



Mainstreaming Sustainability in the Biofuel Sector in Mali (DBM01005)

REPORT

**Development of Sustainability Criteria for Biofuels in Mali –
International Initiatives and Expertise**

October 2010

Project Co-ordinator:

Mali – Folkecenter
Rue 800 portes, 1293 Faladie Sema,
Bamako, MALI

Report Preparation

WIP – Renewable Energies
Sylvensteinstr. 2
81369 Munich, GERMANY

This report is elaborated in the framework of the project Mainstreaming Sustainability in the Biofuel Sector in Mali (DBM01005) co-funded by the Global Sustainable Biomass Fund.

The main objective of this project is to develop sustainability criteria and certification to promote sustainability in the future biofuel sector in Mali. This development is based on a participatory process with the involvement of a large variety of biofuel stakeholders in Mali in order to identify a set of sustainability criteria adjusted to the framework conditions of biofuels development in Mali.

The present report presents an overview of recent and on-going international initiatives on sustainability criteria and certification with the aim to support activities in the field of sustainable biofuels development in Mali.

Report Preparation

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

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1. INTRODUCTION

During recent years the Government of Mali as well as the civil society in Mali has shown considerable interest in the development of a strong and sustainable biofuels sector. This development is embedded in several policy documents of the Government of Mali such as the Poverty Reduction Strategy with the following three main objectives for the period 2007-2011:

- Development of infrastructures and the productive sector
- Pursuance and consolidation of structural reforms
- Strengthening of the social sector (education, health, water access)

The achievement of these objectives addresses several priority areas of which three are closely interlinked with the development of a sustainable biofuels sector:

- Food security and rural development
- Development of small and medium size enterprises
- Protection and sustainable management of natural resources

In 2006 the National Strategy on Renewable Energy was published by the Ministry of Energy and Water (MEE) stating the targets of 10% reduction in fossil fuel imports by 2014, 15% by 2019, and 20% by 2024. This strategy includes the following main objectives:

- Improve access to energy especially from renewable sources
- Rationalise the use of existing energy sources
- Increase efficiency of the use of existing natural resources to produce energy
- Promote the sustainable use of biomass resources through the conservation and protection of forests
- Strengthen government capacity and streamline administrative procedures within the energy sector

Biofuels are foreseen to play a major role to achieve the objectives of the National Strategy on Renewable Energy. The National Agency for the Development of Biofuels (ANADEB), legally established on 5th June 2009, will be the implementing agency of the National Strategy on Biofuels. The main responsibilities of ANADEB include:

- Establishment of a centralized and harmonized framework for biofuel promotion
- Increase of the number of professionals working in the biofuels field
- Enacting of production licensing requirements and technical quality standards for biofuels
- Creation of a dialogue between main public and private actors in the field
- Promotion of trade between international partners in biofuels

Thereby, the National Strategy on Biofuels states the importance of ensuring the environmental, economic and social sustainability of the development of the biofuels sector in Mali, and ANADEB is currently involved in the elaboration of national sustainability criteria and a biofuel certification scheme suitable for the specific framework conditions in Mali. This activity is strongly supported by the present project Mainstreaming Sustainability in the Biofuel Sector in Mali which also serves to build capacity and expertise within ANADEB in the field of sustainable biofuels production.

2. BIOFUEL SUSTAINABILITY CONCERNS IN MALI

The main motivations for the development of a biofuels sector in Mali, as in many other countries worldwide, are to contribute to the national energy security and to address the important problem of high and increasing crude oil prices which place pressure on the country's trade balance, as well as to contribute to an improved energy access and the creation of employment opportunities and significant revenues especially for the rural population.

The following paragraphs underline specific framework conditions important for considerations on ensuring sustainability of the biofuels sector in Mali (FARA, 2010).

(a) Food security

An important sustainability criterion for Mali is to avoid the conflict of agricultural production for food and biofuels production. Thereby, it needs to be ensured that the development of the biofuels sector in Mali does not have any negative impact on food production. On the contrary, investments in the agricultural sector triggered by biofuels production should lead to an increase of food production.

Food production in Mali has historically been highly variable due to fluctuating rainfall, which also influences river levels and hence irrigated as well as rainfed agriculture. This variability, combined with a low percentage of total agricultural production entering the market, causes volatile available food quantities as well as fluctuating prices for food products. It is estimated that a fourth of the households in Mali are in a chronic situation of food insecurity with cereal consumption representing around 50% of household expenses (UNDAF, 2009).

(b) Access to electricity

In Mali only about 23% of households have access to electricity (58% in urban areas and 11% in rural areas). Biofuels may therefore significantly contribute to rural electrification through the use of straight plant oil (e.g. *Jatropha* oil) in modified diesel engines for the decentralised production of electricity. Several villages in Mali have already been equipped with Multifunctional Platforms based on *Jatropha* oil to power agricultural machinery and to provide electricity for household consumption and for the operation of productive units.

(c) Employment and revenue generation

The development of a sustainable biofuels sector in Mali needs to ensure that sufficient revenues and jobs are created for local and national stakeholders including rural communities. This criterion will generally favour the local and national use of biofuels as transport fuels (e.g. as pure biofuels or through blending of biofuels with fossil fuels) or for decentralised small-scale electricity generation. If biofuels or raw materials for biofuels production are exported, mechanisms need to be put in place to guarantee appropriate revenue creation within Mali.

(d) Land tenure

Biofuel production in Mali should not have negative consequences on land tenure. The Malian land tenure is complex and characterised by the co-existence of customary and modern land tenure laws. Customary laws are usually oral, vague, variable, unpublished, and their co-existence with modern law is often still conflictual. Land conflicts which occur on a permanent basis are exacerbated by demographic growth, high urbanisation rate, recurrent drought and poor land management practices.

(e) Water availability

Biofuel production in Mali should not have negative impact on water quality, availability and use. More than 60% of the surface area of Mali is desertic or semi-desertic (74.8 million ha) and the 43.7 million hectares of land suitable for agriculture and livestock production face a deficit in rainfall, droughts, and irregular water levels. Water access was identified as one of the main barriers for the production of biofuels in Mali.

(f) Soil protection

Soil erosion and degradation can result from the cultivation of energy plants as well as from the extraction of agricultural residues. Therefore, biofuel production in Mali should not lead to a degradation of soils caused for instance by inappropriate agricultural practices and fertiliser use.

The specific sustainability concerns for biofuel development in Mali highlighted above are meant to provide an initial overview and are by no means exhaustive. The development of a concise set of sustainability criteria should be based on extensive stakeholder involvement as foreseen in the framework of the project Mainstreaming Sustainability in the Biofuel Sector in Mali (see chapter 4).

In chapter 3, examples for sustainability principles and criteria are presented which have been developed within a variety of international initiatives. This overview can serve as guidance for the development of national sustainability criteria suitable in the Malian context.

3. INTERNATIONAL INITIATIVES AND EXPERTISE

Since the 1990s a variety of sustainability standards have been developed for the production, processing and trade of biomass and agricultural products. More recently, sustainability schemes are introduced which specifically address the production and use of (liquid) biofuels.

The following chapters (chapters 3.1 to 3.6) present selected sustainability schemes which are considered suitable to provide assistance for the development of national sustainability criteria for Mali. Finally, chapter 3.7 presents a list of further sustainability schemes which may be consulted for additional information.

Recent overviews of existing sustainability schemes are given in a variety of publications, such as Froger (2010), BTG (2008), Ecofys (2009), GBEP (2008), Imperial College (2010), SEI and Tricorona (2008) and van Dam et al. (2008).

3.1 EC Renewable Energy Directive (RED)

Within the European Union the development of the biofuels sector as well as exports of biofuels into Europe are mainly governed by the Renewable Energy Directive (RED, 2009) which came into force in June 2009.

The RED sets a target for all Member States to achieve a minimum of 10% renewable energy consumption in transport by 2020. In addition, the Fuel Quality Directive (FQD, 2009) sets a target for fuel suppliers in all Member States to achieve at least a 6% reduction in life cycle greenhouse gas (GHG) emissions across all transport fuels by 2020. Biofuels that count towards either of the targets will have to meet sustainability requirements, defined in Article 17 of the RED. These include mandatory aspects as well as reporting requirements, both of which will have to be implemented by EU Member States by December 2010.

The following sustainability requirements were introduced in the RED in order to address the growing concerns of the European public that increased biofuels production worldwide, as stimulated by the targets of the RED, may have severe negative environmental and socio-economic impacts, and may in fact not sufficiently contribute to the reduction of GHG emissions:

- *GHG emissions savings*: at least 35%, increasing to at least 50% from 1 January 2017, and 60% from 1 January 2018 for biofuels and bioliquids produced in installations which started production on or after 1 January 2017 (all using the EC methodology for lifecycle GHG emission calculation)..
- *Biodiversity*: Biofuels may not be made from raw material obtained from land with high biodiversity value in or after January 2008.
- *Carbon stock*: Biofuels may not be made from raw material obtained from land with high carbon stock or land that was peatland in January 2008.
- *Cross compliance*: Biofuel feedstocks grown in the European Community must be cultivated according to the European Commission's "cross compliance" requirements (part A and point 9 of Annex II to Council Regulation (EC) No 73/2009 of 19 January 2009).

In addition, the RED includes reporting obligations on environmental, social and development aspects such as impacts on air, soil and water, impacts on food availability and prices, as well as impacts on land use rights and labour conditions. In 2012 the EC will report on whether to introduce additional sustainability requirements or other corrective actions. The exact definitions of the reporting requirements for economic operators will be defined through the Comitology process before the end of 2010.

The RED also commits the EC to report by the end of 2010 on the impact of indirect land use change (iLUC) on GHG emissions from biofuels. This could lead to a proposal to include the impacts of iLUC in the RED GHG calculation methodology for biofuels.

3.2 International Sustainability and Carbon Certification System (ISCC)

In order to comply with the obligations for EU Member States set by the RED, the German Government enacted the German Ordinance on Requirements for the Sustainable Production of Biofuels (Biokraft-NachV) in September 2009 (revised in June 2010).

The sustainability system ISCC is the first certification system for sustainable biofuels and biomass approved according to the German Ordinance (Biokraft-NachV) by the authority BLE (Federal Agency for Agriculture and Food). The ISCC certification system is supported by the German Federal Ministry of Food, Agriculture and Consumer Protection via the Agency for Renewable Resources (FNR).

The objective of ISCC is to establish an international, practical and transparent system for the certification of biomass and bioenergy. ISCC is oriented towards the reduction of greenhouse gas emissions, sustainable use of land, protection of natural biospheres and social sustainability (ISCC 202, 2010). The ISCC system was developed and tested with the participation of stakeholders along the entire supply chain, from NGOs, governmental organizations and research institutes in different countries.

With respect to the certification of sustainable biofuels, the ISCC system consists of the following 6 core components:

- (1) The sustainability audit at farm level for which the ISCC Producer Checklist is used. This checklist consists of principles (see Table 1), control points, compliance criteria, indicators, and guidance that shall be used within the ISCC system by independent third party certification bodies to verify whether the biomass production takes place in a sustainable manner. Compliance with the ISCC Standard consists of three types of control points:
 - Major Musts (complete compliance is compulsory).
 - Minor Musts (90% compliance is mandatory)
 - Recommendations (No minimum percentage of compliance set).
- (2) The sustainability audit at conversion plant level for which the ISCC Conversion Plant Checklist can be used and which takes place on a voluntary basis.
- (3) The ISCC registry where audited sites and the audited land and all certificates are registered.
- (4) The GHG methodology and data templates to collect the relevant data for the GHG calculation.
- (5) The chain of custody (CoC) audit for which auditors can use the ISCC CoC Checklist.
- (6) The meta system which allows for the endorsement of other existing certification schemes that can be used to cover all of the ISCC Requirements or parts thereof which could be complemented by components of ISCC.

Table 1: Sustainability principles of the ISCC system

International Sustainability and Carbon Certification System (ISCC)	
Principle 1	Biomass shall not be produced on land with high biodiversity value or high carbon stock and not from peat land (according to Article 17, 3. of the Directive 2009/28/EC and § 4 to 6 of the German BioSt-NachV and BioKraft-NachV). HCV areas shall be protected.
Criterion 1.1	Biomass is not produced on land with high biodiversity value.
Criterion 1.2	Biomass is not produced on grassland with high biodiversity.
Criterion 1.3	Biomass is not produced on land with high carbon stock.
Criterion 1.4	Biomass is not produced on land that was peatland in January 2008 or thereafter.
Criterion 1.5	If land was converted after January 1, 2008, the conversion and the use should not run contrary to principle 1.
Criterion 1.6	The agricultural enterprise or site to be audited does not have other production areas that do not comply with the requirements of this standard.
Principle 2	Biomass shall be produced in an environmentally responsible way. This includes the protection of soil, water and air and the application of Good Agricultural Practices
Criteria	See reference ISCC 202 (2010) for details
Principle 3	Safe working conditions through training and education, use of protective clothing and proper and timely assistance in the event of accidents
Criteria	See reference ISCC 202 (2010) for details
Principle 4	Biomass production shall not violate human rights, labour rights or land rights. It shall promote responsible labour conditions and workers' health, safety and welfare and shall be based on responsible community relations
Criteria	See reference ISCC 202 (2010) for details

International Sustainability and Carbon Certification System (ISCC) (cont.)	
Principle 5	Biomass production shall take place in compliance with all applicable regional and national laws and shall follow relevant international treaties
Criteria	See reference ISCC 202 (2010) for details
Principle 6	Good management practices shall be implemented
Criteria	See reference ISCC 202 (2010) for details

The sustainability system ISCC can already today be used by biofuel producers in Mali aiming at exporting biofuels into the European market. The system covers all sustainability requirements specified by the European Renewable Energy Directive. In addition it is foreseen to facilitate the adaptation of the ISCC system to national or regional conditions and crops which can take place within National Technical Working Groups (NTWG).

Further information is available at the website: www.iscc-system.org.

3.3 Sustainability Criteria for Biomass for Energy Purposes (NTA 8080)

In the European Union the Netherlands took a leading role in the development of sustainability criteria for biomass through the report “Testing framework for sustainable biomass” (Cramer report) elaborated in February 2007 by a multi-stakeholder working group under the chairmanship of Jacqueline Cramer (Cramer, 2007).

The Cramer report identified 6 themes within which sustainability criteria are formulated (Cramer Criteria), namely greenhouse gas emissions, competition with food or other local applications, biodiversity, environment, prosperity, and social well-being (see Table 2). Potential indicators to measure compliance with the sustainability criteria are presented in the reference (Cramer, 2007).

These Cramer criteria are broadly supported in the Netherlands and serve as the basis for the current development of the Netherlands Technical Agreements NTA 8080 on Sustainability Criteria for Biomass for Energy Purposes and NTA 8081 (certification scheme) by the Dutch standardisation body NEN (NEderlandse Norm).

Table 2: Sustainability principles and criteria of NTA 8080 (Cramer Criteria)

Sustainability Criteria for Biomass for Energy Purposes (NTA 8080)	
Principle 1	The greenhouse gas balance of the production chain and application of the biomass must be positive
Criterion 1.1	In the application of biomass a net emission reduction of greenhouse gases must take place along the whole chain. The reduction is calculated in relation to a reference situation with fossil fuels.
Principle 2	Biomass production must not be at the expense of important carbon sinks in the vegetation and in the soil
Criterion 2.1	Conservation of above-ground (vegetation) carbon sinks when biomass units are installed.
Criterion 2.2	The conservation of underground (soil) carbon sinks when biomass units are installed.
Principle 3	The production of biomass for energy must not endanger the food supply and local biomass applications (energy supply, medicines, building materials)
Criterion 3.1	Insight into the change of land use in the region of the biomass production unit.
Criterion 3.2	Insight into the change of prices of food and land in the area of the biomass production unit.
Principle 4	Biomass production must not affect protected or vulnerable biodiversity and will, where possible, have to strengthen biodiversity
Criterion 4.1	No violation of national laws and regulations that are applicable to biomass production and the production area.

Sustainability Criteria for Biomass for Energy Purposes (NTA 8080) (cont.)	
Criterion 4.2	In new or recent developments, no deterioration of biodiversity by biomass production in protected areas.
Criterion 4.3	In new or recent developments, no deterioration of biodiversity in other areas with high biodiversity value, vulnerability or high agrarian, nature and/or cultural values.
Criterion 4.4	In new or recent developments, maintenance or recovery of biodiversity within biomass production units.
Criterion 4.5	Strengthening of biodiversity where this is possible, during development and by the management of existing production units.
Principle 5	In the production and processing of biomass the soil and the soil quality are retained or improved
Criterion 5.1	No violation of national laws and regulations that are applicable to soil management.
Criterion 5.2	In the production and processing of biomass best practices must be applied to retain or improve the soil and soil quality.
Criterion 5.3	The use of residual products must not be at variance with other local functions for the conservation of the soil.
Principle 6	In the production and processing of biomass ground and surface water must not be depleted and the water quality must be maintained or improved
Criterion 6.1	No violation of national laws and regulations that are applicable to water management.
Criterion 6.2	In the production and processing of biomass best practices must be applied to restrict the use of water and to retain or improve ground and surface water quality.
Criterion 6.3	In the production and processing of biomass no use must be made of water from non-renewable sources.
Principle 7	In the production and processing of biomass the air quality must be maintained or improved
Criterion 7.1	No violation of national laws and regulations that are applicable to emissions and air quality.
Criterion 7.2	In the production and processing of biomass best practices must be applied to reduce emissions and air pollution.
Criterion 7.3	No burning as part of the installation or management of biomass production units (BPUs).
Principle 8	The production of biomass must contribute towards local prosperity
Criterion 8.1	Positive contribution of private company activities towards the local economy and activities.
Principle 9	The production of biomass must contribute towards the social well-being of the employees and the local population
Criterion 9.1	No negative effects on the working conditions of employees.
Criterion 9.2	No negative effects on human rights.
Criterion 9.3	The use of land must not lead to the violation of official property and use, and customary law without the free and prior consent of the sufficiently informed local population.
Criterion 9.4	Positive contribution to the well-being of local population.
Criterion 9.5	Insight into possible violations of the integrity of the company.

The Dutch biomass certification scheme is currently undergoing national and international pilot testing, and operability is foreseen in 2011.

The Sustainability Criteria for Biomass for Energy Purposes (NTA 8080) have already been presented to biofuel stakeholders in Mali on the occasion of a workshop in Bamako on 22-23 July 2010. The Cramer Criteria certainly provide good guidance for the development of national sustainability criteria suitable in the Malian context.

Further information is available at the website: <http://www.senternovem.nl/sustainablebiomass-import/general/index.asp>.

3.4 RSB Principles and Criteria for Sustainable Biofuels Production

The Roundtable on Sustainable Biofuels (RSB) was initiated and is coordinated by the Energy Centre (CEN) of the Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland.

The RSB is a multi-stakeholder initiative, which develops a standard for sustainable biofuel production through an international consultation process (meetings, teleconferences and online discussions). It gathers experts from about 40 countries and various sectors, from NGOs to oil companies, from academic scientists to government representatives.

In August 2008, the first draft of principles and criteria (Version Zero) was released, after one year of international consultation. These principles and criteria are generic and shall apply to any feedstock and to any region worldwide.

With the publication of Version One in November 2009 (RSB1.0, 2009), the RSB entered into a new phase in which the content of the RSB Standard will be implemented through a certification system applicable to biofuel operations throughout the world, issuing certificates to recognize operations which meet the criteria. During 2010 the RSB pilot tested the Standard through different supply chains in different regions of the world.

Version 1.1 of the RSB Standard (see Table 3) reflects the changes made based on feedback received from pilot projects (RSB1.1, 2010). In November 2010 the approval of Version Two by the RSB Steering Board is foreseen, and the RSB seeks to be an operational certification standard and begin to issue its first compliance certificates in 2011.

Table 3: RSB Principles and Criteria for Sustainable Biofuels Production (Version 1.1)

RSB Principles and Criteria for Sustainable Biofuels Production (Version 1.1)	
Principle 1	Biofuel operations shall follow all applicable laws and regulations
Criterion 1	Biofuel operations shall comply with all applicable laws and regulations of the country in which the operation occurs and with relevant international laws and agreements.
Principle 2	Sustainable biofuel operations shall be planned, implemented, and continuously improved through an open, transparent, and consultative impact assessment and management process and an economic viability analysis.
Criterion 2.a	Biofuel operations shall undertake an impact assessment process to assess impacts and risks and ensure sustainability through the development of effective and efficient implementation, mitigation, monitoring and evaluation plans.
Criterion 2.b	Free, Prior & Informed Consent (FPIC) shall form the basis for the process to be followed during all stakeholder consultation, which shall be gender sensitive and result in consensus-driven negotiated agreements.
Criterion 2.c	Biofuel operators shall implement a business plan that reflects a commitment to long-term economic viability.
Principle 3	Biofuels shall contribute to climate change mitigation by significantly reducing lifecycle GHG emissions as compared to fossil fuels
Criterion 3.a	In geographic areas with legislative biofuel policy or regulations in force, in which biofuel must meet GHG reduction requirements across its lifecycle to comply with such policy or regulations and/or to qualify for certain incentives, biofuel operations subject to such policy or regulations shall comply with such policy and regulations and/or qualify for the applicable incentives.
Criterion 3.b	Lifecycle GHG emissions of biofuel shall be calculated using the RSB lifecycle GHG emission calculation methodology, which incorporates methodological elements and input data from authoritative sources; is based on sound and accepted science; is updated periodically as new data become available; has system boundaries from Well to Wheel; includes GHG emissions from land use change, including, but not limited to above- and below-ground carbon stock changes; and incentivizes the use of co-products, residues and waste in such a way that the lifecycle GHG emissions of the biofuel are reduced.
Criterion 3.c	Biofuel blends shall have on average 50% lower lifecycle greenhouse gas emissions relative to the fossil fuel baseline. Each biofuel in the blend shall have lower lifecycle GHG emissions than the fossil fuel baseline.

RSB Principles and Criteria for Sustainable Biofuels Production (Version 1.1) (cont.)	
Principle 4	Biofuel operations shall not violate human rights or labor rights, and shall promote decent work and the well-being of workers
Criterion 4.a	Workers shall enjoy freedom of association, the right to organize, and the right to collectively bargain.
Criterion 4.b	No slave labor or forced labor shall occur.
Criterion 4.c	No child labor shall occur, except on family farms and then only when work does not interfere with the child's schooling and does not put his or her health at risk.
Criterion 4.d	Workers shall be free of discrimination of any kind, whether in employment or opportunity, with respect to gender, wages, working conditions, and social benefits.
Criterion 4.e	Workers' wages and working conditions shall respect all applicable laws and international conventions, as well as all relevant collective agreements. Where a government regulated minimum wage is in place in a given country, this shall be observed. Where a minimum wage is absent, the wage paid for a particular activity shall be negotiated and agreed on an annual basis with the worker. Men and women shall receive equal remuneration for work of equal value.
Criterion 4.f	Conditions of occupational safety and health for workers shall follow internationally-recognized standards.
Criterion 4.g	Operators shall implement a mechanism to ensure the human rights and labor rights outlined in this principle apply equally when labor is contracted through third parties.
Principle 5	In regions of poverty, biofuel operations shall contribute to the social and economic development of local, rural and indigenous people and communities
Criterion 5.a	In regions of poverty, the socioeconomic status of local stakeholders impacted by biofuel operations shall be improved.
Criterion 5.b	In regions of poverty, special measures that benefit and encourage the participation of women, youth, indigenous communities and the vulnerable in biofuel operations shall be designed and implemented.
Principle 6	Biofuel operations shall ensure the human right to adequate food and improve food security in food insecure regions
Criterion 6.a	Biofuel operations shall assess risks to food security in the region and locality and shall mitigate any negative impacts that result from biofuel operations.
Criterion 6.b	In food insecure regions, biofuel operations shall enhance the local food security of the directly affected stakeholders.
Principle 7	Biofuel operations shall avoid negative impacts on biodiversity, ecosystems, and other conservation values
Criterion 7.a	Conservation values of local, regional or global importance within the potential or existing area of operation shall be maintained or enhanced.
Criterion 7.b	Ecosystem functions and services that are directly affected by biofuel operations shall be maintained or enhanced.
Criterion 7.c	Biofuel operations shall protect, restore or create buffer zones.
Criterion 7.d	Ecological corridors shall be protected, restored or created to minimize fragmentation of habitats.
Criterion 7.e	Biofuel operations shall prevent invasive species from invading areas outside the operation site.
Principle 8	Biofuel operations shall implement practices that seek to reverse soil degradation and/or maintain soil health
Criterion 8.a	Operators shall implement practices to maintain or enhance soil physical, chemical, and biological conditions.
Principle 9	Biofuel operations shall maintain or enhance the quality and quantity of surface and ground water resources, and respect prior formal or customary water rights
Criterion 9.a	Biofuel operations shall respect the existing water rights of local and indigenous communities.
Criterion 9.b	Biofuel operations shall include a water management plan which aims to use water efficiently and to maintain or enhance the quality of the water resources that are used for biofuel operations.

RSB Principles and Criteria for Sustainable Biofuels Production (Version 1.1) (cont.)	
Criterion 9.c	Biofuel operations shall not contribute to the depletion of surface or groundwater resources beyond replenishment capacities.
Criterion 9.d	Biofuel operations shall contribute to the enhancement or maintaining of the quality of the surface and groundwater resources.
Principle 10	Air pollution from biofuel operations shall be minimized along the supply chain
Criterion 10.a	Air pollution emission sources from biofuel operations shall be identified, and air pollutant emissions minimized through an air management plan.
Criterion 10.b	Biofuel operations shall avoid and, where possible, eliminate open-air burning of residues, wastes or by-products, or open air burning to clear the land.
Principle 11	The use of technologies in biofuel operations shall seek to maximize production efficiency and social and environmental performance, and minimize the risk of damages to the environment and people
Criterion 11.a	Information on the use of technologies in biofuel operations shall be fully available, unless limited by national law or international agreements on intellectual property.
Criterion 11.b	The technologies used in biofuel operations including genetically modified: plants, micro-organisms, and algae, shall minimize the risk of damages to environment and people, and improve environmental and/or social performance over the long term.
Criterion 11.c	Micro-organisms used in biofuel operations which may represent a risk to the environment or people shall be adequately contained to prevent release into the environment.
Criterion 11.d	Good practices shall be implemented for the storage, handling, use, and disposal of biofuels and chemicals.
Criterion 11.e	Residues, wastes and byproducts from feedstock processing and biofuel production units shall be managed such that soil, water and air physical, chemical, and biological conditions are not damaged.
Principle 12	Biofuel operations shall respect land rights and land use rights
Criterion 12.a	Existing land rights and land use rights, both formal and informal, shall be assessed, documented, and established. The right to use land for biofuel operations shall be established only when these rights are determined.
Criterion 12.b	Free, Prior, and Informed Consent shall form the basis for all negotiated agreements for any compensation, acquisition, or voluntary relinquishment of rights by land users or owners for biofuel operations.

Within the implementation of the project Mainstreaming Sustainability in the Biofuel Sector in Mali close cooperation contacts have already been established with representatives of the Roundtable on Sustainable Biofuels (RSB). The development of national sustainability criteria can certainly benefit from the extensive international stakeholder consultation performed for the development of the RSB sustainability standard. A RSB stakeholder consultation meeting took place in the framework of the EC co-funded project COMPETE (www.compete-bioafrica.net) in November 2008 in Bamako.

On a global scale the RSB currently provides the sustainability platform with the strongest involvement of stakeholders from African countries. Stakeholders from Mali could continue to get involved in the refinement of the RSB standard, as it is anticipated that Version Two of the RSB Standard will not be the end of the standard development process, but rather the beginning of an ever-evolving standard reflecting current technical, environmental and social realities. The biofuel sector is rapidly changing and the RSB will continue to be open and flexible to integrating new information and technology developments into the standard to stay relevant into the next decade and beyond.

Further information is available at the website: <http://rsb.epfl.ch/>

3.5 RSPO Principles and Criteria for Sustainable Palm Oil Production

In response to the urgent and pressing global call for sustainably produced palm oil, the Roundtable on Sustainable Palm Oil (RSPO) was formed in 2004 with the objective to promote the growth and use of sustainable oil palm products through credible global standards and engagement of stakeholders. The seat of the association is in Zurich, Switzerland, while the secretariat is currently based in Kuala Lumpur with a satellite office in Jakarta.

RSPO is a not-for-profit association that unites stakeholders from seven sectors of the palm oil industry - oil palm producers, palm oil processors or traders, consumer goods manufacturers, retailers, banks and investors, environmental or nature conservation NGOs and social or developmental NGOs - to develop and implement global standards for sustainable palm oil.

Sustainable palm oil production is comprised of legal, economically viable, environmentally appropriate and socially beneficial management and operations. This is delivered through the application of a set of principles and criteria (see Table 4) which is accompanied by guidance and definitions.

The RSPO Principles and Criteria for Sustainable Palm Oil Production were adopted in November 2005 (RSPO, 2005), and the RSPO Certification System for Sustainable Palm Oil was launched in November 2007. In order to obtain a RSPO certificate, companies must submit to audits carried out by a certification body accredited by the RSPO.

In October 2010, the RSPO website lists 46 companies that are in conformance to the RSPO principles and criteria. Comprehensive certification summary reports are publicly available on the RSPO website and describe the process and outcome of the certification audits of the company palm oil production sites.

It is agreed upon that the RSPO had positive impact on the palm oil sector leading to improved management of the plantations (less erosion, more attention to biodiversity aspects, prevention of fire, etc.) and a better understanding of 'sustainability aspects'. The RSPO, however, is said to have only very little effect on deforestation caused by oil palm plantations and is therefore subject to criticism.

Table 4: RSPO Principles and Criteria for Sustainable Palm Oil Production

RSPO Principles and Criteria for Sustainable Palm Oil Production	
Principle 1	Commitment to transparency
Criterion 1.1	Oil palm growers and millers provide adequate information to other stakeholders on environmental, social and legal issues relevant to RSPO Criteria, in appropriate languages & forms to allow for effective participation in decision making.
Criterion 1.2	Management documents are publicly available, except where this is prevented by commercial confidentiality or where disclosure of information would result in negative environmental or social outcomes.
Principle 2	Compliance with applicable laws and regulations
Criterion 2.1	There is compliance with all applicable local, national and ratified international laws and regulations
Criterion 2.2	The right to use the land can be demonstrated, and is not legitimately contested by local communities with demonstrable rights.
Criterion 2.3	Use of the land for oil palm does not diminish the legal rights, or customary rights, of other users, without their free, prior and informed consent.
Principle 3	Commitment to long-term economic and financial viability
Criterion 3.1	There is an implemented management plan that aims to achieve long-term economic and financial viability.

RSPO Principles and Criteria for Sustainable Palm Oil Production (cont.)	
Principle 4	Use of appropriate best practices by growers and millers
Criterion 4.1	Operating procedures are appropriately documented and consistently implemented and monitored.
Criterion 4.2	Practices maintain soil fertility at, or where possible improve soil fertility to, a level that ensures optimal and sustained yield.
Criterion 4.3	Practices minimise and control erosion and degradation of soils.
Criterion 4.4	Practices maintain the quality and availability of surface and ground water.
Criterion 4.5	Pests, diseases, weeds and invasive introduced species are effectively managed using appropriate Integrated Pest Management (IPM) techniques.
Criterion 4.6	Agrochemicals are used in a way that does not endanger health or the environment. There is no prophylactic use, and where agrochemicals are used that are categorised as World Health Organisation Type 1A or 1B, or are listed by the Stockholm or Rotterdam Conventions, growers are actively seeking to identify alternatives, and this is documented.
Criterion 4.7	An occupational health and safety plan is documented, effectively communicated and implemented.
Criterion 4.8	All staff, workers, smallholders and contractors are appropriately trained.
Principle 5	Environmental responsibility and conservation of natural resources and biodiversity
Criterion 5.1	Aspects of plantation and mill management that have environmental impacts are identified, and plans to mitigate the negative impacts and promote the positive ones are made, implemented and monitored, to demonstrate continuous improvement.
Criterion 5.2	The status of rare, threatened or endangered species and high conservation value habitats, if any, that exist in the plantation or that could be affected by plantation or mill management, shall be identified and their conservation taken into account in management plans and operations.
Criterion 5.3	Waste is reduced, recycled, re-used and disposed of in an environmentally and socially responsible manner.
Criterion 5.4	Efficiency of energy use and use of renewable energy is maximised.
Criterion 5.5	Use of fire for waste disposal and for preparing land for replanting is avoided except in specific situations, as identified in the ASEAN guidelines or other regional best practice.
Criterion 5.6	Plans to reduce pollution and emissions, including greenhouse gases, are developed, implemented and monitored.
Principle 6	Responsible consideration of employees and of individuals and communities affected by growers and mills
Criterion 6.1	Aspects of plantation and mill management that have social impacts are identified in a participatory way, and plans to mitigate the negative impacts and promote the positive ones are made, implemented and monitored, to demonstrate continuous improvement.
Criterion 6.2	There are open and transparent methods for communication and consultation between growers and/or millers, local communities and other affected or interested parties.
Criterion 6.3	There is a mutually agreed and documented system for dealing with complaints and grievances, which is implemented and accepted by all parties.
Criterion 6.4	Any negotiations concerning compensation for loss of legal or customary rights are dealt with through a documented system that enables indigenous peoples, local communities and other stakeholders to express their views through their own representative institutions.
Criterion 6.5	Pay and conditions for employees and for employees of contractors always meet at least legal or industry minimum standards and are sufficient to meet basic needs of personnel and to provide some discretionary income.
Criterion 6.6	The employer respects the right of all personnel to form and join trade unions of their choice and to bargain collectively. Where the right to freedom of association and collective bargaining are restricted under law, the employer facilitates parallel means of independent and free association and bargaining for all such personnel.
Criterion 6.7	Child labour is not used. Children are not exposed to hazardous working conditions. Work by children is acceptable on family farms, under adult supervision, and when not interfering with education programmes.

RSPO Principles and Criteria for Sustainable Palm Oil Production (cont.)	
Criterion 6.8	The employer shall not engage in or support discrimination based on race, caste, national origin, religion, disability, gender, sexual orientation, union membership, political affiliation, or age.
Criterion 6.9	A policy to prevent sexual harassment and all other forms of violence against women and to protect their reproductive rights is developed and applied.
Criterion 6.10	Growers and millers deal fairly and transparently with smallholders and other local businesses.
Criterion 6.11	Growers and millers contribute to local sustainable development wherever appropriate.
Principle 7	Responsible development of new plantings
Criterion 7.1	A comprehensive and participatory independent social and environmental impact assessment is undertaken prior to establishing new plantings or operations, or expanding existing ones, and the results incorporated into planning, management and operations.
Criterion 7.2	Soil surveys and topographic information are used for site planning in the establishment of new plantings, and the results are incorporated into plans and operations.
Criterion 7.3	New plantings since November 2005 (which is the expected date of adoption of these criteria by the RSPO membership), have not replaced primary forest or any area containing one or more High Conservation Values.
Criterion 7.4	Extensive planting on steep terrain, and/or on marginal and fragile soils, is avoided.
Criterion 7.5	No new plantings are established on local peoples' land without their free, prior and informed consent, dealt with through a documented system that enables indigenous peoples, local communities and other stakeholders to express their views through their own representative institutions.
Criterion 7.6	Local people are compensated for any agreed land acquisitions and relinquishment of rights, subject to their free, prior and informed consent and negotiated agreements.
Criterion 7.7	Use of fire in the preparation of new plantings is avoided other than in specific situations, as identified in the ASEAN guidelines or other regional best practice.
Principle 8	Commitment to continuous improvement in key areas of activity
Criterion 8.1	Growers and millers regularly monitor and review their activities and develop and implement action plans that allow demonstrable continuous improvement in key operations.

The RSPO Principles and Criteria for Sustainable Palm Oil Production constitute a plant specific sustainability standard with limited application to the framework conditions in Mali. Furthermore, this standard did not initially address palm oil production for biofuels and therefore currently does not include principles and criteria on GHG emission reductions.

Nevertheless, it is believed that the RSPO standard can provide valuable insight for the development of sustainability criteria in Mali, as several principles and criteria are generic for a large variety of feedstocks for biofuels production and only few principles and criteria address issues specific for the palm oil sector.

Moreover, stakeholders from Mali can learn lessons from the successful involvement of a multitude of (large and small scale) actors engaged in the palm oil sector on how to establish an effective national platform of biofuel stakeholders in Mali.

Further information is available at the website: <http://www.rspo.org>

3.6 COMPETE Good Practice Assessment for Bioenergy Projects

This methodology for good practice assessment was elaborated in the framework of the project COMPETE (Competence Platform on Energy Crops for Africa, www.compete-bioafrica.net) coordinated by WIP Renewable Energies and co-funded by the European Commission.

The principles were selected through consultation with African bioenergy stakeholders with the aim to provide a clear and balanced guideline for *Good Practices* (Imperial College, 2010). These guidelines do not provide definitive criteria and indicators as the principles do not attempt to be a certification or verification system. Nevertheless, according to the methodology followed and the benchmarking review, the guidelines can be used by stakeholders:

- i) To initiate or assess a bioenergy proposal or project
- ii) To assess the sustainability of a feasibility report for a bioenergy proposal or project
- iii) To review policy guidelines and assist in the decision-making process of a bioenergy proposal or project
- iv) To review and/or assess an ongoing bioenergy proposal/project

Table 5 presents the identified 12 principles and the topic they are related to (environmental, social, economic, policy and institutions).

Table 5: COMPETE principles for sustainability assessment for bioenergy initiatives

	Principle	En	S	Ec	P
1.	Good agro-ecological and forestry practices (biodiversity, soil)	✓			
2.	Not affecting water supply and quality	✓			
3.	No land use change that detrimentally affects food security	✓			
4.	Community participation (from planning)		✓		
5.	Women's participation (from planning)		✓		
6.	Skills transfer (management, business, agriculture)		✓		
7.	Community inclusion in business or economic model (Contract with investor or NGO)			✓	
8.	Added value in the community (individual, money, assets, land, co-products)			✓	
9.	Improvement in services and infrastructure (energy supply, health) reinvestment of revenue within the community			✓	
10.	Compliance with National guidelines for bioenergy policy in place				✓
11.	Compliance with Local programmes, regulations and/or plans in place				✓
12.	Respect Land rights and avoid displacement				✓

In the following a more detailed description of the selected good practice principles is presented.

Principle 1. Good agro-ecological and forestry practices (biodiversity, soil)

This principle considers that the basic environmental characteristics to grow bioenergy crops will be followed according to the agro-ecological and forestry conditions of each country, region or community willing to grow them. They include: land use type, soil conditions (adequate for the selected bioenergy crop), soil management and protection, no negative effect on biodiversity, good agriculture practices (e.g. use of fertilisers and pesticides), good forestry practices (e.g. conservation and management).

Principle 2. Not affecting water supply and quality

This principle seeks to consider that especially in areas where water is constrained it will not be used for bioenergy crops or the water use will be limited or managed according to good agricultural practices. It also seeks to avoid the pollution of water that negatively affects its quality (e.g. overuse or bad use of fertilisers and pesticides). The principle considers the use of water first for human consumption and for food crops.

Principle 3. No land use change that detrimentally affects food security

Land use for bioenergy crops should be considered within the national policies and agro-regionalisation along with the other policy instruments and guidelines (if available). The change of land use for bioenergy crop production should not affect food security.

Principle 4. Community participation (from planning)

This principle considers the community participation in the bioenergy project, programme or plan since the early stages of the planning process. Community participation is not only part of a sustainability process but will also contribute to the success of the project and will allow the community to participate in the decision-making process. Additionally, it provides a feeling of “ownership” and “recognition” by the community.

Principle 5. Women’s participation (from planning)

This principle looks for women participation in bioenergy initiatives from the early stages of the planning process. Including women since the beginning will allow to provide direct gender benefits and will empower women in activities directly related to them.

Principle 6. Skills transfer (management, business, agriculture)

Transfer of skills is related to the added value of growing bioenergy crops. This includes different stages of the business cycle and it applies to the different production and scale schemes (e.g. out-growers, small, medium and large scale). It also includes productive areas (agriculture), transformation (e.g. extraction of oil from seeds), management and business skills (e.g. revenue and trading).

Principle 7. Community inclusion in business or economic model (Contract with investor or NGO)

The inclusion of the community in the business or economic model will prevent the exploitation of its members and will provide the mechanisms to comply with other principles such as Principles 6 and 8.

Principle 8. Added value in the community (individual, money, assets, land, co-products)

The added value from the bioenergy initiative can be translated not just in terms of an increment in the income of the community and at individual level (e.g. savings or additional income) but also with additional assets (e.g. animals, food production), land (e.g. individual or communal land) and co-products (e.g. income from soap making).

Principle 9. Improvement in services and infrastructure (energy supply, health) and/or reinvestment of revenue within the community

At a community level, the possibilities of reinvesting the revenue to improve services and infrastructure (if previously agreed within the community) are considered as a main objective. These services can be related to energy supply or better access to health services.

Principle 10. Compliance with National guidelines for bioenergy policy in place

Where available National policies or guidelines regarding bioenergy production exist, these should be followed by all stakeholders involved in the bioenergy initiative such as the proponent, the community, national and international consultants and developers, investors, and NGOs. Working with national, regional and local authorities is considered to be important especially for developers and investors in order to adequately address cross-cutting sectors (e.g. environment, social, industry, agriculture sectors).

Principle 11. Compliance with Local programmes, regulations and/or plans in place

Working with the national, regional and local authorities is considered to be important to create awareness of all programmes, plans and regulations at local level. Compliance will strengthen the bioenergy initiative and avoid conflicts with different stakeholders and regulators.

Principle 12. Respect Land rights and avoid displacement

The debate on land rights in developing countries (mainly in Africa) led to this principle to be considered by communities, governments and investors. It aims at avoiding displacement. In cases where displacement can not be avoided (based on the decisions of authorities), adequate compensation and further studies for relocation need to be performed according to international practice.

The assessment of bioenergy initiatives or projects is conducted with an Assessment Form following a qualitative score system. Pilot assessments have been performed for biofuel initiatives in Africa. The present COMPETE methodology for good practice assessment may serve as additional input for sustainability considerations in Mali, as it was developed based on the views of a large variety of African stakeholders during the implementation of the COMPETE project (2007 – 2009).

3.7 Other International Sustainability Initiatives

This chapter presents a list of further sustainability schemes (in alphabetical order) which may be consulted for additional information. Recent overviews of existing sustainability schemes are given in a variety of publications, such as Froger (2010), BTG (2008), Ecofys (2009), GBEP (2008), Imperial College (2010), SEI and Tricorona (2008) and van Dam et al (2008).

- Better Sugarcane Initiative (BSI); www.bettersugarcane.org
- CDM Gold Standard; www.cdmgoldstandard.org
- CEN/TC 383; www.cen.eu
- Fairtrade; www.fairtrade.net
- Forest Stewardship Council (FSC); www.fsc.org
- GLOBALGAP; www.globalgap.org
- Green Gold Label (GGL); www.greengoldcertified.org
- Linking Environment and Farming (LEAF); www.leafuk.org
- IDB Biofuels Sustainability Scorecard; www.iadb.org/biofuelsscorecard
- ISO/TC 248; www.iso.org
- REDCert; www.redcert.org
- Renewable Transport Fuel Obligation (RTFO); <http://www.renewablefuelsagency.gov.uk/aboutthertfo>
- Round Table on Responsible Soy (RTRS); www.responsiblesoy.org
- SEKAB Verified Sustainable Ethanol Initiative; www.sustainableethanolinitiative.com
- Sustainable Agriculture Network / Rainforest Alliance (SAN/RA); www.rainforest-alliance.org

4. RECOMMENDATIONS – WAY FORWARD

The following chapter provides recommendations for the development of national sustainability criteria and certification systems to promote sustainability in the future biofuel sector in Mali. Thereby, the development of a Malian biofuel sustainability system should proceed along the following 4 main steps which are briefly discussed in the chapters 4.1 to 4.4:

- (1) Identification of potential negative impacts – Stakeholder consultation
- (2) Selection of suitable principles and criteria – Stakeholder consultation
- (3) Formulation of indicators for proof of compliance
- (4) Policy measures – Elaboration of certification scheme

4.1 Identification of potential negative impacts – Stakeholder consultation

In the framework of the project Mainstreaming Sustainability in the Biofuel Sector in Mali an intensive stakeholder consultation has been launched with the establishment of the following 4 cross-sector multi-stakeholder working groups on sustainability criteria for biofuels in Mali:

- Parliamentary working group
- State technical services working group
- Private sector working group
- Civil society working group

On 22-23 July 2010 a stakeholder workshop was organised in Bamako in order to discuss the Dutch biomass sustainability scheme NTA 8080 based on the sustainability criteria elaborated in 2007 by a working group under the chairmanship of Jacqueline Cramer (Cramer criteria, see chapter 3.3). The 48 workshop participants formed thematic groups on social, economic, and environmental aspects and elaborated initial recommendations on the development of a sustainability scheme for Mali.

It was recommended to establish a committee within the National Agency for the Development of Biofuels (ANADEB) responsible for the coordination of stakeholder contributions for the formulation of the Malian sustainability scheme.

Further important steps to be taken include the identification and prioritisation of potential negative impacts of the development of a biofuels sector in Mali within the 4 multi-stakeholder working groups. This process shall be guided and overseen by ANADEB and lead to a concise list of sustainability concerns which need to be addressed to guarantee the sustainability of the biofuels sector in Mali (see chapter 2).

4.2 Selection of suitable principles and criteria – Stakeholder consultation

Based on the identified sustainability concerns, a set of suitable sustainability principles and criteria needs to be elaborated in close consultation with the 4 multi-stakeholder working groups. These principles and criteria constitute the core and integral part of the Malian national sustainability scheme. Guidance for the selection of principles and criteria for Mali can be provided by existing international initiatives, standards and certification schemes as presented in chapter 3.

As an example (non-exhaustive list), principles and criteria of the sustainability schemes presented in chapter 3 are identified which address the initial set of sustainability concerns elaborated in chapter 2.

(a) Food security

- NTA 8080 Principle 3: The production of biomass for energy must not endanger the food supply and local biomass applications (energy supply, medicines, building materials)
- RSB Principle 6: Biofuel operations shall ensure the human right to adequate food and improve food security in food insecure regions
- COMPETE Principle 3: No land use change that detrimentally affects food security

(b) Access to electricity

- NTA 8080 Principle 9: The production of biomass must contribute towards the social well-being of the employees and the local population
- COMPETE Principle 9: Improvement in services and infrastructure (energy supply, health) and/or reinvestment of revenue within the community

(c) Employment and revenue generation

- NTA 8080 Principle 8: The production of biomass must contribute towards local prosperity
- RSB Principle 5: In regions of poverty, biofuel operations shall contribute to the social and economic development of local, rural and indigenous people and communities
- RSPO Principle 3: Commitment to long-term economic and financial viability
- RSPO Criterion 6.5: Pay and conditions for employees and for employees of contractors always meet at least legal or industry minimum standards and are sufficient to meet basic needs of personnel and to provide some discretionary income
- COMPETE Principle 8: Added value in the community (individual, money, assets, land, co-products)

(d) Land tenure

- ISCC Principle 4: Biomass production shall not violate human rights, labour rights or land rights. It shall promote responsible labour conditions and workers' health, safety and welfare and shall be based on responsible community relations
- NTA 8080 Criteria 9.3: The use of land must not lead to the violation of official property and use, and customary law without the free and prior consent of the sufficiently informed local population
- RSB Principle 12: Biofuel operations shall respect land rights and land use rights
- RSPO Criterion 2.3: Use of the land for oil palm does not diminish the legal rights, or customary rights, of other users, without their free, prior and informed consent
- RSPO Criterion 6.4: Any negotiations concerning compensation for loss of legal or customary rights are dealt with through a documented system that enables indigenous peoples, local communities and other stakeholders to express their views through their own representative institutions
- RSPO Criterion 7.5: No new plantings are established on local peoples' land without their free, prior and informed consent, dealt with through a documented system that enables indigenous peoples, local communities and other stakeholders to express their views through their own representative institutions

(e) Water availability

- ISCC Principle 2: Biomass shall be produced in an environmentally responsible way. This includes the protection of soil, water and air and the application of Good Agricultural Practices
- NTA 8080 Principle 6: In the production and processing of biomass ground and surface water must not be depleted and the water quality must be maintained or improved
- RSB Principle 9: Biofuel operations shall maintain or enhance the quality and quantity of surface and ground water resources, and respect prior formal or customary water rights
- COMPETE Principle 2: Not affecting water supply and quality

(f) Soil protection

- ISCC Principle 2: Biomass shall be produced in an environmentally responsible way. This includes the protection of soil, water and air and the application of Good Agricultural Practices
- NTA 8080 Principle 5: In the production and processing of biomass the soil and the soil quality are retained or improved
- RSB Principle 8: Biofuel operations shall implement practices that seek to reverse soil degradation and/or maintain soil health
- RSPO Principle 4: Use of appropriate best practices by growers and millers
- COMPETE Principle 1: Good agro-ecological and forestry practices (biodiversity, soil)

It is obvious from the above initial listing that existing international sustainability schemes provide a large number of sustainability principles and criteria which could either be directly used or adapted to the Malian context.

The sustainability concern on increasing energy access for the rural population, however, may not be suitably addressed in existing sustainability schemes. In this field further work by the multi-stakeholder working groups is needed.

4.3 Formulation of indicators for proof of compliance

For the set up on an effective sustainability scheme in Mali, indicators have to be identified which can be used to verify compliance with the selected principles and criteria.

For the choice of suitable indicators guidance can be provided by existing international sustainability schemes, such as the International Sustainability and Carbon Certification System (ISCC) (see chapter 3.2), the Dutch sustainability scheme (NTA 8080) (see chapter 3.3), the RSB sustainability scheme (see chapter 3.4), and the RSPO sustainability scheme for sustainable palm oil production (see chapter 3.5). Specific indicators are discussed in the documents available at the respective websites of the certification schemes.

In most existing certification schemes clear and measurable indicators only exist for environmental sustainability criteria (e.g. GHG emission reductions, carbon stocks, biodiversity), whereas the compliance with socio-economic sustainability criteria is usually subject to reporting requirements or mandates to perform impact assessments.

In the field of socio-economic impacts of biomass and biofuels, research on the identification of practically applicable and measurable indicators is currently undertaken in the framework of the project Global-Bio-Pact (Global Assessment of Biomass and Bioproduct Impacts on Socio-economics and Sustainability) which is coordinated by WIP Renewable Energies and co-funded by the European Commission (Rutz et al. 2010). Cooperation between Global-Bio-Pact and the current initiative on the development of a certification scheme in Mali is foreseen.

4.4 Policy measures – Elaboration of certification scheme

In order to provide the grounds for the implementation of biofuel sustainability certification schemes in Mali, such schemes need to be integrated into relevant policy documents, namely the National Strategy on Biofuels under development by the National Agency for the Development of Biofuels (ANADEB).

It may be beneficial to introduce two different sustainability schemes depending on the application of the produced biofuels, i.e. whether the biofuels are used for national consumption (e.g. for rural electrification or as blend with fossil fuels) or for export purposes.

Biofuels for export into the European market will be subject to the sustainability criteria specified in the Renewable Energy Directive (RED). Several certification schemes are already available or will be available during 2011 (e.g. ISCC, REDCert, NTA 8080, RSB) in order to certify compliance with the RED. It is therefore recommended to use these existing certification systems for biofuels export into Europe rather than to develop a new Malian system. Furthermore, most certification systems offer the opportunity to facilitate the adaptation of the systems to national or regional conditions and crops. Biofuels for export will generally be produced by larger companies which should be able to certify biofuels according to international schemes.

On the other hand, biofuels for national consumption or for export into markets without sustainability requirements (i.e. Asian markets) may require the development of a national sustainability scheme with a clear focus on Malian sustainability concerns, namely the avoidance of food-fuel and land tenure conflicts, the increase of energy access for the rural population and the ensuring of sufficient local and national revenue generation. The Malian sustainability scheme may thereby involve less administrative requirements than international schemes in order to limit the associated costs to facilitate the engagement of small-scale farmers in the biofuels sector in Mali.

This sustainability scheme should be developed and overseen by the national agency ANADEB. An interesting option to complement the development of a sustainability scheme is a national mapping and zoning initiative with the aim to identify land suitable for the production of biofuels. Such zoning initiatives have recently been successfully undertaken by the Governments of Brazil and Mozambique providing valuable experiences for a similar initiative in Mali. Based on such land management plans and a suitable set of sustainability criteria, ANADEB could then be responsible to issue or withhold permissions for the implementation of biofuel projects in Mali.

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