COUNTRY REPORT ON ENERGY POLICY

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Eswatini Country Profile

- The Kingdom of Eswatini is a landlocked country in the Southern African region and covers a total area of **17 364 square kilometres**
- Shares about three-quarters of its boundary with South Africa to the South, West and North, and Mozambique to the East.

IRENA, 2014

- Eswatini is a **lower-middle income** country with a population of 1,367,254 million (2017) people and an annual population growth rate of 1.8%

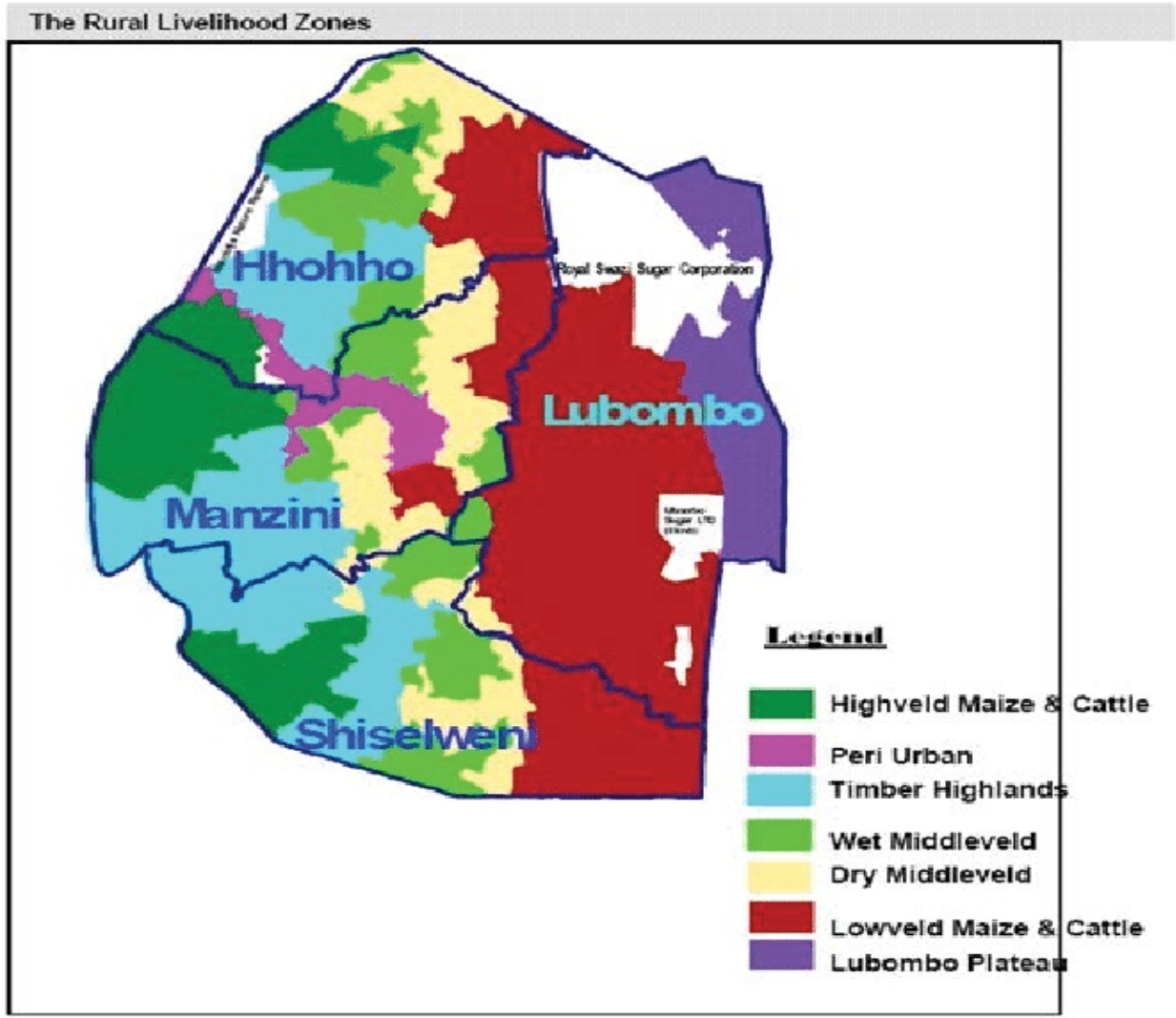
World Bank, 2017

Eswatini Country Profile Cont.

PHYSICAL FEATURES

- The country is divided into four ecological zones namely; the **Highveld, Lowveld, Middleveld** and the **Lubombo Plateau**

- This classification is done taking into account **elevation, landforms, geology, soils** and **vegetation**.



Eswatini Country Profile – Climate

- The country enjoys a **sub-tropical to near-temperate climate** along the western highlands, which rises to an altitude of over 1,800 meters above sea level, while the **low-lying areas are generally hot.**
- The ecological zones have diverse climate conditions ranging from sub-humid and temperate in the Highveld to semi-arid and warm in the Lowveld. Generally, **rain falls** mostly during the **summer** months, often in the form of thunderstorms and **winter is the dry season.**

- **Temperatures are lower in the Highveld** and **increases** towards the **Lowveld**. Annual rainfall is highest on the Highveld in the West, between 1,000 and 2,000 mm depending on the year with annual average temperatures of 17 degrees Celsius. The further East, the less rain, with the Lowveld recording 500 to 900 mm per annum and annual average temperatures of 22 degrees Celsius.

- *Master plan of NTD, 2015*

Economic Indicators

- Eswatini has close economic linkages to South Africa on which it depends for about 85% of its imports and about 60% of exports.
- **Economic growth** is estimated to have **slowed to 0.5% in 2018** from 1.9% growth in 2017, constrained by fiscal challenges
- Growth was hampered by weak recovery in the raw materials extraction sector, a slowdown in the production sector, and contraction in the services sector

- **Inflation slowed in 2018**, averaging 4.8% down from 6.2% in 2017, driven by lower food prices
- **Economic growth** is projected **to recover slightly in 2019**, supported by recovery in industrial production and a modest regional economic outlook particularly the South African economy

World Bank, 2019

Economic Indicators Cont.

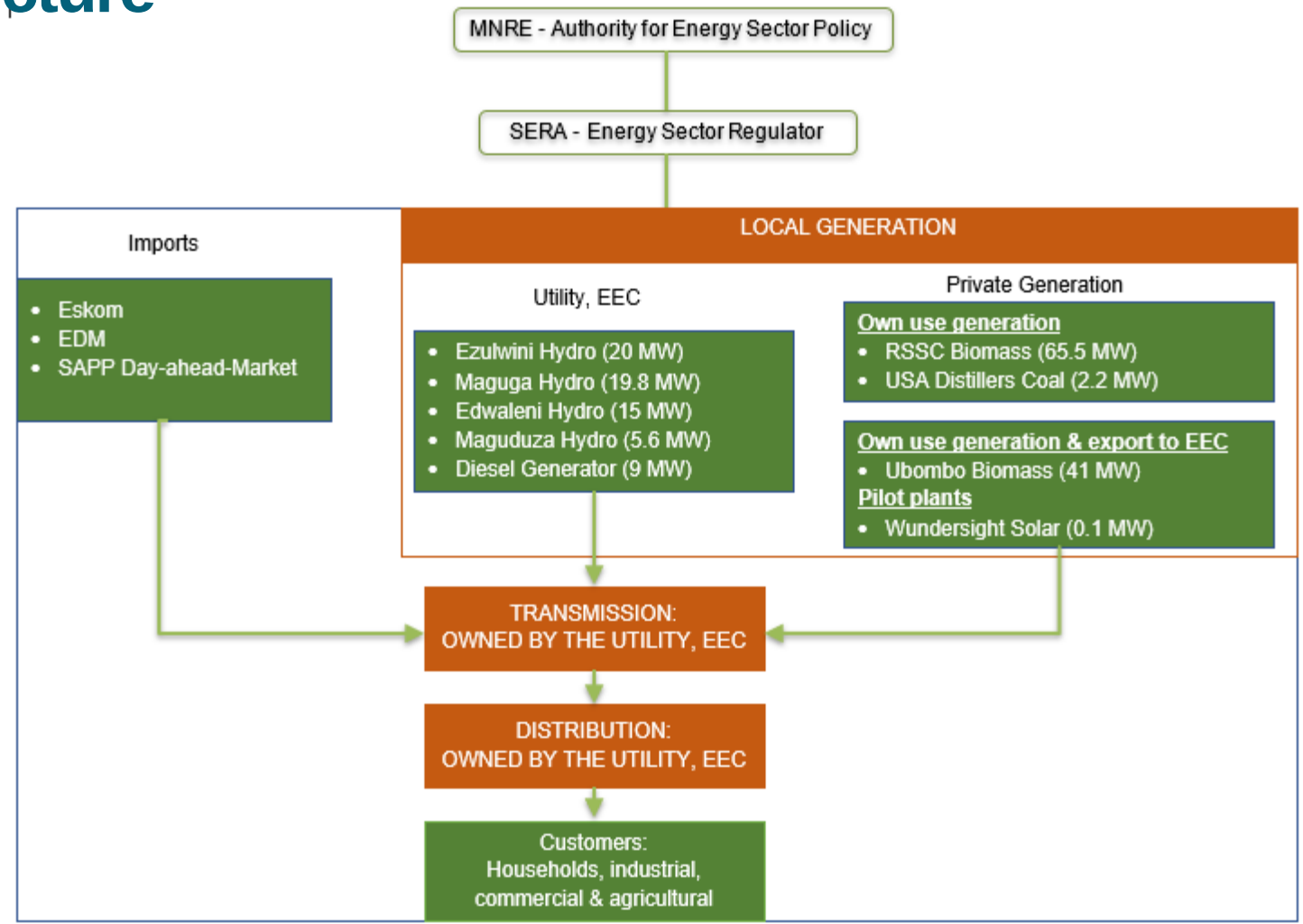
- Eswatini's economy is **fairly diverse**.
- **Agriculture and forestry** contribute about 7.5% of Gross Domestic Product (GDP)
- **Manufacturing** (mainly textiles and sugar-related processing, metal works and light industry) represents 44%

- **Mining** contributes 0.5% of GDP
- Services, particularly government services, constitute the remaining 48% of GDP. This is mostly sourced from Southern African Customs Union receipts. The economy is therefore very closely linked to that of South Africa (which accounts for 94% of Swaziland imports). It is **very export-oriented**, primarily to South Africa and the European Union, which accounts for about **70% of the country's exports**

Source: IRENA, 2014

Organizational Structure

*Sourced from Short-term Generation Expansion Plan (**SGEP Report**), 2018*



Energy and Mineral Resources Reserves

The major economical mineral deposits

- Coal – 700 million tons (estimate 1 billion tons)
- Gold – 240,000 ounces at 200 metres
- Iron ore – 630 million tons
- Diamond – 677 million tons of ore at a rate of 12 carats / 100 tons
- Tin – (missing data)

Current Energy Policy and Measures

NATIONAL ENERGY POLICY, 2018

- Developed to support further energy expansion in the petroleum and electricity sectors

- **Vision:** to meet the energy needs of the Country in a sustainable manner that contributes to economic growth and well-being of the population
- Will be achieved and guided by the following principles:
  - ✓Ensuring access to available and affordable energy for all
  - ✓Enhancing employment creation
  - ✓Ensuring security of energy supply
  - ✓Stimulating economic growth and development
  - ✓Ensuring environmental and health sustainability

NEP, 2018

Current Energy Policy Measures

Legal and Regulatory Framework governing the energy sector of Eswatini includes:

i. Electricity Act, 2007
ii. Swaziland Electricity Company Act, 2007
iii. Energy Regulatory Act, 2007
iv. Petroleum Bill
v. Swaziland Independent Power Producer (SIPP) Policy
vi. Key Responsibilities for Electricity Market Liberalization
vii. The way forward for the petroleum sector

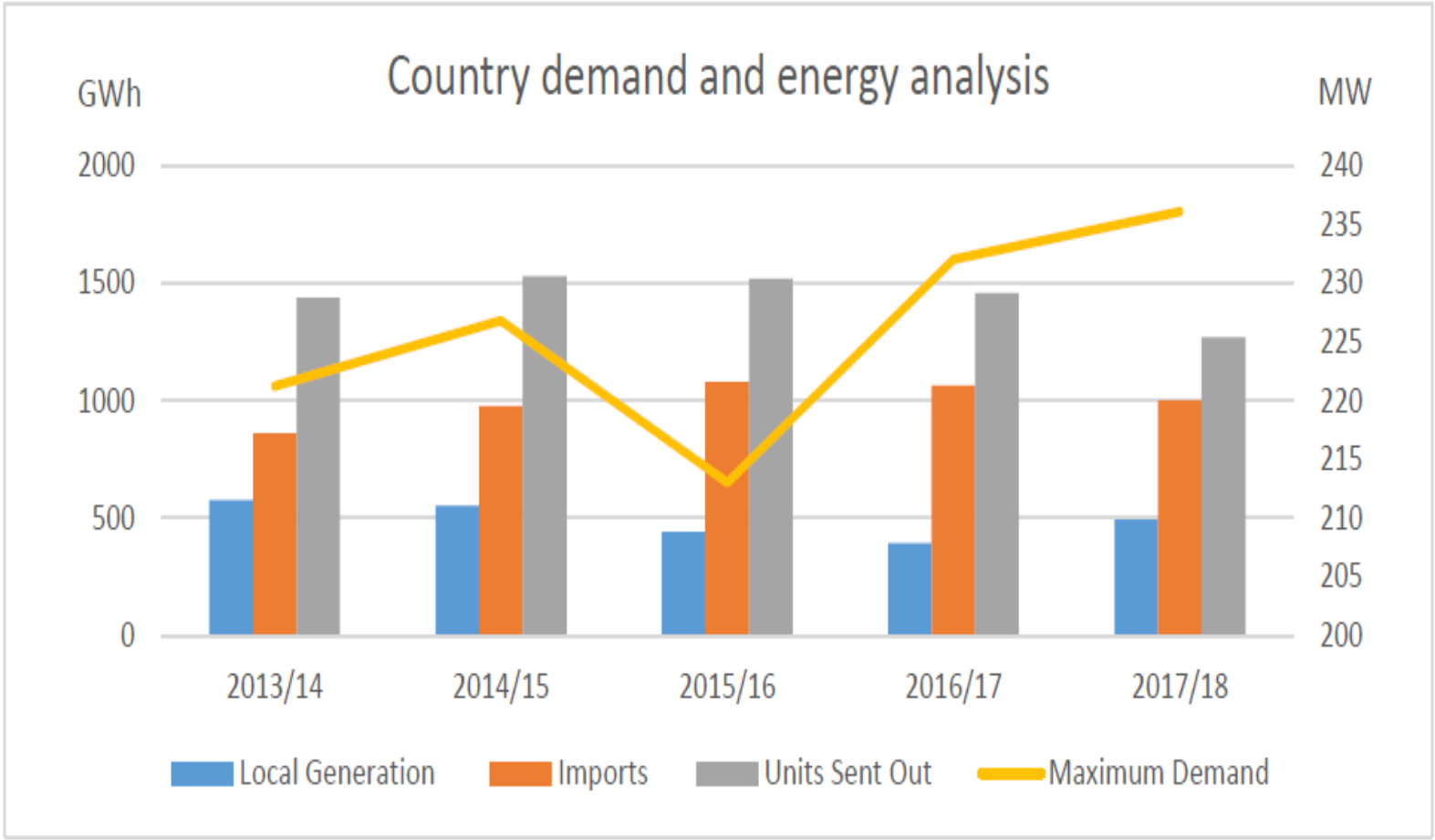
The means to achieving the cross cutting goals include **overall national energy planning** and **development of functional energy model** to help guide the broad plans. Also, there will be actions towards achieving systematic **rural energization** and **acceleration of rural productive centres** with abundance of electrical power

NEP, 2018

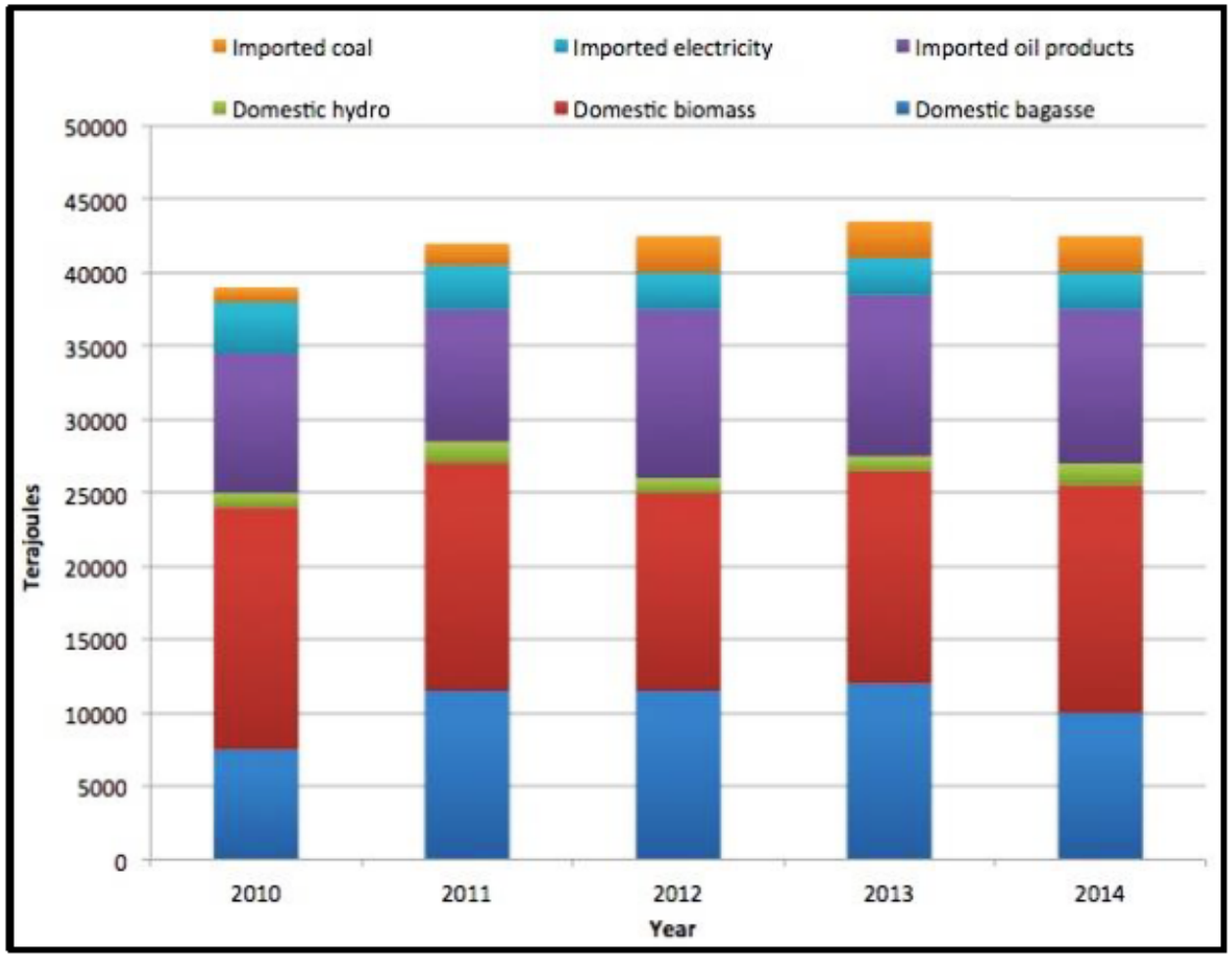
PAST ENERGY DEMAND AND SUPPLY

Past Energy Demand Analysis

Despite the significant **reduction in energy sent out**, the grid's maximum **demand slightly increased** by 1.75% up to 236.06 MW from 232 MW in 2016/17.



Primary Energy Supply by Source



The country **relies entirely on imported electricity** for base load which is normally around 80% of the total electricity consumption.

Source: Programme Framework for Affordable Renewable Energy in Swaziland (PARES), 2018

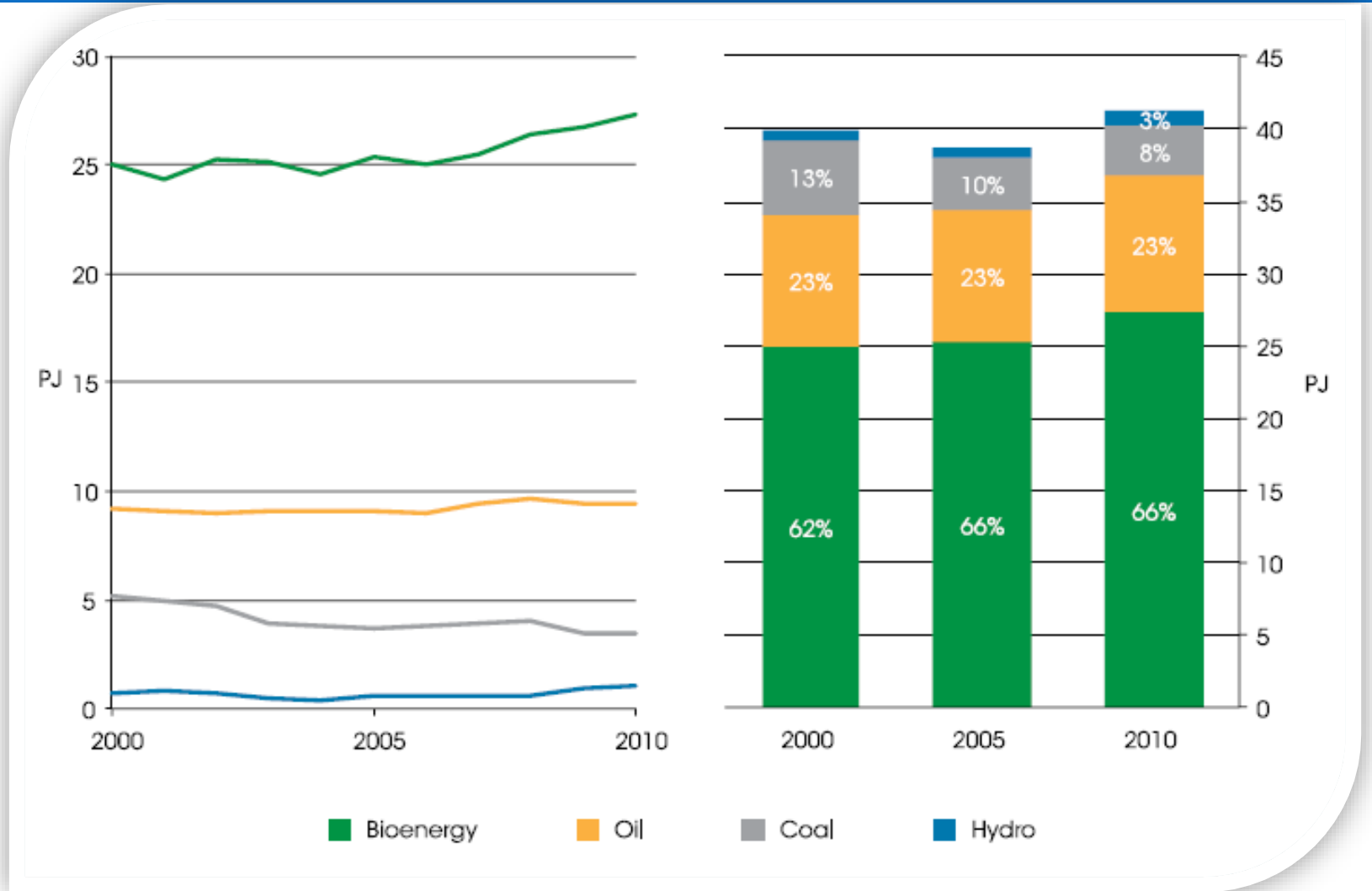
Primary Energy Supply by Energy Source

Bioenergy = 27.5 PJ ≈ **656.83 ktoe** (kilo tonne of oil equivalent)

Oil = 9 PJ ≈ **214.96 ktoe**

Coal = 3 PJ ≈ **71.65 ktoe**

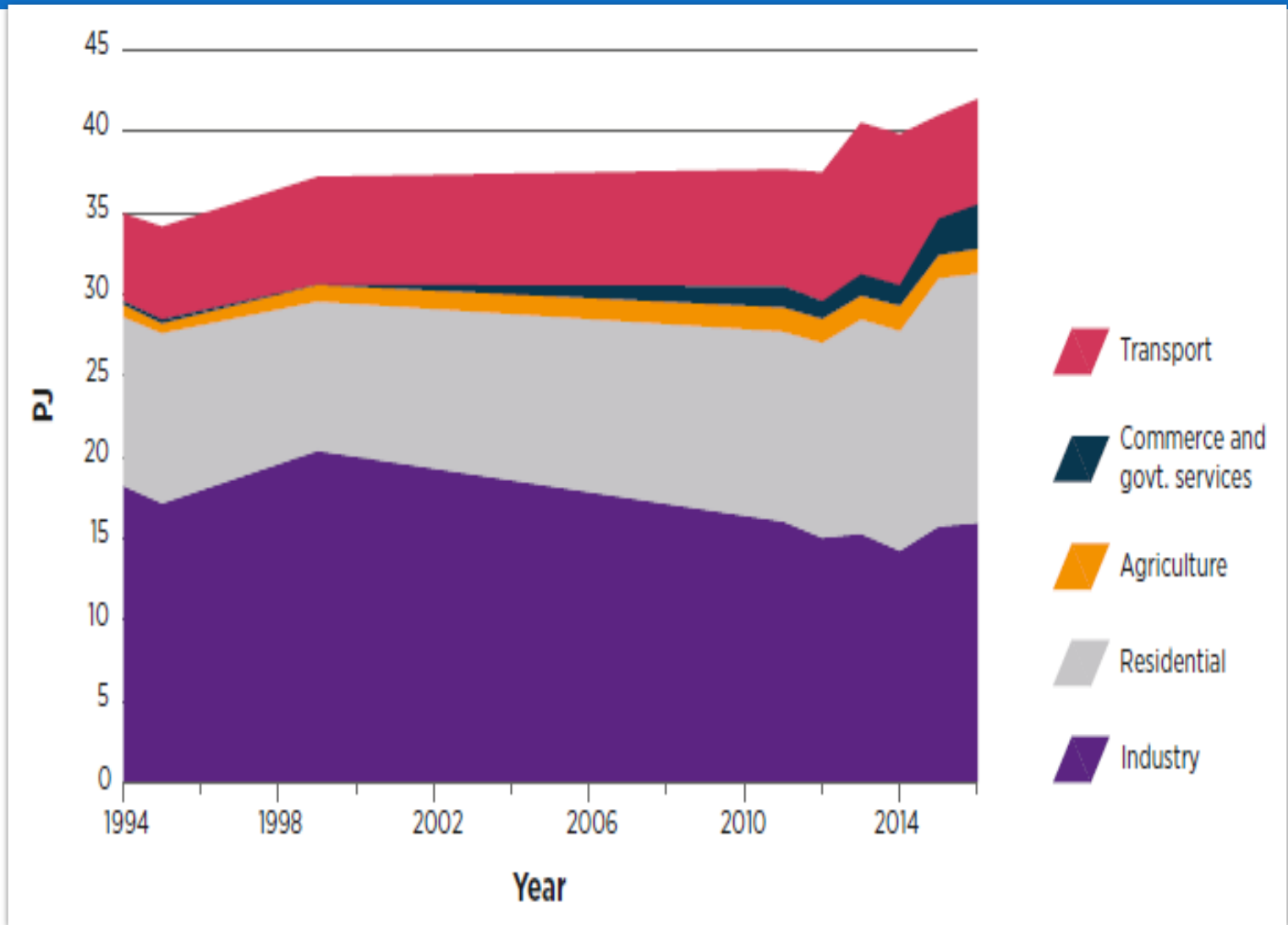
Hydro = 1.8 PJ ≈ **43.00 ktoe**



Source: Programme Framework for Affordable Renewable Energy in Swaziland (PARES), 2018

Final Energy Consumption (FEC) by Sector

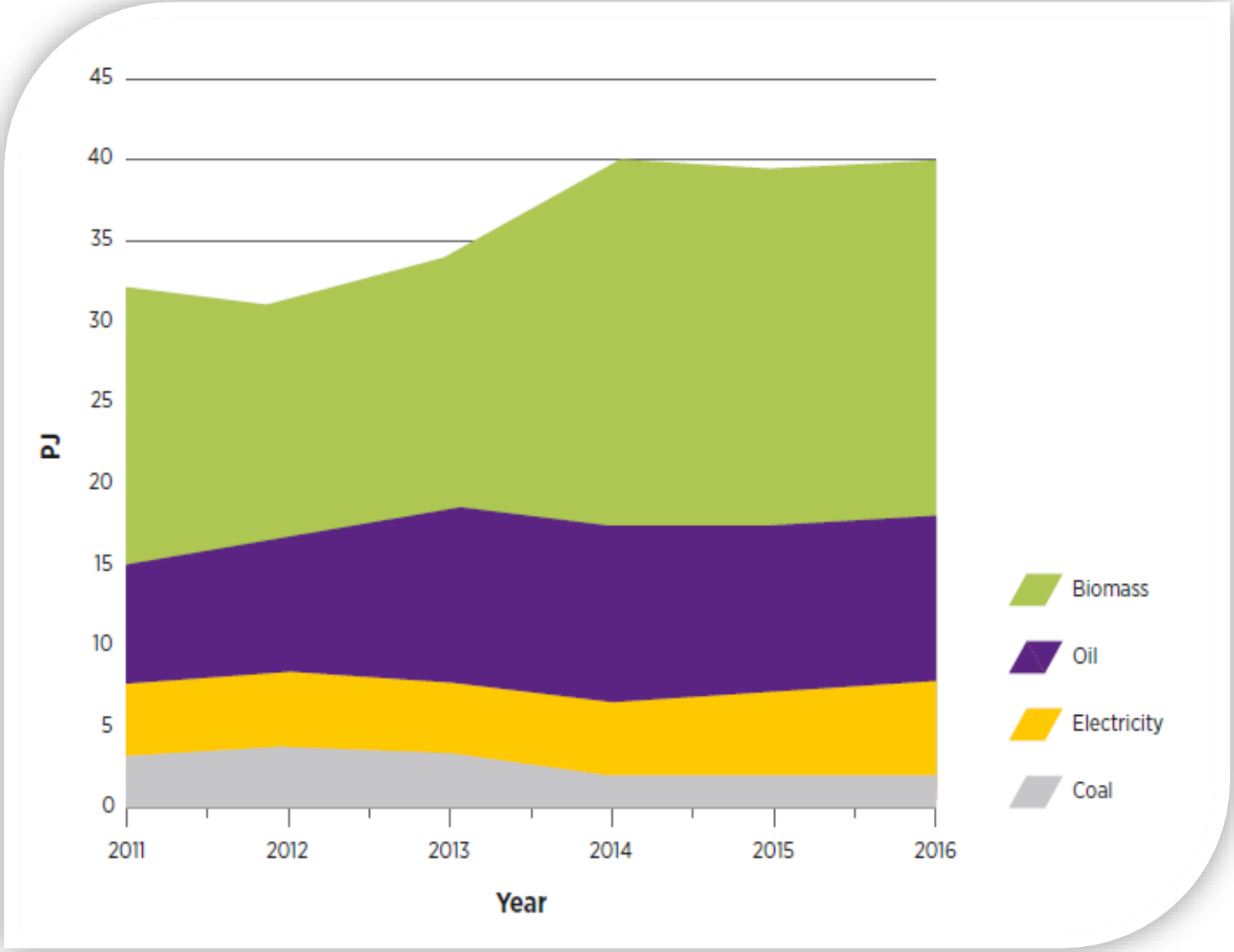
Over this period the FEC **increased slightly**, driven primarily by **increased** fuel use in the **residential sector.**



Source: Energy MasterPlan 2034, 2018

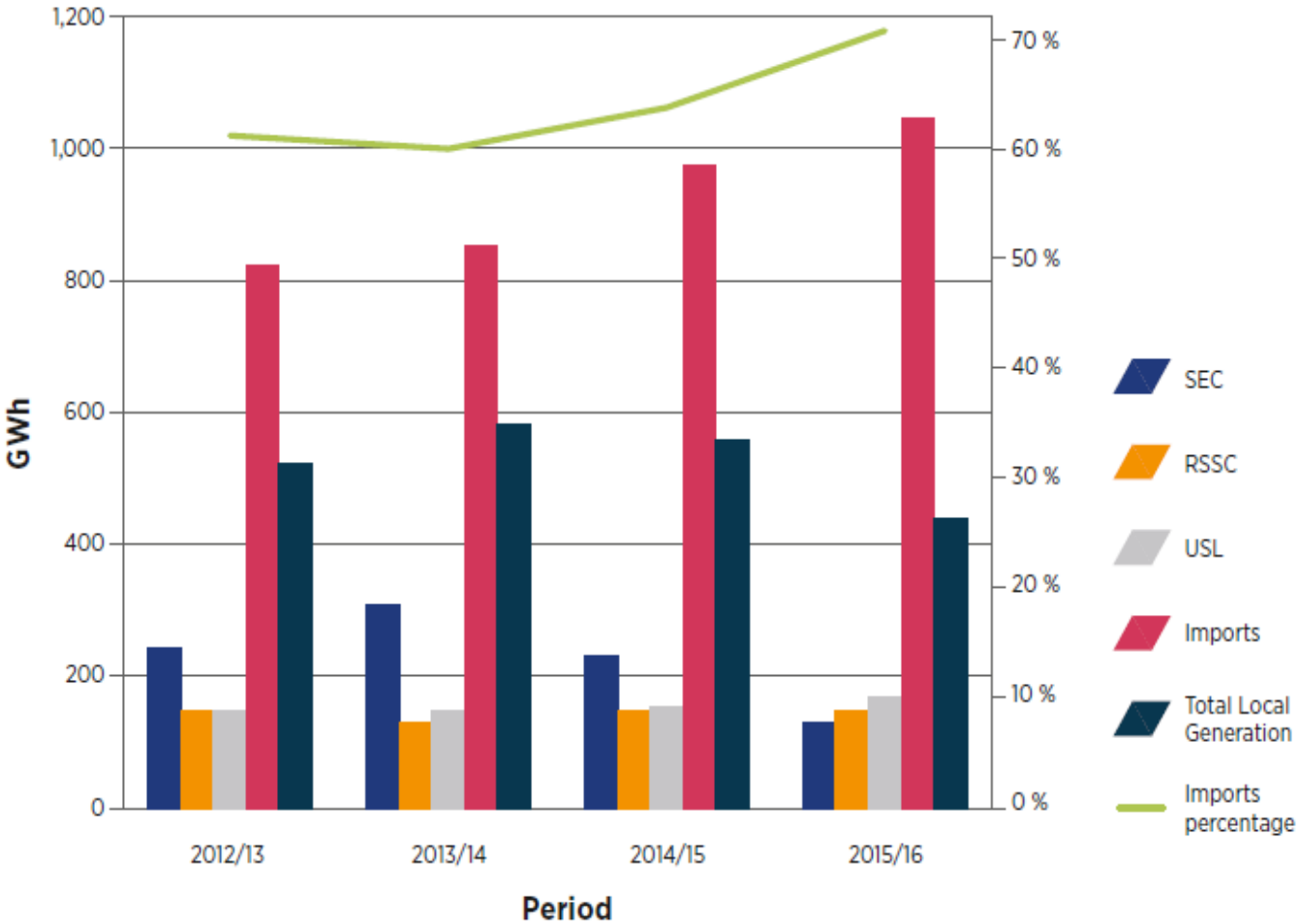
Final Energy Consumption by Energy Source

The use of **biomass** shows an **upward trend**, and the use of the remaining fuels remains relatively constant, except for a **slight increase in oil use** in the transport sector as a result of **increased car ownership.**



Source: Energy Master Plan 2034, 2018

Electricity Generation by Energy Source



- **SEC** – **Hydro** and **Diesel/Oil**
- **RSSC** and **USL** – **Biomass** (bagasse)
- **IMPORTS** – mostly **Coal**

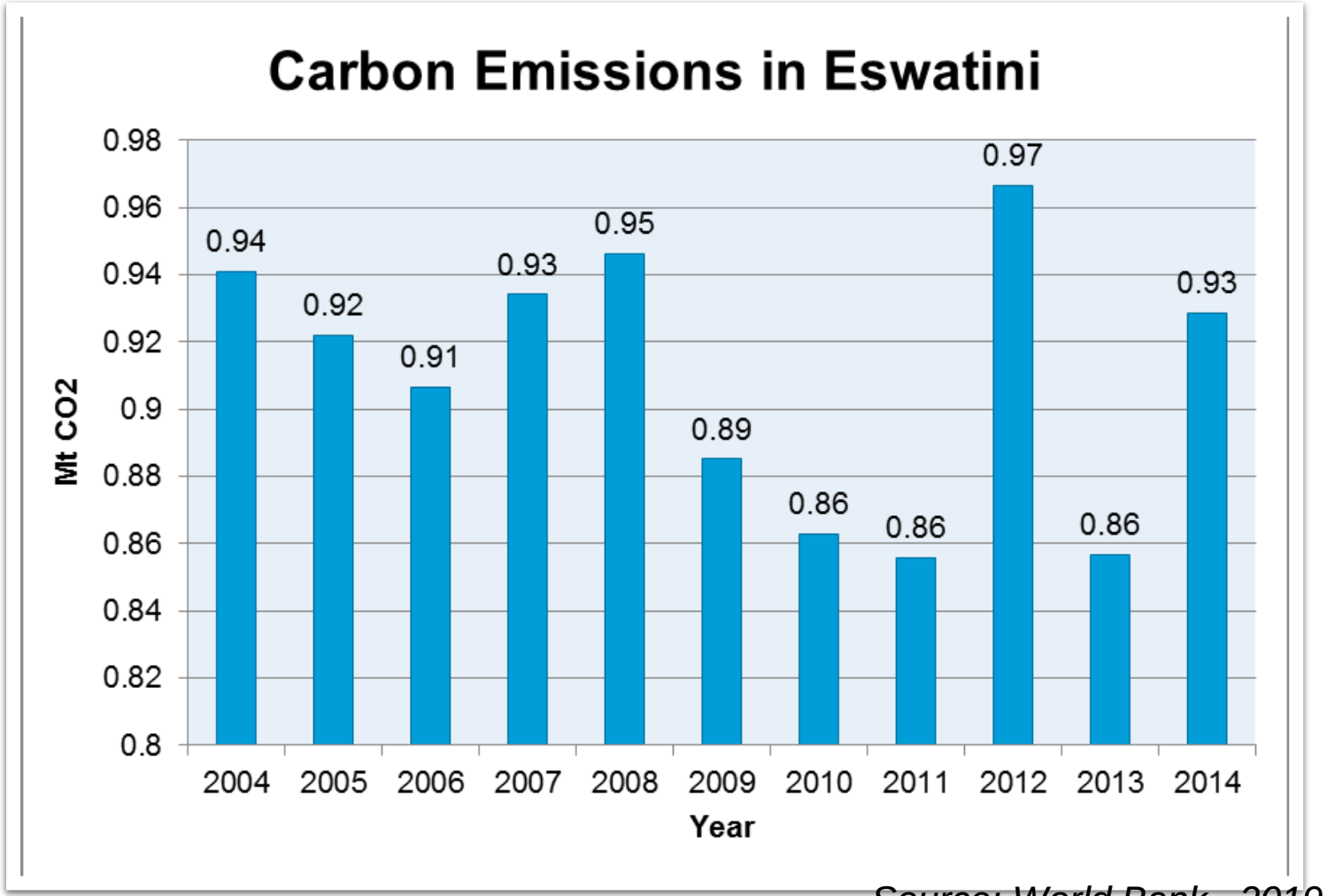
- About **1,050GWh of electricity** is generated **from coal** (imports)

Source: Energy Master Plan 2034, 2018

CO2 Emission by Sector

Eswatini's CO2 Emissions was reported at **0.929 Metric Ton** in Dec 2014. This records an **increase from** the previous number of **0.857 Metric Ton** for Dec 2013.

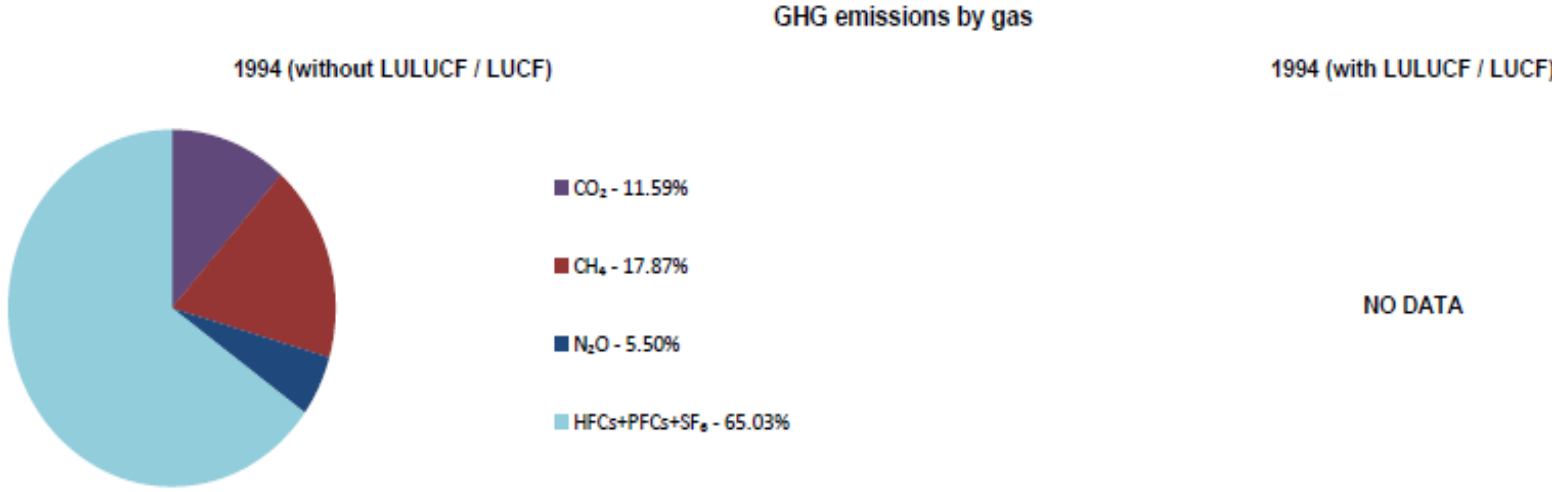
Eswatini's CO2 Emissions data is updated yearly, **averaging 0.702** Metric Ton from Dec 1960 to 2014, with 53 observations. The data reached an **all-time high of 1.198** Metric Ton in **1997** and a record low of 0.010 Metric Ton in 1961.

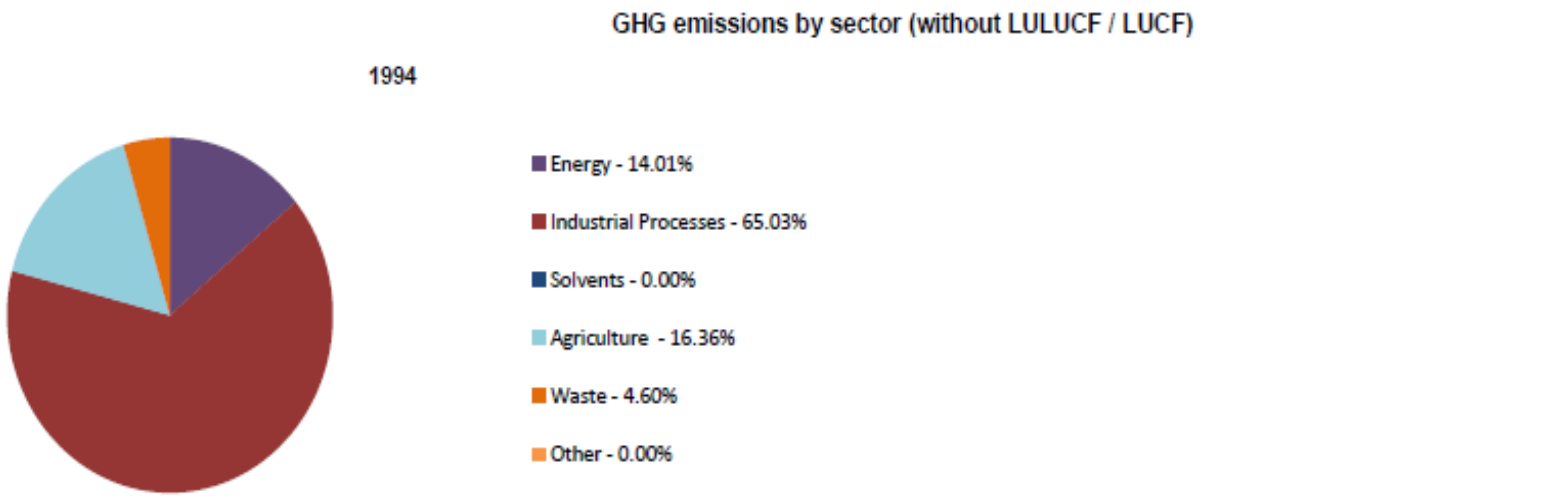


Source: World Bank , 2019

CO2 Emission by Sector

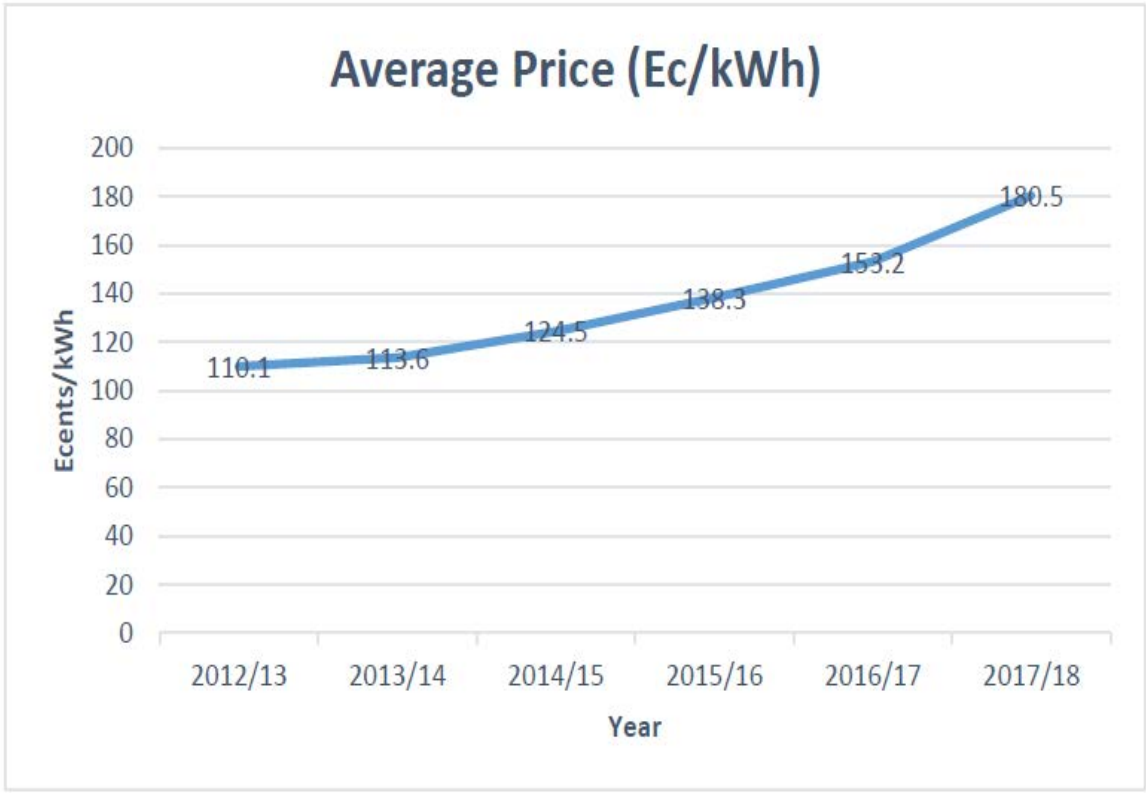
Major contributing sectors:
Industry – 65%
Agriculture – 16%
Energy – 14%
Waste – 5%





Source: United Nations Framework Convention on Climate Change (UNFCCC), n.d.

Energy Prices



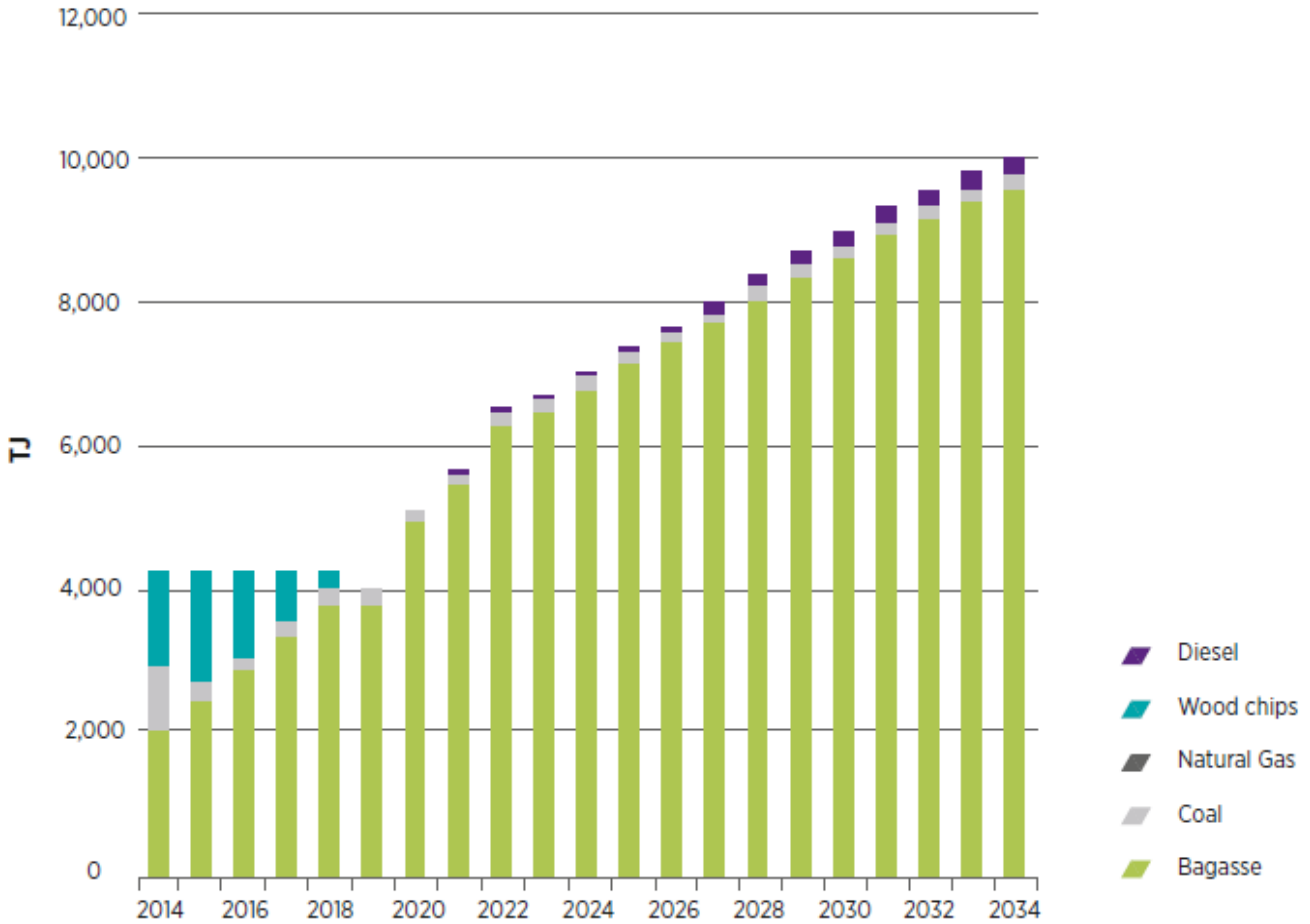
- **Eskom** effected a **tariff increase of 2.2%** as per the approval of the National Energy Regulator for South Africa (NERSA) on February 23, 2017.
- **The increase was effected on the 1st April 2017** and for the Eswatini Electricity Company, the effective tariff increase was 2.7% as per the Power Purchase Agreement between the two entities.

National Average Electricity Tariffs

Facility Charge Increase	6.40%	2017/18 SEC Tariff Structure		
Access Charge Increase	6.40%			
Demand Charge Increase	14.65%			
Corporate Award (TOU) Increase	16.90%			
Corporate Award (Non- TOU) Increase	17.18%			
Lifeline Increase	17.65%			
Domestic Charge Increase	17.65%			
Type	NON-TOU TARIFFS	Facility Charge E/M	*Energy Charge E/kW	Demand Charge E/kVA
S10	Life Line		1.38	
S1	Domestic		1.49	
S2	General Purpose	194.95	2.05	
S3	Small Commercial - prepayment	194.95	2.05	
S3	Small Commercial - credit meter	389.90	2.05	
K4	Small Holder Irrigation	1 727.43	0.79	127.11
K5	Large Commercial and Industrial	2 032.26	0.92	149.53
K6	Large Irrigation	2 032.26	0.92	149.53
TOU TARIFFS	T1	T2	T3	T4
	TOU at MV at HV network	TOU at MV	TOU at LV	TOU small irrigation < 100 kVA
Facility Charge E/month	4 714.02	2 268.77	1 706.67	1 450.68
Demand Charge E/kVA	135.94	142.41	149.53	127.11
Access Charge E/kVA	54.57	57.17	54.80	51.02
*Energy – Low Demand - Peak E/kWh	1.43	1.46	1.49	1.29
*Energy – Low Demand - Standard E/kWh	1.02	1.04	1.06	0.92
*Energy – Low Demand - Off-Peak E/kWh	0.82	0.84	0.86	0.75
*Energy – High Demand - Peak E/kWh	4.03	4.16	4.24	3.60
*Energy – High Demand - Standard E/kWh	1.25	1.28	1.31	1.11
*Energy – High Demand - Off-Peak E/kWh	0.82	0.84	0.86	0.75

OUTLOOK OF ENERGY DEMAND AND SUPPLY

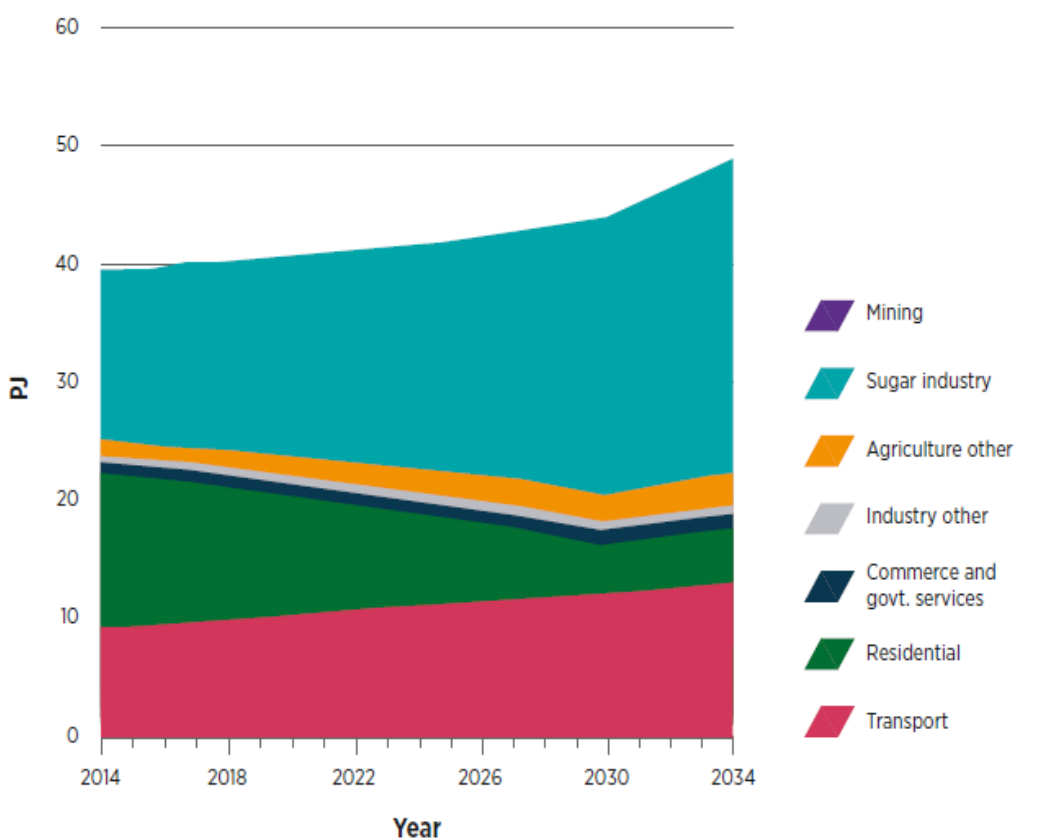
Primary Energy Supply by Source and Energy Source



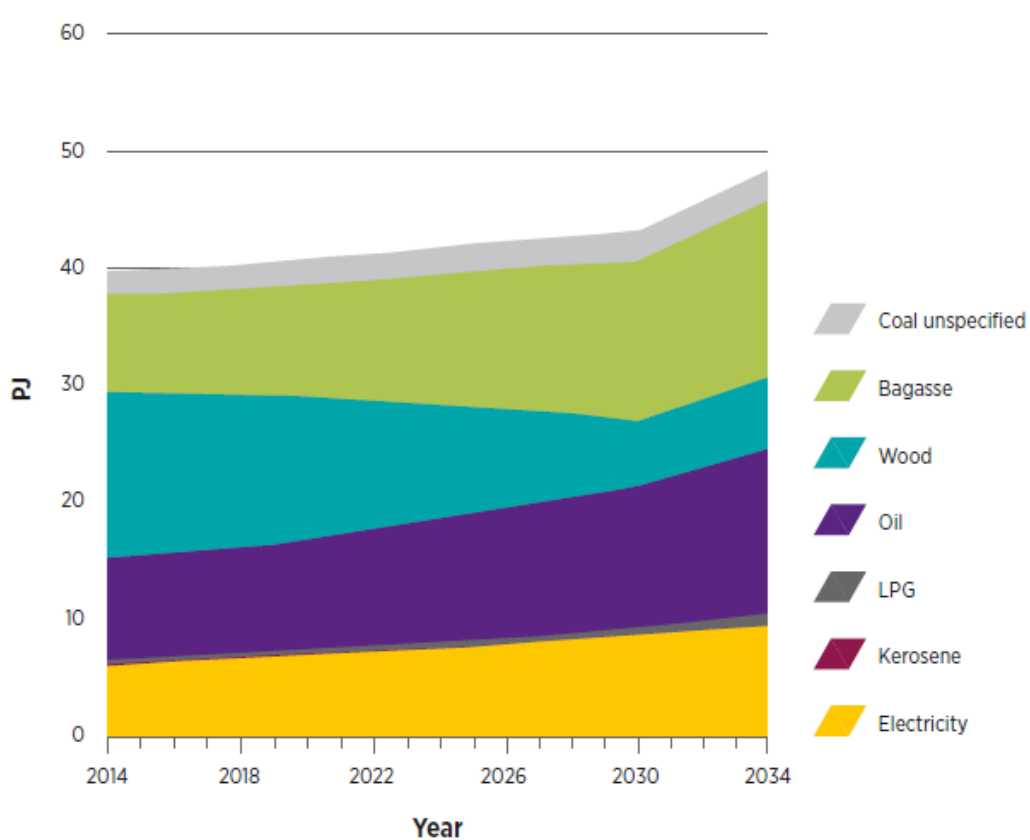
Source: Energy Master Plan 2034, 2018

Primary Energy Consumption by Source and Energy Source

By sector



By energy source



Source: Energy Master Plan 2034, 2018

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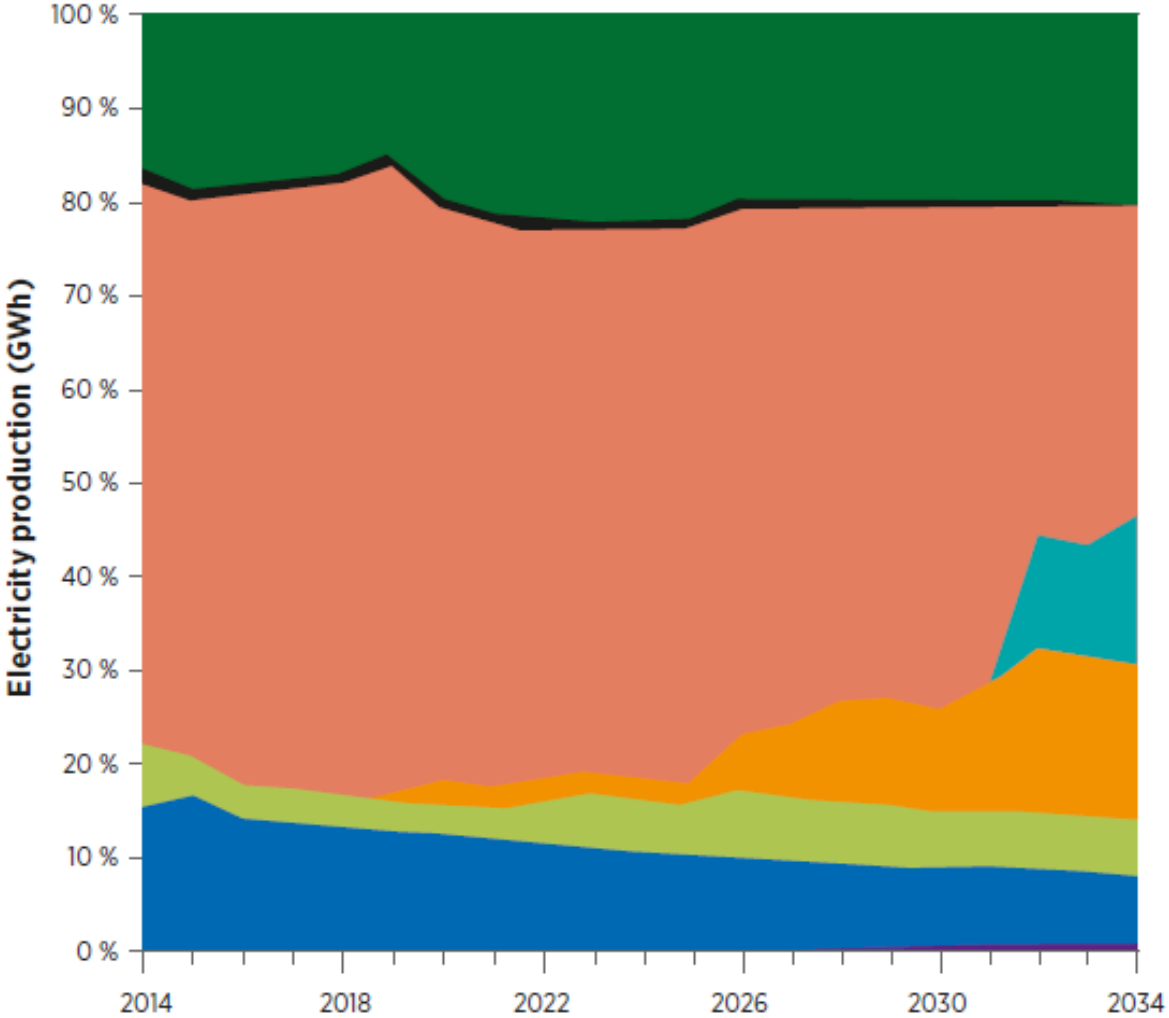


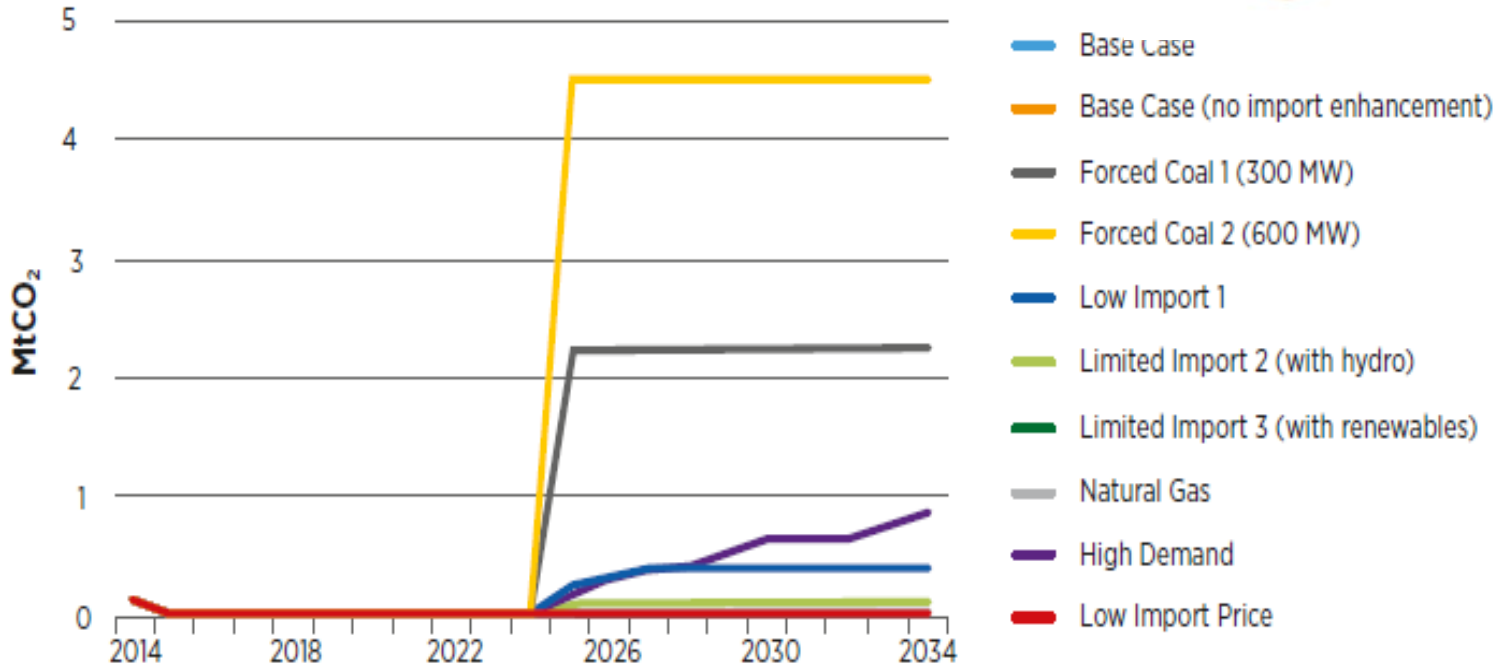
Electricity Generation by Energy Source

- **Electricity demand** is **projected to increase** from 1,270 GWh to 2,648 GWh over the planning horizon.
- Currently **electricity imports** account for approximately **70 %** of the country's electric energy requirement.
- Following **major investments** in **power generation** from 2020, it is envisaged that the share of **imports will fall to 65 %** and further **decline to 35 % by 2034**.

CO_2 Emission by Sector and Energy Source

- The **amount of CO_2 emissions** from the power sector **corresponds** directly to the penetration of **coal-fired power plants** in each scenario.

- Under the Forced Coal 2 scenario, the **emissions increase to 4.5Mt after 2024,** and under the Forced Coal 1 scenario they remain at 2.2Mt



Source: Energy Master Plan 2034, 2018

Energy-related Investment for Domestic and Overseas

1. 100 kW of electricity generation from solar PV which is an investment by the Spaniards

2. 40 MW of power generated by Ubombo Sugar Limited

3. 40 MW of power from solar where requests for qualification have been advertised to potential power producers.

Major Difficulties and Bottlenecks Currently Faced in Formulating Energy Policies

- Delays in passing legislation
- Gaps in data presenting challenges during analysis to formulate policies that address a current issue
- Politics which delays or makes the formulation of energy policies and their implementation to be delayed
- Lack of research in the energy sector to present reliable data
- Lack of monitoring and evaluation of present policies

Subjects you Would Like to Study in the Order of Priority and the Reason

- Feasibility studies in renewable energy generation undertakings
- Designing a viable energy mix based on the available energy
- Capacity building for officers involved in energy related activities from the central government to the local governments.
- Awareness and educational campaigns – energy saving
- Information, Education and Communication strategy

THANK YOU

NGIYABONGA

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