



***International Conference***  
***'Bioenergy Policy Implementation in Africa'***

***26-28 May 2009***  
***Lusaka, Zambia***

***Conference Summary***



COMPETE is co-funded by the European Commission in the 6<sup>th</sup> Framework Programme – Specific Measures in Support of International Cooperation (INCO-CT-2006-032448).

### **Conference Objectives**

The main objective of this conference was to contribute to sound and successful bioenergy policy implementation in Africa. For this, global experiences on bioenergy policy implementation were reported and discussed with high-level decision-makers from Africa.

Furthermore, partners from the COMPETE project presented lessons learnt on ensuring value creation and sustainability of bioenergy development in Africa in order to:

- **Exploit the benefits of innovative bioenergy solutions** with respect to sustainable rural development and improved livelihoods, increased energy access and income generation, alternative markets for agricultural products, security of energy supply, and diversification of energy sources
- **Avoid the dangers of negative social and environmental implications**, with regards to land competition, land ownership, insufficient value creation for local farmers, and the 'fuel versus food' debate.

This international conference was organised by the Centre for Energy, Environment and Engineering Zambia (CEEEZ) and WIP Renewable Energies, Germany, in cooperation with the Food Agriculture and Natural Resources Policy Analysis Network (FANRPAN), South Africa, in the framework of the project COMPETE, funded by the European Commission, DG Research.

The presentations held at this conference are available at the COMPETE project website: [http://www.compete-bioafrica.net/events/events2/zambia/presentations\\_conference.html](http://www.compete-bioafrica.net/events/events2/zambia/presentations_conference.html).

The agenda of the COMPETE policy conference is presented in Annex I to this report.

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### **Conference Summary - Editors**

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CEEEZ

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## Conference Summary

### Opening Session

The COMPETE Policy Conference 'Bioenergy Policy Implementation in Africa' was officially opened by **Hon. Allen Mbewe, M.P., Deputy Minister of Energy and Water Development of Zambia**.

Hon. Mbewe cordially welcomed all conference participants to Zambia and underlined the importance of the conference with respect to sound and successful bioenergy policy implementation in African countries.

Hon. Mbewe highlighted that in Zambia, as well as in many other African countries, traditional biomass (wood and charcoal) accounts for more than 70% of the total national energy consumption. He stated that the conditions for the development of the bioenergy sector in Africa are favourable due to available arable land and manpower as well as suitable climate.

Thereby, the drivers for bioenergy development in Africa include security of energy supply, a reduction of the foreign exchange burden of oil importing countries, as well as providing a viable alternative fuel for the transport sector reducing dependence on fossil fuels. In addition, excess biofuels may be exported creating valuable income for national economies and stimulating the much needed development of the agriculture sector.

Several African countries have already developed bioenergy policies. The Zambian Government has launched programmes on the promotion of production and use of biofuels as well as on the promotion of biogas and biomass gasification. However, the implementation of bioenergy policies in African countries faces a variety of challenges such as the availability of financial and human resources. Furthermore, African countries will need technological support for the set-up and operation of reliable and successful bioenergy projects.

In conclusion, Hon. Mbewe urged the participants of the COMPETE conference to engage in discussions identifying opportunities for the development of the bioenergy sector in Africa. Thereby, a strong focus shall be placed on poverty alleviation through the empowerment of the local population leading to truly sustainable economic development.

The welcome address by the host organisation was given by **Prof. Francis Yamba, Centre for Energy, Environment and Engineering Zambia (CEEEZ)**. Prof. Yamba expressed his gratitude to all national and international conference participants dedicated to support bioenergy policy implementation in African countries with the aim to ensure local and national value creation and the overall sustainability of bioenergy development.



Opening session: Prof. Yamba, Hon. Mbewe, C. L. Mulenga, Dr. Janssen (from right)

**Dr. Rainer Janssen, COMPETE Project Co-ordinator, WIP Renewable Energies, Germany**, presented an overview of recent activities and results of the COMPETE project.

The objective of the Competence Platform on Energy Crop and Agroforestry Systems for Arid and Semi-arid Ecosystems - Africa (COMPETE) is to stimulate sustainable bioenergy implementation in Africa. The COMPETE project, co-funded by the European Commission in the 6<sup>th</sup> Framework Programme, has successfully established a platform for policy dialogue and capacity building throughout the bioenergy provision and supply chains.

COMPETE carries out a comprehensive, multi-disciplinary, assessment of current land use, energy demand and technology innovation focused on Africa to identify pathways for the sustainable provision of bioenergy, which will:

- Improve the quality of life and create alternative means of income for rural populations in Africa
- Aid the preservation of the critical functions of arid and semi-arid regions in Africa as intact ecosystems
- Enhance the equitable exchange of knowledge between EU and developing countries

The COMPETE partnership comprises 20 European and 23 non-European partners - 11 partners from 7 African countries, 3 regional African policy and financing bodies (African Development Bank; Food, Agriculture and Natural Resources Policy Analysis Network of Southern Africa; UEMOA - Biomass Energy Regional Program), 9 partners from Latin America and Asia - and the Food and Agriculture Organisation of the United Nations (FAO).

Dr. Janssen concluded that in the field of bioenergy policy implementation the COMPETE project provides support for policy development in African countries. This includes the organisation of policy conferences and the development of policy recommendation documents such as the *COMPETE Declaration on Sustainable Bioenergy for Africa*. This declaration highlights the African approach to sustainable bioenergy identifying visions for bioenergy development in Africa, favourable market creation and land use strategies, as well as initiatives for capacity building. The COMPETE declaration is available at the project website [www.compete-bioafrica.net](http://www.compete-bioafrica.net).

## **Session 1: International Policy Implementation Frameworks**

The session on international policy implementation frameworks was chaired by **Mr. Bruno Chisambo from the Biofuels Association of Zambia**.

This session included presentations by Dr. Gustavo Best, Mexican Bioenergy Network (REMBIO), Prof. Jose Roberto Moreira, Brazilian National Reference Center on Biomass (CENBIO), and Mr. Francis Johnson, Stockholm Environment Institute, Sweden.

**Dr. Gustavo Best, Mexican Bioenergy Network (REMBIO)**, gave a presentation on global bioenergy policy implementation frameworks. He highlighted the fact that a large variety of drivers exist for bioenergy development worldwide, namely climate change, environment, energy security, rural development, agricultural development and technological progress. As bioenergy policies in all countries are motivated by more than one of the above objectives, successful bioenergy development poses the great challenge to achieve multiple goals which are not always compatible.



Therefore, effective frameworks are required to address the complex topic of bioenergy. These frameworks shall constitute a set of *principles and long-term goals* that form the basis of making *rules and guidelines*, to give overall direction to *planning and development*.

Global approaches to establish such frameworks are supported by international institutions such as UN Energy which will publish a document on *Planning Strategically and Managing Risks in Investment Costs* in 2009. Furthermore, the Global Bioenergy Partnership (GBEP) is actively involved in the fields of sustainability criteria, GHG emission methodologies and bioenergy trade.

Several areas for policy action in the energy and agricultural fields were identified in the 2008 State of Food and Agriculture published by the Food and Agriculture Organisation of the United Nations (FAO).

- *Protect the Poor*

High energy prices initiate or exacerbate price volatility of agricultural commodities, and hence have impact on food security. Therefore, safety nets are required to protect poor net food buyers either through food subsidies, food distribution, or targeted cash transfers via social programmes.

- *Take advantage of opportunities*

Biofuel demand is the largest source of new demand for agricultural commodities. Developing countries, in particular, are well-positioned to benefit from increased global demand for agricultural commodities.

- *Lowering trade barriers to biofuels*

Border protection in the form of tariffs on ethanol has provided a protective barrier and affected farmers. Some governments have granted exemptions from fuel excise taxes that are available only to domestic biofuel producers.

- *Ensure environmental sustainability*

Future support for biofuels is likely to be assessed against sustainability criteria, and some countries have already taken an interest in the environmental sustainability of the products they would like to import.

However, Dr. Best claimed that there is a need for an international forum in which sustainability criteria can be determined without creating unnecessary barriers to trade. In this respect an on-going initiative is provided by the Roundtable on Sustainable Biofuels (RSB) which has elaborated a set of 10 principles for sustainable biofuels. Furthermore, the International Community should support countries with natural production advantage such as countries in Sub-Saharan Africa, to meet the (local and global) demand for biofuels in a sustainable way.



Speakers of Session 1: Prof. Moreira, Dr. Best, Francis Johnson (from left)

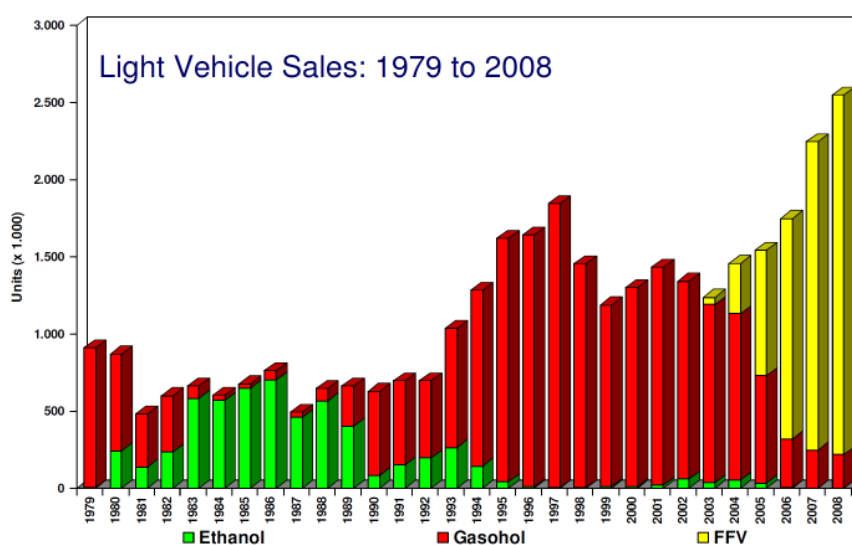
The history and current status of bioenergy policy implementation in Brazil was presented by **Prof. Jose Roberto Moreira, Brazilian National Reference Center on Biomass (CENBIO)**.

In the late 1970s Brazil initiated large-scale biofuel production after a 1975 law guaranteed price parity for ethanol and gasoline along with a system of tax rebates and subsidies for ethanol production facilities. This combined system of mandates, tax credits, and construction incentives has served as reference for bioenergy policies worldwide. The following elements of the Proalcool programme were emphasized by Prof. Moreira:

- Mandatory blending of ethanol in gasoline (still existing);
- Mandatory purchase of a guaranteed amount of ethanol by the state-owned oil company PETROBRAS (terminated);
- Ethanol prices at the pump were set at 59% of the price of gasoline (today ethanol is cheaper than gasoline in a free market);
- Prices paid to ethanol producers were defined by the Federal Government
- Special conditions to finance alcohol production facilities (terminated);
- Mandatory sales of hydrated ethanol at gas stations (today every gas station in Brazil sells hydrated ethanol and gasohol in a free market).

In addition to the Proalcool programme addressing the ethanol sector, the Brazilian Government launched a biodiesel programme in 2002. This programme allowed a voluntary addition of 2% biodiesel in mineral diesel from December 2004 and mandated 3% admixture since 2008 increasing to 4% in June 2009 and 5% in 2013. The biodiesel programme thereby includes a social dimension as tax reductions are granted for feedstock produced in "family farming" schemes creating jobs in rural areas of Brazil.

Furthermore, in 2002 the PROINFA programme (Programme of Incentives for Alternative Electricity Sources) was implemented providing support for electricity generation from biomass sources, wind turbines and small hydroelectric power plants.



Evolution of light vehicle sales in Brazil from 1979 to 2008 (Source: ANFAVEA)

Prof. Moreira underlined the fact that today ethanol is competitive with gasoline on the free market and ethanol demand is secured by the fact that currently 90% of the new cars sold in Brazil are Flex Fuel Vehicles (FFV) (see figure). However, Brazil still employs a series of policies that secure the role of ethanol in the country's energy matrix, including:

- A mandate requiring that all gasoline is blended with a minimum of 20-25% ethanol (flexible with respect to changing sugar and ethanol prices on the world market);
- An import tariff on ethanol and an import tariff on gasoline that is one of the highest in the world;
- A ban on diesel-powered personal vehicles to increase the demand for ethanol powered vehicles.
- A mandate for all gas stations in Brazil to have ethanol pumps;
- A requirement that all government entities purchase 100% hydrated ethanol-fuelled vehicles;
- Low interest loans for financing producer-owned stocks.

Furthermore, the Government of Brazil is allocating considerable funds for R&D programmes for bioenergy development. Funding agencies include the National Council for Scientific and Technological Development (CNPq) linked to the Ministry of Science and Technology (MCT) and the State of São Paulo Research Foundation (FAPESP) linked to the State of São Paulo's Secretariat for Higher Education.

In conclusion, Prof. Moreira stated that a large fraction of the world gasoline consumption could be replaced with ethanol from 10 to 15 major producer countries and from domestic production in more than 100 countries. He anticipated a future more ambitious role of Brazil in global bioenergy development and urged developed countries to support biofuel production and consumption in developing countries through effective cooperation in the fields of policies and technologies.

In his presentation on bioenergy policy implementation in Europe, **Mr. Francis Johnson, Stockholm Environment Institute, Sweden**, stated that biomass has a prominent role to play in a sustainable energy future for Europe. Solid biomass is already widely used in countries such as Sweden and Austria for combined heat and power, district heating, as well as industrial and residential applications. Biogas produced from animal wastes or landfills not only provides an energy-rich fuel for transport or stationary applications, but also reduces methane leakage, thereby making a considerable contribution to GHG reduction.

In recent years, the use of liquid biofuels has gained more attention due to the increasing dependence on, and the increasing price of, oil imports, and the need for climate mitigation options in the transport sector. However, it will be difficult for European producers to provide the large volumes required at competitive prices. Furthermore, the high productivity of biofuels produced in tropical regions means that imported biofuels will be cheaper and can potentially have much lower environmental impacts. The economic and environmental logic thereby emerges for importing some share of liquid biofuels from highly productive regions such as Brazil and Sub-Saharan Africa, while devoting a relatively larger share of biomass resources from within the EU for solid biofuels and biogas.

The potential supply of biomass grown on agricultural lands in the EU ranges from 20% to 100% of the total EU energy demand. The wide range is due to possible environmental restrictions, use of irrigation, variations in the applications and the wide range of characteristics in the types of fuels. It is foreseen that as yields improve, especially in new member states, and as the overall efficiency of food production increases, a significant amount of agricultural land can be freed up for energy crops without impacting food and feed production.

With respect to (bioenergy) policy implementation in Europe, the new EU Directive "on the promotion of the use of energy from renewable sources" mandates a 10% share by volume for biofuels in each Member State by 2020. Biofuels must meet sustainability criteria in order to be counted towards this target. The Directive calls for a minimum 35% reduction in GHG emissions, which will increase to 50% in 2017 and 60% for new facilities. Additionally, restrictions on types of land to be used for the production of biofuels include wetlands, biodiverse grasslands, and undisturbed forests.

In conclusion, Mr. Johnson emphasised the following implications of EU Sustainability Criteria for developing countries in Africa:

- The large potential market created by the EU targets provides a major opportunity for biofuels production in developing countries.
- Compliance with GHG criteria will generally not be a problem. However, monitoring and analysis may cause problems for African producers.
- The definition of "highly biodiverse grasslands" needs to be clarified without creating undue burdens for African producers.
- Incentives for biofuels production on degraded lands need to be established, as economic competitiveness will be difficult to achieve.
- Monitoring of social sustainability of biofuel production needs to include issues of land tenure and land availability.

## **Session 2: Policy Implementation Strategies in Africa**

***Dr. Gustavo Best from the Mexican Bioenergy Network (REMBIO)*** acted as chairperson of session 2 on policy implementation strategies in African countries.

Within this session an overview of the implementation of bioenergy policies was presented by Government representatives from several African countries: Mr. Oscar Kalumiana, Director Department of Energy, Zambia; Mr. Wisdom Ahiataku-Togobo, Ministry of Energy, Ghana; Ms. Mareledi Wright, Department of Energy, Botswana; Mr. Paul Kiwele, Ministry of Energy and Minerals, Tanzania; Mr. Erick Akotsi, Acting Director of Renewable Energy, Ministry of Energy, Kenya; and Mr. Hamza Hassane, Direction of Renewable Energies, Ministry of Mines and Energy, Niger.

The current status of the implementation of bioenergy policies in Zambia was presented by ***Mr. Oscar Kalumiana, Director Department of Energy, Zambia.***

The vision of the Government of Zambia is to ensure environmentally sustainable exploitation of biomass resources in order to realize supply security and stable prices of transport fuels, to increase investment in the agricultural sector and to contribute to socio-economic development. Thereby, specific policy goals are to improve the management of



woodlands for sustainable firewood production, to improve the efficiency of charcoal production, and to promote alternatives to firewood.

In Zambia, the conditions for the development of the bioenergy sector are favourable. The current dependency of the country on food imports is mainly caused by the lack of infrastructure and investment in the agricultural sector. Therefore, bioenergy is seen as an excellent opportunity to significantly enhance the production potential of feedstock for both food and biomass production.

Mr. Kalumiana stated that activities under preparation by the Government of Zambia include the elaboration of appropriate financial and fiscal instruments for stimulating production and use of biomass, the implementation of public awareness campaigns, and the development of policies and a regulatory framework for biomass. The Ministry of Energy and Water Development is elaborating a long-term Energy Strategy (2009 – 2030) that includes biofuels as priority sub-sector. Current policy measures include detailed assessments of available resources and market demand for bioenergy, the elaboration of an efficient legal and institutional framework, and the formulation of incentives to stimulate investments in the bioenergy sector.

According to Mr. Kalumiana, until today no specific initiatives have been implemented on how to guarantee socio-economic sustainability of bioenergy projects. In this field, close cooperation with the Environmental Council is foreseen and Environmental and Social Impact Assessments (ESIA) will be required for bioenergy projects. Further activities to ensure sustainability are thus urgently needed to provide guidance to the development of the bioenergy sector.

**Mr. Wisdom Ahiataku-Togobo, Ministry of Energy, Ghana**, gave a presentation on bioenergy policy implementation in Ghana.

Currently, in Ghana bioenergy (charcoal and firewood) accounts for more than 64% of total energy and for more than 90% of cooking fuels consumed in the country. Crucial problems to be addressed are the very low access to modern energy services, overdependence on wood fuel with its health and environmental implications as well as the economic burden caused by strong dependence on imported petroleum products.

Therefore, the main objectives for bioenergy development in Ghana include:

- Increasing access to 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.

Thereby, the availability of affordable, reliable and sustainable energy service delivery is the main driving force for policy on energy access.

Mr. Togobo highlighted that during recent years Ghana has gained considerable experience in bioenergy technologies, namely improved cookstoves, improved charcoal production technologies, briquetting, co-generation using sawmill and palm residues, biogas using municipal/farm waste and animal dung, gasification, and biodiesel based on *Jatropha*, oil palm, soya bean oil, and coconut oil.



Construction of biogas facility in Ghana

The planned short to medium term policy actions focus on the development of a Renewable Energy (RE) Law to create a RE-friendly regulatory environment, to promote innovative market delivery models, to establish favourable pricing policies for RE, and to create awareness on the benefits of renewable energies including bioenergy and biofuels. Thereby, the target for this policy development is to stimulate private sector participation and increase energy access.

However, during the past 2 years, and before the enactment of the RE Law, Ghana was experiencing an influx of foreign investors mainly from Europe for large scale cultivation of *Jatropha*. Millions of acres of agricultural land have been acquired through traditional leaders and local people are being denied access to these lands for firewood, sheanut collection, and farming.

In order to avoid negative impact of bioenergy development on the local population, the Government of Ghana is therefore taking measures to ensure that large scale production of biofuels creates commercial benefits for the population and does not affect food production. This includes flexibility of replanting farmland for food production if food security is threatened and the allocation of degraded and arid dry lands for *Jatropha* production. Additionally, feedstock other than *Jatropha* is promoted such as oil palm, groundnut, cassava or other energy crops with high economic value and existing cultivation experience in Africa.

In conclusion, Mr. Togobo stated that bioenergy development in Ghana has good potential to deliver energy services, create employment, alleviate poverty and contribute to increased food production. Appropriate policies and incentives are needed to reduce biofuel cost and contribute to the achievement of the overall policy goal to increase access to affordable and sustainable energy services. However, great care has to be taken to ensure that large scale bioenergy deployment does not negatively affect (but rather enhance) food production, and that 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.

An overview of bioenergy policy implementation in Botswana was presented by **Ms. Mareledi Wright, Department of Energy, Botswana.**

Ms. Wright introduced the mission of the Department of Energy to formulate and coordinate national energy policy and programmes and facilitate availability of effective, reliable and affordable energy services to customers in an environmentally sustainable manner.

In Botswana, bioenergy meets about 35% of the national energy needs and about 74% of rural communities depend on fuel wood mainly for cooking. However, biomass energy management is fragmented among various institutions with limited coordination and the Government of Botswana is placing low priority on energy planning.

Recently, the initiative BEST (Biomass Energy Strategy) was launched in Botswana with support from the German Development Cooperation GTZ and the Partnership Dialogue Facility of the EU Energy Initiative (EUEI PDF). The objective of BEST is to ensure that biomass energy is produced, supplied and used in a socially, economically and environmentally sustainable manner. Within BEST, studies were performed to identify opportunities for interventions on woody biomass, wet biomass, energy crops and residues. It was found that in Botswana there are considerable resources of wet biomass (municipal liquid waste, household waste), residues (chicken manure, municipal solid waste) and selected energy crops that can be exploited to provide modern biomass energy.

In conclusion, Ms Wright presented on-going Government initiatives in the field of bioenergy. The Government of Botswana is engaged in the dissemination of improved woodstoves, the implementation of biogas pilot projects for cooking and village electrification, as well as in a feasibility study on the production and use of biofuels in Botswana. Thereby, the potential of sweet sorghum for ethanol production and of *Jatropha* for biodiesel production is investigated. By 2012, a 50 million litre/year biodiesel processing plant shall be in operation and a 20.000 ha *Jatropha* plantation for feedstock production shall be developed under the guidance of the Government of Botswana.

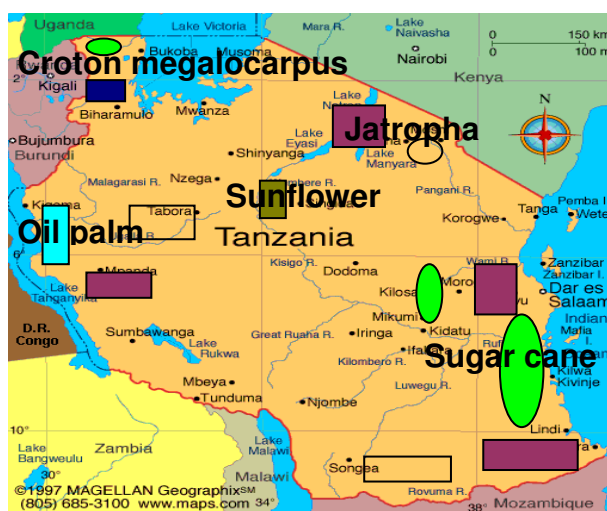
**Mr. Paul Kiwele, Ministry of Energy and Minerals, Tanzania,** presented current progress in bioenergy policy implementation in Tanzania.

The vision set forth by the Government of Tanzania for the development of the bioenergy sector is to contribute to the replacement of fossil transport fuels and to stimulate socio-economic development through rural electrification projects. Benefits expected from the implementation of bioenergy projects are to improve energy security, to reduce oil imports and foreign exchange burdens, as well as to provide alternative markets for farmers creating new jobs and income generation opportunities.

Mr. Kiwele stated that in 2005 the Government of Tanzania established a Biofuels Task Force under the lead of the Ministry of Energy and Minerals with the participation of a variety of government ministries and institutions. This Task Force has elaborated draft biofuel guidelines which aim at guiding the sector until policies, legislation and an institutional framework are in place. These guidelines focus on ensuring socio-economic sustainability of bioenergy development, the avoidance of food-fuel conflicts, and sufficient value creation for the local rural population. Different land acquisition and tenure systems are introduced for bioenergy projects including shorter leasing periods of 5-25 years, the possibility to use land as equity, and mandatory villager shares in projects. Furthermore, investors will be required to use part of the land allocated for the production of food crops.

Finally, contract farming, outgrower schemes and community engagement will be promoted, and Environmental and Social Impact Assessments (ESIA) will be required for the implementation of bioenergy projects.

Today, several bioenergy projects are already under implementation or preparation in Tanzania. These projects include *Jatropha* plantations for biofuel production (managed by the German company Prokon in the Mpanda region and the Dutch company Diligent in the Arusha region) and for rural electrification within the framework of Multifunctional Platforms (MFP) (coordinated by the Tanzanian NGO TaTEDO). Furthermore, an oil palm project is implemented by the Tanzanian company FELISA in the Kigoma region and preparations were undertaken by the Swedish fuel supplier SEKAB to set up sugar cane plantations in the Bagamoyo region. The latter initiative, however, is currently under re-consideration (also due to sustainability concerns) and may not be realised. The figure shows regions of Tanzania where bioenergy projects are currently under implementation or preparation. Bioenergy feedstock includes *Jatropha*, sugar cane, oil palm, sunflower, and the indigenous tree *croton megalocarpus*.



Areas currently under bioenergy development in Tanzania

Mr. Kiwele concluded that currently the Government of Tanzania is engaged in the implementation of a Biofuels Action Plan including a thorough review of existing policies and legal and regulatory frameworks with the aim to develop new national bioenergy policies in the coming year. Furthermore, the action plan includes agro-ecological zoning of land available for bioenergy production, capacity building programmes for government departments and other stakeholders, and awareness creation initiatives for the population.

The status of bioenergy policy implementation in Kenya was presented by **Mr. Erick Akotsi, Acting Director of Renewable Energy, Ministry of Energy, Kenya.**

In Kenya, 92% of the population use traditional biomass energy (charcoal and firewood) for cooking and heating leading to serious problems of deforestation. Mr. Akotsi reported that the overall objective of the energy policy in Kenya is to provide adequate, sustainable, cost-effective and affordable energy services for socio-economic development. Specifically, policy objectives in the field of bioenergy aim to ensure sufficient bioenergy supplies to meet demand on a sustainable basis while minimizing environmental impacts. Initiatives of bioenergy policy implementation include the development of strategies in the areas of biodiesel, bioethanol, cogeneration and woodfuel.

In the field of biodiesel a National Biofuels Committee was set up in 2006 with the objective to develop a strategy for 2008 to 2012. The motivation for the biodiesel strategy was to increase security of energy supply by reducing dependence on imported fossil fuels, to diversify rural energy sources by supplementing with biodiesel, to contribute to poverty alleviation through diversification of income sources, and to address global warming. The biodiesel strategy in Kenya includes blending ratios of 5% (B5) in 2012 and 10% (B10) by 2020 to ensure a national market for biodiesel.

The objectives for the development of an ethanol strategy are to increase security of energy supply, to diversify the sugar industry base and strengthen competitiveness of sugar factories, and to minimise pollutant effects of woodfuel and kerosene by substituting these fuels with bioethanol. It is envisaged that a 10% blend of bioethanol in gasoline (E10) can be achieved by the end of 2010.

In the field of co-generation a feed-in-tariff is available to encourage investment, especially to motivate sugar factories to improve existing bagasse based co-generation facilities in order to feed power into the national grid.

Furthermore, the Government of Kenya has developed a woodfuel strategy and action plan with the main aim to license charcoal production to encourage sustainable commercial production.

Finally, Mr. Akotsi highlighted that the Government of Kenya is supporting the establishment of energy centres for the promotion of renewable energy technologies. These centres focus on biomass by training farmers and providing technical advice such as for the construction of biogas digesters. Until today, 10 centres have already been established and plans exist to increase the number to 21.

**Mr. Hamza Hassane, Direction of Renewable Energies, Ministry of Mines and Energy, Niger**, provided an overview of bioenergy potential and use in Niger.

In Niger, traditional biomass fuels account for about 88% of the final energy consumption whereas oil products and electricity account for 10% and 2%, respectively. Niger is 100% dependent from oil and electricity imports from neighbouring Nigeria.

The rate of access to electricity for households is 8.1% in average, with a rate of only 0.4% in rural areas. The contribution of renewable energies to the national energy balance is very weak amounting to 0.01% in 2006.

Policy documents addressing bioenergy include the Poverty Reduction Strategy (SRP), the National Renewable Energy Strategy (SENR) and the Reference Program of Energy Access (PRASE).

Currently no bioenergy project is under implementation in Niger. From 1985 to 2000 more than 20 biogas installation had been set up in rural areas to provide energy for cooking, lighting, and sanitary water. However, today all these installations have been abandoned due to lack of water and resources.

In the field of biofuels preliminary studies have identified 3 potential feedstock sources, namely *Jatropha*, neem, and moringa. Furthermore, successful experiments have been performed to test the use of neem oil in engines.

In conclusion, Mr. Hassane stated that in Niger further studies and R&D activities are urgently needed to identify the true potential of bioenergy in the country.



### **Session 3: Ensuring Value Creation and Sustainability – Lessons learnt from COMPETE**

The session on ensuring value creation and sustainability was chaired by **Mr. Wisdom Ahiataku-Togobo, Ministry of Energy, Ghana.**

This session included presentations by Mr. Hartley Walimwipi, CEEEZ, Zambia, Dr. Rocio Diaz, Imperial College, United Kingdom, Ms. Khamarunga Banda, Food Agriculture and Natural Resources Policy Analysis Network (FANRPAN), South Africa, and Dr. Rainer Janssen, WIP Renewable Energies, Germany.

**Mr. Hartley Walimwipi, CEEEZ, Zambia,** presented an integrated approach for well informed biofuels policy and business decisions.

Mr. Walimwipi stated that various and complex factors influence policies and business decisions required for biofuels implementation strategies. On one hand, policymakers need to ensure social, environmental and economic sustainability of biofuel production. On the other hand, stakeholders including the private sector involved in the biofuels value production chain require reasonable return on investment and incentives to achieve competitiveness with gasoline and diesel fuels.



Speakers of Session 3: H. Walimwipi, K. Banda  
Dr. Diaz-Chavez (from left)

Trade off between both interests is possible as long as both policy and business interests are taken into account. Thereby, well informed decisions need to be based on integrated strategies. For this, an Integrated Decision Support Tool (DST) has been developed by UNIDO with technical support from the German Biomass Research Institute (DBFZ).

This DST was used to assess the economic performance of different feedstocks for ethanol and biodiesel production in a Southern African context. The bioethanol scenarios investigated had typical production capacities of 20 million litres per year based on sweet sorghum, sugarcane, and maize. The biodiesel scenarios investigated for the feedstock *Jatropha* and sunflower had production capacity of 50,000 tonnes.

Results of the assessment presented by Mr. Walimwipi included production cost of ethanol from sweet sorghum, sugarcane and maize to be US\$ 0.4, 0.5 and 0.6 per litre, respectively. Ethanol production from sweet sorghum is thus competitive at crude oil prices of 50 US\$ per barrel whereas maize based ethanol is competitive at oil prices of 80 US\$. With respect to land requirements, the production of 20 million litres of bioethanol per year from maize requires 24,000 ha of land as compared to 5,000 ha for sweet sorghum and sugarcane. For biodiesel, production costs for *Jatropha* and sunflower have been calculated at US\$ 0.50, and 1.10 per litre, respectively. *Jatropha* based biodiesel is competitive with fossil diesel at oil prices of 60 US\$ per barrel.

In conclusion, Mr. Walimwipi underlined that the competitiveness of biofuels mainly depends on international crude oil prices and related gasoline and diesel production costs. At crude oil prices of less than 50 US\$ per barrel for bioethanol and less than 60 US\$ for biodiesel incentives are required to make biofuels attractive for investors.

**Dr. Rocio Diaz, Imperial College, United Kingdom**, reported on the social impacts of bioenergy development in Africa.

The following potential adverse social and socio economic impacts in the areas biomass production, biomass transport, pre-treatment and conversion, and residue disposal were reported by Dr. Diaz:

- Health and safety impacts (pesticides, machinery, emissions)
- Freedom of association and collective bargaining
- Working hours and remuneration
- Migrant labour, child and forced labour
- Land ownership, access to land, conflict over land tenure
- Food security
- Access to water resources
- Land and water contamination, impacts on landscape
- Foreign control of economic benefits
- Community and cultural dilution

On the other hand, the following potential socio-economic benefits have been identified:

- Rural employment and income generation
- Infrastructure development
- Economic leakage

In order to avoid potential negative impacts Governments need to get active in the field of Policy, Planning and Programmes (PPP). Furthermore, effective frameworks for Strategic Environmental Assessments (SEA), Environmental Impact Assessments (EIA), and Social Impact Assessments (SIA) need to be established. Full accountability of stakeholders has to be guaranteed and best practice initiatives and projects have to be promoted and replicated.

In conclusion, Dr. Diaz stated that biofuels production may provide opportunities to reduce poverty in developing countries. However, social and economic issues need to be carefully taken into account and assurance or certification systems need to be established to ensure sustainability. For the implementation of such sustainability systems, stakeholders in developing countries will need support to cope with monitoring requirements and additional costs of proving compliance.

**Ms. Khamarunga Banda, Food Agriculture and Natural Resources Policy Analysis Network (FANRPAN), South Africa**, gave a presentation on gender and biofuels in Africa.

Ms. Banda highlighted that women will be the main producers of biomass feedstock in Africa as the majority of women in developing countries are engaged in crop production and small scale agriculture. However, gender inequalities exist in terms of access to and control over land and productive assets.

The situation of women in most African countries is characterised by the fact that the majority of the poor are women. They lack information access and education, participation in decision-making processes, and the availability of suitable technologies. Furthermore, policies in Africa are usually gender blind.



Women involved in agricultural activities

In most rural areas of Africa, 70% of the population depend on unmanaged and unsustainable biomass and the majority of rural poor have no access to electricity. Furthermore, there are health implications like respiratory diseases associated with wood and agricultural residues used as energy source.

Therefore, main challenges for the development of bioenergy in Africa include a shift to energy sources that uplift women's quality of life through income generation, new energy technologies that free women's labor, and the implementation of policies that push for investments efficiency of cleaner energy sources.

Mr. Banda underlined the following recommendations for a truly sustainable bioenergy development in Africa paying due respect to gender aspects:

- Environmental and social impact assessments of proposed biofuels projects or programmes should include an evaluation of gender-differentiated impacts.
- Consultative processes should be designed to ensure substantial participation of women.
- Gender equity should be one of the principles considered in sustainability assessments.

On a small scale, locally produced plant oils and biodiesel can successfully be used to power generators in rural villages. Such projects create benefits for women by easing the burden of firewood collection and providing new opportunities for agricultural processing, new enterprises and income generation.

On the other hand, most of the threats related to biofuel production come from the operation of large-scale plantations using agro-business models. In order to avoid negative impacts, the interests of small landowners need to be protected by engaging them as producers and processors of biofuels as part of a larger value production and supply chain. For this, Governments should develop and promote biofuels policies, regulations and programmes that take into account the needs and interests of small farmers and women in rural communities.

In conclusion, Mr. Banda emphasised that for biofuels to promote the empowerment of women, it is important for women to be involved in planning and managerial decisions, and to have shares as co-owners or investors in biofuels production companies and processing operations, rather than simply providing labour as growers of biofuel feedstock. New initiatives and pilot projects should capture gender-specific information as one of the factors in determining the sustainability of projects. Finally, Governments, managers and investors in biofuels projects need to incorporate gender equity as a key element in assessing potential benefits and impacts.

**Dr. Rainer Janssen, WIP Renewable Energies, Germany**, presented an overview of the sustainability criteria incorporated in the recently enforced European Renewable Energy Directive.

In June 2009 the Directive “on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC” was approved and enforced (RED).

The RED sets a European target of 20% renewable energies in the EU until 2020 and 10% renewable energies in the transport sector (including biofuels and other renewable energies in transport). In order to achieve the national targets and the renewable energy obligations, the RED allows Member States to grant financial support for the consumption of biofuels.

However, in order to count towards to the national targets and obligations, and to be eligible for financial incentives, the RED demands dedicated sustainability requirements, irrespective of whether the raw materials are cultivated inside or outside the territory of the Community (Article 17, paragraphs 2-6):

- The greenhouse gas emission saving from the use of biofuels shall be at least 35%. In 2017 it shall be at least 50% and from 2018 at least 60 % (for biofuels produced in installations in which production started on or after 1 January 2017).
- Biofuels shall not be made from raw material obtained from land with high biodiversity value, namely primary forests and other wooded land (forest and other wooded land of native species, where there is no clearly visible indication of human activity and the ecological processes are not significantly disturbed), protected areas, highly biodiverse grassland that is natural (grassland that would remain grassland in the absence of human intervention and which maintains the natural species composition and ecological characteristics and processes; or non-natural grassland that would cease to be grassland in the absence of human intervention and which is species-rich and not degraded, unless evidence is provided that the harvesting of the raw material is necessary to preserve its grassland status).

- Biofuels shall not be made from raw material obtained from land with high carbon stock, namely from wetlands (land that is covered with or saturated by water permanently or for a significant part of the year), continuously forested areas (land spanning more than one hectare with trees higher than five metres and a canopy cover of more than 30 %, or trees able to reach those thresholds in situ) and areas with more than one hectare with trees higher than five metres and a canopy cover of between 10 % and 30 %, or trees able to reach those thresholds in situ.
- Biofuels shall not be made from raw material obtained from land that was peatland in January 2008, unless evidence is provided that the cultivation and harvesting of that raw material does not involve drainage of previously undrained soil.

In addition, the RED demands the European Commission to report every two years to the European Parliament and the Council, in respect of both third countries and Member States that are a significant source of biofuels or of raw material for biofuels consumed within the Community, on national measures taken to respect the above mentioned sustainability criteria and for soil, water and air protection. Furthermore it should also report on the impact on social sustainability, on the impact of Community biofuel policy on the availability of foodstuffs at affordable prices, in particular for people living in developing countries, and on wider development issues. Reports shall address the respect of land-use rights. They shall state, both for third countries and Member States that are a significant source of raw material for biofuel consumed within the Community, whether the country has ratified and implemented Conventions of the International Labour Organisation. Finally, the European Commission is asked to report on whether the country has ratified and implemented the Cartagena Protocol on Biosafety and the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The first report for these issues shall be submitted in 2012. The Commission shall, if appropriate, propose corrective action, in particular if evidence shows that biofuel production has a significant impact on food prices.

In conclusion, Dr. Janssen stated that generally the RED is a driver for both, imported and domestically produced biofuels within Europe. Due to the ambitious targets of the RED, Europe may depend upon imported biofuels from other continents, since only limited land is available in Europe, and since biofuels may be produced at lower costs in many Sub-Saharan African countries.



## Policy Recommendations

The COMPETE Policy Conference 'Bioenergy Policy Implementation in Africa' on 26-28 May 2009 in Lusaka, Zambia, brought together more than 50 high-level participants including decision makers from several African countries, representatives from the Private Sector, NGOs, the donor community, FAO, UNEP, international initiatives as well as national and international energy experts and stakeholders.

**The main aim of this COMPETE conference was to elaborate Policy Recommendations addressing the following crucial topics of bioenergy development in Africa:**

- **Land use and the food-fuel conflict in Africa**
- **How to ensure value creation of bioenergy development in Africa?**
- **Regulations and standards for bioenergy implementation in Africa**

**The present COMPETE Bioenergy Policy Recommendation Paper was elaborated along the lines of the following 3 Roundtable Discussions engaging international bioenergy experts as well as high-level decision-makers from Botswana, Ghana, Kenya, Niger, Tanzania, and Zambia.**

### **Round Table 1: Land use and the food-fuel conflict in Africa**

- Dr. Helen Watson, University of KwaZulu-Natal, South Africa
- Dr. Rocio Diaz, Imperial College, United Kingdom
- Mr. Wisdom Ahiataku-Togobo, Ministry of Energy, Ghana
- Mr. Hamza Hassane, Ministry of Mines and Energy, Niger
- Mr. Rainer Krell, FAO
- Mr. Maxwell Mapako, CSIR, South Africa
- Mr. Adamou Bouhari, UNEP, Division of GEF Coordination (DGEF)
- Mrs. Angeline Kahari, SNV Netherlands Development Organisation



Panellists of Round Table 1: Land use and the food-fuel conflict in Africa

### **Round Table 2: How to ensure value creation of bioenergy development in Africa?**

- Dr. Rainer Janssen, WIP, Germany
- Mr. Gustavo Best, REMBIO, Mexico
- Mrs. Khamarunga Banda, FANRPAN, South Africa
- Mr. Jensen Schuma, TaTEDO, Tanzania
- Ms. Francesca Farioli, University of Rome, Italy
- Dr. Thomas Krimmel, Munich Advisors Group, Zambia



Panellists of Round Table 2: How to ensure value creation of bioenergy development in Africa?

### **Round Table 3: Regulations and standards for bioenergy implementation in Africa**

- Prof. Francis Yamba, CEEEZ, Zambia
- Mr. Ngosa Mbolela, Ministry of Energy and Water Development, Zambia
- Mr. Paul Kiwele, Ministry of Energy and Minerals, Tanzania
- Prof. Jose Roberto Moreira, CENBIO, Brazil
- Mr. Erick Akotsi, Ministry of Energy, Kenya
- Mr. Francis Johnson, Stockholm Environment Institute, Sweden



Panellists of Round Table 3: Regulations and standards for bioenergy implementation in Africa

## **COMPETE Bioenergy Policy Recommendation on Socio-economic Development and the Food-Fuel Conflict in Africa**

The agricultural sector in most Sub-Saharan countries is dominated by subsistence farming with very low investment levels and yields. The development of modern bioenergy systems offers opportunities for investment and infrastructure improvements in agriculture with the promise to diversify agricultural production and thus to stimulate socio-economic development and local value creation.

In general, many African countries have suitable conditions for bioenergy development such as abundant labour and sufficient available arable land and water resources. However, concerns exist that bioenergy (biofuels) expansion may have severe negative impacts through increasing competition over land and water resources. Furthermore, rising prices of agricultural commodities may negatively affect food security of the poor in developing countries and the implementation of large-scale bioenergy projects may cause negative social impacts such as displacement of rural communities.

It is thus of crucial importance that policies and development plans are implemented in African countries to ensure environmentally, economically and socially sustainable bioenergy production. These policies shall aim at mobilising the benefits offered by bioenergy feedstock production to reverse the long-term decline in real agricultural commodity prices and to boost agricultural and rural development.

A variety of Sub-Saharan African countries are currently engaged in the formulation of appropriate policies and implementation strategies to ensure sustainable bioenergy for economic development.

The project COMPETE is providing support for these policy developments through the organisation of policy workshops with representation of policymakers from African countries and the development of policy recommendation documents highlighting the African approach to sustainable bioenergy.

In the framework of the COMPETE Policy Conference 'Bioenergy Policy Implementation in Africa' in Zambia, policy recommendations have been elaborated for the formulation of policies and development plans to ensure the sustainability of the bioenergy sector in Africa.

## A) Land use and the food-fuel conflict in Africa

The following recommendations for African policymakers have been identified to avoid the potential conflict between food and bioenergy production in Africa:

- Bioenergy policies and development plans in Africa should have a **clear vision to achieve socio-economic development and to improve the well-being** of the population.
- Urgent measures need to be taken to **increase investment in the agricultural sector** in African countries as insufficient food production is currently mainly caused by low yields and lack of infrastructure rather than limited land availability.
- African Governments need to engage in **natural resource management planning** (for food and bioenergy production) using effective tools addressing the complexity of the agricultural sector (including conflicting interests of pastoralists and other traditional land use practices).
- African Governments should engage in the **international dialogue** on sustainable bioenergy and link bioenergy development with **International Conventions** (e.g. conventions on land degradation, biodiversity, climate change).
- Policies and development plans need to be based on **reliable scientific information** and take into account national framework conditions.
- **Regional integration** should be ensured for national bioenergy policy development.
- African Governments should perform **agro-ecological zoning initiatives** to identify available and suitable land for food and bioenergy production. Thereby, bioenergy development should not be restricted to marginal and degraded land.
- National planning needs to ensure **flexibility of feedstock production** and leave decisions on feedstock selection to farmers. Transparent and reliable information should be provided to farmers.
- **Close cooperation between national authorities and traditional authorities** in the local communities on land tenure issues needs to be ensured. **Gender issues** with respect to land ownership should be respected.
- **Participation and ownership** of local communities in bioenergy projects should be ensured.
- Specific conditions should be enacted for **land acquisition and tenure** for bioenergy investors
- Bioenergy investors should be obliged to **dedicate part of the land to grow food crops**.
- Initiatives for (agricultural) **capacity building** need to be implemented on local level.

## B) How to ensure value creation of bioenergy development in Africa?

The following recommendations for African policymakers have been identified to ensure sufficient value creation of bioenergy development in African countries leading to sustainable socio-economic development opportunities for the local population:

- African Governments need to develop and implement policies and regulations creating a favourable environment for **investment in the agricultural sector**.
- African Governments need to increase their efforts in the field of **infrastructure development**.
- African Governments need to clearly **define social requirements** and guidelines for investors in bioenergy projects to ensure benefits for the local population. This may be achieved in cooperation with social sustainability criteria integrated in international initiatives to ensure sustainability of bioenergy production.
- African Governments need to appropriately **valorise non-economic benefits** offered by bioenergy systems (e.g. health benefits through avoidance of Indoor Air Pollution).
- African Governments need to put in place **incentives and measures of risk reduction** such as subsidies and tax exemptions to foster the development of the bioenergy sector. Specific incentives need to be established for local businesses and smallholder farmers.
- **Suitable feedstock and bioenergy technologies** need to be identified and promoted with respect to local and national framework conditions.
- Provision of **financing opportunities** for farmers and investors to facilitate implementation of small and large scale bioenergy projects.
- **Stable markets** for bioenergy and by-products need to be created on local, national and international level. Agricultural production needs to be diversified. Bioenergy development in Africa should include small, medium and large scale projects.
- Promotion of the participation of national stakeholders in the **full bioenergy value chain** (not just raw material provision).
- Promotion of **outgrower schemes and community engagement** to ensure ownership of the local population. Promotion of the engagement of farmer organisations.
- Incorporation of **gender equity** as a key element in assessing socio-economic benefits and impacts of bioenergy projects.
- Establishment of **fair and transparent** pricing agreements for bioenergy feedstock between farmers and bioenergy producers.
- Provision of **training for business creation** and information on bioenergy market development to farmers.
- **Capacity building** and provision of improved **agricultural extension services** for farmers.



### C) Regulations and standards for bioenergy implementation in Africa

The following recommendations for African policymakers have been identified to establish regulation and standards in order to create stable markets providing the opportunity for socio-economic development:

- African Governments need to establish **cooperation links with international standardisation initiatives**.
- For **export markets**, bioenergy produced in Africa needs to **comply with technical and sustainability standards** existing or under development in potential importing countries (USA and Europe).
- For **national markets**, suitable (technical and sustainability) **standards need to be developed** with respect to national framework conditions in consultation with national stakeholders. Standard development should be based on existing international standards and shall take into account different feedstock.
- National guidelines for **social requirements** of bioenergy projects should be elaborated in close cooperation with local communities. Focus should be placed on the production of biomass feedstock.
- National and regional consensus on **social, environmental and economic sustainability criteria** for bioenergy projects in Africa should be achieved.
- **Minimum standards** for African countries should be defined on **regional level** (e.g. SADC, ECOWAS).
- Regulations for the promotion of bioenergy in African countries should be transparent and well **integrated into existing laws and regulations**. Over-regulation of the bioenergy sector should be avoided.
- African Governments should establish **suitable national regulations and targets** for (voluntary or mandatory) blending of biofuels with fossil fuels.
- African Governments should establish **suitable subsidy schemes and price guarantees** for bioenergy to create stable national markets.

## COMPETE Technical Tour

### Visit to Jatropha Outgrower Scheme and Jatropha Plantations in the vicinity of Kabwe Town

On 28 May, the participants of the COMPETE Policy Conference 'Bioenergy Policy Implementation in Africa' visited a Jatropha outgrower scheme in the vicinity of the town Kabwe approximately 50 km north of Lusaka.

The Zambian company Marli Investments initiated research on Jatropha in April 2003 and started planting in November 2004, using cuttings from a few existing Jatropha Curcas trees, seeds and seedlings. The company uses the outgrower model, starting with a few farmers in the Kasosolo settlement scheme in the central province of Zambia.

Currently, Marli Investments has distributed more than 12 million seedlings/seeds to outgrowers throughout Zambia. More than 25.000 outgrowers have joined the scheme with 12.000 ha under plantations and 6.500 ha in the seedling stage. The company provides capacity building and agronomic support through 100 Field Officers and 180 Coordinators working together with the outgrowers.

Seeds and training are provided free for farmers, and until today all Jatropha seed yields are used for the extension of plantations. Thereby, conflict between food and fuel production is avoided through the plantation of Jatropha on available additional land with no impact on existing food production.



Outgrower model for the production of Jatropha in Zambia

The construction of a biodiesel pilot plant is foreseen in 2009. In order to ensure security of feedstock production and to provide a guaranteed market for outgrowers, production purchase agreements with farmers are signed with a duration of 30 years. Thereby, the price of Jatropha seeds will be calculated with a formula linked to the world oil price.

In order to establish the national market for the produced biodiesel, a blending mandate of biodiesel in diesel is currently under negotiation with the Government of Zambia. The larger scale biodiesel production under the outgrower scheme by Marli Investments is planned in 2011 with the construction of a 600.000 tons per year biodiesel production plant.

In conclusion, it was agreed upon by the conference participants that bioenergy projects based on the close involvement of local communities through outgrower schemes have the potential to contribute to socio-economic development in African countries by offering additional income opportunities for the rural population.

## Selected Pictures



## **Annex I - Conference Programme**

### **MONDAY 25<sup>th</sup> May 2009**

16:00 – 19:00      Conference Registration

### **TUESDAY 26<sup>th</sup> May 2009**

08:00 – 09:00      Conference Registration

#### **Opening Session**

09:00 – 09:15      Welcome Address by the Host Organisation  
Prof. Francis Yamba, CEEZ, Zambia

09:15 – 09:30      The EC Project COMPETE – Activities and Results  
Dr. Rainer Janssen, COMPETE Project Co-ordinator, WIP, Germany

09:30 – 10:00      Official Opening Address  
Hon. Allan Mbewe, Deputy Minister of Ministry of Energy and Water  
Development, Zambia

10:00 – 10:30      Coffee Break

#### **Session 1: International Policy Implementation Frameworks**

Chair: Mr. Tyson Bruno Chisambo, Biofuels Association of Zambia

10:30 – 11:10      Global Bioenergy Policy Implementation Frameworks  
Dr. Gustavo Best, REMBIO, Mexico

11:10 – 11:40      Bioenergy Policy Implementation in Brazil  
Prof. Jose Roberto Moreira, CENBIO, Brazil

11:40 – 12:10      Bioenergy Policy Implementation in Europe  
Mr. Francis Johnson, Stockholm Environment Institute, Sweden

12:10 – 12:45      Discussion

12:45 – 14:00      Lunch Break

## **Session 2: Policy Implementation Strategies in Africa**

Chair: Dr. Gustavo Best, REMBIO, Mexico

- 14:00 – 14:20 Bioenergy Policy Implementation in Zambia  
Mr. Oscar Kalumiana, Director Department of Energy, Zambia
- 14:20 – 14:40 Bioenergy Policy Implementation in Ghana  
Mr. Wisdom Ahiataku-Togobo, Ministry of Energy, Ghana
- 14:40 – 15:00 Bioenergy Policy Implementation in Botswana  
Mrs. Mareledi Wright, Department of Energy, Botswana
- 15:00 – 15:20 Bioenergy Policy Implementation in Tanzania  
Mr. Paul Kiwele, Ministry of Energy and Minerals, Tanzania
- 15:20 – 15:40 Bioenergy Policy Implementation in Kenya  
Mr. Erick Akotsi, Acting Director of Renewable Energy, Ministry of Energy, Kenya
- 15:40 – 16:20 Coffee Break
- 16:20 – 16:40 Bioenergy Policy Implementation in Niger  
Mr. Hamza Hassane, Direction of Renewable Energies, Ministry of Mines and Energy, Niger

## **Session 3: Ensuring Value Creation and Sustainability – Lessons learnt from COMPETE**

Chair: Mr. Wisdom Ahiataku-Togobo, Ministry of Energy, Ghana

- 16:40 – 17:00 Protection of the Environment - LCA and Environmental Impact Assessments  
Mr. Hartley Walimwipi, CEEEZ, Zambia
- 17:00 – 17:20 Social Impacts of Bioenergy Development in Africa  
Dr. Rocio Diaz, Imperial College, United Kingdom
- 17:20 – 17:40 Gender and Biofuels in Africa  
Mrs. Khamarunga Banda, FANRPAN, South Africa
- 17:40 – 18:00 Policies on Sustainability for Biofuels  
Dr. Rainer Janssen, WIP, Germany
- 18:00 – 18:30 Discussion



## **WEDNESDAY 27<sup>th</sup> May 2009**

### **Round Table 1 (08:30 – 10:00)**

#### **Land use and the food-fuel conflict in Africa**

08:30 – 09:00      Introductory Presentation  
                         Dr. Helen Watson, University of KwaZulu-Natal, South Africa

09:00 – 10:00      Round Table Discussion

Chair: Dr. Rocio Diaz, Imperial College, United Kingdom

#### Panellists:

- Mr. Wisdom Ahiataku-Togobo, Ministry of Energy, Ghana
- Mr. Hamza Hassane, Ministry of Mines and Energy, Niger
- Mr. Rainer Krell, FAO
- Mr. Maxwell Mapako, CSIR, South Africa
- Mr. Adamou Bouhari, UNEP, Division of GEF Coordination (DGEF)
- Mrs. Angeline Kahari, SNV Netherlands Development Organisation

10:00 – 10:30      Coffee Break

### **Round Table 2 (10:30 – 12:00)**

#### **How to ensure value creation of bioenergy development in Africa?**

10:30 – 12:00      Round Table Discussion

Chair: Dr. Rainer Janssen, WIP, Germany

#### Panellists:

- Mr. Gustavo Best, REMBIO, Mexico
- Mrs. Khamarunga Banda, FANRPAN, South Africa
- Mr. Jensen Schuma, TaTEDO, Tanzania
- Ms. Francesca Farioli, University of Rome, Italy
- Dr. Thomas Krimmel, Munich Advisors Group, Zambia

12:00 – 13:30      Lunch Break

### **Round Table 3 (13:30 – 15:00)**

#### **Regulations and standards for bioenergy implementation in Africa**

13:30 – 14:00      Introductory Presentation  
                         Prof. Francis Yamba, CEEEZ, Zambia

14:00 – 15:00      Round Table Discussion

Chair: Mrs. Angeline Kahari, SNV Netherlands Development Organisation

Panellists:

- Mr. Ngosa Mbolela, Ministry of Energy and Water Development, Zambia
- Mr. Paul Kiwele, Ministry of Energy and Minerals, Tanzania
- Prof. Jose Roberto Moreira, CENBIO, Brazil
- Mr. Erick Akotsi, Ministry of Energy, Kenya
- Mr. Francis Johnson, Stockholm Environment Institute, Sweden

15:00 – 15:30      Conference Summary and Conclusions  
                         Prof. Francis Yamba, CEEEZ, Zambia  
                         Dr. Rainer Janssen, COMPETE Project Co-ordinator, WIP, Germany

**THURSDAY 28<sup>th</sup> May 2009**

#### **COMPETE Technical Tour**

**Visit to Jatropha Outgrower Scheme and Jatropha Plantations in the vicinity of Kabwe Town**

## The COMPETE Project



### **COMPETE Objectives**

The Competence Platform on Energy Crop and Agroforestry Systems for Arid and Semi-arid Ecosystems – Africa (COMPETE) will establish a **platform for policy dialogue and capacity building** and identify **pathways for the sustainable provision of bioenergy**

- to improve the quality of life and create alternative means of income for the rural population in Africa
- to aid the preservation of intact ecosystems in arid and semi-arid regions in Africa
- to enhance the equitable exchange of knowledge between EU and developing countries

### **COMPETE Activities**

COMPETE will deliver a matrix of multi-disciplinary and cross-sectoral work-packages

- to evaluate current and future potential for the **sustainable provision of bioenergy** in Africa in comparison to existing land use patterns and technologies
- to facilitate **South-South technology and information exchange** capitalising the world-leading RD&D in bioenergy in the key countries Brazil, Mexico, India, China and Thailand
- to develop **innovative tools for the provision of financing** for national bioenergy programmes and local bioenergy projects, including: carbon credits, bilateral and multi-lateral funding instruments, and the role of international trade
- to develop **practical, targeted and efficient policy mechanisms** for the development of bioenergy systems that enhance local value-added, assist local communities and address gender inequalities
- to establish the **Competence Platform** to ensure effective dissemination and knowledge exchange inside and outside the network

### **COMPETE Partnership**

The COMPETE partnership comprises 20 European and 23 non-European partners - 11 partners from 7 African countries, 3 regional African policy and financing bodies (African Development Bank; Food, Agriculture and Natural Resources Policy Analysis Network of Southern Africa; UEMOA - Biomass Energy Regional Program), 9 partners from Latin America and Asia - and the Food and Agriculture Organisation of the United Nations (FAO).

COMPETE Website: [www.compete-bioafrica.net](http://www.compete-bioafrica.net)

### COMPETE Project Coordination WP7 Coordination - Dissemination

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