

**Working Group on Capacity Building:
Study Tour for Capacity Building, 2nd Bioenergy
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National Bioenergy Strategy in Ghana

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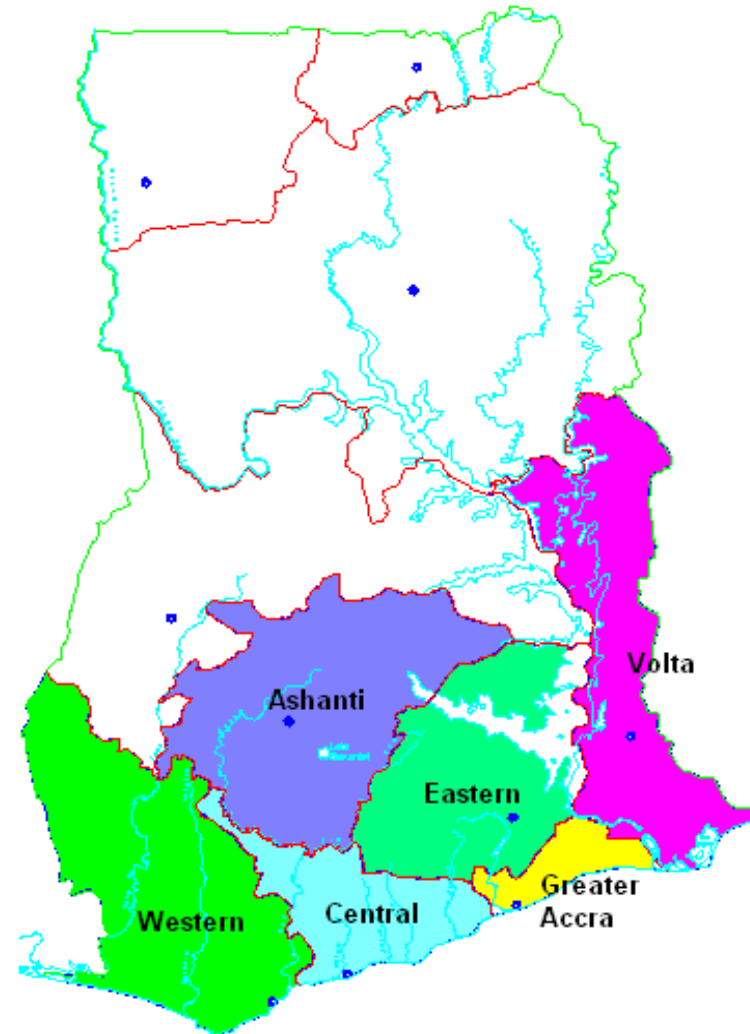
5 May, 2014

Presentation Outline

- **Country Profile**
- **Ghana's Energy Situation**
- **Goal of Bioenergy Strategy of Ghana**
- **Thematic areas of the Strategy**
- **Issues, Objectives and Strategies for the thematic areas**
- **Conclusion**

Country Profile

- Land Area: **238,500 km²**
- Population: **24,658,823** (2010 Census)
- Electricity Access: **72%** (2012)
- Consumption/Capita: **443.3kWh** (2012)
- Av. GDP Growth Rate: **9.2%** (2012)
- Major Export: **Cocoa, Gold, Timber, Bauxite, Oil, Electricity**
- Bordering nations: **Togo, Benin & B. Faso**



GHANA'S ENERGY SITUATION

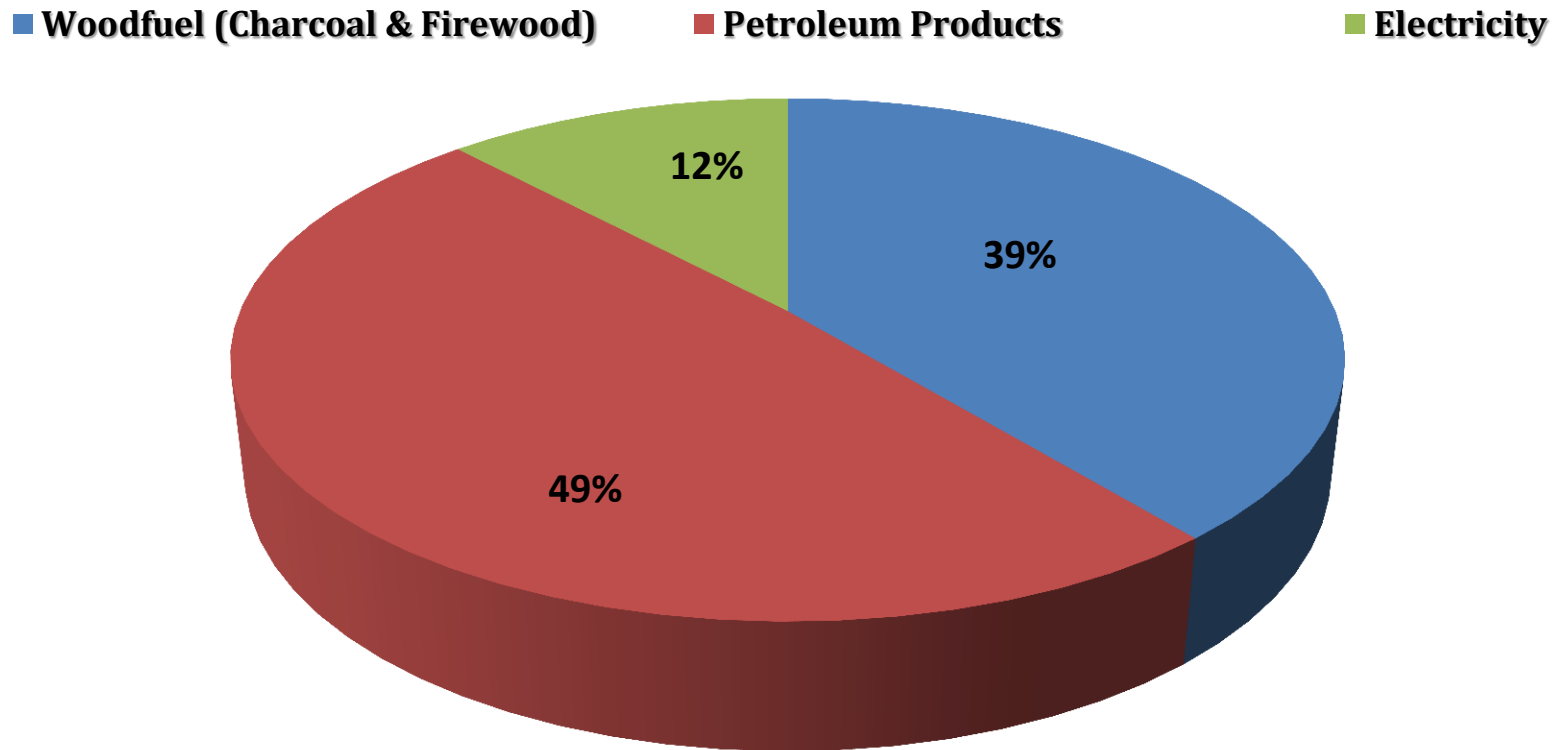
Bioenergy Resources

- Total Wood supply for fuel **11.4 million tonnes/annum (2012)**
- Woodfuel supply **6.4million tonnes /annum (2012)**
- Municipal waste **2 million tonnes/annum (2009)**
- Animal waste **12.5 million tonnes/annum (2011)**

Electricity & Petroleum

- Electricity Installed capacity **2,280MW** (2012)
- Electricity generation **12,024GWh** (2012)
- Electricity generation:
 - Hydro **8,071GWh (67.1%)** (2012)
 - Thermal **3,953GWh (32.9%)** (2012)
- Transmission losses **4.3%** (2012)
- Crude oil production **80,000b/day** (2012)

Final Energy Consumption in 2012



Source: Energy Statistics, Energy Commission, 2012

Goal of Policy

To develop and promote the sustainable supply and utilisation of bioenergy to ensure energy security for Ghana whilst maintaining adequate food security

Thematic Areas of Policy

- **Woodfuel**
- **Biofuel**
- **Biomass Waste to Energy**

Woodfuel - Supply Side

- **Main issues relating to woodfuel supply**
 - **Competing land use**
 - **Growing imbalance between supply and demand**
 - **Land and tree tenure issues**
 - **Adverse environmental issues**
 - **High initial capital cost of improved charcoal production technology**
 - **Absence of standards and codes for carbonisation technologies.**

Woodfuel - Supply Side

- **Policy Objectives**
 - **Promote increased supply of woodfuel**
 - **Support national capacity for agro-forestry extension services**
 - **Support sustainable production and supply of woodfuel**

- Ensure reliability of woodfuel supply**
- Create an enabling environment for woodfuel production, transportation and marketing**
- Promote other woodfuel sources.**

Woodfuel - Supply Side

- **Strategies**
 - **Promote woodlot cultivation, sustainable tree harvesting methods and efficient wood carbonisation technologies**
 - **Improve packaging and labelling of charcoal for supply to the market**
 - **Support technology transfer and modernisation of biomass energy systems**

- **Enact and enforce regulation, standards and codes of practice for woodfuel production, transportation and marketing**
- **Strengthen institutional capacity for woodfuel sub-sector regulation**
- **Ensure production and supply of other woodfuel sources such as bamboo**

Woodfuel - Demand side

- **Main issues relating to woodfuel demand**
 - **Low dissemination of improved woodfuel stoves**
 - **Inefficient woodfuel cookstoves**
 - **Health hazards associated with the use of traditional woodfuel cookstoves**
 - **Absence of standards and codes for the end-use technologies**

Woodfuel - Demand side

- **Policy objectives**

- **Promote efficient woodfuel and alternate end-use technologies**
- **Develop comprehensive legal and regulatory instruments to effectively manage woodfuel activities**
- **Promote woodfuel research, development and dissemination**

Woodfuel - Demand side

- **Strategies**
 - **Increase the rate of adoption of efficient cookstoves from current levels by 10% by 2020**
 - **Involve local artisans in the production high quality cookstoves**
 - **Enact legislation and regulation, standards and codes of use of cookstoves**

- Enforce standards for improved woodfuel cookstoves**
- Formulate woodfuel research, development and dissemination plan**
- Build adequate capacity in woodfuel research and development**
- Provide financial support for woodfuel research**

Biofuel - Supply Side

- **Main issues relating to Biofuel supply**
 - **Land tenure system does not promote the easy acquisition for the cultivation of crops for biofuel production**
 - **Large amounts of arable land required for biofuel crops resulting in energy-food security conflicts**
 - **Export of biofuel feedstock and products.**

- Absence of storage and distribution facilities throughout the country.**
- Non-existence of biofuel pricing mechanism**
- No fiscal incentives for biofuel production, supply and marketing**
- High cost of Biofuel refinery equipment**

Biofuel - Supply Side

- **Policy Objective**
 - **Enhance biofuel in the national energy supply mix**

Biofuel - Supply Side

- **Strategies:**
 - Reserve a specified proportion of land earmarked for biofuel feedstock cultivation for food production.
 - Improve and sustain local enterprises in the production and supply of biofuel feedstock
 - Increase biofuel supply in the national petroleum product mix to 10% by 2020
 - Ban the importation of biofuel to encourage local production

- Ban the export of biofuel feedstock**
- Impose levies and taxes on biofuel exports**
- Establish fiscal incentives for the promotion of biofuel production, supply marketing**
- Enforce standards to ensure quality of the products.**
- Establish adequate storage and distribution facilities throughout the country**

Biofuel – Demand Side

- **The main issues relating to Biofuel demand and marketing**
 - **Non-existence of a market for biofuel distribution and consumption in the country**
 - **Continuous dependence on fossil fuel**
 - **There is no incentive mechanism for biofuel distribution and consumption**

Biofuel – Demand Side

- **Policy objectives**
 - **Promote market for Biofuels and its consumption in the country**
 - **Provide technical and financial support to biofuel development**

Biofuel – Demand Side

- **Strategies**
 - **Develop an effective pricing mechanism for the sale of biofuel products**
 - **Set the proportion of biofuel in the biofuel blend**
 - **Create awareness for biofuel consumption**

- EC should provide support (technical and financial) from the Renewable Energy Fund for biofuel research, development and dissemination**
- Seek alternative sources of funding for the research institutions to provide capacity building in the biofuel industry**
- Establish a mechanism for collaboration between research institutions and biofuel producing and marketing companies for the enhancement of the biofuel industry**

Biomass Waste

- **Main issues relating to Biomass waste**
 - **No effective waste management systems exist in the country**
 - **High component of wet incombustible organic waste in the municipal solid waste**
 - **High transportation cost for municipal waste collection**

- Dispersed nature of agricultural waste due to small holding and subsistence farming practices**
- Low level of awareness of biomass waste conversion technologies**
- High cost of efficient biomass conversion technologies**

Biomass Waste

- **Policy Objective**
 - **Promote the utilisation of biomass waste for the generation of electricity and heat.**

Biomass Waste

- **Strategies**

- **Legislate and create incentives for the sorting and use of municipal and industrial wastes for energy.**
- **Create incentives for logging offcuts and wood processing residues, municipal and agricultural wastes to be used for energy.**
- **Develop regulations for efficient and effective disposal of logging offcuts and wood processing residues, municipal and agricultural wastes to be used for energy purposes.**

- Compel by legislation all future housing estates to be developed to have a centralized sewage system to enable the production of biogas.**
- Compel by legislation both private and public institutions such as second cycle institutions, tertiary, hospitals, housing estates etc to convert liquid waste into energy.**

Conclusion

- **The Energy sector ministry would coordinate the implementation of the Bioenergy Policy**
- **The Energy Commission (EC) by its mandate shall lead the implementation of the policy**
- **An inter-agency standing committee comprising bioenergy related sectors such as Energy, Environment, Forestry, Agriculture, Water, Research, and Industry shall be established under the auspices of the EC to manage the cross-sectoral bioenergy issues**

THANK YOU