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PRIORITY A.2.3.: Managing Arid and Semi-arid Ecosystems

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ANNEX 3-3-4: Report on 'Understanding and implementing certification'

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COMPETE

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

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1. Introduction

Different project partners have been working on the certification and sustainability schemes for biofuels. The current report is based mainly on the work that these partners have been reporting for different audiences. The primary aim of this report is to present an overview of the initiatives for sustainability schemes and a short analysis of the implications of their implementation. This is considered a draft report and therefore guidelines as part of the COMPETE project will be reviewed by the partners and submitted as a final report to the coordination.

The guidelines will also be based on the experience and views of the African partners. This report includes also some of the opinions collected during the International conference ***International Conference and Policy Debate on 'Bioenergy Sustainability Schemes - An African Perspective' 16-18 June 2008, Arusha, Tanzania*** and also during the ***International Workshop 'Bioenergy Policies for Sustainable Development in Africa'25-27 November 2008, Bamako, Mali.***

2. Current state of biofuels production

The growing interest in biofuels[1] has led to increasing concern with their wider implications, particularly if grown in large scale. Such concerns include environmental sustainability, green gas gases (GHG), land use changes and impacts on food prices. To counterbalance the possible negative effects, a serious of measures are being put in place to ensure their sustainability e.g. certification, accreditation, and traceability- that will have a major impact, either positive or negative, in the development of the biofuels industry. It is important to understand from the outset that there is no perfect fuel and therefore it is necessary to ensure that there is a fair playing field for all transport fuels.

The interest in biofuels has been driven by a combination for factors, but primarily by initiatives on climate change to reduce GHG, reduce dependency on oil fuels and by the potential for socio-economic development. Thus there are many arguments in favour of the use of biomass (e.g. security of energy supply, diversification of energy sources, low-carbon emission, an alternative market for agricultural products, land rehabilitation, among others). The current debate focuses on the possible negative social and environmental implications, especially land competition, the questionable reduction of emissions, 'the fuel versus food' debate and the indirect effects of land use change (Diaz-Chavez & Woods, 2008).

[1] In this reports it means basically biodiesel and bioethanol

Considerable amount of work has been done on sustainability issues, but not on a global scale. It is necessary a more systematic approach which has greater acceptance. The problem is how to create a global standard that allows for national and global activities, given the complexity of many of the issues involved. Any sustainability standard must include the three key components: economic, social and environmental aspects. Although, a political and institutional new pillar has to be included as many of the issues implied in sustainability are regarded of political nature (e.g. targets), see Diaz-Chavez, 2008a).

A number of issues need to be considered to ensure both a sustainable production and use of biomass oriented towards energy needs and reducing GHG emissions. Amongst these are environmental and social concerns, which bring into consideration the area of land required from energy crops for producing electricity and biofuels for transport. Additionally, other concerns include the effects that the large-scale cultivation of energy crops and use of residues may have on biodiversity, soils, hydrology and landscape (Diaz-Chavez and Woods, 2008).

3. Environmental considerations [2]

The main environmental criteria contained in a number of proposals for standards (e.g. the Roundtable for Sustainable Palm Oil RSPO) and available standard systems, i.e. Forest Stewardship Council, Rainforest Alliance[3] include among others:

1. *Biodiversity* (including genetically modified organisms (GMO) and natural ecosystems.

This point refers mainly to the conservation of biodiversity, threatened or endangered species and the protection of high conservation value habitats. The use of GMO is not widely considered in the different systems reviewed and it is opened to the national regulations

2. *Water* (efficient use, conservation and pollution)

This issue is considered in most of the certification systems. It involves the efficient use of water (especially in critical water areas), conservation of water and pollution control.

3. *Soil conservation and maintenance*.

This environmental concern is related to soil management including protection of soil structure and avoidance of erosion as well as the maintenance of nutrient status.

4. *Crop management* (use of fertilizers and pesticides).

This refers also with the other environmental concerns to good agricultural practice. Along with water and soil management it is also essential to guarantee the sustainability growth of bioenergy crops. This includes good fertiliser and pesticide practice.

[2] Sections 3,4 and 5 are part of the report Diaz-Chavez, R and Rosillo-Calle, F. 2008. Sustainability and certification in transport biofuels. Where we are now and where are we going – A short review. Department for Transport UK. Draft under review.

[3] See ECCM, 2006; Woods and Diaz-Chavez, 2007.

5. *Waste management*.

This concern has not been explored additionally in standards for bioenergy crops. Nevertheless, in the current discussions regarding the GHG accountability and the biorefinery concept, agricultural waste may play an important role to contribute to GHG reduction.

6. Landscape impacts

Although it not referred explicitly under these terms, landscape impacts are considered on land use change, habitat conservation and ecosystems values. Nevertheless, landscape impacts should be accounted specially for large scale plantations where monocultures dominated (e.g. palm oil plantations in South East Asia). Of course, visual impacts receive much greater priority in the most developed countries than in developing countries.

Land use change is one of the most important environmental impacts to consider, both the direct implications of biofuel production and also indirect, knock on effects. Other concerns include reducing local emissions, limiting the use of resources, improving biodiversity and protecting the habitat and landscape, through for instance, growing short rotation forests, which can do well when carefully planned and designed. Section 6 presents a review of the indirect land use change (ILUC) which has been developed in the UK in the Gallagher Review. This is an important issue because this Review actually changed the targets for biofuels in the UK.

4. Socio-economic considerations

The social and economic impacts refer to working conditions (wages, child labour, child and forced labour), land use rights, health and safety. In the UK, the Low Carbon Vehicle Partnership under the Renewable Transport Fuel Obligation (RTFO), commissioned a report (Ecofys, 2006) setting out a framework criteria for a standard/certification system for imported biofuels. Although it applies to liquid biofuels to be used for transport, the social criteria selected from previous reports (the Social Accountability in Sustainable Agriculture (SASA) (ISEAL, 2006) and ECCM (2006), are also applicable to biomass production and use in general, such as:

1. Child labour
2. Freedom of association
3. Discrimination
4. Health and safety
5. Forced labour
6. Wages
7. Working hours (Plus standard only)
8. Contracts and subcontractors
9. Land rights (Ecofys, 2006)

Some aspects of criteria may be of greater relevance in developing countries (such as Brazil and a number of African countries). Nevertheless, some of them also apply to EU Member States (MS), particularly from Eastern Europe (Diaz-Chavez and Woods, 2008). These concerns are again mostly related to workers' rights and working conditions (including child labour) which need to be examined more widely and in accordance to the prevailing conditions of each country (see Smeets *et al.*, 2006). Discussion of the socio-economic impacts of biofuel production must balance the very real danger of environmental degradation and social challenges associated with food security, access to land and conflict over resources such as water, with the significant potential for rural development and value-added, both in developed and developing economies (PCW, 2006).

Among the social benefits considered are the protection of existing employment and also generation of new jobs. In the case of Brazil, during the 1990s sugar cane production generated 2200 direct jobs for 1 M tons of sugar cane produced (1600 for the production and 600 for the processing). Including indirect jobs, the whole industry employed 380,000 people in the São Paulo State (Assad, 2007). In 2005, the region of the Centre-South of Brazil (including São Paulo responsible for more than 60 percent of ethanol production) registered 364,443 direct formal jobs in the sugar cane industry (63% of the total of the country's sugar industry) showing an increment of jobs in a decade (Ferraz, 2007). Research carried out by the East of England Development Agency (EEDA) has estimated that 2-5 farming jobs could be created or sustained for each 1000 tons of biofuel produced in the UK (EEDA, 2006). A further aspect that needs to be considered is the quality of the jobs created. Furthermore, bioenergy projects enable the transfer of skills and the introduction of new ones, as well as educational opportunities and training (Diaz-Chavez, 2008b).

5. Sustainability schemes related to biofuels.

One of the first calls to put an eco-certification system for biofuels in Europe came from a report from WWF (WWF, 2006), not only for those biofuels produced internally but also for those imported. The EU Commission also acknowledged this indicating that depending on the production process and on the land used for this purpose, biofuels could be either an environmentally friendly process that contributes positively to climate change mitigation, or the opposite (COM, 2006).

A comparison of different international certification systems for general management, environment and supply chain, forest production and agriculture activities, has been carried out by different authors, in order to identify where these systems might be of relevance to biofuel production and supply chain environmental assurance, see for instance Low Carbon Vehicle partnership commissioned report (ECCM, 2006), Junginger (2006), and Lewandowski and Faaij (2006).

The review starts with general management and environment standards and then evaluates forest and agricultural certification systems used worldwide and in the UK. In the UK this is followed by a comparison of all of systems as well as those principles proposed by the LowCVP (see ECCM, 2006). Appendix 1 shows the tables where these comparisons are made.

A report commissioned by the European Commission DG TREN – Directorate D – New and renewable sources of energy, demand management & sustainable development (EU DG-TREN-better give the full Ref in Refs List) reviewed 'Technical assistance for certification aspects related to the promotion of the use of biofuels in the European Union'.

The report reviewed all the strengths and weaknesses of Cross Compliance as a policy tool for providing assurance that biofuels are produced on an environmentally sustainable and socially equitable basis. It presents a review of the principles proposed for sustainability compliance within the UK Renewable Transport Fuel Obligation (RTFO) and discusses how existing standards may fill any gaps in cross compliance in the provision of quantifiable, transparent indicators and will underpin sustainability assurance. Other sections of the report reviewed the growing market and recommendations of how **biodiversity aspects** could be included in the revised Biofuel Directive (Janssen et al., 2007).

The report also reviewed the Statutory Management Requirements (SMRs) and Good Agricultural and Environmental Conditions (GAECs) from the UK and compared them against the RTFO (See appendix 2 for summary Table).
Although the Cross Compliance could be useful for the sustainability assurance in the EU, the difference in SMRs and GAECs within the EU member makes it difficult to apply in all EU MS.

Currently there are different efforts being made towards the development of standard and certification systems specifically dedicated to biofuels. These are briefly explained as follows:

5.1 Global and Regional schemes

1) *Roundtable for Sustainable Palm Oil (RSPO) system*
This is a global multi-stakeholder initiative, originally produced for the palm oil production with focus on cosmetic and food industry. It also added a principle on greenhouse gas accountability. It has eight principles with respective criterion (39) and indicators. The RSPO has already produced several pilot studies (RSPO, 2004, 2005)

2) *Round Table for Responsible Soya (RTRS)*

This is also a multi-stakeholder organisation created in 2004 including producers, industry, trade & financial organisations and civil society organizations. The RTRS is developing a set of standards for the production and sourcing of responsible soy and a verification mechanism to reinforce these standards.

3) *The United Nations Environment Program (UNEP)*

The Working group of UNEP is developing sustainability criteria and standards for the cultivation of biomass used for biofuels (UNEP, 2007). To date this information has not been finalised.

4) *The European Commission with the new Energy Directive*

The recently approved EC Directive on the promotion of the use of energy from renewable sources (COM, 2008), states that biofuel production should be environmentally sustainable. “Biofuels used for compliance with the targets laid down in this Directive, and those that benefit from national support systems, should therefore be required to fulfil criteria for environmental sustainability” (COM, 2008, page 17). It also states that sustainability criteria should be applied including GHG calculation, environmental, agricultural (if produced in the EU).

5) *The Global Bioenergy Energy Partnership (GBEP).*

Partners include the G8 countries + 5 (Mexico, South Africa, China, India and Brazil) and other UN institutions and associations. The GBEP Task Force on Sustainability, established under the leadership of the United Kingdom, is also developing a set of global science-based criteria and indicators with examples of experiences and best practices including benchmarks regarding the sustainability of bioenergy (GBEP, 2008). These criteria are based on four themes: Environmental, Economic, Social and Energy Security. In January 2009 the Task will circulate a draft of the criteria to be reviewed by the members.

6) *The International Petroleum Industry Environmental Conservation Association (IPIECA), Chain of Custody (CfC).*

IPIECA is a global association representing both the upstream and downstream oil and gas industry on key global environmental and social issues. IPIECA held a seminar on social and economic impacts of biofuels in 2007 in Kuala Lumpur, Malaysia (Diaz-Chavez, 2007) demonstrating their interest into sustainability aspects of biofuels production. In 2008 IPIECA held a seminar in London (September 29, 2008) on Biofuel Sustainability and Chain of Custody where it was announced that they are planning to commission a CfC document in 2009 to delineate best practices for biofuels blends supply chain, in consultation with NGOs (IPIECA, 2008).

This demonstrates that oil companies are playing an increasing role in the development of sustainability and accreditation issues. Biofuels, with their perceived high environmental credentials, form a potential extension of the large oil companies' sustainable development (SD) and corporate social responsibility (CR) profiles and overall strategies, particularly with regards to climate change mitigation. SD and CR (see Workman & Rosillo-Calle, 2008).

7) The Round Table of Sustainable Biofuels.

The Roundtable on Sustainable Biofuels (RSB) created in 2007, is an international multi-stakeholder initiative that has brought together over 500 individuals from companies, NGOs, governments, and experts in nearly forty countries. The work of the different stakeholders resulted in a draft standard for sustainable biofuels production and processing. Through a series of on-line consultations, teleconference discussions, and in-person stakeholder meetings in Brazil, China, South Africa, and India held between June 2007 and July 2008, the Roundtable drafted a series of principles and criteria of a global sustainability standard called "Version Zero". This version is under review and still receiving comments. The RSB is currently moving to a new stage in order to continue with the work (RSB, 2008). This initiative is foreseen as the main organisation to organise the efforts on the sustainability schemes and to look for a form to harmonise them.

5.2 National and local schemes: European initiatives

1) *The Cramer Report from the Netherlands*

Along with the UK system this report, also known as the Cramer Report, was one of the first ones to be developed in Europe. The Cramer report is the result of the Dutch "Sustainable Production of Biomass" commissioned by the Energy Transition Task Force to formulate sustainability criteria for the production and processing of biomass for energy, fuels and chemistry (ETST, 2006). The system looked at developing sustainability criteria to be used by 2007 and a more tightened criteria to be used by 2011. This criteria is arranged into six themes:

- Greenhouse gas balance
- Competition with food, local energy supply, medicines and building materials
- Biodiversity
- Economic prosperity
- Social well-being
- Environment

The system calls for a certification system that should be preferably based on a track-and-trace system, in which the traceability of the biomass is guaranteed. Nevertheless, it was recognised in the report that a transition system will be necessary in order to achieve the goal of the system. To date several pilot studies have been conducted but the system is not fully working due to the work of the EU Commission on the Energy Directive (2008) and the new system to be adopted.

2) *The German initiative on biofuels (Fehrenbach, 2007; Meyer, 2009*
Different reports reviewing possible criteria for biofuels production have been developed or commissioned in Germany being the first one the WWF report (2006) previously mentioned.

The German Biofuels Ordinance (BioNachV, 2007) sets the requirements for the sustainable production of biomass for use as biofuels (Biomass Sustainability Regulation). This regulation is to ensure conformity with minimum requirements for the sustainable cultivation of agricultural land and minimum requirements for the protection of natural habitats in the production of biomass for biofuels. It also establishes that biofuels must have a *certain* potential to reduce greenhouse gas emissions during all phases of production, processing and delivery. For this purpose it is envisaged that the regulation will include a GHG accountability methodology. It also refers to environmental criteria (water, soil conservation, biodiversity, and ecosystem protection). The report also looks to provide certificates if compliance is proved. An important note in the German Ordinance is that it refers to good agricultural practices and the responsible is the Federal Ministry of Food, Agriculture and Consumer Protection. If biofuels are produced in Europe it refers to the Common Agricultural Policy Good Agricultural Practices (GAECs).

3) *The Low Carbon Partnership (LowCVP)*
This initiative through the RTFO in the UK with the newly created Renewable Fuels Agency (RFA) introduced the Carbon and Sustainability guidance in April 2008 (RFA, 2008a), In the UK the RFA (RFA, 2007) started to verify imported biofuels under the RTFO from April 2008 in the first system to operate in the world.
The RTFO comprises seven sustainability principles; five environmental and two social. These seven principles have been used to define the RTFO sustainability meta-standard. A meta-standard approach enables the use of existing certification schemes to meet the standard (system used also by the RSB explained in the previous section). Existing schemes, such as the UK's Assured Combinable Crops Scheme (ACCS), are assessed against the RTFO principles (RFA, 2008d).

4) *SEKAB*
Currently SEKAB has announced a "Verified Sustainable Ethanol Initiative" with a series of criteria and indicators currently under verification (Sekab, 2008) and on sale in Sweden. These criteria include the following issues:

- At least 85 % reduction in fossil carbon dioxide compared with petrol, from a well to-wheel perspective
- At least 30 % mechanisation of the harvest now, plus a planned increase in the degree of mechanisation to 100 %
- Zero tolerance for felling of rainforest

- Zero tolerance to child labour
- Rights and safety measures for all employees in accordance with UN guidelines
- Ecological consideration in accordance to UNICA's environmental initiative
- Continuous monitoring that the criteria are being met

5*) Greenergy*

According to the RFA (2008d), the first reporting of fuel meeting the RTFO social sustainability meta-standard was Greenergy, the company that has supplied Brazilian sugarcane ethanol meeting this standard. The report states that although Brazilian bioethanol achieves a very high level of carbon saving, there is no national or international standard for sugar cane in existence against which we could measure the sustainability of our Brazilian supply. Therefore, Green*ergy* developed a set of criteria which meet the RTFO sustainability standard. This covers a wide range of social, environmental and community issues and according to the RFA (2008d) it surpasses the RTFO social criteria. The environmental criteria includes: carbon, soil and biodiversity conservation, sustainable water use, and air quality. The social criteria includes: social performance (workers rights and working relationships) and communities (land rights and community relationships).

5.3 Other schemes around the world

1) The University of California Berkeley.

The Low Carbon Fuel Standard (LCFS) (January 18, 2007), calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020 (Farrel and Sperling, 2007a,b). The two parts report instructed the Secretary of the California Environmental Protection Agency to coordinate activities between the University of California, the California Energy Commission (CEC) and other state agencies to develop and propose a draft compliance schedule to meet the 2020 Target.

This first study assesses the low-carbon fuels options that might be used to meet the proposed standard, and presents a number of scenarios for mixes of fuels that might meet a 5, 10, and 15 percent standard. The second part of the study examined key policy issues associated with the LCFS (Farrel and Sperling, 2007a).

2) In Brazil, the State of São Paulo has a certification system related to the fires (*queimadas*) during the crop season of the sugarcane (SMA, 2007). This program is called Green Fuel (from the Environmental Secretariat of São Paulo State) and rewards with a certificate those plantations or ethanol plants (*usinas)* that do not burn the sugar cane fields and produce sugar cane in a sustainable form. This is also done in collaboration with the National Union of Sugar Cane Producers (UNICA).

At the same time, there is an initiative at federal level coordinated by the National Institute of Metrology (INMETRO, 2007) for the certification of biofuels. This initiative also has different participants such as the Agriculture Ministry. This proposal includes the following criteria:

1. Soil
2. Water
3. Air
4. Labour
5. Sustainability
6. Biodiversity

Some of the issues that INMETRO is also considering for this non-mandatory certification system are GHG, the whole supply chain, incentives, the rational use of resources, socio-economic issues, inclusion of other stakeholders (certifiers, UNICA).

3) International Organization for Standardization (ISO)

ISO began in 1906 with the International Electro-technical Commission (IEC). Several attempts in other fields were carried out until 1947 when the International Organization for Standardization (ISO). The International Standards are useful in almost all sectors private and public as they contribute to making development, manufacturing and supply of product and services more efficient, safer and cleaner (ISO, 2006). ISO standards are voluntary and applied worldwide through 3000 ISO technical groups. It is working at the moment with the World Trade Organisation on Technical Barriers to Trade (TBT).

Though almost all ISO standards are specific to particular product, material or process, there are mainly two types of ISO standards, the ISO 9000 and ISO 14000. The ISO 9000 is concerned with quality management, reviewing regulatory requirements and performance while ISO 14000 is concerned with environmental management aiming to verify that the organization does not produce environmental harmful effects and reviewing the company's environmental performance (Diaz-Chavez, 2007).

Though the ISO system has not yet been in the production of biofuels it has some standards for agriculture and forestry that may well be considered for application (see ISO, 2006). More recently, ISO launched the new standards ISO 14064 for greenhouse gas accounting and verification to provide government and industry with an integrated set of tools for programmes aimed at reducing greenhouse gas emissions, as well as for emissions trading (Diaz-Chavez, 2007).

4) The International Social and Environmental Accreditation and Labelling Alliance (ISEAL)

ISEAL is an association of international organisations engaged in standard-setting, certification and accreditation focused on social and environmental issues. ISEAL has a code of good practice that provides a benchmark to assist standard setting organisations to developing their social and environmental standards. The normative documents that ISEAL used to draw its Code are the ISO/IEC Guide 59 Code of Good Practice for standardization, the ISO/IEC 14024 (environmental standards) and also the WTO Technical Barriers to Trade Agreement, among others (ISEAL, 2006).

Although ISEAL does not provide direct standards related to specific topics (e.g. agriculture, biofuels), the points marked in their Code of Practice are also relevant to set a standardization system with reference to biofuels from its production to all the chain (e.g. see 7-Effectiveness, relevance and international harmonization pp.5) (Diaz-Chavez, 2007). Currently, the RSB is a member of the ISEAL and the Version Zero standard follows ISEAL Code of Good Practice for Standards (RSB, 2008).

6. Alternative certification schemes

The Fairtrade system is composed of the following organisations:

- 21 Labelling Initiatives: The Fairtrade Foundation (UK), Max Havelaar (Netherlands, France), Transfair (Germany, US), etc. Based in (northern) consuming countries, these initiatives promote Fairtrade with consumers and award the Fairtrade Label to products meeting the Fairtrade standards (See label on page 1).
- Fairtrade Labelling Organisations (FLO EV), Bonn, Germany: FLO is owned by the Labelling Initiatives and comprises a Standards Unit (developing standards) and a Producer Business Unit (helping producers achieve and maintain certification). www.fairtrade.net
- FLO Certification (FLO-Cert GmbH), Bonn, Germany: FLO-cert inspects and certifies producers and traders against the FLO Standards. www.flo-cert.net
- Fairtrade Producer Networks: These represent Fairtrade certified producers within the FLO system (advocacy platforms):
    - Coordinadora Latinoamericana de Comercio Justo (CLAC)
    - African Fairtrade Network (AFN)
    - Network of Asian Producers (NAP)

The fair-trade system is illustrated in Figure 6.

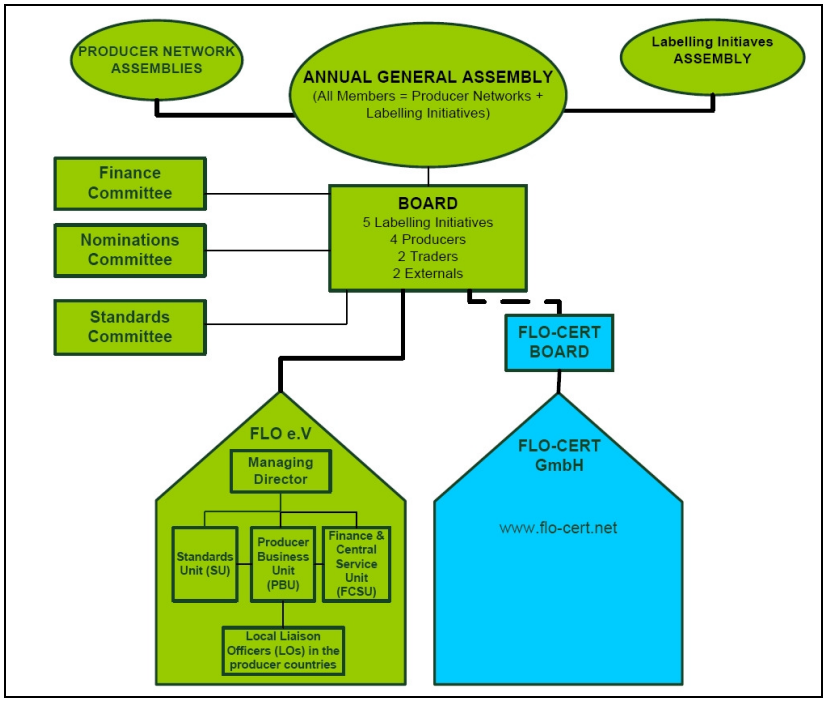

Figure 6. The Fairtrade Governance system:[4]

6.1 Certification system and procedures

FLO's Fairtrade standards are composed of generic standards (for small farmers, plantations, traders) and product-specific standards. In addition, FLO-Cert has a number of certification and trading policies which operators have to adhere to. FLO standards cover a range of topics: social development, economic development, environmental development and labour conditions.[5] Standards are divided into minimum requirements (which operators need to adhere to in order to gain and maintain certification) and progress requirements (on which operators need to show a continuous degree of progress in order to maintain certification).[6] Depending on the nature of a non-compliance, operators can receive (in order of seriousness) conditions, corrective actions, or be suspended or de-certified. While Fairtrade's focus has always been social and economic, the standards have always featured a list of prohibited chemicals and some environmental requirements.[7] Since 2005, FLO has sought to strengthen its environmental standards by adding new requirements.

[4] FLO (2008) *FLO's Structure* http://www.fairtrade.net/structure.html
[5] See FLO's complete standards on http://www.fairtrade.net/standards.html
[6] FLO-Cert (2008) *Compliance criteria* http://www.flo-cert.net/flo-cert/main.php?id=61
[7] See FLO's Prohibited materials list on http://www.fairtrade.net/fileadmin/user_upload/content/FLO_Prohibited_Materials_List_Dec_2007_EN.pdf

In 2008, FLO-Cert introduced a new inspection system for producers, based on a series of 3-year compliance cycles. Once the organisation has complied with the minimum criteria and has agreed on compliance criteria for the cycle, it receives a 3 year certificate; FLO-Cert then returns for 'surveillance' inspection the two following years to ensure minimum criteria are adhered to, and analyse how far the organisation is from complying with the criteria from the following cycle (gap analysis). The third year, new compliance criteria are set for the next 3 year cycle, as so on.[8]

Smallholder producer organisations are encouraged to form an Internal Control System (ICS) "to show an organised methodology and record-keeping system that applies to all levels of the organization from the top management down to the individual member."[9] An ICS in a common methodology used by grower groups in organic certification, and recognised by organic regulations in major consumer markets. It enables groups of producers to 'self-certify' themselves with an internal team of inspectors, and submit their documentation to an external certification body for approval. It is both a cheaper and more empowering system of certification for producers.

[8] FLO-Cert (2008) *Certification Process* http://www.flo-cert.net/flo-cert/main.php?lv=2&p=2
[9] FLO (2007) Generic Fairtrade Standards for Small Farmers' Organizations
http://www.fairtrade.net/fileadmin/user_upload/content/Generic_Fairtrade_Standard_SF_Dec_2007_EN.pdf

7. Potential lessons for bioenergy productions

The Fairtrade system presents a number of key learnings that could help establish sustainable foundations for the bioenergy sector. Its standards and certification systems present a good basis for potential mechanisms to monitor sustainability, and its (minimum) pricing system and associated finance and support structures could be replicated in the bioenergy sector to help reward best practice in production.

a. **Producer governance structures**: the Fairtrade system is based on principles of democracy and producer and worker empowerment. Many structures such as the AGM, board and vigilance/control committees already occur in producer cooperatives and associations to ensure producer and worker involvement and democratic 'turn-over' in the organisations. In addition, Fairtrade standards require producer committees or management/worker 'Joint Bodies' to decide on – and manage – FLO premium projects. These well-established democratic structures could be replicated in new bioenergy supply chains to ensure decisions are taken and activities are carried out in a transparent and bottom-up way. Many proposed bioenergy production schemes are located in the same countries and regions as Fairtrade organisations, and therefore provide easy opportunities for exchange visits to transfer experiences between the two sectors. Existing Fairtrade producer organisation networks offer an added opportunity to share knowledge in this way.

b. **Management / processing / export structures**: many Fairtrade supply chains present similar structures and characteristics to existing and potential bioenergy supply chains. These range from plantations, to out-grower schemes to smallholders cooperatives or associations. One of the aims Fairtrade is to add more value at producer level, and many producer organisations have been able to turn increased Fairtrade revenues into investments on the ground, such as improved plant varieties and growing techniques, better grading, processing and exporting facilities, and modern communications systems. The Fairtrade system therefore presents useful insights and opportunities for exchange on more empowering and value-adding production structures. Indeed in some cases such as sugar cane or oilseeds, organisations within the Fairtrade system could also make use of the bioenergy sector to access new markets and diversify their income sources, making better use of their existing supply chain and investments. An existing example of cross-over between the two sectors can be found in Brazil, where a coffee producer is now exporting husks as biomass to Dutch energy firm Essent for the production of electricity, under a scheme set up by Solidaridad, a Dutch Fairtrade organisation.[10]

[10] Biopact (2007) *World first: fair trade founders team up with Brazilian farmers to sell coffee husk pellets to Dutch energy company* http://biopact.com/2007/10/world-first-fair-trade-founders-team-up.html

c. **Access to training and credit:** in many cases, Fairtrade markets have enabled producers to gain access to many other benefits, such as training programmes financed by development NGOs aimed at strengthening their businesses. The combination of a minimum price, bringing guaranteed incomes for producers, and the requirement for pre-finance has given rise to a new alternative/ethical financing sector, with northern organisations specialising in lending to smallholder producer organisations in Fairtrade. These development and financing institutions provide a much needed support network for Fairtrade organisations to build their business and influence in their sectors, and would also be useful in the bioenergy sector to ensure it fulfilled its development objective of benefitting poor producers in the supply chain.

d. **Social and labour standards**: the FLO Standards include social and democratic requirements for small farmer organisations and labour requirements for plantations that present a useful starting point for bioenergy sustainability standards. The Roundtable of Sustainable Biofuels (RSB) has already published the 1st version of its standards, which includes a section on labour standards.[11] As both the bioenergy and Fairtrade sectors progress, it would make sense for some ongoing consultation and exchange to take place on standards development and revision. Depending on development within the bioenergy sector, it should also be possible to agree on a degree of equivalence whereby Fairtrade producer organisations could qualify for bioenergy sustainability standards (RSB or otherwise) without the burden and costs of an additional certification.

e. **Pricing systems to guarantee fair price**: One of the key pillars of Fairtrade is a minimum pricing system to guarantee that the price paid to producers covers costs of production. This price is set following consultation with producers and traders, and constitutes a minimum below which a contract price cannot fall. If the world price rises above the minimum price level, then the Fairtrade transaction occurs at a set premium above the world price, to ensure Fairtrade producers always receive a higher price for their produce. The minimum pricing system ensures that producers can stay in business and keep investing in their production when world price fall below costs of production. The Fairtrade minimum price therefore provides a safety net during commodity crises for smallholders who often have little income alternative, and helps to prevent widespread social and economic upheaval.

[11] Roundtable on Sustainable Biofuels (2008) *Version Zero, Standard for Sustainable Biofuels* http://cgse.epfl.ch/webdav/site/cgse/shared/Biofuels/VersionZero/Version%20Zero_RSB_Std_en.pdf,

8. Conclusions on Sustainability tools and means to assure, monitor and reward sustainable bioenergy production

International Conference *and Policy Debate on 'Bioenergy Sustainability Schemes - An African Perspective. 16-18 June 2008, Arusha, Tanzania*

The Proceedings of the International Conference included the discussions of the Roundtables organised by the COMPETE project as well as the presentations made by COMPETE partners and guest speakers. As an example the following figure show the contents of the sessions related to the sustainability schemes and forms to reward good practice.

Session 2: Sustainable Development Pathways for Bioenergy Production

Chairs: Mamadou Dianka, UEMOA, Burkina Faso and Dr. Rocio Diaz-Chavez, Imperial College, United Kingdom

11:10 – 11:30	Sustainable Bioenergy Production - International Developments Martina Otto, UNEP
11:30 – 11:50	Sustainable Biomass: Issues and Global Perspective Dr. Uwe Fritsche, Oeko-Institute, Germany
11:50 – 12:10	Climate Change and Sustainable Biofuel Production in Africa Prof. N.H. Ravindranath, Centre for Sustainable Technologies (CST), Indian Institute of Science
12:10 – 12:30	Sustainability Criteria for Biofuels – a Mozambican Approach Anna Lerner, GTZ-ProBEC, Mozambique

Session 4: Investment, Regulation and Good Practice Reward

Chairs: Estomih Sawe, TATEDO, Tanzania and Dr. Veronika Dornburg, Copernicus Institute, Utrecht University, Netherlands

14:00 – 14:20	UEMOA Steps on Promoting Liquid Biofuels Markets Mamadou Dianka, Coordinator Biomass Energy Regional Programme, UEMOA, Burkina Faso	46
14:20 – 14:40	End of Oil – Future of What? Threat or Opportunity to Empower African Societies Per Carstedt, SEKAB, Sweden	51
14:40 – 15:00	An Industry View on Biofuels in Africa Cameron Rennie, BP Biofuels, United Kingdom	--
15:00 – 15:20	FELISA – Its Establishment and Progress Dr. Hamimu Hongo, FELISA Ltd., Tanzania	55

The roundtable on sustainability panellists is shown in the next figure followed by the main conclusions.

10:00 – 11:00

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

Chair: Dr. Jeremy Woods, Porter Institute, United Kingdom

Secretary: Dr. Rocio Diaz-Chavez, Imperial College, United Kingdom

Panellists

- 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.

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) and 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 the 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 productionand 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 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 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

9. The Roundtable on Sustainable Biofuels

The RSB was briefly explained in section 5.1 This section includes the consultation made by the RSB within the forum of the COMPETE project.

In the course of its international multi-stakeholder consultation on the first draft (Version Zero) of a global standard for sustainable biofuel production, the **Roundtable on Sustainable Biofuels (RSB)** undertook a one-day consultation in Bamako, Mali to collect feedback, opinions and suggestions from participants in the **COMPETE Workshop on Bioenergy Policies in West Africa** (RSB, 2008).

The General remarks on the RSB standard reported by the RSB are included in te next box.

Box 1. West-African Consultation on Version Zero of a Global Standard for Sustainable Biofuels Bamako, Mali, 26 November 2008.

- The standard cannot be efficiently implemented in Africa in absence of a **coherent and adapted framework, ensuring that the legislation, governmental policies, information and technologies at disposal converge** toward a sustainable biofuel production.

- The standard can in no case contradict existing laws, but it can go beyond.

- The standard is generic; it needs to be **interpreted in specific regional contexts**, and adapted to the reality of small farmers.

- Local authorities and communities can be relied upon for the implementation and consultation in Africa.

- Since Africa suffers much from **erosion, water scarcity, biodiversity losses, land rights dispute and food insecurity**, such a standard could bring much benefit, in addition to the opportunities to respond to the demand for certified products or gain carbon credits through the CDM.

Greenhouse gas emissions are a burning topic in Africa. Whereas some consider that **Africans are not responsible for the current climatic issues** and must be allowed to pursue economic development without obstacles related to GHG emissions, other participants consider that **GHGs will become an increasingly important issue** if economic development is enhanced, so it would be wiser to start optimizing carbon cycles now to avoid future problems.

Discussions of **environmental aspects in the RSB standard** included:

- The need to **involve local communities in the identification of HCV areas and ecosystem services.**

- The issue of requesting wastewater treatment in countries where no infrastructure or governmental incentives exist for sustainable water treatment.

- The need to prevent the use of GMOs that increase the dependency of developing countries toward developed countries and big companies.

Discussions of **social aspects** included:

- The actual problem related to food security is not the availability of land, but the availability of manpower. **Biofuel production is likely to displace jobs, rather than create new ones,** due to a lack of available labor.

- The need to consider small farmers as the priority and help them becoming more competitive.

- Through decentralized systems, the consultation of local authorities is sufficient for understanding the context.

Source: RSB, 2008. West-African Consultation on Version Zero of a Global Standard for Sustainable Biofuels Bamako, Mali, 26 November 2008.

10. Conclusions

Much is made of the development potential of the emerging bioenergy sector, with proponent claiming it could provide smallholders with new income opportunities, as well as the chance to help power their own local, regional and national economies. As in any sector, it is important not to 're-invent the wheel', but to learn from the experience of existing initiatives especially if, as with Fairtrade, there are many similarities and potential market synergies. Fairtrade certification, production and trading systems provide powerful tools for monitoring sustainability and rewarding best practice in the bioenergy sector, and to ensure it fulfils its development claims.

There are several initiatives at global, national and local levels to develop sustainability criteria for the so called First generation biofuels or bioenergy crops for biofuels. The main concern of these criteria is that these biofuels are produced in an environmental and social sustainable form. Nevertheless, sustainability is not composed only by social and environmental pillars. Economic and policy issues need to be considered as well. However, a sustainable or a certification scheme cannot influence in the national policy goals and programmes regarding sustainability.

A certification or standard scheme should be wide enough to consider these essential criteria without compromising global trade and without been too prescriptive. There is an urgent need to harmonise the different available systems and to consider the wider implementation in different developing countries attending to national interpretations. This has been done before in the case of the FSC Forest Stewardship Council. Another example of global application is the International Standard Organisation's standards (ISO 9000 and ISO 14 000 series).

The next step that is envisaged and recommended is to focus on the implementation and monitoring as well as the national interpretations for a sustainability scheme.
Regardless of the scheme, it is fundamentally important to acknowledge that there is not a fair playing field for biofuels. There is a great disadvantage to implement stringent sustainability and certification criteria for biofuels while overlooking or largely ignoring the negative impacts of fossil fuels and agriculture practice in general. The current debate on sustainability issues and GHG accountability is switching onto a wider applicability to these two debatable areas: fossil fuels and agriculture.

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12. Appendix

Appendix A

Case Study on the Use of Bioenergy in Supply Chains: Arabica Coffee Husk as Biomass at Huatusco Coffee Union, Veracruz, Mexico[12]
Twin / Twin Trading
Sep 2008

Coffee is grown throughout the tropics and is a major source of revenue for developing countries, employing millions of people in its production and trading, and in some years providing the second biggest source of revenue after oil.[13]

There are two main types of coffee, Arabica and Robusta. Arabica coffee carries a greater premium on world markets as it has a more delicate flavour and undergoes a more complicated production process involving fermentation, washing and drying. In some places where local climatic conditions are unfavourable or there are logistical challenges to drying the coffee under the sun, coffee processing mills use boilers to produce hot air to dry the coffee artificially, in order to achieve the correct moisture range before exporting it (see photo 1). Boilers produce hot air through a heat exchanging system, which is then blown into large rotating cylinders containing the green coffee (see photo 2). These boilers can be powered by fuel (diesel) or biomass, and constitute a significant running costs for the mills.

In Mexico, Twin's producer partner *Union Regional de Pequeños Productores de Café, Agropecuaria, Forestal y Agroindustrias de la zona de Huatusco* (HUATUSCO) represents almost 2,000 small farmers and exports around 1,600 tonnes of coffee every year. The organisation's dry mill was built in the 1950s and as such has required ongoing investments in a modernisation programme.

One major investment has been aimed at reducing the amount of energy consumed by the mill, and in particular to convert the boiler to use coffee husks as fuel instead of a mix of diesel and rice husks. This work has also included improving the heat exchanging system, reducing the coffee drying time from 32 to 24 hours and relieving the mill from what was historically a major bottle-neck in the system.

[12] From Jos Algra, Twin (2006) *Technological Innovations Huatusco* report

[13] International Coffee Organisation (2008) *About Coffee* http://www.ico.org/coffee_story.asp

The main cost saving component of the investment has been the conversion of the boiler from running on a mix of diesel and rice husk (which had to be collected) to running on the mill's own by-product, coffee husk. See table below:[14]

Comparative Table of Fuel Consumption

Exchange rate (2006): USD 1 = MXN 11 (Mexican pesos)

Concept	Unit	Before	Current	Reduction
Diesel consumption	L/day	3,000	0	3,000
Harvest period	days	110	110	
Annual consumption (50,000 quintals)	L	330,000	0	330,000
Unit costs	MXN/L	5.42	5.42	0
Cost of diesel	MXN	1,788,600	0	1,788,600
Use of rice husks (50,000 quintals)	Trips	33	0	33
Unit costs	MXN/trip	6,000	6,000	
Cost of rice husks	MXN	198,000	0	198,000
Total annual costs of fuel	MXN	1,986,600	0	1,986,600
				US$ 180,600

As shown in the table above, the switch from a mix of diesel and rice husk to a free source of coffee husk has resulted in savings of over $180,000 per year in direct costs. Additionally, a number of costs associated with the need to clean the boiler were eliminated, because the coffee husks burn cleaner and produce muck less ash compared to rice husks. This conversion has also removed the need to dispose of coffee husk, which usually presents both an environmental and logistical challenge to coffee mills. The removal of 330,000 litres of diesel consumption per year from this part of the supply chain has also led to significant reductions in carbon emissions associated with the use of fossil fuel.

The case of HUATUSCO's dry mill highlights the multiple benefits of improving the efficiency of industrial boilers and converting their fuel source to a free by-product of the supply chain. While the carbon emissions savings were not calculated for this project, they would be significant and help to improve the sustainability of the supply chain.

[14] From Jos Algra, Twin (2006)

Photo 1: The boiler at HUATUSCO's mill, converted from a fuel mix of diesel and rice husk to coffee husk

Photo 2: Rotating green coffee dryers supplied with hot air source from boilers powered by coffee husks.

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