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COMPETE

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

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PERFORMANCE EVALUATION OF NATIONAL AND REGIONAL BIOFUELS POLICIES IN SSA

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1. BACKGROUND AND CONTEXT

The demand for biofuels is rapidly increasing throughout the world particularly in industrialized countries. Debates around biofuels development have been shaped by great optimism as well as pessimism around benefits to be accrued. Though not a new phenomenon, biofuels has now captivated the global agenda as a substitute for oil in recent years. Biofuels, otherwise known as agro fuels when grown under commercial agriculture farming methods, have divided development practitioners and policy makers on a number of issues.

Indeed, the demand for bio-fuels is driven largely by global concerns and to a lesser extent by national interests. At the global level, there is pressure for addressing the energy needs of growing economies such as China and India. In addition, the pressure for addressing climate change through the reduction of Greenhouse Gases is mounting - a situation that assists and forces nations to recommit themselves into meeting the Kyoto protocol agreement targets. For industrialized countries, the increases in prices of fossil fuels coupled with technological changes in various sectors such as the motor car industries constitute a major driver. At the national levels, there is need to address energy challenges particularly in developing countries by providing alternative sources that will benefit both urban and rural contexts. Anticipated economic benefits that address the impact of high fuel prices is expected to ease the pressure on most nations to import fuel while at the same time providing development opportunities for rural areas. In addition, this is also expected to stimulate and diversify the agriculture sector.

In response to the increase in the promotion of biofuels, several African countries are making efforts to introduce policies that specifically deal with biofuels. To this end, South Africa and Nigeria are the most active although a number of activities are spreading fast throughout the continent. Experimental jatropha plantations used for the production of bio-diesel are the most promoted interventions in sub Saharan Africa (e.g. Ghana, Tanzania, Nigeria, Zimbabwe), although most of these initiatives are still in the planting and growing stages. It is important to note that currently, the continent is producing almost no jatropha oil, because of a lack of adequate feedstock. Ethanol production dates back to the early 1980s for most countries in SSA such as Zimbabwe, Tanzania, Mozambique, Democratic Republic of Congo and South Africa.

Despite these expected benefits, there are fears that the bio-fuel agenda will compete with the growing of food crops and thus lead to food insecurity. There are also fears that governments are promoting bio-fuels and making decisions without adequate policy and institutional frameworks to guide implementation. Against this background, several initiatives in SSA are being undertaken to understand the context of biofuels in SSA economies and its peoples. One such initiative is the Competence Platform on Energy Crop and Agroforestry Systems for Arid and Semi-arid Ecosystems – Africa (COMPETE) who are working with the southern African Food Agriculture and Natural Resources Policy Analysis Network (FANRPAN) to understand biofuels sector in SSA. Previous studies identified and analysed national policies on biofuels in the region (see Jumbe et al., 2007). This paper builds on work by Jumbe et al (2007) by specifically analysing and assessing the performance of biofuels policies towards their sustainable production.

1.2 Objectives of the Report

The objective of this report is to contribute to work package 6 on policy development. It builds on earlier work (output 6.3) which examined the extent to which national policy frameworks on biofuels (including energy) incorporate and support biofuels development in sub-Saharan Africa. This report gives an overview of biofuels performance in sub-Saharan Africa by critically analyzing (i) Africa's Regional Economic blocks (SADC, ECOWAS, and EAC), (ii) Implementation Bodies (AU and NEPAD, UNECA, FEMA, AFREC) and (iii) and selected countries in the different economic regions; with the main objective being to assess performance of their policy directions using sustainability principles (RSB[1]) guidelines in addition to various other principles..

1.3 Approach and methodology

Most of the information used in this report were sourced from national nodes of FANRPAN and triangulated with desktop review of literature around biofuels.

1.3.1 Case study selection process justification

Based on previous work and assessment of data availability, the following steps were undertaken in the selection of case studies. The criteria were:

- Geographical and institutional representation – Institutional analysis and country analysis was aimed at achieving regional and national representation (see table 1)
- To achieve regional representation, at least one country was selected from each of the three regions of ECOWAS, EAC and SADC; and
- In terms of expanding scope of assessment of policy direction some of regional institution mandated with resource mobilization and implementation in SSA are also assesses, for example NEPAD and UNECA.
- Which Policies to analyze – In terms of biofuels the study confined itself with examining energy policies in the countries that support biofuels production;
- Equally important was assessment of stakeholder participation.

[1] The Roundtable on Sustainable Biofuels (RSB)

Table 1: Selection criteria: List of Countries, regional bodies and key feedstock

Country	Regional representation	Regional body	Key Feedstock's	Presence of policies
Ghana	West Africa	ECOWAS	Jatropha, palm oil Sugar cane	Energy Policy, Renewable energy
Mozambique	Southern Africa	SADC	Jatropha Sugar cane	Renewable energy policy, Biofuels strategy
Nigeria	West Africa	ECOWAS	Palm oil	Energy Policy, Biofuels strategy
South Africa	Southern Africa	SADC	Sunflower, canola, soya, sugarcane, sugarcane	Energy Policy, Renewable energy, energy and biofuels industrial strategy
Tanzania	East Africa	EAC	Jatropha	Energy policy – process of developing a strategy
Zambia	Central/Southern Africa	EAC/SADC	Jatropha, jatropha, Sugar cane sorghum	Energy Renewable energy, energy and biofuels industrial strategy
Zimbabwe	Southern Africa	SADC	Jatropha, sugar cane and oil seeds	Draft energy policy
Uganda	East Africa	EAC	Jatropha, sugarcane	Energy Policy
Benin	West Africa	ECOWAS	Palm oil	Could not establish
Mali	West Africa	ECOWAS	Jatropha	Renewable energy, energy and biofuels industrial strategy

2 FRAME OF ANALYSIS

Biofuels are being developed in a very complex, dynamic and diverse context. Therefore in assessing performance of biofuel policies, there is need for a framework of analysis. The frame of analysis the study utlised was based on sustainable criteria around impacts; social, economic and environmental. Currently, there are a number of emerging principles and standards being developed around sustainable biofuels promotion. Most of these however, are being pushed by global voluntary interest other than national or regional interests in of SSA. This study utilizes one such framework, the RSB. The choice of the RSB is based on the fact that this is one sustainable standard that has undergone great global stakeholder consultation. The RSB principle for global sustainable biofuels development (known as version Zero) is show below (See table 2). It should be noted however, that consultations around this standard is still ongoing.

Table 2: Roundtable Sustainable Biofuels (RSB) Principles

Roundtable Sustainable Biofuels Principles[2]
Principle 1: Legality Biofuel production shall follow all applicable laws of the country in which they occur, and shall endeavour to follow all international treaties relevant to biofuels' production to which the relevant country is party
Principle 2: Consultation, planning, and monitoring Biofuels projects shall be designed and operated under appropriate, comprehensive, transparent, consultative and participatory process that involve all relevant stakeholders
Principles 3: Climate Change and Greenhouse Gas emissions Biofuels shall contribute to climate change mitigation by significantly reducing GHG emissions as compared to fossil fuels
Principle 4: Human and labour rights Biofuel production shall not violate human rights and labour rights, and shall ensure decent work and the well-being of workers
Principles 5: Rural and social development Biofuel production shall contribute to the social and economic development of local, rural and indigenous peoples and communities
Principle 6: Food security Biofuel production shall not impair food security
Principle 7: Conservation Biofuel production shall avoid negative impacts on biodiversity, ecosystems an areas of High Conservation Value
Principle 8: Soils Biofuel production shall promote practices that seek to improve soil health and minimize degradation
Principle 9: Water Biofuel production shall optimize surface and groundwater resource use, including minimizing contamination or depletion of these resources, and shall not violate existing formal customary water rights
Principle 10: Air quality Air pollution fro biofuels production and processing shall be minimized along the supply chain
Principle 11: Economic efficiency, technology and continuous improvement Biofuels shall be produced in the most cost-effective way. The use of technology must improve production efficiency and social and environmental performance in all stages of the biofuels value chain
Principle 10: Land rights Biofuel production shall not violate land rights

[2] A principle is a general tenet of sustainable production and criteria is a condition to be meet to achieve these tenets

2.1 Emerging sustainability issues that would influence sustainable policy direction

There are a number of emerging issues, and questions around biofuels that inform and will inform policy direction for biofuels in SSA. Some of these key issues are:

2.1.1 Locating biofuels conceptually

Biofuels are a fairly modern, diverse and cross–cutting sub–sector that brings together food security and energy issues (NEPAD, 2007).

This intersection between energy security and industrial production creates a lot of challenges for policy makers in SSA around biofuels. This is because the so called "biofuels portfolio" falls within two critical and powerful ministries in most African nations. These are energy and agriculture leading to challenges in terms of policy development, programme implementation and investment. This split responsibility has in most countries, created strong territorial issues. It is noted though that in some countries though policies around biofuels are termed "biofuels polices", The Africa Biosafety Centre (2008) argues that these are actually "agrofuels strategies" (reference to the South African biofuels Industrial Strategy).

Is it a Biofuels or Agrofuels policy debate?

We call this a biofuels program. Such Phrases use the prefix bio- to subtly imply that the energy question comes to life in general this is illegitimate and manipulative. We need to find a term in every language that describes the situation more accurately, a term like agro-fuels. This term refers specifically to energy created from plant products grown through agriculture".

MST, Via Campesina

Source: **The Africa Biosafety Centre, 2008**

The term agrofuels emerged in Latin American circles to describe the use of food and oil crops produced in large scale plantation style and processed and blended with petroleum and used and energy crops (The African Biosafety centre, 2008). Biofuels they argued describe the traditional use of wood, dung and other biological material for fuel – biodiesel and bio ethanol. It is argued that depending on the definition, the policy development may lean towards either industry centred or farmer and people centred.

2.2.2 How to manage Policy direction for SSA

Another emerging issue not fully articulated in many papers on biofuels is an assessment on how policy has progressed in last three decades in Africa. The question is to understand emerging trends and how this would assist shape future biofuels policies. Leading scholars on the topic of policymaking in SSA like Olukoshi Adebayo (2005) argue that capital investment for new developments in SSA [like biofuels which has greatly depended on foreign capital] must be driven more by a "domestic investment orientation". Most African countries, he contends, tend to frame their policy making around "attracting foreign capital". This is clearly evident in early post-independence years planning. This trend still continues to date in SSA. Benin relates this example in this report. Olukoshi (ibid) also warns of the tendency for SSA to lift policies from historical experiences of other regions and apply them in what he terms "an ossified form" in guise of a universal model. This approach itself as observed by Olukoshi (ibid) is a key methodological flaw of 'doing" development in Africa. Mamadani (1995) also warns scholars and policy makers not to think and act by analogy in addressing the many challenges that face the continent.

Olukoshi (ibid), further points to a relevant issue around policy direction, and making in SSA. He observes the complexity of African society livelihoods especially farming systems and yet we continue with an approach that treats people as distinct, exclusive, oppositional categories of the

policy debate even though they are that are part and parcel of it. From this it can be argued that to unravel the policy complexity of biofuels will require a historical analysis, domestic interest alignment in investment planning leanings, and attempts at putting people at the centre of the dialogue. If this is so, one questions how to make sustainable principles that will do justice in capturing the dynamics and complex livelihoods in SSA.

2.2.3 Food verses fuel – high food prices

Historically, agriculture prices have been linked to energy prices especially in developed counties this is because increased cost of fossil fuel based inputs (diesel, fertilizers, pesticides) lowers output (IFAD, 2008). Literature and practice from the region point to a number of issues that are informing the development of biofuels policy in SSA. There is the food verses fuel controversy, where questions are being raised around need for research and data to understand to what extent agriculture and the energy sector can meet biofuels demand without compromising food security. If farmers both large and small scale farmers benefits from high commodity prices would this compromise net purchaser of food. For example IFAD (2008) reports the link between biofuels and high food prices. They state that some food crops used as feedstocks have pushed up the prices of food up (IFAD, 2008). IFA (ibid) further points out that the price of maize increased by 23% in 2006 alone. This was the result of U.S ethanol programme which also pushed global cereal prices. This same phenomenon is noted for oil crops such as palm, soya beans and rapeseed because of biodiesel production. Projections on food prices globally point to continued increase of some food prices till 2020, while price of wheat would remain unchanged. What policy then would mitigate this – is another concern.

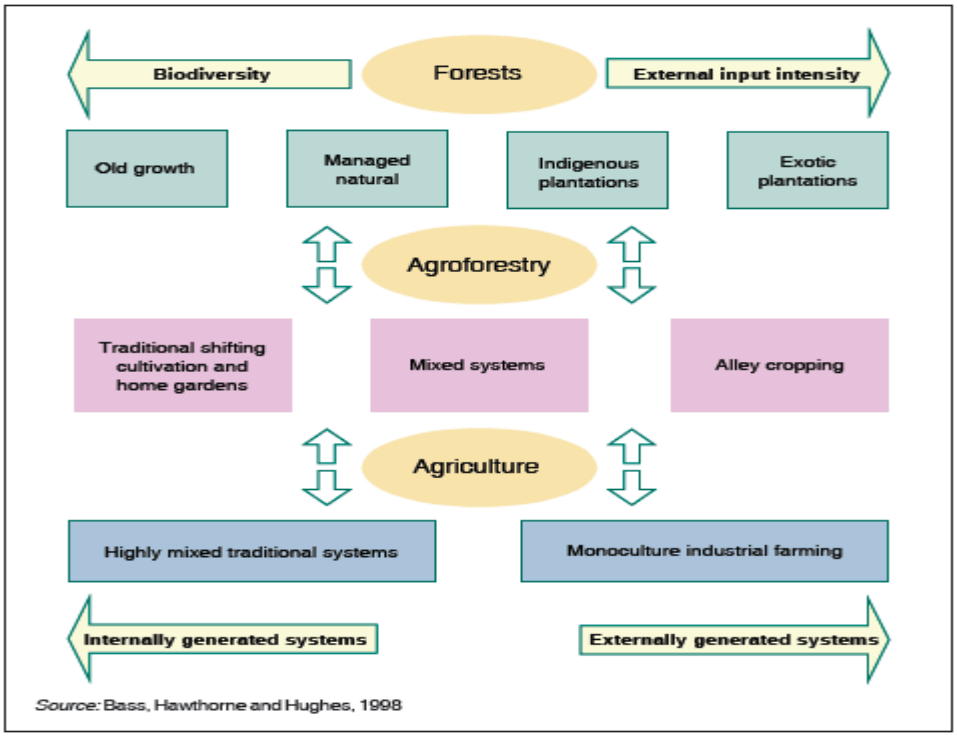
2.3.4 Climate change and environment

Biofuels as a global phenomenon has been pushed by environmental groups that see it linked to greenhouse gas emission reduction. Most countries in SSA are signatories to the UNFCCC, conventions. These are commitments from countries to reduce global green house gas emission. However, the question still remains on how effective biofuels will be to perform this role and whether biofuels is the right yardstick to use. They cite intensive farming practices utilizing more energy (fossil fuels) through extensive mechanization. For SSA, who have low net emissions of green house gases, arguments are that they have other urgent priorities like poverty, and energy availability is pre-condition to move people to economic development.

2.3.5 Land use and tenure security

Land is at the centre of biofuels production. This is because large tracks of land are required to gain maximum profit from biofuels for both for ethanol (as in the case of sugar plantation) of biodiesel and in the case of oil crops production. The land question, rides on the fact that large tracts of land are taken away from communities who are socially, and economically vulnerable groups. It is these communities mostly traditional systems whose tenure regimes are not secure. There has been an increase in number of land conflicts linked to biofuels. It is evident additionally that land taken for use of biofuels competes with land for growing food crops thereby compromising food security. In terms of land use, the aim of a sustainable biofuels policy, it is argued, should be to manage the diverse land use spectrum of both large and small scale development, in time and space, with change resulting from interactions among ecological, economic and socio-political factors (see figure 1 below: on land use spectrum).

1
Land-use spectrum as basis for biofuel development



Source: Hawthorne and Hughes, 1998

2.3.6 Impact on poverty alleviation

Most of the developments around biofuels are occurring in lands in rural areas of SSA. These areas are where the poorest and vulnerable of these nations reside, especially small scale farmers. In terns of rural development, the issues are, would biofuels in these areas contribute to poverty alleviation through provision of energy for reproductive and productive energy needs? Would biofuels contribute to rural poverty reduction through employment and opportunities for improved livelihoods of rural populace, would it reverse the rural- urban migration by making rural areas viable economic areas?

2.3.7 Gender Issues

Further, issues linked to biofuels and genders are emerging. Gender practitioners are questioning how biofuels will contribute to women's and their children's lives especially the rural and urban poor. Energia (2009) argues that women in many developing countries lack access to modern energy. Energy is a serious constraint. Women are primarily responsible both for securing energy for their households, and in poor regions they rely heavily on traditional biomass fuels such as firewood, charcoal and agricultural residues for most of their energy use. Women in these areas are greatly in need of modern energy services to reduce the time and labour involved in providing for their families, and to open up new opportunities for education and economic advancement. Therefore well-planned policies on biofuels production have the potential of transforming women's current roles as energy suppliers into sustainable livelihoods that trigger new advancements in rural development and self-reliance. However, if gender considerations are not incorporated into biofuels policies and practices, the livelihoods of women and their families could be threatened.

2.3.8 Global Efforts towards sustainability

In effort to answer this call, the RSB has attempted to unravel the key sustainable development issues around biofuels through the definition of principles that would inform policy through global multi-stakeholder dialogues (see table 2).

The proceeding section analyses the performance of biofuels policies in SSA by assessing significant policies and practice in selected institutions and countries.

2. INTRODUCTION:

2.1 Overview Energy/Biofuels policy trends in SSA: Past to Present

A historical overview illustrates at independence of most African countries in SSA in the 1960 – 70s, an explicit energy policy direction was virtually non-existence in terms of any coherent institutional infrastructure for policy formulation, analysis, monitoring and implementation (Karekezi & Makenzie, 2002). It is evident that early initiatives on policy development on energy centered on increasing supply of electricity and petroleum with major refineries build in Africa. This era also saw significant development in the power sector, mainly electrification. This move was in anticipation of predicted growth in industry and agriculture which most countries believed would follow the exponential growth path of the 60's. Karekezi and Mackenzie (2002) illustrate that supply-oriented energy policies dominated this era and subsequent years till the late 70's. They (Ibid) also delineate for analysis purposes three distinct energy policy development eras in SSA. These eras are strongly marked by national response to the global oil crisis. Post 1980s noted the entry of sustainable development and climatic considerations that brought biofuels development to this agenda. See table 3 below.

Table 3: Era and Energy Policy Response and Direction in Sub-Saharan Africa

ERA/PHASES	ENERGY POLICY RESPONSE AND DIRECTION IN SSA
- *First oil crisis 1960-1973*	- Geared towards external borrowing to offset cost of oil - Excessive government spending on non-productive projects - Move from planning to survival policies creating - No space for energy policy consultation or people engagement - Rural development plans abandoned/ monitoring not an issue (food security compromised) - Weak monitoring (economic inefficiency) - Weakened legal frameworks as nations became centralization – one party states - No consideration for environmental issues as survival become paramount
- *second oil crisis 1979*	- Failure to meet debt load - Beginning national energy survey - training, capacity initiatives - development master plans - bulk of energy investment to conventional energy - discussion on Renewables began - no sound environmental consideration
- *era on low oil prices beginning mid 1980*	- SSA did not benefit from low oil prices - Era characterized by inefficient utilities - New Bioenergy efforts – ethanol as alternatives –sugarcane (example Zimbabwe, Malawi & South Africa)
- *Post 1980's oil crisis & global environmental concerns*	- Improved technologies around Renewables - Climate change debate leads to consideration of new sustainable development principles - People centered approaches for energy access - Increased power to multi-national companies - Growth and power for economic regions - Increased call for people participation in energy policy direction - Biofuels energy as key issue

Source: adapted from Karekezi & Mackenzie, 2002

It is clear that the development of national policy around energy in SSA have been driven by three major policy goals these are: motivation to reduce trade imbalances through reduction in oil import bills and increased export earnings, increased energy security and to support national development goals. The other emerging driver is to mitigate negative impacts of fossil fuels.

In the light of above issues, it is clear that policies on energy/biofuels development in SSA are and will be strongly framed around global crisis than regional and national concerns. As it shall be outlined in the following pages, a regional analysis of biofuel strategies indicates that Africa's regional economic bodies have played a limited role in neither shaping and driving practice and implementation at country levels, nor explicitly shaping a policy direction on biofuels that sub-Saharan Africa could take.

2.2 Assessment of Economic Regions Biofuels Policies: ECOWAS, SADC & ECA

The economic regions in sub-Saharan Africa, ECOWAS, SADC and ECA provides very little in terms of data and concrete best practices capable of providing a clear policy development pathways for biofuels development in sub-Saharan Africa. The main economic regions reveal huge potential for biofuels exploitation. Emerging studies cite favourable climatic conditions for a number of feedstock's, cheap labour and availability of land. Studies on biofuels development in the three economic blocks demonstrate that biofuels have been on the agenda of most African countries since the 1980's with best known energy technology systems being ethanol used predominately as a substitute for petroleum (Kerekezi and Ranja, 1997). In terms of financing biofuels, there is relatively low-level investment, and proliferation of a number of low cost uncoordinated projects and programmes scattered all over the region and run by various organisation. This is with the exceptions of countries like South Africa (Dynes, 2008).

An overview review reveals that most of the projects in the region are at various stages of development, but generally they are all in infancy stage, hence making it a challenge to attempt a concise assessment towards a sustainable policy direction. When pegged against international biofuels principles and standards (for example RSB), the region shows that the economic blocks need harmonized efforts towards an explicit criterion for sustainable biofuels for SSA. Soumonni and Cossens (2008) argue that lack of harmonizing and policy direction is not new for the economic block. This is tradition of these bodies, where on a number of agreements they fail to make them binding for its members. Lack of an explicit policy is noted for example in the ECOWAS, Energy Protocol which only refers to biofuels in an annexure on energy materials were biomass features as "a primary Biofuels" in reference to fuelwood (logs, twigs, billets and charcoal). Similarly, EAC energy strategy only mentions biofuels on its section on defining biomass.

It is also evident that there is a lot more activities to guide policy direction development within SADC. At the forefront of SADC activities is South Africa, who already has put in place a number of policies and frameworks. South Africa has utlised the SADC protocol to encourage the development of a regional approach in the biofuels programme. It has also managed to position itself as a leader in the region (RSA, 2007). Arguably, policy directions in sub-Saharan Africa are emanating more from country driven initiatives rather than from the regional economic blocks. It is equally evident that policy direction in the three economic blocks will be defined more by the push from national initiatives than agreements made through these regional economic blocks.

It is within this frame that this paper attempts to assess some institutions charged with implementing policies and plans in SSA. Furthermore the paper presents an assessment of country initiatives around biofuels policy development using the lens of national policies and best practices as illustrated below.

3. ASSESSMENT OF SSA POLICY DRIVER INSTITUTIONS

There are various institutions in Africa charged and resourced to assist national states with the development of bankable and effective regulations. Some of these are NEPAD, FEMA, UNECA, AFREC and FEMA. The assessment will examine if these institutions are in any way giving policy directions to biofuels policy in SSA.

3.1 United Nation Economic Commission for Africa (UNECA)

Based on Addis Ababa, Ethiopia was established with mandate for social, economic development, regional cooperation with a key stake in promoting the development of energy in Africa. They played a significant role in drafting the Renewable energy policy for SADC.

3.2 Africa Energy Commission (AFREC)

With headquarters in Algiers was created by the 37th Summit Conference of the OAU Heads of States and Government in Lusaka in 2001(ELhag, 2005). Its mandate is to develop energy policies, strategies, databases on sub-regional and continental development.

3.3 African Union, NEPAD initiatives

Apart from the economic blocks that fall under the AU, there is also the new partnership for Africa (NEPAD) programme on biofuels is located within the broader agenda of energy access. Biofuels is seen as a significant pre-condition towards poverty reduction. During the Minister of Energy Conference in 2001, NEPAD put forward a set of objectives for the energy sector. It main objectives is to increase energy from 10% to 35% or more, access to reliable and affordable commercial energy supply by Africa's population in 20 years (FEMA, 2007). This would require huge investments as FEMA estimated between $6 - $15 Billion per annum between now and 2015 (FEMA, 2007). See table 4.

Table 4: Investment required to increasing access to modern energy service in SSA

	US$ billions	Remarks
World Bank (A)	11	Electricity only, 725m people by 2030
World bank (B)	4	Electricity only for 725m people -48% by 2030
ECOWAS	5.2	Energy cost for cooking account for about 250m people - 50% by 2015
EAC	0.3	Using High-Impact Low cost and scalable technologies 110 m people 50% by 2015
CEMAC	0.2	Electricity only, 35 m -50% by 2015

Source: FEMA, 2007

The World Bank through its Action plan for Energy Access in Africa (APEA) has indicated levels of investments. In terms of modern energy access SSA would require approximately $4-11 billion per annum for the current population of 735million. These compare well with ECOWAS. The big question is current investment falls short of cost suggested. In terms of policy direction towards sustainable outcomes by NEPAD, its goal is pushing for modern energy for productive activities, economic growth, reversing environmental degradation associated with traditional fuels; regional integration and sectoral reform (see annexure 1). Nepad has also been part of processes of defining policy on energy access that links to Millennium development goals through the Millennium Development Workshop of 2004. Despite these notable commitments and initiatives, NEPAD has not been effective in adequately influencing national practice in individual countries.

3.4 Forums of Energy Ministers of Africa (FEMA)

FEMA was formed in 2005, in Kampala Uganda has the objectives of raising awareness of the central role of energy in achieving MDGs, developing coherent policies, technical standards and projects of regional energy markets (Sakrini, 2004).

It is noted that there are isolated and sometimes overlapping initiatives happening around energy/ biofuels in these implementing institutions. There is clearly a lack of harmonization of efforts towards a clear policy direction. The policy intention of the institution is hinged on poverty reduction. It is however, difficult to follow any policy direction as donor interest and funding drives the agenda of national policy. However, FEMA (2007) argues that the weakness of these institutions is due to unclear and overlapping terms of human capital and reliance on donor support. This is noted in the national initiatives.

4. ASSESSMENT OF COUNTRY BIOFUELS POLICIES:

ECOWAS REGION

4.1 Nigeria

Nigeria's 2007 national policy on biofuels specifically promotes ethanol production through the use of sugar cane. The ultimate objective is to improve the quality of fossil-based fuels in Nigeria, thus demonstrating a rare and yet commendable environmental concern. As such, the policy outlines legal provisions concerning the use and extraction of biofuels, the roles and responsibilities of various stakeholders, production targets including the domestic and export potential of the industry (Azih, undated). In addition, the policy stresses the need for employment creation, agricultural development and technology acquisition and initiatives towards attracting foreign investments (ibid). An analysis of the main issues contained in the policy indicates that the consultation process was inadequate as many issues contained in the RSB principles have not been considered. For example, issues of food security, conservation and land rights have not been given particular attention for the purposes of guiding implementation.

Assessment of the implementation process of the biofuels policy appears to be too early at this stage. Current knowledge leans towards anticipated benefits in terms of industrialization, investments, rural infrastructure, employment creation and poverty reduction. There is no known evaluation that has been conducted o monitor the close to 2 years of the policy's existence.

4.2 Benin

Benin has no clear policy around biofuels development. The country heavily relies on agricultural policies to push this industry, as agriculture is the mainstay of Benin's economy. Agriculture production is largely by small scale farmers who account for 90% of agriculture production. In 2000, agriculture alone accounted for 38% of national GDP. Main food crops cultivated are yams, manioc, corn, sorghum, rice, dry beans, sweet potatoes, sugar cane and millet. Main cash crops are cotton and palm oil. Palm production has always been the focus of much controversy in Benin and now also has entered the biofuels debate (WRM, 2007). The policy favours a push for palm oil exploitation as a potential feedstock for biodiesel. There are plans in the country to develop 300,000 – 400,000 hectares of prime land in the south Benin for palm oil production by 2011. There have been a number of critics to this move arguing along sustainability principles. Soumonni and Cossens (2008), argue that this is prime land were half of the population of the country resides (7.7 % of national area) and therefore pushing people out would put a lot of land and resource pressure on many communities.

The government sees biofuels development in its policy entirely as an export crop without any mention of domestic benefits ABN, 2007

There is a lack of studies to establish challenges that would inform future policy and planning. For example hydrological studies on Benin (Gauthier et al., 1998), point to increasing climatic variation and change, especially in rainfall patterns. This it is predicted will have impacts on production yield on palm plantations and other food crops. Therefore selection of land for mono-cropping of biofuels must also consider climatic factors. Government policy around land appears to be implemented without adequate best practice consideration. It appears that in Benin, plans for biofuels expansion are occurring with very little participation by the local people. Noted is the lack of a coordinated approach that encourages consultation. Like other Palm Oil projects in SSA (See Jones, 2005: pp 60 -61). Palm oil production plants in Ghana have successfully displaced other forms of agriculture but this has resulted in increasing social differentiation (or "de-agrarianisation:"), the rise of underclass, and insecurity over markets, lands and livelihoods. Successful technical interventions have been made but these are shaped and controlled by the powerful economic interest. This is similar to the scenario unfolding on Benin.

There is a lack of policy guidelines for sustainable principles and standards. The government sees biofuels development in its policy entirely as an export crop without any mention of domestic benefits (ABN, 2007; Soumonni and Cossens, 2008). It is also difficult to establish how communities would benefit. It is clear that the programme is driven by a select group and communities are not engaged as effective partners in the biofuels development drive.

4.3 Ghana

Ghana is one the few countries in Sub-Saharan Africa with a distinct policy on biofuels. The National Biofuels Policy of 2005 promotes biodiesel development by allowing a 20 percent national gas oil consumption to be replaced with biodiesel and 30 percent of national kerosene consumption replaced with Jatropha oil by 2015. The policy also provides a provision for improving the efficiency of production technologies and techniques of biodiesel with the aim of reducing costs (Jumbe, 2007). The country's focus is on the production of biodiesel from Jatropha with a number of private and public enterprises engaged in its cultivation and processing (see Table 5). This high level of activity has not been matched by good performance of the sector because of poor coordination and exchanges of lessons among players (Hagan, 2007), a situation that clearly reveals policy weaknesses in implementation and monitoring.

Ghana is one of a few countries in Sub-Saharan Africa a distinct policy on Biofuels: The National Biofuels Policy of 2005

Table 5: Main players of Jatropha production in Ghana

Institution	Land area under cultivation (hectares)	Funding sources
B I Ghana Limited	700	Private fuding
ADRA/UNDP	800	NDP-GEF/ADRA
New Energy	6	Donor funding
Gbimsi Women Group	4	UNIFEM/UNDP-GEF
Anglo Gold Ashanti Ltd	20	Corporate funds
Valley View University	4	University Funds
Total	**1, 534**	

Source: Hagan, 2007

A story that made headlines in 2008 is that of a Norwegian biofuel company that took advantage of Africa's traditional system of communal land ownership and current climate and economic pressure to claim and deforest large tracts of land in Kusawgu, Northern Ghana. The company claimed it was creating "the largest jatropha plantation in the world" (see http://www.biofuelwatch.org.uk/files/biofuels_ghana.pdf). Without any consultations with the government, the company made the illiterate chief to sign away 38 000 hectares with his thumb print.

This situation clearly demonstrates that the adoption of biofuels in Africa cannot be analyzed without understanding the underlying issues of poverty and poor economic conditions that currently exist. As such, poor communities are being drawn into the industry without clearly understanding the opportunities and likely disadvantages. Moreover, women are losing their farms for biofuels production without their livelihood concerns being met (see http://allafrica.com/stories/200903161744.html). The communities are unclear what would happen to their land and food security and evidence of the destruction of biodiversity is now increasing for example, economic trees such as shea-nut and *dawadawa* trees. As such, there is a convincing argument that biofuel production is currently being driven by foreign and external energy needs without consideration of local needs and there are no national regulation frameworks ad monitoring to keep project developments in check.

4.4 Mali

Mali is one of the poorest countries in the world, with 60% of land areas desert or semi desert with a population of 99% lacking energy services. In the last three decades, Mali has been searching for alternatives for energy as means out of poverty. In 2006, Mali adopted the National Energy Policy and the Renewable energy Development strategy in June, 2008. This was later followed by the National Biofuels Development Strategy. The strategy is aimed at increasing national energy production through the development of biofuel in order to meet the country's socio-economic needs at a lower cost (Afrique-Actualités, 2009). Mali in 2009, established a National Biofuels Agency (ANADEB), as approved by the country cabinet. The functions of the agency are mainly to provide a consultative framework amongst key stakeholders in the industry and harmonize Mali programmes with international community (Afrique-Actualités, 2009).

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In terms of best practices, Mali has provides the region with a lot of lessons on policy direction on how to implement community based Jatropha programme pioneered by Mali Folkcenter a local Non-governmental organisation. Some of the community schemes in Mali have tried to push for testing of some of the sustainable biofuels principles understanding also that Mali Folkcenter has been part of the creation of the RSB principles. In trying not to use prime land projects have been concentrated in the semi-arid regions to grow jatropha. In the Garalo 10, 000 hectare biofuels project for example, women have been at the forefront of jatropha development. The centre has provided for electricity, irrigation services, refrigeration and other services. It has also combined this with training at different levels of the values chain.

Example of Community Biofuels Scheme

A 15-year project in the township of Garalo aims set up electricity generators fuelled by jatropha oil for 10 000 people and to reduce village poverty. The population is mainly engaged in agriculture (mostly millet, sorghum and rice, as well as cotton for income generation), raising cattle and fishing. Electricity is required to pump water for irrigation, to operate agricultural processing equipment, to chill vegetables and for lighting and refrigeration services in small shops and restaurants. Jatropha (mainly *Jatropha curcas*) is well known in Mali where it is used for protective hedges, erosion control and traditional soap-making. The project will implement 1 000 ha of plantations of jatropha and other oil-producing plants and will provide training at different levels to ensure quality of the processed oil. Expected environmental benefits include carbon-dioxide emission savings of 9 000 tonnes per year as well as protection of soil against erosion to combat deforestation and desertification. The money spent on locally grown fuel stays in the community to stimulate the local economy. On a macro-economic level, this implies a reduction of the country's expenses on imported fossil fuels, saving hard-earned foreign currency reserves.

Source: FACT, 2007; UN Energy, 2007

The Garalo jatropha project is driven by leadership of Malifolkcentre. They provide for skills development and political leverage for the communities. Projects in Mali have demonstrated effective participation approaches, showing multi stakeholder consultation, and a policy drive towards ensuring a sustainable biofuels industry. Focus discussion with communities in the project at Garalo[3] recount how electricity had contributed to education, health (there was now an ambulance stationed at Garalo to transport patients to the central hospital in Bamako), improved communication and governance. Women have moved into the centre of development of the community. Women were quoted to say "we are now part of the key decision-making process on biofuels of Garalo". However, it could not be established how these principles cultivated towards sustainable biofuels projects would play out given a large scale biodiesel production or if transported to another context.

East African Community (EAC)

4.5 Tanzania

Tanzania has no specific policy on biofuels but implementation is guided by the National Energy Policy (2003). Since the energy policy is not explicit about biofuels production and implementation, the Government established the National Biofuels Task-Force in 2006 which was tasked with providing policy direction towards a sustainable Biofuels development and utilization in Tanzania (see TOR in box 1).

In a recently published study on the "Biofuel Industry in Tanzania," journalist Khoti Kamanga of the University of Dar es Salaam warns against the side effects of energy plantations. The population, Kamanga writes, is usually uninformed, while the cultivation of energy plants usually goes hand-in-hand with forced resettlement. According to Kamanga, it is very likely that ethanol production will also affect food prices in Tanzania, with the country's dependency on food imports growing even further.

In Dar es Salaam, the government has now recognized that the boom also comes with problems. "Energy plants cannot be an alternative to food production," said President Jakaya Kikwete, responding to widespread resentment in his country over high food prices.But the energy farmers remain unimpressed. Sun Biofuels and Sekab each want to expand their production to 50,000 hectares (124,000 acres) -- as soon as possible.

www, Spiegel. de/international/o,158,4603322,00html

This planning phase has proved successful in promotion best practice in the sector and providing direction on its development in two ways. Firstly, the composition of the task force is comprehensive and representative of the major interest groups in Tanzania, although gender representation has been clearly ignored (see Table 6). Secondly, tangible outputs in the form of a Draft Biofuels Development Guidelines, inclusion of biofuels in Petroleum Supply Bill, preparation of two years biofuels project document that seeks to deeply assess policy, legal, regulatory and institutional framework in the biofuels industry has been developed (Mwihava and Rwebangila, 2008).

[3] Visit to Garalo, November, 2008 under the COMPETE project –Report by Khamarunga Banda

Table 6: Composition of the Tanzania Biofuels Task Force
Ministry Planning Economy and Empowerment (Chairperson)
Ministry of Energy & Minerals (Secretary)
Ministry Agriculture, Food Security and Cooperatives
Ministry of Water
Ministry of Lands, Housing and Settlement Development
Ministry of Labour, Employment and Youth Development
Ministry of Finance
VPO-Environment
AG-Chambers
Tanzania Investment center
Tanzania petroleum Development Cooperation
Tanzania Sugar Producers Associations
Community Finance Company

Generally, Tanzania has received tremendous amounts of support at both research and implementation levels despite lack of a national policy. There are a sizable number of players (domestic and international) in the industry who are at different stages of the biofuels. Most players are international companies who receive external funding from countries such as Japan, Germany and Japan. A lack of specific policy, legal and institutional framework on biofuels has contributed in delayed decision and limited biofuels investment.

Box 1: Terms of Reference of the Biofuels Task Force in Tanzania

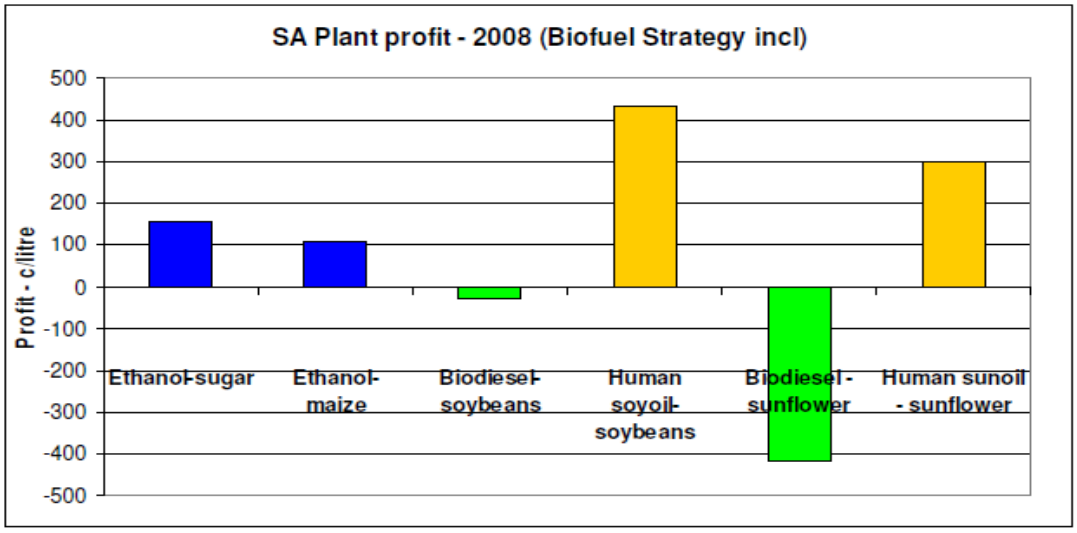
- Review the existing environment in the biofuels sub-sector [policies, legislation (laws& regulations), strategies, programmes, standards, etc.].
- Prepare enabling environment to facilitate sustainable development, promotion and utilization of biofuels in Tanzania.
- Develop well-defined, coordinated and integrated modalities and procedures for dealing with development of biofuels.
- Develop a sustainable programme for biofuels industry catering for community, commercial and national interests and linked to economic growth, poverty reduction and economic empowerment.
- Prepare modalities for immediate facilitation of biofuels developers/investors.

Source: Mwihava and Rwebangila, 2008

Southern African Development Community (SADC)

4.6 South Africa

South Africa has been at the forefront of providing policy direction within the SADC region. As early as 2003, the country developed a Biofuels White Paper. It provides for a ten-year medium-term goal to promote the biofuels energy sub-sector. In support of the proposed new energy policy, the Government has provided for a 30 percent tax reduction for biofuel for ethanol, which can be produced from sugar cane, grain sorghum, maize and sugar beet, while the cultivation of crops suitable for biodiesel is, however very, limited (NEPAD, 2007).



Source: Meyer Ferdi, Bureau of Food and agriculture Policy, South Africa

In 2005, the South African government established an Inter-departmental Biofuels Task Team that produced a detailed feasibility study in favor of biofuels. The most critical recommendations were:

- Sugar cane, sugar beet, sunflower, canola and soya as main feedstock's
- That a 3.4% biofuels target was feasible and attainable by 2013;
- A 2% blend of biodiesel (B2) derived from soya would be commercially viable without subsidies at a price of $65 per barrel;
- A 10% ethanol (E10) from maize and sugar would also be commercially viable;
- It was envisaged that a 4.5% biofuels contribution would do little to energy security or balance of payments for South Africa;
- It was also recommended that the South Africa biofuels programmes should have a regional approach to assist set standards and harmonize regional fuels specifications, taking in account the abundant arable land in the region.

By December 2007, the Biofuels Industrial strategy was finalised. Critics of the strategy argue firstly for its lack of inclusion of small scale farmer concerns. They stated that the policy was hinged not on 'biofuels" paradigm but on "agro fuels" (for example biogas exclusion), this therefore makes agriculture central to the discussion and small scale farmer's key stakeholders in its development. Women groups argued for the exclusion of gender concerns around resource access, decision making and participation (see Sugrue, Banda and Annecke, 2007). To date in the country there are number of projects at various phases of implementation. These are funded by various institutions from government parastatal companies and private sector. The largest amount of funding however comes from government parastatal companies; this includes private capital (BCA, 2008). There are many key players in the country presently involved in biofuels in a complex interplay. Some of the organisations include companies like, The Central Energy Fund (CEF); Industrial Development Cooperation (IDC) and AsigSA and many provincial developments. In the country, both private and parastatal companies are pushing an aggressive agribusiness model (based on chemical input, monoculture, corporate owned hybrid and genetically modified (GM) seed. BCA (2008) further argues that the drive is more like a land grab being promoted on the last frontier of traditional farming systems in the country. The impact and criteria used to procure this land is still contested, especially with criticism around slowness by government in the land reform process. In this model, however, it is difficult to assess objectively benefits to communities, their engagement, participation and empowerment the project since the project is still at infancy stage.

Example of Multi stakeholder Biofuels outgrowers Scheme

Mafura-Makhura Incubators was formed in 2006. It is a project born out of a push by the former Minister of Minerals and Energy Mlambo- Ngcuka, who urged Limpopo farmers to search for alternative energy sources to avert energy prices and benefit small scale farmers (Temo News, 2009). The project was created as a joint partnership of big business, government and small scale farmers. The National Department of Agriculture and Agriculture Research Council (ARC) with funding from the Department of Science and technology, Small Enterprise Development Agency (SEDA) and the Limpopo Department of Agriculture. The vision of the organisation is ensuring development of fully equipped small scale farmers (women and men) who can compete in the biofuels chain by taking advantage of the benefits of the multi stakeholders. Small scale farmers are trained in biofuels farming practices and agricultural.

Both women and men are key participants in the projects which aim for a 50% women and men's participation although this has yet to be realized. The new trainees to the programme sign an "incubation" agreement which enables the provision of seeds, fertilizers and training in production skills and business development. They also are bound to the programme for 3 years as repayment for start up capital they receive from the programmes. To overcome the cost of inputs a cooperative was created to which the "incubates" are shareholders. Participates in the project relate to improved livelihood, incomes and skills since joining the programme.

Source: Banda, K, 2009; adapted from case study of MMI

Various questions lately are arising around the government introduction of large mono-cropping in what it terms "agricultural degraded lands" especially in the Eastern Cape. They are that this is the only way to gain maximum financial benefits. Various questions are arising around related impacts on the poor, especially as targeted degraded land are mainly in the former homelands4 . The National African Farmers Union (NAFU SA) and other groups argued against this large scale models, argue that implementation of these model would perpetuate inequality and further dispossesses already marginalised small scale black farmers, especially women (Banda, 2007).

[4] These are areas in South Africa that were set aside during the apartheid regime for separate development of black people "homelands" and they were forces in these areas through laws of forced removal and restrictive laws of movement. These areas were ones categorized as having less resource and economic value and yet become over crowded.

These arguments have brought to the fore arguments around crops suitability and prioritisation in the feedstock mix selection.

National African Farmers Union of South Africa (NAFU SA) is arguing that certain food crops should not be considered in the feedstock mix because of foreseen impact on food and nutritional security. In a controversial move by government supported by the Reserve Bank Governor Tito Mboweni, maize was excluded from the feedstock mix for the production of ethanol. A fierce debate ensued furthermore by environmental groups, which saw the exclusion of jatropha. It was argued that it was an evasive species. However, government supports seem to favours both small and large scale biofuels production.

They seem to lean more on a move for introducing large scale mono-crop agriculture in the former homelands and other areas of the land seen as 'degraded lands", a concept still contested.

A Fuel levy exemption for biodiesel manufacturers has been in place for some time in South Africa approved by the national treasury in 2002 for 30% biodiesel this has later been revised to 50% in the Biofuels Industrial Strategy. However SARS is still grappling legislature around biofuels, BAC, 2008

South Africa policy direction is clear in the development of legal parameters that guide development of biofuels industry. For example, the government support to the biofuels industry is in form of tax incentives. There is a rebate on fuels levy collected by the South African Revenue Authority (SARS). A Fuel levy exemption for biodiesel manufacturers has been in place for some time in South Africa approved by the national treasury in 2002 for 30% biodiesel this has later been revised to 50% in the Biofuels Industrial Strategy. However SARS is still grappling legislature around biofuels (BAC, 2008). Discussion around biofuels has been active and have created platforms for debate, discussion, public participation and discussion around biofuels as evidenced by public expression through media and demonstrations; in this regard it places South Africa in a leadership role in the region. However, biofuels development in South Africa has evidently magnified the inherent inequalities that currently exist in access to land and resources across geography, gender and race.

4.7 Zimbabwe

Zimbabwe is one of the first countries in Africa to be engaged in bio-fuel production. The country's first activities involved ethanol production in the 1980s driven mainly by the private sector. In 2007, the government embarked on a massive Biofuels Programme using *Jatropha curcas* currently run by the National Oil Company of Zimbabwe (NOCZIM). Through an out grower scheme for Jatropha, NOCZIM works with willing farmers who have land and the capacity to grow Jatropha. However, production of *Jatropha curcas* has been promoted by a number of private, research and a number of Non- Governmental Organisations. The Ministry of Energy and Power Development has the overall responsibility for energy issues in Zimbabwe including policy formulation, performance monitoring and regulation of the energy sector parastatals as well as research, development and promotion of new and renewable sources of energy. In 2007 (GOZ, 2007), a draft energy policy was developed to specifically address the energy needs of the country (see box 2).

Box 2: The Zimbabwe Draft Energy Policy Objectives

- Preservation of an appropriate balance between energy demand and supply;
- Balanced use of natural resources with environmental considerations;
- Established clear definition of roles between the state, private sector and other players; and take cognisance of the context within which it is being formulated.

Although, the energy policy does not clearly address the issues of biofuels, the Government's creation of a biofuels programme within NOCZIM has created an enabling environment for the implementation process. For example, supporting an expanded Jatropha feedstock production has yielded positive results. In this regard, the Government made a policy decision not to use food crops for biofuels and to promote inedible Jatropha growing in drought prone semi-arid areas to minimize competition for prime agricultural lands (Mashaka and Revanewako, 2009). While bio-ethanol has been produced by large corporations in the past, the Government made a policy decision to use biodiesel production as a vehicle for economic empowerment of farmers and rural development. Admittedly, while this is a positive step towards adhering to the RBS principle, the effectiveness of these policy decisions are still weak on the ground. For example, the Jatropha production is currently driven from top down without a clear policy direction and without learning from those who have traditionally grown the crop. For example, although the goal of government is to produce biodiesel for fuel generation, smallholder farmers see the value in the use of the end products (Tigere et al. 2006). The end products are useful for domestic uses but local level studies indicate that little income is generated from this activity. In addition, although there are large number of women engaged in the biofuels industry at the local level projects their full participation including that of poor farmers is constrained by access to land and the non availability of tillage support in the form of tractors. The Jatropha project is currently providing more support to those with resources such as large scale farmers.

5. DISCUSSION AND CONCLUSION

In general, global demand for biofuels has been driven by both economic and environmental concerns. Economically, the increase in fuel prices has caused nations to search for alternative energy sources, while environmental concerns have been driven by need to mitigate the impact of climate change. There is a growing consensus that, Sub-Saharan Africa has potential for both large and small scale investments in biofuels investment because of availability of arable land and abundant cheap labour. However, effective implementation of the biofuels production that ensures equitable and sustainable benefits will largely depend on the existence and good performance of policy and institutional frameworks in the region. This assessment has shown that although efforts have been made by regional bodies such as ECOWAS, SADC and EAC to provide guidance on development of the industry there is no explicit policy direction around implementation criteria. This creates a concern for policy development.

In fact, current policy direction leans more towards energy access concerns with less emphasis on environmental and biofuels concerns. This can be attributed to the regions pre-occupation to address other poverty related issues such as food security and HIV/AIDS, as such biofuels has generally received less attention. It is clear that the region's response has been slow and less prepared to the growing international demand and interest around biofuels. Coming up with a harmonized agreement has been hindered by the tradition of these bodies where agreements have never been binding for its members. Another reason is disconnect between global and regional priorities and it is within this context that countries in SSA have to search for negotiating platforms that assist in balancing both their global interest against their national priorities. This power play, it is evident, will require new models and paradigms to enable the powerless (voiceless) to engage in these platform. Using representative case studies, this paper has identified a number of critical issues that assist in assing the performance of biofuels policies in SSA. Based on an assessment of a number of principles the study utilized the RSB and national context to frame the discussion and conclusions.

It is evident from the assessment that the development of the biofuels industry is guided by country energy policies, except for South Africa, Nigeria, Mali, and Ghana. Admittedly, the energy policies are not explicit on biofuels; some countries (Zambia and Zimbabwe) are in the process of revising their energy policies to include biofuels. Examined against energy policy development in SSA, it is clear that biofuels remains a fairly new sub-sector within agriculture and at large has remained couched within the energy sector. This has also contributed to the lack of clarity in terms of policy directions in most African counties.

An analysis of policy intents and statement reveal little in terms of substantive guidance towards implementation except for South Africa, and other countries with biofuels strategies. It is also evident that despite countries having biofuels policy directions, implementation and monitoring is challenged by a number of issues. Key amongst them are:

- **Legality** – The sustainable development of a viable biofuels industry requires a strong, supportive policy, and a firm legal, regulatory and institutional framework to ensure that measures are put in place to harness the contribution of the sector to rural livelihood. The current legal and institutional frameworks in SSA are inadequate to deal with challenges posed by biofuels development because of lack of skills and knowledge about the sector. In most countries there is no platform to disseminate information to local communities. In addition, there is weak enforcement of current legal guidelines due to lack of human and financial capacity. Weak implementation allows for corruption and exploitation of the less powerful as observed in the Ghana case and also Benin controversies around palm oil. South Africa has a well developed legal framework though with contestation over the institutional management of where to locate biofuels programmes and polices presenting a

challenge around implementation. Additionally, there is also a need for stronger legislature around protecting women labour rights as most outgrower models being adopted in SSA do disadvantage women as legislature around this is weak (Banda,K and Ngomane, S, 2006).

- **Consultation, planning and monitoring** – There is a clear lack of comprehensive consultation processes that takes into account all interest groups. The industry is dominated by big investors in the form of multinational companies, donors, and local private investors. It would appear consultation processes have no proper laid guidelines. Consequently, most biofuels task forces have excluded small scale farmer representatives and are weak on gender representation. This plays out in favour of "big" businesses. South Africa and Mali presents good practice of key stakeholder consultation and engagement. There seem to be a number of small disjointed and uncoordinated projects and programmes run by different interest group scattered across SSA with no clear planning and monitoring making these projects more of experimentation that sustainable projects. Government agendas throughout SSA are geared towards economic gains through export oriented biofuels programme without considering the local livelihood of communities. However, Nigeria presents an interesting case with its drive for environmental concerns of improving quality of their locomotive fuels supply.

- **Environmental Concerns** – Land is at the centre of biofuels debate. The questions and debates are around land use, access and rights land availability have created a number of conflicts. In terms of land access and rights as large tracts of land are being cleared to give to way to biofuels production and land right of many farmers particularly women are threatened. For example in Ghana, women have lost land and economic tress that support their livelihoods. There are inadequate support mechanism and policy direction on addressing such challenges. However, some countries such as Zimbabwe have made deliberate provision to designate marginal and used land for jatropha production in order to safeguard communities against loss of land. Evident in Mali is the use of semi-arid or arid zones for production. South Africa too has zoned off what it terms "degraded lands". However, this has created controversy in South Africa because degraded lands are in former homelands and this has incited pressure groups to term this " land grab" similar to apartheid days. There also concerns around priority of food supply over food security as large tracks of land are being cleared to give way to mono-crops. Some countries have called to have food crops removed feedstock list. For example South Africa. Other environmental concerns are around loss of biodiversity by species invasion as the case of South Africa with Jatropha. Other issues are that the development of the biofuel industry will require intensified crop production, and if there are no proper environmental, soil management and crop rotation programmes soil erosion will occur. Some countries are piloting programmes to mitigate this for example Zambia.

- **Gender concerns –** women have been the main producers of food in Africa and decision makers around food and nutritional security, yet their participation in biofuels is limited to small scale projects. Biofuels to benefit women will have to answer two main issues: (i) ability to contribute towards replacing traditional biomass use especially in rural Africa that poses great poverty challenges in terms of drudgery and health for both reproductive and productive purposes; (ii) time-use of women using traditional energy imposes challenges on its collection and use. Emerging in-country studies (Banda, K, 2009; Gandura; 2009), illustrates that currently there is very little efforts in countries of SSA to make women producers and participants in the biofuels industry. Women are relegated only to production, and not to full participation in the whole values chain of biofuels. Efforts at including women are mainly with small community schemes, which give benefits to household livelihoods. Best practice examples of evolving methods towards effective gender/women participation is seen in the cases of Zimbabwe and to some extent the initiatives beginning in South Africa.

6. POLICY RECOMMENDATIONS

6.1 General recommendations:

- A Harmonisation of policy direction is needed within the three economic blocks. Agreements around biofuels sustainability criteria and indicators must be developed for various themes for example food security, land access and rights which can be applied to various context. Priority programmes in the long and short terms should prioritise:
    - Enabling policy and institutional framework
    - Financing mechanisms
    - Resource assessment - feedstock availability and sustainability
    - Strengthening technical expertise
    - Models of improving stakeholder participation[5] (especially the vulnerable like small-scale farmers both women and men)
    - Promoting energy solutions for poorer households and farms that are efficient, affordable and sustainable

- There is need to form coherent and explicit policy pathway all relevant stakeholders including industrial partners, international organisation is essential to ensure the practical and feasibility of sustainability standards and instrument.

6.2 specific recommendations:

6.2.1 Regional & Sub-Regional Bodies (AU, UNIDO, AFREC, ECA, Sub-regional agencies)

- Need to take the leadership in the coordination of institutions/stakeholders:
    - Lobbying commercial and marketing bodies to expand local markets for biofuels
    - Mobilizing financing
    - Promoting investment and joint ventures
    - Coordinating exchange of skills and know-how

6.2.2 Policy Makers

- Must focus on formulation of policies that build on proven options that build on existing agro-industries that use available agro-wastes (such as bioethanol in existing sugar industries)
- Minimize start-up costs and reduce risk; Undertake regularly updated detailed resource assessments, stocktaking on existing bio-energy investments, initiatives and planned expansions
- Set pre-determined prices for Bioenergy/biofuels options and establish supportive regulatory and policy measures such as standard PPAs and blending requirements

[5] See model of participation Annexure 3

6.2.3 NGOs

- Priorities on investment analysis and preparation of “bankable” investment proposals
- Encourage policy platform and knowledge networks at national, regional and international exchange of experience, skills and technologies (regional bioenergy network) and;
  - Continue to regularly update detailed resource assessments, stocktaking on existing bio-energy investments, initiatives and planned expansions
  - Support R&D and local adaptation
  - Initiate pilot and demonstration investments
  - Strengthen national, regional and global technical exchange of skills, experience and information

6.2.4 Private Sector

- Refineries and fuel distributors; Automobile industry; Quality and Standards Boards; Research Institutions; Private entrepreneurs and banks must actively be engaged and get engaged in development process and should provide inputs

6.2.5 Researchers

Leading research institutions and policy networks must collaborate in SSA towards:

- Further generation of data and to define indicators, extensive work on prioritized pathways of biomass growing, conversion and use should be undertaken for different regions in Africa.
- Studies are required around differentiated impacts from biofuels by communities. These should also include strong gendered components that assist design not only participation of communities in the values chain.
- There is need to develop through participatory research indicators and monitoring parameters to constant improvement and re-shaping of biofuels strategies.
- New research around biotechnologies is required not only around varieties of food crops but also use of non-food crops.
- There is need for continued research in provision of modern energy through biomass technologies that assist to overcome the challenges of traditional use of biomass for use at reproductive and well productive household levels.
- Need of future research work around value-added products as these have a way to further enhance benefits from biofuels projects
- Development of widely available, regularly updated and verified resource assessment database and development of widely accepted, flexible, adaptable and cost-effective sustainability indicators/standards
- Technical studies on pricing and incentives for biofuels;
- Pre-feasibility and Feasibility assessments on viability of bio-fuels projects
- Training workshops and study tours on financial assessments and pricing may be organized based on the requirements of specific countries

6.2.6 Small scale farmers

- Must be recognised as key stakeholders in this industry and their priorities taken into account to take leadership in this industry
- Farmer association must form part of biofuels network and stakeholder groups
- Assist in training small farmer in methodology of biofuels use and production
- Farmer support services must be promoted as key to farmers participation in terms of inputs (fertilisers, finance, access to markets etc)
- New techniques, technologies that link production to climate concerns must be made aware and these skills transferred
- Strengthen extension services in terms of information flow on biofuels to small scale farmers
- Strengthen legislature around farm labour practices that relate to outgrowers models especially as it related to women small scale farmers

6.2.7 Gender

- Gender analytical tools are key for project planning, policy and implementation in all biofuels project
- Gender strategies are required to achieve maximum benefit from these projects through participation of both women and men.
- There is need to promote technologies that can be used to assist remove drudgery at household levels. Other technologies must be available like simple oil presses
- There is need to design general as well as specific training course that include women on the training around production are required and management of biofuels is required

6.2.8 Regional Networks on biofuels policy

- Assist in coordinate and supporting implementation of action plan which African Governments are expected to lead
- Subject to support from African Governments, the Network could possibly be part of International Biofuels Network initiative in collaboration with AU, AFREC, ECA, UNECA and sub-regional institutions
- Core membership from African countries and institutions
- Participation of global biofuel leaders such as Brazil
- Expected to establish Centers of excellence for each biofuel option and/or agro-ecological region
- Centres of excellence to spearhead development of option in the region – nodal points for action and follow-up
- Need of centres of excellence could be jointly hosted or jointly managed by sub-regional agencies and leading research institutions/independent research centres/NGOs within a continental umbrella of African Governments, AU, AFREC and ECA

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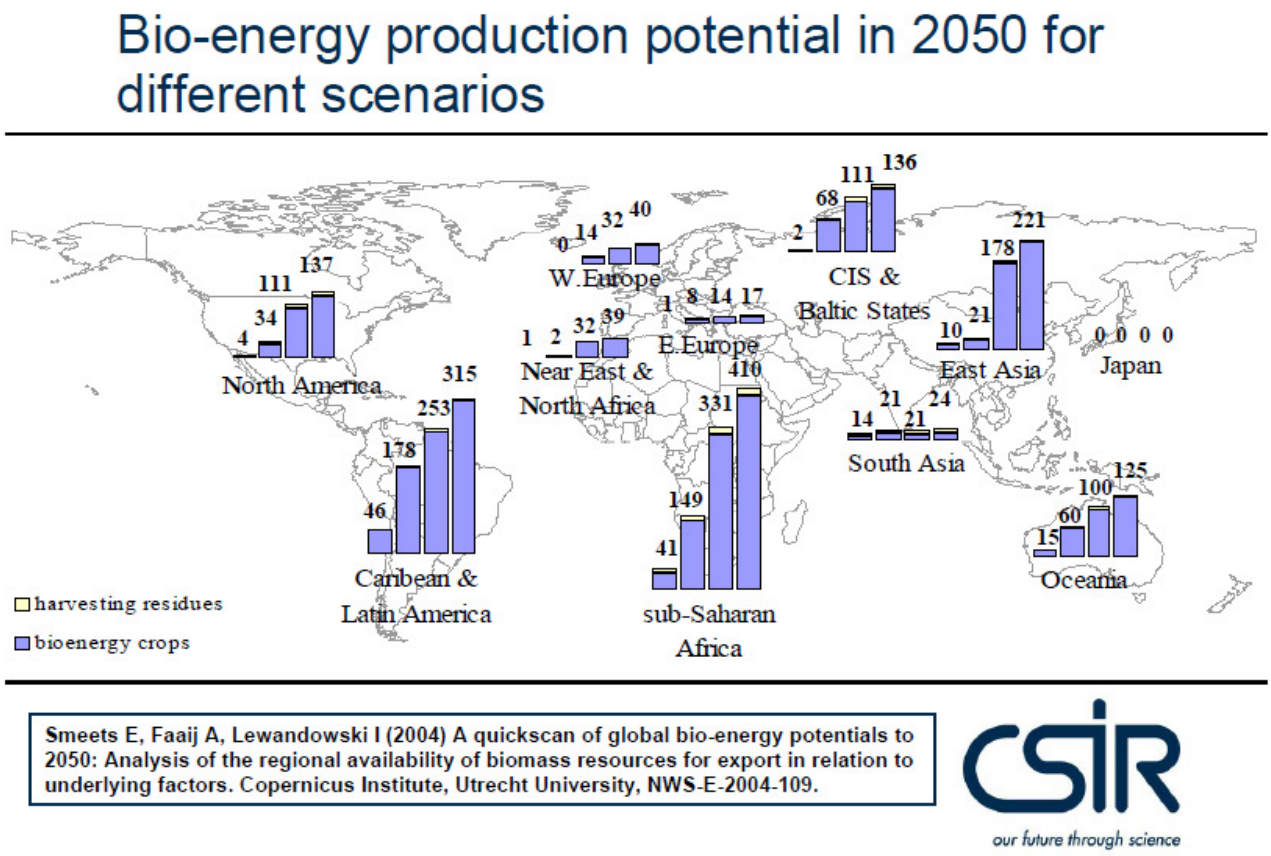
8. ANNEXURES

8.1 Annexure 1: Biofuels Potential in SSA



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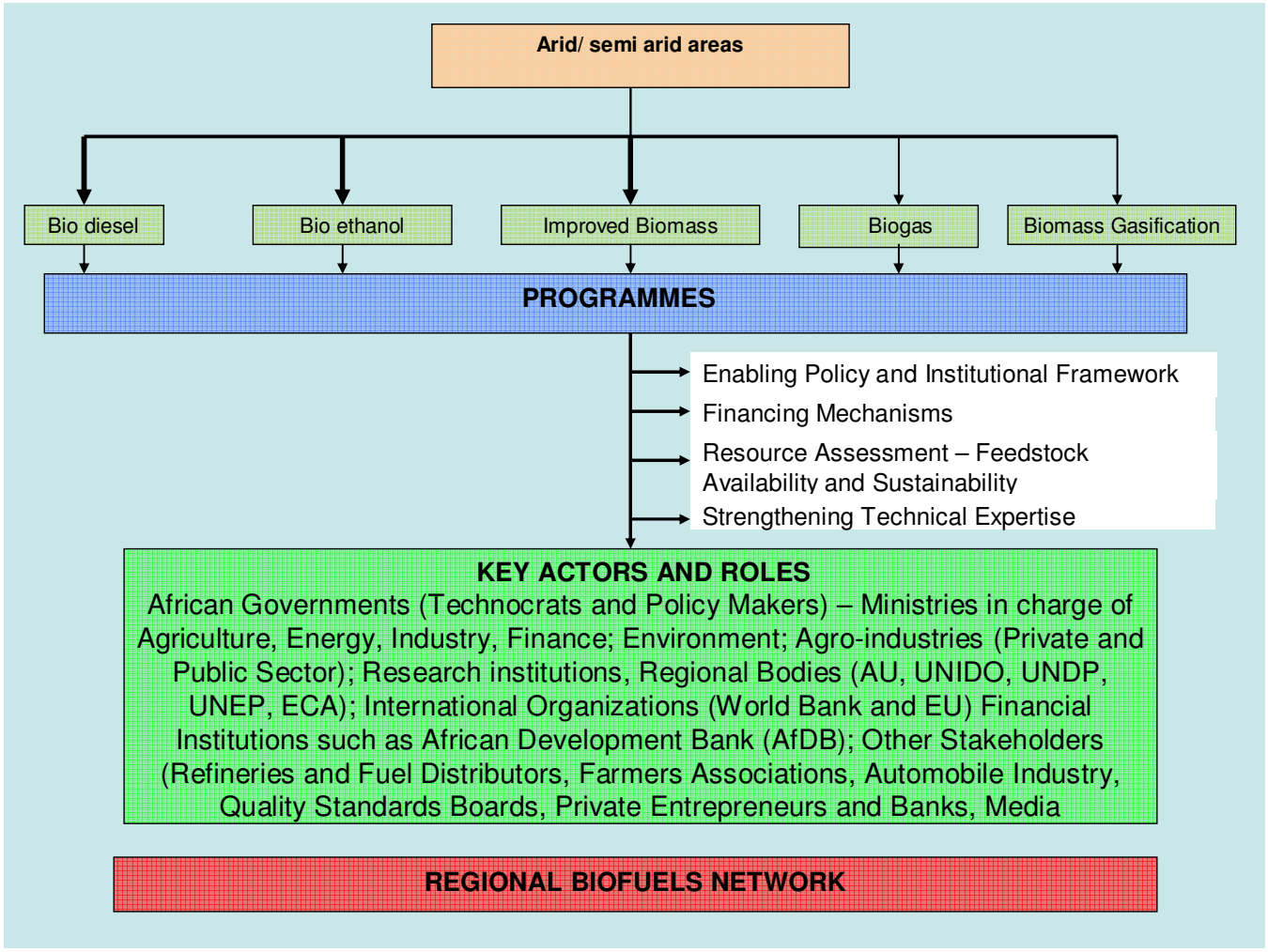
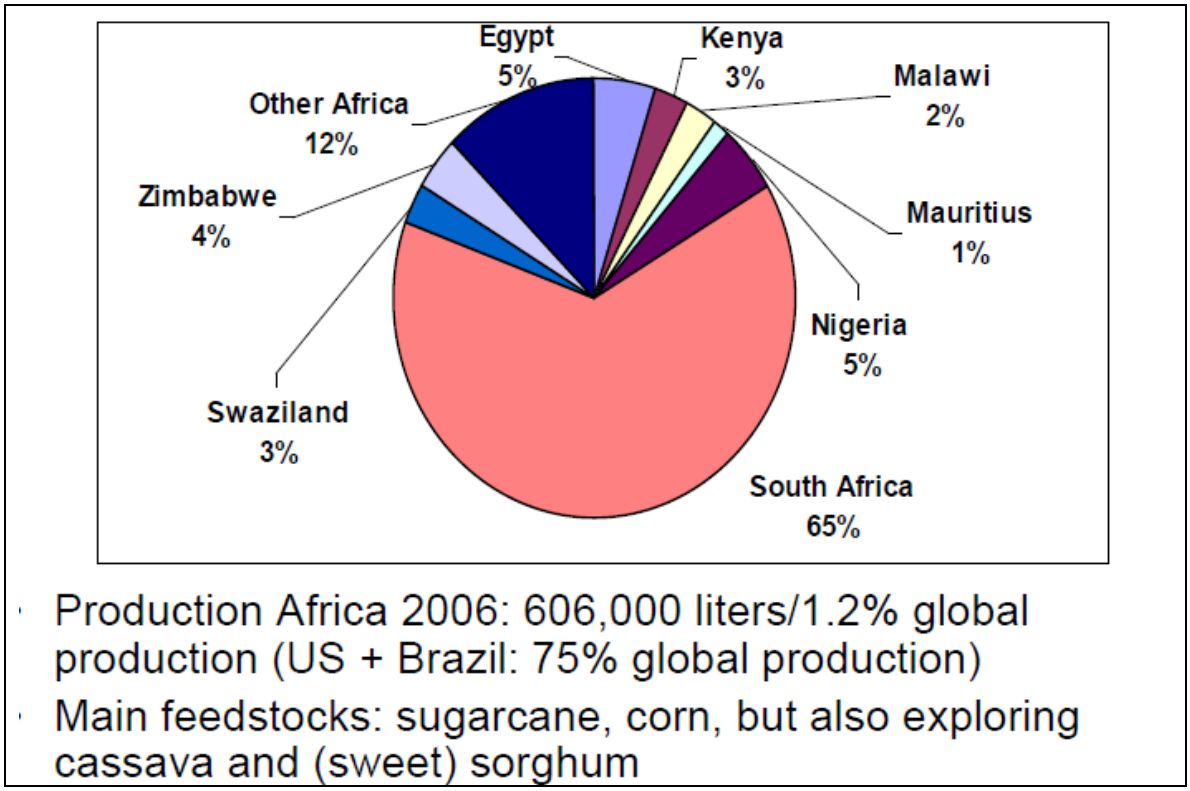
8.2 Annexure 2: Proposed model for policy direction



Source: Paper presented by the African Union/Brazil/UNIDO Bio-Fuels Seminar in Africa to workshop on "Action Plan for Biofuels Development in Africa Draft". 30th July – 1st August 2007, Addis Ababa, Ethiopia

8.2 Annexure 3: Biofuels in Africa



Source: Anne Dufey, 2008

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