MINISTRY OF ENERGY AND PUBLIC UTILITIES

ENERGY OBSERVATORY REPORT 2014

11/2016

TABLE OF CONTENT

LIST OF TABLES

TABLE OF FIGURES

Disclaimer:

The purpose of this energy observatory report is to give an indication on the annual energy use in the country. This report has been compiled using data from the Central Electricity Board, National Transport Authority and Statistics Mauritius. Neither the Energy Efficiency Management Office, nor any of its employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any information in this report.

Note:

- *All data in this document 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, Island of Rodrigues and Agalega.*
- *Rounding of error may be present on certain totals.*

1 ENERGY SUPPLY

1.1 Introduction

The energy supply of Mauritius is divided into:

- Imports of primary energy (*Fossil fuels: Heavy Fuel Oil. Liquefied Petroleum Gas, Gasolene, Diesel, Kerosene, Aviation fuel, Coal*)
- Production of primary energy (*Local resources: Bagasse, hydro, wind, landfill gas, fuelwood, photovoltaic*)
- Primary energy re-exports
- Variation of stocks

1.2 Imports

The imports of energy sources in 2014 totalled 1649.4 ktoe, as shown in Table 1.1

Fossil Energy Imports 2014	ktonne	ktoe
Coal	771.7	478.5
Gasolene	137.9	148.9
Diesel oil	303.6	306.7
Aviation fuel	232.0	241.3
kerosene	2.2	2.2
Fuel oil	406.4	390.2
Liquefied Petroleum Gas (LPG)	75.6	81.6
TOTAL	1929.4	1649.4

Data Source: Statistics Mauritius

Table 1.1: Imports of energy sources

The distribution of the imports of energy sources are shown in Figure 1.1

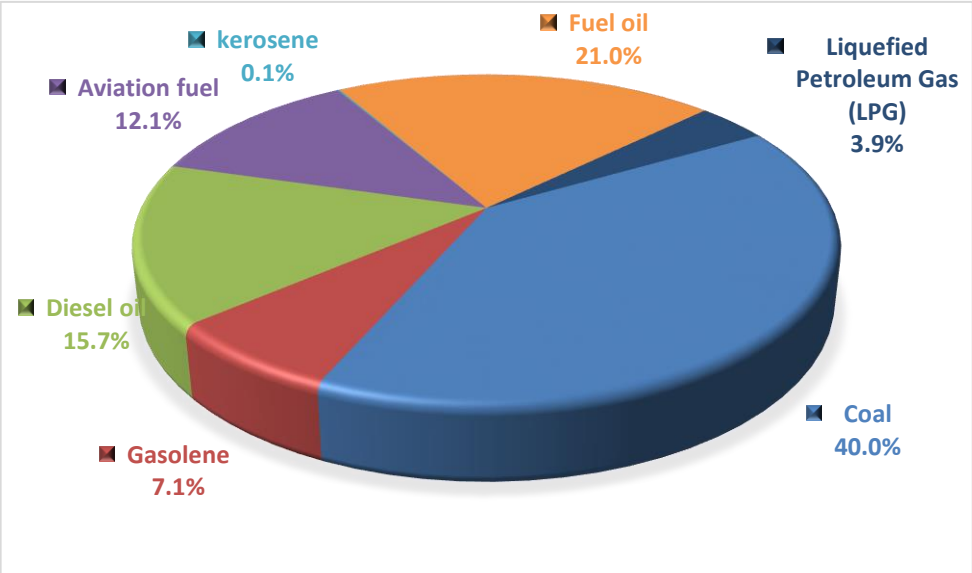
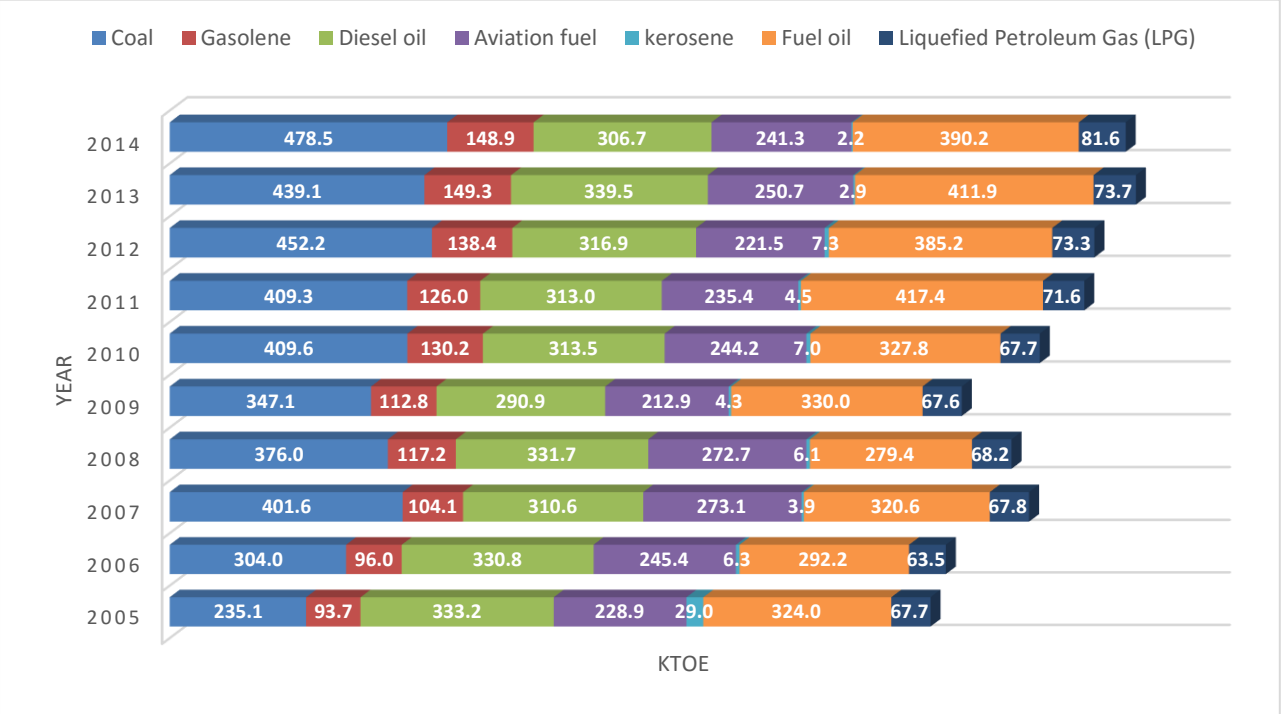


Figure 1.1: Fossil energy imports 2014

Petroleum products are intended mostly for the sectors of transport, electricity generation, manufacturing and to a minor level in the household (kerosene), commercial and agriculture sectors, while 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. Fig 1.2 shows the trend of fossil fuel import for the period 2005-2014.



Data Source: Statistics Mauritius

Figure 1.2: Trend of fossil fuel imports

In 2014 imports of fossil fuels decreased by 1.1 % compared to 2013. The total import bill of energy sources for 2014 amounted to Rs. 31, 146.1 M out of which Rs 29, 013.3 M were for petroleum products (Gasolene, Diesel Oil, Dual purpose kerosene, Fuel Oil, LPG) and Rs 2, 132.8 M for coal, representing a decrease of 10.8 % compared to 2013.

1.3 Primary energy requirement

The primary energy requirements are met from imported sources and from local renewable sources as shown in Table 1.2.

Primary Energy Requirement (ktoe)		2014	2013	% change
Imported fuels	Coal	460.3	440.6	4.5 %
	Gasolene	151.7	142.7	6.3 %
	Diesel Oil	208.0	207.0	0.5 %
	Aviation Fuel	126.8	120.7	5.0 %
	Kerosene	0.9	0.8	5.0 %
	Fuel Oil	254.8	248.5	2.5 %
	LPG	76.7	74.9	2.5 %
	Sub Total	**1279.4**	**1235.4**	3.6 %
Local resources	Bagasse	193.4	201.7	-4.1 %
	Fuelwood	6.9	7.3	-4.9 %
	Photovoltaic	2.1	0.2	811.1 %
	Landfill gas	1.8	1.7	6.5 %
	Hydro & Wind	8.1	8.5	-4.5 %
	Sub Total	**212.3**	**219.4**	-3.2 %
	TOTAL	**1491.7**	**1454.8**	2.5 %

Data Source: Statistics Mauritius

Table 1.2 : Primary energy requirement 2013 – 2014

In 2014, primary energy requirement from fossil fuels amounted to 1279.4 ktoe representing an increase of 2.5% compared to 2013.

Figure 1-3 shows the share of fuel source in the primary energy requirement for year 2014 in ktoe.

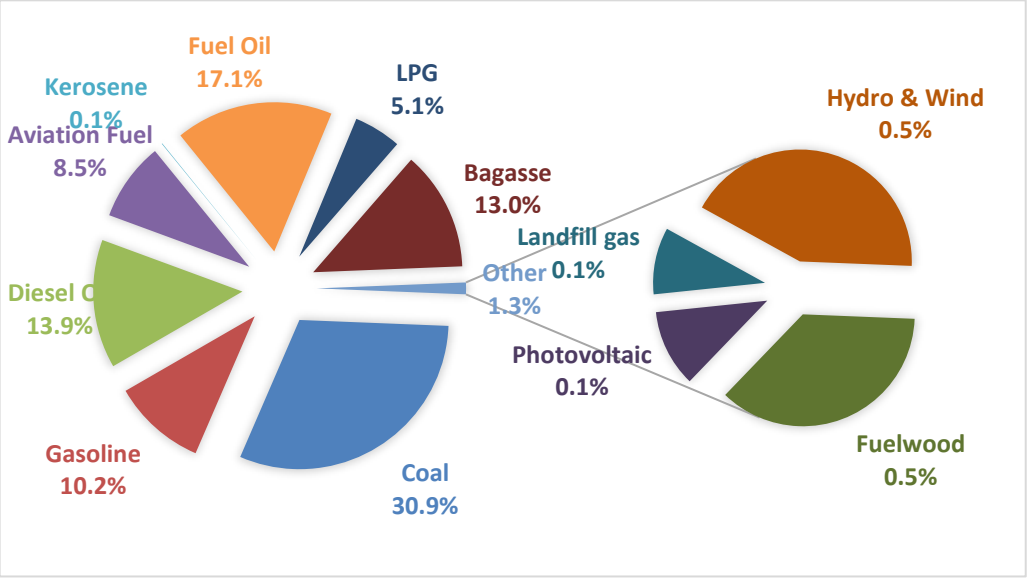


Figure 1.3 : Primary energy requirement (ktoe)

1.4 Production of Primary energy – Local Renewable Sources

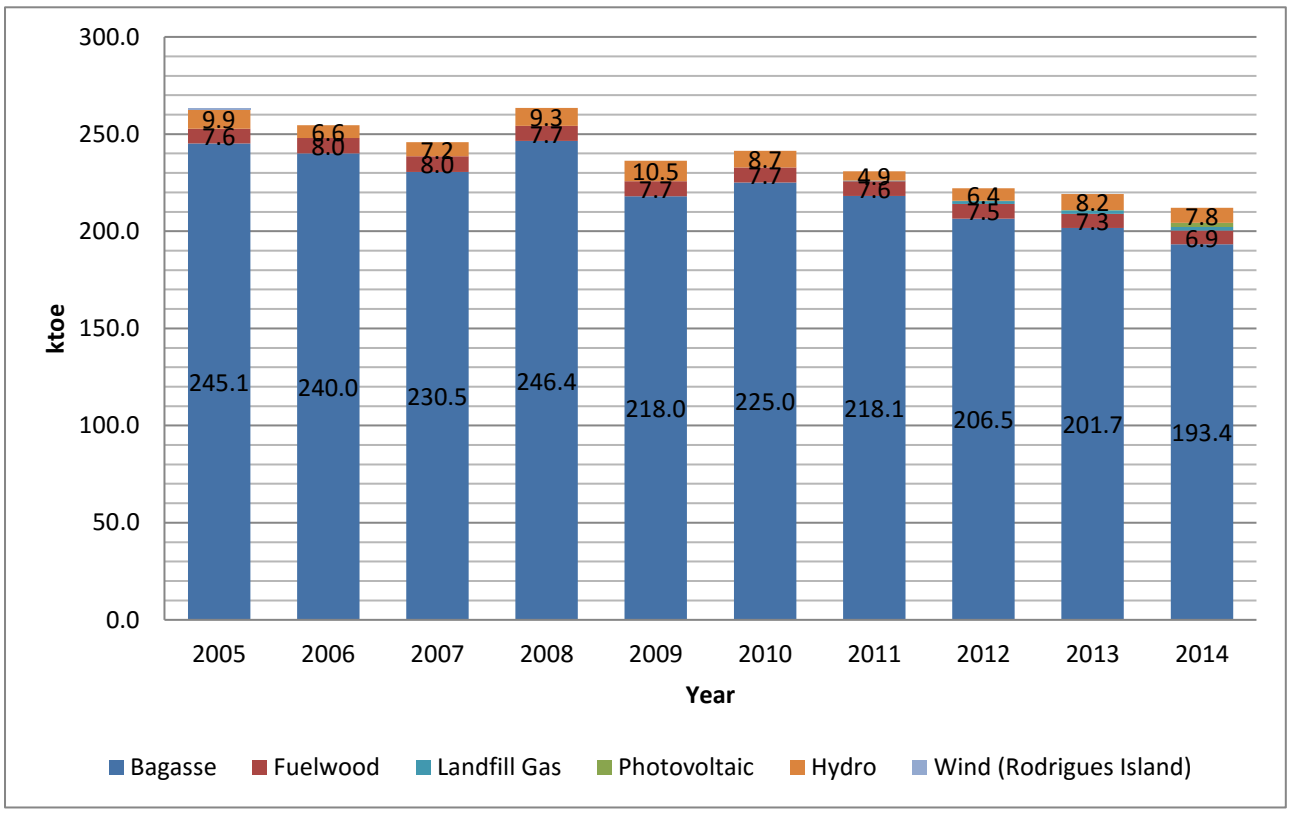
Examples of renewable energy sources are wind, solar, geothermal, wave, tidal, hydro energy including energy derived from biomass, landfill gas, sewage gas, and biogas. In Mauritius, the main sources of renewable energy exploited are biomass, in the form of bagasse, hydro, PV, wind and fuel wood. A total of 212.3 ktoe of local resources was tapped in 2014, as shown in Table 1.3

Local Resources	ktonne	GWh	Ktoe
Bagasse	1208.5		193.4
Fuelwood	18.3		6.9
Photovoltaic		24.6	2.1
Landfill gas		21.3	1.8
Hydro		90.8	7.8
Wind		3.2	0.3
Total	1226.8	139.9	212.3

Data Source: Statistics Mauritius

Table 1.3 : Primary energy supply in 2014 – Local resources

In 2014, primary energy from local resources decreased by 3.2 %, compared to 2013. Bagasse is the main source of primary energy from local resources. Photovoltaic (PV), mostly due to the Small Scale Distributed Generation (SSDG) scheme implemented by the CEB which allows Small Independent Power Producers (SIPP) to feed electricity generated through PV plants installed on their premises to the CEB grid, provided 2.1 ktoe of electricity in 2014. Figure 1.4 shows the trend of primary energy obtained from local resources from 2005 to 2014:

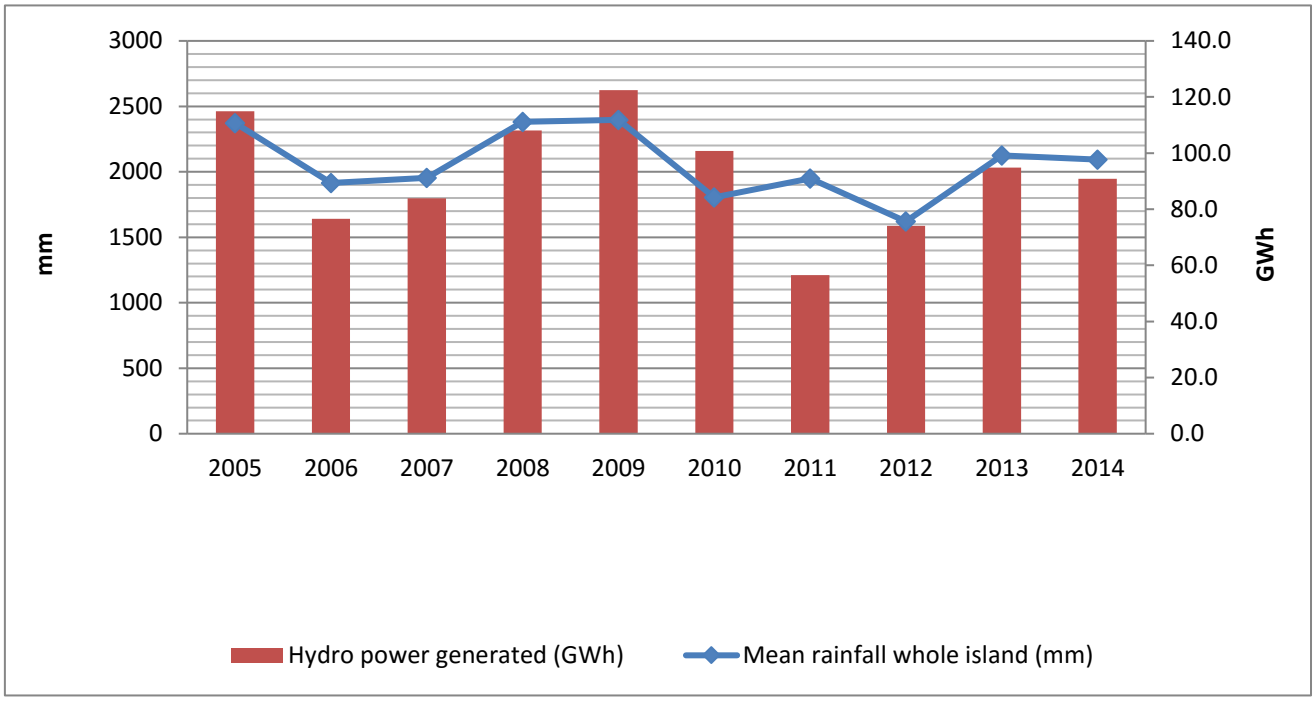


Data Source: Statistics Mauritius

Figure 1.4 : Trend of Primary energy from Local Resources, 2005 - 2014

1.4.1 Hydro electricity

Hydroelectricity is the production of electricity from the potential energy of falling water. There were ten plants in operation as at December 2014 across the Island of Mauritius.



Data Source: Statistics Mauritius

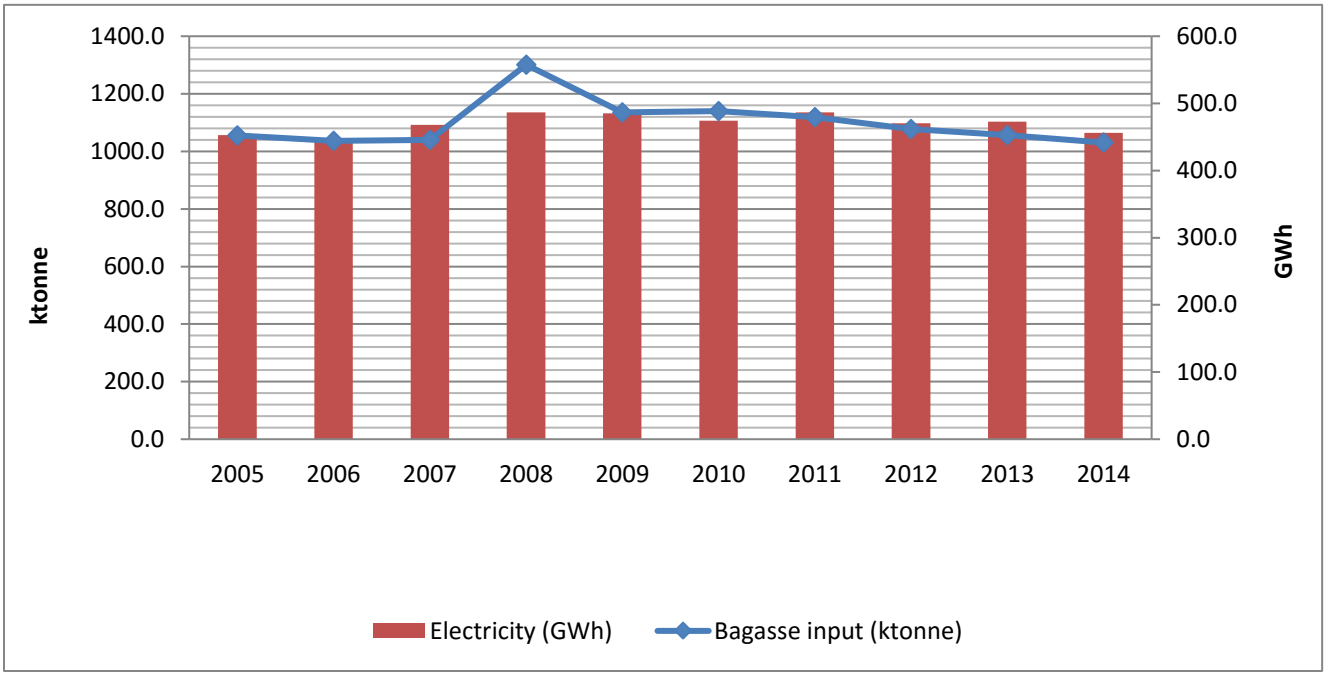
Figure 1.5 : Trend of hydro-electric generation, 2005 to 2014

Hydroelectric power generation accounted for 3.1% of electricity produced in 2014. Fluctuations in hydroelectric power generation tend to follow annual rainfall levels as shown in figure 1.5. In 2011, the discrepancy between hydroelectric power generation and rainfall level can be attributed to the water shortage that affected the island of Mauritius where water, that otherwise, would have been used for hydroelectric power generation had to be diverted for use in other sectors.

1.4.2 Bagasse

Bagasse is the fibrous residue of sugar cane used by sugar factories for heat production to meet their own requirements. Surplus of bagasse is converted into electricity by thermal power plants found mostly on sugar estates. Figure 1.6 gives the bagasse input for electricity generation and the amount so generated over the period 2005 to 2014.

In 2014, 1208.5 ktonnes of bagasse was produced out of which 1030.6 ktonnes was used for electricity generation.



Data Source: Statistics Mauritius

Figure 1.6 : Trend of electricity generation from bagasse, 2005 to 2015

Table 1.4 shows the ratio of electricity produced per ton of bagasse over the period 2005 to 2015. The ratio has been more or less stable in the range of 0.42 MWh/tonne to 0.45 MWh/tonne. In 2014 the ratio of electricity produced per tonne of bagasse was 0.44. Also 15.5 % of electricity production was from bagasse representing a decrease of 3.7 % compared to 2013.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Ratio electricity produced to bagasse input (MWh/tonne)	0.429	0.430	0.450	0.374	0.427	0.416	0.435	0.437	0.448	0.443

Table 1.4 : Ratio of electricity produced per tonne of bagasse, 2005 - 2014

1.4.3 Photovoltaics (PV)

Photovoltaics is a method of generating electrical power by converting solar radiation into direct current electricity using semiconductors.

PV installations are generally used as source of electricity in remote areas where access to the CEB network was not accessible or the cost of extension of the existing network is too high. The main applications were in private hunting ground or domains. Another use of PV is for solar powered street lighting.

The electricity generation from photovoltaic panels was 24.5 GWh in 2014 compared to 2.7 GWh in 2013. A notable increase arising mainly from the coming into operation of small and medium scale PV plants installed by CEB customers.

1.4.4 Electricity from Wind energy

Wind energy comes from the movement of air across the atmosphere of the Earth. 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. It may be noted 3.3 GWh of electricity was produced from wind energy in Rodrigues Island in 2014. Two large wind power projects are in the pipeline for Mauritius. This comprises a 29.4 MW plant by Consortium Suzlon-Padgreen Co Ltd and a 9MW plant by Eole Plaines des Roches Ltd for which Power Purchase Agreements were signed in August 2012 and July 2013 respectively.

1.4.5 Electricity from Landfill gas

Landfill gas is a gas, constituted of mostly methane, produced by the fermentation of organic waste in landfills in the absence of oxygen. 21.3 GWh of electricity was produced from landfill gas in Mauritius in 2014.

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

By the end of 2013, it was estimated that there were at least 76,742 solar water heaters installed, used mainly for the purpose of water heating for bathing in households.

This figure has been calculated taking into account the figure of 41 842 SWH provided by the Housing National Census 2011 and to the total number of solar water heaters subsidised during the MID Fund schemes 2 and 3, which amounted to 34 900 SWH.

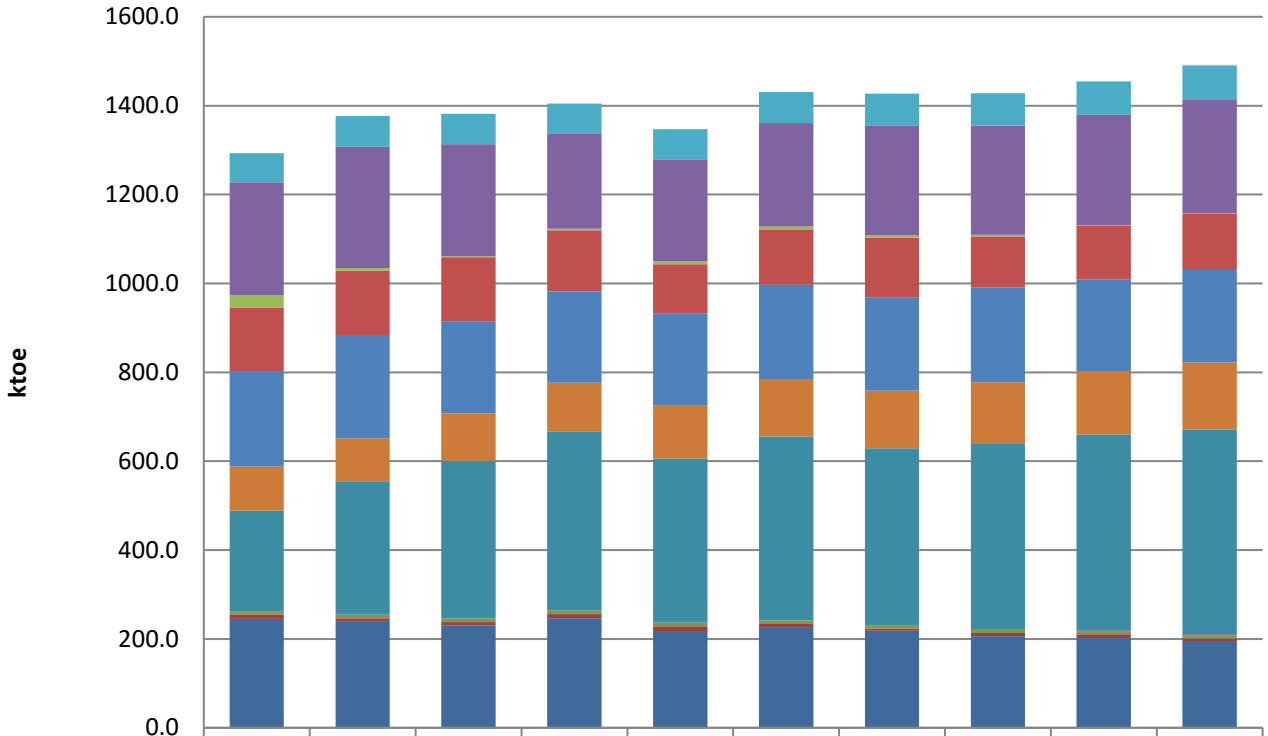
A few additional SWH may have also been installed since 2011 outside the MIDF, without subsidies. It is to be noted that large scale solar water heater are used in other sectors of the economy such as the tourism sector and manufacturing sector to preheat water for swimming pools and boilers. Figures for these sectors are, however, currently not available.

In the case that these solar water heaters have displaced only electric water heaters having an average thermal efficiency of 95 %, the avoided electric energy is estimated to be 39.5 GWh. Using the grid emission factor for year 2014, the avoided CO_2 emissions would be 42 841.7 tCO_2.

On the other hand, if these solar water heaters have displaced only LPG gas water heaters having an average thermal efficiency of 80%, consumption of 3 731 tonnes of LPG would have been avoided and the reduction in emissions would equal 10 761 tCO_2.

1.5 Primary energy consumption

The evolution of primary energy consumption over the period 2005 to 2014 is shown in Figure 1.7



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Photovoltaic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	2.1
LPG	65.7	69.0	68.9	67.9	68.9	70.2	71.1	72.7	74.9	76.7
Fuel oil	253.3	273.3	251.9	213.3	227.9	232.2	248.1	245.4	248.5	254.8
kerosene	28.6	6.0	2.4	4.0	6.7	8.0	4.3	3.8	0.8	0.9
Aviation fuel	143.1	146.7	143.6	136.9	110.5	123.3	134.3	115.0	120.7	126.8
Diesel oil	214.2	230.6	207.4	205.4	206.7	213.6	210.1	213.4	207.0	208.0
Gasoline	100.1	96.2	106.9	109.5	120.6	127.7	130.0	136.6	142.7	151.7
Coal	225.6	300.4	355.0	403.9	369.3	414.1	397.7	418.4	440.6	460.3
Landfill gas	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.5	1.7	1.8
Fuelwood	7.6	8.0	8.0	7.7	7.7	7.7	7.6	7.5	7.3	6.9
Hydro & Wind	9.9	6.6	7.2	9.3	10.7	8.9	5.1	6.7	8.5	8.1
Bagasse	245.1	240.0	230.5	246.4	218.0	225.0	218.1	206.5	201.7	193.4

Data Source: Statistics Mauritius

Figure 1.7 : Primary energy consumption

1.6 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.

Table 1.5 shows the demand for petroleum products over the period 2005 to 2014. It may be noted that annual demand in Petroleum Products to meet domestic and international demand decreased by 7.5% from 1,215,500 tonnes in 2013 to 1,159,900 tonnes in 2014.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Gasolene	86.8	88.9	96.4	108.5	104.4	120.6	116.7	128.2	138.2	137.9
Diesel oil	329.9	327.5	307.5	328.5	288.0	310.4	309.9	313.8	336.1	303.6
Aviation fuel	220.1	236.0	262.6	262.2	204.7	234.9	226.4	213.0	241.1	234.2
kerosene	27.9	6.0	3.7	5.9	4.1	6.7	4.3	7.0	2.8	2.2
Fuel oil	337.5	304.4	333.9	291.0	343.7	341.5	434.8	401.2	429.1	406.4
Liquefied Petroleum Gas (LPG)	62.7	58.8	62.8	63.1	62.6	62.7	66.3	67.9	68.2	75.6
TOTAL (thousand tonnes)	**1064.9**	**1021.5**	**1066.9**	**1059.2**	**1007.6**	**1076.7**	**1158.4**	**1131.1**	**1215.5**	**1159.9**

Data Source: Statistics Mauritius

Table 1.5 : Demand for petroleum products, 2005 - 2014

Upon arrival at the New Oil Jetty of Port Louis Harbour, the petroleum products are pumped out of the tankers and delivered through pipelines into fuel tanks owned and operated individually or jointly in the port Area by the local oil companies, which operate a Jet Fuel tank near SSR Airport. The local oil companies comprise:

(i) Vivo (Mauritius) Ltd (Ex-Shell);
(ii) Total Mauritius Ltd;
(iii) Engen (Mauritius) Ltd; and
(iv) Indian Oil (Mauritius) Ltd

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

1.7 Stock variation

The variations in stock in 2014 are provided in the Table 1.6.

	2014							
	Import		Export		Consumption		Import-Export-Consumption	
	ktonne	ktoe	ktonne	ktoe	ktonne	ktoe	ktonne	ktoe
Coal	771.7	478.5			742.5	460.3	29.2	18.2
Gasolene	137.9	148.9			140.5	151.7	-2.6	-2.8
Diesel oil	303.6	306.7	116.7	117.8	206.0	208.0	-19.0	-19.2
Aviation Fuel	234.2	243.6	121.7	126.6	122.0	126.8	-9.5	-9.8
Kerosene	2.2	2.3			0.8	0.9	1.3	1.5
Fuel oil	406.4	390.2	170.6	163.7	265.5	254.8	-29.6	-28.4
LPG	75.6	81.6			71.0	76.7	4.6	4.9

Data Source: Statistics Mauritius

Table 1.6: Variation in stock

1.8 Primary energy re-export

Primary energy re-export in 2014 is shown in Table 1.7.

Energy Source	ktonne	ktoe
Diesel oil	116.7	117.8
Aviation fuel (foreign aircraft)	121.7	126.6
Fuel oil	170.6	163.7

Data Source: Statistics Mauritius

Table 1.7: Primary energy re-export

1.9 Energy dependency rate

In 2014, the energy dependency rate was **85.8%**. The trend of the energy dependency rate from 2005 to 2014 is shown in Table 1-8.

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
79.7%	81.5%	82.2%	81.2%	82.5%	83.1%	83.8%	84.4%	84.9%	85.8%

Table 1.8 : Dependency Rate, 2005 - 2014

2 ELECTRICITY PRODUCTION CAPACITY

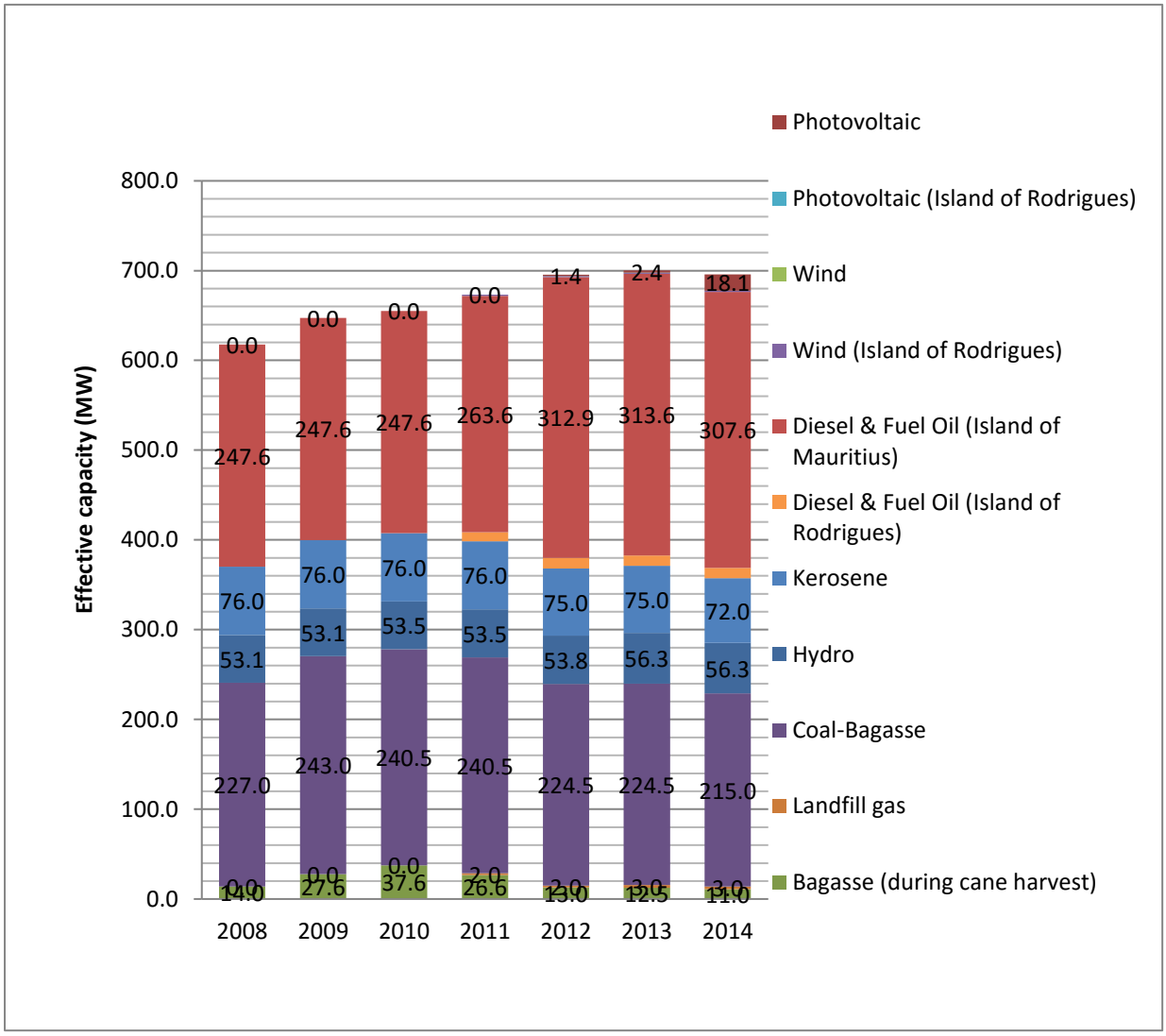
The capacity of power plants connected to the grid in 2014 is shown in Table 2.1.

Type of power plant		Installed plant capacity (MW)	Total Installed plant capacity (MW)	Effective plant capacity (MW)	Total effective plant capacity (MW)
BAGASSE (during cane harvest)	Medine	12.50	12.50	11.00	11.00
COAL- BAGASSE	Alteo Energy Ltd (formerly F.U.E.L.)	36.70	226.30	27.00	185.00
	Terragen Ltd (formerly Compagnie Thermique de Belle Vue)	71.20		62.00	
	Consolidated energy limited	28.40		22.00	
	Omnicane Thermal Energy Operations (La Baraque) Ltd (formerly Compagnie Thermique de Savannah)	90.00		74.00	
	Omnicane Thermal Energy Operations (St Aubin) Ltd (formerly Compagnie Thermique du Sud)	32.50	32.50	30.00	30.00
HYDRO	Champagne	30.00	60.74	28.00	56.30
	Ferney	10.00		10.00	
	Tamarind Falls	11.70		9.50	
	Le Val	4.00		4.00	
	Reduit	1.20		1.00	
	Cascade Cecile	1.00		1.00	
	Magenta	0.94		0.90	
	Midlands Dam	0.35		0.35	
	La Nicoliere	0.35		0.35	
	La Ferme	1.20		1.20	
LANDFILL GAS	Sotravic Ltd	3.30	3.30	3.00	3.00
KEROSENE	Nicolay	78.40	78.40	72.00	72.00
DIESEL & FUEL OIL	St Louis	89.00	336.60	66.60	307.60
	Fort Victoria	109.60		107.00	
	Fort George	138.00		134.00	
PHOTOVOLTAIC	IPP	18.12	18.12	18.12	18.12
PHOTOVOLTAIC	Island of Rodrigues (IPP)	0.09	0.09	0.09	0.09
WIND	IPP	0.00	0.00	0.00	0.00
WIND	Island of Rodrigues	1.28	1.28	1.28	1.28
DIESEL & FUEL OIL	Island of Rodrigues	12.30	12.30	11.40	11.40
Total power available on grid (Island of Mauritius) (MW)		768.46	768.46	683.02	683.02
Total power available on grid (Island of Rodrigues) (MW)		13.67	13.67	12.77	12.77
Total (MW)		782.13	782.13	695.79	695.79

Data Source: Statistics Mauritius

Table 2.1 : Capacity of power plants in 2014

The trend of power plant capacity from 2008 to 2014 (Island of Mauritius) is shown in Figure 2.1.



Data Source: Statistics Mauritius

Figure 2.1 : Trend of effective power plant capacity, 2008 - 2014

3 ELECTRICITY PRODUCTION

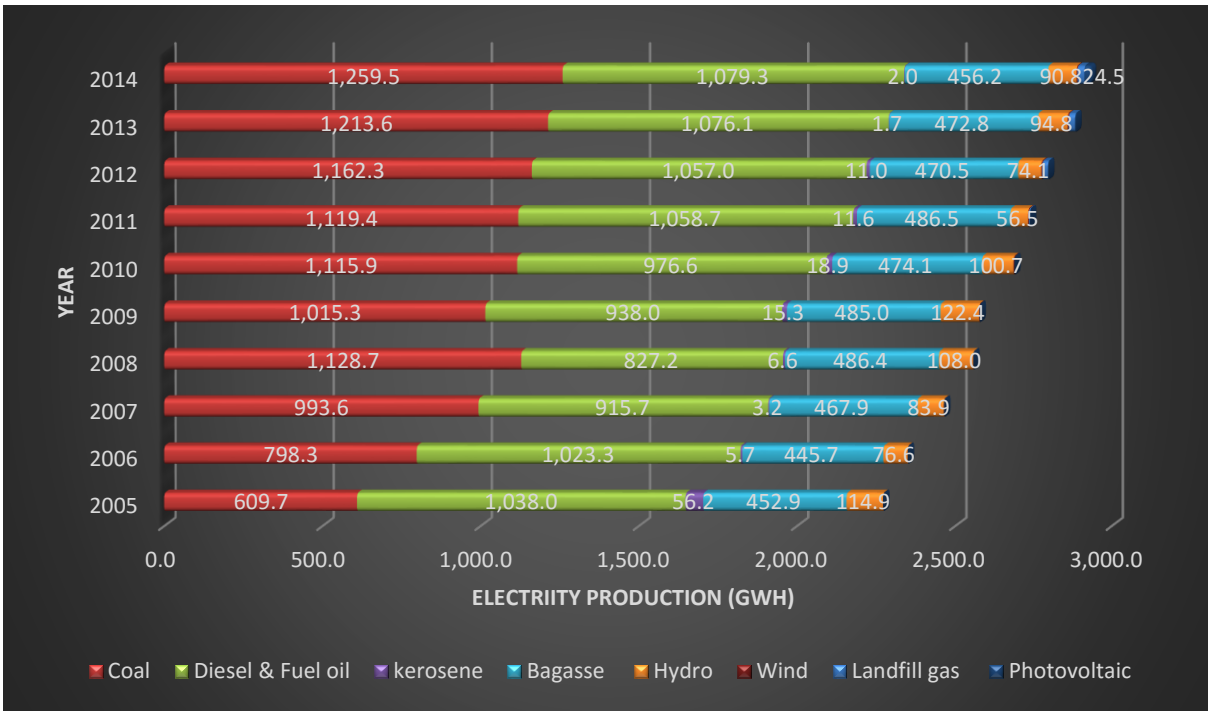
Overall conversion efficiencies of power plants in 2014 are given in Table 3.1

2014	Fuel input	Electricity production		Overall conversion efficiency
	ktoe	GWh	ktoe	
Coal	441.0	1259.5	108.3	24 %
Diesel & Fuel Oil	213.8	1079.3	92.8	45 %
kerosene	0.7	2.0	0.2	24 %
Bagasse	164.9	456.2	39.2	24 %
TOTAL (Thermal)	**820.4**	**2797.0**	**240.5**	**29 %**

Data Source: Statistics Mauritius

Table 3.1 : Conversion efficiency of power plants

Figure 3.1 shows the trend of electricity production over the period 2005 to 2014.

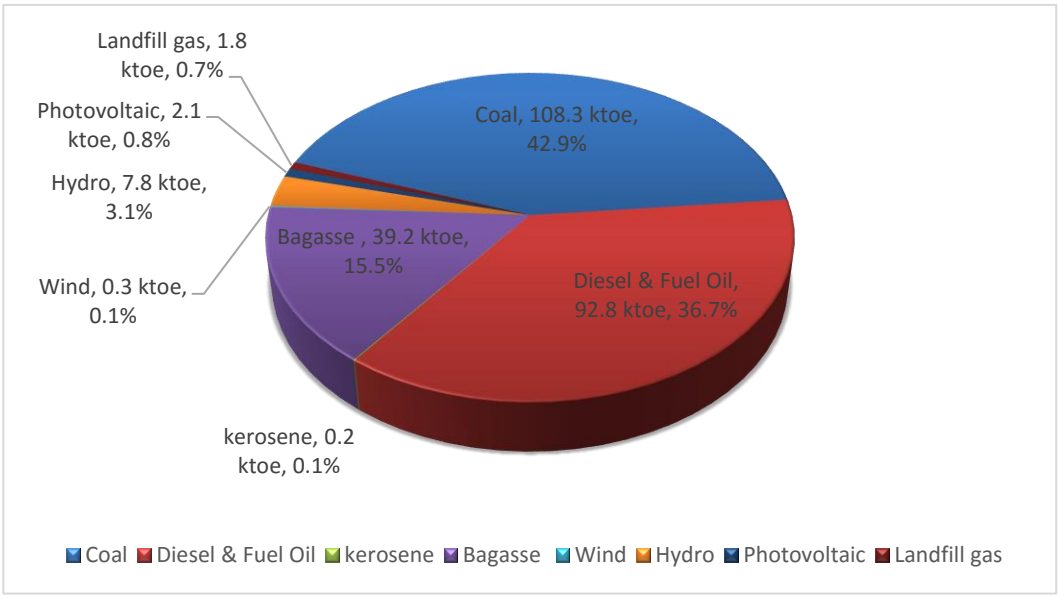


Data Source: Statistics Mauritius

Figure 3.1 : Trend of electricity production, 2005 - 2014

Total electricity production over the previous year increased by 1.8 % in 2014 compared to 3.2 % in 2013. As it can be noted from Figure 3.2, 79.7% of electricity production was derived from fossil sources and 20.3% from renewable sources.

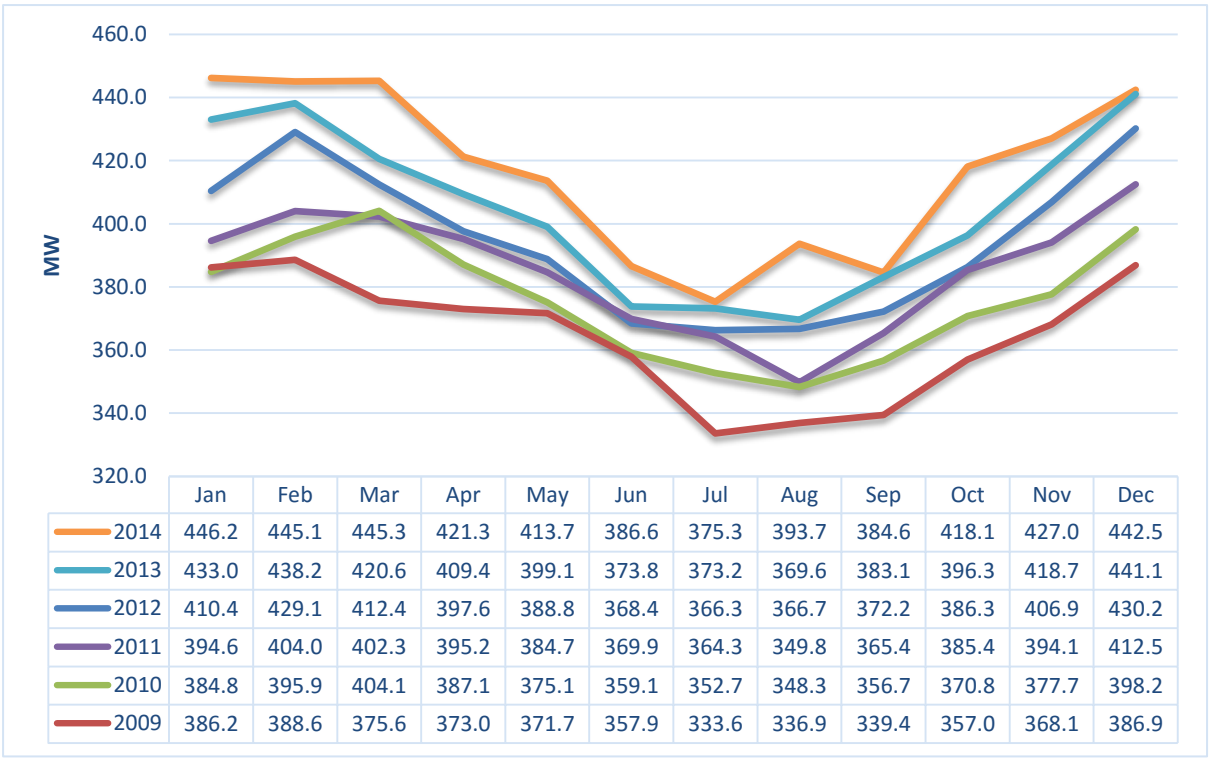
The share of electricity generated from renewable source in 2014 was 20.3 % which is less than the share of 20.6% in 2013. This can be explained by a decrease of 3.5 % in electricity production from bagasse and 4.2 % form hydro power stations as compared to 2013.



Data Source: Statistics Mauritius

Figure 3.2 : Share of electricity production by fuel type

Figure 3.3 shows the monthly peak electricity demand for the years 2009 - 2014 (Island of Mauritius).



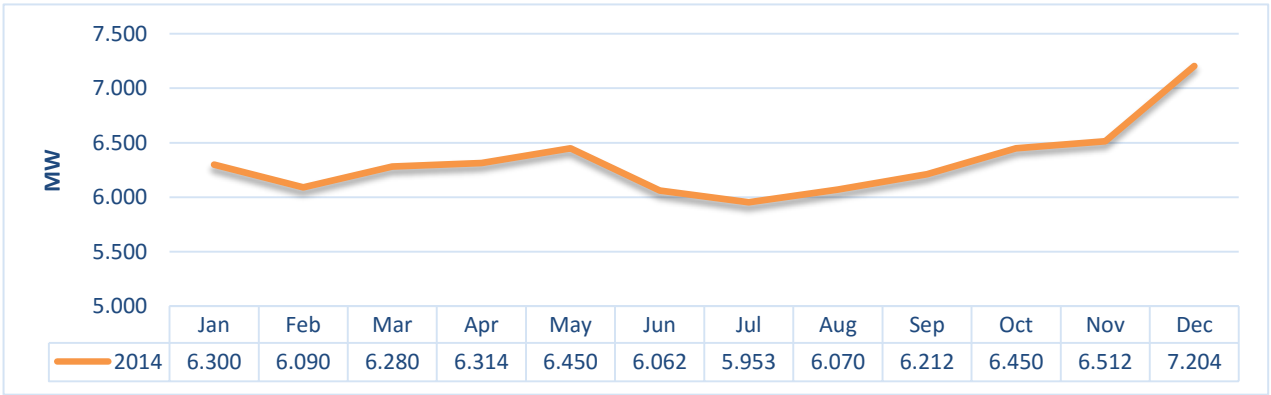
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	446.2	445.1	445.3	421.3	413.7	386.6	375.3	393.7	384.6	418.1	427.0	442.5
2013	433.0	438.2	420.6	409.4	399.1	373.8	373.2	369.6	383.1	396.3	418.7	441.1
2012	410.4	429.1	412.4	397.6	388.8	368.4	366.3	366.7	372.2	386.3	406.9	430.2
2011	394.6	404.0	402.3	395.2	384.7	369.9	364.3	349.8	365.4	385.4	394.1	412.5
2010	384.8	395.9	404.1	387.1	375.1	359.1	352.7	348.3	356.7	370.8	377.7	398.2
2009	386.2	388.6	375.6	373.0	371.7	357.9	333.6	336.9	339.4	357.0	368.1	386.9

Data Source: Statistics Mauritius

Figure 3.3 : Peak electricity demand (Island of Mauritius), 2009 – 2014

In 2013, peak power demand varied between 369.6 MW to 444.1 MW. Peak demand of 441.1 MW occurred in December.
In 2014, peak power demand varied between 375.3 MW to 446.2 MW. Peak demand of 446.2 MW occurred in January.
The peak power demand is observed to follow prevailing meteorological conditions, mainly temperature with peaks noted in the summer season, which implies additional power demand for air conditioning across the island. Electricity use for refrigeration also increases during the summer period.

Figure 3.4 shows the monthly peak electricity demand for the year 2014 (Island of Rodrigues).

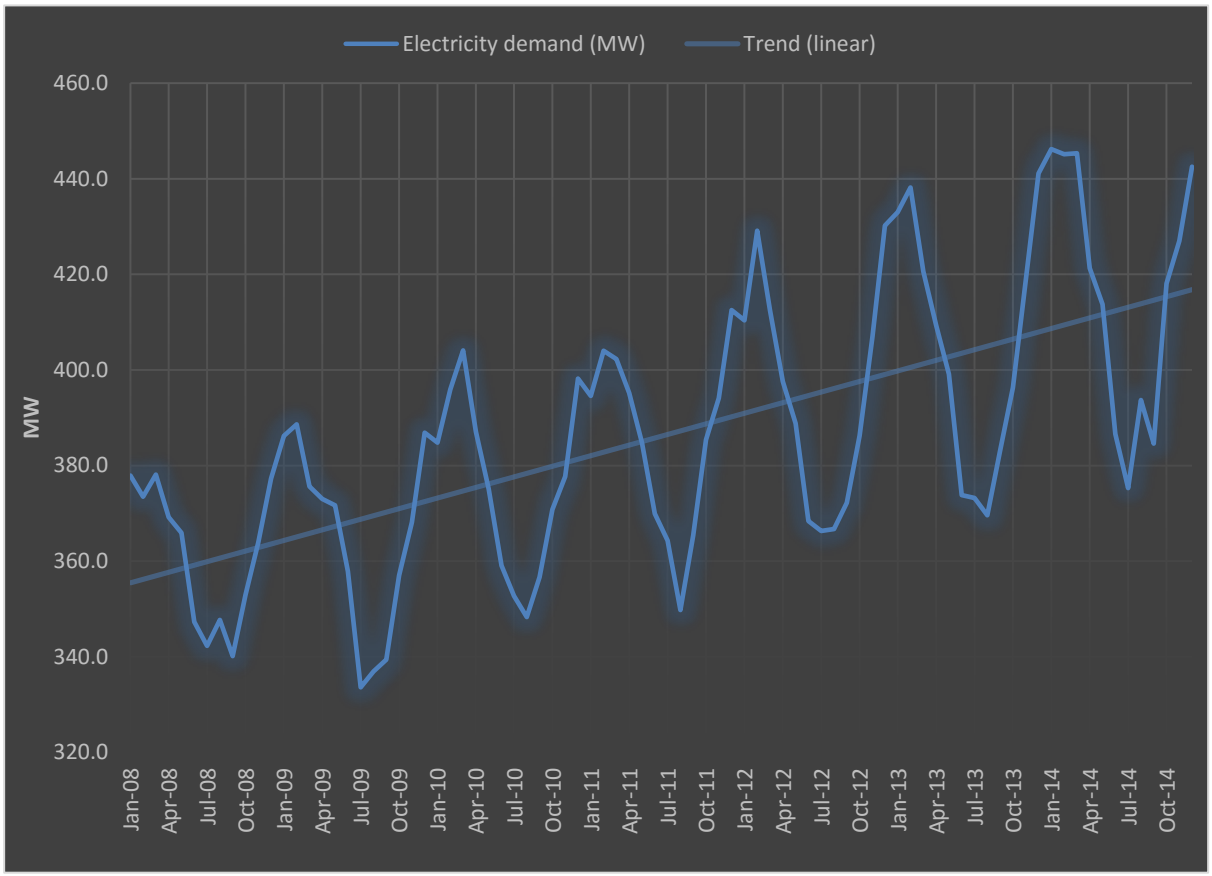


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	6.300	6.090	6.280	6.314	6.450	6.062	5.953	6.070	6.212	6.450	6.512	7.204

Data Source: Statistics Mauritius

Figure 3.4 : Peak electricity demand (Island of Rodrigues), 2014

Peak demand has consistently increased as shown by the demand trend over the period 2009 - 2014 (Island of Mauritius) in Figure 3.5.



Data Source: Statistics Mauritius

Figure 3.5 : Electricity demand (MW) trend, January 2008 to Dec 2014

Table 3.2 provides a summary of the electricity production over the period 2005 to 2014 (Island of Mauritius).

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Fossil (GWh)	1,704.0	1,827.4	1,912.5	1,962.5	1,968.5	2,111.4	2,189.7	2,230.3	2,291.4	2,340.8
Renewables (GWh)	568.2	522.7	552.2	594.8	608.9	577.3	548.9	566.8	593.9	596.1
Increase (GWh)	106.9	78.0	114.6	92.5	20.2	111.3	49.9	58.6	88.1	51.6
Percentage increase overall	4.9 %	3.4 %	4.9 %	3.8 %	0.8 %	4.3 %	1.9 %	2.1 %	3.2 %	1.8 %
Percentage of renewables	25.0%	22.2%	22.4%	23.3%	23.6%	21.5%	20.0%	20.3%	20.6%	20.3%
Peak demand (MW) (Island of Mauritius)	353.1	367.3	367.6	378.1	388.6	404.1	412.5	430.2	441.1	446.2
Peak demand evolution	6.2 %	4.0 %	0.1 %	2.9 %	2.8 %	4.0 %	2.1 %	4.3 %	2.5 %	1.2 %

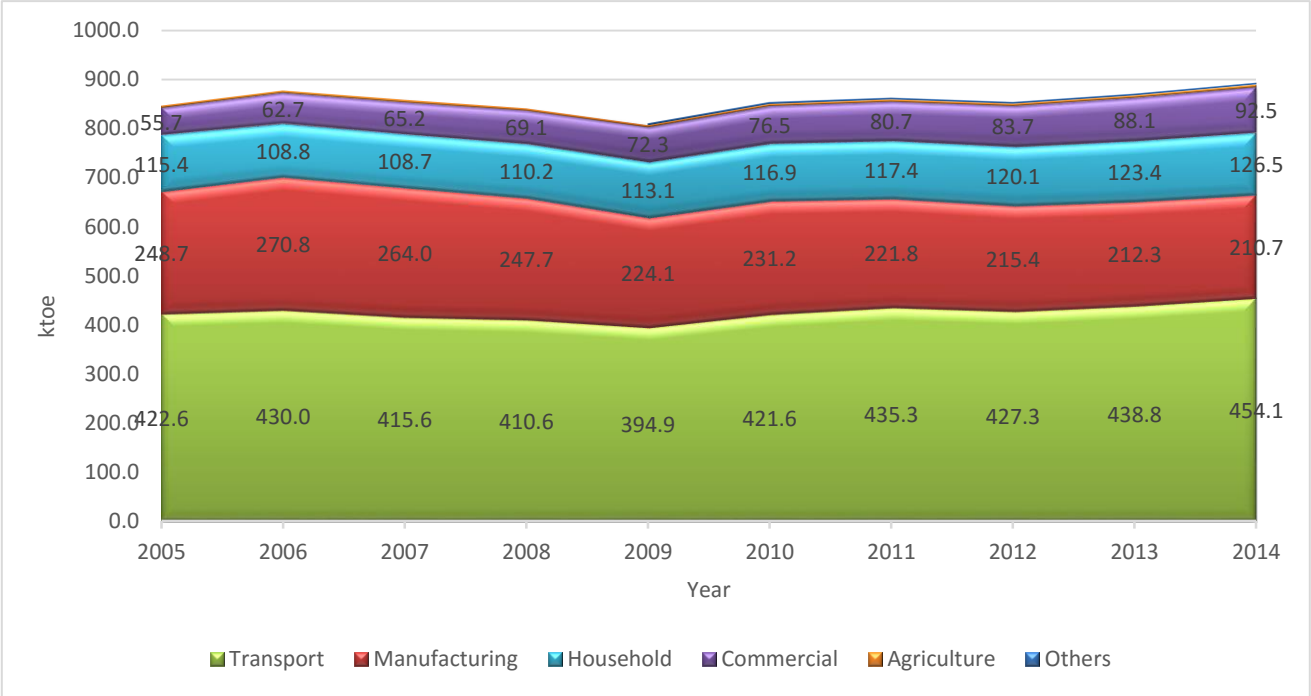
Data Source: Statistics Mauritius

Table 3.2 : Summary of electricity production, 2005 - 2014

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 2005 to 2014. It can be noted that the total final energy consumption in 2014 amounted to 891.9 ktoe, representing an increase of 2.5 % compared to 2013. As can be seen in Figure 4.1, with the exception of the manufacturing sector which has maintained a decreasing trend, an increase in final energy consumption has been observed in all other sectors, with the highest increase (+ 15.3 ktoe) being for the transport sector.



Data Source: Statistics Mauritius

Figure 4.1 : Final energy consumption by sector, 2005– 2014

4.2 Final Energy consumption - Transport sector

Table 4.1 gives the fuel consumption in the sub-sectors of the transport sector, while Figure 4.2 shows the share of fuel use in each sub-sector and Figure 4.3 depicts the trend in consumption over the period 2005 – 2014.

Fuel consumption transport sector 2014	Gasolene	Diesel	Aviation fuel (local aircraft)	LPG	Fuel Oil	Total (ktoe)
Land	148.2	166.8		4.0		319.1
Aviation			126.8			126.8
Sea	3.5	1.2			3.5	8.2
Total (ktoe)	151.7	168.0	126.8	4.0	3.5	454.1

Data Source: Statistics Mauritius

Table 4.1 : Fuel consumption in the Transport sector in 2014

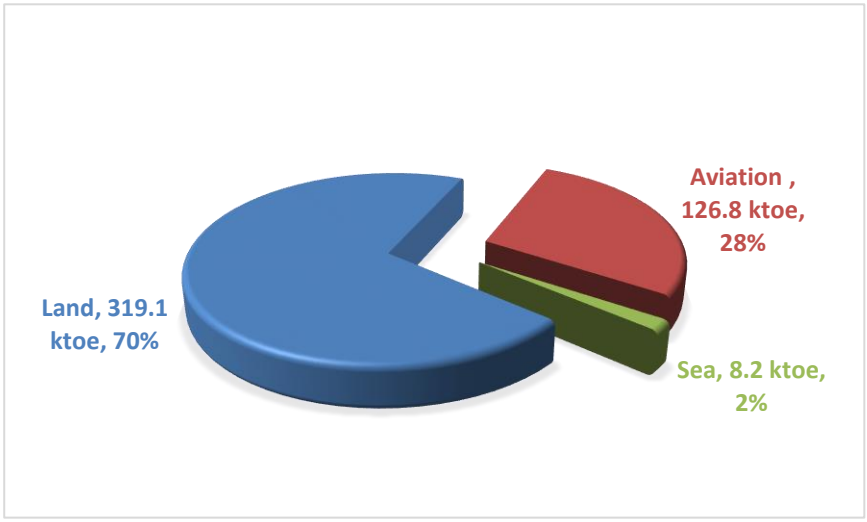
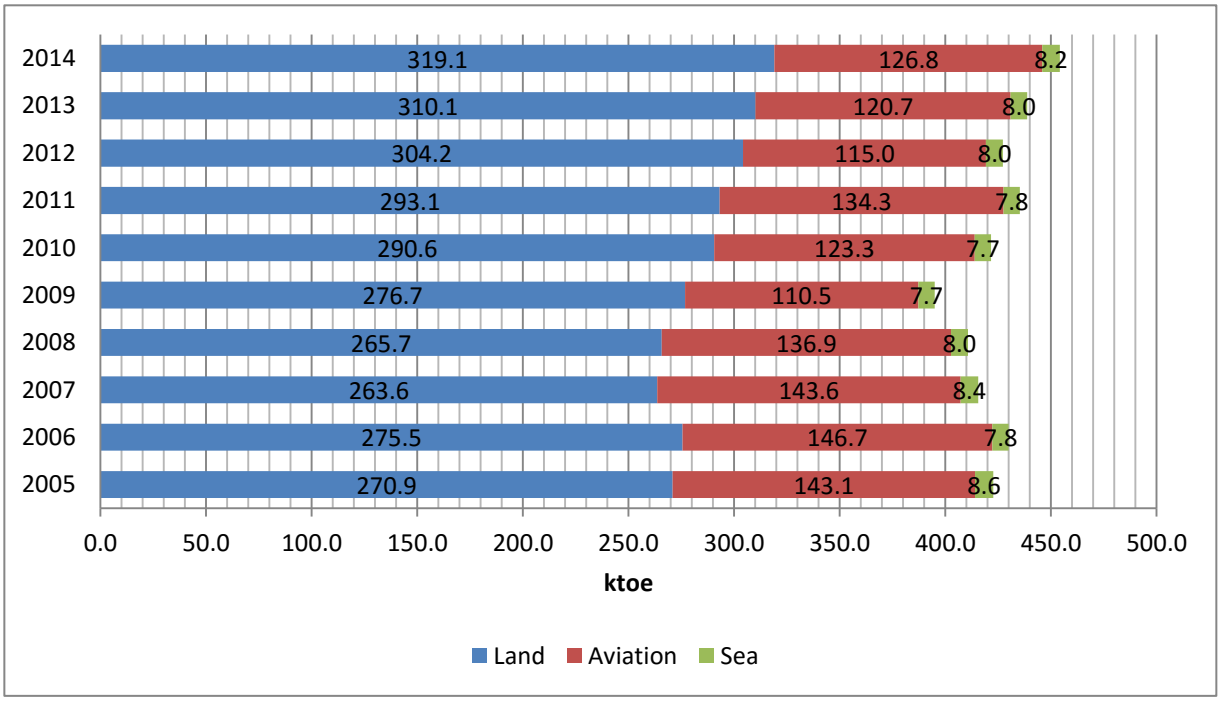


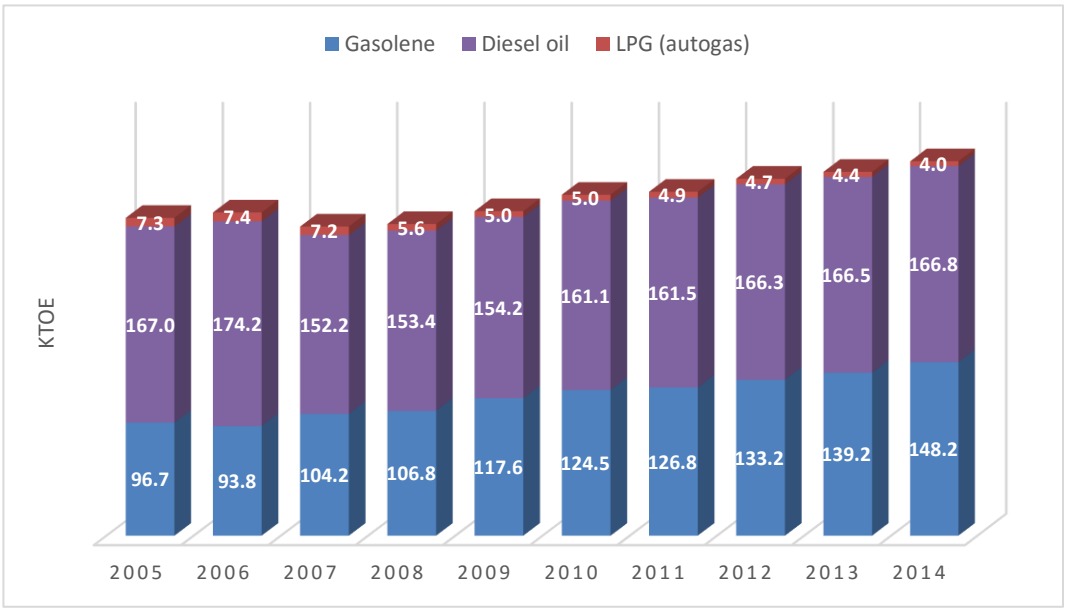
Figure 4.2 : Fuel consumption share in sub-sectors of the Transport sector in 2014



Data Source: Statistics Mauritius

Figure 4.3 : Trend of Fuel Consumption in sub-sectors of Transport sector 2005 – 2014

The trend of fuel consumption in the road transport sector over the period 2005 to 2014 is shown in Figure 4.4. It may be noted that fuel consumption in road transport reached 319.1 ktoe in 2014; representing an increase of 2.9 % over 2013.



Data Source: Statistics Mauritius

Figure 4.4 : Trend of Fuel Consumption in Road Transport, 2005 - 2014

Compared to 2013, it may be observed that in 2014:-

- Diesel consumption increased by 0.2 %.
- Gasolene consumption increased by 6.5 %.
- LPG (autogas) consumption has decreased by 8.0 %

Vehicle fleet

The fleet of powered vehicles for Mauritius comprised 463 210 vehicles in 2014.

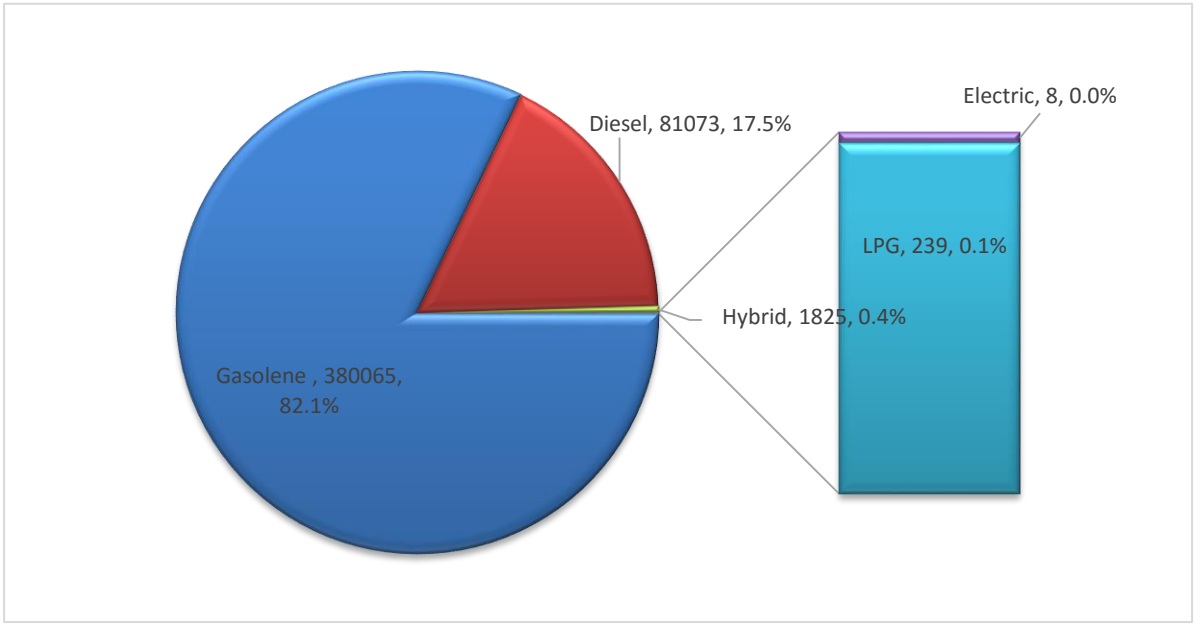


Figure 4.5 : Vehicle fleet by type of fuel

In 2014 the number of hybrid powered vehicles increased to 2413 compared to 1825 in 2013.

It may be noted from Table 4.2 that there has been an increase in new and second hand imported car registrations from in 2014 of +2.2 % compared to 2013.

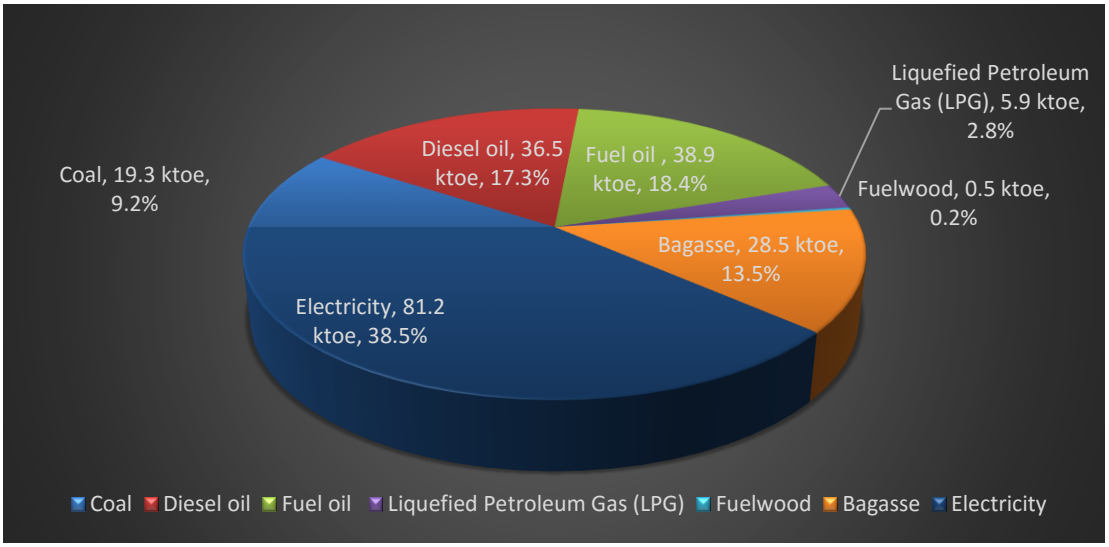
Engine capacity	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	% growth in 2014 over 2013
Up to 1,000 c.c	1171	722	535	726	804	948	856	1634	1982	1519	-23.4
1,001 - 1,250 c.c	803	1224	1338	1580	1211	1060	1158	1582	2056	3166	54.0
1,251 - 1,400 c.c	1135	879	1283	1801	1691	2205	2015	2691	3321	3212	-3.3
1,401 - 1,500 c.c	2926	2465	2033	2042	1835	2384	1771	1824	2528	2425	-4.1
1,501 - 2,000 c.c	1184	1945	2482	2858	2927	2105	2867	3557	3240	3039	-6.2
2,001 - 2,250 c.c	141	100	72	338	32	9	20	30	51	56	9.8
2,251 - 2,500 c.c	57	59	91	169	155	196	166	58	432	512	18.5
2,501 - 3,000 c.c	54	54	129	162	139	154	185	142	102	94	-7.8
Above 3,000 c.c	44	30	82	115	72	87	71	77	48	44	-8.3
Total	**7515**	**7478**	**8045**	**9791**	**8866**	**9148**	**9109**	**11595**	**13760**	**14067**	2.2

Data Source: National Transport Authority

Table 4.2 : New and second hand imported car registration

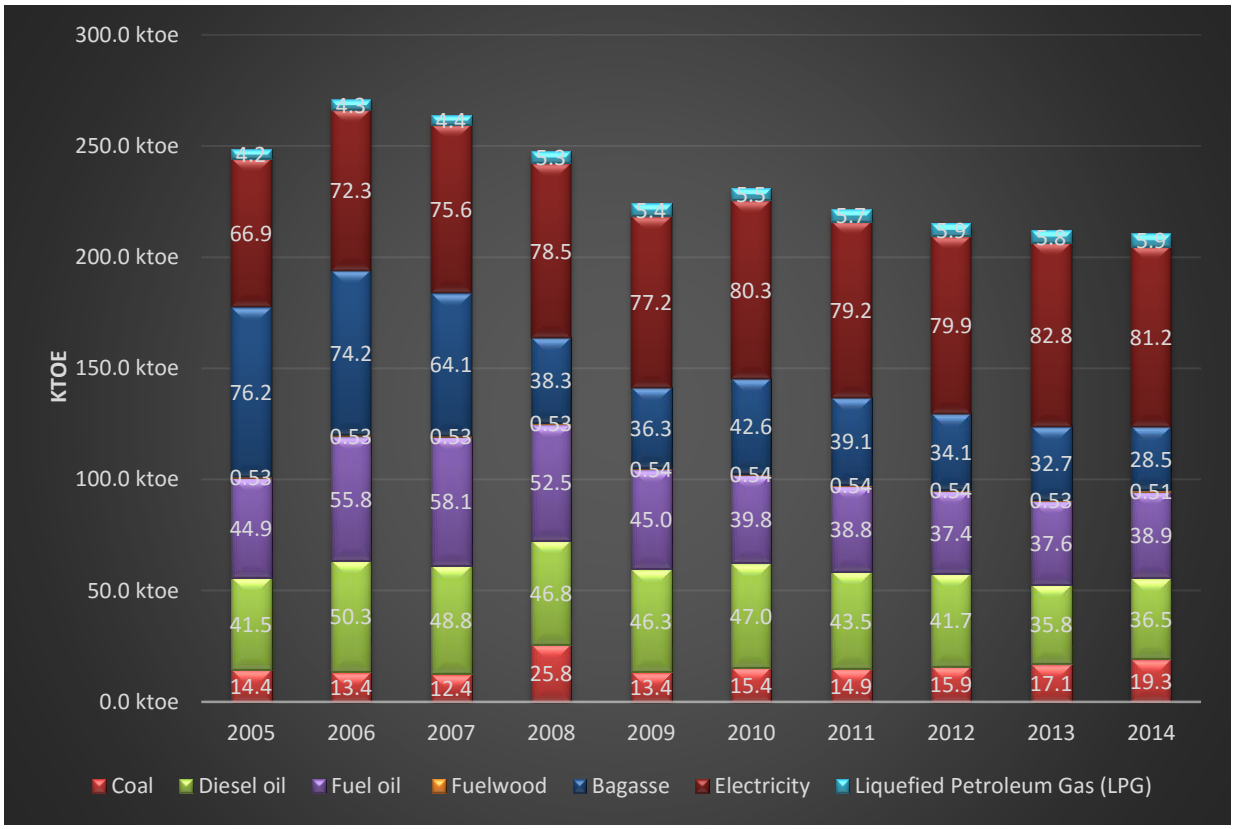
4.3 Final energy consumption - Manufacturing sector

Total energy consumption in the manufacturing sector amounted to 210.7 ktoe in 2014 which was 0.8 % less than in 2013. Figure 4.6 shows the share of different energy sources used in the manufacturing sector in 2014, while Figure 4.7 provides the trend for the period 2005 to 2014.



Data Source: Statistics Mauritius

Figure 4.6: Share of energy sources, Manufacturing Sector, 2014

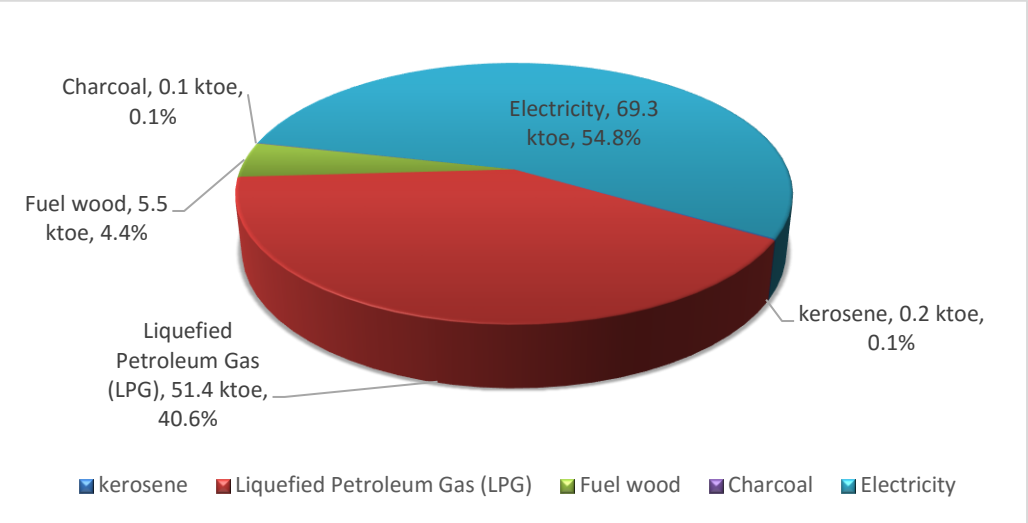


Data Source: Statistics Mauritius

Figure 4.7: Trend of fuel consumption in the Manufacturing Sector, 2005 – 2014

4.4 Final energy consumption - Household sector

Total energy consumption in the household sector amounted to 126.5 ktoe in 2014 representing a 2.5% growth over 2013. The share of energy sources in the Household sector in 2014 is given in Figure 4.8.

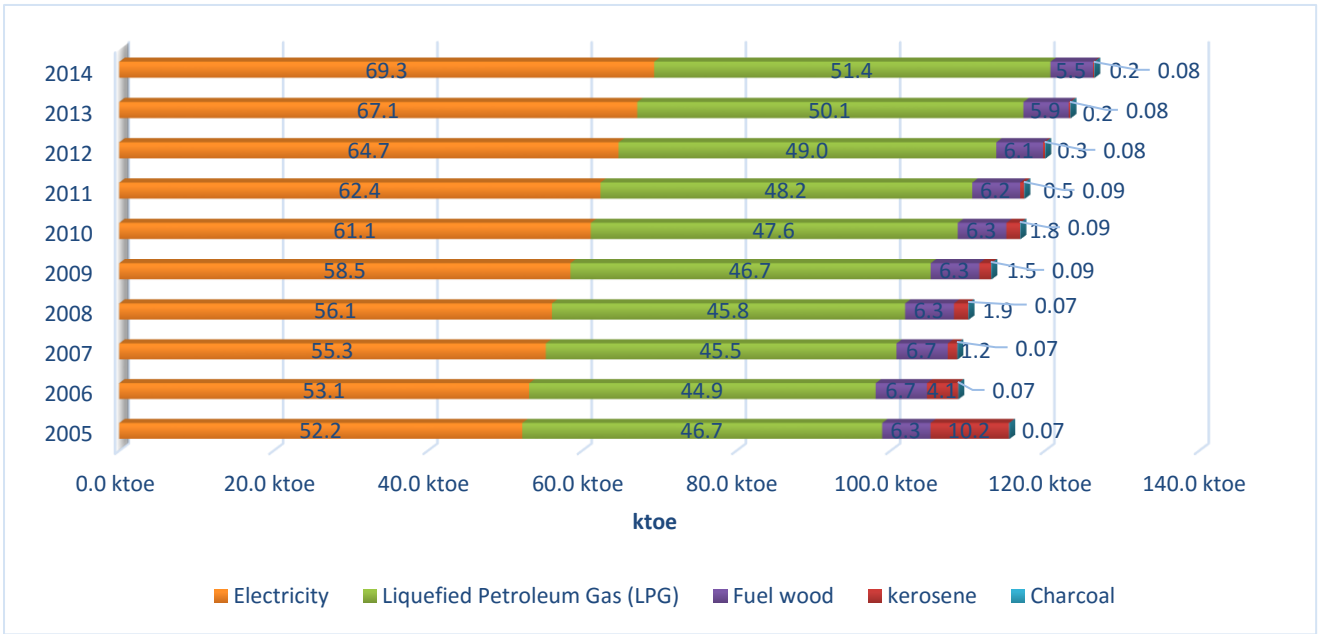


Data Source: Statistics Mauritius

Figure 4.8 : Share of energy sources, Household sector, 2014

As can be seen from Figure 4.8, 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 not very significant. Use of kerosene as fuel has nearly disappeared since the price increase in its retail price in 2005. In 2014 the consumption of electricity and LPG have both increased compared to 2014 by 3.3 % and 2.6 % respectively.

The trend of the use of each fuel over the period 2005 to 2014 is shown in Figure 4.9.

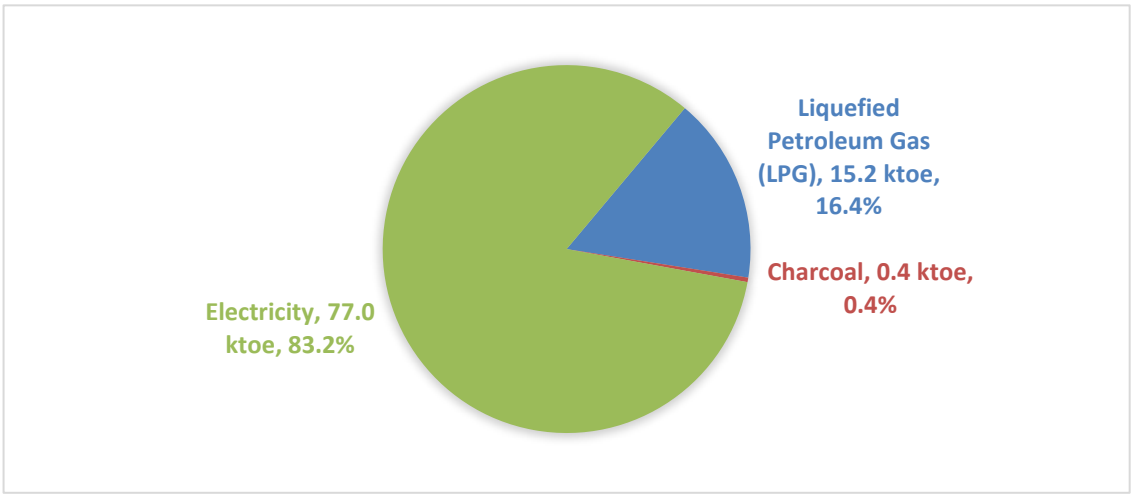


Data Source: Statistics Mauritius

Figure 4.9: Trend of fuel consumption in the Household sector, 2005 - 2014

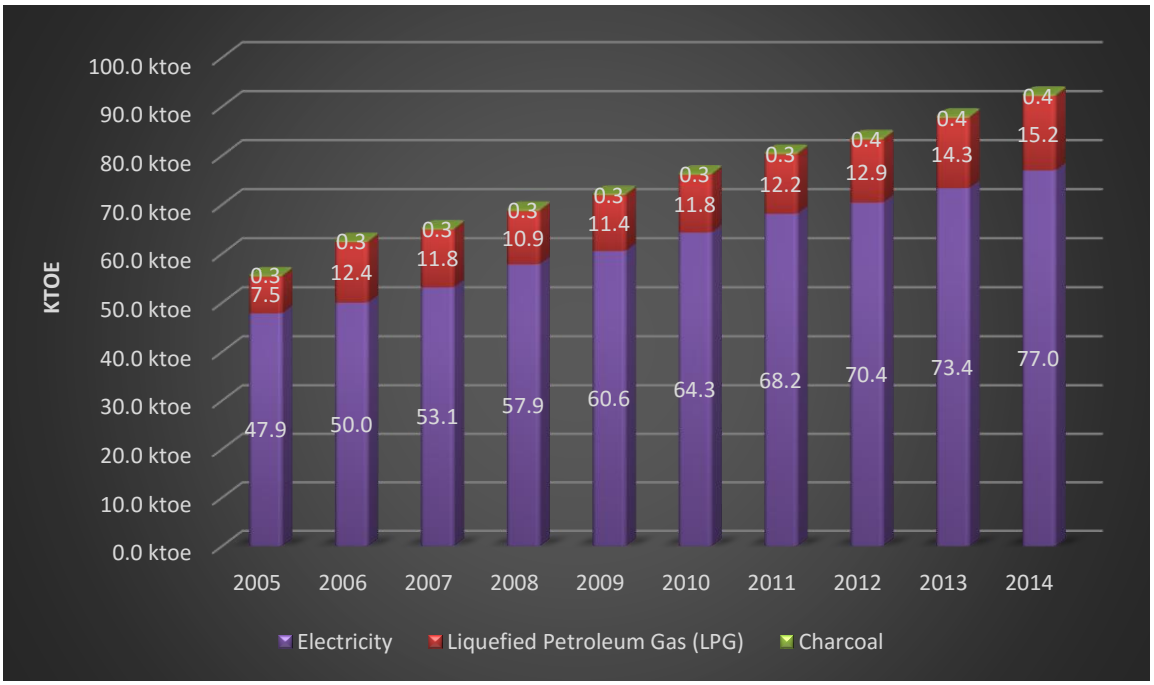
4.5 Final energy consumption - Commercial sector

Total energy consumption in the Commercial sector amounted to 92.5 ktoe in 2014 and the share of energy sources in 2014 is shown in Figure 4.10, while Figure 4.11 gives the trend of fuel consumption over the period 2005 to 2014.



Data Source: Statistics Mauritius

Figure 4.10: Share of energy sources in the Commercial sector, 2014



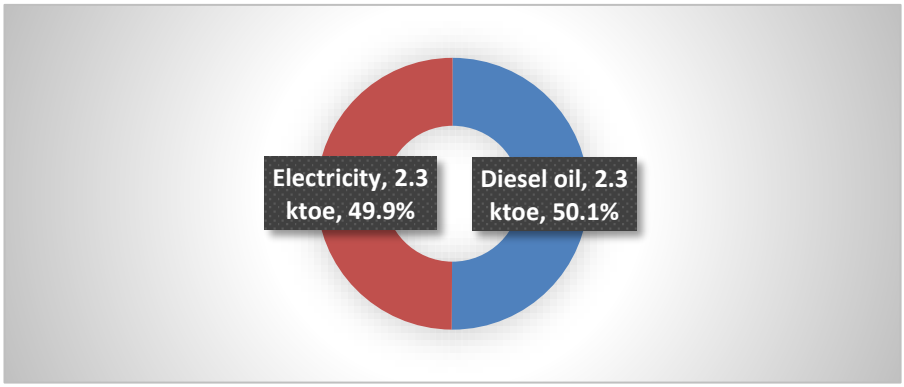
Data Source: Statistics Mauritius

Figure 4.11: Trend of fuel consumption in the Commercial sector, 2005 - 2014

In 2014, electricity consumption in the commercial sector increased by 4.9% compared to 2013, indicating continued expansion in the sector. The main areas of electricity use in this sector are refrigeration, air conditioning, decorative and security lighting.

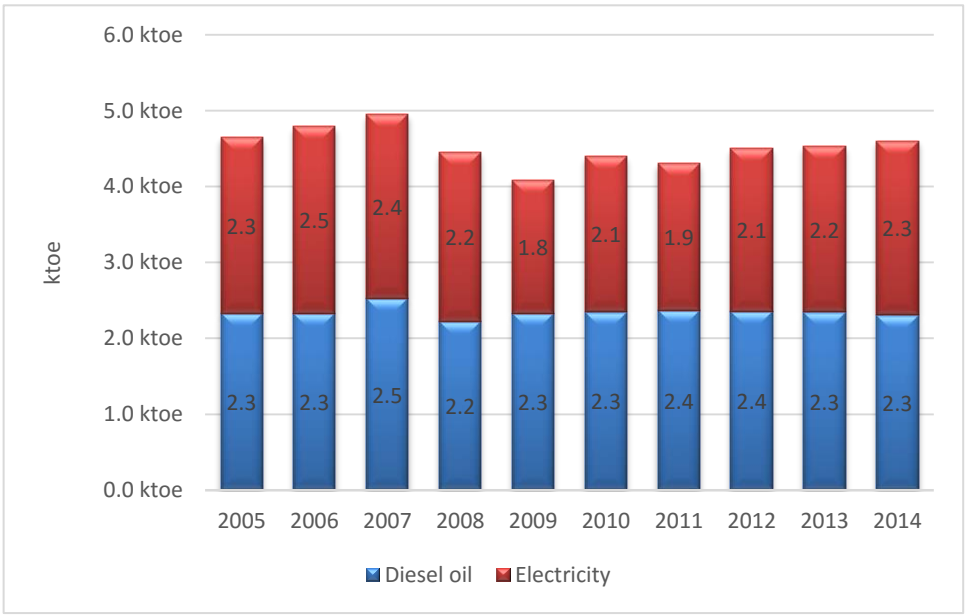
4.6 Final energy consumption - Agriculture sector

Total energy consumption in the agriculture sector amounted to 4.6 ktoe in 2014 and the share of energy sources in 2014 is shown in Figure 4.12, while Figure 4.13 gives the trend of fuel consumption over the period 2005 to 2014.



Data Source: Statistics Mauritius

Figure 4.12: Share of energy sources in Agriculture sector, 2014



Data Source: Statistics Mauritius

Figure 4.13: Share of fuel consumption in the Agriculture sector, 2005 – 2014

It may be noted from Figure 4.13 that the fuel consumption in the sector is rather stable, in the range of 4.1 to 4.8 ktoe over the period 2005 to 2014.

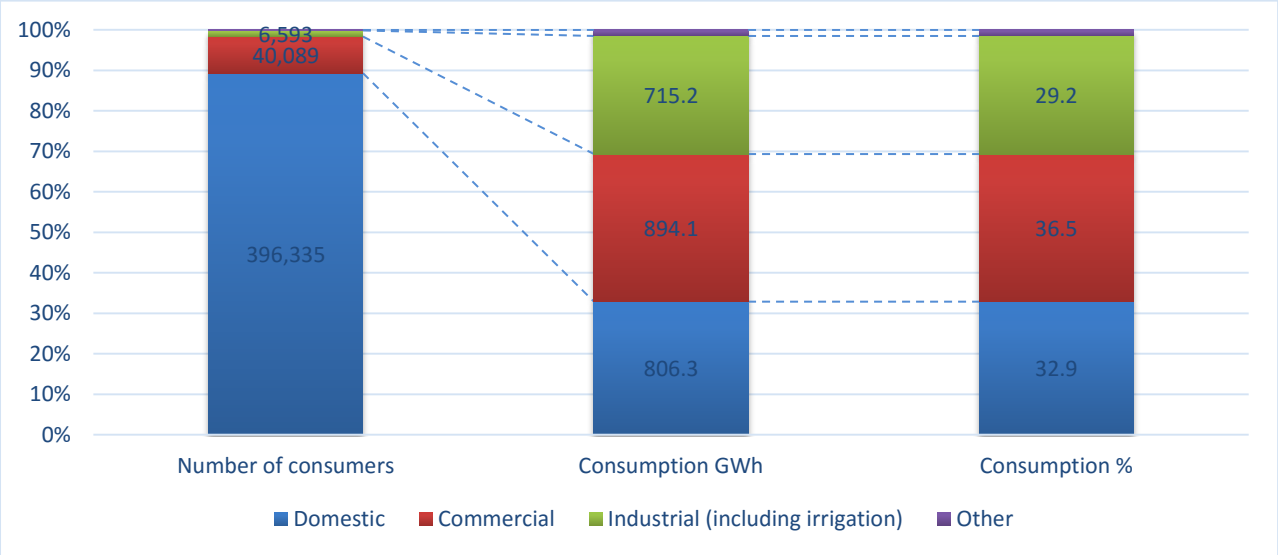
4.7 Electricity consumption

As shown in Table 4.3 electricity sales for 2014 amounted to 2,452.2GWh compared to 2,384.1GWh in 2013, that is an increase of 2.9 % compared to 2013. Figure 4.14 gives details of the number of different category consumers, the electricity consumption in each category and the share of consumption of each for year 2014.

Type of tariff	Number of consumers		Consumption GWh		Consumption %	
	2014	2013	2014	2013	2014	2013
Domestic	396,335	388,910	806.3	780.8	32.9	32.8
Commercial	40,089	39,199	894.1	852.0	36.5	35.7
Industrial (including irrigation)	6,593	6,703	715.2	715.2	29.2	30.0
Other	610	550	36.6	36.1	1.5	1.5
Total	**443,627**	**435,362**	**2,452.2**	**2,384.1**	**100**	**100**

Data Source: Statistics Mauritius

Table 4.3: Electricity consumption, 2013 & 2014



Data Source: Statistics Mauritius

Figure 4.14: Electricity consumption of different category of consumers, 2014

An analysis of domestic electricity consumption is given in Table 4.4, which shows an increase from 1.90 MWh in 2009 to 2.03 MWh in 2014.

Domestic consumers	2008	2009	2010	2011	2012	2013	2014
Consumption (GWh)	652.2	680.1	710.7	725.3	753.0	780.8	806.3
Number of consumers	350627	358359	364474	372315	381096	388910	396335
Average consumption per consumer (MWh)	1.86	1.90	1.95	1.95	1.98	2.01	2.03
Consumption growth rate %	-0.7%	2.0%	2.7%	-0.1%	1.4%	1.6%	1.3%
Average consumption per inhabitant (KWh/day)	1.44	1.49	1.56	1.59	1.64	1.70	1.75

Data Source: Statistics Mauritius

Table 4.4: Analysis of domestic electricity consumption, 2008 - 2014

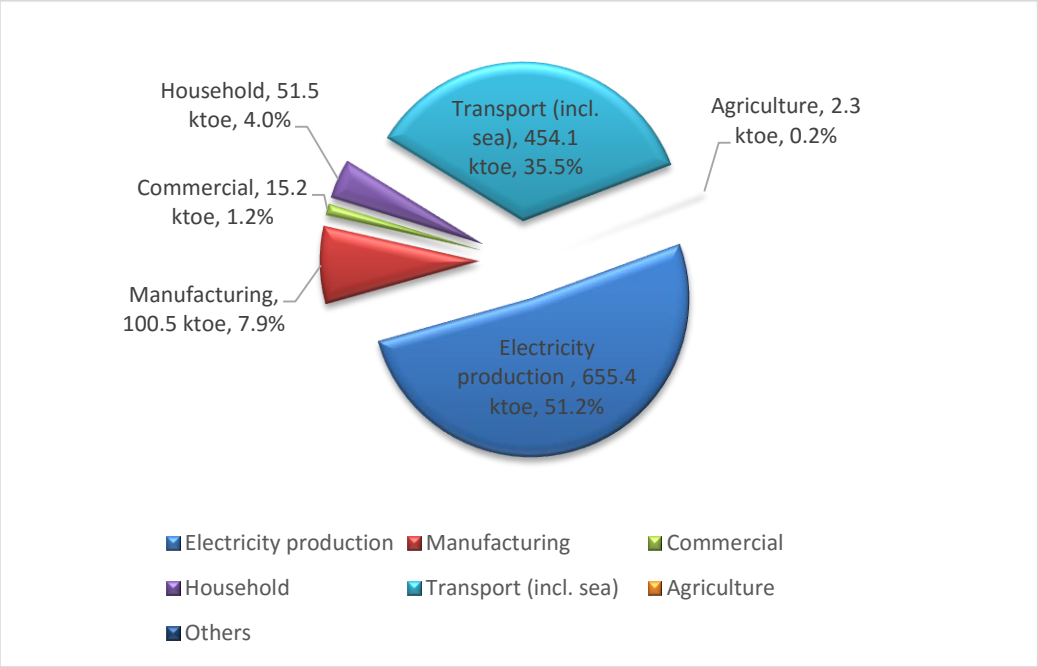
4.8 Fossil Fuel consumption

Table 4.5 provides a breakdown of fossil fuels consumption by sector.

2014	Coal	Gasolene	Diesel	Aviation fuel	Kerosene	HFO	LPG	Total (ktoe)
Electricity production	441.0		1.2		0.7	212.5		655.4
Manufacturing	19.3		36.5			38.9	5.9	100.5
Commercial							15.2	15.2
Household					0.2		51.4	51.5
Transport (incl. sea)		151.7	168.0	126.8		3.5	4.0	454.1
Agriculture			2.3					2.3
Others							0.3	0.3
Total (ktoe)	460.3	151.7	208.0	126.8	0.9	254.8	76.7	1279.5

Data Source: Statistics Mauritius

Table 4.5: Fossil fuel consumption by sector, 2014



Data Source: Statistics Mauritius

Figure 4.15: Share of fossil fuel consumption by sector, 2014

Final use of fossil fuel in Mauritius:

- Energy industries (electricity production): **655.4 ktoe (51.2%)**
- Transport sector: **454.1 ktoe (35.5%)**
- Manufacturing sector: **100.5 ktoe (7.9%)**
- Household: **51.5 ktoe (4.0%)**
- Commercial: **15.2 ktoe (1.2%)**
- Agriculture sectors**: 2.3 ktoe (0.2%)**

5 CO_2 EMISSIONS DUE TO FOSSIL FUELS

5.1 Introduction

The greenhouse gas effect is a natural phenomenon that captures part of the energy emitted by the Sun to the Earth. Greenhouse Gases (sometimes abbreviated GHG) have a role comparable to that of glass of a greenhouse shed. The heat from the atmosphere depends on solar radiation (constant) and the amount of radiation trapped by greenhouse gases.

5.2 Greenhouse Gas Emissions

A greenhouse gas is a gas in an atmosphere that absorbs and emits radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect. The primary greenhouse gases in the Earth's atmosphere are water vapour, carbon dioxide, methane, nitrous oxide, and ozone.

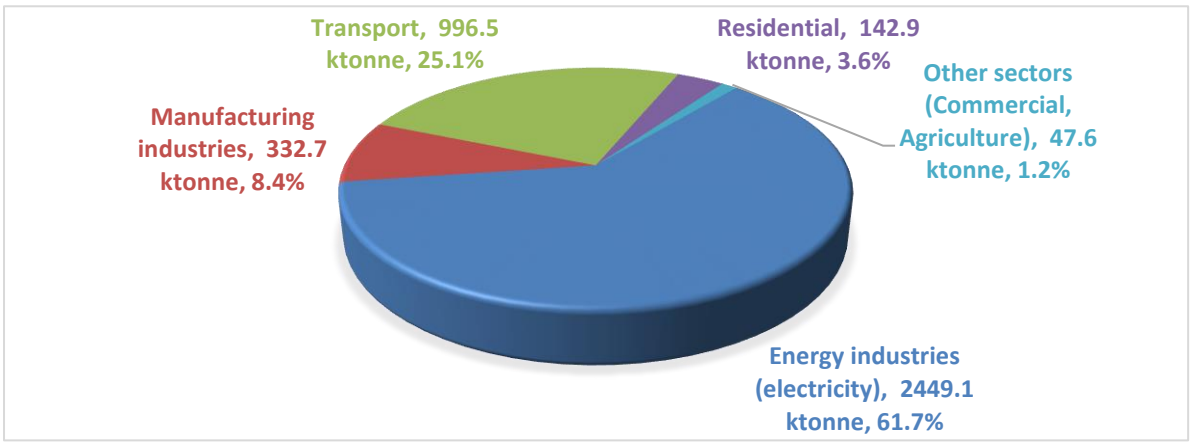
Emissions from human activities mainly concern the following six gases, covered by the Kyoto Protocol: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).

Human activity since the industrial era has led, due to the consumption of fossil energy stocks, to the increase in carbon dioxide in the atmosphere, despite the uptake of a large portion of the emissions through various natural "sinks" involved in the carbon cycle. carbon dioxide (CO_2) emissions produced by human activities come mainly from combustion of fossil fuels, principally coal, heavy fuel oil and its derivatives (gasolene, diesel, Liquefied Petroleum Gas (LPG) etc.), and natural gas.

5.3 Inventory of CO_2 from energy sources for Island of Mauritius in 2013

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_2emissions due to fossil energy conversion in all sectors (electricity generation, transport, residential and manufacturing).

Figure 5.1 gives the share of carbon dioxide emission from fossil fuel combustion in each sector in 2014. It may be noted that, in 2014, total CO_2 emissions from fuel combustion activities amounted to **3, 968, 810 tonnes** and CO_2 removals amounted to **294 000 tonnes**. Net CO_2 emissions for 2014 was **3,675,620 tonnes**.



Data Source: Statistics Mauritius

Figure 5.1 : Sectoral carbon dioxide emissions from fossil fuel combustion, 2014

5.4 CO_2 emissions due to fossil fuels

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net CO_2 emissions (ktonnes)	2772.3	3155.7	3225.7	3187.1	3074.6	3375.0	3351.3	3452.2	3542.9	3675.6
tCO2 emissions per capita	2.4	2.7	2.8	2.8	2.7	2.9	2.9	3.0	3.0	3.1
tCO_2 per Rs 100,000 GDP (at 2000 prices)	1.95	2.19	2.14	2.00	1.83	1.95	1.86	1.84	1.83	1.84

Source: Statistics Mauritius

Table 5.1 : CO_2 emissions, 2005 -2014

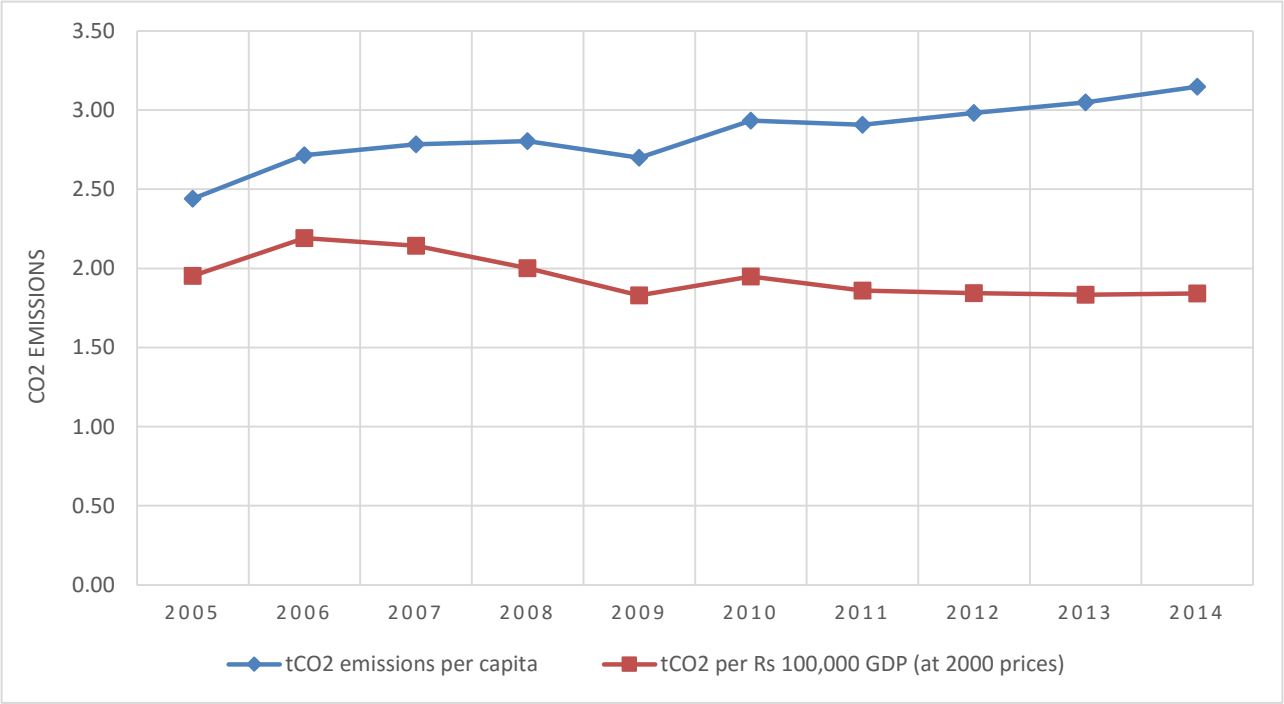


Figure 5.2 : Trend of CO_2 emissions, 2005 – 2014

5.5 CO_2 emissions for electricity generation

In 2014, the total CO_2 emissions from electricity generation amounted to **2 449 100 tonnes** and the grid emission factor per KWh was 915.2g CO_2/KWh.

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

In 2014 emissions have reached **996 500 tonnes** of CO_2 representing an increase of 2.8 % compared to 2013.

6 KEY FIGURES

Indicator	Unit	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total primary energy requirement	ktoe	1293.2	1376.8	1381.8	1404.4	1346.9	1430.7	1426.9	1427.7	1454.8	1491.7
Imported	*ktoe*	*1030.5*	*1122.1*	*1136.0*	*1140.9*	*1110.6*	*1189.0*	*1195.7*	*1205.3*	*1235.4*	*1279.4*
Local	*ktoe*	*262.6*	*254.6*	*245.8*	*263.5*	*236.3*	*241.6*	*231.1*	*222.3*	*219.4*	*212.3*
Annual increase (Primary Energy)	%	3.0	6.5	0.4	1.6	-4.1	6.2	-0.3	0.1	1.9	2.5
Import Dependency	%	79.7	81.5	82.2	81.2	82.5	83.1	83.8	84.4	84.9	85.8
GDP in 2000 rupees	Rs M	143996	150496	159338	168101	173198	180299	187331	193325	199512	206694
Mid-year Population		1228254	1233996	1239630	1244121	1247429	1250400	1252404	1255882	1258653	1260934
Energy intensity	toe per Rs 100000 GDP at 2000 prices	0.90	0.91	0.87	0.84	0.78	0.79	0.76	0.74	0.73	0.72
Per capita primary energy requirement	toe	1.05	1.12	1.11	1.13	1.08	1.14	1.14	1.14	1.16	1.18

Data Source: Statistics Mauritius

7 SUMMARY TABLE 2014

	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)									193.4	1.8	6.9		7.8	2.1		0.3			212.3
Imported Resources	478.5	148.9	306.7	241.3	2.3	390.2	81.6												1649.4
Re-exports and bunkering			-117.8	-126.6		-163.7													-408.2
Stocks (+ destocking; - stocking)	-18.2	2.8	19.2	12.2	-1.4	28.4	-4.9												38.1
TOTAL Primary Energy (PE)	**460.3**	**151.7**	**208.0**	**126.8**	**0.9**	**254.8**	**76.7**	**0.0**	**193.4**	**1.8**	**6.9**	**0.0**	**7.8**	**2.1**	**0.0**	**0.3**	**0.0**	**0.0**	**1491.7**
% Energy independence (LP/PE)																			14.2
Secondary Energy																			
Coal input for electricity production	-441.0																108.3		-332.6
HFO and diesel input for electricity production			-1.2			-212.5											92.8		-120.9
Bagasse input for electricity production									-164.9								39.2		-125.7
Kerosene input for electricity production					-0.7												0.2		-0.5
Biogas input for electricity production										-1.8							1.8		0.0
Hydro input for electricity production													-7.8				7.8		0.0
PV input for electricity production PV														-2.1			2.1		0.0
Wind input for electricity production																-0.3	0.3		0.0
Electricity production own use																	-3.9		-3.9
Solar Thermal heat production																			0.0
Fuelwood to charcoal											-0.9	0.4							-0.5
TOTAL Secondary supply (SS)	**-441.0**	**0.0**	**-1.2**	**0.0**	**-0.7**	**-212.5**	**0.0**	**0.0**	**-164.9**	**-1.8**	**-0.9**	**0.4**	**-7.8**	**-2.1**	**0.0**	**-0.3**	**248.6**	**0.0**	**-584.2**
Energy Distribution																			
Final distribution (D=PE+SS)	19.4	151.7	206.8	126.8	0.2	42.4	76.7	0.0	28.5	0.0	6.0	0.4	0.0	0.0	0.0	0.0	248.6	0.0	907.6
Losses (L=(D+F))	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-15.6	0.0	-15.6
TOTAL final distribution (D+L)	19.4	151.7	206.8	126.8	0.2	42.4	76.7	0.0	28.5	0.0	6.0	0.4	0.0	0.0	0.0	0.0	233.0	0.0	892.0
Final Energy Consumption																			
Manufacturing	-19.4		-36.5			-38.9	-5.9		-28.5		-0.5						-81.2		-210.7
Commercial							-15.2					-0.4					-77.0		-92.5
Household					-0.2		-51.4				-5.5	-0.1					-69.3		-126.5
Transport		-151.7	-168.0	-126.8		-3.5	-4.0										0.0		-454.1
Agriculture			-2.3														-2.3		-4.6
Others							-0.3										-3.2		-3.4
TOTAL (F)	**-19.4**	**-151.7**	**-206.8**	**-126.8**	**-0.2**	**-42.4**	**-76.7**	**0.0**	**-28.5**	**0.0**	**-6.0**	**-0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**-233.0**	**0.0**	**-892.0**

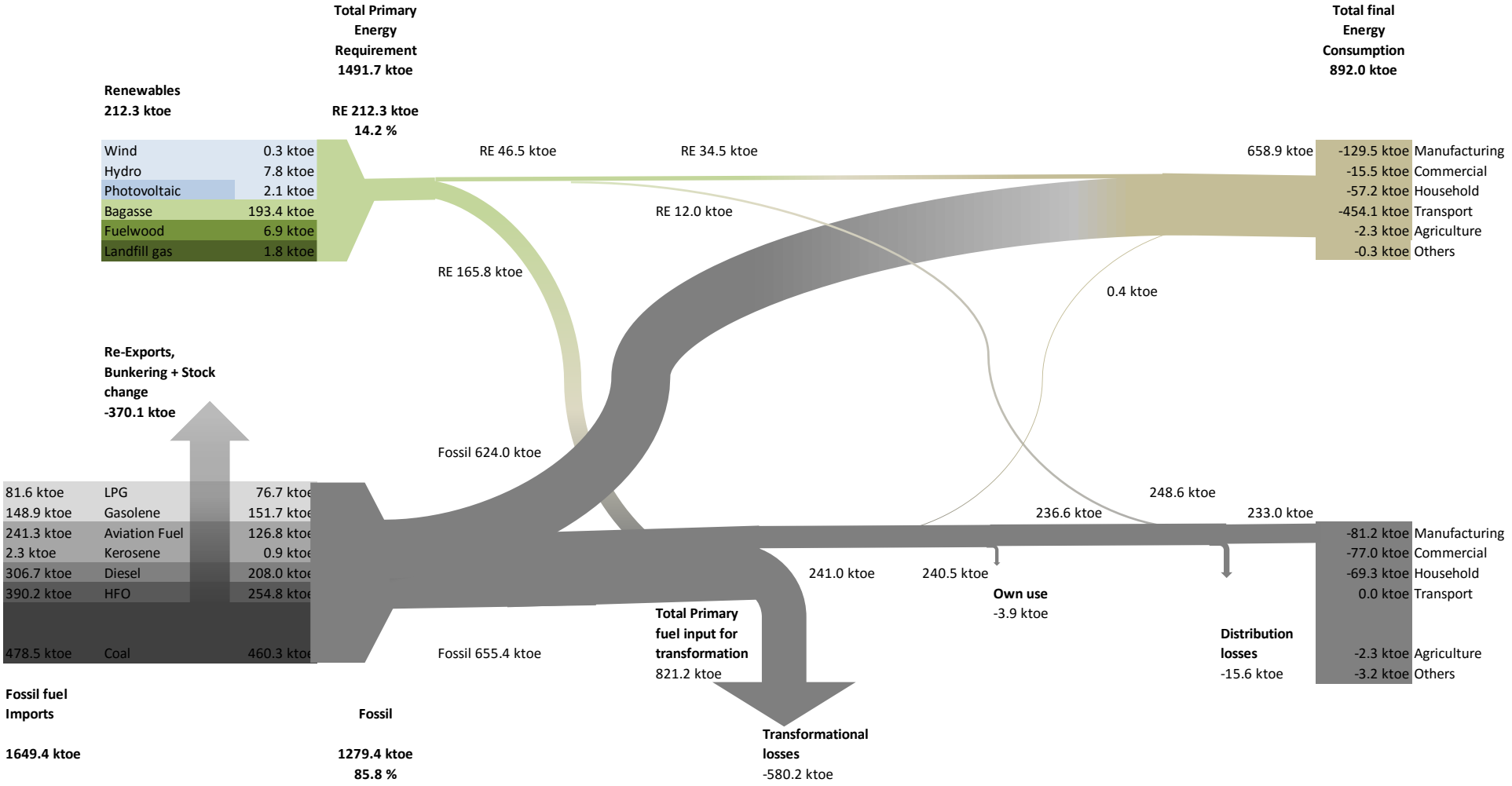
8 SUMMARY TABLE 2013

	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)									201.7	1.7	7.3		8.2	0.2		0.3			219.4
Imported Resources	439.2	149.3	339.5	250.7	3.0	411.9	73.7												1667.2
R-exports and bunkering			-115.2	-120.5		-149.8													-385.6
Stocks (+ destocking; - stocking)	1.5	-6.6	-17.2	-9.5	-2.1	-13.5	1.2												-46.212
TOTAL Primary Energy (PE)	**440.6**	**142.7**	**207.0**	**120.7**	**0.9**	**248.5**	**74.9**	**0.0**	**201.7**	**1.7**	**7.3**	**0.0**	**8.2**	**0.2**	**0.0**	**0.3**	**0.0**	**0.0**	**1454.8**
% Energy independence (LP/PE)																			15.1
Secondary Energy																			
Coal input for electricity production	-423.6																104.4		-319.2
HFO and diesel input for electricity production			-1.3			-207.5											92.5		-116.3
Bagasse input for electricity production									-169.0								40.7		-128.3
Kerosene input for electricity production					-0.7												0.1		-0.5
Biogas input for electricity production										-1.7							1.7		0.0
Hydro input for electricity production													-8.2				8.2		0.0
PV input for electricity production PV														-0.2			0.2		0.0
Wind input for electricity production																-0.3	0.3		0.0
Electricity production own use																	-3.6		-3.6
Solar Thermal heat production																			0.0
Fuelwood to charcoal											-0.9	0.4							-0.5
TOTAL Secondary supply (SS)	**-423.6**	**0.0**	**-1.3**	**0.0**	**-0.7**	**-207.5**	**0.0**	**0.0**	**-169.0**	**-1.7**	**-0.9**	**0.4**	**-8.2**	**-0.2**	**0.0**	**-0.3**	**244.5**	**0.0**	**-568.4**
Energy Distribution																			
Final distribution (D=PE+SS)	17.1	142.7	205.7	120.7	0.2	41.0	74.9	0.0	32.7	0.0	6.4	0.4	0.0	0.0	0.0	0.0	244.5	0.0	886.4
Losses (L=(D+F))	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-15.8	0.0	-15.8
TOTAL final distribution (D+L)	17.1	142.7	205.7	120.7	0.2	41.0	74.9	0.0	32.7	0.0	6.4	0.4	0.0	0.0	0.0	0.0	228.7	0.0	870.6
																			870.6
Final Energy Consumption																			
Manufacturing	-17.1		-35.8			-37.6	-5.8		-32.7		-0.5						-82.8		-212.3
Commercial							-14.3					-0.4					-73.4		-88.1
Household					-0.2		-50.1				-5.9	-0.1					-67.1		-123.4
Transport		-142.7	-167.6	-120.7		-3.4	-4.4										0.0		-438.8
Agriculture			-2.3														-2.2		-4.5
Others							-0.3										-3.3		-3.5
TOTAL (F)	**-17.1**	**-142.7**	**-205.7**	**-120.7**	**-0.2**	**-41.0**	**-74.9**	**0.0**	**-32.7**	**0.0**	**-6.4**	**-0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**-228.7**	**0.0**	**-870.6**

9 GROWTH PERCENTAGE (%) IN 2014 COMPARED TO 2013

	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)									-4.1 %	6.6 %	-4.8 %		-4.2 %	811.7 %		-11.8 %			-3.2 %
Imported Resources	9.0 %	-0.2 %	-9.7 %	-3.8 %	-22.4 %	-5.3 %	10.8 %												-1.1 %
TOTAL Primary Energy (PE)	4.5 %	6.4 %	0.5 %	5.1 %	-1.6 %	2.5 %	2.5 %		-4.1 %	6.6 %	-4.8 %		-4.2 %	811.7 %		-11.8 %			2.5 %
Secondary Energy																			
Coal input for electricity production	4.1 %																		4.2 %
HFO and diesel input for electricity production			-3.2 %			2.4 %													4.0 %
Bagasse input for electricity production									-2.4 %										-2.1 %
Kerosene input for electricity production					5.5 %														2.2 %
Biogas input for electricity production										6.6 %									
Hydro input for electricity production													-4.2 %						
PV input for electricity production PV														811.7 %					
Wind input for electricity production																-11.8 %			
Electricity production own use																			9.1 %
Solar Thermal heat production																			
Fuelwood to charcoal											2.0 %	0.0 %							3.9 %
TOTAL Secondary supply (SS)	4.1 %		-3.2 %		5.5 %	2.4 %			-2.4 %	6.6 %	2.0 %	0.0 %	-4.2 %	811.7 %		-11.8 %	1.7 %		2.8 %
Final Energy Consumption																			
Manufacturing	13.6 %		1.8 %			3.3 %	1.4 %		-13.0 %		-3.0 %						-1.9 %		-0.7 %
Commercial							5.6 %					3.1 %					5.0 %		5.1 %
Household					-9.5 %		2.6 %				-6.1 %	-7.3 %					3.3 %		2.5 %
Transport		6.4 %	0.2 %	5.1 %		3.3 %	-7.9 %												3.5 %
Agriculture			-1.6 %														4.9 %		1.6 %
Others							4.7 %										-3.4 %		-2.7 %
TOTAL (F)	13.6 %	6.4 %	0.5 %	5.1 %	-9.5 %	3.3 %	2.5 %		-13.0 %		-5.8 %	1.1 %					1.9 %		2.5 %

10 ENERGY PATTERN 2014



11 TABLE OF INDICATORS

Indicators	Unit	2013	2014	% change
Primary Energy Consumption	ktoe	1454.8	1491.7	2.5
Share of local resources: local primary consumption/total primary consumption	%	15.1	14.2	-5.6
Energy intensity per inhabitant: Primary energy Consumption/population	toe/inhab	1.16	1.18	2.4
Energy intensity per 100,000 (2000 Rs): Primary Energy Consumption/GDP	toe/Rs	0.73	0.72	-1.0
Total fossil fuel input for electricity production	ktoe	633.1	655.4	3.5
Total renewable input for electricity production	ktoe	121.1	140.0	15.6
Total electricity production	GWh	2885.3	2936.9	1.8
Penetration of renewable resources	%	20.6	20.3	-1.4
Total electricity sold	GWh	2384.1	2452.2	2.9
Domestic sector	%	32.8	32.9	0.4
Commercial sector	%	35.7	36.5	2.0
Industrial sector	%	30.0	29.2	-2.8
Electricity consumption per consumer (Domestic)	GWh/consumer	2.01	2.03	1.3
Electricity consumption per consumer (Commercial)	GWh/consumer	21.74	22.30	2.6
Electricity consumption per consumer (Industrial)	GWh/consumer	106.70	108.48	1.7
Total energy consumption (transport)	ktoe	438.8	454.1	3.5
Total CO_2 emissions	$ktCO_2$	3836.8	3969.6	3.5
Net CO_2 emissions	$ktCO_2$	3542.9	3675.6	3.7
Energy sector	%	61.61	61.70	0.1
Manufacturing sector	%	8.27	8.38	1.4
Transport sector	%	25.27	25.10	-0.6
Residential sector	%	3.59	3.60	0.4
Others	%	1.24	1.20	-3.0
CO2 emissions per kWh of electricity generated (Grid emission factor)	gCO_2/kWh	1084.6	915.2	-15.6

Data Source: Statistics Mauritius

1 Domestic sector in this document includes CEB residential consumers, charitable and religious institutions.
2 Source: Central Electricity Board

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.

CPP (Continuous 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 from bagasse only and the surplus for sale to the CEB only during the cane harvest period.

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 fuels:
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.

Fuels:
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.

Gasoline:
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 vehicle:
A vehicle that uses different types of energy for power. This vehicle has usually two types of engines: internal combustion engine and electric motor.

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.

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, Gasoline, 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 woodare 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
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 1Joule per second.

Energy conversion factors

	tonne	toe
Gasoline	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/Bagasse	1	0.086
Electricity	1	0.086

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