



# BIOENERGY REPORTING AND STATISTICS

## THE CASE OF THE KINGDOM OF ESWATINI

24-27 April 2023

Lome, Togo



# KEY FACTS

- Population-1.1 million
- Economic growth-1.3% in 2019
- GDP-5.2 Billion USD
- Electrification rate-80% (95% Urban and 69% Rural)
- Energy Balance-1995-2018
- 45% of the country is covered by plantations, natural forests and woodlands



# BIOENERGY STATISTICS COLLECTION



## Central Statistical Office

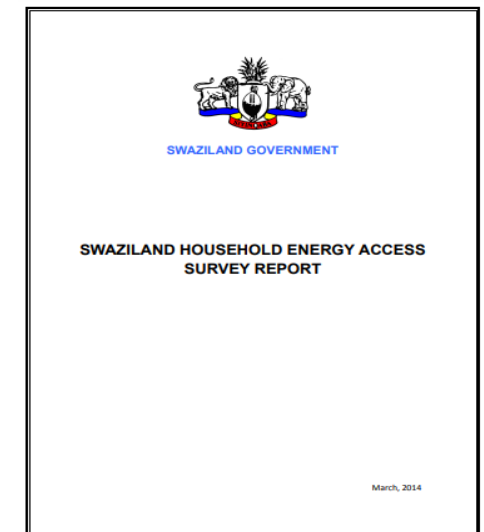
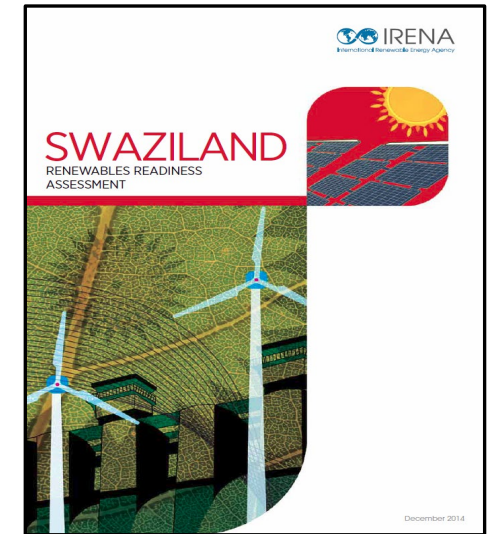
- Conducts annual household-based surveys
- Agriculture survey

## Ministry of Natural Resources and Energy

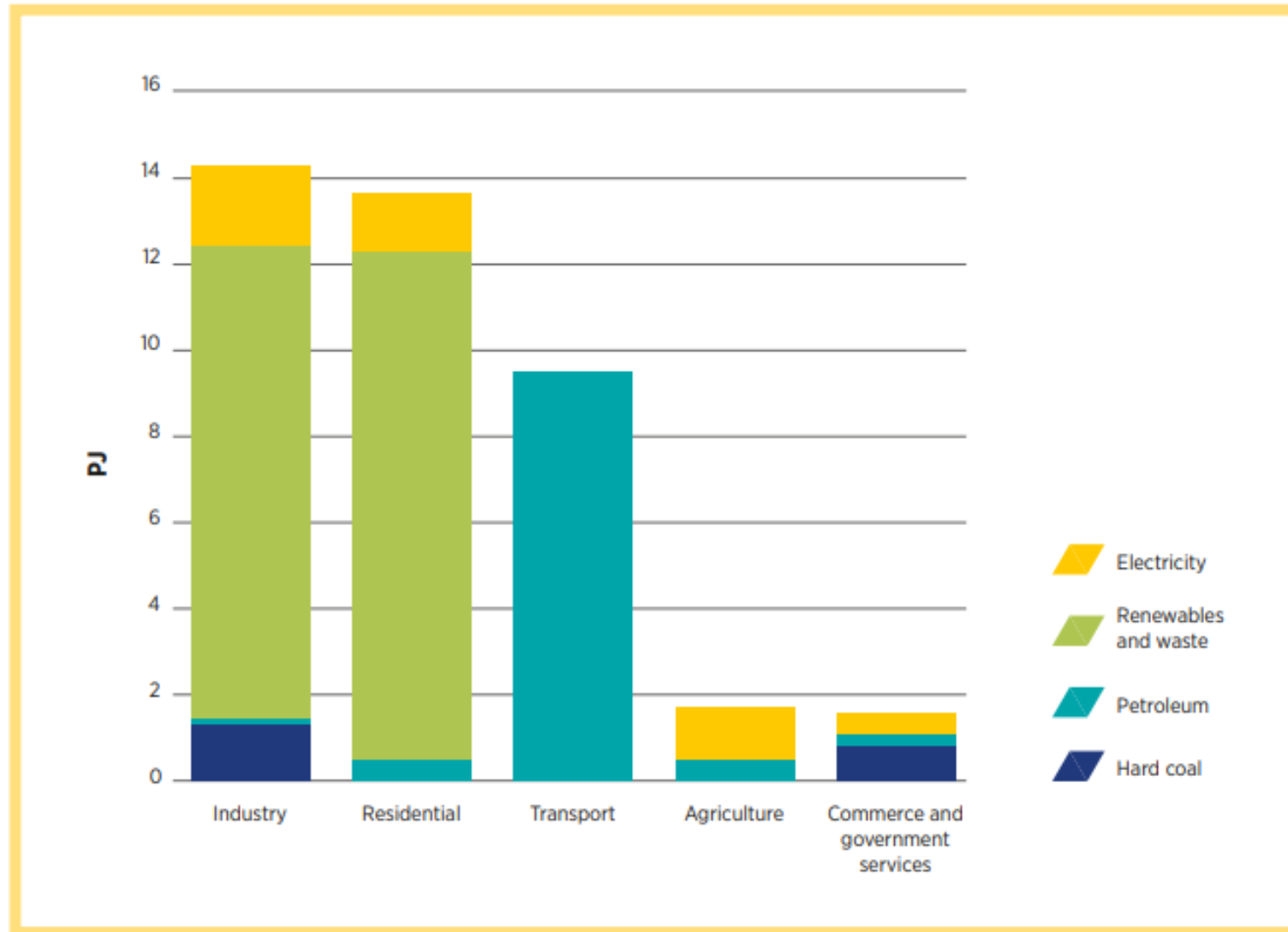
- Conducts Company surveys for collection of energy balance data
- Responsible for policy development and implementation on bioenergy

## Ministry of Tourism and Environmental Affairs

- Maintenance of forestry inventory
- Promotes tree growing and sustainable use of forests and natural resources
  - Control of invasive species and wattle management.



# Final Energy Consumption (2014)

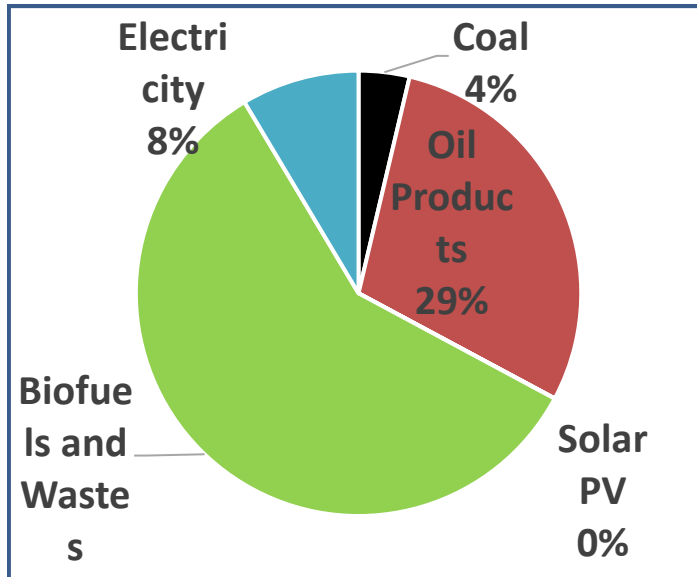


- Industry and Residential account for 2/3 of Total Final Energy Consumption
- In both sectors *Renewables and Waste* account for more than 80% of the consumption of the sector

# Bioenergy Data

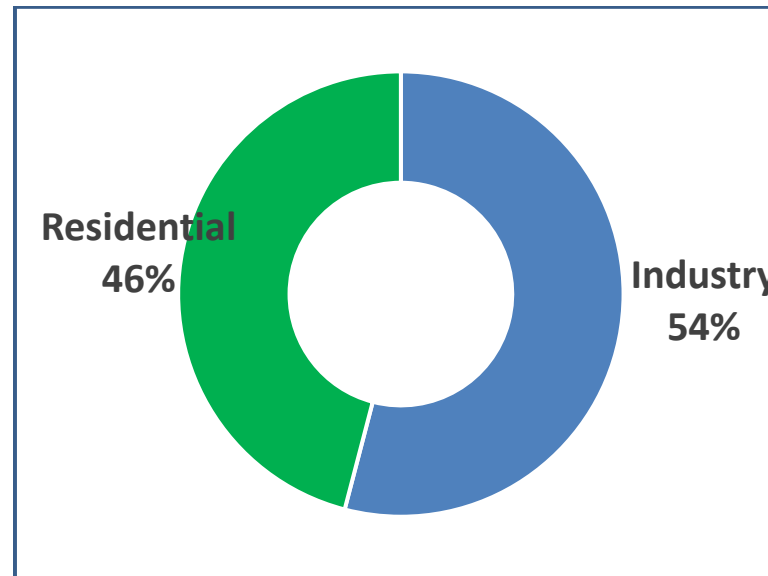


## Total Primary Energy Supply



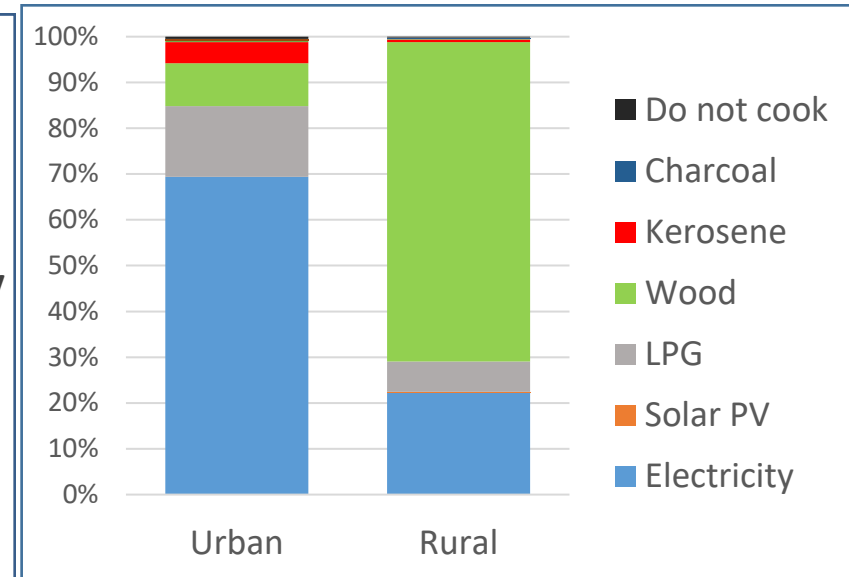
- Biofuels and wastes are the main fuel in the country's energy mix
- Local electricity is generated from hydro and biomass. 70% of total electricity is imported

## Bioenergy Total Final Energy Consumption



- For industrial heat processes and in food and beverage sector and cogeneration in sugar sector
- For cooking and heating in residential sector

## Household Energy use for cooking



- Implementation of Rural Electrification project since 1992
- Target of 100% access by 2030
- High residential electricity tariffs
- Urban to rural migration



# Biomass use in Industry



## **Woodchips/ Woodwaste**

- Supplementary fuel in manufacturing industry for heat and power generation



## **Bagasse**

- Use in sugar industry for heat and power generation

# Types of Biomass in Households



## **Traditional biomass**

- 70% of Rural and 9% of urban households use wood for cooking
- Most traditional biomass is not traded



## **Charcoal, Briquettes**

- Only 0.13% of households use charcoal for cooking
- Burned in open fire to grill during social activities and informal street food markets

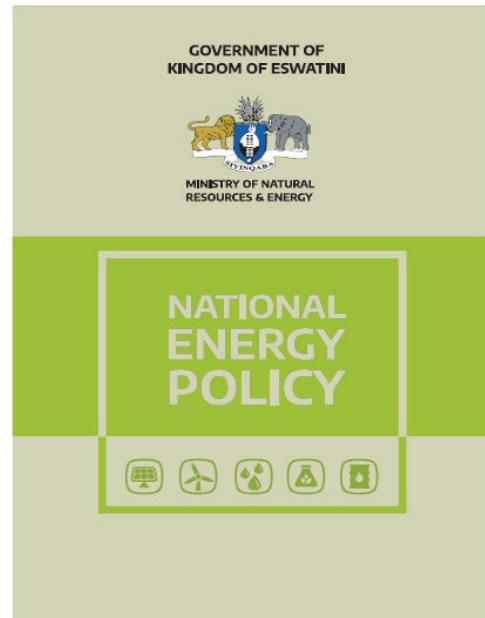




# Energy Policy, 2018



- To support the development of domestic resources for a target of 50% of the energy mix in the electricity generation
- To strive to provide all households with access to modern energy by 2022.
  - ***Smoke free kitchens:*** This includes promotion actions to build improved cook-stoves with built-in chimneys or the modern smokeless stoves



# Energy Masterplan, 2020



FIGURE 5.12 ENERGY USE IN ELECTRIFIED HOUSEHOLDS

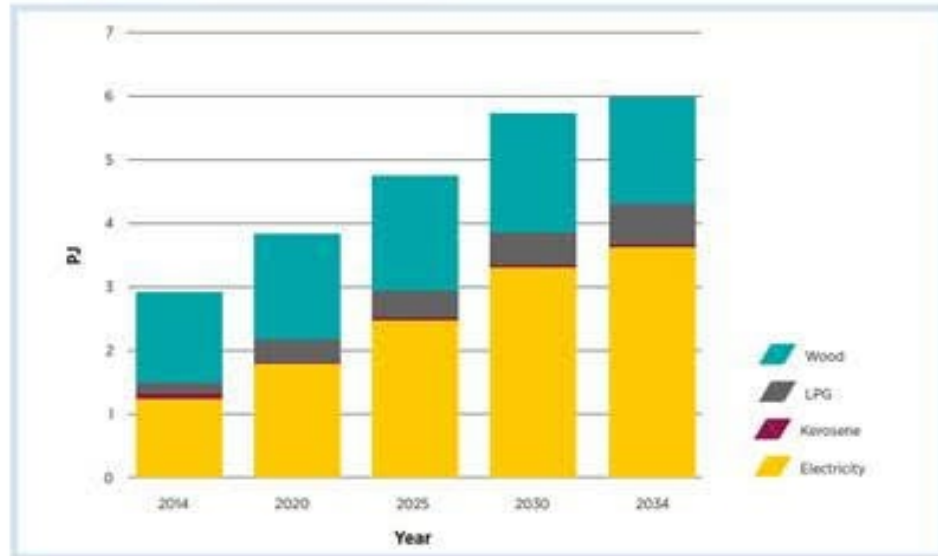
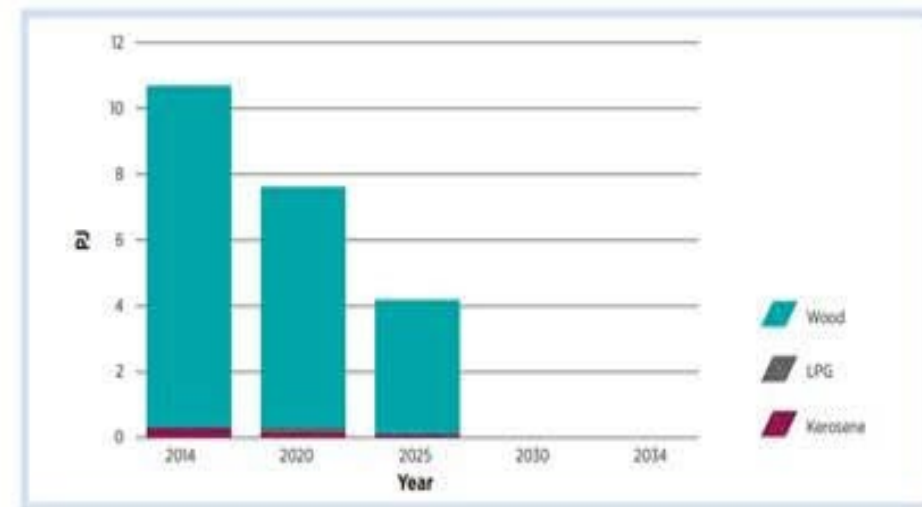


FIGURE 5.10 ENERGY USE IN NON-ELECTRIFIED HOUSEHOLDS



- According to the SE4ALL targets
  - Universal access to clean energy by 2030 including electricity, LPG, solar home systems and biogas
  - Coupled with effective policy on improved bioenergy cookstoves

# Household traditional Bioenergy cookstoves



## 1. Efficient Wood Cookstoves



# Difficulties in reporting bioenergy data



- Traditional Bioenergy is mainly non-commercial
  - Quantities cannot be estimated
  - Informal sales of fuel wood is also not quantified
- Bioenergy use in commercial sector
  - Butcheries, hospitality, roadside non-formal business
- Other types of bioenergy
  - Energy crops, cow dung, wood wastes, charcoal, briquettes etc
- Measuring efficiency of the modern wood cookstoves



# Way forward



- The country in cooperation with the World Bank is conducting a Mutli-tier Energy Access survey
  - quantification of bioenergy demand in all sectors,
  - Impact assessment of the rural electrification programme in all sectors
  - impacts of bioenergy on forest resources in the country,
  - GIS database for rural energy access,
- Developing strategies for fuel switching opportunities e.g. fuelwood to LPG





# Sample Questionnaires: HH



I.1	Enumerator: Record Respondent ID for this section										I.11	I.12	I.13	I.14	I.15	I.16
I.2	I.3	I.4	I.5	I.6 A	I.6 B	I.7	I.8	I.9	I.10	I.11	I.12	I.13	I.14	I.15	I.16	
<b>Fuel Type</b>	In the last 12 months, did your household use this [FUEL]?	In the last 12 months, what did your household use [FUEL] for? Kuletinyanga letingu 12 letengcile nimsebentise [FUEL] kwentani? <i>READ ALOUD the options below and Check “\” for each item the household uses it for.</i>									In the last 12 months, how many months did you use this [FUEL]?	In the last 12 months, in which months was this [FUEL] scarce and significantly more expensive? Kuletinyanga letingu 12 letengcile ngutiphi lapho [FUEL] bekulukhuni kumtfolanoma lapho adula kakhulu khona? <i>Multiple responses possible</i>	What unit do you purchase/collect [FUEL] in? Uyitsenga ngasiphi sisindvo le[FUEL]	How often do you or a household member purchase/collect [FUEL]? Wena noma umuntfu lohla lapha ekhaya niya kuyotsenga [FUEL]?	How much do you purchase each time? Nitsenga lokungakani njalo naniyile Quantity	How much did you pay for the amount of [FUEL] that you purchase each time? Nikhipha malini kulelinani le [FUEL] lenilitsengako?
<b>Read Aloud</b>	Kuletinyanga letingu 12 letengcile nimsebentisile [FUEL]										[FUEL]?	Scarce and significantly more expensive?	Kg...1 Litre...2 Other, specify...3	Daily...1 Weekly...2 Twice a week...3 Monthly...4 As need arise...7	0 next row	
<b>CODE:</b> Yes...1 No...0→ NEXT ROW																
<b>S</b>		LIGHTING KUKHANYISA	COOKING KUPHEKA	HEATING KUSHISA	COOLING KUPHOTISA	FIRE STARTER/ IGNITION KUBASAMLILO	BOILING WATER KUBILISA EMANTI	HOME-BASED INCOME ACTIVITY KWENTASIBHIZINSI YELIKHAXA	OTHER, SPECIFY LOKUNYE, CHAZA	Number of Months	See Month Codes January.....1 February.....2 March.....3 April.....4 May.....5 June.....6 July.....7 August.....8				QUANTITY	COST (LOCAL CURRENCY)

- a. **LPG/ cooking gas**  
Gas yelibhodlela
- b. **Wood Purchased**  
Tinkhuni letitsengiwe
- c. **Wood Collected**  
Tinkhuni letitfotwe
- d. **Charcoal Emalahle**
- e. **Solar**
- f. **Kerosene Paraffin**  
longakahlutwa
- g. **Piped Bio-Gas**
- h. **Gas longena**  
ngemaphayiphi njengemanti
- i. **Coal/ Lignite**  
Emalahle lembiwako
- j. **Animal waste/ Dung**  
Umcuba
- k. **Crop Residue/ Plant Biomass Insalela**  
yetinsaba nemahlanga
- l. **Sawdust**
- m. **Coal Briquette**  
Timvutfu temalahle
- n. **Biomass Briquette**  
Insalela yemahlanga netinsaba
- o. **Electricity Gezi**
- p. **Pellets/ processed biomass/ wood chips**



# **QUESTIONS**

**THANK YOU!  
SIYABONGA!**