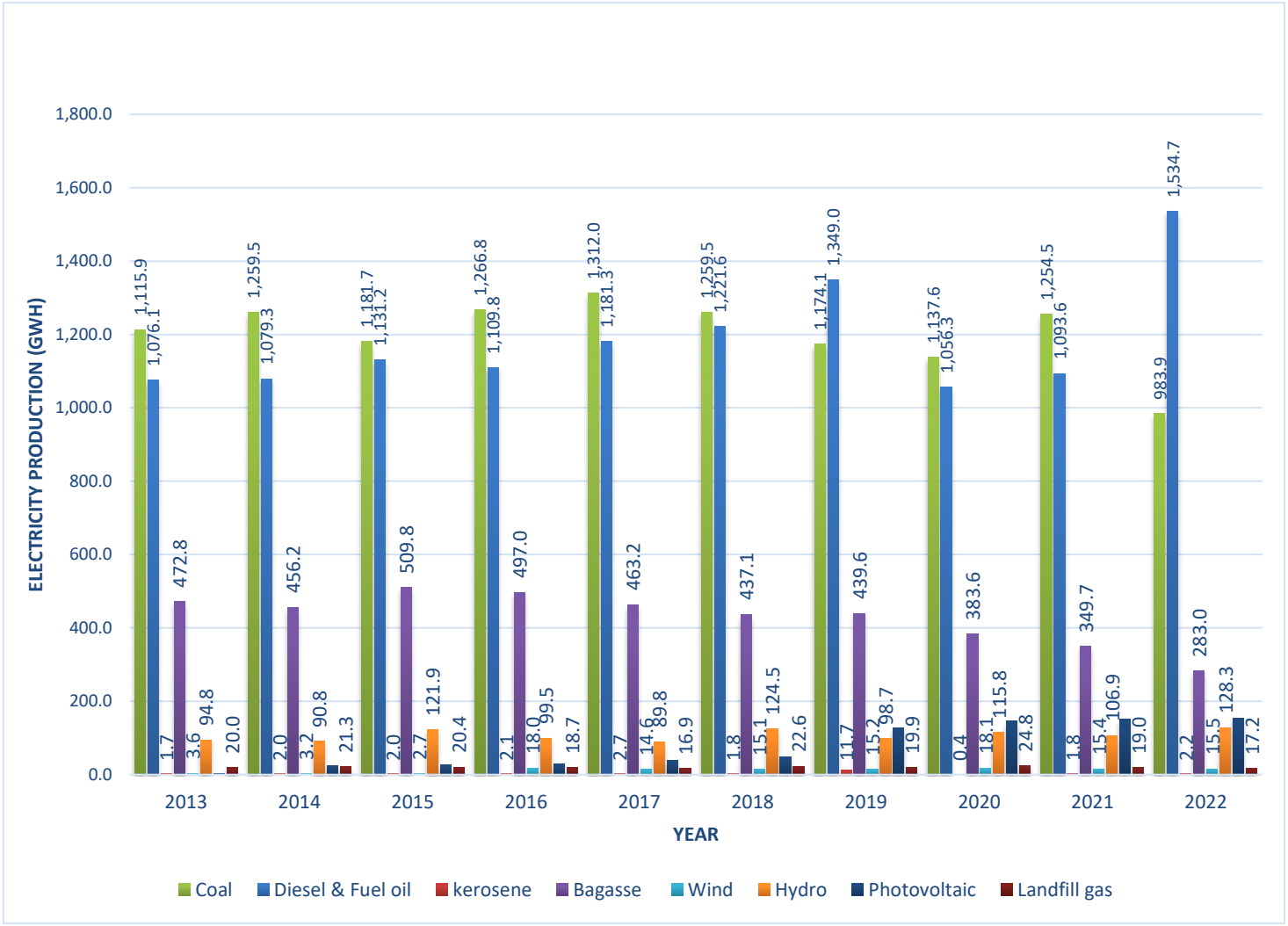
2021	Fuel input	Electricity production		Overall conversion efficiency
	ktoe	GWh	ktoe	%
Coal	431.0	1,254.5	107.9	25.0
Diesel & Fuel Oil (Island of Mauritius)	204.7	1,050.7	90.4	44.2
Diesel & Fuel Oil (Island of Rodrigues	9.5	42.9	3.7	38.8
Kerosene	0.7	1.8	0.2	23.9
Bagasse	127.6	349.7	30.1	23.6
TOTAL	**773.4**	**2,699.6**	**232.3**	**32.1**

Data Source: Statistics Mauritius

Table 3. 4- Conversion efficiency of power plants (2022)

2022	Fuel input	Electricity production		Overall conversion efficiency
	ktoe	GWh	ktoe	%
Coal	342.8	983.9	84.6	24.7%
Diesel & Fuel Oil (Island of Mauritius)	285.0	1491.6	128.3	45.0%
Diesel & Fuel Oil (Island of Rodrigues	9.5	43.1	3.7	39.2%
Kerosene	0.8	2.2	0.2	23.3%
Bagasse	109.5	283.0	24.3	22.2%
TOTAL	**765.3**	**3076.1**	**264.5**	**34.6%**

Figure 3.5 shows the trend of electricity production per source of energy over the period 2013 to 2022.



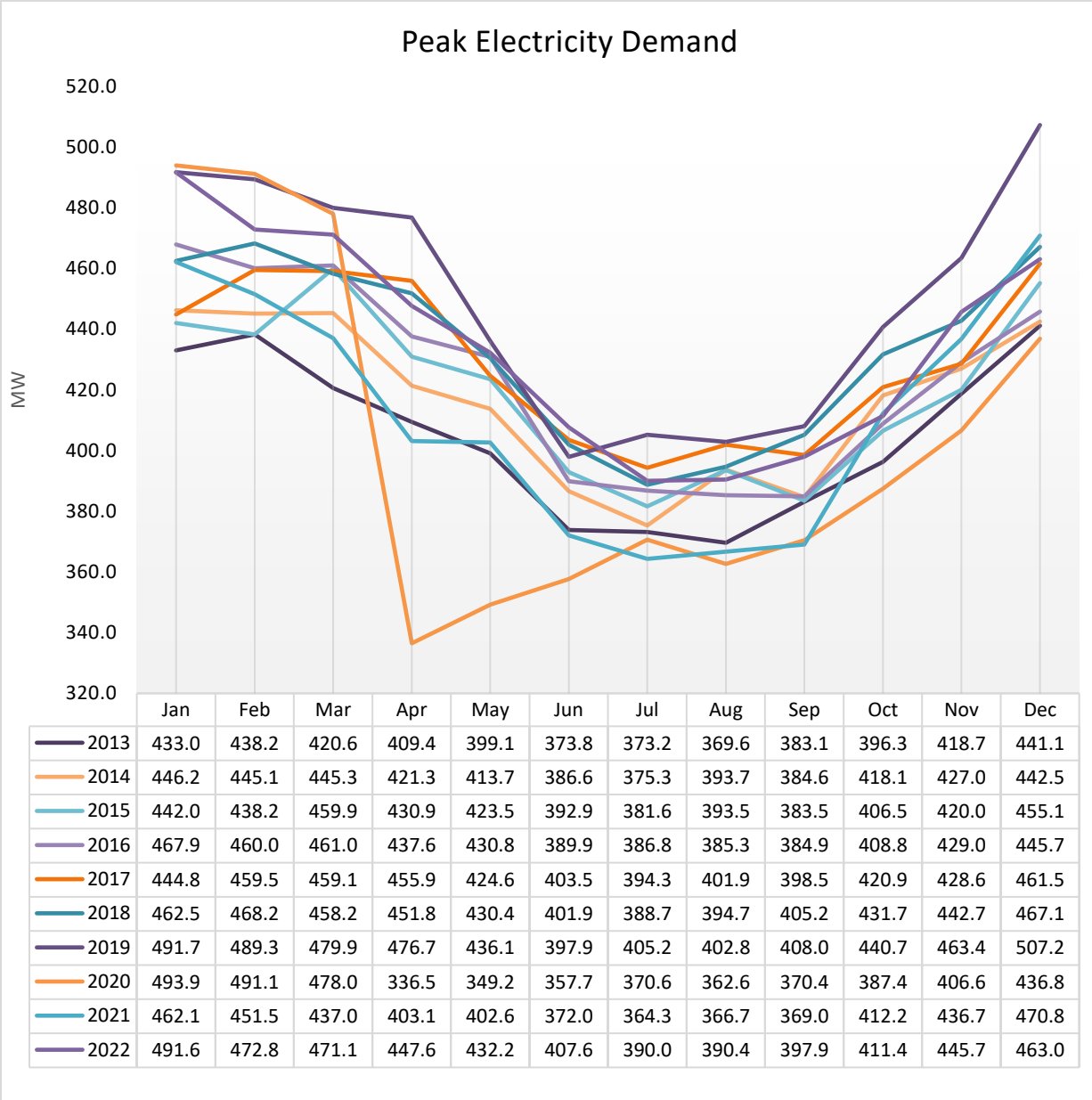
Data Source: Statistics Mauritius

Figure 3. 5- Trend of electricity production, 2013 – 2022

Total electricity production increased by 3.8 % in 2021 compared to 2020. In 2021, 78.5% of electricity production was derived from fossil fuel sources while 21.5% of electricity production was from renewable energy sources. This is due to an increase in electricity production from photovoltaic from 145.7 GWh in 2020 to 151.3 GWh in 2021 .

The total electricity production increased by 4.2% in 2022 as compared to 2021. In In 2022, 80.8% of electricity was derived from fossil fuel sources while 19.2% of electricity production was from renewable energy sources.

Figure 3.6 shows the monthly peak electricity demand for the years 2013 – 2022 (Island of Mauritius).



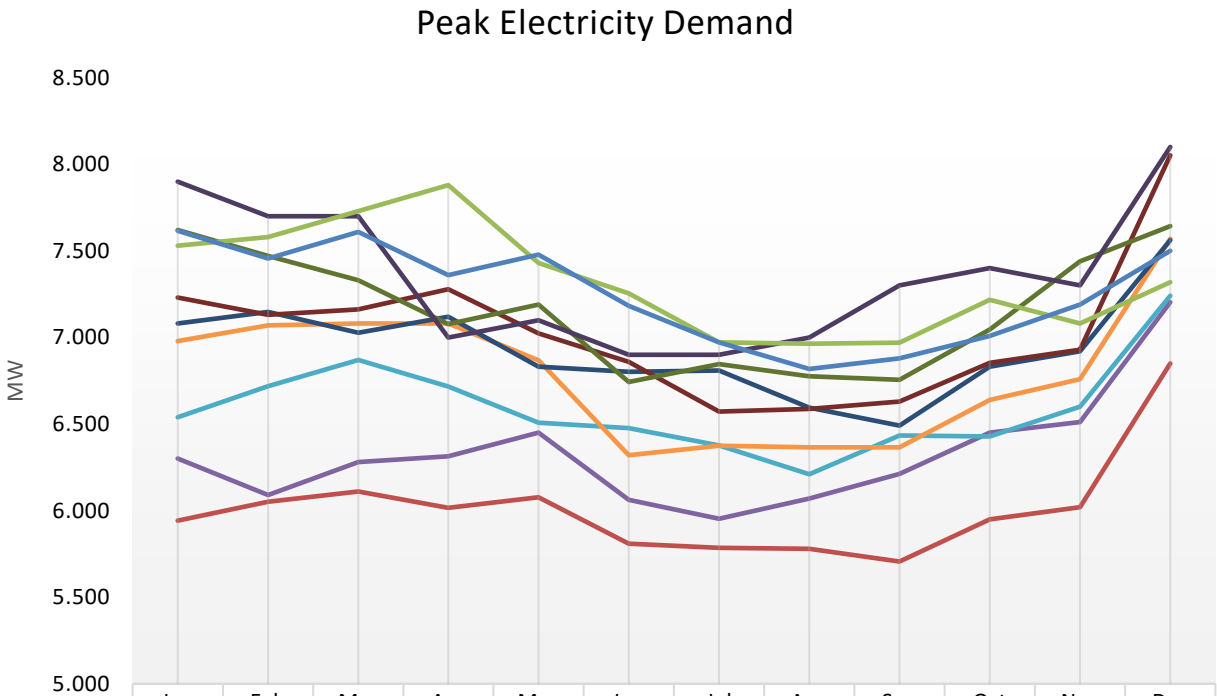
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2013	433.0	438.2	420.6	409.4	399.1	373.8	373.2	369.6	383.1	396.3	418.7	441.1
2014	446.2	445.1	445.3	421.3	413.7	386.6	375.3	393.7	384.6	418.1	427.0	442.5
2015	442.0	438.2	459.9	430.9	423.5	392.9	381.6	393.5	383.5	406.5	420.0	455.1
2016	467.9	460.0	461.0	437.6	430.8	389.9	386.8	385.3	384.9	408.8	429.0	445.7
2017	444.8	459.5	459.1	455.9	424.6	403.5	394.3	401.9	398.5	420.9	428.6	461.5
2018	462.5	468.2	458.2	451.8	430.4	401.9	388.7	394.7	405.2	431.7	442.7	467.1
2019	491.7	489.3	479.9	476.7	436.1	397.9	405.2	402.8	408.0	440.7	463.4	507.2
2020	493.9	491.1	478.0	336.5	349.2	357.7	370.6	362.6	370.4	387.4	406.6	436.8
2021	462.1	451.5	437.0	403.1	402.6	372.0	364.3	366.7	369.0	412.2	436.7	470.8
2022	491.6	472.8	471.1	447.6	432.2	407.6	390.0	390.4	397.9	411.4	445.7	463.0

Data Source: Statistics Mauritius

Figure 3. 6– Peak Electricity Demand (Island of Mauritius), 2013 – 2022

In 2021, peak power demand varied between 366.7 MW and 470.8 MW for the Island of Mauritius. The peak for the year 2021, i.e 470.8 MW, occurred in December 2021. For the year 2022, the peak demand was 491.6 MW and it occurred in January 2022.

Figure 3.7 shows the monthly peak electricity demand for the years 2013 to 2022 (Island of Rodrigues).

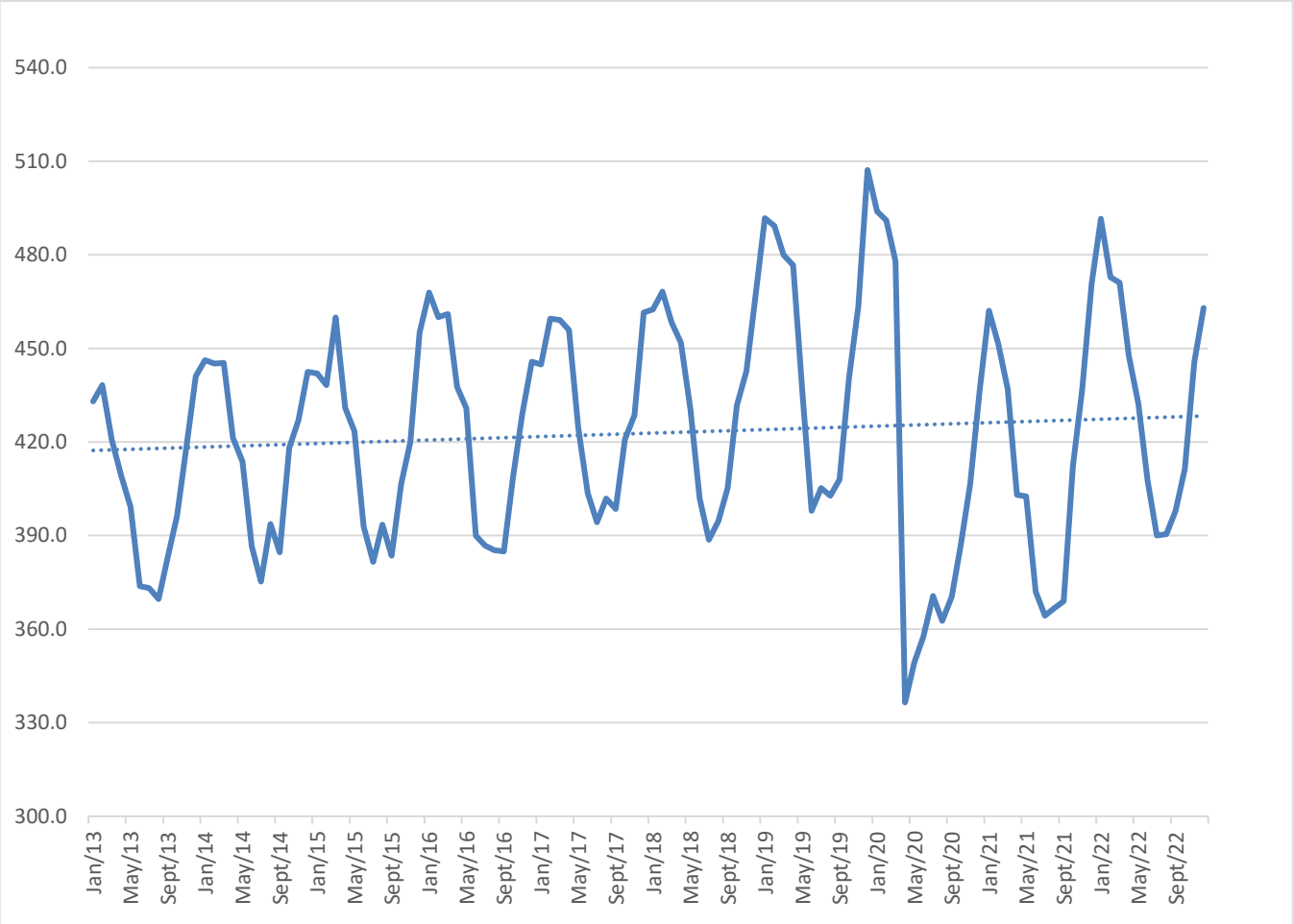


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2013	5.943	6.052	6.110	6.016	6.078	5.810	5.785	5.780	5.706	5.950	6.020	6.850
2014	6.300	6.090	6.280	6.314	6.450	6.062	5.953	6.070	6.212	6.450	6.512	7.204
2015	6.540	6.719	6.870	6.716	6.507	6.477	6.376	6.210	6.433	6.429	6.600	7.241
2016	6.980	7.070	7.080	7.080	6.868	6.320	6.374	6.366	6.366	6.639	6.760	7.570
2017	7.081	7.148	7.028	7.120	6.832	6.802	6.810	6.595	6.491	6.832	6.920	7.562
2018	7.230	7.130	7.163	7.278	7.023	6.859	6.572	6.588	6.629	6.854	6.930	8.052
2019	7.620	7.470	7.330	7.078	7.190	6.743	6.846	6.776	6.755	7.045	7.440	7.643
2020	7.900	7.700	7.700	7.000	7.100	6.900	6.900	7.000	7.300	7.400	7.300	8.100
2021	7.530	7.580	7.730	7.880	7.430	7.255	6.971	6.964	6.970	7.217	7.080	7.320
2022	7.616	7.456	7.610	7.360	7.479	7.183	6.972	6.818	6.880	7.009	7.190	7.500

Data Source: Statistics Mauritius

Figure 3. 7 - Peak electricity demand (Island of Rodrigues), 2013 – 2022

In 2021, peak power demand in Island of Rodrigues varied between 6.964 MW and 7.880 MW. Peak demand of 7.880 MW occurred in April. In 2022, the peak power demand varied between 6.818 MW and 7.616 MW with the highest peak occurring in January.

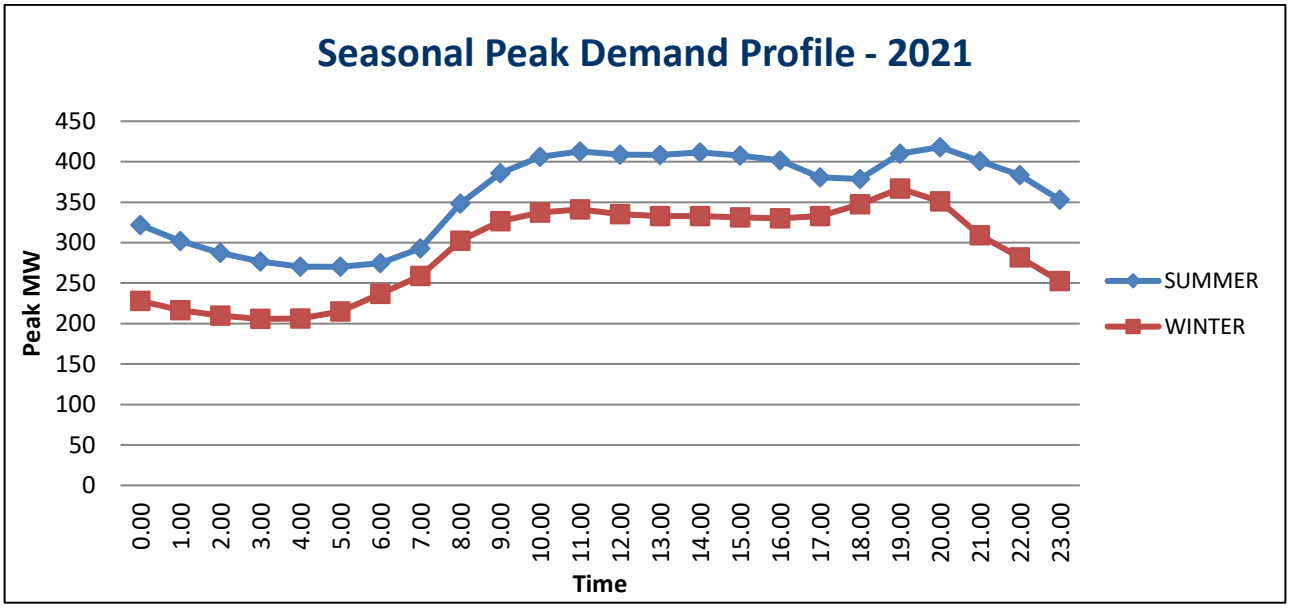


Data Source: Statistics Mauritius

Figure 3.8 - Peak electricity demand - Electricity demand (MW) trend, 2013 to 2022 (Island of Mauritius)

Based on the seasonality in Mauritius, two typical demand profiles namely winter demand profile and summer demand profile are identified. In summer, demand is higher than in winter. This is mainly due to air conditioning loads. However, during the day, the increase in demand is due to the Commercial and Industrial Sectors while the residential sector contributes mainly in the evening.

Figure 3.9 and Figure 3.10 show the hourly seasonal peak demand profile (Island of Mauritius) for the years 2021 and 2022 respectively.



Data Source: CEB

Figure 3.9- Seasonal peak demand profile, 2021

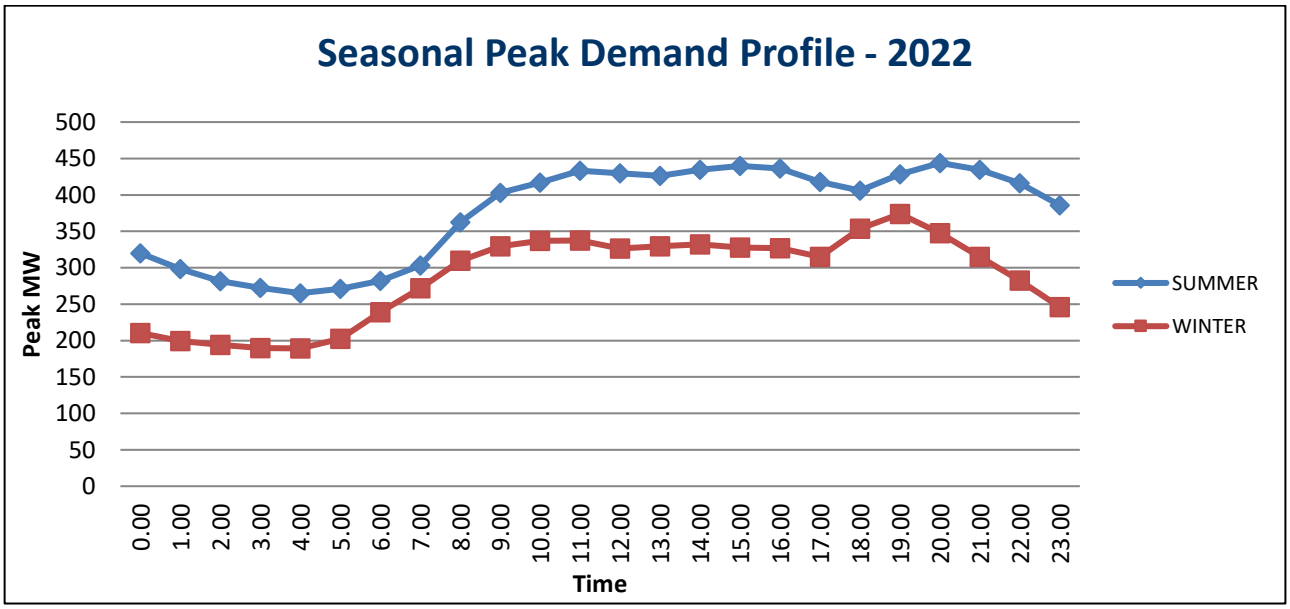


Figure 3.10 – Seasonal Peak Demand Profile, 2022

Table 3.5 provides a summary of the electricity production over the period 2013 to 2022 (Island of Mauritius).

Table 3.5- Summary of electricity production, 2013 – 2022

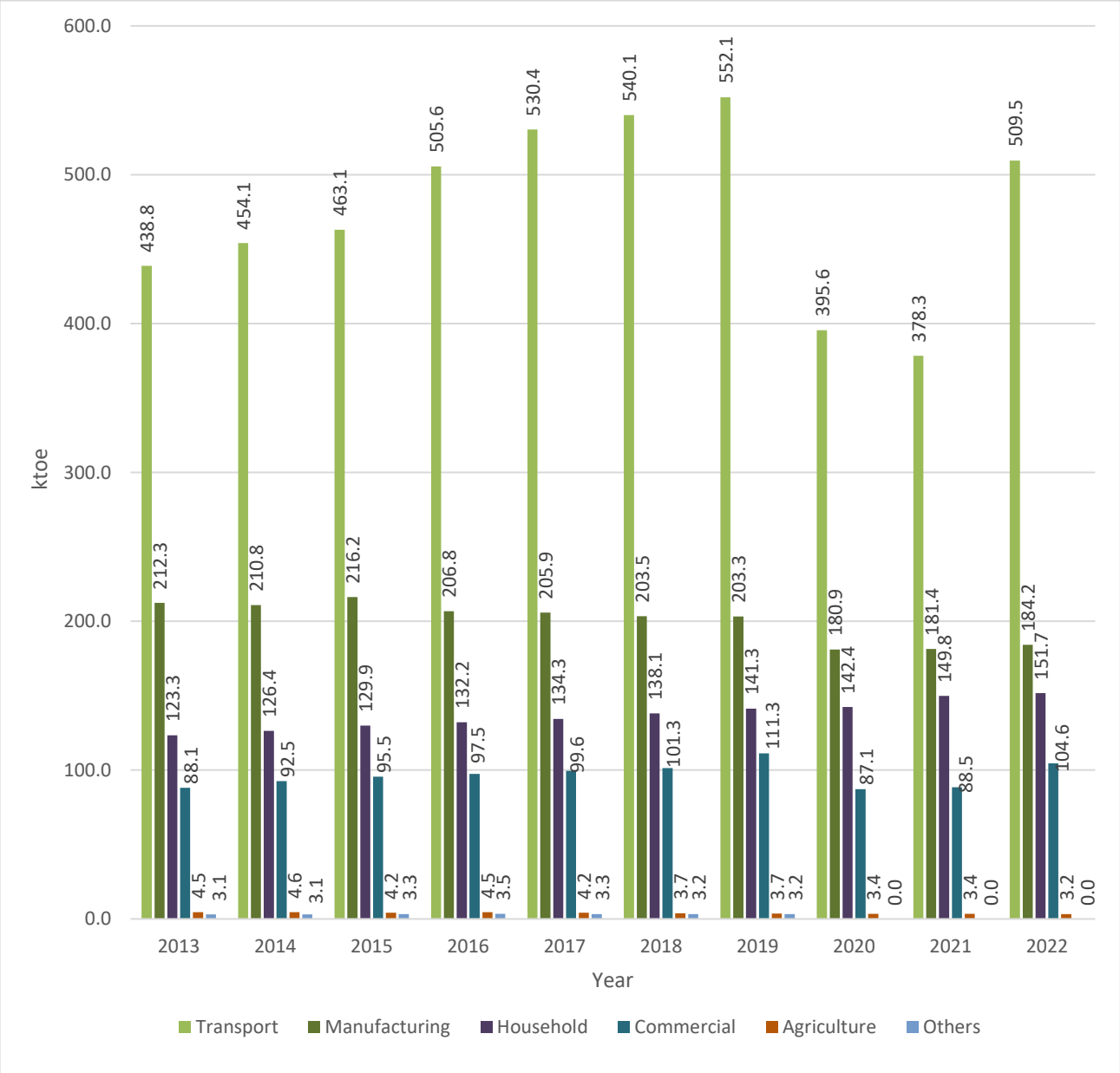
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fossil (GWh)	2,291.3	2,340.8	2,314.9	2,378.7	2,496.0	2,482.9	2,534.8	2,194.4	2,349.9	2,520.8
Renewables (GWh)	594.0	596.2	680.6	663.5	623.7	648.7	701.8	688.0	642.2	598.4
Increase in Electricity Production (GWh)	88.2	51.6	58.7	46.6	77.5	11.9	105.0	-354.3	109.7	127.1
Percentage increase overall	3.1 %	1.8 %	2.0 %	1.5 %	2.5 %	0.4 %	3.2 %	-10.9%	3.8 %	4.2 %
Percentage of renewables	20.6%	20.3%	22.7%	21.8%	20.0 %	20.7%	21.7%	23.9%	21.5%	19.2%
Peak demand (MW) (Island of Mauritius)	441.1	446.2	459.9	467.9	461.5	468.2	507.2	493.9	470.8	491.6
Peak demand evolution	2.6 %	1.2 %	3.1 %	1.7 %	-1.4%	1.5 %	8.3 %	-2.6%	-4.6 %	4.4 %

Data Source: Statistics Mauritius

Chapter 4 - FINAL ENERGY CONSUMPTION

4.1 General

Final energy consumption describes consumption of end users, excluding energy used for electricity generation and losses in the energy transfer matrix. Figure 4.1 shows the final energy consumption on a sector basis, for the period 2012 to 2023. The total final energy consumption in 2021 and 2022 amounted to 801.5 ktoe and 953.2 ktoe. As can be seen in Figure 4.1, a decrease in final energy consumption has been observed in the transport sector in 2021. However, a slight increase in final energy consumption is observed for the manufacturing, household and commercial sector.



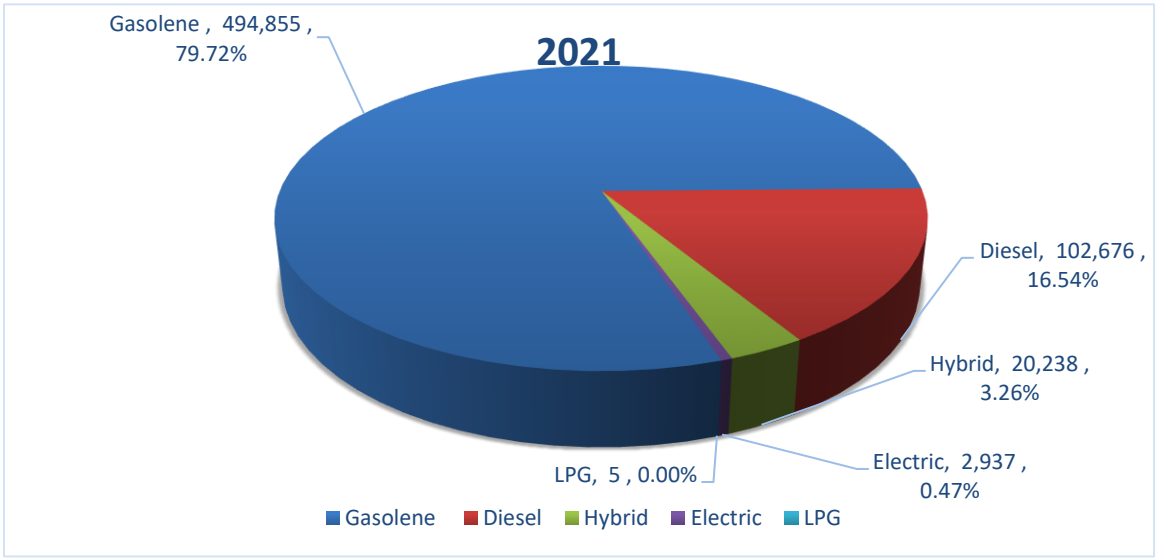
Data Source: Statistics Mauritius

Figure 4. 1 - Final energy consumption by sector, 2013 – 2022

4.2 Final Energy consumption - Transport sector

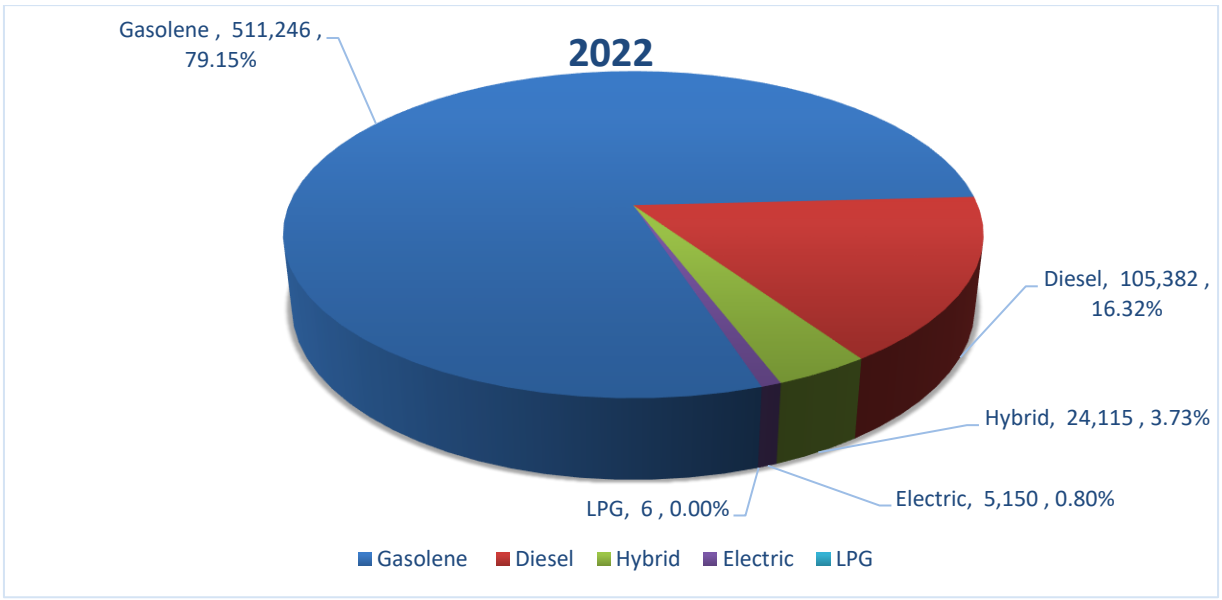
4.2.1 Vehicle fleet

The fleet of powered vehicles for Mauritius, excluding Metro Express and trailers, comprised 620,711 vehicles in 2021 and 645,889 in 2022, with the share of fuel type as given in Figure 4.2 and figure 4.3.



Data Source: National Transport Authority

Figure 4. 2- Vehicle fleet by type of fuel in 2021



Data Source: National Transport Authority

Figure 4. 3 - Vehicle fleet by type of fuel in 2022

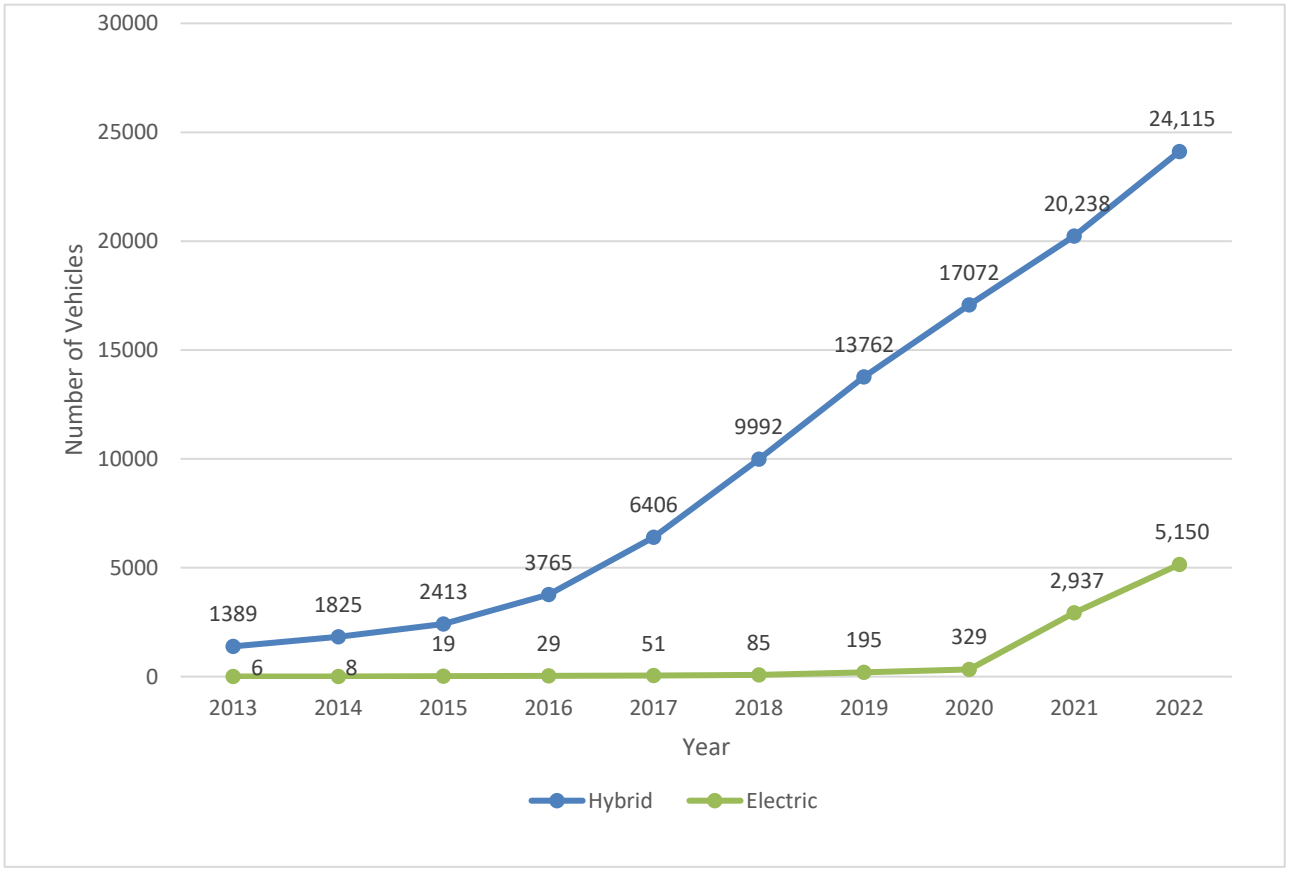
Table 4.1 below, gives the number of hybrid (petrol/electric) and electric vehciles as from 2013 to 2022.

Table 4. 1 – Hybrid and Electric Vehicles , 2013 - 2022

Vehicles Registered	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Hyrbid	1389	1825	2413	3765	6406	9992	13762	17072	20,238	24,115
Electric	6	8	19	29	51	85	195	329	2,937	5,150

As indicated in Table 4.1, the number of hybrid (petrol/electric) vehicles grew by 18.5% in 2021 compared to 2020, followed by an additional 19.2% increase in 2022 compared to 2021.

The number of Electric Vehicles saw a remarkable 792% rise in 2021 compared to 2020, with a further 75.3% increase in 2022 compared to 2021. Figure 4.3 shows a graphical illustration of the increase.



Data Source: National Transport Authority

Figure 4. 4– Trend in EV and Hybrid Vehicles (2013 – 2022)

4.2.2 Fuel Consumption

Table 4.2 and 4.3 gives the fuel consumption in the sub-sectors of the transport sector in 2021 and 2022. There has been a notable increase of 36.7% in 2022 as compared to 2021.

Table 4. 2- Fuel consumption (ktoe) in the transport sector, 2021

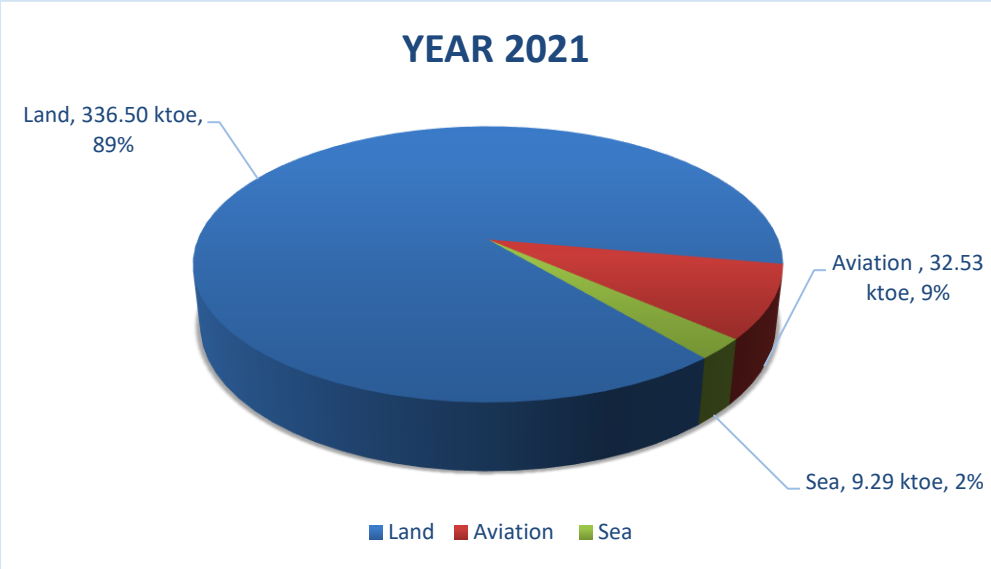
Transport sector	Gasolene	Diesel	Aviation fuel (local aircraft)	LPG	Fuel Oil	Electricity (Metro Express)	Total (ktoe)
Land	176.15 ktoe	157.52 ktoe		2.83 ktoe		0.38 ktoe	336.93 ktoe
Aviation			32.53 ktoe				32.53 ktoe
Sea	4.33 ktoe	1.52 ktoe			3.44 ktoe		9.29 ktoe
Total (ktoe)	180.48 ktoe	159.04 ktoe	32.53 ktoe	2.83 ktoe	3.44 ktoe	0.38 ktoe	378.76 ktoe

Data Source: Statistics Mauritius

Table 4. 3 - Fuel consumption (ktoe) in the transport sector, 2022

Transport sector	Gasolene	Diesel	Aviation fuel (local aircraft)	LPG	Fuel Oil	Electricity (Metro Express)	Total (ktoe)
Land	201.52 ktoe	168.52 ktoe		3.13 ktoe		0.64 ktoe	381.56 ktoe
Aviation			125.56 ktoe				125.56 ktoe
Sea	4.96 ktoe	2.11 ktoe			3.75 ktoe		10.82 ktoe
Total (ktoe)	206.47 ktoe	170.63 ktoe	125.56 ktoe	3.13 ktoe	3.75 ktoe	0.64 ktoe	517.94 ktoe

The share of fuel consumption in the each of the transport sub-sector is shown in figure 4.5 and 4.6 below.



Data Source: Statistics Mauritius

Figure 4.5- Fuel consumption share in sub-sectors of the transport sector in 2021

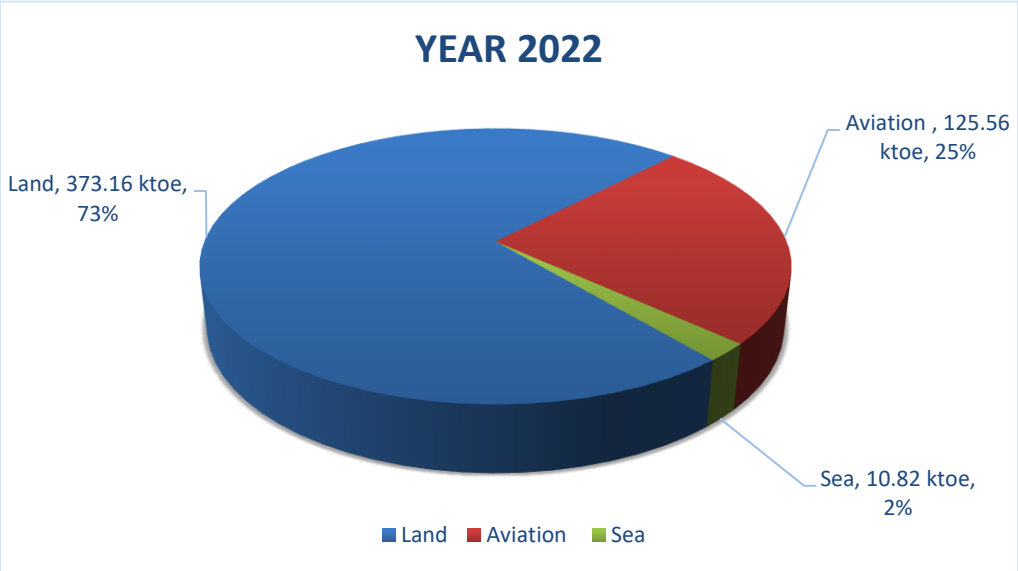
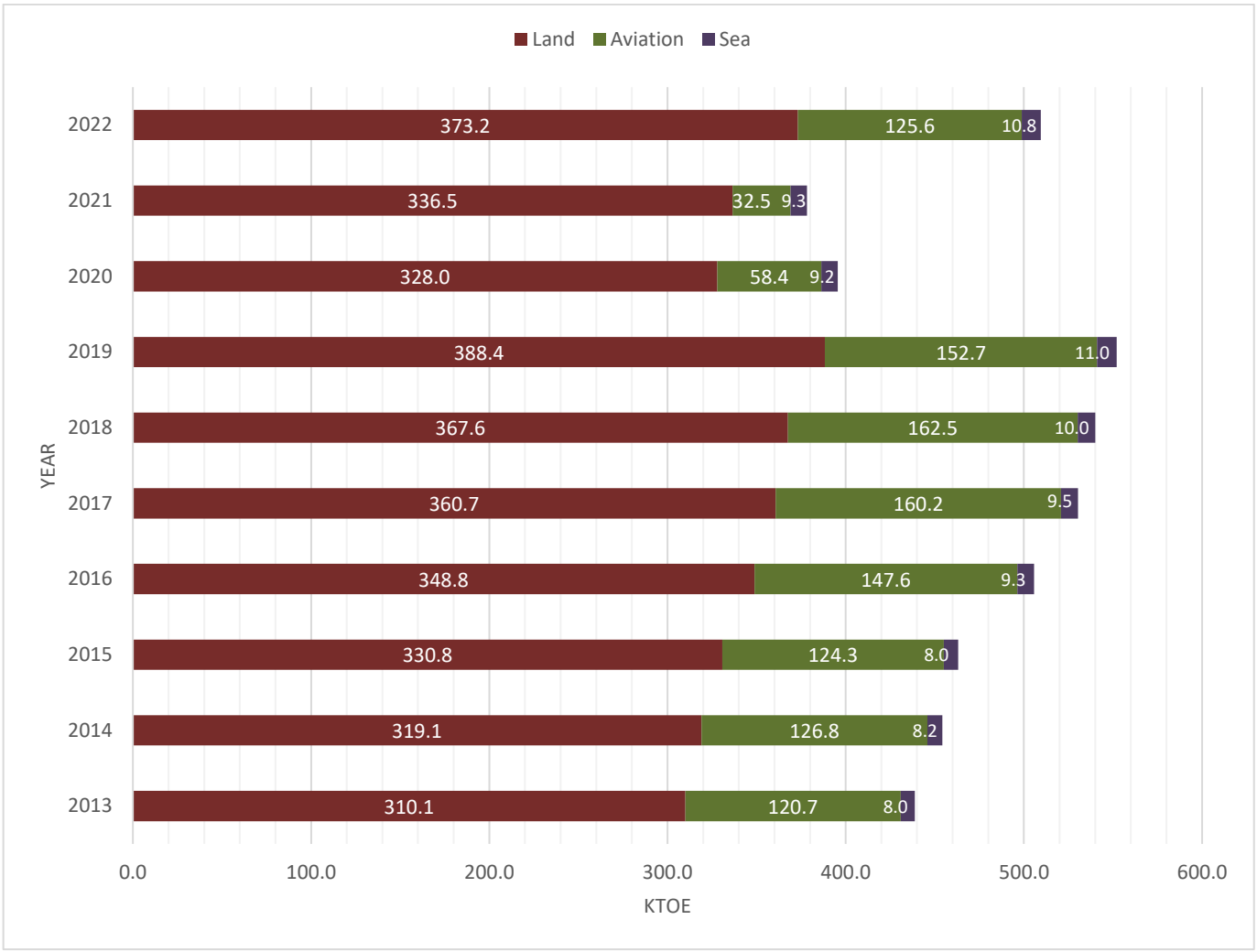


Figure 4. 6 - Fuel consumption share in sub-sectors of the transport sector in 2022

Figure 4.7 shows the trend in each sub sector as from 2013 to 2022.



Data Source: Statistics Mauritius

Figure 4. 7 - Trend of fuel consumption in sub-sectors of transport sector 2013 – 2022

4.2.2.1 Fuel Consumption – Land Sector

The trend of fuel consumption in the land transport sector over the period 2013 to 2022 is shown in Figure 4.8.

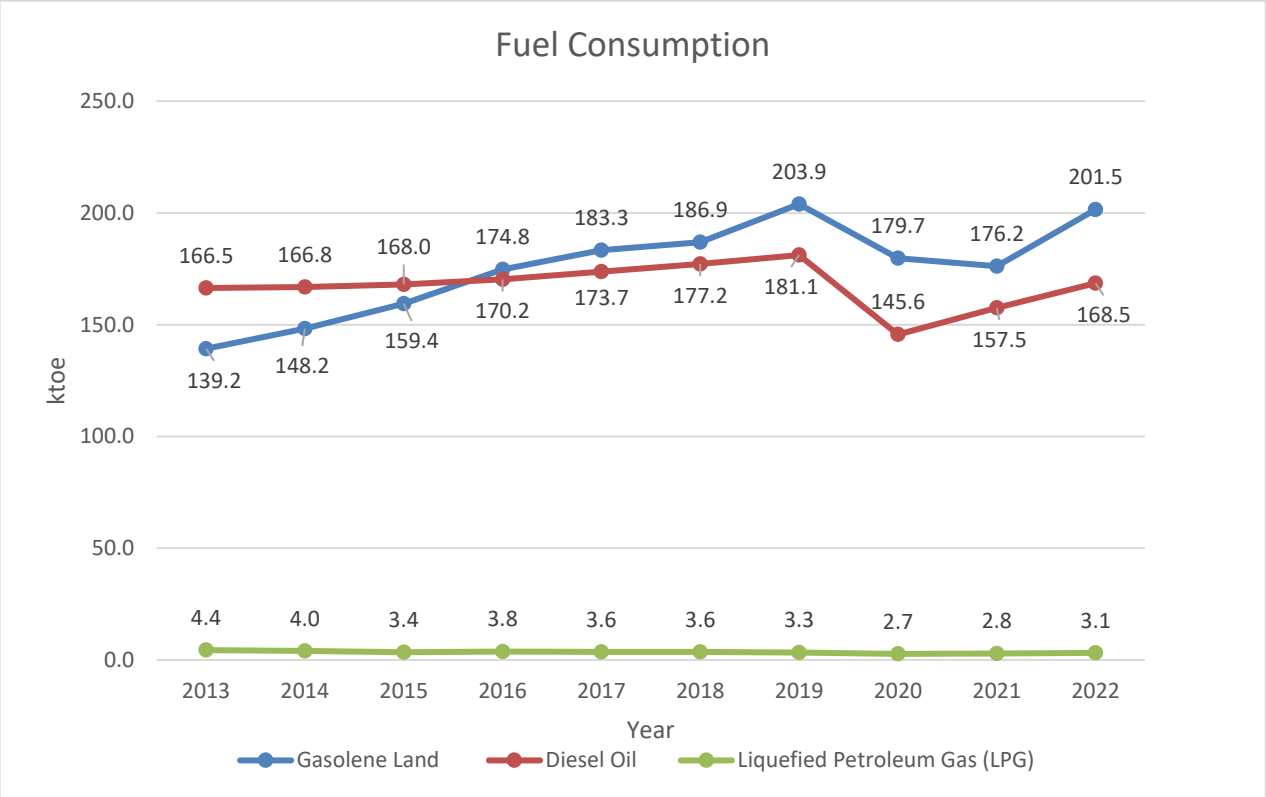
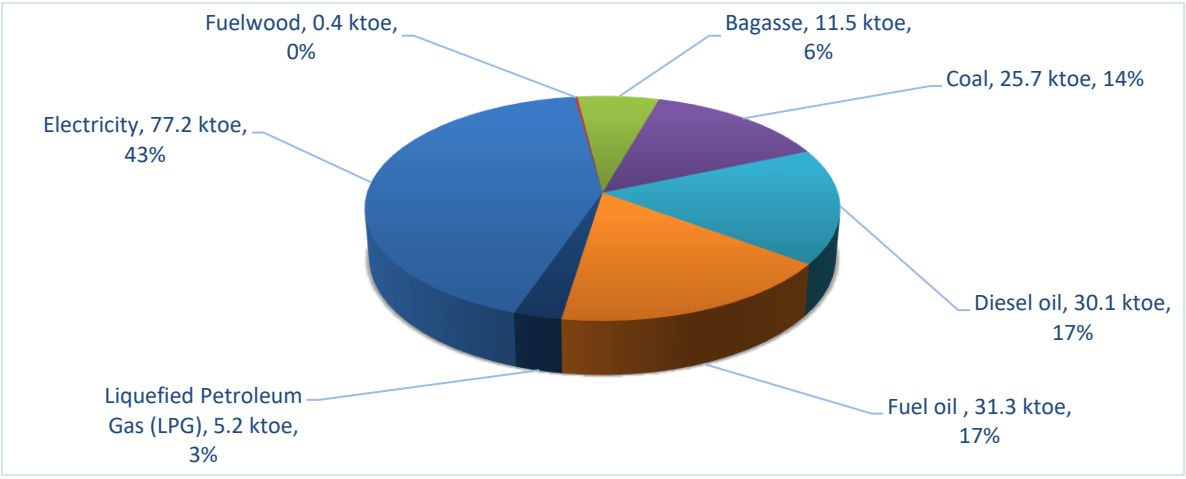


Figure 4. 8 – Tremd of Fuel Consumption Transport Sector (2013 – 2022)

4.3 Final energy consumption - Manufacturing sector

The total energy consumption in the manufacturing sector reached 181.4 ktoe in 2021 and 184.2 ktoe in 2022. This represents a 0.3% increase in 2021 compared to 2020, and a further 1.5% rise in 2022. Figure 4.9 and 4.10 shows the share of different energy sources used in the manufacturing sector in 2021 and 2022. Figure 4.11 provides the trend for the period 2013 to 2022.



Data Source: Statistics Mauritius

Figure 4. 9 - Share of energy sources in the manufacturing sector, 2021

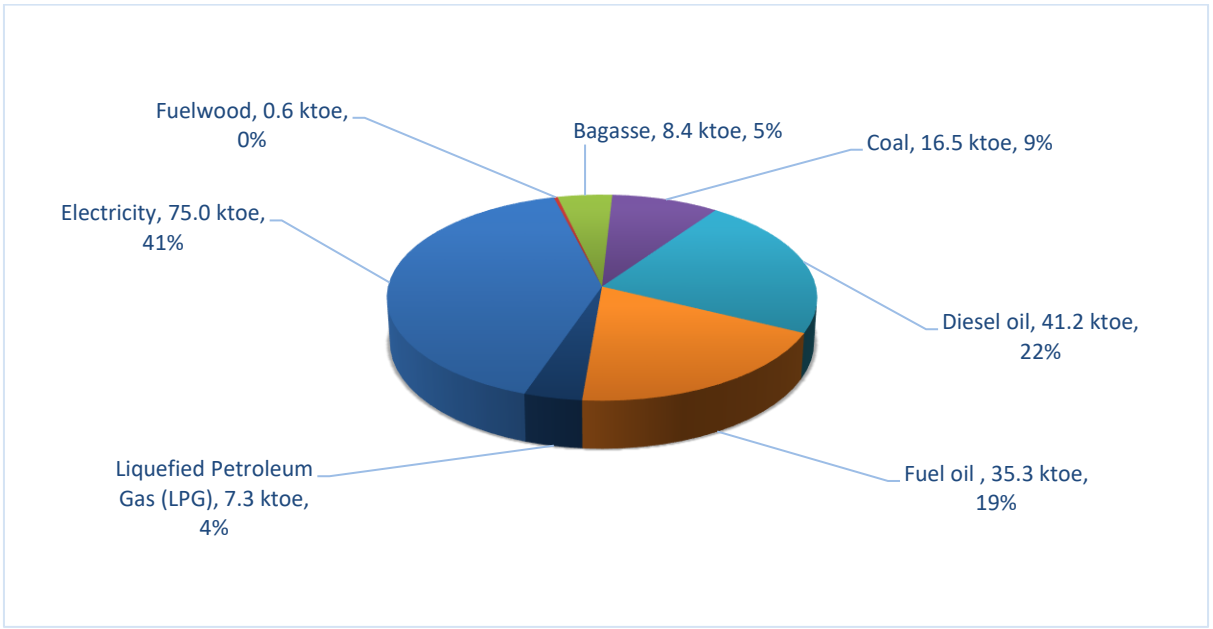
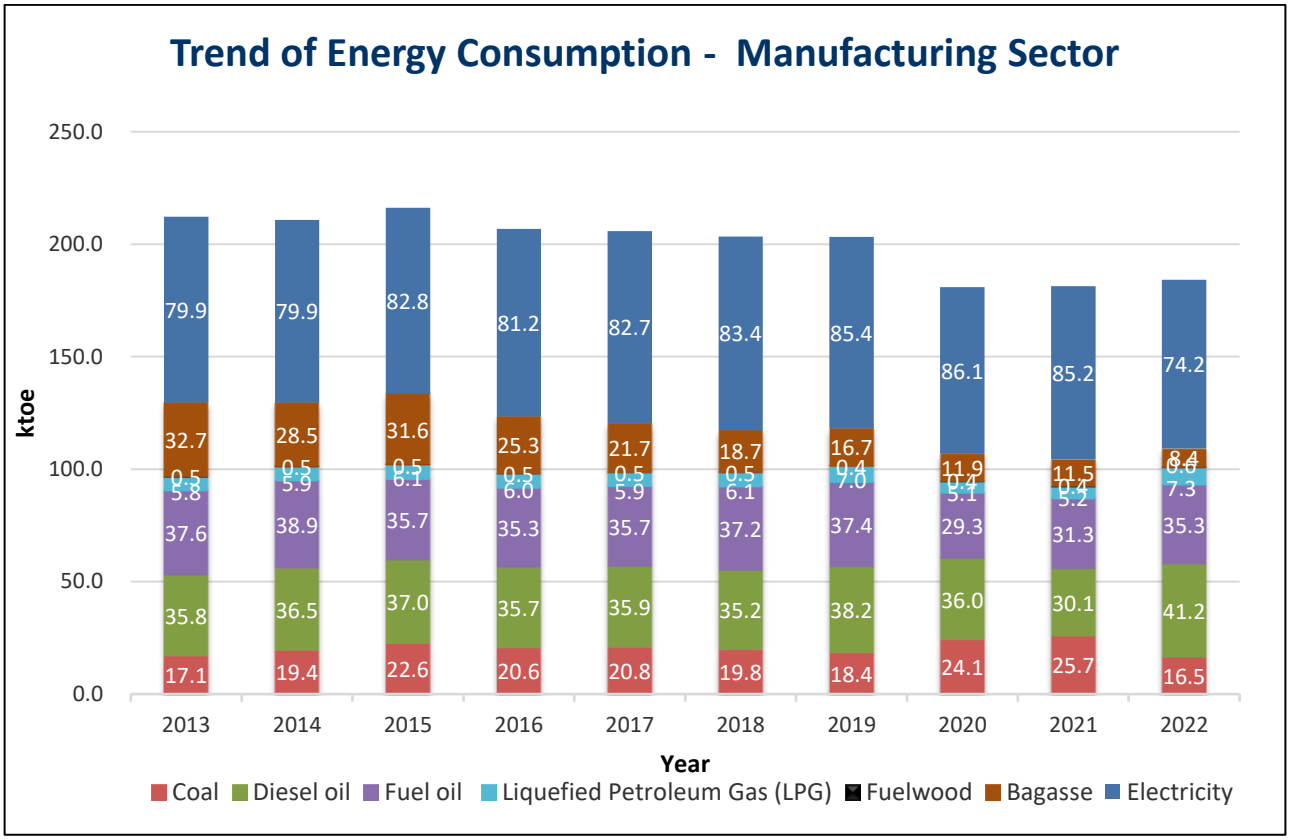


Figure 4. 10 - Share of energy sources in the manufacturing sector, 2022

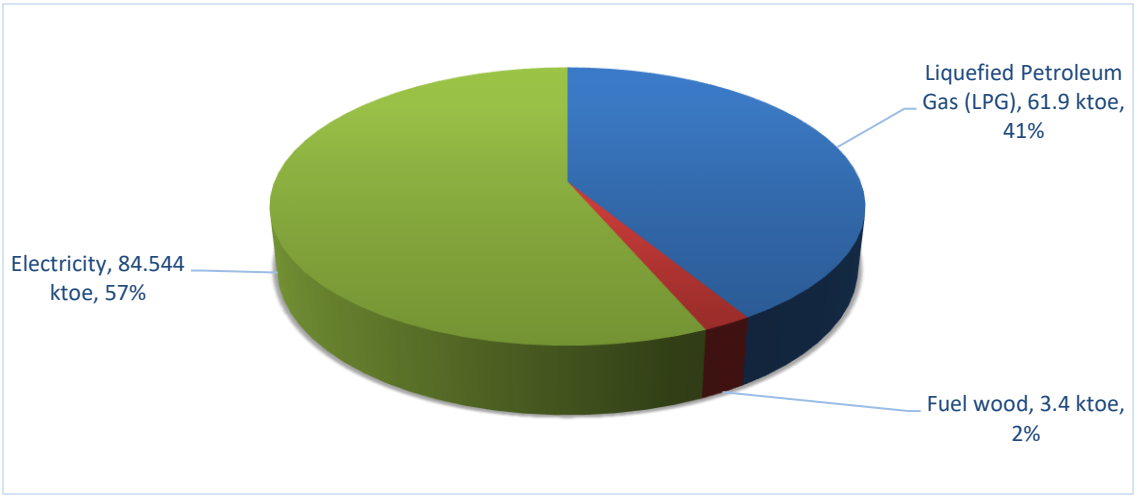


Data Source: Statistics Mauritius

Figure 4. 11 - Trend of energy consumption in the manufacturing sector, 2013 – 2022

4.4 Final energy consumption - Household sector

The total energy consumption in the household sector reached 149.8 ktoe in 2021 and 151.7 ktoe in 2022. This represents a 1.3% increase in 2022 compared to 2021. The share of energy sources in the household sector in 2021 and 2022 is given in Figure 4.12 and 4.13 respectively.



Data Source: Statistics Mauritius

Figure 4. 12 - Share of energy sources,household sector, 2021

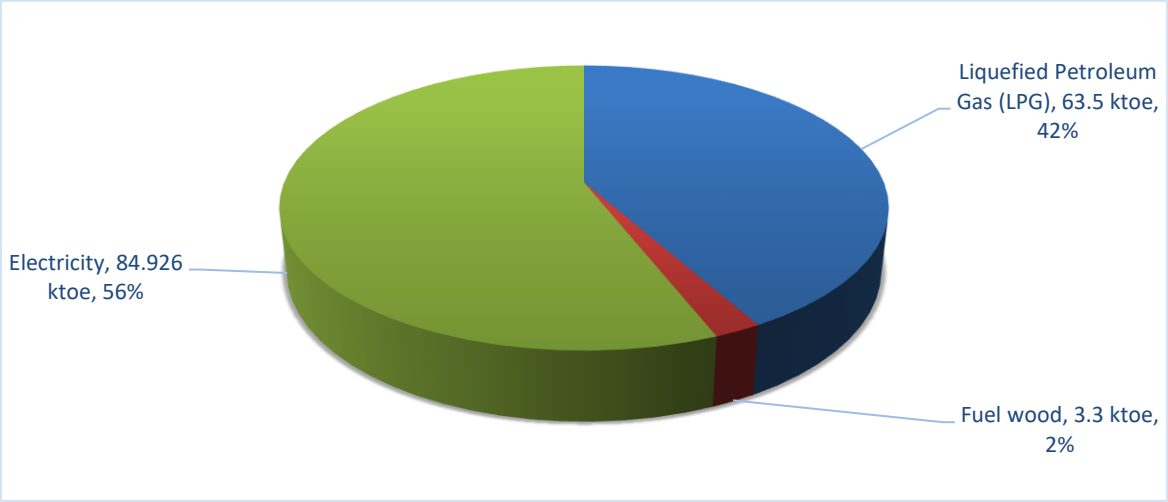
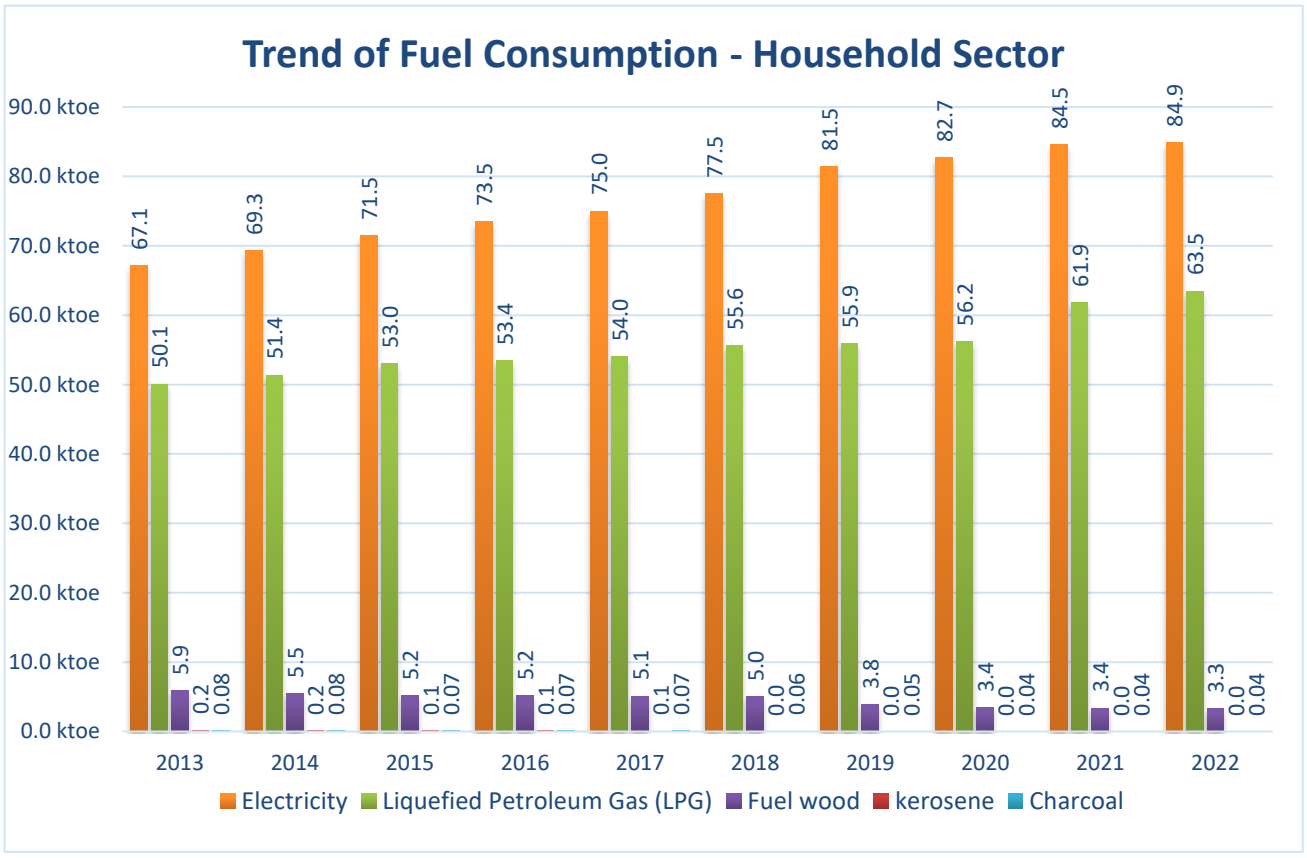


Figure 4. 13 - Share of energy sources,household sector, 2022

As can be seen from Figure 4.12 and 4.13, the main sources of energy for the household sector are LPG and electricity. LPG is used mostly for cooking and water heating. Fuel wood is still in use as cooking fuel albeit insignificant.

The trend of each fuel consumption over the period 2013 to 2022 is shown in Figure 4.14.

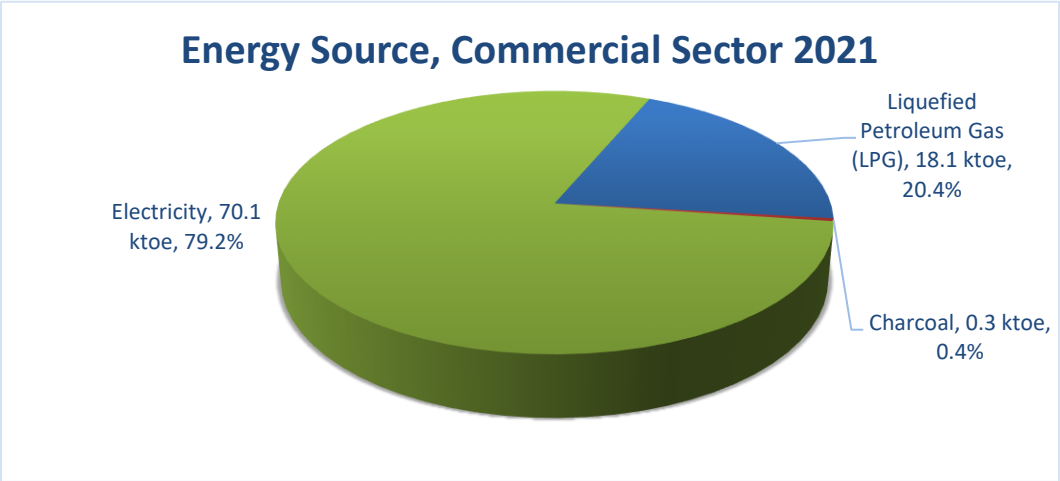


Data Source: Statistics Mauritius

Figure 4. 14- Trend of fuel consumption in the household sector, 2013 – 2022

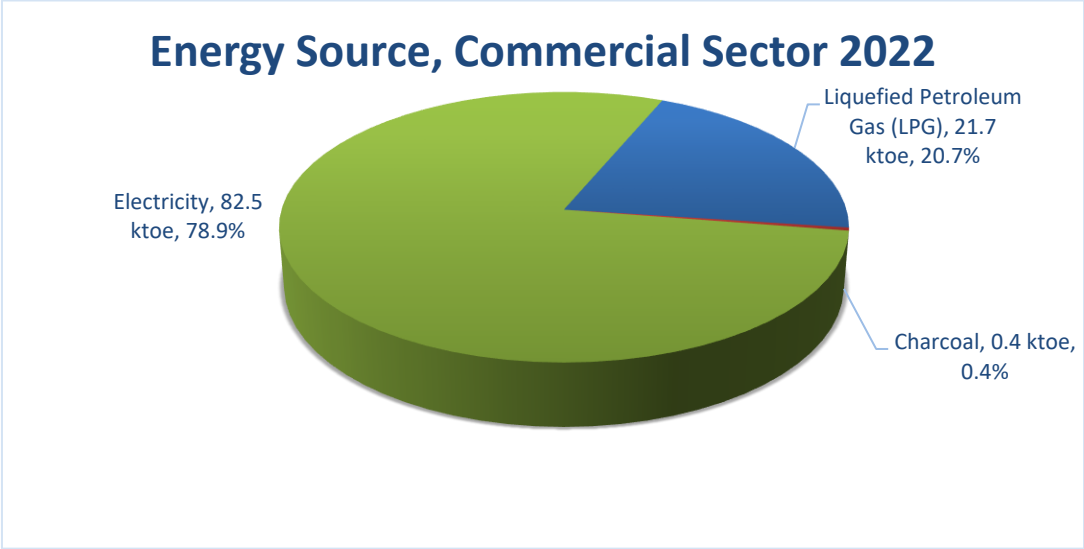
4.5 Final energy consumption - Commercial sector

The total energy consumption in the Commercial sector amounted to 88.5 ktoe in 2021 and 104.6 ktoe in 2022. This represents a 1.6% increase in 2021 compared to 2020, and a further 18.2% rise in 2022. The share of energy sources in 2021 and 2022 is shown in Figure 4.15 and 4.16 , while Figure 4.17 gives the trend of fuel consumption over the period 2013 to 2022.



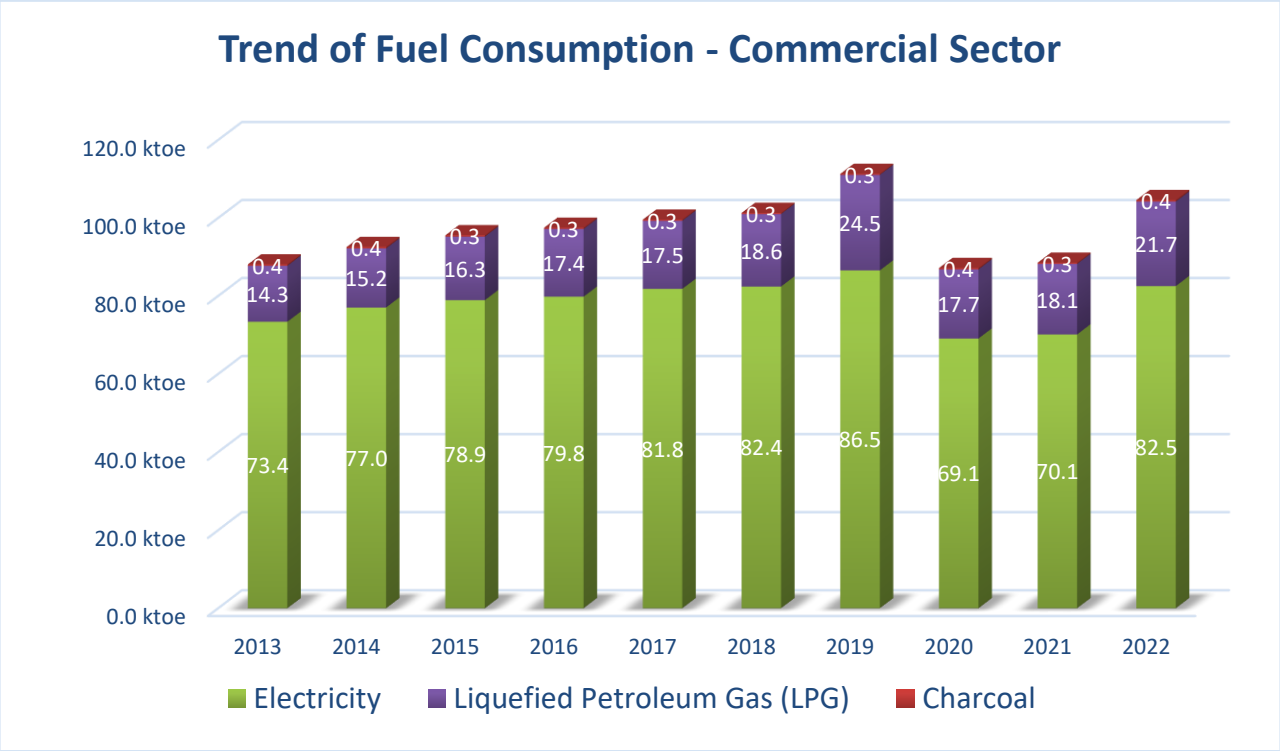
Data Source: Statistics Mauritius

Figure 4. 15 - Share of energy sources in the commercial sector, 2021



Data Source: Statistics Mauritius

Figure 4. 16 - Share of energy sources in the commercial sector, 2022



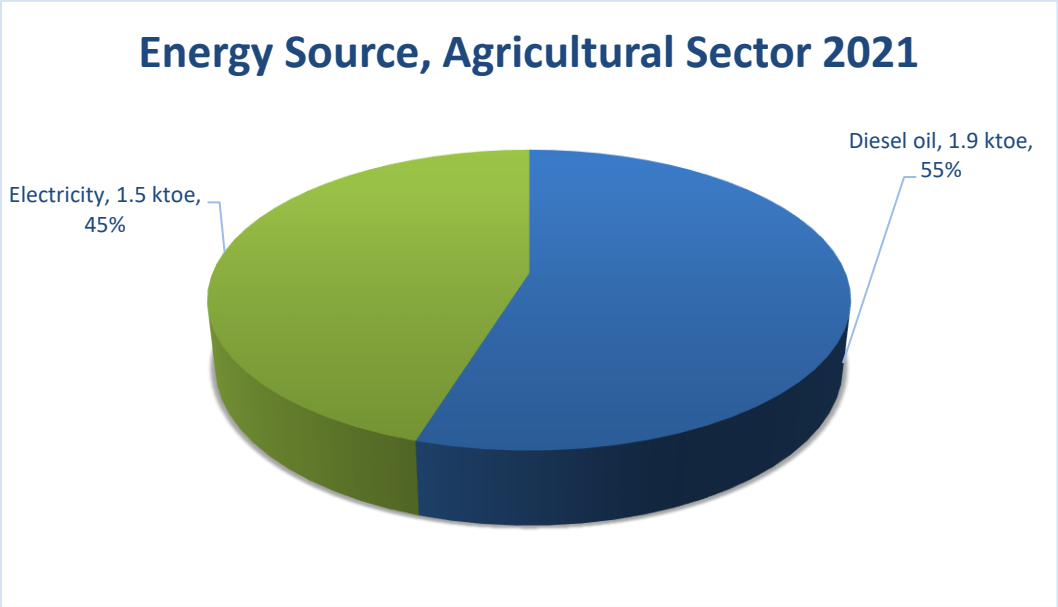
Data Source: Statistics Mauritius

Figure 4. 17- Trend of fuel consumption in the commercial sector, 2013 – 2022

In 2021, electricity consumption in the commercial sector increased by 1.5% compared to 2020, indicating continued expansion in the sector and a further increase of 17.7% in 2022. The main areas of electricity use in this sector are refrigeration, air conditioning and decorative and security lighting.

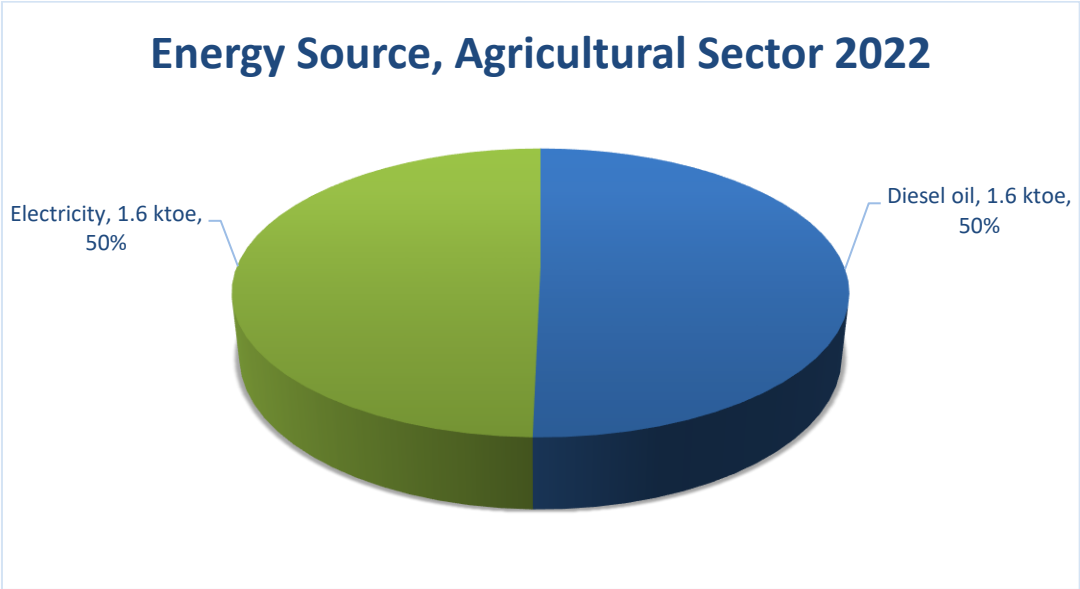
4.6 Final energy consumption - Agricultural sector

Total energy consumption in the agricultural sector amounted to 3.4 ktoe in 2021 and 3.2 ktoe in 2022. The share of energy sources in 2021 and 2022 are shown in Figure 4.18 and 4.19, while Figure 4.20 gives the trend of fuel consumption over the period 2013 to 2022.



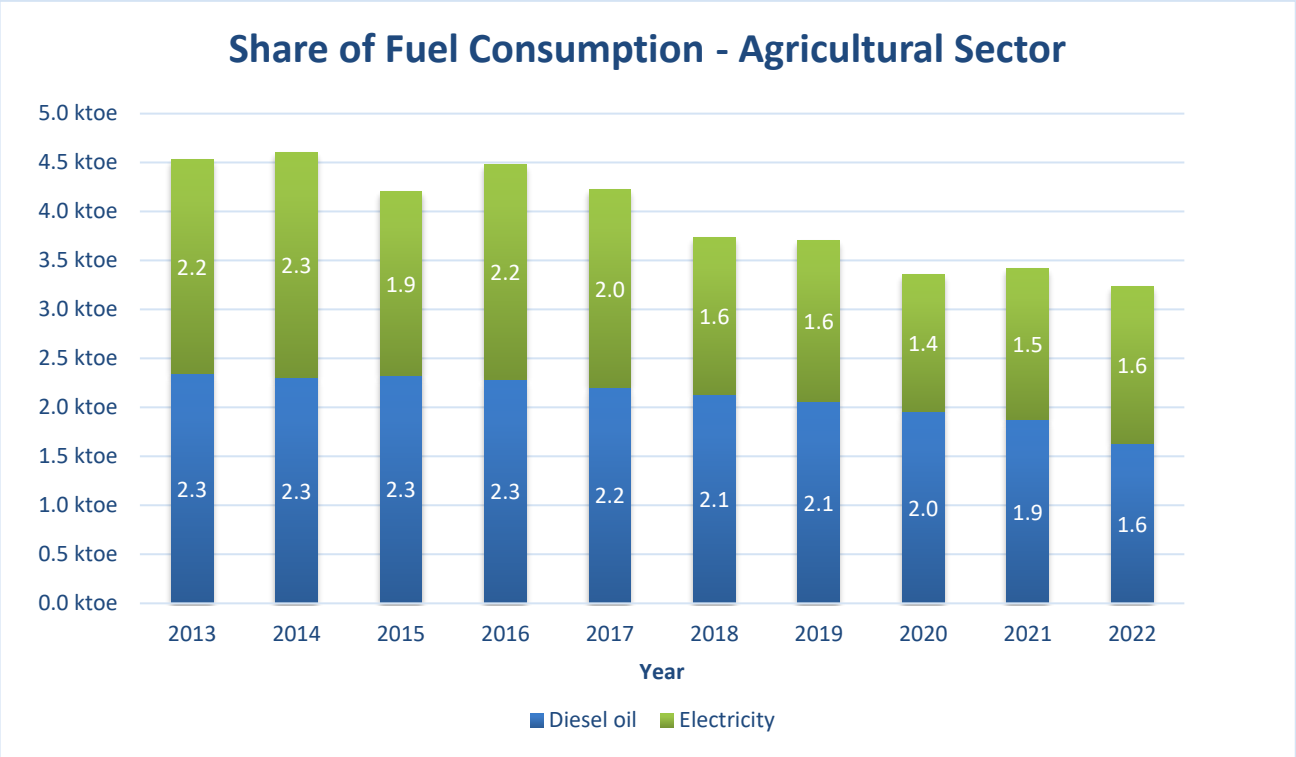
Data Source: Statistics Mauritius

Figure 4. 18 - Share of energy sources in agricultural sector, 2021



Data Source: Statistics Mauritius

Figure 4. 19 - Share of energy sources in agricultural sector, 2022



Data Source: Statistics Mauritius

Figure 4. 20 - Share of fuel consumption in the agricultural sector, 2013 – 2022

4.7 Fossil Fuel consumption

Table 4.4 and 4.5 provides a breakdown of fossil fuel consumption by sector in 2021 and 2022 while Figure 4.21 and 4.22 shows the share of fossil fuel consumption by sector for the year 2021 and 2022.

Table 4. 4- Fossil fuel consumption (ktoe) by sector, 2021

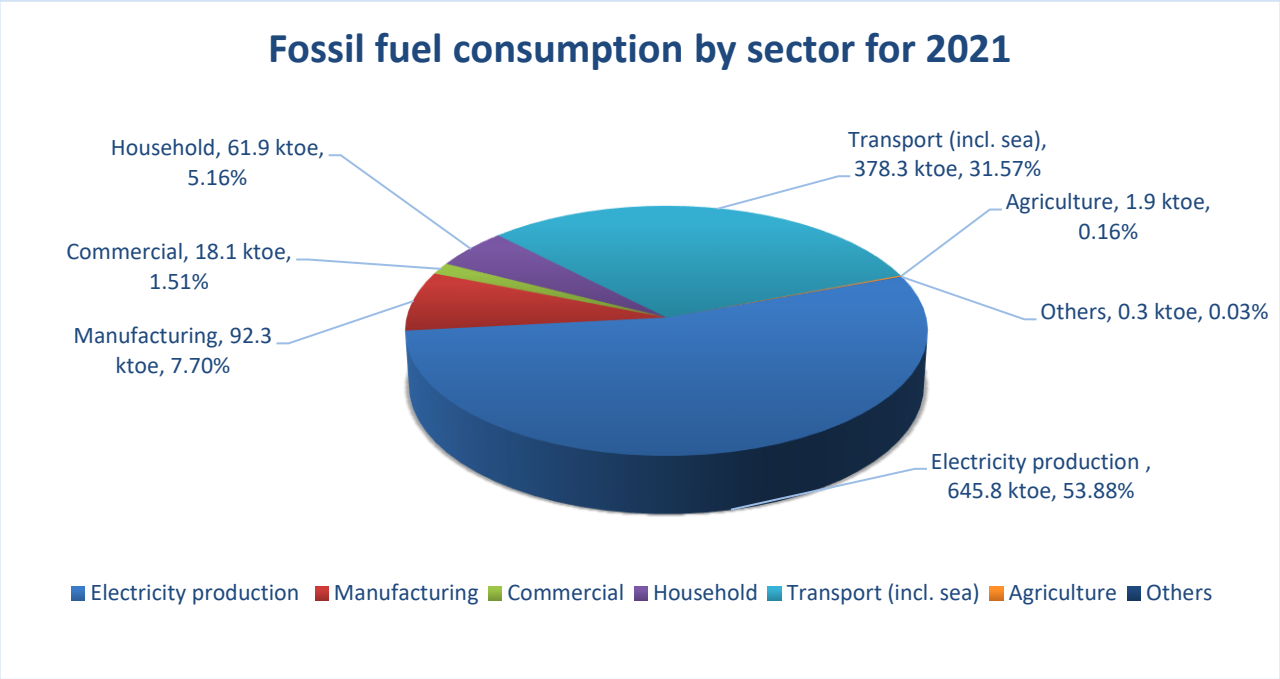
Sector	Coal	Gasolene	Diesel	Aviation fuel	Kerosene	Fuel oil	LPG	Total
Electricity production	431.0	-	0.9	-	0.7	213.2		645.8
Manufacturing	25.7	-	30.1	-	-	31.3	5.2	92.3
Commercial	-	-	-	-	-	-	18.1	18.1
Household	-	-	-	-	0.0	-	61.9	61.9
Transport (incl. sea)	-	180.5	159.0	32.5	-	3.4	2.8	378.3
Agriculture	-	-	1.9	-	-	-	-	1.9
Others	-	-	-	-	-	-	0.3	0.3
Total	**456.7**	**180.5**	**191.9**	**32.5**	**0.7**	**247.9**	**88.3**	**1198.5**

Data Source: Statistics Mauritius

Table 4. 5 - Fossil fuel consumption (ktoe) by sector, 2022

Sector	Coal	Gasolene	Diesel	Aviation fuel	Kerosene	Fuel oil	LPG	Total
Electricity production	342.8	-	0.8	-	0.8	293.6	-	638.1
Manufacturing	16.5	-	41.2	-	-	35.3	7.3	100.3
Commercial	-	-		-	-	-	21.7	21.7
Household	-	-	-	-	0.0	-	63.5	63.5
Transport (incl. sea)	-	206.5	170.6	125.6	-	3.7	3.1	509.5
Agriculture	-	-	1.6	-	-	-	-	1.6
Others	-	-	-	-	-	-	0.8	0.8
Total	**359.3**	**206.5**	**214.3**	**125.6**	**0.8**	**332.6**	**96.4**	**1335.5**

Data Source: Statistics Mauritius



Data Source: Statistics Mauritius

Figure 4. 21 – Share of Fossil Fuel Consumption by Sector, 2021

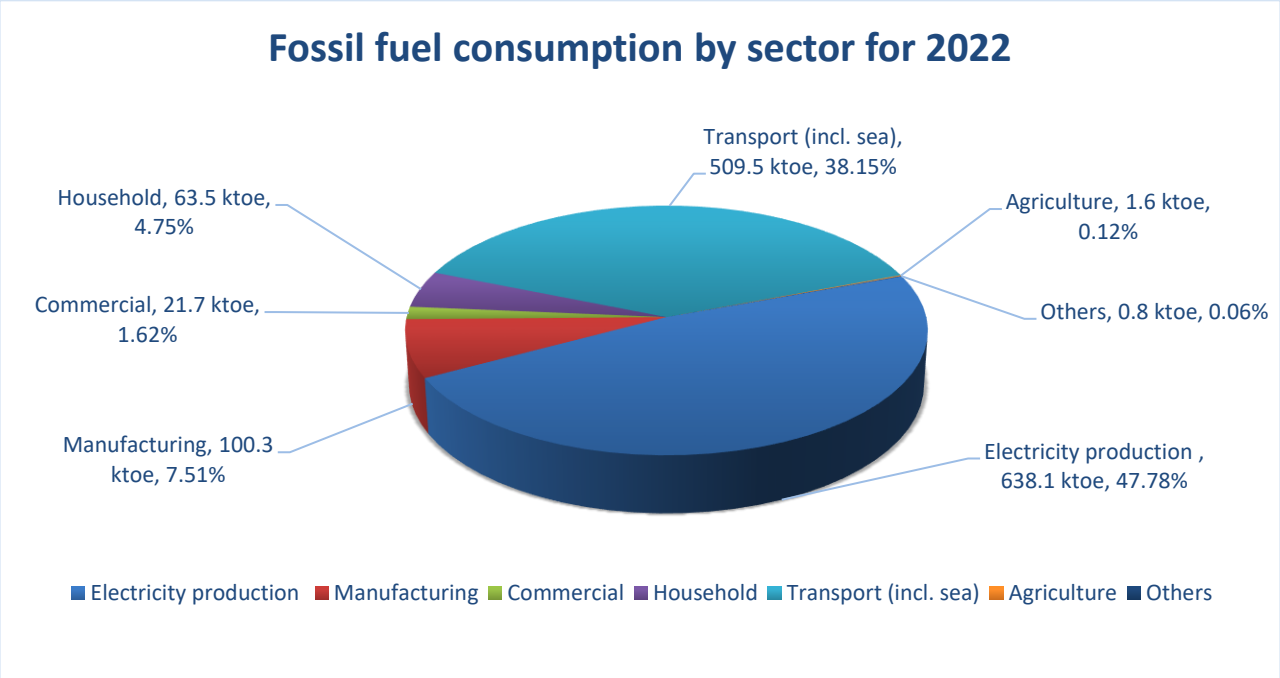


Figure 4. 22 - Share of fossil fuel consumption by sector, 2022

4.8 Sales of Electricity

As shown in Table 4.6, sales of electricity for 2021 amounted to 2,524.3 GWh compared to 2,448.2 GWh in 2020, that is an increase of 3.1 % compared to 2020. In 2022, the sales amounted to 2698.1 Wh, which represents an increase of 6.9%.

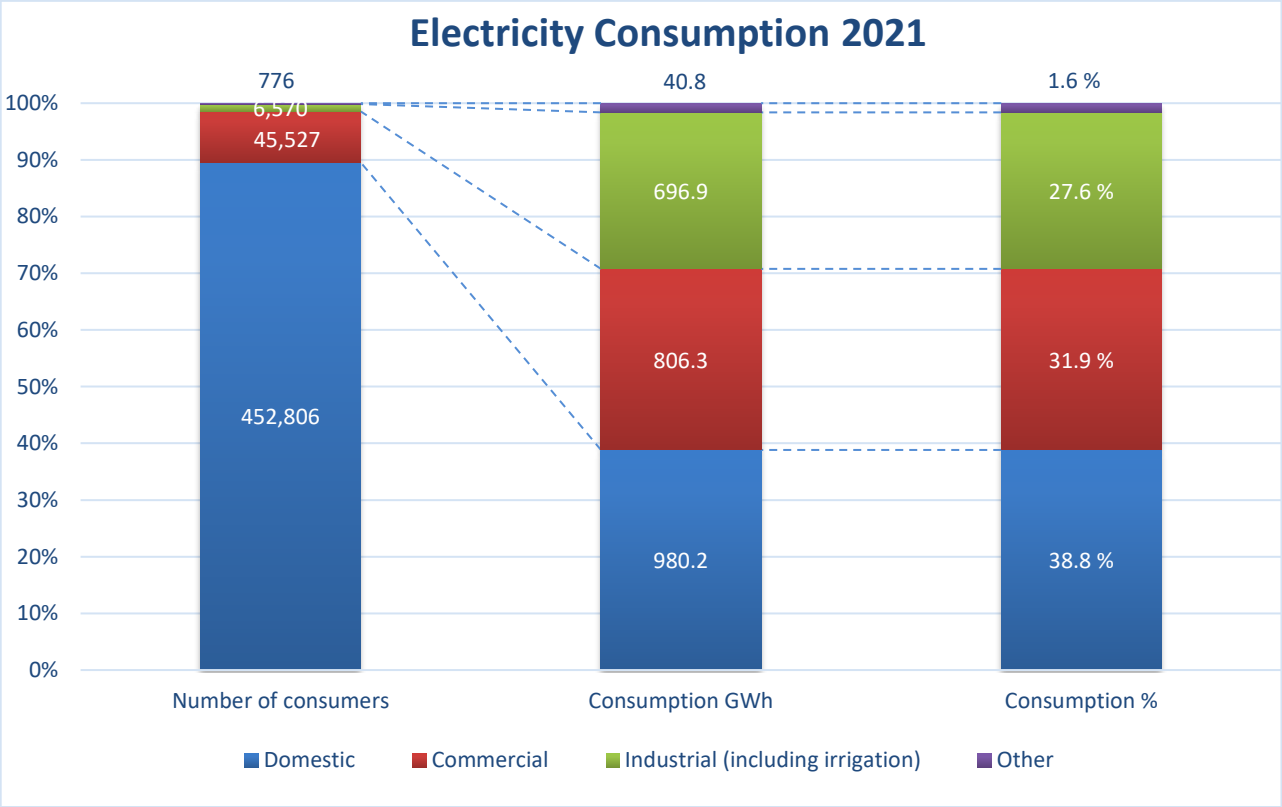
Table 4. 6 - Sales Electricity per category of consumers, 2020 - 2022

Type of tariff	Number of consumers			Electricity Sold - GWh			Electricity Sold - %		
	2020	2021	2022	2020	2021	2022	2020	2021	2022
Domestic	444,947	452,806	459,932	959.0	980.2	987.5	39.2 %	38.8 %	36.6 %
Commercial	44,938	45,527	46,210	795.5	806.3	960.5	32.5 %	31.9 %	35.6 %
Industrial (including irrigation)	6,527	6,570	6,625	655.0	696.9	709.2	26.8 %	27.6 %	26.3 %
Other[4]	753	776	798	38.8	40.8	40.9	1.6 %	1.6 %	1.5 %
Total	497,165	505,679	513,565	2,448.2	2,524.3	2,698.1	100.0 %	100.0 %	100.0 %

Data Source: Statistics Mauritius

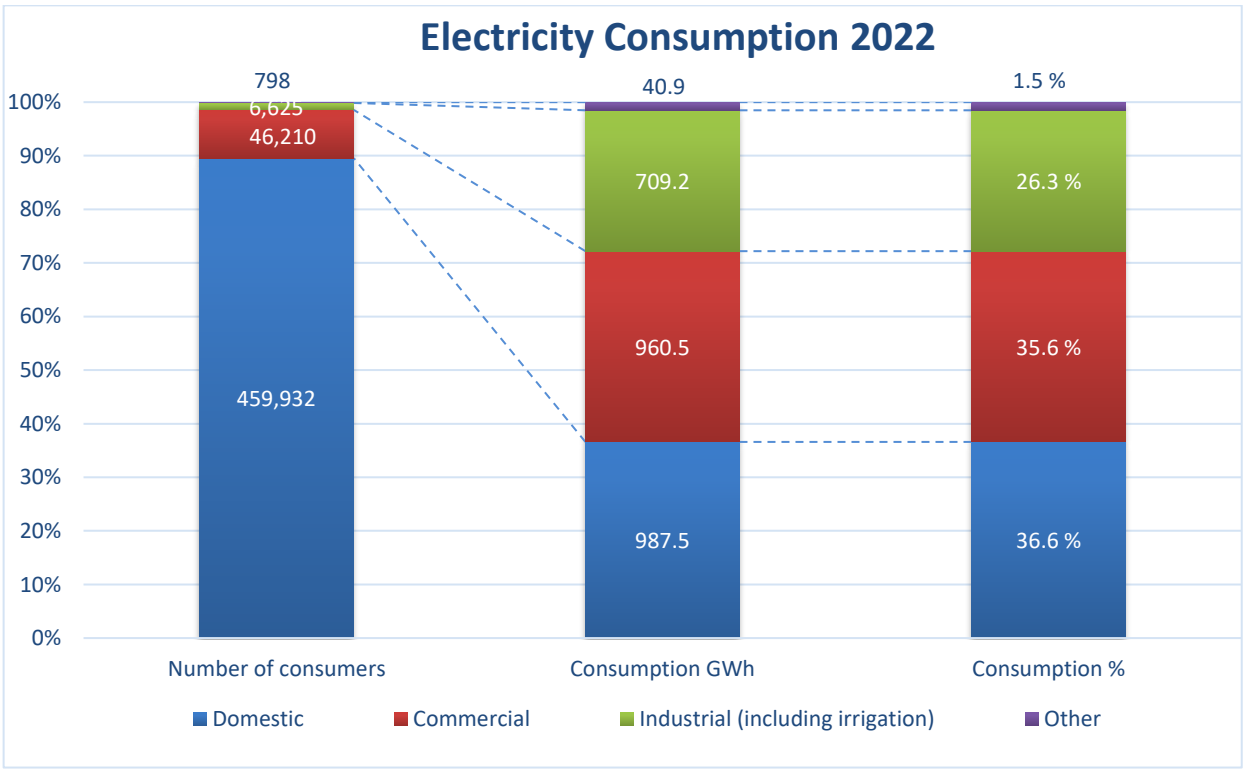
Figure 4.23 and 4.24 gives details on the number of different category consumers, the electricity consumption in each category and the share of consumption of each of these for the year 2021 and 2022.

[4] 'Other' means sugar factories, street lighting & traffic lights, pumping for irrigation and temporary supply



Data Source: Statistics Mauritius

Figure 4. 23 - Sales of Electricity per category of consumers, 2021



Data Source: Statistics Mauritius

Figure 4. 24 - Sales of Electricity per category of consumers, 2022

An analysis of domestic electricity consumption is given in Table 4.7, which shows an increase from 1.70 MWh/consumer/year in 2012 to 2.14 MWh/consumer/year in 2022.

Table 4. 7 - Analysis of domestic electricity consumption, 2013 – 2022

Domestic consumers	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Consumption (GWh)	780.8	806.3	831.0	854.5	872.7	899.3	945.0	959.0	980.2	987.5
Number of consumers	388,910	396,335	404,463	413,068	420,876	428,569	436,831	444,947	452,806	459,932
Annual electricity consumption per consumer (MWh/consumer/year)	2.01	2.03	2.05	2.07	2.07	2.10	2.16	2.16	2.16	2.15
Annual Electricity Consumption per Consumer Growth Rate %	1.6%	1.3%	1.0%	0.7%	0.2%	1.2%	3.1%	-0.4%	0.4%	-0.8%
Average daily consumption per inhabitant (kWh/inhabitant/day)	1.70	1.75	1.80	1.85	1.89	1.95	2.05	2.08	2.12	2.14

Data Source: Statistics Mauritius

Chapter 5 – CO_2 EMISSIONS DUE TO FOSSIL FUELS

5.1 Introduction

Some gases in the atmosphere are capable of absorbing infrared radiation, thereby trapping and holding heat in the atmosphere. These gases are known as "greenhouse gases" (sometimes abbreviated as GHG) are primarily water vapour, and including much smaller amounts of carbon dioxide, methane and nitrous oxide which acts as a thermal blanket for the Earth (greenhouse effect), absorbing heat and warming the surface to a life-supporting average of 15 degrees Celsius.

5.2 Greenhouse Gas Emissions

Human activities since the beginning of the Industrial Revolution (around 1750), have produced a 40% increase in the atmospheric concentration of carbon dioxide (CO_2), from 280 ppm in 1750 to 406 ppm in early 2017. This increase has occurred despite the uptake of more than half of the emissions by various natural "sinks" involved in the carbon cycle.

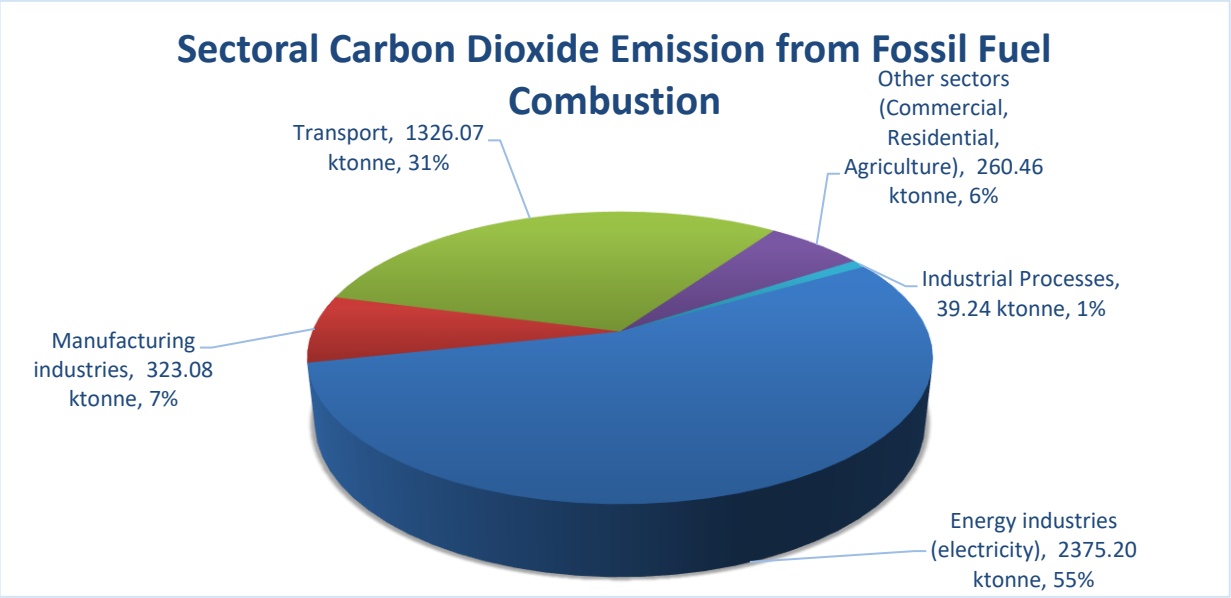
Emissions from human activities mainly concern the following six gases, covered by the Kyoto Protocol: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).

The vast majority of anthropogenic carbon dioxide emissions (i.e., emissions produced by human activities) come from combustion of fossil fuels, principally coal, heavy fuel oil and its derivatives [gasoline, diesel, Liquefied Petroleum Gas (LPG)] and natural gas, with comparatively modest additional contributions coming from deforestation, changes in land use, soil erosion, and agriculture.

5.3 Inventory of CO_2 from energy sources for the Republic of Mauritius in 2021

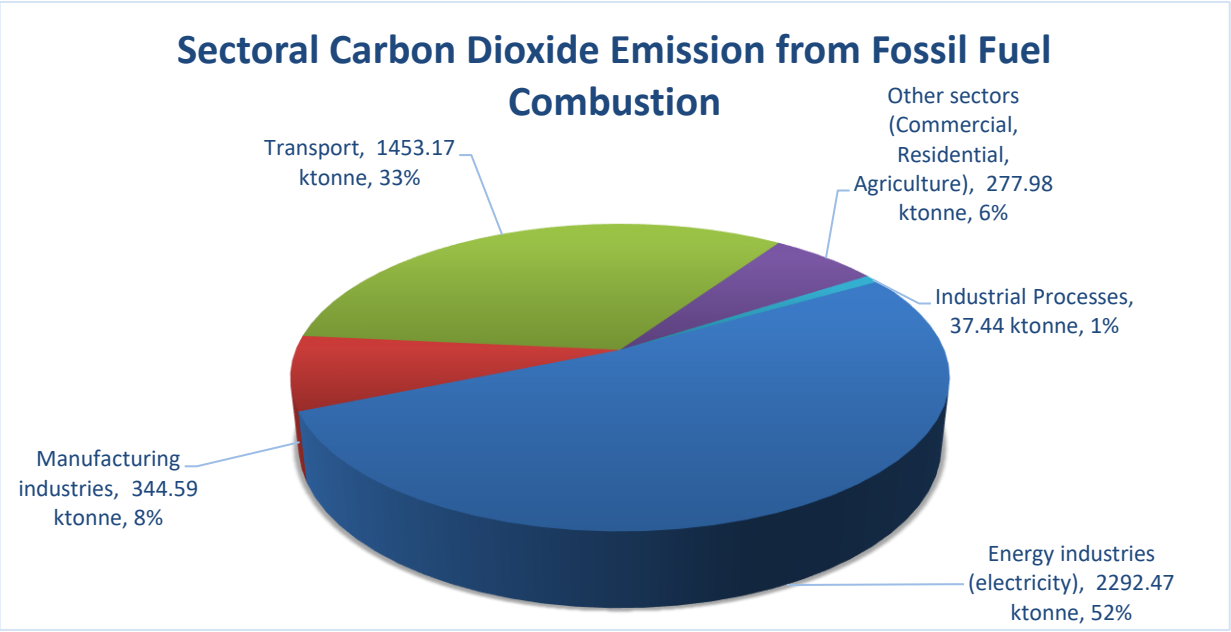
This report focuses only on CO_2 emissions (excluding other greenhouse gases) during combustion of fossil fuels. The scope of emissions discussed concerns all CO_2 emissions due to fossil energy conversion in the following sectors : electricity generation, transport, residential and manufacturing.

Figure 5.1 and 5.2 gives the share of carbon dioxide emission from fossil fuel combustion in each sector in 2021 and 2022. It may be noted that, in 2021, total CO_2 emissions from fuel combustion activities amounted to 4,324.8 ktonnes and CO_2 removals amounted to 335.57 ktonnes. Net CO_2 emissions for 2021 stood at 3,989.3 ktonnes.



Data Source: Statistics Mauritius (Provisional data)

Figure 5. 1 - Sectoral carbon dioxide emissions from fossil fuel combustion, 2021



Data Source: Statistics Mauritius (Provisional data)

Figure 5. 2 - Sectoral carbon dioxide emissions from fossil fuel combustion, 2022

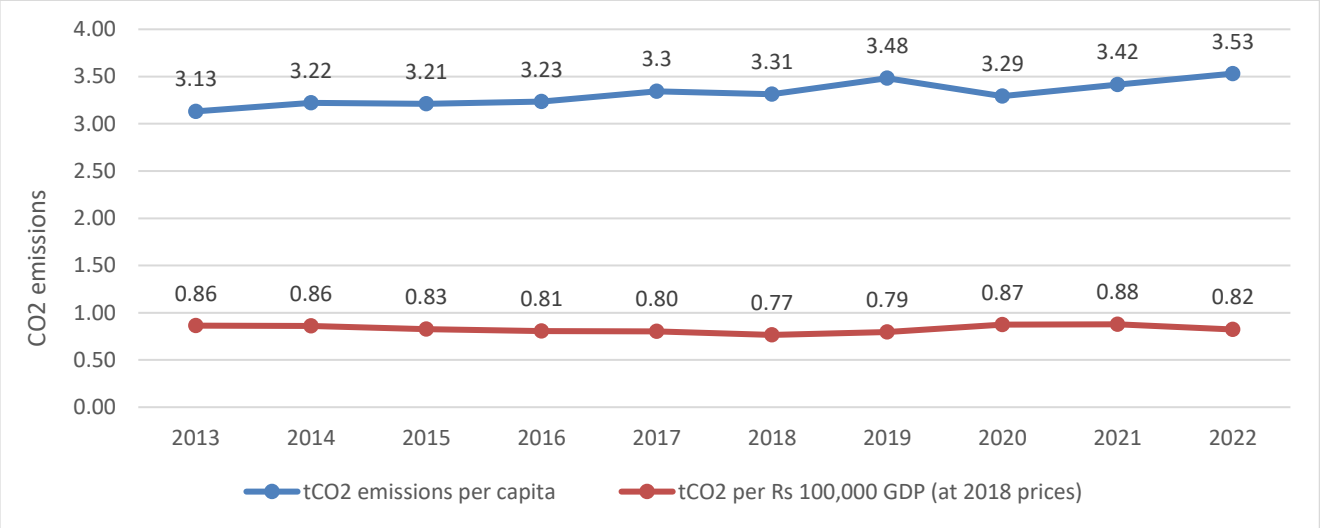
5.4 Trend of CO_2 emissions

Table 5.1 and Figure 5.3 show the trend in tonnes of CO_2 emissions per capita and per Rs 100,000 GDP (at 2018 prices). It may be observed that the amount of CO_2 emitted with respect to GDP has generally been decreasing from 2013 to 2019 , however it has increase as from 2019 to 2022.

Table 5. 1 - CO_2 emissions, 2013 – 2022

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Net CO_2 emissions (ktonnes)	3,573.6	3,696.3	3,685.4	3,723.7	3,861.5	3,825.5	4,086.5	3,843.0	3,989.3	4072.3
tCO_2 emissions per capita	3.13	3.22	3.21	3.23	3.34	3.31	3.5	3.3	3.4	3.5
tCO_2 per Rs 100,000 GDP (at 2018 prices)	0.86	0.86	0.83	0.81	0.80	0.77	0.79	0.87	0.88	0.82

Data Source: Statistics Mauritius



Data Source: Statistics Mauritius

Figure 5. 3 - Trend of CO_2 emissions, 2013 – 2022

5.5 CO_2 emission in the transport sector (inclusive of aviation)

In 2021, emissions totaled 1326.07 ktonnes of CO2, marking a 4.1% decrease compared to 2020, when emissions were 1383.22 ktonnes. However, by 2022, emissions rose to 1453.17 ktonnes, reflecting a 9.6% increase.

5.6 CO_2 emissions for electricity generation

In 2021, the total CO_2 emissions from electricity generation amounted to 2,375.20 ktonnes representing an increase of 9.7% compared to 2020. However, for 2022, the emission was 2292.47 ktonnes representing a decrease by 3.5%.

The Grid Emission Factors for the national grid of Mauritius for 2021 and 2022 are as follows:

Table 5. 2- 2021 Grid Emission Factors for National Grid of Mauritius

Type of Project	Operation Margin (tCO_2/MWh)	Built Margin (tCO_2/MWh)	Combined Margin (tCO_2/MWh)
PV and wind	1.0273	0.8814	0.9908
All other projects	1.0273	0.8814	0.9543

Data Source: CEB

Table 5. 3 – 2022 Grid Emission Factors for National Grid of Mauritius

Type of Project	Operation Margin (tCO_2/MWh)	Built Margin (tCO_2/MWh)	Combined Margin (tCO_2/MWh)
PV and wind	0.916	0.44923	0.8101
All other projects	0.916	0.4923	0.7041

Data Source: CEB

OM: Operational Margin

BM: Built Margin

CM: Combined Margin

Note: The variation in the Grid Emission Factor between 2021 and 2022 is attributed to a change in the accounting factor applied.

5.7 CO2 emissions avoided for Island of Mauritius

Table 5.3 shows the CO_2 emission avoided due to the production of electricity from renewable energy sources for the Island of Mauritius in 2021 and 2022

Table 5. 4 - Avoided CO_2 emission for the Island of Mauritius, 2021 and 2022

Renewable energy source	2021		2022	
	Total RE (GWh)	Avoided CO_2 Emissions (tCO_{2e})	Total RE (GWh)	Avoided CO_2 Emissions (tCO_{2e})
On-shore wind	12.54	12425	13.56	10983
Solar Energy - SSDG	14.70	14565	15.51	12567
Solar Energy - MSDG	8.45	8372	10.42	8440
Solar Energy - Utility	127.40	126228	3.15	2555
Solar Energy - IPP	-	-	124.69	101009
Biomass - Bagasse	245.20	233994	275.62	194065
Biomass –Cane trash	5.61	5354	7.38	5196
Landfill Gas	19.05	18179	17.21	12120
Hydro	106.86	101976	128.30	90333
Total	307.433	521093	595.84	437268

Data Source: CEB

5.8 CO2 emissions avoided for Island of Rodrigues

Table 5.4 shows the CO_2 emission avoided due to the production of the electricity from renewable energy sources for the Island of Rodrigues in 2021 and 2022.

Table 5.4 - Avoided CO_2 emission for the Island of Rodrigues, 2021

Renewable energy source	*2021*		2022	
	Total RE (GWh)	**Avoided CO_2 Emissions (tCO_{2e})**	**Total RE (GWh)**	**Avoided CO_2 Emissions (tCO_{2e})**
On-shore wind	1.280	1268	1.921	1556
Solar Energy	0.634	628	0.688	557
Total	**1.914**	**1896**	**2.609**	**2114**

Data Source: CEB

Note:

(1) Grid Emission Factor for the island of Mauritius: 0.9543 gCO_2/kWh and 0.7041 gCO_2/kWh (2021 and 2022)

(2) Biomass is assumed to be carbon neutral.

(3) Emission Factor of Landfill gas 54.6 tons/TJ (IPCC 2006), $EF_{Landfill}$ = 196.56 tons/GWh

6. KEY FIGURES

Table 6. 1 – Key Figures

Indicator	Unit	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total primary energy requirement	*ktoe*	1,454.8	1,491.7	1,534.4	1,555.3	1,599.8	1,586.3	1,600.3	1,334.0	1,367.1	1484.7
Imported	*ktoe*	1,235.4	1,279.4	1,283.2	1,328.5	1,385.3	1,381.9	1,395.8	1,156.5	1,198.5	*1335.5*
Local	*ktoe*	219.4	212.3	251.3	226.8	214.5	204.4	204.5	177.5	*168.7*	*149.2*
Annual increase (Primary Energy)	*%*	1.9	2.5	2.9	1.4	2.9	-0.8	0.9	-16.6	2.5	8.6
Import Dependency	*%*	84.9	85.8	83.6	85.4	86.6	87.1	87.2	86.7	87.7	89.9
GDP in 2018 rupees	*Rs M*	413,682	429,514	445,365	462,567	480,783	500,047	514,505	439,662	454,627	494,148
Population		1,258,653	1,260,934	1,262,605	1,263,473	1,264,613	1,265,303	1,265,711	1,265,740	1,266,060	1,262,249
Energy intensity	*toe per Rs 100000 GDP at 2018 prices*	0.35	0.35	0.34	0.34	0.33	0.32	0.31	0.30	0.30	0.30
Per capita primary energy requirement	*toe*	1.16	1.18	1.22	1.23	1.27	1.25	1.26	1.05	1.08	1.18

Data Source: Statistics Mauritius

6.1 SUMMARY TABLE 2021

	Fossil Fuels								Renewable Energy										
	Coal	Petroleum products							Biomass				Hydro	Solar		Wind	Electricity	Heat	TOTAL
-' Consumption in ktoe		Gasolene	Diesel	Aviation fuel	Kerosene	HFO	LPG	Used oils	Bagasse	Landfill Gas	Fuelwood	Charcoal		PV	Thermal		+ Prod	+ Prod	
+' Production and supply																	- Cons	- Cons	
Primary Energy and Supply																			
Local Production (LP)									139.2	1.7	4.2		9.2	13.0		1.3			168.6
Imported Resources	473.5	201.7	315.9	71.3	1.7	718.8	82.3												1865.2
Re-exports and bunkering			-111.6	-32.2		-487.4	0.0												-631.1
Stocks (+ destocking; - stocking)	-16.8	-21.3	-12.4	-6.7	-1.0	16.6	5.0												-36.6
TOTAL Primary Energy (PE)	**456.7**	**180.4**	**191.9**	**32.4**	**0.7**	**248.0**	**87.3**	**0.0**	**139.2**	**1.7**	**4.2**	**0.0**	**9.2**	**13.0**	**0.0**	**1.3**	**0.0**	**0.0**	1366.0
% Energy independence (LP/PE)																			12.3
Secondary Energy																			
Coal input for electricity production	-431.0																107.9		-323.1
HFO and diesel input for electricity production			0.7			204.0											90.4		295.0
Bagasse input for electricity production									127.6								30.1		157.7
Kerosene input for electricity production					0.7												0.2		0.8
Biogas input for electricity production										-1.6							1.6		0.0
Hydro input for electricity production													-9.2				9.2		0.0
PV input for electricity production														-13.0			13.0		0.0
Wind input for electricity production																-1.3	1.3		0.0
Electricity production own use																	-4.0		-4.0
Solar Thermal heat production																			0.0
Fuelwood to charcoal											-0.6	0.1							-0.5
TOTAL Secondary supply (SS)	**-431.0**	**0.0**	**0.7**	**0.0**	**0.7**	**204.0**	**0.0**	**0.0**	**127.6**	**-1.6**	**-0.6**	**0.1**	**-9.2**	**-13.0**	**0.0**	**-1.3**	**249.6**	**0.0**	126.0
Energy Distribution																			
Final distribution (D=PE+SS)	25.7	180.4	192.6	32.4	1.3	452.0	87.3	0.0	266.8	0.1	3.6	0.1	0.0	0.0	0.0	0.0	249.6	0.0	1492.1
Losses (L=(D+F))	0.0	0.1	-1.7	0.1	-1.3	-417.3	1.0	0.0	-255.3	-0.1	0.2	0.1	0.0	0.0	0.0	0.0	-12.8	0.0	-687.1
TOTAL final distribution (D+L)	25.7	180.5	190.9	32.5	0.0	34.7	88.3	0.0	11.5	0.0	3.8	0.3	0.0	0.0	0.0	0.0	236.8	0.0	805.0
																			804.97
Final Energy Consumption																			
Manufacturing	-25.7		-30.0			-31.3	-5.2		-11.5		-0.4						-77.3		-181.4
Commercial							-18.1					-0.3					-70.2		-88.6
Household					0.0		-61.9				-3.4	0.0					-84.6		-149.9
Transport		-180.5	-159.0	-32.5		-3.4	-2.8										0.5		-377.7
Agriculture			-1.9														-1.6		-3.5
Others							-0.3										-3.6		-3.9
TOTAL (F)	**-25.7**	**-180.5**	**-190.9**	**-32.5**	**0.0**	**-34.7**	**-88.3**	**0.0**	**-11.5**	**0.0**	**-3.8**	**-0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**-236.8**	**0.0**	**-804.97**

6.2 SUMMARY TABLE 2022

	Fossil Fuels								Renewable Energy										
	Coal	Petroleum products							Biomass				Hydro	Solar		Wind	Electricity	Heat	TOTAL
-' Consumption in ktoe		Gasolene	Diesel	Aviation fuel	Kerosene	HFO	LPG	Used oils	Bagasse	Landfill Gas	Fuelwood	Charcoal		PV	Thermal		+ Prod	+ Prod	
+' Production and supply																	- Cons	- Cons	
Primary Energy and Supply																			
Local Production (LP)									117.9	1.5	4.2		11.0	13.3		1.3			149.2
Imported Resources	363.4	195.5	314.6	219.2	4.0	726.5	99.1												1922.3
Re-exports and bunkering			-107.2	-106.5		-370.9	0.0												-584.6
Stocks (+ destocking; - stocking)	-4.1	11.0	6.9	12.9	-3.2	-22.9	5.0												5.5
TOTAL Primary Energy (PE)	**359.3**	**206.5**	**214.3**	**125.6**	**0.8**	**332.6**	**104.1**	**0.0**	**117.9**	**1.5**	**4.2**	**0.0**	**11.0**	**13.3**	**0.0**	**1.3**	**0.0**	**0.0**	1492.5
% Energy independence (LP/PE)																			10.0
Secondary Energy																			
Coal input for electricity production	-342.8																84.6		-258.2
HFO and diesel input for electricity production			0.7			284.4											128.3		413.3
Bagasse input for electricity production									109.5								24.3		133.9
Kerosene input for electricity production					0.8												0.2		1.0
Biogas input for electricity production										-1.5							1.5		0.0
Hydro input for electricity production													-11.0				11.0		0.0
PV input for electricity production														-13.3			13.3		0.0
Wind input for electricity production																-1.3	1.3		0.0
Electricity production own use																	-4.0		-4.0
Solar Thermal heat production																			0.0
Fuelwood to charcoal											-4.2	0.0							-4.2
TOTAL Secondary supply (SS)	**-342.8**	**0.0**	**0.7**	**0.0**	**0.8**	**284.4**	**0.0**	**0.0**	**109.5**	**-1.5**	**-4.2**	**0.0**	**-11.0**	**-13.3**	**0.0**	**-1.3**	**260.6**	**0.0**	281.8
Energy Distribution																			
Final distribution (D=PE+SS)	16.5	206.5	215.0	125.6	1.6	617.0	104.1	0.0	227.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	260.6	0.0	1774.3
Losses (L=(D+F))	0.0	0.0	-1.6	0.0	-1.6	-578.0	-7.7	0.0	-219.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0	-18.8	0.0	-822.8
TOTAL final distribution (D+L)	16.5	206.5	213.4	125.6	0.0	39.1	96.4	0.0	8.4	0.0	3.9	0.0	0.0	0.0	0.0	0.0	241.8	0.0	951.5
																			951.54
Final Energy Consumption																			
Manufacturing	-16.5		-41.2			-35.3	-7.3		-8.4		-0.6						-77.2		-186.5
Commercial							-21.7					0.0					-70.1		-91.8
Household					0.0		-63.5				-3.3	0.0					-84.5		-151.3
Transport		-206.5	-170.6	-125.6		-3.8	-3.1										-5.0		-514.6
Agriculture			-1.6														-1.5		-3.1
Others							-0.8										-3.5		-4.3
TOTAL (F)	**-16.5**	**-206.5**	**-213.4**	**-125.6**	**0.0**	**-39.1**	**-96.4**	**0.0**	**-8.4**	**0.0**	**-3.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-241.8**	**0.0**	**-951.54**

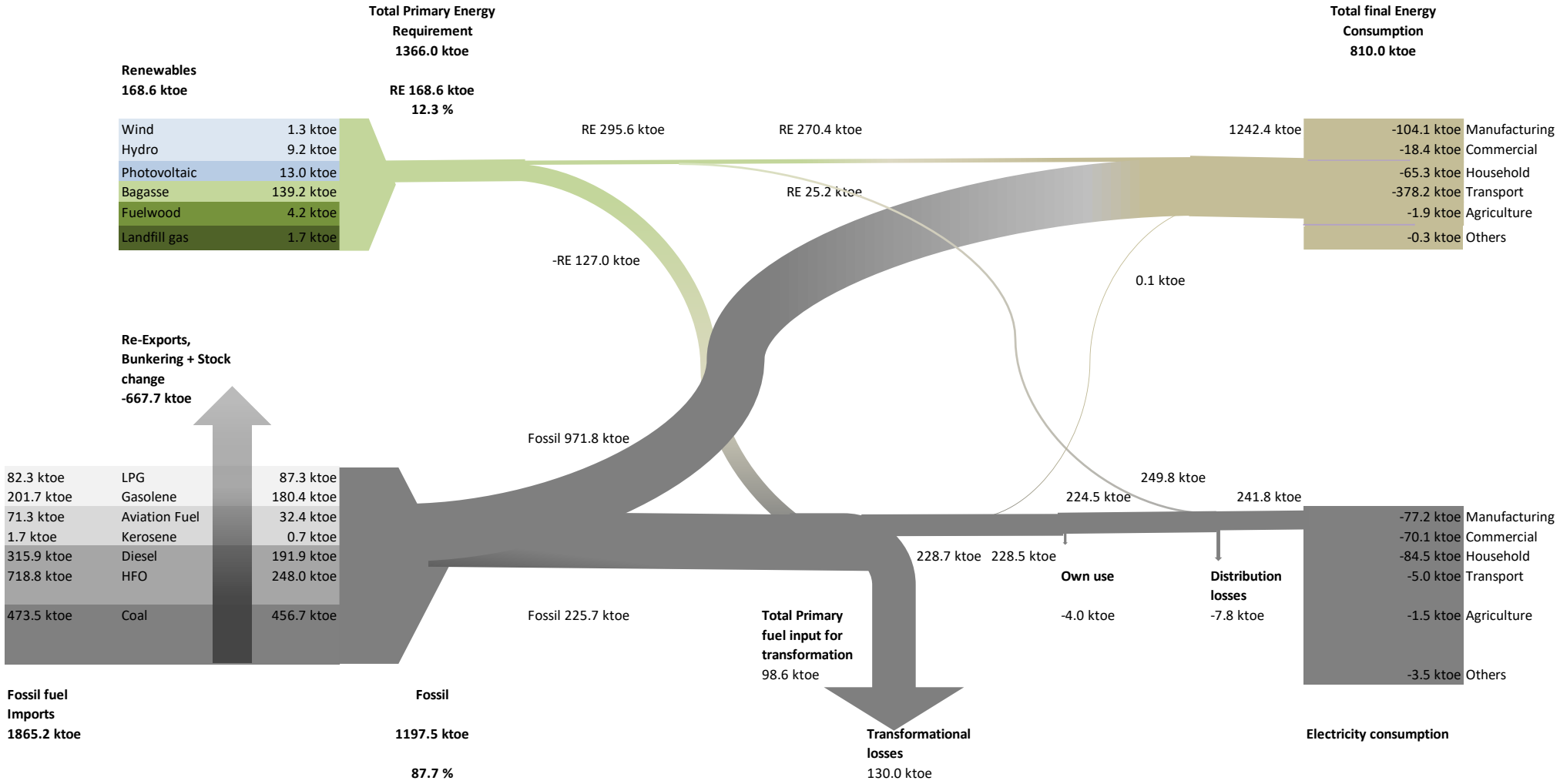
6.3 GROWTH PERCENTAGE (%) IN 2021 COMPARED TO 2020

	Fossil Fuels								Renewable Energy										
	Coal	Petroleum products							Biomass				Hydro	Solar		Wind	Electricity	Heat	TOTAL
-' Consumption in ktoe		Gasolene	Diesel	Aviation fuel	Kerosene	HFO	LPG	Used oils	Bagasse	Landfill Gas	Fuelwood	Charcoal		PV	Thermal		+ Prod	+ Prod	
+' Production and supply																	- Cons	- Cons	
Primary Energy and Supply																			
Local Production (LP)									-5.2 %	-19.0 %	-3.8 %		-8.1 %	4.1 %		-17.3 %			-5.0 %
Imported Resources	-35.8 %	31.9 %	21.3 %	-3.0 %	163.4 %	5.0 %	12.3 %												-5.9 %
TOTAL Primary Energy (PE)	11.5 %	-2.0 %	3.3 %	-44.5 %	145.0 %	4.9 %	6.4 %		-5.2 %	-19.0 %	-3.8 %		-8.1 %	4.1 %		-17.3 %			2.4 %
Secondary Energy																			
Coal input for electricity production	11.8 %																		12.3 %
HFO and diesel input for electricity production			61.0 %			4.6 %													5.8 %
Bagasse input for electricity production									-5.5 %										-4.4 %
Kerosene input for electricity production					116.7 %														88.6 %
Biogas input for electricity production										-23.8 %									
Hydro input for electricity production													-8.0 %						
PV input for electricity production PV														4.0 %					
Wind input for electricity production																-0.2 %			
Electricity production own use																			0.0 %
Solar Thermal heat production																			
Fuelwood to charcoal											0.0 %	-52.4 %							52.4 %
TOTAL Secondary supply (SS)	11.8 %		61.0 %		116.7 %	4.6 %			-5.5 %	-23.8 %	0.0 %	-52.4 %	-8.0 %	4.0 %		-0.2 %	3.9 %		7.5 %
Final Energy Consumption																			
Manufacturing	6.6 %		-16.7 %			6.8 %	2.0 %		-3.4 %		0.0 %						4.0 %		0.2 %
Commercial							2.3 %					0.0 %					1.7 %		1.8 %
Household					-100.0 %		10.1 %				0.0 %	0.0 %					2.3 %		5.4 %
Transport		-2.0 %	8.1 %	-44.3 %		1.9 %	3.9 %												-4.5 %
Agriculture			-5.0 %														14.3 %		2.9 %
Others							0.0 %										-16.7 %		-15.6 %
TOTAL (F)	6.6 %	-2.0 %	3.2 %	-44.3 %	-100.0 %	6.3 %	7.7 %		-3.4 %		0.0 %	0.0 %					2.2 %		-1.1 %

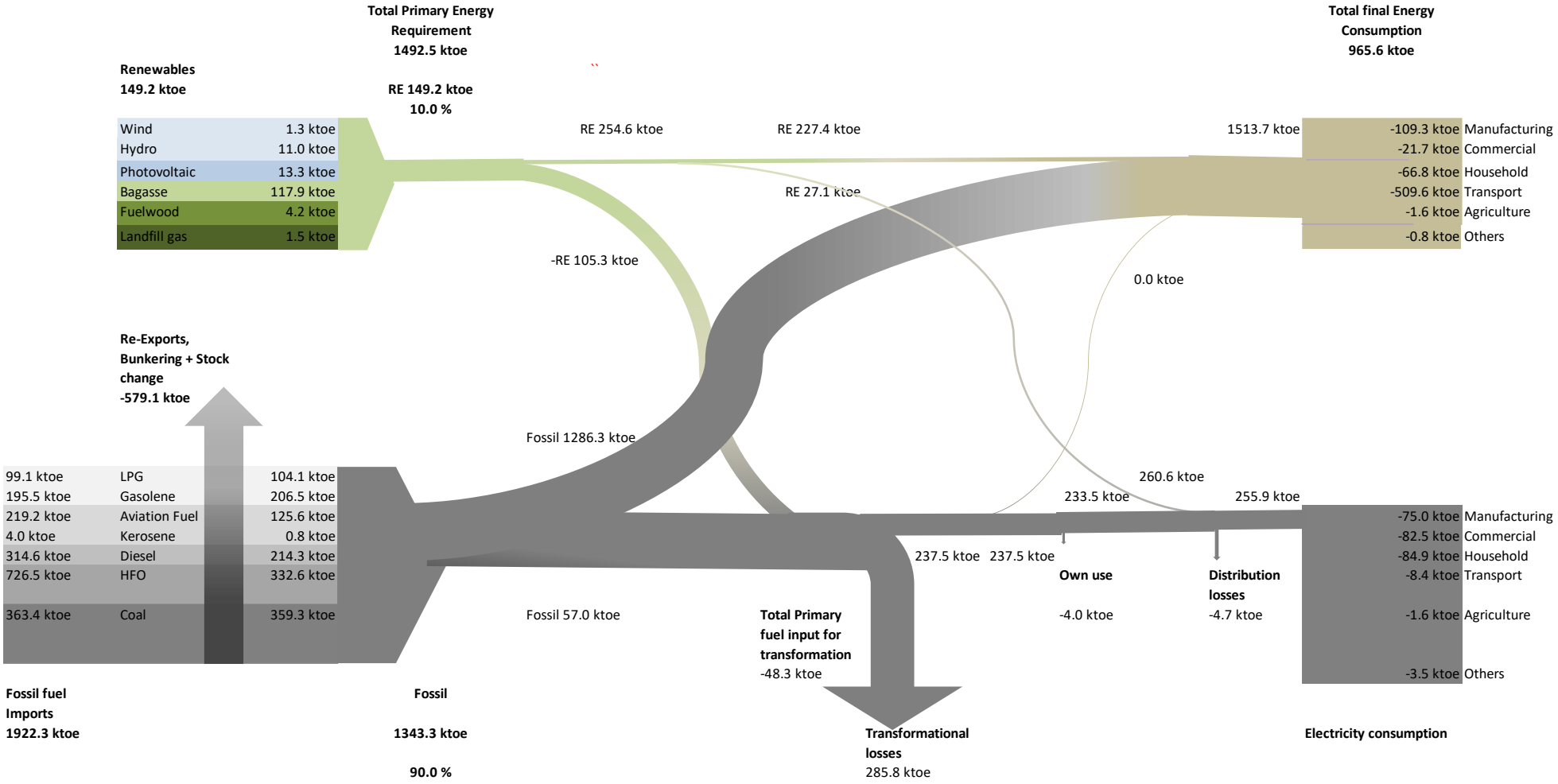
6.4 GROWTH PERCENTAGE (%) IN 2022 COMPARED TO 2021

	Fossil Fuels								Renewable Energy										
	Coal	Petroleum products							Biomass				Hydro	Solar		Wind	Electricity	Heat	TOTAL
-' Consumption in ktoe		Gasolene	Diesel	Aviation fuel	Kerosene	HFO	LPG	Used oils	Bagasse	Landfill Gas	Fuelwood	Charcoal		PV	Thermal		+ Prod	+ Prod	
+' Production and supply																	- Cons	- Cons	
Primary Energy and Supply																			
Local Production (LP)									-15.3 %	-12.9 %	0.4 %		20.1 %	2.1 %		0.6 %			-11.5 %
Imported Resources	-23.3 %	-1.3 %	-0.6 %	46.8 %	3.4 %	464.8 %	2.3 %												3.1 %
TOTAL Primary Energy (PE)	-21.3 %	14.4 %	11.7 %	287.0 %	23.8 %	34.1 %	19.3 %		-15.3 %	-12.9 %	0.4 %		20.1 %	2.1 %		0.6 %			9.3 %
Secondary Energy																			
Coal input for electricity production	-20.5 %																		-20.1 %
HFO and diesel input for electricity production			-4.2 %			39.4 %													40.1 %
Bagasse input for electricity production									-14.2 %										-15.1 %
Kerosene input for electricity production					23.5 %														23.1 %
Biogas input for electricity production										-6.3 %									
Hydro input for electricity production													19.6 %						
PV input for electricity production PV														2.3 %					
Wind input for electricity production																0.0 %			
Electricity production own use																			0.0 %
Solar Thermal heat production																			
Fuelwood to charcoal											600.0 %	-100.0 %							818.6 %
TOTAL Secondary supply (SS)	-20.5 %		-4.2 %		23.5 %	39.4 %			-14.2 %	-6.3 %	600.0 %	-100.0 %	19.6 %	2.3 %		0.0 %	4.4 %		123.6 %
Final Energy Consumption																			
Manufacturing	-35.8 %		37.3 %			12.8 %	40.4 %		-27.0 %		50.0 %						-2.8 %		1.7 %
Commercial							19.9 %					-100.0 %					17.7 %		17.7 %
Household					0.0 %		2.6 %				-2.9 %	0.0 %					0.5 %		1.3 %
Transport		14.4 %	7.3 %	286.5 %		10.3 %	11.8 %												35.2 %
Agriculture			-15.8 %														6.7 %		-5.9 %
Others							0.0 %										0.0 %		13.7 %
TOTAL (F)	-35.8 %	14.4 %	11.8 %	286.5 %		12.5 %	9.2 %		-27.0 %		2.6 %	-114.4 %					5.8 %		19.2 %

6.5 ENERGY PATTERN 2021



6.6 ENERGY PATTERN 2022



6.7 TABLE OF INDICATORS

Item	Indicators	Unit	2018	2019	2020	2021	2022
Primary Energy Requirement	Primary Energy Requirement	ktoe	1,586.3	1,600.3	1,333.9	1367.1	1484,7
	Share of local resources: local primary requirement/total primary requirement	%	12.9	12.8	13.3	12.3	10.1
Energy intensity	Energy intensity per inhabitant: Primary energy Requirement/population	toe/inhab	1.25	1.26	1.05	1.08	1.18
	Energy intensity per 100,000 (2018 Rs): Primary Energy Requirement/GDP	toe/Rs	0.32	0.31	0.30	0.30	0.30
Electricity Production	Total fossil fuel input for electricity production	ktoe	666.9	659.9	590.3	645.8	638.1
	Total renewable input for electricity production	ktoe	161.4	160.3	135.0	127.6	109.5
	Total electricity production	GWh	3,131.6	3,236.6	2882.4	2992.1	3119.2
	Penetration of renewable resources	%	20.7	21.7	23.9	21.5	19.2
Final electricity consumption per sector	Total electricity sold	GWh	2,650.2	2,754.0	2,448.2	2524.3	2698.1
	Domestic sector	%	33.9	34.3	39.2	38.8	36.6
	Commercial sector	%	36.0	36.3	32.5	31.9	35.6
	Industrial sector	%	28.7	28.0	26.8	27.6	26.3
	Others	%	1.4	1.4	1.6	1.6	1.5
	Annual electricity consumption per consumer (Domestic)[5]	MWh/ Consumer /year	2.10	2.16	2.16	2.16	2.15
	Annual electricity consumption per consumer (Commercial)	MWh/ Consumer /year	21.99	22.51	17.70	17.71	20.79
	Annual electricity consumption per consumer (Industrial)	MWh/ consumer /year	118.24	119.07	100.35	106.07	107.5
Final energy consumption in transport sector	Total energy consumption (transport)	ktoe	540.1	552.1	395.6	378.3	509.5
CO_2 Emissions	Total CO_2 emissions	$ktCO_2$	4,190.5	4,264.2	3,653.96	4324.8	4406.4
	Net CO_2 emissions	$ktCO_2$	3,825.5	3,903.3	3,290.95	3989.2	4072.3
	Energy sector	%	58.83	56.69	59.86	54.92	52.03
	Manufacturing sector	%	8.22	7.92	7.88	7.47	7.82

[5]Domestic sector in this document includes CEB residential consumers, charitable and religious institutions.

Item	Indicators	Unit	2018	2019	2020	2021	2022
	Transport sector	%	25.95	26.00	23.04	30.66	32.98
	Others	%	6.12	8.18	6.92	6.02	6.31
	CO_2 emissions per kWh of electricity generated (Grid emission factor)[6]	gCO_2/ kWh	895.3	917.8[7]	954.3	954.3	704.1

Data Source: Statistics Mauritius

[6]Data Source: CEB

[7]Data Source: ABS ASB0046-2019 Standardized Baseline Mauritius Grid Emission Factor, United Nations Framework Convention on Climate Change

7. GLOSSARY

Aviation fuel:

A kerosene type meeting the required properties for use in jet engines and aircraft-turbine engines.

Bagasse:

Cellulosic residue left after sugar is extracted from sugar cane.

Capacity:

The maximum power available from a power station at a point in time:

- *Installed capacity*: The nameplate capacity of the generator set.

- *Plant capacity*: The net capacity measured at the terminals of the stations, i.e., after deduction of the power absorbed by the auxiliary installations and the losses in the station transformers.

- *Effective capacity*: It is the plant capacity less any amount of derated capacity from the installed capacity.

Charcoal:

Comprises the solid residue obtained by the destructive distillation of wood in the absence of air.

Coal:

Fossil fuel that has a high degree of coalification, with a gross calorific value over24MJ/kg (5700 Kcal/kg) on an ash-free but moist basis.

Diesel oil:

Consists primarily of medium oil distilling between 180^0C and 380^0C.

Electric energy dependence:

The ratio of electricity generation from fossil fuels and electricity generation total.

Electric dependency ratio:

Ratio between electricity production from fossil fuels and the total electricity production.

Energy:

Capacity for doing work or for producing heat. Producing heat is a common manifestation of 'doing work' as are producing light and motive force.

Energy intensity:

A measure of the energy efficiency of the economy of the country. Provides a measure of the efficiency with which energy is being used in production. A lower ratio usually reflects a more efficient use of energy.

Energy unit:

The International System of Units (SI unit) of energy is the Joule.

Final energy:

Energy that is supplied to consumers (electricity, petrol, diesel, natural gas, fuel oil, heating oil).

Final energy consumption:

Energy consumption by final user- i.e. energy which is not being used for transformation into other forms of energy. The consumption by sector is presented as follows:

Agriculture: Energy used for irrigation and by other agricultural equipments;

Commercial & distributive trade: Energy consumed by the business and commercial sector;

Residential: Consumption of energy by residential sector;

Manufacturing: Consumption in industry and construction; and

Transport: Includes consumption by land vehicles, ships and local aircrafts.

Fossils fuel:

Formed from the fossilized remains of dead plants and animals by exposure to heat and pressure in the Earth's crust over hundreds of millions of years.

Fuel:

Term used to describe energy sources that must be subjected to combustion in order to release the energy stored up inside them.

Fuel wood:

All forms of woody material.

Fuel oils:

Heavy oils from the refining process of crude oil and used as fuel in power stations. It is also commonly used by ships and industrial large-scale heating boilers installations as a fuel in furnaces or boilers in the manufacturing sector.

Gasolene:

A mixture of relatively volatile hydrocarbons, which have been blended to form a fuel suitable for use in spark-ignition internal combustion engines.

Gross Domestic Product (GDP):

The aggregate money value of all goods and services produced within a country out of economic activity during a specified period, usually a year, before provision for the consumption of fixed capital.

Gigawatt hour (GWh):

Unit of electrical energy, equal to 3.6 terajoules (TJ).

Hybrid motor vehicle:

A motor vehicle which for the purpose of its mechanical propulsion, has at least two different energy convertors and two different on-vehicle energy storage systems.

IPP (Independent Power Producers):

Entities which, in addition to their main activities, themselves produce(individually or in combination) electric energy intended, in whole or in part, to meet their own needs and for sale to the CEB throughout the year from bagasse during the cane harvest period and coal outside this period.

Kerosene (excl. Aviation fuel type):

A medium oil distilling between 150^0C and 300^0C and which is used in sectors other than aircraft transport.

Kilowatt (kW):

Unit of electrical power equal to 1 000 watts.

Kilowatt hour (kWh):

Unit of electrical energy equal to one kilowatt (1 kW) of power expended for one hour (3 600 s) or 3 600 000 joules.

Liquefied Petroleum Gas (LPG):

Consists mainly of propane or butane, derived from either petroleum refining process or extracted from petroleum streams. It is normally liquefied under pressure for transportation and storage. In Mauritius it is often used to power cooking stoves or gas water heaters and to fuel some types of vehicle.

Losses (transmission / distribution losses):

Comprise losses in transmission and distribution of electric energy and losses in transformers, which are *not* considered as integral parts of the power stations.

Normal cubic metre (Nm^3):

Common unit used to refer to gas emissions or exchange. It is the value that a gas of a constant mass occupies under normal or standard condition.

Own use (station use and loss):

Included are consumption by station auxiliaries and losses in transformers, which are considered as integral parts of the power stations.

Peak demand:

Term used in energy demand management describing a period in which electrical power is expected to be provided for a sustained period at a significantly higher than the average supply level. Peak demand fluctuations may occur on daily, monthly seasonal and yearly cycles.

Petroleum products:

The primary source of petroleum products is crude oil. Petroleum or crude oil is a naturally occurring, flammable liquid found in rock formations in the Earth. Diesel oil, fuel oils, Gasolene, Kerosene and Liquefied petroleum gas (LPG) are among the major products derived from crude oil distillation.

Primary energy:

Primary energy designates energy from sources that involve only extraction or capture. Primary energy is not derived from any other forms of energy. By convention, sources of energy that occur naturally such as coal, heavy fuel oil, fuel wood are termed primary energy.

Primary energy consumption:

The final energy consumption in which is included the losses and consumption of producers and transformers of energy.

Production:

Comprises gross production, i.e., the amount of electric energy produced, including that consumed by station auxiliaries and any losses in transformers that are considered integral parts of the power station.

Renewable energy or Renewables:

Natural resources that, after exploitation, can return to their previous stock levels by natural processes of growth or replenishment.

Secondary energy:

Designates energy from all sources of energy that results from transformation of primary sources. e.g. electricity from coal.

Solar Thermal:

Solar energy harnessed in the form of thermal energy

Thermal plants:

Comprises of conventional thermal plants of all types that require combustion of fuels to generate electricity. They include steam-operated generating plants and plants using internal combustion engines or gas turbines.

Thermal sources of electricity:

These include coal, oil and its derivatives and bagasse.

Tonne (t):

The tonne (SI symbol: t) is a metric system unit of mass equal to 1,000 kilograms.

Tonne of oil equivalent (toe):

Amount of heat obtained by the perfect combustion one tonne of oil, defined as 41.868 gigajoules.

Watt (W):

The conventional unit to measure a rate of conversion of energy. One watt equals to 1 Joule per second.

ENERGY CONVERSION FACTORS

	tonne	toe
Gasolene	1	1.08
Diesel Oil	1	1.01
Dual Purpose Kerosene (DPK)	1	1.04
Fuel Oil	1	0.96
Liquified Petroleum Gas (LPG)	1	1.08
Coal	1	0.62
Bagasse	1	0.16
Fuelwood	1	0.38
Charcoal	1	0.74

	GWh	ktoe
Hydro/Wind/Landfill gas/Photovoltaic	1	0.086
Electricity	1	0.086

1 toe = 0.041868 terajoule (TJ) (net calorific value)

8. REFERENCES

1. Digest of Energy and Water Statistics 2021, Statistics Mauritius.
2. Digest of Energy and Water Statistics 2022, Statictics Mauritius
3. Renewable Energy Roadmap 2030 for the Electricity Sector, Ministry of Energy and Public Utilities.
4. ASB0046-2019 Standardized Baseline Mauritius Grid Emission Factor, United Nations Framework Convention on Climate Change.

Note:

- All data in this report refer to the Republic of Mauritius, unless otherwise specified and may be subject to revision in subsequent issues. The figures for Republic of Mauritius include those for the Island of Mauritius and the Island of Rodrigues.
- Rounding error may be present on certain totals.

Disclaimer:

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