

# OFF-GRID RENEWABLE ENERGY STATISTICS (ORES) CONFERENCE 15-19 Jan 2021

**Topic:** Data Collection of Biomass Energy  
Consumption in 2017: Lesotho's Case

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# Background of biomass (fuel wood) data collection

- In 2017 when Lesotho Bureau of Statistics was planning to undertake Household Energy Consumption Survey (HECS), FAO was coincidentally intending to pilot to a woodfuel module to be integrated into household surveys.
- The purpose of the module was to enable developing countries to enhance their national socio-economic statistics on woodfuel production and consumption.
- Lesotho was then chosen to be one of the countries to participate in the pilot exercise.

# Pilot Sampling Methodology

- **Three-stage purposive sampling.** The **first stage** focused on the selection of districts (Mafeteng, Maseru, Leribe and Quthing).
- The **second stage** involved the selection of the ecological zones (Lowlands, Foothills, Mountain and Senqu River Valley) while,
- the **third stage** was to determine the coverage which consisted of private households that were randomly selected.
- Enumeration areas in the four districts were selected based on the presence of Forest Reserves and Indigenous Woodlots.

# Methodology cont...

- Enumeration areas in which these woodlots and forests were present, were determined by Bureau of statistics from its survey frame and purposefully selected.
- Ministry of Forestry was involved in the pilot exercise and provided the areas that had woodlots and forests in the country.
- The findings from this pilot survey informed our approach to data collection of biomass in 2017 Household Energy Consumption Survey (HECS).

# Integrating wood fuel measurement in HECS

- The survey was done by BOS in collaboration with Department of Energy (DOE)
- Funded by UNDP under Sustainable Energy For All (SE4ALL) Project
- Lesotho Government contributed towards allowance of field staff

# Sample Size

- A sample size of 192 enumeration areas was selected countrywide.
- In each Primary Sampling Unit, fifteen (15) households were selected.
- A total of 2880 ( $192 \times 15$ ) households throughout the country was selected

# Main Data collection Plan

- Collection months:
  - winter (April, May, June and July)
  - summer (August, September, October and November)
- Enumeration was done by engaging
  - 192 enumerators
  - 38 supervisors
  - 4 coordinators
  - 6 IT Coordinators

# DATA COLLECTION TECHNIQUE

- Direct visit was done to the selected households during 2017 HECS
- The enumerator administered a pre-coded questionnaire in a tablet (CAPI)
- Enumerator stayed with the household for two days observing the energy consumption pattern
- Direct measurements of fuel used and records were done at household level



# Data Collection tools

- Tablet / CAPI (Questionnaire)
- Shopping bag
- Spring Balance
- String

# Data Collection tools

- *Shopping bag, String and weighing scale were used to weigh the energy source e.g Bundle of wood, Dung*



# Example of measuring a load of wood to be used for cooking/space heating



# Data Quality Assurance

- Questionnaire design was done collectively with the Department of Energy (DOE)
- DOE consultant reviewed the questionnaire
- Questionnaire presented before management of BOS and DOE
- Questionnaire reviewed in Swaziland during a study tour
- Lesotho Energy stakeholder forum reviewed the tool
- Questionnaire reviewed presented in Rome before world energy experts
- Consultations were done with IRENA, IEA, etc
- Pilot survey of the questionnaire was done before main data collection

# Data Quality Assurance cont..

- Every stage improved the quality of the tool as we kept on making necessary adjustments to fine tune the questionnaire

# Limitations of HECS

- Data was only collected for two seasons. It would have been ideal to have collected for four seasons
- The enumerator could only stay in the household for only two days to observe the pattern of energy consumption due to resource limitation
- The balance scale needed to continuous calibration

# Lessons learnt from HECS

- Collaboration makes a difficult task simple.
- The resources that were garnered facilitated smooth execution of the survey.

# Discussions

- Open



Thank very much