

# Status of Biofuels Industry in Tanzania



*Biofuels Stakeholders Workshop at Oasis Hotel, Morogoro*

*9<sup>th</sup> – 11<sup>th</sup> June 2008*



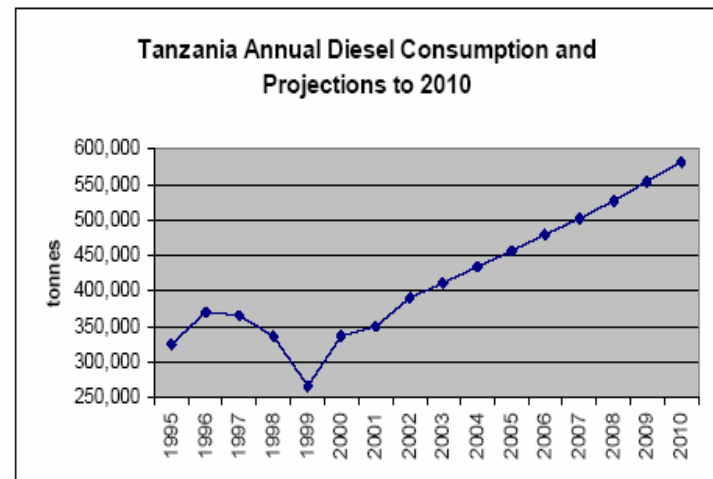
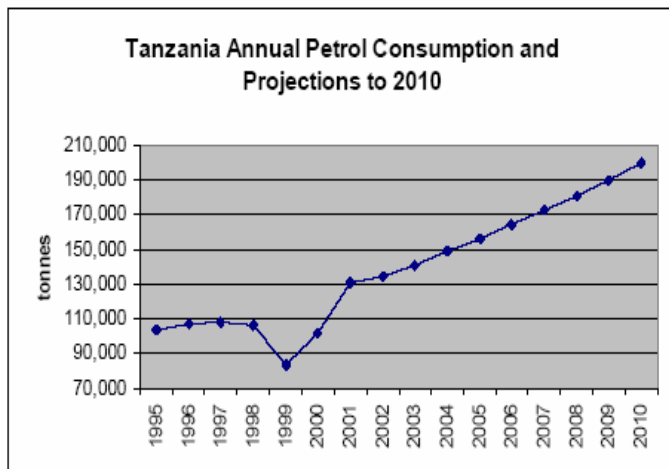
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# Why Biofuels in Tanzania?

Promotion of biofuels have started in Tanzania with ambitious focus to:

- Improve energy security (e.g. reducing oil imports and foreign exchange savings);  
Tanzania depend entirely on imported fossil fuels for local needs,  
According to BoT (2006), the value of the country's oil imports increased from US\$400.3 million (2003) to US\$ 1.1 billion (2005),  
Demand and price for petroleum products are growing rapidly at a rate of more than 30 percent per year (GTZ, 2005) causing a heavy burden for the country.



## Why Biofuels in Tanzania? (cont..)

- Improve livelihoods;  
Introduction of alternative cash crops farmers small and large scale),  
  
Employment and income opportunities,
- Promote rural development;  
Creating new rural industries,  
  
Improved Infrastructures,

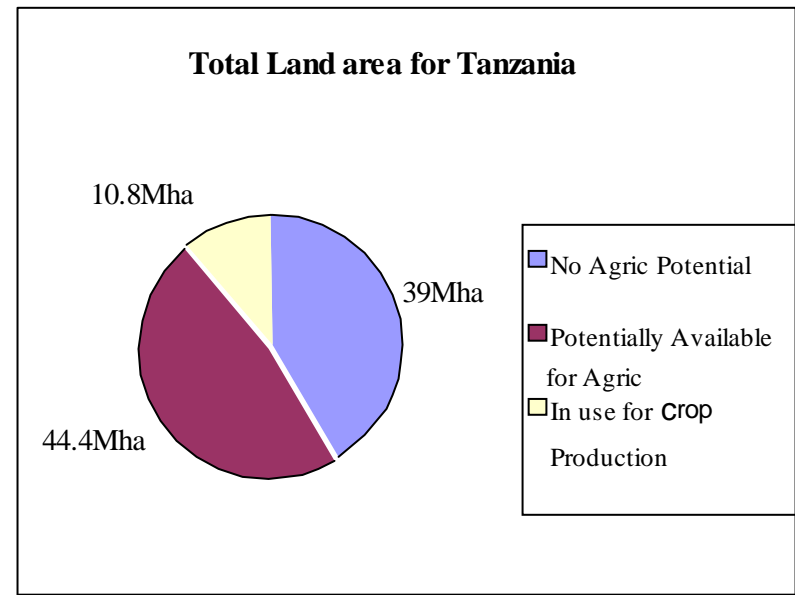
# Potential for Biofuels Production in Tanzania

Significant potential to produce biofuels and become one of the major supplies. Reasons are:

Availability of high yield biofuel's feedstock ,

Land resource,

Availability of labour force



**However**, this potential has remained unexploited for various reasons; inadequate technical skills, lack of policy and guidelines to support biofuels development, etc.

Biofuels development in Tanzania is at infant stage,

- No production of Biofuels (ethanol and biodiesel),
- Only small scale production of straight vegetable oil (SVO) from oilseeds, e.g. Jatropha, oil palm, etc do exist – promoted by local private companies and NGOs,
- Multinational companies/investors have started large-scale production of biofuels – mainly for export



# Status of Private Sector Investment

## 1. Large Scale production

Name of the company and Origin	Year started	Purpose	Location	Ha of land targeting	Estimated production
<b><u>Diligent Tanzania Limited</u></b> is a Dutch Eindhoven-based company with branches in Tanzania and Columbia.	2004	Production of jatropha oil - local consumption and export	Based in Arusha has collection points for Jatropha in Arusha, Coast, Tanga and Singida regions.	Buys seeds from farmers	Current production is 1500 lt of oil per day
<b><u>PROKON</u></b> is a Germany based company	2005	Production of plant oil and biodiesel from jatropha and rapeseed - export	Mpanda district, Rukwa region	The cultivation is carried out by several thousand farmers on a total area of 10,000 hectares through contact farming.	-
<b><u>D1 Oils Tanzania Limited</u></b> This is a subsidiary company of D1 Oils, a UK company based in Newcastle,	2003	Biodiesel production from plant oil particularly <i>Jatropha curcus</i> and <i>Moringa oleifera</i> - export	-	-	-
<b><u>Sun Biofuels Tanzania Limited</u></b> It is a UK based international company	2007	Planning to plant Jatropha for biodiesel production - export	Kisarawe district, Coast region	The company has already acquired 9,000 ha	-
<b><u>SEKAB BioEnergy Tanzania Ltd</u></b> . The company formed following signing of MoU between GoT, Swedish Ethanol Chemistry (SEKAB), BioAlcohol Fuel Foundation and Community Finance Company (CFC)	2007	To produce ethanol from sugarcane- for export	Bagamoyo, (Rufiji and Kilwa ??) districts	400,000 ha (approx. 18,000 ha acquired in Bagamoyo)	-



## 1. Large Scale production cont...

Name of the company and Origin	Year started	Purpose	Location	Ha of land targeting	Estimated production
<b><u>Kikuletwa Farm.</u></b> The farm is owned by Peter Burland (British farmer)	2004	Production of oil from jatropha and Aloe vera - local consumption and export	Located at TPC area in Moshi town..	1000 acres	-
<b><u>Africa Biofuel and Emission Reduction Company (Tanzania) Ltd</u></b> It is a joint venture between TTT-WILMA Biofuels and Emission Reduction Company, part of WILMA Group of the USA and the National Investment Company Limited (NICOL) of Tanzania.	2007	Production of biodiesel from <i>croton megalocarpus</i> trees, a species indigenous to the area.	Biharamulo district, Kagera region	The company have acquired 20,000 ha	103 million litres of biodiesel per year.
<b><u>Donesta Ltd and Savannah Biofuels Ltd.</u></b> This is a local company .	2007	Biodiesel production from sunflower and jatropha - export	Dodoma	The company has already acquired 2000 ha and established 100,000 jatropha seedlings. Already planted 200 ha of sunflower	-
<b><u>Farming for Energy for better Livelihoods in Southern Africa (FELISA)</u></b> This is a local company.		Production of biodiesel from oil palm and edible oil.	Kigoma region	8000 ha	40 million litres of palm oil per year.
<b><u>Bioshape.</u></b> It is a Dutch company	2006	Production of biodiesel from Jatropha – for export	Kilwa district	30,000 – 80,000 ha	-





## 1. Large Scale production cont...

Name of the company and Origin	Year started	Purpose	Location	Ha of land targeting	Estimated production
<u>InfEnergy</u> . A UK based company	2005	Production of palm oil and food crops only – no biodiesel	Mngeta farm– Mvomero district	5,818	–
<u>BioMassive</u> . It is a Swedish based company	2006	Biodiesel production from jatropha and Pongamia	Lindi region	50,000 ha	Initial production of over 100 000 tons per annum of Biofuel



## 2. Small Scale production

Name of the company and Origin	Year started	Purpose	Location	Ha of land targeting	Estimated production
<p><b><u>Kampuni ya Kusambaza Teknolojia Limited (KAKUTE).</u></b> Is a local non-profit making company based in Arusha promoting Jatropha and rural technologies.</p>	2000	<p>Piloting projects focusing on the production, processing and use of Jatropha aims at controlling soil erosion and management of natural resources, promotion of economic activities for women, poverty reduction and the creation of rural industries as well as the promotion of renewable household energy for rural communities.</p>	<p>Have projects in Monduli and Arumeru districts.</p>	-	-
<p><b><u>Jatropha Products Tanzania Limited.</u></b> It is a local non-profit making company based in Arusha</p>	2005	<p>To develop knowledge, skills, information and technologies to small holder farmers and SMEs interested in jatropha plant, seeds and products.</p>	<p>Have projects in 5 regions</p>	-	-
<p><b><u>The Tanzania Traditional Energy and Environment Development Organization (TaTEDO).</u></b> This is a local NGO based in Dar es Salaam working in more than 10 regions of Tanzania.</p>	1990	<p>Sensitizing rural and urban communities on the potential use of Jatropha. The main focus has been to provide information and extension services to smallholders' farmers</p>	<p>Have projects in more than 10 regions</p>	<p>Have acquired 50 ha in Kisarawe district to set-up Jatropha demonstration farm</p>	-



# Biofuels for Local Consumption

## Transport

- No use of biofuels for transportation,
- Biodiesel production is being experimented by TaTEDO and Diligent,
- Diligent Tanzania Ltd use straight vegetable oil (SVO) to run vehicles (with minor engine modifications,
- Blending with petrol and diesel (to a certain percentage) is possible for ethanol and biodiesel respectively.

B20 (20% Biodiesel) is possible without engine modifications – for high quality biodiesel.

E10 (10% ethanol) is possible for all gasoline vehicles – no modifications of engine



## **Rural electrification using Multifunctional Platform (MFP)**

- MFP is a simple diesel engine that can power different tools,
- Has potential to provide electricity to the households and motive power for cereal milling, oil pressing, welding and battery charging,
- Aims at improving the living conditions of rural populations in the off-grid areas,
- Normal diesel and SVO (e.g. jatropha oil, palm oil, etc) can be used to run MFP.
- TaTEDO has installed 2 MFPs in the rural areas of Arusha regions. More than 100 households have been electrified.

## Rural electrification using Multifunctional Platform (MFP)



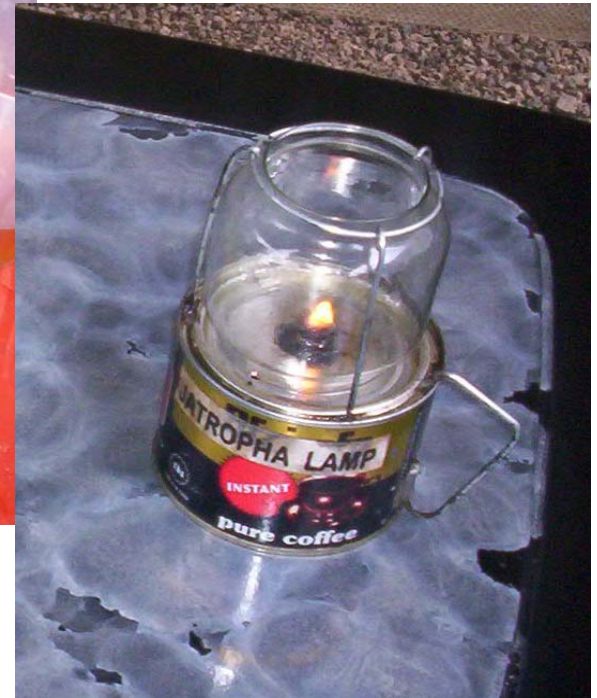


## Cooking

- Use of straight vegetable oil (VSO) for cooking, e.g. Jatropha oil – Protos/BOSCH stoves, KAKUTE/JPTL stoves under experiment/testing.
- Jatropha seedcakes can be used biogas feedstock (at a certain percentage). e.g. Diligent Tanzania constructed a 60 m<sup>3</sup> biogas plant. The gas is used for cooking.
- Ethanol jelly is processed from ethanol can be used for cooking. For example, Moto Poa Company Limited produce ethanol-based jelly for cooking. The Company imports all its ethanol from South Africa. It consumes between 18,000 and 20,000 lts of ethanol per month. Daily production of ethanol-jelly fuel, at fully capacity is around 2,000 tons; this is six times the nation's current daily demand of kerosene.



## Cooking Stove and Lantern





## Export Potential

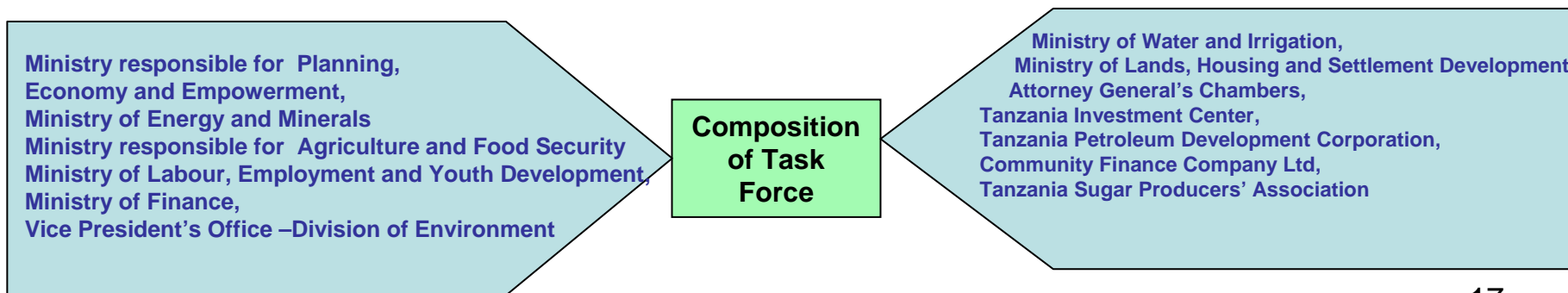
- Global biofuels demand continues to grow and is expected to remain strong and stronger in the future,
- Tanzania has significant potential to become a major supplier to the world markets,

Tanzania has potential of producing about 4010 and 1726 million litres of ethanol and biodiesel respectively. The local annual demand for ethanol and biodiesel are estimated at 568 and 886 million litres respectively. This means, the country has annual export potential to the world market of ethanol and biodiesel of about 3442 and 840 million litres respectively (Philip, 2007).





- The (GoT) has identified biofuels as the most appealing alternative to the fossil fuels and is providing support to accelerate investment
- But Tanzania lack policies, strategies, guidelines and regulations to support biofuels development,
- Achieving sustainable biofuels production requires coordinated policies and strategies,
- The GoT through MEM established a National Biofuels Task Force (NBTF) in 2006.
- The task force is responsible for promoting development of the sector and develop legislation to stimulate biofuels production in the country.





## **Coordination**

Uncoordinated initiatives to introduce biofuels - biofuels fall under which ministry- not clear

## **Biofuels guidelines and strategy**

Lack of biofuels investment guidelines slowing down private sector initiatives,

## **Forests and biodiversity**

Clearing of large areas of natural forests habitats to give way to biofuels crop farming,  
Miombo woodlands and coastal forests are at risk,  
Risks of promoting invasive crops.

## **Water catchments**

Degradation/contamination of water sources,  
Depletion of water sources,  
Water use conflicts (food and biofuels water needs)



## Issues of Concern cont..

### Land use

With growing potential income, competitive use of agriculture land will increasingly relevant as land use for food.

For a viable biofuels industry, the land must also be capable of supporting sufficiently high crop yields for production to be economic. This means arable land is also target for biofuels production.

### Land ownership

Biofuels farming may result in the concentration of land ownership and land access into fewer hands of investors.

Tanzania Investment Centre plays a big role in allocating land for investment purposes. TIC has developed a Land Bank, with several land plots for potential investment opportunities all over Tanzania.



## Issues of Concern cont..

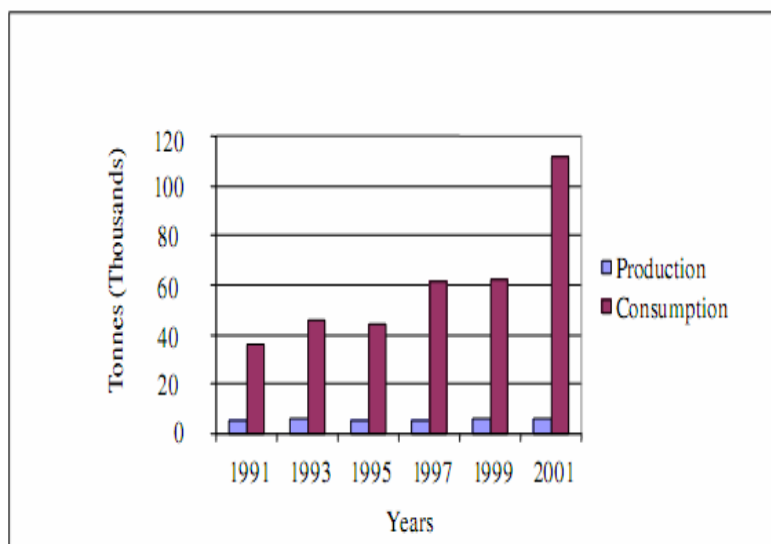
### Food security

Impacts of crop production away from food and only to produce biofuels.

#### For example;

Growing sugarcane to produce ethanol, land area devoted for food production will be reduced, so eroding local food security and sovereignty and causing shortages,

Price increases for some biofuels crops that are also staple foods will put food security at risk. This is likely to happen if it is more profitable to sell food crops to biofuels producers,



Production of palm oil is below the quantity demanded for use as food.

The gap between consumption and production makes Tanzania to import palm oil from Malaysia and Indonesia.

Using palm oil for biodiesel production is likely to face competition from its food use; leading to high local price for the crop and biodiesel produced.



## **Displacement of communities**

Communities in areas identified suitable for biofuels production have distinct territories with well-defined natural boundaries, settlements, rivers, etc. Their territories have been used for small scale farming, cultural believes for number of years.

## **Soils**

Use of agrochemicals in large-scale biofuels plantations will obvious affect the soils.

## **Promises to the communities**

Support social and economic activities e.g. employment, incomes, building schools, dispensaries, roads,, etc.

No bidding agreement for fulfilling these promises



# Recommendations

**Moratorium on land clearing until guidelines are set ,**

**Regulations, guideline set with stakeholders inputs**

Policy makers (Tanzania)

Policy makers (International, e.g. EU -standards will be sufficient to allow export)

Research Institutes

Private Sectors

NGOs

CSOs

Community representatives

Inter-ministerial task force

**No-go- zones in ecologically sensitive areas e.g. coastal forests**

GIS studies

Gazetting of land



## Recommendations cont...

### **Biofuels used for range of uses**

Local consumption

Multi Functional Platform

Cooking

Effectively use all bi-products

Transportation

### **Research into increasing the land efficiency**

Agricultural waste and forest residues are used to make into biofuels.

New types of crops with higher yields BUT also avoiding heavy use of petroleum based chemicals.

### **Protection of resource base**

Soils – Effective monitoring made for soil health.

Water – in depth hydrological studies carried out in order to assess the amount of water available for irrigation.

### **Land allocation for biofuels**

Make use of degraded lands for Biofuel plantations.



## Recommendations cont...

### Rural development

- Out grower schemes/ Cooperatives,
- Purchase from small holder farmers (contract farming),
- International development funding to support small farmers,
- Technical assistance,
- Appropriate government support to small holder farmers,
- Promote local consumption of biofuels.

### Land acquisition

- Adequate compensation for land,
- Protocol designed (pros and cons),
- Schemes for paying communities,
  - Regular payments made over a long period,
  - Community has a small share in the plantation/ company.

**Promises made to the communities need to be written down in a legally binding document.**





## Recommendations cont...

### **Processing standards set**

Use of renewable process energy.

Chemical effluent from processing plant minimized.

### **The establishment of wildlife corridors**

**Agreed upon timetable in order to set policy guidelines**



**A global opportunity is emerging  
for producers of Biofuels.  
Tanzania will benefit if it chooses  
to engage in this opportunity  
aligning industry sustainability  
and development goals.**



**AHSANTENI SANA**