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COMPETE

Competence Platform on Energy Crop and Agroforestry Systems for Arid and Semi-arid Ecosystems - Africa

Responsible Partner:

WIP, Sylvensteinstrasse 2, 81369 Munich, Germany

Project Co-ordinator:

WIP, Sylvensteinstrasse 2, 81369 Munich, Germany

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Content

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The COMPETE Policy Recommendation Paper was elaborated under the guidance of stakeholders and high-level decision-makers from a variety of African countries.

Editors - COMPETE Policy Recommendation Paper

Dr. Rainer Janssen, Dominik Rutz
WIP – Renewable Energies
Sylvensteinstr. 2
81369 Munich, GERMANY
Tel.: +49 89 72012743
Email: rainer.janssen@wip-munich.de
Web: www.wip-munich.de

1. Background

In Sub-Sahara Africa today the large majority of the population, especially in rural areas, depends on traditional biomass for cooking and heating. This situation is not likely to change and it is estimated that in 2030 more than 700 million people will rely on traditional biomass such as firewood, charcoal, agricultural residues as well as human and animal waste. In many regions traditional biomass resources are readily available for the local population. Their production and use, however, causes a variety of negative impacts including overuse of natural resources leading to deforestation and health effects due to Indoor Air Pollution (IAP) disproportionately affecting women and children in the poor areas of developing countries.

The agricultural sector in most Sub-Saharan African countries is dominated by subsistence farming with associated very low investment levels and yields as compared to developed countries. The development of modern bioenergy systems therefore offers opportunities for investment and infrastructure improvements in agriculture with the promise to diversify agricultural production and thus to stimulate socio-economic development. Thereby, in Africa today the main focus of bioenergy development is placed on liquid biofuels (plant oil, biodiesel, bioethanol) as transport fuel and for rural electrification initiatives.

In addition, drivers for bioenergy development in Africa include security of energy supply, a reduction of the foreign exchange burden of oil importing countries, as well as environmental benefits such as alleviating desertification and reducing greenhouse gas (GHG) emissions.

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).

On the other hand, concerns exist that bioenergy (biofuels) expansion may have severe negative impacts on biodiversity and the use of natural resources through increasing competition over land and water resources. Furthermore, rising prices of agricultural commodities will negatively affect food security of the poor in developing countries and the implementation of large-scale bioenergy projects may cause negative social impacts such as displacement of rural communities.

It is thus of crucial importance that ***policies and development plans are implemented in African countries to ensure environmentally, economically and socially sustainable bioenergy production***. These policies shall aim at mobilising the benefits offered by bioenergy feedstock production to reverse the long-term decline in real agricultural commodity prices and to boost agricultural and rural development. Thereby, effective mechanisms to ensure sustainability need to be put in place and safety nets need to be established to protect the world's poorest and most vulnerable people to ensure their access to adequate food.

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

The project COMPETE (Competence Platform on Energy Crop and Agroforestry Systems - Africa) provides support for policy development in African countries through the organisation of policy workshops 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*.

2. Introduction

During the implementation of the COMPETE project, the following four recommendation documents were elaborated to guide the formulation of policies and development plans to ensure the sustainability of the bioenergy sector in Africa, and to identify pathways to overcome potential barriers and risks to financing of bioenergy projects in Africa. All policy documents are available at the COMPETE website www.compete-bioafrica.net.

The COMPETE Policy Recommendation Papers were elaborated under the guidance of stakeholders and high-level decision-makers from a variety of African countries.

I) COMPETE Declaration on Sustainable Bioenergy for Africa, June 2008, Arusha

The main aim of the COMPETE Conference and Policy Debate on 'Biofuels Sustainability Schemes - An African Perspective' on 16-18 June 2008 in Arusha, Tanzania, was to elaborate recommendations addressing the opportunities and challenges of global bioenergy development from an African Perspective.

This COMPETE Declaration on Sustainable Bioenergy for Africa was elaborated along the lines of Roundtable Discussions engaging high-level decision-makers from Kenya, Mozambique, Tanzania, Uganda, Zambia, as well as the Union Economique et Monétaire Ouest Africaine (UEMOA).

II) COMPETE Bioenergy Policy Recommendation on Socio-economic Development and the Food-Fuel Conflict in Africa, May 2009, Lusaka

This recommendation paper based on the results of the COMPETE Policy Conference 'Bioenergy Policy Implementation in Africa' in Lusaka, Zambia, on 26-28 May 2009, discussed the following crucial topics of bioenergy development in Africa:

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

It was concluded in Roundtable Discussions engaging high-level decision-makers from Botswana, Ghana, Kenya, Niger, Tanzania, and Zambia that policies and development plans urgently need to be 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.

III) Recommendations on Financing Sustainable Bioenergy Projects in Africa, October 2009, Dakar

The main aim of the COMPETE Financing Conference on 29 September to 1 October 2009 in Dakar, Senegal was to identify ways to overcome potential barriers and risks to financing of bioenergy projects in Africa, as well as highlight avenues for financing including bilateral and multilateral financing, carbon finance, trade, and policy avenues. Policy recommendations to overcome barriers to financing and stimulate investment in the bioenergy and agricultural sector of African countries include to support the creation of clear and transparent national policy frameworks for bioenergy, to improve capacity, communication and information sharing for resource mobilization, and to increase public-private partnerships (PPP) to encourage bioenergy finance opportunities.

IV) COMPETE Bioenergy Policy Recommendations, November 2009, Brussels

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.

This concluding COMPETE conference was organised by WIP Renewable Energies, Germany, in cooperation with Imperial College London, United Kingdom. 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.

Finally, bioenergy 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*

These COMPETE policy recommendation documents are presented in the following chapters of this report.

3. COMPETE Declaration on Sustainable Bioenergy for Africa, June 2008, Arusha

3.1. Introduction

The COMPETE Conference and Policy Debate on 'Biofuels Sustainability Schemes - An African Perspective' on 16-18 June 2008 in Arusha, Tanzania, brought together more than 60 high-level participants including decision makers from several African countries, representatives from the Private Sector, NGOs, the donor community, FAO, UNEP, international initiatives (e.g. RSB) as well as national and international energy experts and stakeholders.

The main aim of this COMPETE conference was to elaborate recommendations addressing the opportunities and challenges of the global bioenergy development from an African Perspective.

Thereby, emphasis was given to:

- ensure that a strong African perspective is encouraged to emerge in the global arena of energy, climate change and bioenergy policy making
- engage the policy and decision makers of African countries in sustainable bioenergy development
- assist African countries in the development of strong regional and national policies on the sustainable development of bioenergy resources for indigenous and export markets
- highlight ways of developing food AND fuel and avoiding the food versus fuel conflict

The present COMPETE Declaration on Sustainable Bioenergy for Africa was elaborated along the lines of the following two Roundtable Discussions engaging high-level decision-makers from Kenya, Mozambique, Tanzania, Uganda, Zambia, as well as the Union Economique et Monétaire Ouest Africaine (UEMOA).

Roundtable 1: Policy strategies to enhance the bioenergy potential in Africa

- H. E. Jaime Himede, Vice – Minister, Ministry of Energy, Mozambique
- Mr. Oscar Kalumiana, Director, Ministry of Energy and Water Development, Zambia
- Mr. Mamadou Dianka, Coordinator Biomass Energy Regional Programme, UEMOA
- Mr. Styden Rwebangila, Ministry of Energy and Minerals, Tanzania

Roundtable 2: Sustainability tools and means to assure, monitor and reward sustainable bioenergy production in Africa

- Ms. Faith Odongo, Senior Renewable Energy Officer, Ministry of Energy, Kenya
- Mr. Turyahabwe Elsam, Director of Renewable Energy, Ministry of Energy and Mineral Development, Uganda
- Ms. Martina Otto, UNEP, Roundtable on Sustainable Biofuels (RSB)
- Ms. Janske van Eijck, Diligent Tanzania Ltd.

3.2. COMPETE Declaration, June 2008, Arusha

A) Policies and implementation strategies to enhance the bioenergy potential in Africa

Bioenergy should be seen as part of the solution of energy needs and greenhouse gases reduction and not as part of the problem. Major opportunities as well as constrictions need to be considered within the range of alternatives that bioenergy can provide especially in developing countries. Five main topics considered within policies and implementation strategies are as follows:

1) Visions guiding the implementation of policies for bioenergy development in Africa

The following visions should provide the guiding principles for bioenergy policy development in African countries:

- ***Rural development and improved livelihoods*** for the rural population in African countries
- ***Increased energy access*** and ***income generation*** opportunities
- Successful ***transition from traditional biomass to modern biomass***
- Sustainable large-scale production of biofuels ***involving communities, smallholders, cooperatives, local enterprises and foreign investors***
- ***Modernisation of agricultural practices*** and ***sustainable soil and land management*** to exploit complementarities of food and bioenergy production
- Full exploitation of the potential of energy crops and agricultural residues for the ***production of power, household energy, charcoal, biofuels, materials and food***
- ***Reduced dependence on imported expensive fossil fuels***
- Achievement of the ***Millennium Development Goals (MDG)***

2) Markets (local, national, international) for bioenergy development in Africa

The following policy measures and principles for bioenergy market development should be implemented in African countries:

- Create ***policies and (technical) standards*** to facilitate and guide bioenergy market development in Africa (favour local over export markets in initial stages of market development)
- Select and implement ***appropriate policy tools*** to establish local and national bioenergy markets (such as subsidies to encourage local bioenergy production)
- Give ***priority to small-scale projects and local markets*** (e.g. rural electrification, water pumping, transport fuels in agriculture)
- Create new and long term ***local and national markets*** for bioenergy (e.g. blending targets)

- Then, explore ***export, global markets*** and large-scale projects (e.g. sugar cane)

- In all cases, ensure ***value created for local farmers*** and rural development through local processing and value adding instead of exporting primary feedstock

- Highlight the importance of ***bioenergy by-products*** for the efficient use of biomass for (local) market creation and for multiple products and services (e.g. power, household fuel, food-fuel, materials, chemicals, bio-charcoal to improve soil characteristics)

- Develop **appropriate policy frameworks for investors** in cooperation with investors as well as creating links with communities

- Integrate bioenergy development in ***overall investment policies***

- Establish mechanisms for "equitable markets" and access to the different markets for African countries first at local level and then on regional and global level

3) Development of Land Use Strategies as means to ensure sustainable bioenergy development in Africa

The development of effective land use strategies (such as agro-ecological mapping and zoning initiatives) is an essential tool to avoid food-fuel conflict and ensure food security AND bioenergy development in African countries through:

- Inclusion of bioenergy in ***national land use plans and regulations***

- ***Harmonisation of policies*** in the agricultural, natural resources (e.g. water) and energy sector

- ***Zoning and identification of real potential*** of countries and regions to produce food, energy crops, materials and chemicals

- ***Mapping of indigenous land use practices*** (***participatory mapping*** from grass-root level) in order to build bioenergy development on existing knowledge and practices

- Identification of ***appropriate use of land and water resources*** (with special focus on soil properties and environmental issues) with respect to the ***local needs of rural communities***

- Promotion of ***better land use management*** (zoning resolution needs to reflect complexity)

- ***Create and enforce regulatory frameworks*** on land use issues involving the ***private sector and smallholder farmers***

- Create frameworks and policies to ensure ***food security AND bioenergy development*** in African countries (in case of existing food-fuel conflicts priority should be given to food production)

- Ensuring appropriate ***flexibility*** of land allocation

- Promotion of ***intercropping*** and ***integrated production complexes*** of food and energy crops

- ***Dissemination of information*** on agro-ecological zoning to the public (farmers)

4) Ensure bioenergy development in accordance with prevailing land tenure systems to enhance benefits to local communities

Bioenergy development in Africa should take into account the prevailing land tenure systems in a way that creates benefits to the local communities, especially the rural population. We acknowledge that land (ownership) is a sensitive issue in African countries, and that land ownership by foreign investors is restricted in many African countries.

- ***Concessions/ownership granted by national authorities*** for bioenergy projects focussing on rural and socio-economic development
- ***Clear procedures on land tenure*** issues for investors
- Investors need to consult with ***Government authorities AND the local population to be responsive to their needs (participatory approach)***
- Investors need to ***respect land laws and regulations*** of the host country, including recognised customary land tenure systems
- ***Avoid displacement*** of the rural population
- ***Avoid corruption*** regarding land use issues demonstrating transparency in all process regarding land tenure

5) Capacity building and R&D

Capacity building of all stakeholders (decision-makers, farmers, extension services, technicians, scientists, researchers) as well as enhanced R&D activities are urgently needed to build-up the necessary human resources in African countries to ensure a sustainable bioenergy development. Fields of specific importance include:

- Knowledge on ***policies and implementation strategies*** and capacity to develop and implement clear strategies and regulations
- Expertise on ***energy and environmental planning***
- Expertise on ***bio-geochemical modelling*** and ***Integrated Soil Fertility Management***
- ***Agricultural and technical expertise***, R&D on new crops and improved crop management systems (capacity building for farmers and extension workers)
- ***Standardisation*** to guarantee adequate quality of bioenergy products
- Establishment of ***structures for the development of a suitable knowledge base*** and continuous knowledge improvements (e.g. for farmers)
- Promotion of ***technology transfer*** as well as South-South and North-South cooperation
- Scaling up of existing ***best practices in Africa***
- R&D on infrastructure needs for the whole supply chain of biomass

B) Sustainability tools and means to assure, monitor and reward sustainable bioenergy production in Africa

1) Why sustainability assurance and certification schemes are needed?

Major dangers and opportunities exist for the exploitation of biofuels in Africa, either for domestic or export purposes. Many of these problems and opportunities stem from the likely changes in economic land value, the potential for rural employment provision or the exclusion of rural populations from the land. As with agriculture in general, longer term environmental and social impacts, positive and negative, could also result from changing land use to include the provision of bioenergy. Therefore, a set of tools to understand, monitor and quantify these impacts, opportunities and threats must be developed.

These 'sustainability tools' will include environmental and social impact assessment (EIA and SIA), strategic environmental assessment (SEA), life-cycle assessment (LCA). Developed sustainability tools will also need to be underpinned by local to global standards monitored through assurance and certification schemes. Sustainability tools must focus on the local communities but must also consider all stakeholders in the potential biofuel supply chain including national and international governments and international organisations as required. The following points should be considered for the African context and worldwide regarding the use of sustainability tools:

- There is an urgent need to implement the use of 'sustainability tool sets' as outlined above.

- However, viewing biofuels in isolation from the rest of the agricultural and forestry production sectors is inconsistent and potentially distorting. Therefore sustainability tools **should be implemented across all land-use sectors.**

- These tools will by definition need to encompass **economic, social, and environmental (including climate change) principles.**

- Understanding and being sensitive to the scale and context of feedstock production and conversion industry is of critical importance. The implementation of tools needs to be practical **for the use of (small scale or large scale) farmers.** Therefore, there is need **to improve and develop capacity** to understand the level of detail required at a particular scale and to appropriately enforce the monitoring. This is a central component to the viability of such schemes.

- Sustainability tools are already in place for **existing management tools,** with some complying to existing ISO standards. They are gaining support as a planning tools at multiple scales.

- Major opportunities for investment in agricultural production, related infrastructure and knowledge could be driven, in-part, by foreign investors and so the **option to export biofuels** and include the **private sector** must be retained.

- The standards underpinning the sustainability tools will need to include **social issues, land tenure, guidance for the selection and participation of stakeholders** and on **contract development, particularly for farmer groups (e.g. cooperatives).**

2) What level of scale and complexity is needed for the sustainability tools

Guidance on the use of the tools is needed at the various scales of production and conversion and the market that the product will reach (e.g. internal or for export). If internal, the tools should consider transitions towards sustainable agriculture and forestry. The monitoring process should reward good practice and penalise bad practice. Considerations on the scale include:

- Need to **define scales** of commercial products and **differentiate crops** for large and small scale
- Understand the implications of the different **scales and conditions** of small holders, large scale or hybrid systems and **empower small scale** farmers to have more secure market opportunities
- Three areas to consider**: agriculture, production** (conversion) **and marketing**
- Encourage **large scale projects to support small holders** (multi-scale) applying **Corporate Social Responsibility** principles
- Consider the **social structures** and work conditions of the **small holders** which is **more sustainable but often regarded as more expensive,**

3. Sustainability tools and applications in biofuel production

The application of standards and certification may vary from government and private sectors and may be seen as regulatory or reporting duty. The inclusion of climate change considerations in the life cycle assessment of products may also put an additional element into the sustainability views of the production system. Some of the reflections on this are:

- There is need of a **model framework in Africa** that considers other issues such as **land use change impacts** (indirect)
- Use **existing tools** (EIA, EA) and **policies** in place but **distinguish between the available tools with the new themes**
- Consider **available models of production** (e.g. sugar cane)
- Need to use **cooperation "blocks" in Africa** such as ECOWAS for sharing knowledge
- Use of other models and **South-South cooperation** including **CDM experience**
- **Education** is needed in all steps towards achieving sustainability

4. COMPETE Policy Recommendation on Socio-economic Development and the Food-Fuel Conflict in Africa, May 2009, Lusaka

4.1. Introduction

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

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

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

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

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

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

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

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

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

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

4.2. COMPETE Bioenergy Policy Recommendations, May 2009, Lusaka

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

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

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

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

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

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

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

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

- Bioenergy policies and development plans in Africa should have a ***clear vision to achieve socio-economic development and to improve the well-being*** of the population.
- Urgent measures need to be taken to ***increase investment in the agricultural sector*** in African countries as insufficient food production is currently mainly caused by low yields and lack of infrastructure rather than limited land availability.
- African Governments need to engage in ***natural resource management planning*** (for food and bioenergy production) using effective tools addressing the complexity of the agricultural sector (including conflicting interests of pastoralists and other traditional land use practices).
- African Governments should engage in the ***international dialogue*** on sustainable bioenergy and link bioenergy development with ***International Conventions*** (e.g. conventions on land degradation, biodiversity, climate change).

- Policies and development plans need to be based on ***reliable scientific information*** and take into account national framework conditions.
- ***Regional integration*** should be ensured for national bioenergy policy development.
- African Governments should perform ***agro-ecological zoning initiatives*** to identify available and suitable land for food and bioenergy production. Thereby, bioenergy development should not be restricted to marginal and degraded land.
- National planning needs to ensure ***flexibility of feedstock production*** and leave decisions on feedstock selection to farmers. Transparent and reliable information should be provided to farmers.
- ***Close cooperation between national authorities and traditional authorities*** in the local communities on land tenure issues needs to be ensured. ***Gender issues*** with respect to land ownership should be respected.
- ***Participation and ownership*** of local communities in bioenergy projects should be ensured.
- Specific conditions should be enacted for ***land acquisition and tenure*** for bioenergy investors
- Bioenergy investors should be obliged to ***dedicate part of the land to grow food crops***.
- Initiatives for (agricultural) ***capacity building*** need to be implemented on local level.

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

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

- African Governments need to develop and implement policies and regulations creating a favourable environment for ***investment in the agricultural sector***.
- African Governments need to increase their efforts in the field of ***infrastructure development***.
- African Governments need to clearly ***define social requirements*** and guidelines for investors in bioenergy projects to ensure benefits for the local population. This may be achieved in cooperation with social sustainability criteria integrated in international initiatives to ensure sustainability of bioenergy production.
- African Governments need to appropriately ***valorise non-economic benefits*** offered by bioenergy systems (e.g. health benefits through avoidance of Indoor Air Pollution).
- African Governments need to put in place ***incentives and measures of risk reduction*** such as subsidies and tax exemptions to foster the development of the bioenergy sector. Specific incentives need to be established for local businesses and smallholder farmers.
- ***Suitable feedstock and bioenergy technologies*** need to be identified and promoted with respect to local and national framework conditions.
- Provision of ***financing opportunities*** for farmers and investors to facilitate implementation of small and large scale bioenergy projects.
- ***Stable markets*** for bioenergy and by-products need to be created on local, national and international level. Agricultural production needs to be diversified. Bioenergy development in Africa should include small, medium and large scale projects.

- Promotion of the participation of national stakeholders in the ***full bioenergy value chain*** (not just raw material provision).
- Promotion of ***outgrower schemes and community engagement*** to ensure ownership of the local population. Promotion of the engagement of farmer organisations.
- Incorporation of **gender equity** as a key element in assessing socio-economic benefits and impacts of bioenergy projects.
- Establishment of ***fair and transparent*** pricing agreements for bioenergy feedstock between farmers and bioenergy producers.
- Provision of ***training for business creation*** and information on bioenergy market development to farmers.
- ***Capacity building*** and provision of improved ***agricultural extension services*** for farmers.

C) Regulations and standards for bioenergy implementation in Africa

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

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

5. Recommendations on Financing Sustainable Bioenergy Projects in Africa, September 2009, Dakar

5.1. Introduction

The COMPETE Conference 'Sustainable Bioenergy Projects in Africa – Barriers and Opportunities for Financing' on 29 September to 1 October 2009 in Dakar, Senegal brought together speakers and representatives from the investor, financing and donor community, project developers, enterpreneurs, NGOs, international organisations as well as national and international energy experts.

The main aim of this COMPETE conference was to identify ways to overcome potential barriers and risks to financing of bioenergy projects in Africa, as well as highlight avenues for financing including bilateral and multilateral financing, carbon finance, trade, and policy avenues. Emphasis was placed on projects and initiatives that ensure social, economic and environmental sustainability and contribute to sustainable rural development.

The present COMPETE Recommendations were elaborated along the lines of the following 3 Roundtable Discussions engaging high-level decision-makers from Burkina Faso, Ghana, Senegal, South Africa, Tanzania.

Roundtable 1: Perspectives on Overcoming Barriers

- Dr. Rocio A. Diaz-Chavez, Imperial College Science, Technology and Medicine
- Mamadou Dianka, UEMOA, Burkina Faso
- Frank O. Atta Owusu, KITE, Ghana
- Touria Dafrallah, ENDA-TM, Senegal
- Serigne Amar, African Association for Biofuel Promotion, Senegal
- Mamadou Kane, Wallonie-Brussels Delegation in Dakar, Senegal
- Mouhamadou Gueye, Technical Advisor to the Presidency, Senegal

Roundtable 2: The Practical Side of Overcoming Barriers: Financing and Implementation of Sustainable Bioenergy Projects in Africa

- Paul van Aalst, E+Co Europe, Netherlands
- Mireille Afoudji, PERACOD (GTZ), Senegal
- Michael Hofmann, Camco, United Kingdom
- Jensen Shuma, TaTEDO, Tanzania
- Marie-Vincente Pasdeloup, UN Foundation
- Abdoulaye Diouf, Sugar Company of Senegal

Roundtable 3: Partnerships for Sustainable Bioenergy Development

- Martina Otto, UNEP
- Secou Sarr, ENDA-TM, Senegal
- Cliff Spencer, UN Foundation
- Estherine Fotabong, New Partnership for Africa's Development, South Africa
- Marie Adelaïde Dione, Regional Bank for Solidarity, Senegal
- Massaër Nguer, Agriculture Research Institute of Senegal

5.2. COMPETE Recommendations on Financing, September 2009, Dakar

Modern bioenergy has enormous potential in Africa to be utilized as a renewable source of energy, contribute to energy security and energy access, and increase social welfare by providing development opportunities. However, there are many barriers that have contributed to lower levels of investment in the region relative to the potential that exists. This conference identified these barriers and offered key and concise pragmatic options to reduce them and support the bioenergy agenda in a sustainable fashion. Conference participants have provided a wealth of information and exchange on this topic from successful tools, approaches and best practices. The messages from the conference are reflected in the policy recommendations that are enclosed in this summary report.

Crucial to spurring investment:

A) Support the creation of clear and transparent national policy frameworks for bioenergy

National policy frameworks are a prerequisite for the development of bioenergy industries and projects by increasing investor security and creating markets (some frameworks, for example, might include subsidies, guarantees, mandates, credit enhancement mechanisms, etc). The policy measures under such frameworks are comprised of several key strategies.

- ✓ Increase inter-ministerial communication and cooperation: ensure that cross-cutting issues of bioenergy (energy, agriculture, environmental, trade, development, etc.) are addressed within a framework that recognizes linkages to social, environmental, and economic agendas.
- ✓ Ensure that policies are based on scientific information and practical lessons learned.
- ✓ Ensure that policies are flexible enough to adapt to local needs and emerging science.
- ✓ Ensure that policy frameworks are transparent and accessible to the public and project developers to create the foundation for more foreign investment to enter African countries.
- ✓ Within this framework, identify local and national public funds that are available for the creation of bioenergy projects/ industries as macro effects warrant government budget support
- ✓ Lessons learned should be taken from other countries in the region with existing bioenergy policy frameworks. Some countries, such as Mozambique, have started implementing such frameworks and can serve as examples.

B) Improve capacity, communication and information sharing for resource mobilization

Supporting initiatives that build the capacity and collaboration of key stakeholders in the bioenergy field is instrumental to increasing its growth in Africa. Communication gaps and lack of information exchange between these stakeholders has been recognized as a key barrier in financing bioenergy projects. Adopting several strategies can reduce those barriers in order to increase the opportunity for investment.

Between financiers and project developers

- ✓ Create technical clearinghouses (investment promotion centres) that can provide information and services to both project developers and financiers with regards to financial structures, risk profiling, technology, and information on policy frameworks related to bioenergy. This initiative should utilize existing networks and trusted institutions. Some examples of topics that can be addressed in these promotion centres are below:
    - o *On carbon finance*:
        - These promotion centres can encourage carbon finance for bioenergy projects by being a body where information and resources on carbon finance can be exchanged between banks/local finance institutions and project developers. This allows further communication to finance institutions to understand the structures of carbon finance and to developers to understand the needs of finance institutions.
    - o *On micro-finance*:
        - These promotion centres can also provide information on learned lessons of other innovative forms of finance such as micro-lending and micro-finance. They can be intermediary bodies between local credit agencies and developers.
    - o *On traditional lending:*
        - As traditional lending for bioenergy projects has been difficult in Africa, these promotion centres can reduce this barrier by providing information to financial institutions to become more aware of the specific financial needs of bioenergy projects. Financing for feasibility studies and agronomic activities, which is instrumental in developing projects, can be a focus.

Between project developers and project developers

- ✓ Flagship projects and lessons learned need to be shared between developers so that best practices in finance can be utilized and successful projects can be replicated.

Between donors

- ✓ Improve communication channels between all donors working on bioenergy projects to encourage coordination and prevent overlap.

C) Increase public-private partnerships (PPP) to encourage bioenergy finance opportunities

Creating and strengthening effective PPP for bioenergy is an innovative form of financing that can unlock potential finance opportunities and investments in Africa. Enabling policy frameworks are as well invaluable to support these PPPs.

- ✓ Enhance public- private partnerships for introducing new bioenergy technologies and services, based on local demand and inclusive decision making.

- ✓ Create communication channels between private sector partners, the community, and public partners for greater transparency.

6. COMPETE Bioenergy Policy Recommendations, November 2009, Brussels

6.1. Introduction

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?

- 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

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

- 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

6.2. COMPETE Bioenergy Policy Recommendations, November 2009, Brussels

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, bioenery, 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 agiculture***. 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.

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
dominik.rutz@wip-munich.de
Web: www.wip-munich.de

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
Web: 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
E.M.W.Smeets@uu.nl
Web: 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
smutimba@esda.co.ke
Web: www.esd.co.uk

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
r.diaz-chavez@imperial.ac.uk
Web: www.imperial.ac.uk

WP4 Coordination – International Cooperation

Winrock International India
Contact: **Sobhanbabu Patragadda**
E-mail: sobhan@winrockindia.org
Web: www.winrockindia.org

Stockholm Environment Institute
Contact: **Francis Johnson**
E-mail: francis.johnson@sei.se
Web: www.sei.se

European Biomass Industry Association
Contact: **Stephane Senechal**
E-mail: eubia@eubia.org
Web: www.eubia.org

WP6 Coordination – Policies

Food, Agriculture and Natural Resources Policy
Analysis Network of Southern Africa
South Africa
Contact: **Khamarunga Banda**
Lindiwe Sibanda
E-mail: **khamarunga@hotmail.com**
lmsibanda@fanrpan.org
Web: www.**fanrpan.org**

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