



***International Conference***

***‘Bioenergy for Sustainable Development in Africa  
– Lessons learnt from COMPETE’***

***24-25 November 2009***

***Brussels, Belgium***

***Conference Summary and  
Policy Recommendations***

***DRAFT***

This international conference was organised by WIP Renewable Energies, Germany, in cooperation with Imperial College London, United Kingdom, in the framework of the project COMPETE, funded by the European Commission, DG Research.



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 identify cooperation opportunities between stakeholders and policymakers from European and African countries to contribute to the exploitation of bioenergy resources for sustainable development in African countries.

Recent bioenergy initiatives, programmes and projects in African countries were presented and discussed with respect to their social, economic and environmental sustainability.

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.

The presentations held at this conference are available at the COMPETE project website: <http://www.compete-bioafrica.net/events/events2/competeevents.html#brussels>.

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

### **Conference Organisation**

Dr. Rainer Janssen, WIP, Germany (rainer.janssen@wip-munich.de)

Mr. Dominik Rutz, WIP, Germany (dominik.rutz@wip-munich.de)

Ms. Maria Cabanero, WIP, Germany (maria.cabanero@wip-munich.de)

### **Conference organisation support:**

Dr. Jeremy Woods, Imperial College, United Kingdom (jeremy.woods@imperial.ac.uk)

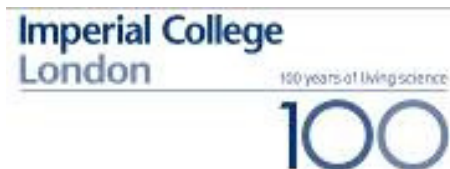
Dr. Rocio Diaz-Chavez, Imperial College, United Kingdom (r.diaz-chavez@imperial.ac.uk)

### **Conference Summary - Editors**

Dr. Rainer Janssen, WIP, Germany (rainer.janssen@wip-munich.de)

Mr. Dominik Rutz, WIP, Germany (dominik.rutz@wip-munich.de)

Mr. Wolfgang Hiegl, WIP, Germany (wolfgang.hiegl@wip-munich.de)



## Official Launch of the COMPETE Bioenergy Competence Platform for Africa

On the occasion of the COMPETE Conference 'Bioenergy for Sustainable Development in Africa - Lessons Learnt from COMPETE', on 24-25 November 2009, in Brussels, Belgium, the *COMPETE Bioenergy Competence Platform for Africa* was officially launched as continuation of the COMPETE activities in 2010 and beyond.

### COMPETE Mandate

The COMPETE Bioenergy Competence Platform for Africa shall identify pathways for the sustainable provision and use of bioenergy in Africa to improve the quality of life and to create alternative means of income for the rural population in Africa.

### COMPETE Objectives

- **Exploit the benefits of innovative bioenergy solutions in Africa** 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 biodiversity, water availability, land competition, land ownership, insufficient value creation for local farmers, and the 'fuel versus food' debate.

### COMPETE Activities

- Networking among African, European and global scientists, policy makers, organisations and industry on sustainable bioenergy provision and use in Africa
- Organisation of COMPETE conferences
- Continuation of COMPETE website services under [www.compete-bioafrica.net](http://www.compete-bioafrica.net)
- Provision of information on COMPETE themes (reports, conferences, policy documents, etc.) by partners of the Competence Platform
- Continuous publication of the information on the website
- Publication of bi-monthly on-line newsletter

### COMPETE Themes

- Biomass resources in Africa, land use, land use change, mapping and zoning initiatives
- Improved bioenergy production and use schemes for household energy
- Bioenergy solutions for rural electrification
- Bioenergy technologies for electricity and heat production as well as for transport applications
- Sustainability of bioenergy production and use in Africa
- International cooperation
- Financing of bioenergy projects and international trade
- Development of bioenergy policies and implementation strategies

## Conference Summary

### Opening Session

#### Welcome Address by Representative from the European Commission

Mario Scalet, European Commission, DG RTD, Directorate International Cooperation

The conference “Bioenergy for Sustainable Development in Africa - Lessons learnt from COMPETE” was opened by Mario Scalet from the European Commission, Directorate General for Research (DG RTD). Mr Scalet welcomed all conference participants to Brussels, Belgium, the capital of Europe and the residence place of the European Commission.



Opening session: Mario Scalet, Helen Watson, Rainer Janssen (from right)

Mr Scalet presented the Energy Theme and the new INCO programmes of the 7<sup>th</sup> Framework Programme for Research and Technological Development (FP7)

of the European Union. He highlighted that compared to the former FP6 programme, FP7 has simpler procedures and a new structure including the following programmes: Cooperation, Ideas, People, and Capacities.

The Cooperation Programme includes theme-oriented international cooperation actions and is open for all third countries, both for ICPC (International Cooperation Partner Countries) and industrialised countries. It furthermore includes Specific International Cooperation Actions (SICAs) dedicated to ICPC. Apart from the Cooperation Programme, also the People Programme, the Capacity Programme, and the Ideas Programme are open to 3rd countries.

This means that all African countries are eligible for funding programmes of the 7<sup>th</sup> Framework Programme and Mr Scalet encouraged the conference participants to actively participate in the calls.

Finally, Mr Scalet emphasized that international cooperation is an increasingly important element of the energy research policy of the European Union. Thereby, he presented the current calls for international cooperation in the energy topic.

All information on the 7<sup>th</sup> Framework Programme are available at the following websites: <http://cordis.europa.eu/fp7> and <http://ec.europa.eu/research/fp7/>.

### **Welcome Address by African Representative from the COMPETE Project**

Dr. Helen Watson, University of KwaZulu-Natal, South Africa

The welcome address by the African representative was given by Dr. Helen Watson from the University of KwaZulu-Natal, South Africa.

Dr. Helen Watson highlighted the excellent cooperation in the framework of the COMPETE network and summarised the main activities of the three years project including several studies on biomass feedstock, energy crops, sustainability, policies on bioenergy and on many other issues related to the sustainable bioenergy value chain.

On the occasion of many COMPETE meetings, workshops, and conferences in Germany, Mauritius, Mali, Zambia, Senegal, Tanzania, and Burkina Faso the network participants had the opportunity to present their individual perspectives on bioenergy. Thereby, the input of African stakeholders into the European bioenergy policy debate was one of the most important issues.

In the framework of South-South cooperation study tours to Mexico, India, and Brazil, African partners had the opportunity to gain insight in agricultural and technical practices of other continents.

Finally, Dr Helen Watson thanked the European Commission, all COMPETE partners, stakeholders and the COMPETE coordinators for the excellent implementation of the successful COMPETE network and stressed the urgent need to continue with the network activities after the EU funded period.

### **Welcome Address by the COMPETE Project Co-ordinator**

Rainer Janssen, WIP Renewable Energies, Germany

Dr. Rainer Janssen, COMPETE Project Co-ordinator, WIP Renewable Energies, Germany, cordially welcomed all COMPETE partners and conference participants to Brussels. Dr. Janssen emphasized the need to increase the “voice” of Developing Countries in the European discussion about the sustainability of bioenergy – the main focus of the conference. Finally, Dr. Janssen officially launched the “Bioenergy Competence Platform for Africa”, being the continuation of the COMPETE network which is funded by the EC until December 2009.

## Session 1: Bioenergy Policy Implementation in African Countries

The session on bioenergy policy implementation in African countries was chaired by Dr. Piero Venturi, European Commission, DG RTD.

### Bioenergy Policy Implementation in Ghana

Wisdom Ahiataku-Togobo, Ministry of Energy, 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.



Speakers of Session 1: Mamadou Dianka, Wisdom Togobo, Piero Venturi, Marcelina Mataveia, Anna Lerner (from left)

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.

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.



*Improved cookstoves in Ghana*

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 additional economic value and existing cultivation experience in Africa.

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.

In conclusion, Mr. Togobo invited policymakers and stakeholders from Europe to assist Ghana and other African countries to realise real benefits of bioenergy development in the following fields:

- Development and enforcement of appropriate policies and regulatory frameworks to ensure the sustainability of the bioenergy industry.
- Addition of value to bioenergy products to create local jobs.
- R&D, technology transfer and local capacity building.

## **Bioenergy Policy Implementation Strategies for UEMOA Countries**

Mamadou Dianka, Biomass Energy Regional Program, UEMOA, Burkina Faso

The West African Economic and Monetary Union (UEMOA - Union économique et monétaire ouest-africaine) is an organization of eight states of West Africa (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo) established in 1994 to promote economic integration. The energy sector of UEMOA countries is characterised by the domination of traditional biomass mainly used for household cooking, high costs of conventional energy sources, and a weak utilisation of the abundant renewable resources.

Within UEMOA, the Common Energy Policy (CEP) has the following objectives:

- Ensuring energy security
- Management of energy sources with focus on grid interconnection
- Promotion of energy efficiency and renewable energies
- Increase energy access of the rural population
- Preservation of the environment

The UEMOA ***Biomass Energy Regional Programme (BERP)***, co-financed by the Dutch Government, was created to work towards the vision to “Contribute to Poverty Reduction and Sustainable Development in the Region through the development of Comprehensive, Sustainable and Efficient biomass energy sector policies, strategies and investment programs and projects”.

The following main activities are undertaken by the BERP:

- Formulation of vision papers and regional strategies
- Harmonisation of laws on domestic fuels and the charcoal value chain
- Analysis of trans-boundary flows of domestic fuels
- Establishment of Energy Information Systems, collection of data on bioenergy potential and technologies
- Fund raising for the implementation of bioenergy projects, cooperation with donor organisations

Until today, the following projects have been implemented with the support of the Biomass Energy Regional Programme:

- Participatory forest management in Togo and Côte d'Ivoire
- Utilisation of cotton residues (briquetting, charcoal production) in Mali
- Utilisation of rice husks (briquetting, charcoal production) in Senegal
- Utilisation of Jatropha oil in agricultural vehicles in Mali
- Implementation of biogas digestors in Mali and Burkina Faso in the framework of the Biogas for Better Life initiative





*Production of biomass charcoal briquettes in Senegal*

### **Bioenergy Policy Implementation in Mozambique**

Marcelina Mataveia, Ministry of Energy, Mozambique

The Government of Mozambique is very actively encouraging the introduction of bioenergy (biofuels) in order to save foreign currency, to reduce environmental problems of the increasing transport sector, to reduce dependence on unpredictable and volatile world market oil prices and to contribute to rural development through generating employment and increasing income opportunities.

The main aim of bioenergy development in Mozambique is to foster large-scale production of bio-fuels for national consumption and exports. This shall be supported by the gradual introduction of biofuels blending with petrol and diesel starting with low blends of 5-10%. Furthermore, the Government of Mozambique supports biofuel based rural electrification projects and places high priority on increasing access to energy for the (rural) poor by promoting modern energy services such as Jatropha oil, gel-fuel and modern wood-stoves for lighting and cooking.

The conditions for the development of the bioenergy sector in Mozambique are favourable due to its suitable climate for the cultivation of sugar cane and other energy crops. Mozambique has 7 million ha of available arable land, abundant labour and water resources for the production of bioenergy without threatening food production and food security.

On 21 May 2009 the Government of Mozambique published a biofuels policy and strategy in its official journal. This policy states the clear *vision to establish the country's biofuels sector to contribute to energy security and socio-economically sustainable development*. The institutional framework will include the creation of a National Programme for Biofuel Development to give financial support to activities and projects. Furthermore, a National Commission for Biofuels (CNB) will be set up to supervise the implementation of the biofuel strategy.

In order to establish a national market for biofuels in Mozambique a Biofuel Commercialisation Programme (PCB) will be established to purchase ethanol and biodiesel for blending with fossil fuels. With respect to biofuels export Mozambique will act as exporter of processed biofuels (i.e. biodiesel instead of vegetable oil) to enable local producers to add value to their production. It is expected that biofuel expansion (450.000 ha, compulsory blending of E10, B5) will generate substantial macroeconomic benefits including 150.000 new jobs.

Prior to the elaboration of the biofuels policy the Government of Mozambique has embarked in a detailed resource assessment and research on promising feedstock options. It was concluded that biofuel production in Mozambique shall be based on sugar cane and sweet sorghum for ethanol, and *Jatropha curcas* and coconuts for biodiesel.

Furthermore, the Government of Mozambique performed an agro-ecological zoning initiative to specifically identify land available for food and for bioenergy production. The resolution of this zoning was 1:1.000.000, and an improved zoning with a resolution of 1:250.000 is currently on-going. The government will place strict limitations on land approval and it will identify selected agro-ecological areas for biofuel production which will be the only areas permitted for production. Thereby, guiding principles will be to avoid the use of basic food crops and monocultures, and to favour biofuel development that enhances biodiversity.

In order to ensure the environmental, economic and social sustainability of biofuels production, the policy states that all actors participating in the Biofuel Commercialisation Programme need to be certified to prove that their operations are in line with national norms and criteria. Priority is given to the development of a common approach to sustainability criteria in line with global initiatives such as the Round Table for Sustainable Biofuels (RSB) and the sustainability criteria included in the recently adopted European Renewable Energy Directive. The Government of Mozambique has set up a Working Group within the national Biofuels Task Force to elaborate national sustainability principles. This initiative is supported by the bilateral SADC (Southern African Development Community) Programme for Biomass Energy Conservation (ProBEC) of the German Technical Cooperation (GTZ). First drafts of sustainability principles have already been elaborated.

Until today, more than 20 project applications for land approval have been submitted to the Government of which the following 4 have been approved and are currently under implementation:

- PROCANA, located in Massinger, Gaza province: 30.000 ha of land for sugar cane, production of 221 million litres of ethanol and 212 GWh electricity per year
- Principle Energy, Manica Province: 18.000 ha of land for sugar cane, production of 213 million litres of ethanol and 82.500 MWh electricity per year
- ENERTERRA, located in Sofala province: 18.000 ha of land for *Jatropha*, production of 1.2 million litres of biodiesel per year
- GROWN ENERGY, located in Sofala province: 15.000 ha of land for sugar cane, production of 100 million litres of ethanol

The following Action Plan of phased mandatory blending of biofuels in fossil fuels was set-up by the Government of Mozambique:

- Pilot Phase (2009-2015): Increase level of blending up to 10% ethanol (E10) and 5% biodiesel (B5).
- Operational Phase (2015-2021): Nation-wide implementation of E10 and B5, potential increase towards E20 and B20.
- Expansion Phase (after 2021): Development of distribution networks for higher blends (E75-E100, B100).

In conclusion, Mozambique is among the leading countries regarding bioenergy development in Africa. The Government is taking active steps to implement policies and development plans with the aim to ensure environmentally, economically and socially sustainable bioenergy production.

### **Policy Initiatives of the SADC Biofuel Task Force**

Anna Lerner, GTZ-ProBEC on behalf of SADC Secretariat

The presentation on the SADC Biofuel Task Force was given by Anna Lerner, Technical Advisor to SADC Energy Unit on behalf of Mr. Freddie Motlathledi, Head of Energy Unit, SADC Secretariat.

As response to the “Feasibility Study for the Production and Use of Biofuels in the SADC Region” undertaken in 2005, a SADC Biofuels Implementation Plan was developed in 2006 with the following main expected outcomes:

- Increased Awareness of the Potential for the Production of Biofuels in the SADC region
- Effective National and Regional Structures for Executing the SADC Biofuels Programme
- National and Regional Policies and Strategies for the Production and Marketing of Biofuels
- Regional Biofuels Training and Research and Development Programme
- Budget and Financing Plan for the SADC Biofuels Programme

In order to achieve progress with respect to the Implementation Plan, the **SADC Biofuel Taskforce** was created in 2008 with the following mandate: “The Taskforce aims to further the development of a competitive and sustainable biofuels industry within southern Africa. It will utilise biofuels as a platform for the sustainable development of the SADC region, for enhancing energy security, renewable energy development, contributing to tackling climate change and poverty alleviation.”

The Taskforce serves as formalised communication channel between SADC Secretariat and Member States. It performs studies on best practices in SADC countries as well as regional screening on biofuels developments in order to guide informed policy making.

SADC actively supports the development of national biofuel strategies through its technical advisors. SADC has commissioned a policy development support tool (crop decision making tool) which can be used by Member States for the development of biofuel policies and implementation strategies. Workshops on the use of this policy tool will be organised in 5 countries in 2010.

Furthermore, a draft paper on Regional Biofuels Sustainability framework is under development which serves as a high-level commitment to sustainable biofuel production in SADC.

The following preliminary findings were highlighted by Anna Lerner:

- Two Member States have developed national biofuels policies (South Africa: Industrial strategy approved 2008, Mozambique: Strategy and Policy approved March 2009).
- Others countries (Swaziland, Zambia, Malawi, Tanzania, Botswana) are in advanced stages of policy development.
- Several Member States are developing biofuel technical standards, generally based on international standards.
- National agricultural suitability assessments for biofuels are relatively infrequent, though most Member States have done land zoning for other crops and purposes.
- Sustainability issues are recognised by most Member States but only Mozambique, Tanzania and Swaziland are assessing how to make use of internationally recognised criteria.
- A variety of financial incentives are proposed, primarily through reductions in taxes and levies rather than direct grants.
- Jatropha production is by far the most common application for biodiesel. However, few viable projects currently exist.
- For ethanol, Malawi remains the only major producer (from sugar cane), but initiatives are underway in Mozambique, Tanzania, Zimbabwe, Zambia and Angola.

In conclusion, within the SADC region biofuel development is regarded as priority by most Member States and it is expected that further national biofuel policies will be approved in 2010. This policy development will be supported and guided by the SADC Biofuel Taskforce through the Policy Support Tool and the Sustainability Framework.

The SADC Secretariat and its Biofuel Taskforce is looking for support from donors and strategic partners in the following areas:

- Continued implementation of sustainability guidelines following GTZ exit (2010)
- Development of regional technical standards for biofuels
- Harmonisation of policies to encourage regional biofuels trade
- Assistance to Member States in developing policies for sustainable biofuels development

## Session 2: Bioenergy Policy Implementation in Europe and Global Initiatives

**Dr. Ibrahim Togola from Mali-Folkecenter** acted as chairperson of session 2 on bioenergy policy implementation in Europe and global initiatives.

### The European Renewable Energy Directive

Ewout Deurwaarder, European Commission, Directorate General Energy and Transport

Ewout Deurwaarder from the European Commission, Directorate General Energy and Transport (DG TREN), presented the history and recent developments of the European policy on bioenergy.

The current policy is influenced by the renewable energy policy development in the mid-1990ies. Indicative national biofuel targets for the transport sector were introduced in 2003. However, many of the European Member States will not achieve their target for 2010. In April 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).

In order to implement the RED, Member States have to transpose it into national legislation by 5 December 2010. Therefore, Member States also have to draw up national renewable energy action plans (NREAPs) by June 2010.

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. These requirements include the following criteria:

1. GHG saving of at least 35% (50-60% from 2017/18)
2. No raw material from land with high biodiversity value
3. No conversion of land with high carbon stock
4. EU feedstock must also meet EU agricultural “cross compliance” rules
5. Companies may be required to *report* on certain issues, which the Commission has yet to determine.



Speakers of Session 2: Ewout Deurwaarder, Chris Malins, Ibrahim Togola, Meghan Sapp (from left)

This scheme will be accompanied by bi-annual monitoring and reporting obligations for the European Commission (2012-2020) on biofuel and bioenergy impacts (land use, soil, water and air, biodiversity, social sustainability, food security, wider development issues, commodity price changes, impact of increased demand on other biomass using sectors, etc.).

Thereby, the enforcement of the sustainability criteria, including e.g. adequate standards of independent auditing, is the responsibility of the Member States. However, the Commission can also accredit 'voluntary schemes' (or international agreements) as sufficient proof of sustainability.

Furthermore, Mr Deurwaarder explained that the introduction of sustainability criteria for solid/gaseous biomass is considered, too. A report with a potential legislative proposal on this issue is expected for December 2009.

Finally, Mr Deurwaarder informed the conference participants about an initiative for the sustainable development of bioenergy in Africa, initiated by Brazil, the European Union and the African Union.

### **Biofuel Policy Implementation in the United Kingdom**

Chris Malins, Renewable Fuels Agency, United Kingdom

Chris Malins, Renewable Fuels Agency, United Kingdom, gave an overview about the "Renewable Transport Fuel Obligation" (RTFO) of the United Kingdom and its considerations regarding the sustainability of biofuels.

In April 2008, the RTFO Programme placed an obligation on fuel suppliers (duty point) to ensure that a certain percentage of their aggregate sales is made up of biofuels. The effect of this will be to require 5% of all UK fuel sold on UK forecourts to come from a renewable source by 2014. This shall help to meet the climate change objectives as well as to contribute to other Government objectives, including security of energy supply. The RTFO provides the opportunity to trade certificates. Thereby, it is not important from where the biofuels originate and from which feedstock the biofuels are produced.

The Renewable Fuels Agency (RFA) is the implementing body of the RTFO. The RFA allocates Renewable Transport Fuel Certificates (RTFCs) to suppliers of biofuels in the UK. It ensures that obligated companies meet their annual obligation and it runs the RTFO's carbon and sustainability reporting system.

In the 1<sup>st</sup> year of the RTFO, 2.6% biofuels by volume was blended. It originated from more than 18 countries and more than 12 different feedstock types. Thereby, 8% was produced domestically in the UK.

The framework of the RTFO, Carbon and Sustainability Reporting scheme is designed to encourage supply of sustainable biofuels. The reporting of this scheme is already mandatory, but no mandatory standards and carbon thresholds have to be met by the supplier, yet. In order to stepwise introduce mandatory sustainability criteria, it is foreseen to use a meta-standard system.

Finally, Mr. Malins showed that currently no biofuel was imported from Africa to the UK. The main imports came from North- and South-America as well as from South-East-Asia. More information on the RTFO and RFA can be obtained from the website: [www.renewablefuelsagency.org](http://www.renewablefuelsagency.org).

## **Global Sustainability Standard: The Experience of the Roundtable on Sustainable Biofuels (RSB)**

Meghan Sapp, PANGEA (Partners for Euro-African Green Energy), Belgium, representing Sébastien Haye, Roundtable on Sustainable Biofuels

Ms Meghan Sapp, PANGEA (Partners for Euro-African Green Energy), Belgium, presented recent activities of the Roundtable on Sustainable Biofuels (RSB). The RSB is an international multi-stakeholder initiative developing a sustainability certification program for biofuels production. The RSB standard is generic to all crops and adaptable to new information. It includes both, environmental and social criteria which were elaborated in a multi-stakeholder process.

After several reviewing steps and an initial set of sustainability principles called “version zero”, the RSB recently came up with its “version one” (<http://cgse.epfl.ch/page84341.html>) including the following principles:

- P1 – Legality (national laws and relevant international treaties)
- P2 – Planning, monitoring, and continuous improvement (through transparent and consultative ESIA, economic viability)
- P3 – GHG significantly better over lifecycle than fossil fuel
- P4 – Human and Labour rights (protect workers’ rights)
- P5 – Rural and Social Development (focus regions of poverty)
- P6 – Local Food Security (only direct impacts)
- P7 – Conservation (conserve and protect high conservation values)
- Conserve and protect Soil (P 8), Water (P 9), Air (P 10)
- P11 – Management of Technology, Inputs and Waste – (esp. biotech) should be used responsibly and transparently,.
- P12 – Land Rights (respect land rights and land use rights)

Finally, Ms Sapp explained possible procedures how RSB certification could be implemented, and how opportunities for Africa could be initiated. Thus, African policies could be positively influenced by the RSB efforts. Today, RSB members in Africa are from Uganda, Kenya, Botswana, South Africa, Tanzania and Malawi. Additional members from Africa were invited to join the RSB.

## **Reducing CO<sub>2</sub> Levels – So many ways, so few being taken**

Prof. Peter Read, Centre for Energy Research, Massey University, New Zealand

Prof. Read, Centre for Energy Research, Massey University, New Zealand, presented a new paper on the urgent need to link bioenergy with biological carbon sequestration in order to drive down the levels of greenhouse gases in the atmosphere:

Prof. Read started his intervention with a quote: "There is too much greenhouse gas in the linked atmosphere and ocean surface layers causing, in the language of Article 3.3 of the UNFCCC, threats of serious or irreversible damage".

'Serious' is a value judgment and therefore a politician's call. 'Irreversible' is a scientific issue, and such threats include the inundation of heavily populated seabords from Miami to the Mekong due to collapse of landbased ice masses, and the runaway release of methane stored in subarctic tundras.

With this Comment Prof. Read emphasised that, on a reasonable metric, relying on emissions reductions alone cannot prevent these irreversible threats from rapidly increasing. He outlined how the metric can be contained through biosphere carbon stock management that deploys negative emissions systems which offer many ways to help reduce CO<sub>2</sub> levels quickly.

Two such carbon stock management technologies are advanced by Ornstein and colleagues. By sidelining such technologies, the strategy being pursued by the international community is both needlessly costly and geopolitically fraught (as well as being ineffective).

Thus what is needed in the post 2012 regime is a way to include incentives for such additional mitigating activities (that in many cases also support adaptation) in a way that preserves and strengthens what is effective in the cap and trade strategy.

In conclusion, Prof. Read urgently proposed a Copenhagen Initiative to address this need.

Recent publications of Peter Read are accessible at the following website:  
<http://seat.massey.ac.nz/personal/p.read/peterspapers.asp>

We are sorry to announce that Dr Peter Read, economist and climate change scientist, died the 24th November 2009, whilst attending our COMPETE conference in Brussels. He died a few hours after making an important presentation on the urgent need to link bioenergy with biological carbon sequestration in order to drive down the levels of greenhouse gases in the atmosphere. We will miss his unique ability to find solutions where others could only see insurmountable problems and for the humour, good will and humility with which patiently explained his reasoning. He died having made a major contribution to the climate mitigation debate at a critical time when the world's leaders grapple for solutions.





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

In this session partners from the COMPETE project present lessons learnt on ensuring value creation and sustainability of bioenergy development in Africa.

### **Introduction: EU S&T Cooperation with Africa**

Fadila Boughanemi, European Commission, Directorate General RTD

As an introduction to the lessons learnt from the COMPETE project, Fadila Boughanemi from the European Commission gave an overview and statistics on EU-Africa cooperation within the Seventh Research Framework Programme (FP7).

Detailed information on the topic is available at the following websites:

- EU research: <http://ec.europa.eu/research>
- Seventh Framework Programme: <http://ec.europa.eu/research/fp7>
- Information on research programmes and projects: <http://www.cordis.lu/>
- Mobility (Marie Curie): <http://europa.eu.int/mariecurie-actions>
- EU-Africa Partnership: <http://africa-eu-partnership.org/au-eu/pages/templates/home>
- FP7 Africa Call 2010:  
[http://cordis.europa.eu/fp7/dc/index.cfm?fuseaction=UserSite.CooperationDetailsCallPage&call\\_id=268](http://cordis.europa.eu/fp7/dc/index.cfm?fuseaction=UserSite.CooperationDetailsCallPage&call_id=268)
- Message from Commissioner Potocnik on u-tube:  
<http://www.youtube.com/watch?v=0qEdUJ1Q2Cc>

### **The COMPETE Project – Activities and Results**

Rainer Janssen, WIP Renewable Energies, Germany

Dr. Rainer Janssen, COMPETE Project Co-ordinator, WIP Renewable Energies, Germany, presented an overview of the 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).

The following **main events** have been organised in the framework of the COMPETE project:

- COMPETE Workshop on 'Improved Energy Crop and Agroforestry Systems for Sustainable Development in Africa', 22 June 2007 in Mauritius
- COMPETE Participation at the First High-level Biofuels Seminar in Africa; A joint activity of the African Union Commission, Brazilian Government and UNIDO; 30 July to 1 August 2007 in Addis Ababa
- COMPETE Meeting and Roundtables in Burkina Faso, 26-29 November 2007 in Ouagadougou
- COMPETE Seminars and Field Visits to Brazil, India and Mexico, October 2007, February 2008, and March 2009
- COMPETE Workshop on Financing of Alternative Land Use, 15 April 2008 Dakar, Senegal
- COMPETE Conference and Policy Debate on 'Biofuel Sustainability Schemes - An African Perspective, 16-19 June 2008, Arusha, Tanzania
- COMPETE Workshop 'Bioenergy Policies for Sustainable Development in Africa', 25-27 November 2008, Bamako, Mali
- COMPETE Conference 'Bioenergy Policy Implementation in Africa', 26-28 May 2009, Lusaka, Zambia
- COMPETE Workshop 'Bioenergy for Rural Development in Africa and Asia', 30 June 2009, Hamburg, Germany
- COMPETE Conference ' Sustainable Bioenergy Projects in Africa – Barriers and Opportunities for Financing', Sept/Oct. 2009, Dakar, Senegal
- COMPETE Conference 'Bioenergy for Sustainable Development in Africa – Lessons learnt from COMPETE', 24-25 November 2009, Brussels, Belgium

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.



*Participants of the COMPETE Conference 'Sustainable Bioenergy Projects in Africa – Barriers and Opportunities for Financing' in Dakar*

Within COMPETE, the following **policy documents** have been elaborated:

- COMPETE Declaration on Sustainable Bioenergy for Africa, June 2008, Arusha
- COMPETE Bioenergy Policy Recommendation on Socio-economic Development and the Food-Fuel Conflict in Africa, May 2009, Lusaka
- COMPETE Sustainability Considerations for Good Practice, May 2009, Lusaka
- Sustainable Bioenergy Projects in Africa: Barriers and Opportunities for Financing, Conference Report and Recommendations, September 2009, Dakar
- Practical Guidelines For Investors In Sustainable Bio-Energy In Africa, September 2009, Dakar

The documentation of COMPETE events and all COMPETE policy papers are available at the project website [www.compete-bioafrica.net](http://www.compete-bioafrica.net).

In conclusion, Dr. Janssen emphasised main conclusions from the COMPETE project:

- ***There is sufficient arable land available in several African countries to produce food and bioenergy***
- ***Bioenergy provides an opportunity to attract investment into the under-invested agricultural sector in Africa***
- ***African countries engage in activities (policy development, projects) to ensure sustainable biofuels production***
- ***Main sustainability focus in African countries is on social criteria (local value added, land rights, food security, capacity building)***
- ***International cooperation needed to ensure sustainable biofuels production without blocking development opportunities***

## Land use, Land Use Change and the Food-fuel Conflict in Africa

Helen Watson, University of KwaZulu-Natal, South Africa

In general it is emphasised by the majority of stakeholders from African countries that land availability is unlikely to be the limiting factor for bioenergy development in Africa.

However, even though land is generally available for bioenergy production in Sub-Sahara Africa, the feasibility and sustainability of specific bioenergy projects need to be evaluated on a case by case basis, carefully taking into account local environmental constraints as well as potential competition over land and water resources. This will become increasingly important in the future in the light of natural resource limitation due to climate change and an expected population growth placing pressure on the supply of affordable and adequate food.

Furthermore, prevailing local land tenure systems need to be respected, displacements of local population avoided and actual benefits for rural communities ensured through employment and revenue creation.

An increase in investment in the agricultural sector can significantly enhance the production potential in many African countries. This may not only lead to increased bioenergy production, but also improve food supply if appropriate mechanisms are put in place by African governments to ensure sufficient production of food crops.

In this respect it is detrimental to limit bioenergy development in Africa to marginal and degraded land as currently proposed by some environmentalist groups. This will negatively influence the economic competitiveness of bioenergy production in Africa and block African countries from socio-economic development opportunities. On the other hand, bioenergy may play an important role in the rehabilitation of degraded lands. Due to the reduced economic viability of such projects, however, international financial support is required for the realisation of land rehabilitation efforts.

In the framework of the COMPETE project, land in semi arid and arid regions of Sub-Sahara Africa was identified where intensification of or conversion to bioenergy use will not have detrimental environmental and/or socio-economic impacts. For this, a wide range of Geographic Information System (GIS) data sets, FAO statistics and literature sources that categorise spatial and temporal variations in Africa's biophysiological parameters and anthropogenic activities were acquired, analyzed, and synthesized.

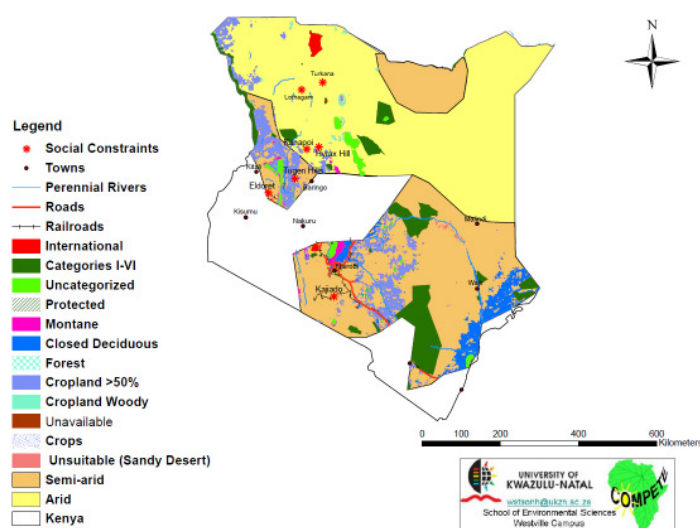
In the table below, the identified available and suitable arid and semi arid land in the COMPETE study countries Senegal, Burkina Faso, Mali, Kenya, Tanzania, Zambia, Botswana, and South Africa is presented. The fraction of suitable and available arid and semi arid land varies between 15% for the Western African countries Senegal and Burkina Faso and more than 80% for Kenya.

### *Suitable and available areas for bioenergy crops in Sub-Sahara's arid/semi-arid regions*

Country	Senegal	Burkina Faso	Mali	Kenya	Tanzania	Zambia	Botswana	South Africa
Total area km <sup>2</sup>	196 013	272 339	1 252 281	581 871	941 375	751 920	587 337	1 221 361
Arid & semi-arid km <sup>2</sup>	111 147	149 973	637 960	457 908	316 738	160 281	581 605	901 345
km <sup>2</sup> arid & semi-arid available & suitable	15 783	22 756	192 438	379 698	147 252	67 383	291 860	722 874
% arid & semi-arid available & suitable	14	15	30	82	46	42	51	79

The following figure shows suitable and available areas for bioenergy crops in arid and semi arid regions of Kenya. As a precaution against detrimental impacts on biodiversity, all categories of protected areas (International, Categories I-VI, Uncategorized), forests and wetlands were excluded. To safeguard food security, all areas under food and/or cash crop (herbaceous and woody) production were excluded. Finally, areas unsuitable because of severe water, terrain and soil constraints were also excluded.

For more details on land availability in arid and semi arid regions of African countries see the interactive maps presented at the COMPETE website at [www.compete-bioafrica.net/current\\_land/current\\_land.html](http://www.compete-bioafrica.net/current_land/current_land.html).



*Suitable and available areas for bioenergy crops in arid and semi arid regions of Kenya*

## **New and Improved Bioenergy Production and Utilisation Schemes**

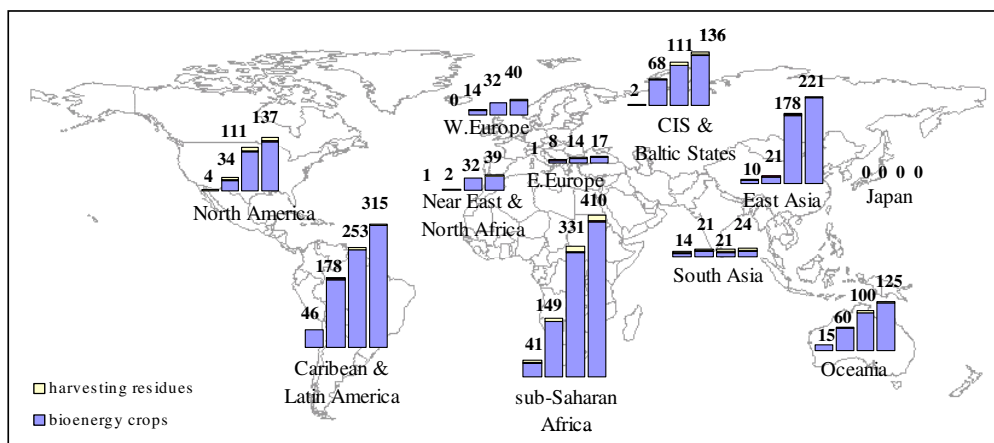
Janske van Eijck, Copernicus Institute, Utrecht University, The Netherlands

The main objective of COMPETE work package 2 is to provide an overview of experiences and concepts for sustainable production (and use) of biomass for energy in Africa.

With respect to present and improved agricultural practices the following key targets for improvement were identified:

- Increase use of fertilizers
- Increase efficiency of the use of irrigation water
- Increase use of machinery
- Increase pest and disease management
- Increase use of improved genetic crop varieties and livestock
- Reduce post-harvest losses

The overall prospects for bioenergy development in Africa are good, as a number of studies have estimated a large resource base for the supply of biomass for energy highlighting large areas of 'unused potential agricultural land' in Africa (750 Mha). Smeets and Faaij predicted for Africa that between 41 and 410 EJ of energy could come from biomass by 2050. As clearly indicated in the figure below, an increase in investment in the agricultural sector can significantly enhance the production potential in many African countries.



*Bioenergy production potential in 2050 for different levels of change in agriculture and trade (EJ/yr)*

With respect to present and improved traditional bioenergy systems, the following key drivers for improved cooking stoves are highlighted: combustion efficiency, heat transfer efficiency, safety, costs, and durability.

Furthermore, present and improved modern bioenergy systems were investigated:

- Biogas from residues and waste
- Heat and electricity from institutional stoves and large scale boilers from residues and waste or dedicated woody crops and grasses
- Pure plant oil from *Jatropha* and other oil crops
- Ethanol from cassava, sugar cane, sweet sorghum

In summary, Janske van Eijck presented the following concluding remarks:

- Large potential to improve agricultural production systems in Africa (agroforestry!).
- Large potential to improve traditional biomass systems (stoves, charcoal kilns).
- Potentially promising biomass systems are:
  - Pure plant oil for domestic use or for export, Ethanol from cassava, sugar cane or sweet sorghum
  - Biogas from residues and waste
  - Second generation biofuels from lignocellulose biomass, Electricity and heat from lignocellulose biomass
  - Heat from lignocellulose biomass & improved traditional biomass systems
- Large variation in socio-economic and natural conditions and production systems; more local analyses and data are crucial.

## **Sustainability of Bioenergy Production and Use in Africa**

Rocio Diaz-Chavez, Imperial College London, United Kingdom

The presentation of work package 3 on *Sustainability Analysis of Biofuels production in Africa* reviewed the main activities and products delivered by contributing partners.

The main objective of the work package was: "To integrate the most recent understanding of the social and environmental management sciences to ensure sustainable use of resources while providing optimum economic and community benefits". The particular objectives included: a) to ensure ecological, economic and social sustainability of alternative energy crops and agroforestry schemes; and b) to review practical mechanisms for defining, monitoring and rewarding good sustainability practice.

In order to achieve these objectives, the work was linked to work package 1 on "Current Land use Patterns and Impacts", work package 2 on "Energy crops and agroforestry systems improved land use" and WP6 on Policy Development. The work considered a framework on sustainability which includes four pillars (economic, environmental, social, and policy and institutions). This framework proved to be useful especially considering policy and institutions as another integral part of sustainability and not a driver. The conferences, reports, meetings and field trips demonstrated the links needed between different policy agendas for biofuels production including industry, agriculture and rural development, environment, transport and energy among others.

In terms of sustainability analysis it was also reviewed that the implications of the concept have different understandings and meanings across the different political agendas with main differences between North and South, although, some particular issues remain meaningful for both regions. This is particular noticeable when reviewing the different forms of production and scales involved for the production of bioenergy crops. Sustainability with emphasis on social concerns tends to be more evident when small scale farming or outgrowers are involved in the production. This does not imply that large scale necessarily needs to be unsustainable as long as major contributions and benefits are also directed to national and local communities.

The main products delivered within this work package included:

- The organisation of a conference in Arusha, Tanzania in June 2008 and the resulting Declaration on "**Biofuel Sustainability Schemes- An African Perspective**". The declaration was based in the opinion given during the meeting by policy makers from different African countries and Ministries and other stakeholders.
- "Report on "Understanding and implementing certification" benchmarked the main certification and verification schemes ongoing in the world regarding bioenergy and other products such as fair trade and organic.
- "Policy guidance note on Integrating and Rewarding Sustainability Good Practice" reviewed the possibilities of applying the different sustainability schemes but also examples of current development where bioenergy crops are being produced in a sustainable manner.
- "Good practice guidelines to project implementers" reviewed the opinion of different stakeholders during the 3 years COMPETE project and developed a guideline including 12 sustainability criteria that African partners considered important for bioenergy production.

All the documents produced have a relationship among them in terms of sustainability assessment. The lessons learnt of this work package included:

- There is a “will” in Africa to consider and apply sustainability measures.
- Social and economic issues must be considered in the production and use of biomass.
- A standard assurance or certification system is useful but has a different meaning in developing countries.
- Environmental concerns related to livelihoods effects are more important.
- Biomass production could contribute to reduce poverty in developing countries.
- Problems with certification or standard assurance lie within implementation, additional costs, audit and compliance. National interpretations for these are needed.
- Sustainability matters in its own form and own views in developing countries and there is a need to recognise the Policy links and sustainability in practice.
- There is need for research for local feedstock and technology transformation considering support from local organisations.

### **South-South and North-South Cooperation**

Francis Johnson, SEI, Sweden

The objective of work package 4 was to link project activities in Africa with on-going successful efforts in Latin America and Asia, and to investigate the opportunities of joint ventures as well as the transfer of knowledge and technical know-how between developed and developing countries.

In order to foster South-South cooperation between partners from Africa, Latin America and Asia and to introduce African COMPETE partners to successful interventions in the fields of energy crop and agro-forestry systems, COMPETE study visits have been organised to Brazil, India, and Mexico.

The number of participants of the field visit to Brazil in October 2007 was 23 including COMPETE partners and a group of COMPETE associate members supported by the UN Division for Sustainable Development (UN-DSD). The COMPETE event in Brazil was opened with a one-day meeting in São Paulo and included the launch of a fleet of bioethanol buses in the framework of the EC funded project BEST (Bioethanol for Sustainable Transport) at the University of São Paulo as well as technical visits to the following companies active in the field of bioenergy in Brazil: *Dedini Industrias de Base*, Piracicaba, an industrial equipment manufacturer for ethanol and biodiesel plants; *Santo Antonio Mill* at Sertãozinho, a sugar mill and distillery for bioethanol; *TGM Manufacturers* at Sertãozinho a manufacturer for steam turbines, pumps and gear units; and finally, *Bertin Biodiesel Factory* at Lins, a biodiesel plant built by the Bertin Group with an annual output of 100,000 tons of biodiesel.





*High pressure boiler (left) and bioethanol distillery (right) at Santo Antonio Sugar Factory, Brazil*

The field visit to India in February 2008 was organized by the COMPETE partner Winrock International India (WII) in cooperation with WIP Renewable Energies, Germany. The programme of the field visit included visits to the major equipment manufacturers *PRAJ Industries* and *THERMAX Ltd.* active in the fields of biofuel production technologies as well as boiler technologies for biomass based co-generation, as well as to the Ranidhera Rural Electrification Project based on the use of straight *Jatropha* oil. Furthermore, guided tours to several *Jatropha* plantations and a small-scale biodiesel production facility were organized. The group included 17 representatives from COMPETE partner organizations as well as 7 representatives from COMPETE Associate Partners. 11 participants came from the African countries Burkina Faso, Ethiopia, Ghana, Kenya, Senegal, South Africa, Tanzania and Zambia, and two participants from Mexico and Brazil.

The field visit Mexico in March 2009 was organized by the COMPETE partner UNAM. The objective of this study tour was to provide information on potential plant resources for biofuels production in Mexico and to link Mexican researchers on (non toxic) *Jatropha* varieties with international experts. Furthermore, information was presented on the complex interactions between agriculture, land management, environmental management, and urban development along historical and present examples within the Mexican City Valley.

## **Financing and International Trade**

Michael Hofmann, Camco, United Kingdom

The main objective of COMPETE work package 5 is the development of tools and strategies for the provision of financing for sustainable bioenergy projects in Africa with a focus on: carbon credits / green certificates, bilateral and multi-lateral funding instruments, and international trade.

The following challenges, barriers and risks for financing bioenergy projects were identified:

- Lack of clear regulatory and legal frameworks for bioenergy in many countries (alongside land use, export, rural development)
- Lack of bioenergy expertise: Government, banks and investors
- Lack of coordination between research and markets
- Lack of dissemination of research results and training
- Generally, highly challenging to access funds, in particular: difficulties for small scale projects to gain interest from banks (transaction costs) and carbon market
- Problems to mobilise funds for feasibility studies
- Knowledge gaps regarding new (innovative) financing mechanisms, e.g. microfinance, carbon finance

### *Challenges identified by project developers*

- Financial institutions always ask for securities / collateral
- Financial institutions want to charge interest payments from day 1
- Too many intermediaries, i.e. no direct access from project developers to funding institutions: projects on the ground are at the bottom of the bioenergy funding “food chain”
- Grant conditions often too stringent

### *Challenges identified by investors / financial institutions*

- Inexperienced project developers
- Weak business proposals
- Inadequate local co-financing
- Bioenergy: high risk
- Investment pay-back times: often long

The following strategies to overcome challenges were highlighted:

- Creation of sustainable legal / regulatory bioenergy frameworks
- Focus on demand side and market development (e.g. blending regimes, FIT)
- Improve capacity, communication and information sharing for resource mobilisation (technical clearinghouses / investment promotion centres)

- Encourage bioenergy public-private partnerships (PPP) and JVs
- Entrepreneurial and developer support services / capacity building: Skilled workforce (chemists, lawyers, engineers, financing specialists), and Carbon finance
- New (innovative) financing mechanisms need to be particularly exploited (e.g. microfinance, carbon finance)

With respect to carbon finance of bioenergy projects in Africa, the following facts were underlined:

- International carbon markets are including / will include allowances for international offsets.
- Both compliance (e.g. CDM) carbon markets as well as voluntary carbon markets provide opportunities for African bioenergy projects.
- CERs (i.e. carbon credits from CDM) cannot be claimed for bioenergy produced for export.
- If projects are too small to benefit from CDM, they can be bundled.
- Two existing CDM methodologies for biofuels:
  - AMS-III.T. "Plant oil production and use for transport applications".
  - AM0047 "Production of biodiesel based on waste oils and/or waste fats from biogenic origin for use as fuel".
- Lacking knowledge, even awareness of carbon finance opportunities in Africa.
- Carbon finance can only contribute to partial financing of projects, *typically* around 10-20% of project costs.

## Policy Development

Lindiwe Sibanda, FANRPAN, South Africa

Lindiwe Sibanda presented an overview of the COMPETE activities within work package 6 on policy development. The following countries in Africa are currently most advanced with respect to the development of national bioenergy policies:

- **Ghana** - The PRSP contains specific strategies for biogas development, with a target of substituting 20% of national gas and oil consumption with biodiesel and 30% of paraffin with *Jatropha* oil by 2015.
- **Mozambique** – In 2009 the country has adopted a policy for large-scale production of biofuels, including the gradual introduction of blending of fossil fuels with biofuels, initially at 5 – 10%.
- **South Africa** - The specific biofuels strategy aims at achieving market penetration of 4.5% biofuels by 2013.
- **Malawi** – The country has more than 20 years experience in bioethanol production, however no specific biofuel strategy exists.

Mrs. Sibanda highlighted that overall Africa is moving too slow in the bioenergy debate. This “inaction” will lead to Africa missing out on the potential benefits that biofuels can offer, such as joint-venture & share-holding opportunities, contract-farming opportunities, and small-scale refineries for energy generation in rural areas. However, without policy protection, the danger exists that profits will be expropriated.

The following ‘take-home’ messages were underlined:

**1. Livelihoods should be** at the centre of SSA biofuels strategies, policies, programs.

**2. Policies urgently needed in SSA:**

- To protect the poor from exploitation by private interests at the expense of local livelihoods
- To prevent from falling into the trap of replacing food crops with energy crops for producing fuel to power vehicles
- To prohibit biofuels expansion to protected areas (e.g., forests, catchment)

**3. Define the biofuels development path in SSA:**

- Smallholder focus for rural development
- Expansion beyond small-scale to be carefully guided & monitored

In conclusion, Mrs Sibanda summarised the following policy recommendations:

- **Supportive programs and incentives** should be put in place for the production of energy crop to help subsistence farmers. These programs should offer:
  - Farmers access to capital to invest in improved energy crop - agroforestry systems
  - Farmers training in farming techniques
  - Farmers reliable markets for their energy crops
  - Extension services
- Implementation of agroforestry & bioenergy systems in Africa should take into account the prevailing land tenure systems.
- There is need for **capacity building of all stakeholders** including farmers, extension services, scientists and research in order to ensure sustainable implementation and management of improved agroforestry systems.
- A comprehensive carbon balance assessment of each system should be done.
- Academic and research institutions should be involved in identifying suitable energy crops for each particular area depending on prevailing biophysical factors.
- **Relevant research** institutions should study and come up with different compatible energy crop-tree combinations for each agroforestry system.
- Nitrogen agronomic requirements of various energy crops must be studied to avoid risk of volatilization of excess nitrogen from leguminous trees into the air.
- **Indigenous energy crops** in a particular area should be capitalized so as to avoid detrimental effects of invasive alien species.

- Degraded land should be the first option for large scale energy crop farming so as to help in the rehabilitation of soils and also avoid competition for land.
- **Agroforestry systems** where both cash and energy crop production would be promoted simultaneously should be encouraged.
- **Crop water requirements** of various energy crops should be analysed and matched with available water resources in a particular before these can be grown so as to avoid water use conflicts

## Session 4: Successful Bioenergy Projects and Initiatives in Africa

The session on successful bioenergy projects and initiatives in Africa was chaired by Dr. Jeremy Woods, Imperial College London, United Kingdom.

### Jatropha Outgrower Scheme for Liquid Biofuel Production in Zambia

Kamal Desai, Marli Investments Ltd., Zambia

Kamal Desai, Marli Investments Ltd., Zambia, gave a presentation on a jatropha outgrower project in Zambia where Marli Investments initiated a bioenergy scheme. The goal of this scheme is to utilize the vast human and agricultural resources of Zambia and to mitigate the various energy problems using an environmental friendly project. This will be achieved through the establishment of Marli Investments. Zambia shall become a world leader in the promotion, production and utilization of renewable energy resources.



Outgrower model for the production of Jatropha in Zambia

Marli Investments initiated its research in April 2003 and started planting Jatropha in November of 2004, using cuttings from a few existing *Jatropha curcas* shrubs, seeds and seedlings. The company opted to use the outgrowers model, starting with a few farmers in the Kasosolo settlement in the central province. During the dry season farmers are trained how to efficiently grow and maintain their jatropha plantations. In the long term, Marli Investments will, through the huge network of outgrowers, create self employment opportunities for both the farming communities and local transporters with light trucks to carry seeds to established collection points.

Currently, Marli Investments has distributed more than 12,650,000 seedlings/seeds to outgrowers in Zambia without any costs for the small-scale farmers. Major emphasis is given to local ownership for the land and for the plantations of the farmers. Marli Investments has a Jatropha production agreement with their registered farmers to buy all the seeds harvested and assures a ready market for jatropha seeds. The price offered by Marli Investments relates to the current world oil price for crude oil (per barrel).

Unlike crops such as paprika, cashew nuts, and castor beans, the Marli model offers Production Agreements and seeds to small scale farmers at no cost. Therefore, there is no repayment of any sort and the farmers are not under pressure to repay loans. The farmer obligation to Marli Investments is limited to the sale of seeds to the company.

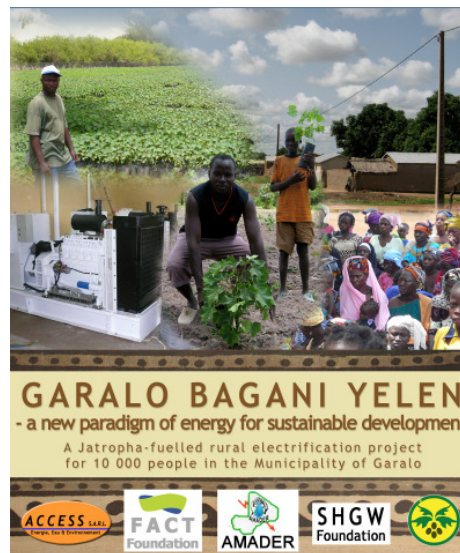
To date, all the financing for the project has been facilitated by the board of directors and shareholders. No external funding has been used. Marli Investments is still in the agronomy stage and ready to move into the production of biodiesel but lacks necessary funding. Marli's business plan is available and the requirement for both the production and agronomy side for the jatropha outgrower scheme is \$25 million.

## Garalo Bagani Yelen Jatropha-Fuelled Rural Electrification Project in Mali

Dr. Ibrahim Togola, Mali-Folkecenter, Mali

Dr. Ibrahim Togola, Mali-Folkecenter (MFC), Mali, gave a presentation on the Garalo Bagani Yelen Jatropha-Fuelled Rural Electrification Project in Mali. After providing an overview about the general energy situation in Africa which still lacks access to energy in many regions, Dr. Togola highlighted key parameters in the production of jatropha in Mali:

- Competition with food production should be avoided through small scale exploitation.
- Many small scale projects can produce biofuel much more sustainably than a few large scale monoculture projects.
- Local use of biofuel to bring maximum benefits to local population shall be prioritised.
- Existing land ownership and tenure patterns to avoid social unrest must be maintained.
- International markets should not be the focus at the first step since they are insatiable.
- Projects should be designed to benefit Malian communities first.



Garalo Bagani Yelen Rural  
Electrification Project in Mali

In order to ensure these issues, MFC has developed a pilot project to demonstrate best practice: Garalo Bagani Yelen.

The village of Garalo is in the south of Mali, 2 hours south of the regional town of Bougouni. The population is 10,000, and the principal economic activities are agriculture (both subsistence food crops and cash crops, particularly cotton), cattle breeding, and trade.

In this village 300 kW of specially adapted gensets were installed, currently being tested with diesel but eventually also being able to run on locally produced Jatropha oil. Therefore, 320,000 jatropha seedlings and more than 600 hectares of Jatropha fields were planted by outgrowers. In order to coordinate the activities, a local jatropha cooperative was created. Currently, the project is scaled up and includes sustainable practices such as intercropping methods (Bagani Courant 10 Project).

MFC is now developing sustainable biomass-based electrification concepts for more Malian villages, together with the Government of Mali and the World Bank.

## **Biomass Energy for Poverty Reduction: The Case of Improved Charcoal Production and Use in Tanzania**

Estomih Sawe, TaTEDO, Tanzania

Estomih Sawe, TaTEDO, Tanzania, shared the experience from TaTEDO's work on improved charcoal production practices with the audience. After presenting general facts about energy and bioenergy in Tanzania, Mr. Sawe summarised the charcoal market situation in Tanzania:

- More than 80 percent of the urban population (8 mill.) in Tanzania depend on charcoal for their daily cooking.
- Non sustainable production of charcoal in Tanzania is a major cause of deforestation. To produce one million tons of charcoal using traditional methods, the producers have to clear-cut the equivalent of 332 hectares of forest every day. A full year of this consumption equates to more than 121,061 hectares of forest destroyed.
- Charcoal production, high manual labour and minimal income are a cause of poverty for rural population.
- Several recent studies have shown that over a million urban Tanzanian households use approximately one million tons of charcoal annually as their primary energy source for cooking.
- Alternatives are either unavailable (briquettes) or seen to be dangerous and too expensive (LPG).
- Many ten thousand rural Tanzanian micro-entrepreneurs depend on the revenue resulting from charcoal production and trade for their subsistence.
- Some District Councils near main urban areas report that more than 70% of their revenues is created by licenses and duties imposed upon charcoal producers and traders.



Half Organge Kiln for charcoal production

The reasons for the preference of charcoal compared to wood fuel and other fuels are:

- Higher calorific value of charcoal per unit weight compared to fire wood.
- More economical transport of charcoal over longer distances.
- Reduced storage requirements of charcoal.
- Reduced deterioration by insects and fungi as compared to firewood.
- Smokeless and sulphur free combustion, making charcoal an ideal fuel for towns and cities.



In summary, the current traditional charcoal production practices and technologies in Tanzania are inefficient and unsustainable. Most charcoal is produced from wood from natural forests through traditional earth mound kilns. Thus, over the years, TaTEDO in collaboration with different partners has provided support (training, plant material) to charcoal producers to adopt sustainable charcoal production practices which include, tree planting, better wood harvesting practices and use of improved charcoal kilns to replace inefficient traditional earth mound kilns. The main objective is to improve quantity and quality of charcoal produced from a given volume of wood while conserving the environment and improving livelihoods of producers and users of charcoal in Tanzania.

### **Promotion of Energy Efficient Cookstoves in Ghana**

Frank Atta-Owusu, KITE, Ghana

Frank Atta-Owusu, KITE, Ghana, presented how improved cook-stoves in Ghana can be promoted. Biomass is the most dominant energy source in Ghana (about 65% of the total energy consumption). Forest wood, charcoal and wood processing residues are the most dominant biomass sources. These feedstocks are mainly used in the domestic sector for cooking and for other heat applications. Also crop residues and other non-woody materials are used.

The main population in Ghana is over-dependent on charcoal and fuelwood as energy sources. Thereby, the use of charcoal and fuelwood for cooking is coupled with inefficient traditional cooking stoves (coal pot, tripod, etc.) which are one of the most threatening energy and environmental issues in Ghana today.

This has contributed to the threat of deforestation and desertification in many parts of the country. Ghana has one of the highest deforestation rates in Africa (3% per annum). In the last 50 years, Ghana has lost over 70% of its vegetation cover, and this still continues.

Improved charcoal stoves (e.g. Ahibenso, Gyapa Cookstove) have the potential to save fuel and to reduce smoke which improves health especially of the women. In Ghana, many attempts to disseminate various designs of improved cookstove technologies were made in the last years. However, the dissemination and design of improved cookstoves is mainly promoted in urban dwellings and for institutional facilities. Although significant progress has been made to disseminate improved charcoal cookstoves, very little has been done on improved cookstoves fuelled on firewood. In the framework of the 'Toyola' Energy project, improved cookstoves are disseminated in Ghana.



Gyapa charcoal improved cookstove

Finally, Mr Atta-Owusu summarized the lessons learnt about improved cookstoves in Ghana:

- The poor can afford improved stoves if they are aware about the availability of the technology and practical benefits to their life as well as if they get the necessary financial assistance.
- The target groups to include commercial/institutional and domestic markets need to be diversified.
- Sustainable entrepreneurial models are needed to disseminate improved cookstoves in a sustainable way.
- More research and development for cost effective products is needed.
- Technical and entrepreneurial competence training for rural and peri-urban artisans needs to be supported.
- Pragmatic policy/strategies and regulatory framework for effective promotion of improved cook stoves in rural and peri-urban areas of Ghana are needed.
- A sound legislation has to be created to facilitate the market uptake of improved cookstoves.
- Intensive public awareness and education on woodfuel conservation is needed.
- Green energy financing (grants, soft loans and donor support) may be a measure to support policies/strategies and to disseminate improved cookstoves in Ghana.

## COMPETE Policy Recommendations

The COMPETE Conference 'Bioenergy for Sustainable Development in Africa – Lessons learnt from COMPETE' on 24-25 November 2009 in Brussels, Belgium, brought together more than 90 decision makers and stakeholders from Europe and several African countries, representatives from the Private Sector, NGOs, the donor community, FAO, UNEP, international initiatives as well as national and international energy experts.

The main objective of this conference was to identify cooperation opportunities between stakeholders and policymakers from European and African countries to contribute to the exploitation of bioenergy resources for sustainable development in African countries 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 biodiversity, water availability, land competition, land ownership, insufficient value creation for local farmers, and the 'fuel versus food' debate.

**The present COMPETE Recommendation Paper was elaborated along the lines of the following 2 Roundtable Discussions engaging international bioenergy experts and decision-makers from Ghana, Mozambique, Senegal, South Africa, and Zambia.**

### **Round Table 1: How to ensure value creation of bioenergy development in Africa?**

This Round Table involved stakeholders and policymakers from European and African countries to discuss successful concepts to exploit the benefits of innovative bioenergy solutions in Africa with respect to sustainable rural development, increased energy access, enhanced income generation, and alternative markets for agricultural products.

Panellists	N.H. Ravindranath, Centre for Sustainable Technologies (CST), Indian Institute of Science
	Jeremy Woods, Imperial College London, United Kingdom
	Jean-Philippe Denruyter, WWF
	Meghan Sapp, PANGEA (Partners for Euro-African Green Energy), Belgium
	Anna Lerner, GTZ-ProBEC, Mozambique
	Touria Dafrallah, ENDA-TM, Senegal
	Wisdom Ahiataku-Togobo, Ministry of Energy, Ghana
	Lindiwe Sibanda, FANRPAN, South Africa



Panellists of Round Table 1: How to ensure value creation of bioenergy development in Africa?

### **Round Table 2: Financing and Implementation of Bioenergy Projects in Africa**

This Round Table involved stakeholders and policymakers from European and African countries to discuss successful concepts for the financing and implementation of bioenergy projects in Africa contributing to sustainable development.

Panellists

- Kees Kwant, Senter Novem, The Netherlands
- Michael Brüntrup, German Development Institute, Germany
- Gavin Fraser, Rhodes University, South Africa
- Hercilia Hamela, Ministry of Agriculture, Mozambique
- Kamal Desai, Marli Investments Ltd., Zambia



Panellists of Round Table 2: Financing and Implementation of Bioenergy Projects in Africa

## COMPETE Policy Recommendations

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.

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.

In the framework of the COMPETE Conference 'Bioenergy for Sustainable Development in Africa – Lessons learnt from COMPETE' in Brussels, policy recommendations have been elaborated addressing the following crucial topics to ensure the sustainability of the bioenergy sector in Africa:

- *How to ensure value creation of bioenergy development in Africa?*
- *Financing and Implementation of Bioenergy Projects in Africa*

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

The following recommendations for African policymakers have been identified aimed at ensuring sufficient local value creation and retention is achieved from bioenergy development in African countries so that sustainable socio-economic development opportunities for the local population are provided.

These policy recommendations address the topics: policy development, market development, stakeholder involvement, as well as research and capacity building.

#### 1) Development of suitable policies and implementation strategies

- African Governments should set ***clear and realistic policy goals and objectives*** to define the desired development pathways for bioenergy in Africa. It is hereby acknowledged that the desired scale of bioenergy projects influences the choice of policy options. Crucially, the scale and nature of bioenergy developments need to match the needs and context of the communities within which they will be embedded.
- African Governments should develop and implement policies and regulations to create favourable environments for ***investment and infrastructural development in their respective agricultural sectors***.
- Policy development should follow a ***holistic approach*** linking energy, agriculture, rural development, and industry development. Furthermore, bioenergy policies should ***address traditional biomass*** for household applications as well as modern bioenergy solutions for the transport, electricity and heat sectors.

- African Governments should clearly **define own social and environmental sustainability requirements** and guidelines for investors in bioenergy projects to ensure benefits for the local population. This may be achieved in cooperation with sustainability criteria developed in the framework of international initiatives.
- The **civil society of African countries should be mobilised** to place pressure on policymakers to develop suitable policy frameworks for bioenergy ensuring local and national value creation.

## 2) Development of bioenergy markets

- **Stable markets** for bioenergy and by-products should be created on **local and national level**. Bioenergy development in Africa should include the **household sector** as well as small and medium-scale projects. Export of bioenergy may be an important part of the bioenergy development strategy, but should not be the sole focus.
- Market development in African countries should be **demand driven and involve local investors** by focussing on projects increasing access to energy and improved household energy systems.
- For market development **investments in the agricultural sector** are urgently needed (infrastructure, technologies, mechanisation, modernisation).
- **Agricultural production** needs to be **diversified** (multi-purpose crops for food and bioenergy production) and **productivity** in the agricultural sector needs to be **increased**.
- **Full value chains** need to be established taking into account food, bioenergy, and other by-products to create win-win situations for investors and the local population.
- The trans-boundary infrastructure between African countries should be enhanced to **facilitate regional trade**.

## 3) Stakeholder involvement

- Stakeholders should be involved in the definition of **social and environmental sustainability requirements** and guidelines for investors.
- **Outgrower schemes and community engagement** should be promoted to ensure ownership of the local population and the participation of national stakeholders in the full bioenergy value chain.
- The establishment and empowerment of farmer organisations should be promoted. Local and indigenous knowledge should be duly respected, and clear communication channels should be established between local communities and other national and international stakeholders.
- **Fair and transparent** pricing agreements for bioenergy feedstock need to be established between farmers and bioenergy producers.
- **Gender equity** needs to be incorporated as a key element in the assessment of socio-economic benefits and impacts of bioenergy projects.

#### 4) Research and capacity building

- Research efforts worldwide need to be enhanced to ***understand the effects of climate change on agriculture***. This is specifically important for African countries as climate change is expected to cause water shortages as well as frequent extreme weather events leading to a reduction of agricultural yields.
- ***Technologies and systems need to be adapted*** to cope with the effects of climate change. Thereby, links need to be established between local household level adaptation requirements and mitigation efforts.
- Research initiatives in African countries should be increased to ***develop suitable and cost competitive bioenergy technologies and applications*** optimised for African framework conditions.
- ***Training colleges in Africa*** should be established and strengthened for skills development.
- ***Training for business creation as well as for organisational and entrepreneurial skills*** should be provided to farmers and other stakeholders in local communities in order to develop the new sector.
- Improved ***agricultural extension services*** and information on bioenergy market development should be provided to farmers.

## B) Financing and Implementation of Bioenergy Projects in Africa

Besides improved capacity building and suitable framework conditions, more investment is needed to develop modern and sustainable bioenergy systems in Africa. The following recommendations highlight prioritised areas for funding bioenergy projects in Africa, emphasize the need to increase access to funding, describe the applicability of financing mechanisms, and propose strategies for public sector funds.

### 1) Prioritised areas for financing in the bioenergy value chain

- Financing priorities for bioenergy development in Africa include the areas training & capacity building, policy development, demonstration/pilot projects, research, agricultural efficiency, and technology development.
- One of the main bottlenecks of financing bioenergy projects in Africa is the ***lack of financing in the agricultural sector***. Africa is the continent with lowest investments in the agricultural sector and agricultural funding in Africa continued to decrease drastically during recent years. There is urgent need to provide significantly increased funding for the agricultural sector, in order to improve sustainable agricultural production, including efficient water and fertiliser use, creation of suitable plant varieties, appropriate use of pesticides, as well as efficient agricultural practices.
- Emphasis should be put on ***financing for many small- and medium scale bioenergy projects involving local stakeholders***, instead of supporting few large-scale projects. Social and environmental sustainability should be the main criterion for prioritising financing strategies.

## 2) Increased access to financing

- The lack of financing sources for bioenergy projects in Africa is often one of the main barriers against project implementation. This is due to the high risk for investors, unsuitable framework conditions, corruption, and low rates of return. Stable frameworks should be ensured by governments and confidence in bioenergy should be created among investors by scientists and biofuel stakeholders. A **risk reducing component for bioenergy investments** in Africa should be established.
- Especially smallholders and the poor population face difficulties to access financing, loans, and bank accounts. They have problems to finance e.g. seeds, seedlings, and training for bioenergy production. Thus, **access to finance for smallholders** needs to be improved.
- A large barrier for bioenergy funding in Africa are the very high interest rates of banks. Mechanisms to decrease or **limit the interest rates for bioenergy projects** need to be ensured.

## 3) Applicability of financing mechanisms

- Tools for financing bioenergy generally include Public Private Partnerships (PPP), carbon credits, micro financing, funding programmes, and subsidies. The suitability and applicability of these tools on the ground should be considered for bioenergy policy development.
- Methodologies and procedures for **financing with carbon credits** are very complicated and **need to be simplified** in order to reduce costs and long-lasting procedures. Currently, mainly large scale projects benefit from carbon credits. Small-scale projects should be supported.
- Institutional transition costs for financing and implementation (permission procedures and processes) of bioenergy projects in Africa should be reduced.

## 4) Strategies for public sector funds

- Due to the high GHG emissions of developed countries at the expenses of developing countries, public funds from developed countries should be provided for modern bioenergy projects in Africa.
- In order to improve local economies and security of supply, but also since Africa is among the main victims of climate change, also African governments should provide public funds for bioenergy projects. Governments should not only rely on donations from developed countries.
- Public subsidies are needed to support the development of new markets, but subsidies need to be limited in amount and time. Effects of subsidies must be carefully considered to avoid negative market distortions for the private sector.
- For the analysis and comparison of the costs of biofuels and fossil fuel, indirect subsidies and external costs should be considered. Only equitable comparisons should be communicated to policy makers and to the public.



## Annex I - Conference Programme

### Conference Programme

TUESDAY 24<sup>th</sup> November 2009

08:00 – 09:00 Conference Registration

#### Opening Session

Timing: 09:00 – 10:00

- 09:00 – 09:20 Welcome Address by Representative from the European Commission  
Mario Scalet, European Commission, DG RTD, Directorate International Cooperation
- 09:20 – 09:40 Welcome Address by African Representative from the COMPETE Project  
Helen Watson, University of KwaZulu-Natal, South Africa
- 09:40 – 10:00 Welcome Address by the COMPETE Project Co-ordinator  
Rainer Janssen, WIP Renewable Energies, Germany
- 10:00 – 10:30 Coffee Break

#### Session 1: Bioenergy Policy Implementation in African Countries

Timing: 10:30 – 12:50

Chair Piero Venturi, European Commission, Directorate General RTD

Policymakers from African countries present recent developments in the field of bioenergy policy implementation in East, Southern, and West Africa. Strategies to ensure the social, economic and environmental sustainability of bioenergy production and use in Africa are discussed.

- 10:30 – 11:00 Bioenergy Policy Implementation in Ghana  
Wisdom Ahiataku-Togobo, Ministry of Energy, Ghana
- 11:00 – 11:30 Bioenergy Policy Implementation Strategies for UEMOA Countries  
Mamadou Dianka, Biomass Energy Regional Program, UEMOA, Burkina Faso
- 11:30 – 12:00 Bioenergy Policy Implementation in Mozambique  
Marcelina Mataveia, Ministry of Energy, Mozambique
- 12:00 – 12:30 Policy Initiatives of the SADC Biofuel Task Force  
Anna Lerner, GTZ-ProBEC on behalf of SADC Secretariat
- 12:30 – 14:00 Lunch Break (Lobby Lounge Lunch Area)

## Session 2: Bioenergy Policy Implementation in Europe and Global Initiatives

Timing: 14:00 – 15:20

Chair Ibrahim Togola, Mali-Folkecenter, Mali

Representatives from the European Commission and international stakeholders present recent developments in the field of bioenergy policy implementation in Europe as well as global initiatives. Emphasis is placed on cooperation opportunities between Europe and Africa to contribute to the exploitation of bioenergy resources for sustainable development in African countries.

- |               |  |
|---------------|--|
| 14:00 – 14:20 | The European Renewable Energy Directive<br>Ewout Deurwaarder, European Commission, Directorate General Energy and Transport                          |
| 14:20 – 14:40 | Biofuel Policy Implementation in the United Kingdom<br>Chris Malins, Renewable Fuels Agency, United Kingdom  |
| 14:40 – 15:00 | Global Sustainability Standard: The Experience of the Roundtable on Sustainable Biofuels (RSB)<br>Sébastien Haye, Roundtable on Sustainable Biofuels |
| 15:00 – 15:20 | Reducing CO <sub>2</sub> Levels – So many ways, so few being taken<br>Peter Read, Centre for Energy Research, Massey University, New Zealand         |
| 15:20 – 16:00 | Coffee Break   |

## Round Table 1: How to ensure value creation of bioenergy development in Africa?

Timing: 16:00 – 18:00

Chair Rainer Janssen, WIP Renewable Energies, Germany

Rapporteur Wolfgang Hiegl, WIP Renewable Energies, Germany

This Round Table involves stakeholders and policymakers from European and African countries to discuss successful concepts to exploit the benefits of innovative bioenergy solutions in Africa with respect to sustainable rural development, increased energy access, enhanced income generation, and alternative markets for agricultural products.

Panellists N.H. Ravindranath, Centre for Sustainable Technologies (CST), Indian Institute of Science  
Jeremy Woods, Imperial College London, United Kingdom  
Jean-Philippe Denruyter, WWF  
Meghan Sapp, PANGEA (Partners for Euro-African Green Energy), Belgium  
Anna Lerner, GTZ-ProBEC, Mozambique  
Touria Dafrallah, ENDA-TM, Senegal  
Wisdom Ahiataku-Togobo, Ministry of Energy, Ghana  
Lindiwe Sibanda, FANRPAN, South Africa

18:30 – 19:30 Cocktail Reception (Foyer "En Plein Ciel")

## WEDNESDAY 25<sup>th</sup> November 2009

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

Timing: 08:45 – 10:45

08:45 – 09:00 Introduction: EU S&T Cooperation with Africa  
Fadila Boughanemi, European Commission, Directorate General RTD

Partners from the COMPETE project present lessons learnt on ensuring value creation and sustainability of bioenergy development in Africa.

09:00 – 09:15 The COMPETE Project – Activities and Results  
Rainer Janssen, WIP Renewable Energies, Germany

09:15 – 09:30 Land use, Land Use Change and the Food-fuel Conflict in Africa  
Helen Watson, University of KwaZulu-Natal, South Africa

09:30 – 09:45 New and Improved Bioenergy Production and Utilisation Schemes  
Janske van Eijck, Copernicus Institute, Utrecht University, The Netherlands

09:45 – 10:00 Sustainability of Bioenergy Production and Use in Africa  
Rocio Diaz-Chavez, Imperial College London, United Kingdom

10:00 – 10:15 South-South and North-South Cooperation  
Francis Johnson, SEI, Sweden

10:15 – 10:30 Financing and International Trade  
Michael Hofmann, Camco, United Kingdom

10:30 – 10:45 Policy Development  
Lindiwe Sibanda, FANRPAN, South Africa

10:45 – 11:30 Coffee Break

## Session 4: Successful Bioenergy Projects and Initiatives in Africa

Timing: 11:30 – 12:50

Chair                      Jeremy Woods, Imperial College London, United Kingdom

African Partners from the COMPETE project and beyond present recent successful bioenergy projects and initiatives in East, Southern, and West Africa.

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|---------------|---|
| 11:30 – 11:50 | Jatropha Outgrower Scheme for Liquid Biofuel Production in Zambia<br>Kamal Desai, Marli Investments Ltd., Zambia                        |
| 11:50 – 12:10 | Garalo Bagani Yelen Jatropha-Fuelled Rural Electrification Project in Mali<br>Ibrahim Togola, Mali-Folkecenter, Mali                    |
| 12:10 – 12:30 | Biomass Energy for Poverty Reduction: The Case of Improved Charcoal<br>Production and Use in Tanzania<br>Estomih Sawe, TaTEDO, Tanzania |
| 12:30 – 12:50 | Promotion of Energy Efficient Cookstoves in Ghana<br>Frank Atta-Owusu, KITE, Ghana  |
| 12:50 – 14:00 | Lunch Break (Baudouin Lunch Area)   |

## Round Table 2: Financing and Implementation of Bioenergy Projects in Africa

Timing: 14:00 – 16:00

Chair                      Rocio Diaz-Chavez, Imperial College London, United Kingdom

Rapporteur              Dominik Rutz, WIP Renewable Energies, Germany

This Round Table involves stakeholders and policymakers from European and African countries to discuss successful concepts for the financing and implementation of bioenergy projects in Africa contributing to sustainable development.

Panellists                Kees Kwant, Senter Novem, The Netherlands  
Michael Brüntrup, German Development Institute, Germany  
Gavin Fraser, Rhodes University, South Africa  
Hercilia Hamela, Ministry of Agriculture, Mozambique  
Kamal Desai, Marli Investments Ltd., Zambia

16:00 – 16:30            Coffee Break

## Conference Summary and Conclusion

Timing: 16:30 – 17:30

This session serves to summarise the results of this conference with respect to:

- Recommendations for successful financing and implementation of bioenergy projects in Africa
- Recommendations on how to ensure social, economic and environmental sustainability of bioenergy production and utilisation in Africa

16:30 – 17:00      Summary of Roundtables  
                            Rapporteurs of Roundtable 1 and 2

17:00 – 17:30      Conclusion and Outlook of the Conference  
                            Jeremy Woods, Imperial College London, United Kingdom  
                            Rainer Janssen, WIP Renewable Energies, Germany

## The COMPETE Project

### **COMPETE Objectives**

The Competence Platform on Energy Crop and Agroforestry Systems for Arid and Semi-arid Ecosystems – Africa (COMPETE) established 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 delivers 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

WIP Renewable Energies  
Sylvensteinstr. 2  
81369 Munich  
Germany

Contact: **Dr. Rainer Janssen**  
**Dominik Rutz**

Phone: +49 89 720 12743  
Fax: +49 89 720 12791

E-mail: [rainer.janssen@wip-munich.de](mailto:rainer.janssen@wip-munich.de)  
[dominik.rutz@wip-munich.de](mailto:dominik.rutz@wip-munich.de)

Web: [www.wip-munich.de](http://www.wip-munich.de)

### COMPETE Project Coordination WP3 Coordination - Sustainability

Imperial College London  
Centre for Energy Policy and Technology  
South Kensington Campus, London, SW7 2AZ  
United Kingdom

Contact: **Dr. Jeremy Woods**  
**Dr. Rocio Diaz-Chavez**

Phone: +44 20 7594 7315  
Fax: +44 20 7594 9334

E-mail: [jeremy.woods@imperial.ac.uk](mailto:jeremy.woods@imperial.ac.uk)  
[r.diaz-chavez@imperial.ac.uk](mailto:r.diaz-chavez@imperial.ac.uk)

Web: [www.imperial.ac.uk](http://www.imperial.ac.uk)

### WP1 Coordination – Current Land Use

University of KwaZulu-Natal  
School of Environmental Sciences  
South Africa

Contact: **Dr. Helen Watson**

E-mail: [watsonh@ukzn.ac.za](mailto:watsonh@ukzn.ac.za)

Web: [www.ukzn.ac.za](http://www.ukzn.ac.za)

### WP2 Coordination – Improved Land Use

Utrecht University  
Dept. Science, Technology and Society  
The Netherlands

Contact: **Dr. Andre Faaij**

**Dr. Edward Smeets**

E-mail: [A.P.C.Faaij@uu.nl](mailto:A.P.C.Faaij@uu.nl)  
[E.M.W.Smeets@uu.nl](mailto:E.M.W.Smeets@uu.nl)

Web: [www.chem.uu.nl/nws](http://www.chem.uu.nl/nws)

### WP5 Coordination – Financing

Energy for Sustainable Development  
United Kingdom

Contact: **Michael Hofmann**  
**Stephen Mutimba**

E-mail: [michael.hofmann@esd.co.uk](mailto:michael.hofmann@esd.co.uk)  
[smutimba@esda.co.ke](mailto:smutimba@esda.co.ke)

Web: [www.esd.co.uk](http://www.esd.co.uk)

### WP4 Coordination – International Cooperation

Winrock International India

Contact: **Sobhanbabu Patragadda**

E-mail: [sobhan@winrockindia.org](mailto:sobhan@winrockindia.org)

Web: [www.winrockindia.org](http://www.winrockindia.org)

Stockholm Environment Institute

Contact: **Francis Johnson**

E-mail: [francis.johnson@sei.se](mailto:francis.johnson@sei.se)

Web: [www.sei.se](http://www.sei.se)

European Biomass Industry Association

Contact: **Eibhilin Manning**

E-mail: [eubia@eubia.org](mailto:eubia@eubia.org)

Web: [www.eubia.org](http://www.eubia.org)

### WP6 Coordination – Policies

Food, Agriculture and Natural Resources Policy  
Analysis Network of Southern Africa  
South Africa

Contact: **Khamarunga Banda**

E-mail: [khamarunga@hotmail.com](mailto:khamarunga@hotmail.com)

Web: [www.fanrpan.org](http://www.fanrpan.org)



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