



# **Role of Bioenergy in Africa's future : Linkage With Productive Sector**

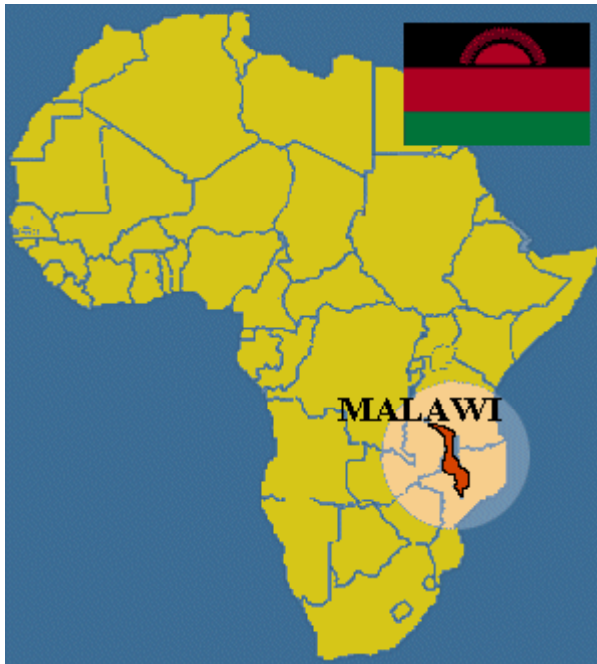
**Annie Chimphango**

*Department of Process Engineering  
University of Stellenbosch*





# BACKGROUND



Source: <http://nocameranointervention.wordpress.com/2009/01/13/sms-texts-fight-malnutrition/>

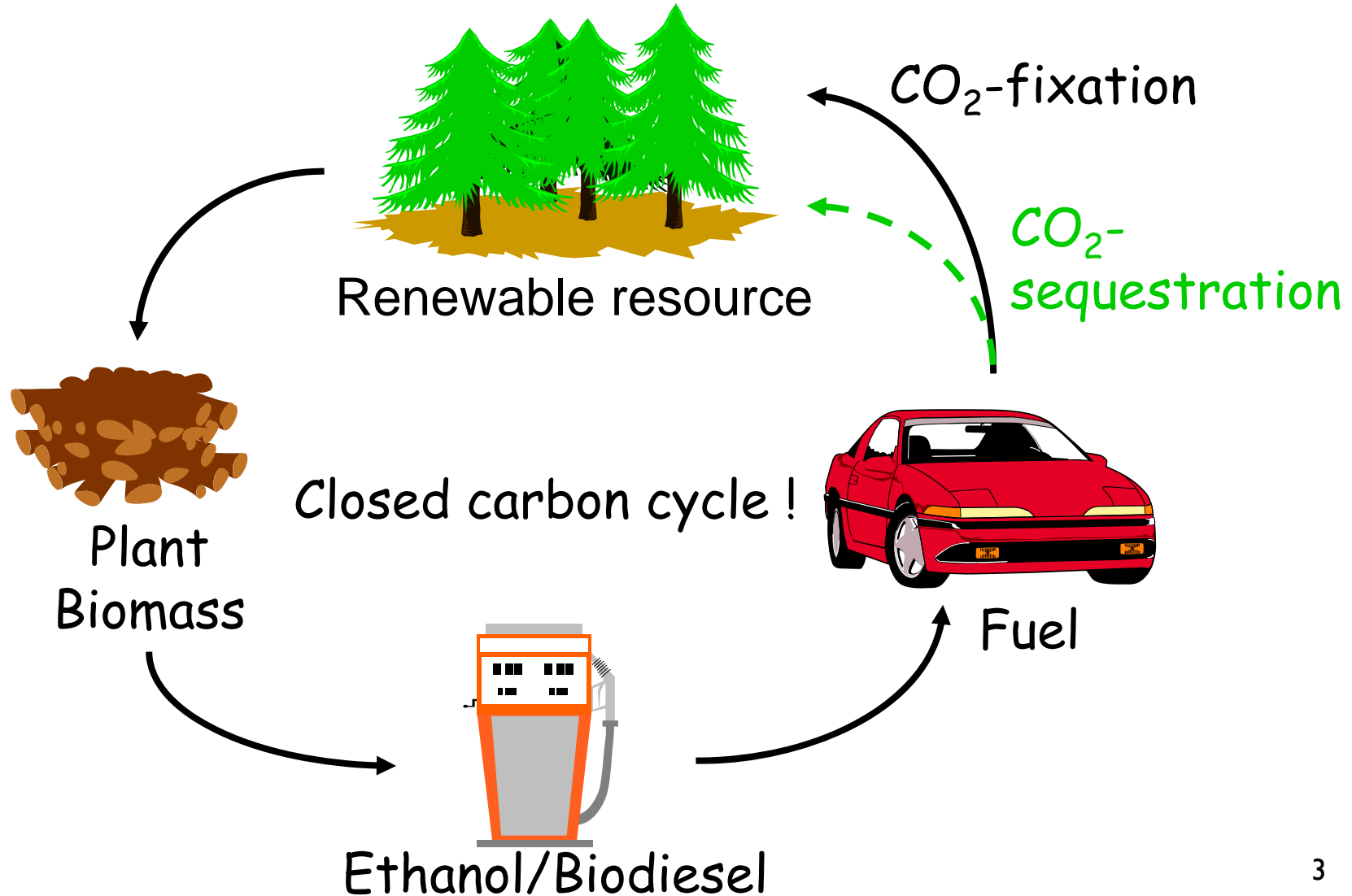
Source: [www.lonelyplanet.com/maps/africa/malawi/](http://www.lonelyplanet.com/maps/africa/malawi/)



# Why consider bioenergy in Africa?



## Alternative fuel





## Linkage With Productive

---



- Bioenergy production and utilisation technologies:
  - What are the target sectors?
  - Who are the target groups ?
  - How do these advanced technologies integrate with indigenous technology?
  - What are the required support services?



# **Productive Sectors in an African context:**



## Linkage With Productive Sector

---



- *Agriculture: Case of Malawi*
- Provides 80% of employment
- Source of over 80% of forex
- Contribute substantially to energy security-  
Agricultural residues
- **Sector is in serious danger due to**
  - Unsustainable land husbandry practices
  - Deforestation
  - Climate change



## Linkage With Productive Sector

---



- *Agriculture: Case of Malawi*
- Requires energy for cultivation
- Post- harvest processing of crops
- Storage of *Agricultural* products
- Transportation of *Agricultural* inputs and products
- Preparation of meals



## Linkage With Productive Sector

---



- Forestry: Case of Malawi-
- Source of livelihood and materials rural industries
- Source of traditional medicine
- Source of firewood- Only 2% of 13 million people have access to electricity
- Fuel for burning bricks
- Processing of Agricultural produce e.g. curing of tobacco





## Linkage With Productive Sector

---



- Problems with current use of Forests
  - Deforestation (13% loss between 1990-2005)
  - Bush burning
  - Over harvest of resources: e.g curing of 1 acre of tobacco requires about 3 acres of woodland



## Linkage With Productive Sector-How to make the sectors more productive

---



- Multi-objective sector:
    - Multiple value added chains (biorefinery)
    - Diversification of bio-industries:
      - Bio-energy, Bio-fuels
      - Textile, Polymer
      - Pulp and paper, timber
      - Speciality chemicals
- (MATCH PRODUCT RANGE OF OIL REFINERY)**



## Linkage With Productive Sector Sector-How to make the sub-sectors more productive



- Best practices: Agro-forestry-
  - Food security
  - Energy security
  - Economic development
  - Social development
  - Sustainability of the environment



## Linkage With Productive Sector-How to make it more productive

---



- Adding value
  - Technology
  - Integration of scientific/ engineering / economics expertise with indigenous knowledge
  - Capital investment- infrastructure
  - Support services e.g extension services
  - Enabling political environment



## Linkage With Productive Sector-Establishment of a bio-economy for sustainable rural sector

---



- Transfer of bio-energy technologies-
  - Who are the target groups: Gender issues? Women, subsistence farmers e.t.c.
  - How to integrate the advanced technologies with the indigenous technologies:
    - What indigenous knowledge for bio-energy production and utilisation already exist?
    - What are the required support services?
    - Extension services- do they still exist?



## Linkage With Productive Sector-Establishment of a bio-economy for sustainable rural sector



- Bioenergy production and utilisation Knowledge already existing in African rural set up
- Fermentation ( African gin production - 20-70% alcohol content)
- Distillation



Source: Hans Hillewaert  
2005



## Linkage With Productive Sector-Establishment of a bio-economy for sustainable rural sector

---



- Bioenergy production and utilisation Knowledge already existing in African rural set up:
- Oil extraction
- Charcoal production



## Linkage With Productive Sector-Establishment of a bio-economy for sustainable rural sector

---



- Training of young generation in rural areas
- The need for support services- to avoid implementation of misguided technologies e.g.
- **Women Diverting Anti Retroviral (ARV) drugs for production of traditional Malawi Gin (Kachasu)**
- Normal Kachasu production process- four packets of sugar = five or six litres of kachasu
- New method: One tablet of ARVs = one packet of sugar to produce eight litres. ([Clement Nyirenda](#), 2009)





THANK YOU!

ZIKOMO (Chichewa)

Q??