

Bioenergy Policy Implementation in Ghana

**COMPETE International Conference
26-28 May 2009, Lusaka, Zambia**

By

Wisdom Ahiataku-Togobo

wtogobo@gmail.com

Ministry of Energy, Ghana

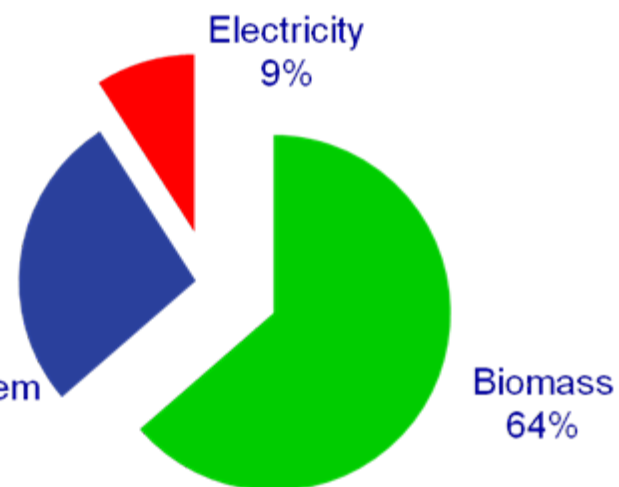
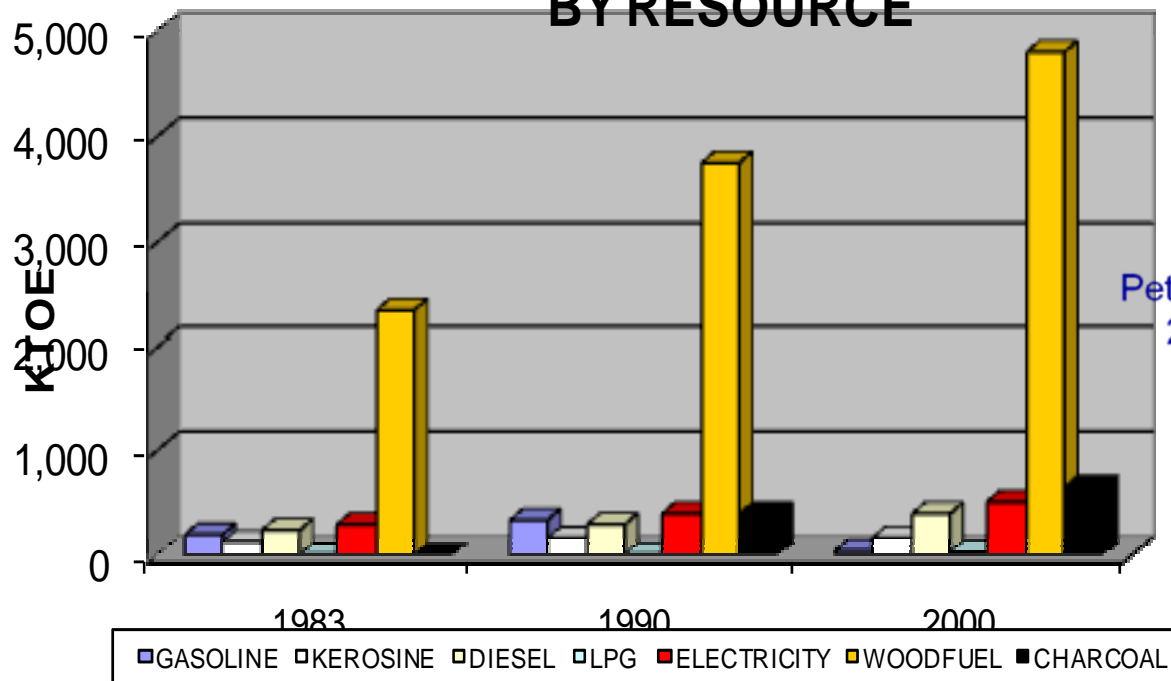
and

Dr. Alfred Ofosu -Ahenkorah

oahenkorah@gmail.com

Energy Commission, Ghana

SNAPSHOTS OF ENERGY CONSUMPTION BY RESOURCE

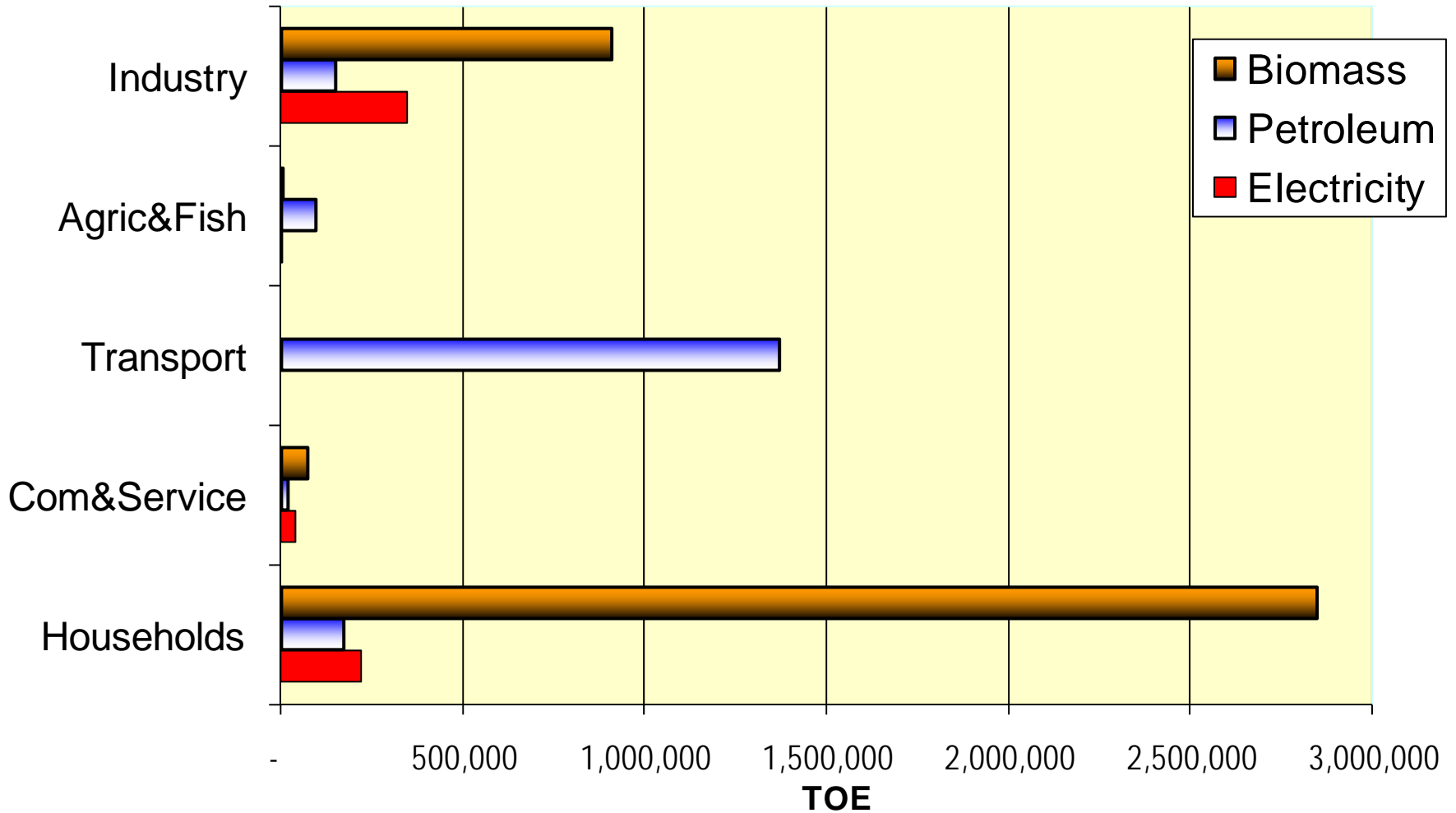


Consumption in Kilo Tons of Oil Equivalent

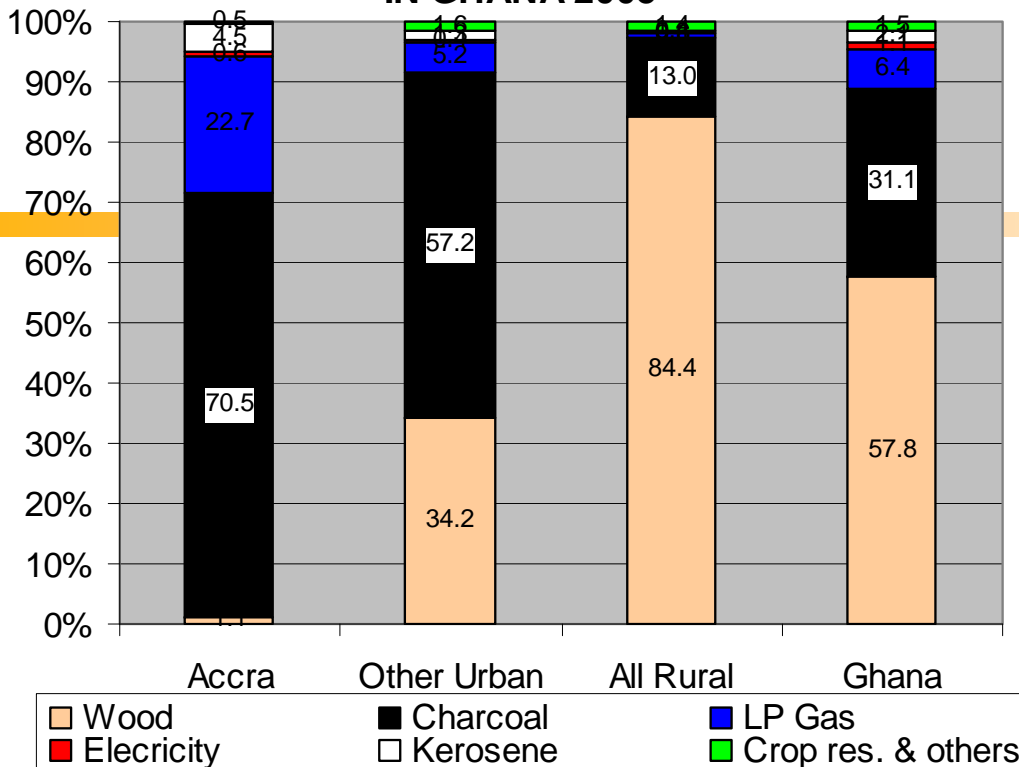
Source: PETROTECH

- Bioenergy (Charcoal & Firewood) accounts for more than 64% of total energy consumed in the country.
- Charcoal consumption alone (674ktoe) is more than total electricity generation in Ghana.

CONSUMPTION BY END-USE SECTOR 2005



PERCENTAGE SHARE OF MAIN COOKING FUEL IN GHANA 2005



COOKING FUEL COST 2005

FUEL	Cost Cents/KWh	% use by Household
FIREWOOD	1.2	57.8%
CHARCOAL	1.9	31.1%
LPG	5.5	6.4%
KEROSENE	6.6	2.1%
ELECTRICITY	7.8	1.1%
Correlation coefficient		-0.93

- Bioenergy accounts for more than 90% of cooking fuels in Ghana.
- Less than 10% use modern cooking fuels other than bioenergy.



Bio-energy

- Key energy resources in Ghana and of the future.
- Wide range of sources including
 - natural forests,
 - short-rotation plantations,
 - energy crops,
 - wood processing,
 - agricultural residues and
 - Municipal and industrial organic waste.



Policy Issues



- Very low access to modern energy services
- Over dependence on woodfuel with its health and environmental implications
- Reliance on imported petroleum products
 - Drain on the economy
 - Security of supply



Policy Directions - Bioenergy

- Increasing access of modern energy services;
- *Promote the use of improved cookstoves and charcoal production technologies.*
- *Support sustained regeneration of woody biomass resources through legislation and fiscal incentives*
- *Support development of indigenous alternative transportation fuel industry based on bio-energy resources (Biofuels) to replace petroleum- based fuels.*
- *Enact legislation that will create demand for Biofuels including appropriate pricing of Biofuels.*

Rationale for Energy Access in Ghana

- Stimulate productive activities and economic growth in rural areas,
- Improve the living standards of the poor
- Reduce rural urban migration
- Availability of affordable, reliable and sustainable energy service delivery is the main driving force for policy on energy access.
- However, Policy is also to increase contribution of RE to about 10% by 2015 (excluding woodfuel and large hydro)

Tested Bioenergy Technologies

- Improved cookstoves (firewood & Charcoal)
- Improved charcoal production technologies
- Briquetting
- Co-generation (sawmill / palm residues)
- Biogas (municipal/farm waste, animal dung)
- Gasification (feasibility study/research)
- Biodiesel – Jathropha, oil palm, soya bean oil, coconut oil etc.

RE Application Biomass



Photos: Rural Energy, Ghana

Biomass Briquettes

- Huge potential for production of wood and charcoal briquettes.
- Target is mainly for export as it cannot compete with cost of firewood or charcoal for local use.



Biomass Co-generation

- Over 6MW capacity installed based on sawmill residue and oil palm waste.
- It has been the source of electric power for the industries and surrounding communities without grid electricity.
- high potential but hindered by the following factors:
 - cheaper power supply from grid electricity.
 - no financial or fiscal incentives
 - neither are there regulatory requirements that would encourage them to generate and sell electricity to the grid.



Biogas



- The biogas technology has been used in Ghana for cooking households, direct lighting, small power generation, and bio-sanitation. Over 240 digesters 6m-10m³(3,680m³ Installed)
- Use for cooking and lighting in households has not been successful. Indeed, most of the household biogas plants have been abandoned.
- Biogas for electricity generation is more expensive than Diesel powered plants.
- Interesting development has been in the area of bio-sanitation projects for schools, slaughter-houses, hospitals and industrial waste management, etc.



Biomass Gasification

- Biomass Gasification has only been limited at the R&D stage and evaluation of plants in developing countries.
- Gasifier is very sensitive to moisture content and therefore feedstock has to be properly dried before use.
- Size of feedstock need to be uniform to ensure easy flow rate. Chopping wood pieces into uniform sizes is a challenge.
- Operates best with charcoal or briquettes.
- High Technical skills is required for its operation & maintenance.
- The cost of electrical energy delivery is rather very expensive.



Bio-diesel

- Liquid biofuels is quite a recent phenomenon in Ghana.
- interest has been on bio-diesel from the Jathropha and oil palm.
- Several initiatives by private sector and NGO including UNDP-Ghana.
- Tested with automotive diesel engines but long term use on engine not yet established.



Bio-diesel Challenges

- The cost of production and trans-esterification of biofuel is higher than ex-pump price of diesel even at US\$140/barrel.
- Bio-fuel has therefore been very uncompetitive for local consumption.(cost is 1.5-2.0 x fossil fuel.
- On going bio-diesel initiatives are therefore focusing on the export market rather than local market.
- This is done at the expense of food production as fertile land is being used for the plantations.



Short to medium term policy actions

- Development of a Renewable Energy Law
 - Establish comprehensive RET policies including biofuels
 - Create RET-friendly regulatory environment
 - Promote innovative market delivery models
 - Establish favourable pricing policies for RET's
 - Create awareness on the benefits of RET's
 - **Target is to stimulate private sector participation and increase energy access**
- World Bank acknowledged for supporting the development of the RE law to be enacted by Dec 2009.

Current Developments

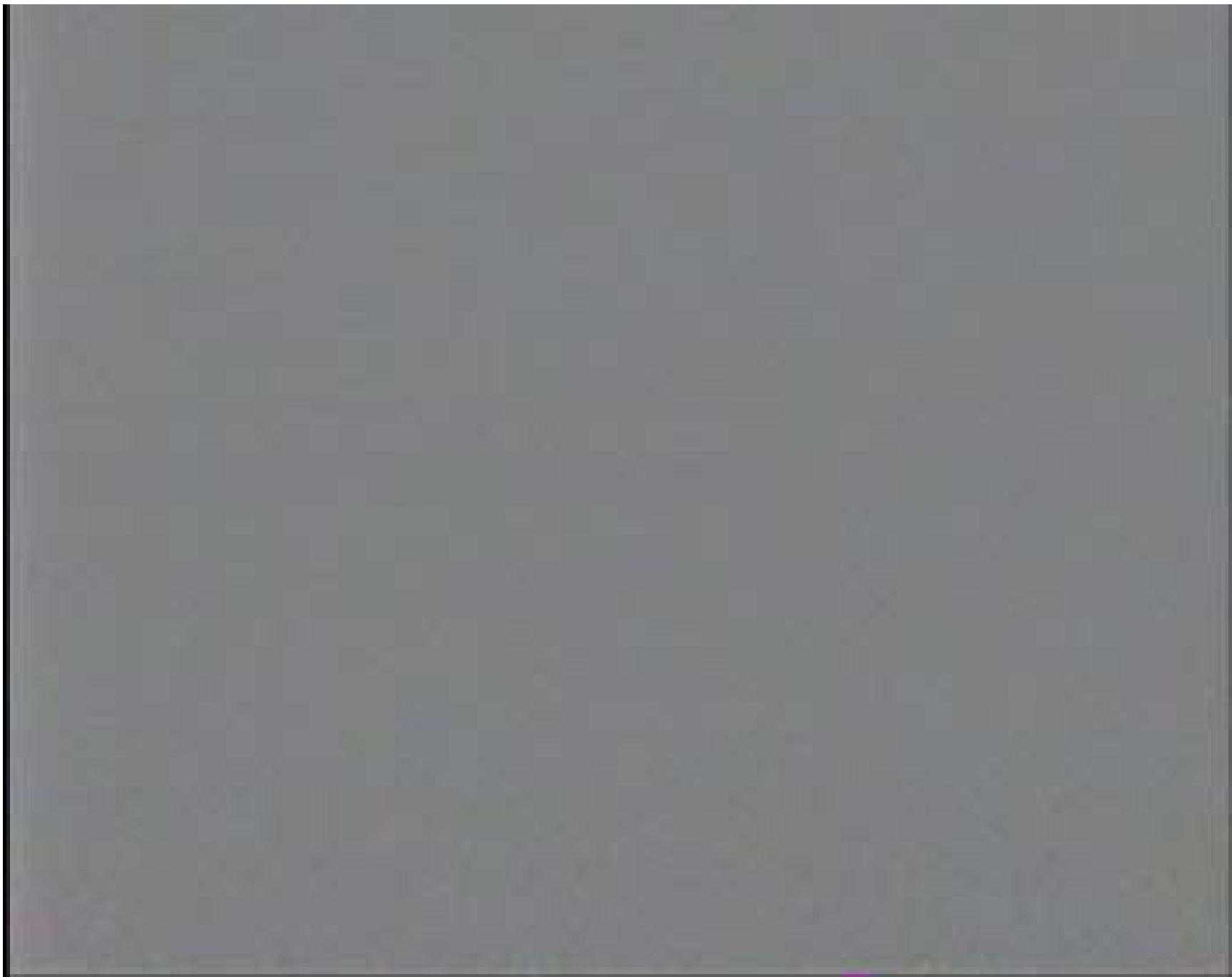
- Even before RE law and policy is completed and enacted,
- Influx of foreign investors mainly from Europe for large scale cultivation of jatropha over the past 2 yrs.
- Million acres of agric land have been acquired through traditional leaders
- Local people are being denied access to these lands for firewood, sheanut collection, farming among others.
- Promise of establishing social amenities like schools and hospitals are yet to see the light of day.
- What happens if drop in biofuel demand in the EU?

Policy Directions - Biofuel

- Ensure that large scale production of biofuel
 - does not affect food production,
 - have other commercial benefits
 - flexibly of replanting farmlands for food production if food security is threatened or the economic value of the biofuels declines – similar to cocoa production
 - for local consumption is driven by legislation and incentives as prices are still in favour of fossil fuels.
 - the jatropha plant or single use plants considered only in degraded areas such as mined out areas and arid dry areas.

Biofuel Feedstocks

- The general trend – feedstock plants in mass production internally and have additional commercial values: eg:
 - Rapeseed (Europe, especially Germany)
 - Sunflower oil (Italy , France and Thailand)
 - Soybean oil, (USA & Brazil)
 - Sugarcane, corn (Brazil, USA)
 - Palm oil (Malaysia, Indonesia)
 - Linseed & Olive oil (Spain)
 - Cottonseed oil (Greece)
- Why should investors focus on only Jatropha?
 - Why not oilpalm, groundnut, cassava or other high energy crops with economic values common in Africa?



Conclusion

- Bio-energy development in Ghana has better potential to deliver energy services, create employment, alleviate poverty and contribute to increased food production.
- Appropriate policies and incentives could reduce biofuel cost and achieve the overall policy of increasing access to affordable and sustainable energy services.
- **The bottom line question for policy makers however is how to ensure that:**
 - Large scale deployment does not affect food production but rather promote it.
 - Foreign investors do not take advantage of the policy incentives for their export gains rather than for the benefits of the country and poor rural majority.

Modern bionergy is Worth the Challenge. In Ghana, we take up this Challenge



THANK YOU

For more information, please contact:

oahenkorah@gmail.com. Or wtoqobo@gmail.com