ECOWAS/GBEP WORKSHOP ON THE PILOTING OF GBEP SUSTAINABILITY INDICATORS
PRAIA (CAPE VERDE), 7-8 NOVEMBER 2013

INTRODUCTION TO THE PILOT STUDY IN GHANA

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ENERGY COMMISSION, GHANA

7 NOVEMBER, 2013
Overview of Ghana
The Pilot Study Project
Processes and methodologies in the pilot Study
General outcome of the Study
OVERVIEW OF GHANA

- Land Area: 238,500 km²
- Population: 24,658,823 (2010 Census)
- Electricity Access: 74% (2012)
- Rural Access: 47% (2012)
- Consumption/Capita: 443.3kWh (2012)
- Av. GDP Growth Rate: 9.2% (2012)

Major Export: Cocoa, Gold, Timber, Bauxite, Oil, Electricity (Togo, Benin & Burkina Faso)
## GHANA’S ENERGY SITUATION

- **Electricity Installed capacity (2012)**: 2,280MW
- **Electricity generation (2012)**: 12,024GWh
- **Crude oil production (2012)**: 100,000 - 110,000b/day

### Electricity generation (2012)
- **Hydro component**: 8071 GWh (67.1%)
- **Thermal component**: 3,953GWh (32.9%)
RENEWABLE ENERGY RESOURCES

- Solar energy: 4.5-6.0 kWh/m²/day
- Wind energy (along coast): over 5.6 m/s at 60 metres height
- Hydro (≤ 100 MW): 900 MW
- Biomass:
  - Total Wood supply for fuel: 30.7 million tonnes/annum
  - Woodfuel supply: 8 million tonnes/annum
  - Municipal waste: 2 million tonnes/annum;
  - Wood residue: 2 million
PRIMARY ENERGY SUPPLY IN GHANA

- **Biomas**: 6.00%, 532.8toe
- **Crude oil**: 22.0%, 2,015.3toe
- **Hydro**: 72.0%, 6,600toe

Legend:
- Green: Biomass
- Red: Crude oil
- Blue: Hydro
• Bioenergy policy
  – Woodfuel. Biofuel and Biomass wastes

• Why GBEP Sustainability Indicators are important for Bioenergy policy development
  – Sound policy
The Pilot Study Project
INTRODUCTION

- Biomass accounts for more 60% of Ghana total annual energy consumption.

- The resource is harvested and utilized unsustainably.

- The Global Bioenergy Partnership has developed a set of 24 sustainability indicators for the bioenergy sector use by national governments.

- The government of Ghana decided to conduct a pilot project with the GBEP sustainability indicators, in close cooperation with the ECOWAS Regional Centre for Renewable Energy and Energy Efficiency (ECREEE) in 2010.

- The Dutch government provided financial support for the study.

- Partners for Innovation, a Dutch biomass and bioenergy sustainability expert provided technical assistance for the pilot.

- The study was undertaken from October 2011 to November 2012.
OBJECTIVES OF GHANA GBEP PILOT PROJECT

1. Enhance the capacity of Ghanaian organisations to use the GBEP indicators as a tool for:
   - assessing the sustainability of the bioenergy sector and
   - developing sustainable bioenergy policies

2. Learn lessons on how to apply the indicators

3. Enhance their practicality as a tool for policymakers

4. Spread experiences in ECOWAS region
Processes and methodologies in the pilot Study
ACTORS

Steering Group
- Office of the President of Ghana
- ECREEE
- NL Ministry of Environment
- NL Agency

Policy Stakeholder Group
- Energy Commission
- Ministry of Energy
- Ministry Food and Agriculture
- Ministry of Environment, Science and Technology
- Ministry of Lands and Natural Resources
- Council Scientific and Industrial Research
- Forestry Commission
- Environmental Protection Agency
- Northern Development Forum
- Africa Biofuel Renewable Energy Company
SELECTED RESEARCH INSTITUTES

Council for Scientific & Industrial Research – Forest Research Institute (FORIG):

Council for Scientific & Industrial Research – Institute of Industrial Research (IIR):

University of Ghana – Institute of Statistical, Social & Economic Research (ISSER):
<table>
<thead>
<tr>
<th>Environmental</th>
<th>Social</th>
<th>Economic</th>
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<tbody>
<tr>
<td>1. Life-cycle GHG emissions</td>
<td>9. Allocation and tenure of land for new bioenergy production</td>
<td>17. Productivity</td>
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<td>3. Harvest levels of wood resources</td>
<td>11. Change in income</td>
<td>19. Gross value added</td>
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<td>4. Emissions of non-GHG air pollutants, including air toxics</td>
<td>12. Jobs in the bioenergy sector</td>
<td>20. Change in consumption of fossil fuels and traditional use of biomass</td>
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<td>5. Water use and efficiency</td>
<td>13. Change in unpaid time spent by women and children collecting biomass</td>
<td>21. Training and re-qualification of the workforce</td>
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<td>6. Water quality</td>
<td>14. Bioenergy used to expand access to modern energy services</td>
<td>22. Energy diversity</td>
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<td>7. Biological diversity in the landscape</td>
<td>15. Change in mortality and burden of disease attributable to indoor smoke</td>
<td>23. Infrastructure and logistics for distribution of bioenergy</td>
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<td>Environmental pillar</td>
<td>Social pillar</td>
<td>Economic pillar</td>
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<tr>
<td>1) Lifecycle Green House cases (GHG) emission</td>
<td>10) Price and supply of national food basket</td>
<td>17) Productivity</td>
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<td>2) Soil quality</td>
<td>12) Jobs in the bioenergy Sector</td>
<td>18) Net energy balance</td>
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<td>8) Land use and land-use change related to</td>
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<td>23) Infrastructure and logistics for distribution of</td>
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<td>CSIR-FORIG</td>
<td>UG-ISSER</td>
<td>CSIR-IIR</td>
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<td>Indicators 1, 2 and 8:</td>
<td>Indicator 10:</td>
<td>Indicators 17, 18, 20 and 23:</td>
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<tr>
<td>• Wood resources</td>
<td>• Maize and sorghum</td>
<td>• Fuel wood to charcoal</td>
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<td>• Jatropha, sunflower</td>
<td>Indicator 12:</td>
<td>• Vegetable oil to biodiesel</td>
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<td>• Agricultural residues</td>
<td>• Wood to charcoal and jatropha to biodiesel</td>
<td>• Waste to biogas</td>
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<td>Indicator 3:</td>
<td>Indicator 14:</td>
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<tr>
<td>• Wood resources</td>
<td>• baseline year 2010</td>
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OBJECTIVES OF RESEARCH WORK

1. Assess the status of bioenergy data collection.

2. Understanding the practicalities of implementing the GBEP indicators in Ghana.

3. Learning lessons on ways to move forward with the GBEP indicators in Ghana.
1. Collect the most appropriate (already available) data.

2. Assess the usefulness, availability and quality of data.

3. Provide recommendations for improved data collection and use.

4. Provide baseline values for the selected indicators.
1) Internet search / desk research; and

2) Interviews with relevant Ministries and Commissions, Ghana Statistical Service, other research institutes, NGOs, industry associations and individual bioenergy/biofuel companies.
General outcome of the Study
DATA AVAILABILITY AND QUALITY, AND APPLICABILITY OF THE GBEP INDICATORS

- The pilot clarified which data is already collected in Ghana, with what frequency and by who.

- The pilot identified how data collection methodology and data collection infrastructure can be improved in the Ghanaian situation.

- The pilot concluded that making data collection methodologies and
RELEVANCE FOR THE GBEP INDICATORS OF EXISTING DATA COLLECTION AND REPORTING STRUCTURES IN GHANA

• The pilot identified data being currently collected and reported on, how this data is collected and the organisations collecting them.

• A number of Ghanaian institutions collect relevant data in a structured manner for bioenergy related subjects.
  • Agricultural data – Ministry of Food and Agriculture, SRID
  • Energy statistics – Ministry of Energy, Energy Commission
  • Ghana Living Standards Statistics – Ghana Statistical Service
THANK YOU