Project: **Towards Sustainability Certification of Jatropha Bio-fuels in Mozambique**

Report: **Selection of a sustainability standard for pilot assessments of Jatropha producers in Mozambique**

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FOREWORD

By order of the Dutch Minister for Development Cooperation NL Agency implements the Global Sustainable Biomass Fund, to support developing countries in making their biomass production for energy uses sustainable. It thus enables them to access the local or international market of sustainable biomass for energy uses. The overall goal of the Fund is to enhance sustainable economical growth; the improvement of people's living conditions and the achievement of the Millennium Development Goals.

The project "Towards Sustainability Certification of Jatropha Bio-fuels in Mozambique" implemented by the Jatropha Alliance, GEXSI and Partners for Innovation, is one of the projects supported through the Global Sustainable Biomass Fund. It aims at making existing sustainability criteria for biomass production work on the ground i.e. for the producers of biomass. Needless to say, this is a very important step towards actual sustainable production of biomass for energy purposes.

In this project three Jatropha producers in Mozambique together with the Jatropha Alliance develop and implement practical tools to apply the sustainability criteria to their production process. The experiences gained through this process are crucial both for obtaining certification eventually and also to motivate other biomass initiatives to become sustainable.

This report is an important milestone in the implementation of the project. It contains an inventory of all existing sustainability standards. Based on sound criteria all parties involved selected a combination of two standards best suited to serve the Jatropha producers. These standards have been elaborated into practical questionnaires. In the next phase of the project the producers will gather all data needed to complete the questionnaires; these will be reviewed and presented subsequently. The result being capacity building at three producers on sustainability certification and lessons learned for many more.

Utrecht, May 2010

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SELECTED ABBREVIATIONS AND DEFINITIONS

Definitions

Assessment methodology:	methodology of the criteria framework or certification scheme that is used to assess the biomass against sustainability criteria.
Assessment scheme:	standard or framework within which biomass is assessed against sustainability criteria (we use it as a synonym for criteria framework)
Criteria framework:	standard or framework within which biomass is assessed against sustainability criteria (we use it as a synonym for assessment scheme)
Certification scheme:	standard or established framework within which biomass is assessed against sustainability criteria, and in which an accredited certification body certifies that a particular operation is in compliance with the standard or framework.
Chain of Custody:	the chronological documentation or paper trail, showing the seizure, custody, control, transfer, analysis, and disposition of evidence, physical or electronic.
Criterion:	normative requirement that forms the second highest level of criteria frameworks and certification schemes.
Indicator:	compliance indicator used by the auditors to check whether a requirement of a standard is fulfilled.
Principle:	normative requirement that forms the highest level of criteria frameworks and certification schemes.
Standard:	document that sets out system and/or performance norms within a criteria framework or certification scheme

Abbreviations

BSI	Better Sugarcane Initiative
CDM	Clean Development Mechanism
COMPETE	Competence Platform on Energy Crop and Agroforestry Systems for Arid and Semi-arid Ecosystems – Africa
EC	European Commission
FQD	Fuel Quality Directive (EU Directive)
FSC	Forest Stewardship Council
GHG	Greenhouse gas

GS	Gold Standard
ISCC	International Sustainability Carbon Certification system
LEAF	Linking Environment And Farming
NTA	Netherlands Technical Agreement
RED	Renewable Energy Directive (EU Directive)
RFA	Renewable Fuels Agency (UK)
RSB	Roundtable on Sustainable Bio-fuels
RSPO	Roundtable on Sustainable Palm Oil production
RTRS	Round Table on Responsible Soy
RTFO	Renewable Transport Fuel Obligation
SAN/RA	Sustainable Agriculture Network / Rainforest Alliance

EXECUTIVE SUMMARY

Background

The project "Towards Sustainability Certification of Jatropha Bio-fuels in Mozambique" aims to build up knowledge for future certification of Jatropha bio-fuels through a benchmark pilot sustainability assessment of three Jatropha producers using existing sustainability criteria frameworks. This report presents the outcome of the selection process of the methodology for the pilot sustainability assessment of the three Jatropha producers, and is the final report of activity 1 of the project.

A variety of potentially interesting sustainability assessment schemes exist

During the 1990s a variety of sustainability standards became operational for the production, processing and trade of biomass, agricultural products and forestry products. Since approximately 2005 work intensified on sustainability standards for biomass-for-energy purposes. The project team identified and reviewed 44 sustainability standards with potential interest for the assessments in Mozambique.

The proposed way forward: RSB as assessment methodology, RTFO for GHG calculations

On the basis of a multi-criteria analysis of the standards' characteristics and expected value for the project and Jatropha sector, the team selected the sustainability standard of the Roundtable on Sustainable Biofuels (RSB) as the basic assessment methodology for the project. The RSB standard was selected for a number of reasons: it is a biofuel-specific standard, it is complete in terms of sustainability aspects covered, it is a practical standard for which extensive guidance is available, it aims to be a truly global standard that complies with regional rules, it covers all sustainability issues and is anticipated to be of high importance for the biofuel sector. The RSB standard is currently in a piloting stage and intends to be operational for certification by the end of 2010.

For the carbon calculations, however, the project team chose to use the calculation methodology of the Renewable Transport Fuel Obligation (RTFO). The main reasons for this choice are that the RSB methodology is not available yet, and that the RTFO carbon calculation methodology has extensive guidance available, Jatropha-specific examples and two years of operational experience. Since April 2008, RTFO has put the requirement on UK fuel suppliers to report on the carbon and sustainability characteristics of the bio-fuel they supply.

The pilot assessments: learning by doing is the main purpose

Emphasis of the pilot assessments is on building up knowledge and capacity; on learning by doing. Focus is on gathering data, collecting evidence and identifying gaps to comply with the RSB Principles and Criteria. Emphasis is also on establishing the way forward regarding certification.

A dedicated questionnaire was developed. The questionnaire is designed in such a way that the Jatropha producers can provide information for the pilot assessments against the 12 RSB Principles and Criteria. The questionnaire refers to RSB thematic guidance documents that are available for detailed guidance.

The pilot sustainability assessments have the character of pre-audits in which Jatropha producers are building up capacity on the information that should be gathered for sustainability certification audits. The pilot sustainability assessments should not be confounded with certification audits.

INTRODUCTION

Background

The project "Towards Sustainability Certification of Jatropha Bio-fuels in Mozambique" aims to build up knowledge for future certification of Jatropha bio-fuels through a benchmark pilot sustainability assessment using existing sustainability criteria frameworks.

In order to do so, the project has defined the following seven project activities:

1. Translating sustainability criteria into a practical pilot assessment methodology
2. Regional embedding
3. Data collection and compilation
4. Sustainability assessment
5. Interaction with European institutions
6. Dissemination within Jatropha Industry
7. Project management

This report

This report is the final report of activity 1 and reports on the activities undertaken by Partners for Innovation to deliver the expected result of activity 1.

This expected result is a methodology for the pilot sustainability assessment of the Jatropha producers approved by the international and local project teams.

In order to deliver this methodology, the project team has reviewed the most advanced and most relevant certification schemes that encourage sustainable biomass production. The project team has selected one methodology for the pilot sustainability assessment of the three Jatropha producers.

This report aims to give insights in the selection process of the pilot assessment methodology, and in the assessment process itself. It contains three chapters and five annexes. Chapter 1 focuses on the context for the sustainability assessments in the project, while Chapter 2 provides an overview of relevant sustainability assessment schemes. Chapter 3 presents how the selection was made for the sustainability assessment methodology chosen for the project. Annexes I to V provide further background for the selection and work done so far. The questionnaires developed for the pilot assessment form separate documents.

Earlier versions of this report were discussed with the project partners on 9 November 2009, 11 February 2010 and 4 March 2010.

1. CONTEXT FOR THE SUSTAINABILITY ASSESSMENTS IN THE PROJECT

>> This chapter provides the context for the sustainability assessments of the project.

1.1 Reasons for the project

"*Biofuel production should be sustainable. Biofuels (…) should therefore be required to fulfil sustainability criteria*". This is consideration 65 of the EU Renewable Energy Directive (RED) and resumes very well the outcome of the international discussion on the appropriateness of biofuels as an energy source of the future. Sustainability [1] has therefore become a key success factor in the biofuel industry.

The Jatropha Curcas tree (throughout the report referred to as 'Jatropha') is a feedstock for non-edible oil. Jatropha projects potentially have attractive sustainability features. Jatropha can for instance be well established on marginal soils and can reach reasonable production, if proper care is given to boost plant growth in the initial grow phases and maintain production by additional inputs[2]. However, aspects such as the location, surroundings and management are highly relevant in relation to sustainability. There is a general lack of data and comprehensive analysis of the sustainability of the Jatropha chain.

This is strongly related to the very early stage of the Jatropha industry. Although approximately 900,000 hectares of Jatropha have already been planted, mainly in Asia but increasingly in Africa and Latin America, very few projects are more than three years old and hardly any project can demonstrate significant production of Jatropha oil yet[3]. Little material is available on the structure and developments of this industry sector. Sustainability monitoring is non-existing.

The Jatropha Alliance aims to represent the Jatropha industry and wishes to be a frontline player in sustainability. The Jatropha Alliance therefore proposed to implement the current project in which sustainability assessments are being carried out on three Jatropha producers in Mozambique. The project and its results will be widely communicated within the sector. The Jatropha Alliance believes that this will help the industry to prepare itself for compliance with leading sustainability and CSR guidelines and for transparent monitoring and reporting of social and ecological impact.

1.2 The target groups: local and international

The main target group is the local Jatropha industry in Mozambique. The sustainability assessments will enable this industry to obtain a better insight in the sustainability aspects of their sector and to anticipate on these aspects in the strong growth that is predicted. They will be able to disseminate these insights to local policy makers and local NGOs in Mozambique.

The second target group is international: the Jatropha industry worldwide as well as the international and national government organisations and NGOs involved in sustainable biomass. The project will provide them with a benchmark of a sustainability assessment of Jatropha producers, inspired upon the international criteria frameworks for sustainable biomass.

[1] The most widely quoted definition of sustainability and sustainable development is that of the Brundtland Commission: "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (United Nations, 1987)
[2] Jongschaap et al, 2007, page 6
[3] GEXSI 2008

1.3 The location: Mozambique

Mozambique is the country of choice for the pilot sustainability assessment of the Jatropha bio-fuel chains, for three interconnected reasons:

1. The Mozambican government is actively promoting Jatropha as part of its National Biofuel Policy and Strategy; there is a good ground for further dialogue, with the aim of mutual learning.

2. The Jatropha Alliance has three members and two associated members in Mozambique, and has recent in-depth information on the Jatropha projects in the country through the market research carried out in 2008. The Jatropha Alliance management team knows the area and its Jatropha projects very well;

3. The Jatropha producers in Mozambique are interesting cases for worldwide showcasing: Mozambique is a country with strong commercial Jatropha activities, and is therefore a reference for the key players in the Jatropha industry. It was decided to choose three Jatropha producers in one country as this means that resources are used in a highly efficient way while three key players of Jatropha industry are directly involved.

The climatic and political situation in Mozambique is considered favourable for commercial Jatropha cultivation. Local experts suggest a significant increase in Jatropha cultivation from 7,000 ha in 2008 to 35,000 ha in 2010 and 170,000 ha in 2015. This growth should come especially from commercial plantations, including the state-owned oil company Petromoc that announced in 2009 its plan to plant 21,000 hectares of Jatropha and Copra north of Maputo[4].

The Government plays an active role in promoting Jatropha in Mozambique. In March 2009, the Council of Ministers approved the National Biofuel Policy and Strategy that defines the strategic objectives related to biofuel production in Mozambique. Jatropha and coconut are seen as strategic feedstock for the biodiesel production, sugar cane and sweet sorghum for the production of ethanol. The Government is now in the process of setting up a National Biofuel Council; a body that will coordinate, supervise and evaluate the implementation of this policy and strategy.

This new policy framework resulted from an intensive discussion about Mozambique's approach towards biofuels after the government received expressions of interest to open up hectares of land to harvest different crops for biodiesel production. Concerns about potential pressure on land, water, food production and lack of control over this process resulted in an intense discussion between government, private sector, farmer, NGO and academic stakeholders. As a result, large-scale land requests were 'frozen' between October 2007 and May 2008, while the government undertook agro-ecological land zoning. The first phase of this study was finalized in 2008, identifying 6,966,030 ha (19.4% of total arable land) as available for large-scale agricultural activities[5].

Economically, Mozambique is one of the poorest and most underdeveloped in the world, despite a high average annual rate of economic growth. Real GDP growth was 8% in 2006 and 7.2% in 2007[6], similar growth rates are expected for the short term. Life expectancy is low (48 years 2002-2008) and the infant

[4] Petromoc 2009
[5] Schut et al, 2010, pages 10 and 17.
[6] AfDB/OECD 2008

mortality rate high (90 out of 1000 live birth during 2002-2008)[7]. Mozambique has one of the lowest Human Development Index; it ranked 172nd out of 182 countries with data in 2009[8]. 85% of the population are rural subsistence farmers. Mozambique is vulnerable to natural disasters (such as floods, droughts, and cyclones) and food insecurity[9]. A large proportion of the population is undernourished (38% in the period 2003 – 2005, which is the last period for which statistics are available[10]).

In terms of energy, Mozambique is endowed with huge energy resources. Residential energy use consists of fuel wood, charcoal and other combustibles. Mozambique produces hydropower at the Cahora Bassa dam, one of the largest hydropower installations in Africa. The dam supplies power primarily to the South African grid[11]. Mozambique imports nearly all used fossil fuels (petroleum) but has reserves of natural gas and coal, which remain however largely unexploited. Petroleum is mainly used for transportation and industrial purposes.

Mozambique is rich in natural resources, counting among its assets arable land in ten different agro-ecological zones, hydropower potential from its many rivers, forests, fisheries, gas, and other subsoil assets (such as coal and heavy sands)[12]. The country is sparsely populated, with large areas of unutilised land. Ten percent of the cultivable land is suitable for crop production, of which 12 percent is being used. Mozambique possesses sites of high biodiversity importance: according to national estimates, the country is home to more than 5,500 plant species, 220 mammals, and 690 birds, many of which are endemic.[13]

1.4 The Jatropha producers

The Jatropha producers participating in the project are located in the provinces Sofala and Manica in the central part of Mozambique. The table below provides the characteristics of the Jatropha producers.

Table 1.1: Characteristics of the participating Jatropha producers in Mozambique

	Company	Province	Location	Employed People	Actual size (2010)	Target size (2015)	Project Type	Former Land Use
M1	Elaion Africa Lda	Sofala	Dondo	63	65 ha	65 ha	Trials	Bush-Savanna
M2	Sun Biofuels Mozambique SA	Manica	Chimoio	600	2,000 ha	10,000 ha	Plantation	Tobacco
M3	Agro Pecuaria de Manica Lda	Manica	Gondola	25 fixed, up to 50 casuals	40 ha	40 ha	Trials	Farm land

Table 1.1 shows that there is a large variation between the producers participating in the project. Two producers (M1 and M3) have planted relatively small trial plots of Jatropha and decided to wait for further developments before expansion. Sun Biofuels (M2) is a plantation that has planted 2,000 ha and aims to expand to 10,000 ha in the next years.

[7] World Bank 2009
[8] UNDP 2009
[9] Schut et al, 2010
[10] FAO 2008
[11] Encyclopedia Britannica 2010
[12] AFD, 2009
[13] USAID 2008

1.5 The current situation of the sustainability of the Jatropha biomass chain

Jatropha projects potentially have attractive sustainability features, depending on the context. Aspects such as the location, its surrounding and the management are all relevant in relation to sustainability. However there is a general lack of data and comprehensive analysis of the sustainability of the biomass chain.

GEXSI's global market study on Jatropha was the first significant piece of work on the industry's structure and developments. It touched upon some sustainability issues such as former land use. On the basis of data gathered on 90 Jatropha projects, GEXSI concluded that the main areas used for Jatropha cultivation were wasteland and former non-food production areas (respectively 49 and 45%). Jatropha projects replace primary forest in only 0.3% of the planted areas (in some spots in Asia) and secondary forest in 5%. Food production was replaced by Jatropha production in 1.2% of planted areas[14]. Further research is needed to confirm these conclusions as it proved to be difficult to differentiate between wasteland, marginal land not suitable for food production, and land which is currently not used for food production.

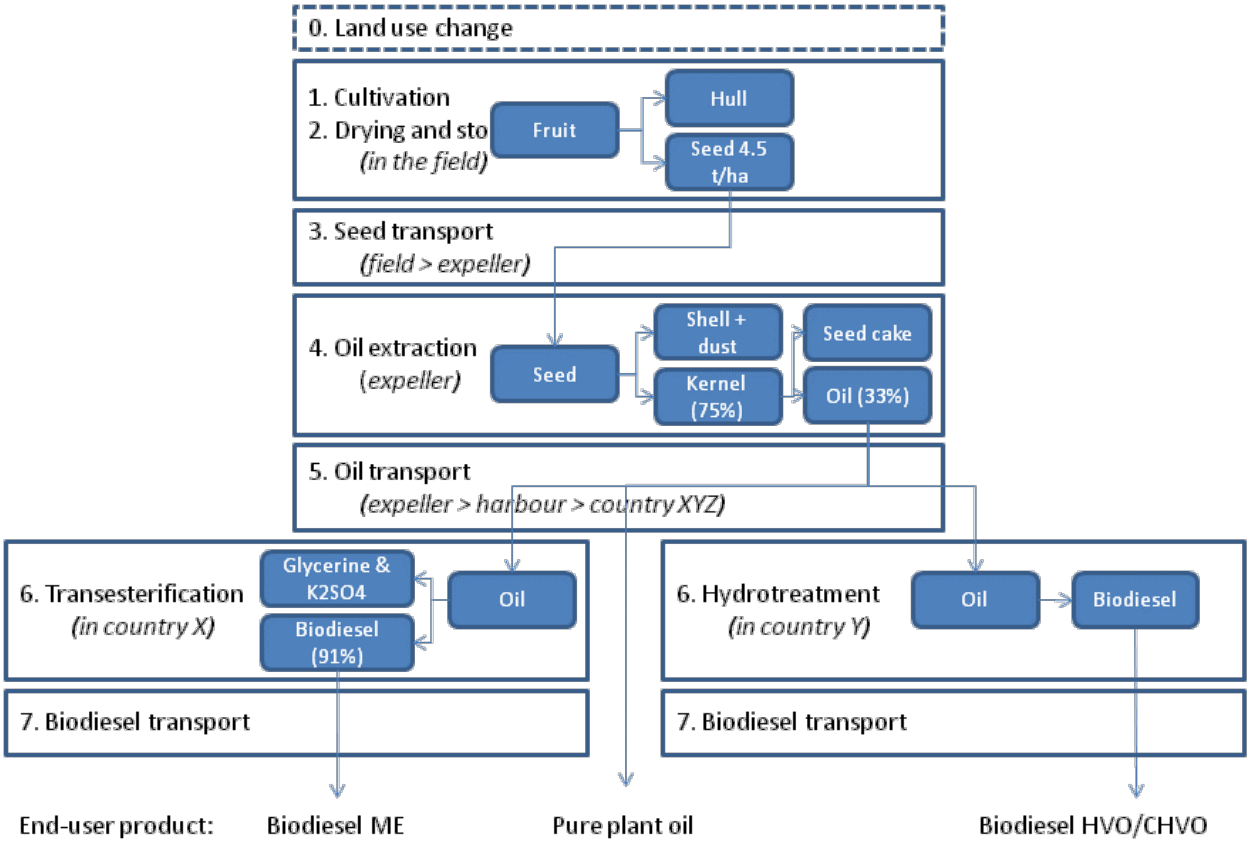
GEXSI's market study confirmed that the majority of projects (59%) do not include carbon credits into their models. CDM under the UNFCCC scheme is most widely explored in Asia (39%) and to a lesser extent in Africa (20%) and Latin America (10%). Yet projects report difficulties in applying for CDM: methodologies still need to be developed and some governments lack institutions required by UNFCCC for awarding credits under CDM. Voluntary emission offsetting schemes are most frequently applied in Africa.

An example of the Jatropha production chain is shown in Figure 1.2. So far, sustainability assessment schemes were not applied in the Jatropha industry, there is no certification mechanism in place, and macro monitoring of the biomass chain does not occur. The industry is aware of possible critical issues, such as competition on land use, biodiversity aspects, carbon impact, agricultural practice, and possible negative consequences for the local socio-economic situation. Yet steps towards sustainability assessment and monitoring were only taken recently because of the early stage of industry. Knowledge and capacity building on sustainable biomass chains are still in their infancy in the sector, as is knowledge transfer.

There have been some studies on the GHG emission of the Jatropha chain (Ecofys 2008, IFEU 2007, IFEU 2008). Since end of 2008, the industry is engaged in the Jatropha Working Group of the Roundtable on Sustainable Biofuels (RSB - see chapters 2 and 3).

[14] GEXSI 2008

Figure 1.2: Example of a Jatropha supply chain to biodiesel and pure plant oil.



[Source: adapted from Ecofys 2008 and IFEU 2008. Figures apply to operations of D1 Oil in India]

2. REVIEW OF SUSTAINABILITY ASSESSMENT SCHEMES

>> This chapter provides an overview of the most relevant sustainability assessment schemes

A variety of sustainability standards became operational for the production, processing and trade of biomass and agricultural products during the 1990s. In the field of forest certification the most prominent standards are INT - FSC and INT - PEFC. The main examples of standards in the agricultural sector are INT – FAIRTRADE, INT - GLOBALGAP and INT - SAN/RA (see Annex II).

Since the early 2000s a number of sustainability standards were developed for green electricity. Some of them include biomass, for example the schemes of BE - Electrabel and NL – GLL (see Annex II).

Since approximately 2005 work on sustainability standards for biomass-for-energy purposes intensified. The need to secure the sustainability of biomass-for-energy production and trade in a fast growing market was progressively acknowledged by various stakeholder groups. Various organizations started developing sustainability standards, principles and criteria. A general agreement has emerged that it is important to include economic, social and environmental criteria in the development of a biomass-for-energy sustainability standard. However, mutual differences are visible in the strictness, extent and level of detail of these criteria, due to various interests and priorities.

Several overviews of sustainability standards for biomass-for-energy exist. We refer to BTG (2008), Ecofys (2009b), GBEP (2008), Imperial College (2010), SEI and Tricorona (2008) and Van Dam et al (2008).

In this chapter we present the sustainability standards that we consider relevant for the project. Three types are presented in the paragraphs that follow:

§2.1 Sustainability standards for agriculture and biomass

§2.2 Sustainability standards for biofuels and biomass-for-energy

§2.3 Carbon credit schemes for GHG reduction projects including bio-energy projects

At the end of the chapter (in §2.4, 2.5 and 2.6) we have addressed three additional topics that are interesting for the project and sector on the validity of the project approach, good practices and costs.

2.1 Existing sustainability standards for agriculture and biomass are integrating biomass-for-energy aspects; new are being developed

As said above a variety of sustainability standards for biomass and agricultural products exist since the 1990s and early 2000s. Today, with the upcoming need of sustainability standards for biomass-for-energy, some of these standards are being opened up for biomass-for-energy feedstock and adapted to comply with the carbon, sustainability and social requirements of mandatory biofuel and biomass-for-energy schemes. Compliance is sought for example with the UK-based RTFO that was the first worldwide in putting mandatory requirements on biofuels, and the EU RED that will be in force in December 2010 (see §2.2).

Several biomass sustainability standards for specific feedstock (e.g. palm oil, soy, sugarcane) are in full development in order to take account of the sustainability constraints that the market is progressively putting on them. These standards also foresee to become RTFO and RED compliant.

Hereafter we present nine sustainability standards for biomass and agricultural products that all have an international scope. They are relevant for the project either because Jatropha producers could use them to become certified, or because they show the current dynamics of feedstock-specific sustainability standards. More standards exist but are for a variety of reasons less relevant for the study; these standards are described in Annex II.

The nine biomass standards with relevance for the project are the following:

1. *INT – BSI - Better Sugarcane Initiative*. BSI is a global multi-stakeholder non-profit initiative dedicated to reducing the environmental and social impacts of sugarcane production. BSI is a standard in development. In November 2009 BSI released Version 2 of its standard. It is relevant because it shows that developments are quick for sugarcane as an important biomass-for-energy feedstock.

2. *INT – Fair-trade*. The Fair-trade Standards are developed to optimise benefits for small-scale producers and plantation workers. To become certified, producers or traders must comply. The standards cover social, socio-economic, environmental and labour conditions but do not cover greenhouse gas emissions. The fair-trade standards are interesting because they have proven to be successful in developing countries. There are some initiatives to assess the usefulness of fair-trade standards for small-scale bio-energy and Jatropha projects in Africa (see e.g. Imperial College 2009 and Schut et al. 2010).

3. *INT – FSC - Forest Stewardship Council*. FSC is an international NGO dedicated to promoting responsible management of the world's forests. It was founded in 1993 in response to public concern about deforestation. There are national working groups in more than 50 countries. FSC certifies wood and wood fibre products only and is therefore not of direct relevance for Jatropha. It is however also a standard that has shown its success and may be of interest for second generation biofuels.

4. *INT – GLOBALGAP*. GLOBALGAP is a pre-farm-gate standard, which means that the certificate covers the process of the certified product from farm inputs like feed or seedlings and all the farming activities until the product leaves the farm. GLOBALGAP is a business-to-business label and is therefore not directly visible to consumers. GLOBALGAP certification is carried out by more than 100 independent and accredited certification bodies in more than 100 countries. It is open to all producers worldwide. RTFO has benchmarked GLOBALGAP and it does neither qualify on environmental issues nor on social issues. However, it was found to come very close to meeting the requirements of a RTFO Qualifying Environmental Standard[15].

5. *INT – LEAF - Linking Environment And Farming*. LEAF is a standard focusing on sustainable agriculture and was launched in 2003 in reaction to increasing demand for environmental sustainability in addition to food safety. Farms cannot be certified by LEAF alone, but first need a base standard such as GLOBALGAP. Inspections for LEAF and the base standard can be combined, thereby reducing costs.

[15] A 'Qualifying Standard' under the RTFO is defined as a standard that meets sufficient sustainability criteria to provide a minimum level of assurance without meeting the full requirements of the Meta-Standard. RFA (2010)

While the initial focus was on the UK, the standard has extended its activities and now has members in 18 countries worldwide including Mozambique.

6. *INT – RSB Jatropha Working Group*. This Jatropha-specific sustainability standard of the Roundtable on Sustainable Biofuels (RSB) is in an early stage of development. A draft Version Zero was published in December 2009; this version was developed taking the generic Version 1 of the RSB standard as basis. It is unclear whether the Jatropha-specific standard will move towards a formal standard because RSB has decided that the need for a Jatropha feedstock-specific standard should be better demonstrated before the continuation of the work on this feedstock-specific standard.

7. *INT – RSPO - Roundtable on Sustainable Palm Oil*. RSPO is an international, multi-stakeholder initiative for the development and implementation of a standard for sustainable palm oil. Its criteria were adopted in November 2005. Certification and accreditation procedures were adopted at the end of 2007, after which several certification bodies have been accredited to certify production units against the RSPO standard. In 2008 the RSPO set up a GHG working group to investigate ways to integrate the effects on carbon emissions into the RSPO's current criteria for sustainable palm oil production but consensus is not yet reached. It is not directly relevant for Jatropha but shows that Roundtable standards can have an important impact on the market and sector.

8. *INT – RTRS - Round Table on Responsible Soy*. RTRS is an international, multi-stakeholder initiative that brings together those concerned with the impacts of the soy economy. It is a standard in development and aims to become operational in June 2010.

9. *INT – SAN / RA - Sustainable Agriculture Network / Rainforest Alliance*. SAN/RA is a coalition of independent non-profit conservation organisations that promote the social and environmental sustainability of agricultural activities by developing standards. SAN has a generic standard and several crop-specific standards for bananas, cacao, citrus, coffee, ferns and flowers. A standard addendum was issued in April 2009 for energy crops; covering palm oil, sugarcane, soy, and sunflower. Jatropha is excluded because of the toxicity of Jatropha fruit with possible negative implications for children and communities around Jatropha farms[16].

Table 2.1 provides an overview of these sustainability standards for biomass. The nine assessed standards are all voluntary standards against which certification is possible. All are operational or planned to be operational in 2010, except the RSB specific Jatropha standard that has evolved into an informal status.

Table 2.1 also provides details on the coverage of environmental and social criteria by the nine standards. We have used the benchmark assessments on sustainability aspects against RTFO and RED for this, as published by the RFA[17]. Three standards (RSPO, RTRS and SAN/RA) include sufficient environmental and social aspects to be RTFO qualifying standard. The other six do not have this status. According to indicative RFA research[18], two standards are believed to comply with the RED biodiversity requirements and none with the RED carbon stock requirements. None of the standards addresses indirect Land Use Change (iLUC).

[16] SAN's Secretariat currently does not authorize the Rainforest Alliance Certified™ certification for clients that cultivate Jatropha. Once additional technical studies are conducted it may be possible to move forward and adjust this policy [Source: personal communication Petra Tanos, Rainforest Alliance].
[17] Sources: RFA 2010 and Ecofys 2009b
[18] RFA 2010

Table 2.1: Overview of international feedstock sustainability assessment schemes[19]

Name	Type Certification standard	Status	Sustainability criteria					Current scope and coverage	
			RED Bio-diversity (indicat.)	RED Carbon stock (indicat.)	RTFO Environ-mental qualifying	RTFO Social qualifying	iLUC	Feedstock	Geographic focus
INT – BSI	Voluntary	Due 2010	Not assessed	Not assessed	No	Yes	No	Sugarcane	AUS, BRA, DOM, IND
INT – Fair trade	Voluntary	Operational	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed	Agricultural products	Global
INT – FSC	Voluntary	Operational	No	No	Yes	No	No	Wood, wood fibres	Global
INT – Global Gap	Voluntary	Operational	Not assessed	Not assessed	No	No	No	Agricultural products	Global
INT – LEAF	Voluntary	Operational	No	No	Yes	No	No	Oilseed rape, sugar beet, wheat	UK, MOZ + 16 countries
INT – RSB Jatropha	Voluntary	Informal	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed	Jatropha oil	Global
INT – RSPO	Voluntary	Operational (since 2008)	Yes	No	Yes	Yes	No	Palm oil	IDN, MYS, PNG
INT – RTRS	Voluntary	Due June 2010	No	No	Yes	Yes	No	Soy	ARG, BRA, PRY, IND
INT – SAN / RA	Voluntary	Operational	Yes	No	Yes	Yes	No	Palm oil, sugarcane, soy, sunflower	19 countries

[Country codes: AUS = Australia, BRA = Brazil, DOM = Dominican Republic, IDN = Indonesia, IND = India, MOZ = Mozambique, MYS = Malaysia, PNG = Papua New Guinea, PRY = Paraguay, UK = United Kingdom]
[iLUC = indirect land use change] [Sources: RFA 2010, Ecofys 2009b, own research]

Economic criteria of sustainability standards are in general not very much developed. Some of the standards of Table 2.1 include explicit socio-economic requirements; the Fair trade standard for example requires a fair economic return for small-scale producers. RSB includes a condition on the economic sustainability of the producer itself, requiring a viable business plan, and also calls for special socio-economic measures in regions of poverty. RED and RTFO do not have economic requirements so the RFA benchmarks presented in Table 2.1 do not address this issue.

Table 2.1 shows that there are two existing standards which may be open to Jatropha (INT – Fair-trade, INT – GLOBALGAP) and one standard which is specific for Jatropha but in an early stage (INT - RSB Jatropha Working Group). The INT – LEAF standard may also be open for Jatropha but needs a base standard such as GLOBALGAP. The other standards are feedstock specific (oilseed rape, palm oil, soy, sugar beet, sugarcane, sunflower, wheat, wood) and not directly relevant for Jatropha. One explicitly excludes Jatropha (INT – SAN/RA).

The INT – RSB Jatropha scheme is considered potentially important for the Jatropha sector in the long run, and is described in detail in Annex I. The INT - RSPO scheme is not directly relevant but is also described in detail in Annex I because of its leadership as the only Roundtable standard that has 2 years

[19] The assessment against sustainability criteria stems from the RTFO benchmark exercises of sustainability standards. Such exercises are available for all listed standards except for the Fair Trade standard and for the RSB Jatropha specific standard. We have not further assessed these two standards as this would not have added to the conclusions or recommendations of the present report.

of operation. The other standards are considered less important for Jatropha feedstock and are briefly described in Annex II.

2.2 Biofuel and biomass-for-energy sustainability standards are in an early stage of development

As said before, works on sustainability standards for biomass-for-energy purposes intensified since 2005. These standards differ from the feedstock standards presented in §2.1 because they focus on biomass-for-energy and put requirements on the whole bio-energy value chain.

We have selected six criteria frameworks that we consider important for the study. Three of these are certification schemes relying on sustainability standards (DE-ISCC, INT-RSB and NL-NTA8080), one is legislation with sustainability requirements (EU-RED), one is a meta-standard with sustainability requirements (UK-RTFO), and one is a sustainability assessment methodology for bio-energy projects. These are presented briefly hereafter, included in Table 2.2 and presented in detail in Annex I. More frameworks exist or are in development; these are presented in Annex II.

The six frameworks are:

1. *DE - ISCC - The International Sustainability and Carbon Certification System*: German-based but internationally oriented system for the certification of biomass and bio-energy. Open for certification since January 2010.

2. *EU - RED - Renewable Energy Directive*: the RED sets a target for all EU Member States to achieve a minimum target of 10% renewable energy consumption in transport by 2020. In addition, the EU Fuel Quality Directive (FQD) sets a target for fuel suppliers in EU Member States to achieve at least a 6% reduction in life cycle GHG emissions across all transport fuels by 2020. Bio-fuels that count towards either of the targets will have to meet carbon and sustainability requirements. As Table 2.2 shows, these include mandatory aspects as well as reporting requirements, which will have to be implemented by EU Member States by December 2010. The EC is currently in the process of developing more detailed guidelines on the carbon and sustainability requirements.

3. *INT - COMPETE - Good Practice Assessment for Bio-energy Projects*: simple methodology aiming to have a balanced set of sustainability criteria. This methodology does not aim to prepare for worldwide roll-out and implementation as a certification scheme. It is however an interesting case as it is the outcome of the African – European project COMPETE, and aims to provide a set of indicators that is balanced for both developed and developing countries. It has 12 principles including 3 economic principles.

4. *INT - RSB - Roundtable on Sustainable Bio-fuels:* the RSB is developing a sustainability certification scheme for bio-fuels. It is developed in consensus by a large variety of stakeholders. Version 1 of the standard is available since November 2009. The certification scheme is being piloted during 2010. RSB expects to have an operational certification scheme by the end of 2010.

5. *NL - NTA 8080 - Netherlands Technical Agreement 8080*: standard that provides the requirements for sustainable biomass-for-energy purposes, adopted in 2009. A certification scheme is under

development (NTA8081). The scheme is Dutch-based but internationally oriented. Certification against NTA8080 is expected to be possible in the course of 2010. The certification scheme is developed on the basis of the Cramer Criteria, laid down in the "Testing framework for sustainable biomass" and published in 2007.

6. *UK - RTFO - Bio-fuel Sustainability Meta-Standard.* The Renewable Transport Fuel Obligation (RTFO) began in the UK on 15 April 2008 as a requirement for obligated parties (mostly fuel suppliers) to supply a percentage of their fuel as bio-fuel. As a world first, the RTFO included from the very beginning a requirement for obligated parties to report on the carbon and sustainability characteristics of the bio-fuel they supply. The RTFO sustainability reporting scheme is based on a 'Meta-Standard' approach under which existing voluntary agri-environment and social accountability schemes are benchmarked against the RTFO Bio-fuel Sustainability Meta-Standard. Schemes that cover the required number of sustainability criteria are called Qualifying Standards, a concept that is defined separately for environmental and social aspects. Schemes that meet all the environmental and/or social criteria are said to meet the full RTFO Meta-Standard.

Table 2.2: Overview of international biomass-for-energy sustainability assessment schemes[20]

Name	Type	Status	Sustainability criteria					Current scope and coverage	
			Bio-diversity	Carbon stock	Soil, air, water	Social	iLUC	Feedstock	Geographic focus
DE – ISCC	Voluntary certification standard	Operational (since 2010)	Yes	Yes	Yes	Yes	Not assessed	All (biomass)	Global
EU – RED FQD	Mandatory legislation for bio-fuels in EU	In force from Dec 2010	Yes	Yes	Non mand.	Non mand.	No (report)	All (bio-fuels/liquids)	Global (for EU supply)
INT – Compete	Voluntary assessment methodology	In development	Yes	No	Yes	Yes	No	All (biomass)	Global
INT – RSB	Voluntary certification standard	Pilot testing (due 2010)	Yes	Yes	Yes	Yes	No	All (bio-fuels)	Global
NL – NTA8080	Voluntary certification standard	In development	Yes	Yes	Yes	Yes	No	All (biomass)	Global
UK – RTFO	Meta- standard with mandatory aspects	Operational (since 2008)	Yes	Yes	Yes	Yes	No	All (bio-fuels)	Global (for UK supply)

[iLUC = indirect land use change. Country codes: DE = Germany, EU = European Union, NL = The Netherlands, UK = United Kingdom. Source: Ecofys 2009b and own research]

Table 2.2 shows that the majority of the frameworks cover the main sustainability criteria. They all show good coverage of carbon stock criteria, except the INT - COMPETE assessment methodology which doesn't address greenhouse gas aspects. The other frameworks address the change in the stock of carbon and take into consideration the direct land use change. So far none of the frameworks cover the issue of *"indirect Land Use Change"* (iLUC), which occurs when the production of biomass feedstock displaces activities to other areas where they cause land use change and thus have potentially negative impacts on

[20] The assessment in Table 2.2 against sustainability criteria aims to provide insight into whether the frameworks address the sustainability criteria without necessarily being compliant with RED or RTFO since RED and RTFO benchmarks do not exist for these frameworks. Sources: Ecofys 2009b and own research.

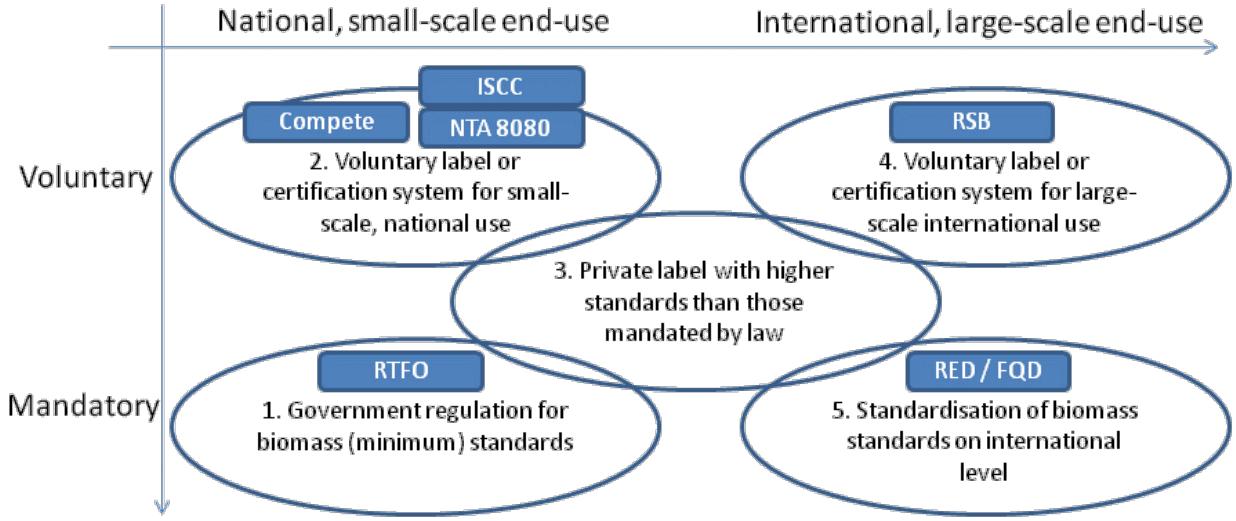
aspects such as carbon stocks and biodiversity. The iLUC issue is still highly debated. INT – RSB has formed a working group on this, and UK – RTFO has proposed a methodology to the EC that is should report on this in December 2010.

Table 2.2 also demonstrates that two of the six frameworks are operational: the UK – RTFO meta-standard (two years of operation) and the DE – ISCC certification scheme (just started, in January 2010). Three frameworks plan to become operational soon and are finalising their methodologies: EU – RED will be in force in December 2010 and is finalising guidance on implementation aspects and carbon and sustainability requirements. NL – NTA 8080 plans to be operational in 2010. INT – RSB started piloting in 2010 and aims to be operational in the end of 2010. The INT – Compete assessment methodology does not plan to become an established standard but is a methodology that can be used for inspiration.

Frameworks within the EU zone (DE – ISCC, NL - NTA 8080 and UK – RTFO) are in a phase of adaptations because of the upcoming compliance with the EU – RED scheme. They are waiting for the final guidance of the EC.

Figure 2.3 below presents the six biofuel and biomass-for-energy sustainability frameworks in a schematic manner according to their approach in two dimensions. Two are clearly geared towards large-scale, international end-use of the biomass: the RED/FQD for biomass use in the EU and the RSB for biofuel worldwide. Four have a smaller scale: ISCC and NTA8080 are open for international biomass but are not expected to have the same large scale of RED/FQD and RSB. RTFO is clearly nationally oriented. The COMPETE methodology is more for inspiration than for large-scale biomass end-use. Two frameworks have mandatory application as part of legislation: the RED/FQD and the RTFO. The other four are entirely voluntary for the moment.

Figure 2.3: selected schemes categorised according to their approach of biomass certification



[Source: adapted from Van Dam et al 2008]

2.3 Carbon credit schemes sometimes assess other sustainability aspects than carbon

In this paragraph we present two carbon offset schemes. These schemes have a different focus because their prime objective is to offer carbon credits for GHG reduction projects, but some of these schemes have much larger environmental and social scope than carbon alone. Table 2.4 lists the most important schemes which are described in detail in Annex I. Other schemes do exist but have a smaller market share. Examples are INT – VCS, INT – CCBS, and INT – Plan Vivo. These are briefly described in Annex II. A good overview of carbon credit schemes can be found in SEI and Tricorona (2008).

The two schemes presented in Table 2.4 are:

1. *INT - CDM - Clean Development Mechanism:* this is an established carbon offset scheme that may enable bio-energy producers to have an additional income through emission reduction certificates. It is part of the Kyoto protocol and aims to create economic efficiency while delivering co-benefits for poorer nations. It has generated large numbers of offsets but not yet for Jatropha projects.

2. *INT - GS - Gold Standard:* this also is an established carbon offset scheme for voluntary offset projects and CDM projects, with a much smaller number of projects than CDM. Compared with CDM it includes additional environmental and social criteria.

Table 2.4: Overview of international carbon credit schemes[21]

Name	Type	Status	Sustainability criteria					Current scope and coverage	
			Bio-diversity	Carbon stock	Soil, air, water	Social	iLUC	Feedstock	Geographic focus
INT – CDM	Voluntary carbon offset standard	Operational	Non mand.	Yes	Non mand.	Non mand.	No	All (Renewables)	Global
INT – Gold Standard	Voluntary carbon offset standard	Operational	Yes	Yes	Yes	Yes	No	All (Renewables)	Global

[iLUC = indirect land use change. Source: own research]

These schemes are included in the study because they may be interesting for Jatropha producers in order to obtain additional revenues. Many Jatropha producers have plans to do so but no practical examples are available so far. The schemes are also included because their environmental and social requirements sometimes come close to sustainability standards presented in §2.1 and §2.2, especially in the case of the INT - Gold Standard and for the social requirements also in the case of INT – CCBS and INT – Plan Vivo for tree-planting projects, reforestation and afforestation.

However, carbon credit schemes are not sustainability standards against which can be certified and that allow products to enter voluntary or mandatory bio-energy markets. Therefore they are not further addressed in this study.

[21] The assessment in Table 2.4 against sustainability criteria aims to provide insight into whether the carbon-credit schemes address the sustainability criteria. Compliance with RED and RTFO is not presented since this is not opportune for the carbon-credit schemes. Source: own research.

2.4 Obtaining more experience with the application of schemes is a valid way forward

Because of the early stage of the sustainability assessment schemes, experience on how to make criteria operational is still limited at this moment. More experience and time is required with issues such as the design of specific criteria and indicators according to the requirements of a region, how to include avoidance of leakage effects and the influence of land use dynamics. On the other hand, there is a need to secure the sustainability of biomass in a fast growing market on the short term. Certification schemes therefore evolve with learning through pilot studies, development of new methodologies, and expansion over time. This gives the possibility for coherence to increase with time and to make adjustments if needed.

Experience from developing countries is especially limited. Existing feedstock sustainability standards (INT – Fairtrade, INT – FSC, INT – RSPO) have extensive experience in developing countries but not yet with biomass-for-energy or biofuels. Some case studies were undertaken or are ongoing with biomass-for-energy: the UK - RTFO has done a number of case studies, e.g. on Malaysian palm oil and Brazilian sugar cane. Also DE – ISCC and NL – NTA8080 have done case studies. INT – RSB is undertaking pilot experiences in 2010.

The project approach of selecting a suitable sustainability standard, and applying this standard to selected Jatropha producers, as a first step towards sustainability certification, is therefore a very valid approach.

2.5 Alternative policy tools may be effective in securing sustainable biomass production and trade

Certification is one of the policy tools that can be used to secure the sustainability of biomass in terms of production and processing. Setting up good practice codes and integrating sustainability safeguards in global business models may be another effective way to ensure this.

For the Jatropha sector it may thus be interesting to maintain an open vision for (a combination of) alternative policy tools to look for the best suitable options to secure sustainable biomass production and trade. Disclosure of sustainability good practices may significantly help this sector where a lot of experiences are ongoing and largely bottom-up. This makes that Jatropha companies cannot easily find appropriate information on sustainability aspects.

Interesting too in this context is the assessment methodology '*INT – COMPETE good practice assessment for bio-energy projects*' (see Annex I.4), which offers a simple tool to assess against good environmental and social practices. The same applies to the '*Biofuels Sustainability Scorecard*' developed by the Inter-American Development Bank (IDB), which is based on the RSB sustainability criteria (see Annex II).

2.6 Information on costs for complying with sustainability certification schemes is needed

There have been some attempts to quantify possible cost ranges for the cost for complying with sustainability certification schemes, based on existing sustainability schemes and certification systems[22]. Substantial costs for complying with sustainability criteria appear to be made in the process towards certification. However the range of costs strongly differs. Reasons are related to the strictness of the sustainability criteria, the number of sustainability criteria and the expertise required checking them adequately. In literature calculations can be found differing between 8–65% additional costs and incidentally also a slight cost reduction was reported. Costs for the certification process itself and chain-of-custody are much lower, a range between 0.1–1.2%. These numbers are estimated based on large-scale production.

For small-scale farmers[23] this number may be much higher since costs are strongly related to the scale of operation. Depending on the relative economic value of the biomass, extra costs for sustainability certification can become unaffordable. Developing countries have also faced hindrances by getting certificates recognised by the importing countries. They often have to rely on international certification companies. Issues of who pays for what are crucial to be discussed in the start-up phase of a process towards certification, to increase the rate of success.

Since biomass certification systems are in an early stage and the criteria and principles differ greatly, costs are still largely unknown. In addition local circumstances may greatly differ and may lead to large differences.

For the present project, it means that it is important to well collect information on the actual cost of the assessment of the three producers.

[22] Van Dam et al 2008b, Annex 17

[23] A widely-accepted definition of small-scale farmers does not exist. As an example, we refer to the definitions of RSB. In RSB terms, a small feedstock producer is *"a feedstock producer with a total area of production of agricultural products, whether intended for biofuel production or not, smaller than or equal to 75 hectares*". RSB has a specific definition of small-scale farmers in developing countries: "*a resource poor feedstock producer from a developing country who currently cultivates less than 10 ha of land on a low input low output basis.*" [Source: RSB 2009 Use of Terms for the Principles & Criteria 12/11/09 page 38 and 39].

3. SELECTION OF THE ASSESSMENT METHODOLOGY FOR THE PROJECT

>> This chapter focuses on the selection of the most suitable assessment methodology for the Jatropha producers in Mozambique in Q1Q2 2010.

3.1 The RSB and RTFO standards seem to be most suitable

In order to select the most suitable sustainability standard for the pilot assessments of the three Jatropha producers in Mozambique in Q1Q2 2010, the project team has developed a multi-criteria analysis. This analysis enables to obtain more insight into the way the standards fit with the project.

The nine selected sustainability standards were compared according to seven criteria, being part of the multi-criteria analysis. Four criteria, related to the standard itself, are defined as follows:

1. Operational experience obtained with the standard worldwide
2. Completeness of the sustainability issues covered by the standard
3. Availability of useable assessment material for the standard
4. Practicability of the assessment methodology of the standard

Three other criteria are related to the fit with the project and to the needs of the Jatropha companies and the Jatropha sector organisation involved in the project. These criteria are considered more important than criteria 1 to 4 and hence score double.

5. Fit with the project aim of piloting the standard's methodology
6. Fit with the needs of the involved Jatropha companies of piloting the standard's methodology
7. Fit with the needs of the Jatropha Alliance of piloting the standard's methodology

The multi-criteria analysis was undertaken for the three feedstock standards that were considered most relevant (see §2.1) and for the six biofuel and bio-energy frameworks (§2.2). Table 3.1 presents the outcome of the multi-criteria analysis, which is discussed in the sections after the table.

Table 3.1: Multi-criteria analysis selected biomass-for-energy sustainability assessment schemes

Methodology	Type of standard	1. Operational experience	2. Completeness themes covered	3. Availability of useable material	4. Practicability of methodology	5. Fit with project aim	6. Fit with needs companies	7. Fit with needs JA	Total
Biomass feedstock standards									
INT – Fair trade	Voluntary certification standard	1	1	2	2	2	2	2	12
INT – GLOBALGAP	Voluntary certification standard	1	1	2	2	2	2	2	12
INT – RSB Jatropha version 0	Voluntary certification standard	0	2	0	0	0	0	0	2
Biofuel and biomass-for-energy standards									
DE – ISCC	Voluntary certification standard	0	2	1	2	4	2	2	13
EU – RED / FQD	Mandatory Directive for bio-fuels in EU	0	1	0	0	0	0	4	5
INT – COMPETE assessment	Voluntary assessment methodology	0	1	1	2	2	2	2	10
INT – RSB generic version 1	Voluntary certification standard	0	2	1	1	4	4	4	16
NL – NTA8080	Voluntary certification standard	0	2	1	2	4	2	2	13
UK – RTFO	Mandatory meta-standard	2	2	2	2	4	2	2	16

Scoring for criteria 1 to 4: 0 = low, 1 = medium, 2 = high. Scoring for criteria 5 to 7: 0 = low, 2 = medium, 4 = high.

The scoring on the seven criteria is explained hereafter:

1. *Criterion 1 'Operational experience*' is scored with a '*zero*' score for schemes that are not operational yet or just begun. The criterion was scored with a '*high*' score for UK – RTFO that has two years of experience with the operation of the meta-standard. The agricultural schemes INT – Fair trade and INT – GLOBALGAP were scored with '*medium*': on the one hand they have a long experience with certification of agricultural biomass, on the other hand they have no experience with biofuels and biomass-for-energy crops.

2. *Criterion 2 'Completeness'* is about the level of coverage of sustainability aspects considered important at the international level for bio-fuel projects. This is related to the sustainability criteria of Tables 2.1 and 2.2. All schemes score '*high*' except INT – Fair trade, INT – GLOBALGAP, INT – COMPETE and EU – RED that cover to a lesser extent carbon and sustainability aspects[24].

3. *Criterion 3 'Availability of useable assessment material*' is about the availability of finalised and useable assessment material and guidance for the scheme. The only schemes that score '*high*' here are the INT – Fair trade, INT – GLOBALGAP and the UK - RTFO schemes which have mature guidance material available. All other schemes do not have finalised material available and score *'medium'*. The DE - ISCC scheme has guidance available but less mature and practical than UK – RTFO and less focused on biofuel projects. The guidance material for RED is not published yet and the material for RSB Jatropha is still in a very early stage. The score attributed to these schemes is therefore '*low'.*

4. *Criterion 4 'Practicability of assessment methodology*' is about the extent to which the methodology can be applied easily for company assessments. Six methodologies are considered relatively easy to implement and were scored '*high'*: was assessed as practical the material available for the INT – Fair trade and INT – GLOBALGAP standard, for the 37-pages draft checklist of the DE – ISCC, the 1-page checklist of the INT – Compete assessment, the 36-pages draft checklist of the NL - NTA8080 standard, and the ROS[25] data forms and comprehensive guidance of the UK – RTFO scheme. Assessed as less practicable is the material available for INT – RSB generic version 1, for which extensive guidance is available but no finalised indicator document and questionnaire yet. The score attributed to this scheme was '*medium*'. A *'low'* score was attributed to EU – RED and INT – RSB Jatropha for which no complete detailed guidance is available yet.

5. *Criterion 5 'Fit with project aim*' is about the fit with the overarching project objective: *to build up knowledge for future certification of Jatropha bio-fuels through a benchmark sustainability assessment, using existing sustainability criteria frameworks.* In our view this learning effect of building up knowledge is completely covered by four of the standards that are scored hence '*high*': DE – ISCC, INT – RSB, NL – NTA 8080 and UK – RTFO. The assessment methodology INT – Compete was scored '*medium*' because certification is not envisaged. Also the INT – Fair trade and INT – GLOBALGAP were scored '*medium'* because of their limited coverage of carbon and sustainability aspects compared with other schemes and because they are not adapted to biomass-for-energy

[24] We have performed in-depth analysis on three schemes (EU – RED, INT – RSB and NL – NTA8080) to check the criterion of completeness. This is reported in Annex III. The conclusion is that, although there are differences in approach and level of detail, our analysis has demonstrated that NTA 8080 based on the Cramer Criteria and RSB version 1 are similar in coverage of biodiversity, carbon, environmental and socio-economic aspects.

[25] ROS = RFA Operating System which is the software application through which fuel suppliers deliver their data within RTFO.

feedstock. The schemes EU – RED and INT – RSB Jatropha were scored *'low'* because these are not advanced enough to obtain the desired learning effect in the view of the project team.

6. *Regarding Criterion 6 'Fit with needs companies',* we have defined the main needs of the companies as follows: (i) to gain credibility at local level (Mozambique government, local communities, and workers) and at international level (investors, international clients of seeds and/or bio-fuel), and (ii) to obtain a learning effect in order to prepare the company towards complying with sustainability requirements, towards undergoing sustainability assessments, and, possibly in the long run, towards being certified against sustainability criteria. We have scored with '*medium'* for nearly all standards because, in our view, the companies would have most value from internationally recognised standards with accessible and simple procedures against which certification is possible, wherever the Jatropha seeds and oil is produced and exported to. Such standards do not exist yet. We have attributed a '*high'* score to the RSB generic standard because this standard nears these needs most. A '*low'* score was attributed to the RSB Jatropha standard because of the early stage of this standard which means no value can be obtained from it yet.

7. *Regarding criterion 7 'Fit with needs Jatropha Alliance*', we have defined the main needs of the Jatropha Alliance as follows: (i) to gain experience with the application of internationally accepted sustainability standards in order to prepare the sector for such standards, and (ii) to obtain competitive advantage from this. We have scored '*high*' for the EU – RED and INT - RSB because of the anticipated importance of those schemes for the sector. Other schemes are scored *'medium'* except the RSB Jatropha scheme which is not advanced enough to present real value.

If we consider the total of the scores, the INT – RSB generic version 1 standard and the UK - RTFO sustainability meta-standard come out best with 16 out of 20 points which means an average score of '*high/medium'.* This is a logical outcome:

1. The INT – RSB generic version 1 standard is still in development but scores high on the fit with the needs of the companies and sector, because of the anticipated importance of the RSB standard for the biofuel sector. The standard developed activities towards a Jatropha-specific variant. The RSB standard covers all sustainability issues, is currently in a piloting stage and intends to be operational for certification by the end of 2010.

2. The UK – RTFO sustainability meta-standard is an operational meta-standard for biofuels, has proven its success, and covers biodiversity, carbon, environmental and social issues. It has templates, guidance and experience available building upon more than 2 years of operation. It provides clear guidance on carbon calculations and on its environmental and social requirements. RTFO relies on other schemes for certification (so called qualifying or meta-standards) so Jatropha producers cannot certify directly against the RTFO, but the RTFO guidance can be used to report on carbon issues and to check against its environmental and social requirements.

The other standards are for various reasons less suitable for the project:

3. The biomass certification standards DE – ISCC and NL – NTA8080 have 13 out of 20 points. The German standard is a little bit more advanced as it has gone live, the Dutch is still pending. Both have

practical and straightforward questionnaires available. However, they are biomass-for-energy generic and not bio-fuel specific.

4. The INT – Fair trade and INT – GLOBALGAP standards have 12 out of 20 points. They form highly interesting benchmark standards for Jatropha producers because of their success in the agricultural sectors around the world. They exist for many years and have practical and useable material available. However, they have a limited coverage of carbon and sustainability aspects compared with other standards, and are not adapted to biomass-for-energy feedstock. Certification against these standards does not help to enter biofuel markets and does hence not provide high value to biofuel companies.

5. The INT – COMPETE good practice assessment methodology for bio-energy projects has 10 out of 20 points. This methodology is highly interesting because it was developed in close relationship with African stakeholders and hence has a local focus. It focuses on environmental, social, economic and policy compliance aspects but does not address GHG emissions. It is a stand-alone methodology not embedded in verification or certification initiatives, and does hence not offer real value to the Jatropha producers or industry for the moment.

6. The RED guidance and its CEN standards (EU – RED / FQD) are not yet available and are expected in the course of 2010. They hence score low (5 out of 20 points) and are not suitable for the project.

7. The INT – RSB Jatropha version zero standard is not very much advanced and is therefore not suitable for the project.

3.2 The proposed way forward: RSB as assessment methodology, RTFO for GHG calculations

The project team proposes to use the RSB standard as the basic assessment methodology because of its anticipated high impact in the biofuel sector and its international character. For the carbon calculations, however, the project team suggests to use the RTFO methodology because the RSB standard has not yet adopted a formal GHG calculation methodology.

This way of moving forward fits very well with the long-term vision that the project team has developed on how Jatropha producers may use sustainability schemes. This view is schematically presented in Figure 3.2. It is based upon three elements:

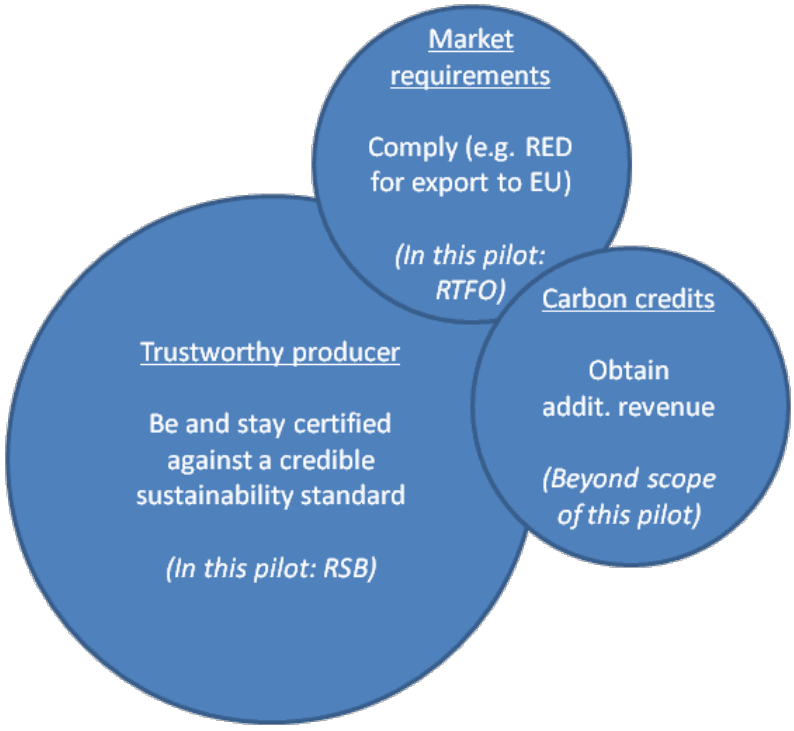
1. *Being a trustworthy producer*: in a sustainable business model, a Jatropha producing company has good economic results and a positive impact on the local economy, on the workers and local population, and on the local and global environment. It is a trustworthy producer for its stakeholders such as the local government and community, its clients and its investors. Certification against a credible sustainability standard adds to the value of the company as it acknowledges its sustainability. In this project we have chosen RSB for the reasons mentioned earlier. Other credible local or international sustainability standards may obviously take the place of RSB.

2. *Complying with market entry requirements:* complying with market requirements is important to enter into these markets. Complying with sustainability requirements is today a must for biofuels

exported to the UK, and from December 2010 for biofuels exported to the EU. Such market entry requirements may also result from the biofuel policy that Mozambique is currently developing. Jatropha producers should be ready to comply. This may be an add-on to the standard against which the producer is certified or an integral part of it (for example: complying with export requirements to the EU is anticipated to be a small add-on to the RSB standard). In this project we will work with the producers to generate the basic GHG data to be compliant with the RTFO.

3. *Obtaining additional revenues through carbon credits*. Next to being certified, and complying with market requirements, the Jatropha producer can also obtain additional revenues by using CDM or voluntary carbon offset schemes. This requires some additional preparation but efficiency gains may be obtained from activities carried out to comply with the certification standard and the market requirements. Piloting the application of a carbon credit scheme goes beyond the scope of this project. In the long run it may however be an interesting idea to develop specific guidance for Jatropha producers on carbon offset schemes (which one to choose, how to apply?).

Figure 3.2: how Jatropha producers may use sustainability schemes.



3.3 The pilot assessments: learning by doing is the main purpose

As said above, the RSB standard will be used for the pilot for a number of reasons: it is a biofuel specific standard, it is complete in terms of sustainability aspects covered, it is a practical standard for which guidance is available, it aims to be a truly global standard that complies with regional rules, and it has been working on a Jatropha-specific standard. GHG calculations will be made using the RTFO methodology since RSB does not have an accepted calculation methodology yet.

Design of the pilot assessment programme

The pilot assessment programme is designed as follows: Partners for Innovation and the companies first discuss the assessment questionnaire and the data requirements. Partners for Innovation will collect some initial data, documents and evidence during the site visits[26]. The companies then provide further data, documents and evidence. Partners for Innovation will help with explaining the required data and evidence. Partners for Innovation will then assess the data and information collected and will provide a draft assessment report to the companies, for comment and discussion with the companies. After this discussion the report is finalised and provided to the companies.

A dedicated questionnaire was developed. The questionnaire is designed in such a way that the Jatropha companies can provide information for the pilot assessments against the 12 RSB Principles and Criteria. The questionnaire refers to RSB thematic guidance documents that are available for detailed guidance.

Emphasis of the pilot assessments is on building up knowledge and capacity, on learning by doing. Focus will be on gathering data, collecting evidence and identifying gaps to comply with the RSB Principles and Criteria. Emphasis will also be on establishing the way forward regarding certification.

The pilot sustainability assessments should not be confounded with certification audits, which can only be done when the principles and criteria of a standard are adopted, and the certification procedures and systems are well in place. The RSB has planned that the standard is operational for certification by the end of 2010. After that date, economic operators that wish to receive a RSB certificate need to hire an accredited certification body and need to demonstrate to the Auditors that they are in compliance with the RSB Criteria, including the minimum and progress requirements, under each Principle.

The pilot sustainability assessments have the character of pre-audits in which companies are building up capacity on the information that should be gathered for sustainability certification audits.

Planning

The project planning foresees that the pilot assessment process is completed by June 2010. The following planning is therefore suggested:

2 – 6 March 2010: workshop and site visits. Discussion of the draft methodology and questionnaire. Meeting the plantation teams. Explaining the assessment programme and questionnaire. Obtaining the first data, documents and insights in site visits. Start of data collection.

7 – 31 March 2010: data collection by the companies. Partners for Innovation provide answers on questions, by email and phone. Companies send their first batch of information to Partners for Innovation.

1 – 30 April 2010: continued data collection by the companies. Continued assistance by Partners for Innovation on questions. Companies send the full information package to Partners for Innovation

1 – 31 May 2010: Partners for Innovation assesses the information, writes draft assessment reports and sends the draft assessment reports to the companies.

[26] Partners for Innovation will not be actively involved in the data collection on the ground, and will not be interviewing third parties and local stakeholders to countercheck information. This goes beyond the scope of the pilot assessments.

1 – 7 June 2010: companies and Partners for Innovation discuss the draft assessment reports. All members of the project team meet in a workshop to define the lessons learned from the pilot assessments.

8 – 30 June 2010: Partners for Innovation write the final assessment reports. Partners for Innovation also write the report on lessons learnt from the pilot assessments with recommendations for the Jatropha industry and organisations involved in sustainability assessment schemes.

Type of lessons learnt that the project team would like to obtain from the piloting exercise

The project team would like to use the pilot assessments to obtain feedback and insights for use of the assessments in the Jatropha industry. A specific questionnaire will be used in the final workshop to evaluate the pilot assessments. At this moment the project team considers the following aspects as most important:

1. Assessment methodology: content and formulation of principles and criteria, clarity of requirements, comprehensiveness of the guidance, ease of use;
2. Tools: ease of use, effectiveness;
3. Indicators: audibility of indicators, 'smartness' of indicators, appropriateness for feedstock, appropriateness for geographical context, appropriateness for specific context, appropriateness for business model of companies and plantations;
4. Criteria: possibility to meet the criteria, coverage of the main sustainability risks, effectiveness of requirements to mitigate these risks;
5. Data collection: availability of data, ease of collection, cost of collection, quality of data;
6. Process: expected value of the assessments for the companies, outlook for certification, administrative burden.

Pilot character of the exercise

As this pilot exercise is never done before, there will be questions and interpretation problems, e.g. on how to deal with specific requirements or how to deal with the upcoming RED guidance. The project team is liaising with the RSB secretariat and RFA to cope with such questions. Representatives of the RSB secretariat and the RFA have confirmed that they are available for answering questions if necessary.

ANNEXES

Annex I – Descriptions of 11 selected sustainability assessment schemes

>> This annex presents eleven selected sustainability assessment frameworks in detail. A uniform template was developed in order to make it possible to get a quick insight in a framework and also to make it possible to compare specific aspects.

Scheme identification and selection

The eleven schemes presented hereafter are those that we consider most relevant, because of the direct links with the process of selecting a scheme for sustainable production of Jatropha. The reasons for selecting these schemes are:

1. *DE - ISCC - The International Sustainability and Carbon Certification System:* German-based but internationally oriented system for the certification of biomass and bio-energy. Open for certification since January 2010.
2. *EU - RED - Renewable Energy Directive*: key mandatory legislation in the EU that currently sets the reference in the international bio-fuel market.
3. *INT - CDM - Clean Development Mechanism*: established carbon-offset scheme that may enable Jatropha producers to have an additional income through emission reduction certificates.
4. *INT - COMPETE - Good Practice Assessment for Bio-energy Projects:* simple methodology aiming to have a balanced set of criteria that are important for both developed and developing worlds.
5. *INT - GS - Gold Standard*: established carbon offset scheme for voluntary offset projects and CDM projects. Compared with CDM it includes additional environmental and social criteria.
6. *INT - RSB - Roundtable on Sustainable Bio-fuels:* key voluntary sustainability certification scheme for bio-fuels that is developed in consensus by a large variety of stakeholders.
7. *INT - RSB / Jatropha Working Group*: feedstock specific standard for Jatropha production that has been elaborated within the RSB.
8. *INT - RSPO - Roundtable on Sustainable Palm Oil production:* voluntary certification scheme for another feedstock that is in operation since two years and that is a qualifying standard within RTFO.
9. *NL - Cramer Criteria:* Framework underlying NTA 8080
10. *NL - NTA 8080 - Netherlands Technical Agreement 8080:* comprehensive biomass-specific standard against which certification can take place, anticipated in 2010.
11. *UK - RTFO - Bio-fuel Sustainability Meta-Standard:* UK reporting scheme for bio-fuels which is operational since April 2008. Includes carbon, environmental and social requirements.

Uniform template

The following aspects are summarised per assessment scheme:

- name
- website
- objective
- context
- principles
- members/stakeholders
- users
- usefulness of scheme for users
- history
- outlook
- certification
- usefulness as assessment framework for the Jatropha Mozambique project
- remarks
- sources

I.1 DE - ISCC - International Sustainability and Carbon Certification System

Name	DE – ISCC - The International Sustainability and Carbon Certification System
Website	http://www.iscc-system.org
Objective	The ISCC goal is the establishment of an internationally oriented, practical and transparent system for the certification of biomass and bioenergy. ISCC is oriented towards • reduction of Greenhouse Gas emissions, • sustainable use of land, • protection of natural biospheres and • social sustainability
Context	ISCC identified that various and differently developed certification systems exist, most of them approaching specific feedstock, but that none of them covered all required sustainability requirements and that there were no practical experiences with the implementation of appropriate systems. There was concern that the coexistence of different systems resulted in multiple use of particular certificates, implementation of double and multiple certifications. Thus the credibility and effectiveness may be affected and higher costs generated. ISCC therefore wanted to develop a one shop system.
Principles	The ISCC Global Generic Producer Reference Checklist, developed within the ISCC Project in a multi-stakeholder-approach, is used to assess the sustainability of the projects. It is based on the six general principles listed below. 1. Biomass shall not be obtained from land with high biodiversity value or high carbon stock and not from peat land 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. 3. Safe working conditions through training and education, use of protective clothing and proper and timely assistance in the event of accidents. 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 5. Biomass production shall take place in compliance with all applicable local and national laws and shall follow relevant international treaties 6. Good management practices shall be implemented
Members/ stakeholders	The ISCC System is financially supported by the BMELV (German Ministry of Food, Agriculture and Consumer Protection) through FNR (Agency for Renewable Resources), who manages the funding programme “Renewable Resources” on behalf of the BMELV.
Users	Members of the association, natural and legal persons, are those who participated in the incorporation of the association, and those that could be later admitted as associates by the General Assembly. Certification bodies will also make use of this scheme.
Usefulness of scheme for users	The checklist has been developed for all kind of biomass production. However, adaptation according to national or regional conditions and crops can take place within National Technical Working Groups (NTWG). The Producer Checklist has been tested already for different crops in different countries during the ISCC pilot phase and has been adapted based on these experiences and based on comments received from all stakeholders.
History	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. ISCC System is a non-profit organization and is governed by its stakeholders. The System is designed as a dynamic and learning system and is open for participation by all

Name	DE – ISCC - The International Sustainability and Carbon Certification System
	stakeholders from all countries.
Outlook	Provide a global, transparent, secure and participatory certification scheme for biomass and bio-energy that can be used by independent third party certification bodies for producers along the supply chain (farm, storage, conversion units) to verify sustainable production and to calculate greenhouse gas emissions throughout the production process. Allow for the separation of global commodity markets based on sustainability and greenhouse gas (GHG) performance and create incentives for sustainable production with low greenhouse gas (GHG) emissions. Provide a certification scheme that can be used to proof compliance with sustainability requirements in the European markets for bio-energy (based on Directive 2009/28/EC). Keep the administrative burden and certification costs at the lowest possible level.
Certification	The ISCC System consists of six core components 1. The sustainability audit at farm level for which the ISCC Producer Checklist at hand is used. As previously stated, the checklist consists of principles, 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, 100%, together with reference evidence, 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 and would then be complemented by certain components of ISCC.
Usefulness as assessment framework for Jatropha Mozambique	The ISCC project recently moved from a project status to a running system. It is German based but opened for project developers worldwide and offers interesting opportunities for sustainability certification of biomass projects such as Jatropha plantations. Hence, in April 2009, the Mission Biotechnologies from Malaysia has become the first non-German biodiesel producer in the world to receive attestation under the German Government supported International Sustainability and Carbon Certification Project (ISCC). They mainly use CPO (Crude Palm Oil) as feedstock but now they are considering the progressive shift to Jatropha. They are carrying out research on this drought resistant and inedible plant and they assist small farmers getting higher agronomic performance with the use of good agricultural practices.
Remarks	None
Sources	www.iscc-system.org www.iscc-project.org www.missionnewenergy.com

I.2 EU - RED - Renewable Energy Directive

Name	EU – RED - Renewable Energy Directive
Website	http://ec.europa.eu/energy/renewables/index_en.htm, www.cen.eu
Objective	The EC Renewable Energy Directive (RED) sets a target for all Member States to achieve a minimum target of 10% renewable energy consumption in transport by 2020. In addition, the Fuel Quality Directive (FQD) 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. Bio-fuels that count towards either of the targets will have to meet C&S requirements, defined by the EC. These include mandatory aspects as well as reporting requirements, both of which will have to be implemented by Member States by December 2010. The EC is currently in the process of developing more detailed guidelines on the C&S requirements and aims to publish a Communication on a number of these issues. In February 2010 a draft was leaked to the media. Other aspects will go through a Comitology process and are expected in the course of 2010. The four main categories of minimum requirements, which economic operators must prove compliance with, can be categorised as follows: • *GHG emissions savings*: at least 35%, increasing to at least 50% from 1 January 2017, and 60% from 1 January 2018 for bio-fuels and bio-liquids produced in installations which started production on or after 1 January 2017 – all using the EC methodology for lifecycle GHG emission calculation. • *Biodiversity*: Bio-fuels may not be made from raw material obtained from land with high biodiversity value in or after January 2008. • *Carbon stock*: Bio-fuels may not be made from raw material obtained from land with high carbon stock or land that was peatland in January 2008. • *Cross compliance*: Bio-fuel 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). Reporting items cover broader environmental and social aspects such as impacts on air, soil and water and labour conditions. In 2012 the EC will report on whether to make requirements for air, soil and water mandatory (RED, Article 18.9). The exact definitions of the reporting requirements for economic operators will be defined through the Comitology process in the course 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 bio-fuels and ways to minimise that impact. This could include a proposal to include the impacts of iLUC in the GHG methodology for bio-fuels in the Directive. The EC has indicated that they plan to bring this work forward to be published in the course of 2010. The objective of Technical Committee 383 of the Centre for European Standardization (CEN/TC 383) is to elaborate European standards for sustainably produced biomass for, but not restricted to, energy applications (transport, electricity, heating, cooling). Firstly, this (these) standard(s) allows users to check for the sustainability themes as laid down by the European authorities (RED). This means inclusion of: • definitions, basic requirements, principles, criteria, indicators and evaluation methods to assess compliance of biomass products to RED criteria, and • evaluation methods to assess the capacity of certification schemes and standards to guarantee the conformity of biomass products to the RED criteria. In addition, CEN/TC 383 will address - in documents like Technical Specifications and Technical Reports - possible issues, including social, environmental and economic themes, which are

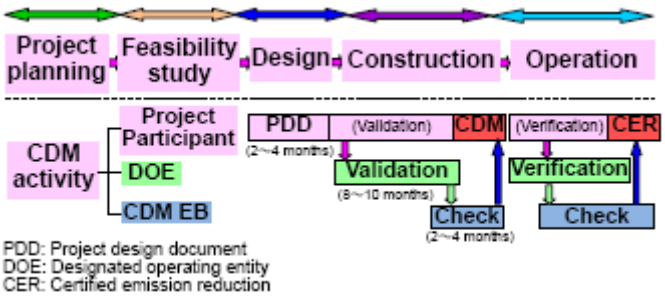
Name	EU – RED - Renewable Energy Directive
	additional to the sustainability themes defined in the RED. The CEN/TC 383 will also elaborate criteria, indicators and methodologies for the additional defined themes.
Context	In 2006, the Dutch government asked a national group of experts to define principles and criteria for the sustainable production of biomass; the so-called Cramer criteria were developed, after the chair of that group. In parallel UK and German governments have initiated similar activities in the attempt to introduce more sustainable biomass on their internal market. The Renewable Energy Directive (RED) on the promotion of the use of renewable energy sources is directly related to standards for sustainable biomass. To meet the 20% renewable energy target of the RED for the whole energy consumption by 2020, including the 10% for transport, the EU needs hundreds of MtOE from sustainably produced biomass. Moreover, a strong demand for standards on sustainability criteria for biomass is heard from the public, NGO's and the industry. Support for the further introduction of these bio-fuels in transport, electricity production and heating/cooling generation is needed. The main expected benefit of CEN/TC 383 is to define standards that support certification for sustainably produced biomass-for-energy applications and introduction of it on the EU market. Next, it brings confidence for the consumers in respect of sustainably produced and processed biomass. It allows biomass generating and energy supplying industries to provide valuable information to the consumers and the market. The biomass may come from various sources including forestry and agricultural by-products and waste. Implementation of CEN/TC 383 allows users to check for the sustainability themes as laid down by the national and European authorities.
Principles	Defined by the RED.
Members/ stakeholders	CEN national members are entitled to nominate delegates to CEN Technical Committees and experts to Working Groups, ensuring a balance of all interested parties. Participation as observers of recognised European or international organizations is possible. Technical liaison is offered to European and worldwide organisations to represent certain stakeholders in the discussion. Especially NGO and biomass producer representatives are invited to participate through direct nomination or liaison. Some European organisations have been involved directly from the first meeting. The actual amount of liaison organisations stands at 11 granted liaisons. [CEN/TC 383 business plan]
Users	Standards are addressed to producers and traders of biomass.
Usefulness of scheme for users	The RED standards will provide biomass producers and traders access to the EU market. The impact is meant to go beyond the EU. CEN/TC 383 observes that discussions in ISO and in the Roundtable on Sustainable Bio-fuels (RSB) give indications that it would be difficult to produce draft international standards within relatively short timeframes. A regulatory framework for sustainability criteria within Europe could form an easier basis for international discussions. ISO and CEN have possibilities and interfaces through the Vienna Agreement, to move this work forward in parallel once such becomes feasible. [CEN/TC 383 business plan]
History	The CEN/Technical committee TC 383 'Sustainably produced biomass-for-energy applications' has been established. NEN is in charge of the secretariat. Chairperson is Prof H. Udo de Haes, Secretary is Mr O.M. Costenoble. Six workgroups have been established: CEN/TC 383/WG 1 Terminology, consistency of evaluation methods and other cross-cutting issues CEN/TC 383/WG 2 GHG emission balance, fossil fuel balance, and respective calculations, using a life-cycle approach CEN/TC 383/WG 3 Biodiversity and environmental aspects

Name	EU – RED - Renewable Energy Directive
	CEN/TC 383/WG 4 Economic and social aspects CEN/TC 383/WG 5 Verification and auditing CEN/TC 383/WG 6 Indirect effects
Outlook	Within CEN/TC 383 there are four standards under development: 00383001 Sustainably produced biomass-for-energy applications - Part 1 Terminology 00383008 Sustainably produced biomass-for-energy applications - RED-related criteria and indicators - Part x Calculation of the GHG emission balance associated with sustainable bio-fuels and bioliquids using a lifecycle approach 00383009 Sustainably produced biomass-for-energy applications - RED-related criteria and indicators - Part x Biodiversity and environmental aspects 00383010 Sustainably produced biomass-for-energy applications - RED-related criteria and indicators - Part x Conformity assessment, including chain-of-custody The initial planning aimed publishing the first standard by the end of 2010, which was acknowledged as extremely ambitious, but also corresponding to the need of instruments to verify compliance with criteria defined in the RED. This planning will not be met. First a public round of discussion needs to be organised. The EC decided to focus more on communication, and drafts need to be improved before they will be sent for the public discussion. Probably the publication of the first version of the standards can be expected in the course of 2010. The planning now is to finish the works in June 2012.
Certification	The CEN/TC 383 standards are anticipated to be the basis for certification of biomass-for-energy applications. In that sense, it has relations to work under development in the Netherlands in projects like NTA8080 and BIOPEC, work in the UK to explore the feasibility of developing a *'kite mark'* for sustainable biomass under RTFO and proposals being developed in Germany and the Scandinavian countries for a sustainability label. It is thus important to avoid duplication between all of these schemes in terms of the basic criteria, terminology, etc. [CEN/TC 383 Business plan]
Usefulness as assessment framework for Jatropha Mozambique	Extremely useful in the long run. As the first scope for draft standards is summer 2010, there may be some direct input from the CEN standards in the Mozambique project. It is considered important to stay in contact with CEN in order to learn from their discussions and process. CEN has identified that sourcing sufficient input from developing countries is an obstacle.
Remarks	None
Sources	http://ec.europa.eu/energy/renewables/index_en.htm www.cen.eu Draft communication from the Commission to the Council and the European Parliament on the practical implementation of the EU biofuels and bioliquids sustainability scheme and on counting rules for biofuels (BI(10)381 – February 2010). CEN/TC 383 business plan, draft 6, accepted at the plenary meeting of 20 January 2009 Personal communication of ir. J. Dakhorst, NEN.

I.3 INT - CDM - Clean Development Mechanism

Name	INT - CDM - Clean Development Mechanism
Website	http://cdm.unfccc.int
Objective	The objective of the CDM is to stimulate sustainable development and emission reductions, while giving industrialised countries some flexibility in how they meet their emission reduction limitation targets. The CDM allows emission-reduction (or emission removal) projects in developing countries to earn certified emission reduction (CER) credits, each equivalent to one tonne of CO2. These CERs can be traded and sold, and used by industrialised countries to a meet a part of their emission reduction targets under the Kyoto Protocol.
Context	The central feature of the Kyoto Protocol is its requirement that countries limit or reduce their greenhouse gas emissions. By setting such targets, emission reductions took on economic value. To help countries meet their emission targets, and to encourage the private sector and developing countries to contribute to emission reduction efforts, negotiators of the Protocol included three market-based mechanisms – Emissions Trading, the Clean Development Mechanism and Joint Implementation.
Principles	Reduction of CO2 emission. CDM allows companies to use either an existing approved methodology or to propose a new methodology to determine and monitor emission reductions. A distinction is made between methodologies for small-scale and large-scale projects. CDM requires the explicit confirmation of the host country that the project contributes to sustainable development in its territory. It is a transparent and voluntary system.
Members/ stakeholders	CDM is one of the instruments of the Kyoto-protocol. Both industrialised countries and developing countries are involved in CDM.
Users	CDM projects can be initiated by the private sector, non-government organisations or government agencies.
Usefulness of scheme for users	The CDM allows net global greenhouse gas emissions to be reduced at a much lower global cost by financing emissions reduction projects in developing countries where costs are lower than in industrialised countries. The CDM enables projects that reduce emissions or enhance sinks through afforestation or reforestation. The current offsets price for CDM projects, ranges from 14 to 30 € per t CO2 eq [SEI and Tricorona 2008].
History	The number of CDM projects went up from 60 projects in 2004 to 5,792 CDM projects in November 2009. The CDM mechanism has registered 2,029 projects; 207 projects are still in the registration process and 2,690 projects at validations stage. [Source: cdmpipeline.org, last visit, 5th February 2010]. China and India continue to access the lion's share of the projects, with a total of 3,070, followed by Brazil and Mexico (510). An increasing number of projects come of regions and countries that were once on the periphery of CDM. If the numbers for China and India are excluded, the Asia and Pacific region now has 635 projects, up from 5 in 2004. And without including Brazil and Mexico, CDM projects in Latin America and the Caribbean stand at 308 – up from 19 in 2004. Africa has 112 projects, Middle East & North Africa 72. Least Developed Countries (LDC) only have a small number of projects: 47. Leading project types are medium and small-scale hydroelectric projects, followed by biomass energy, wind power and electricity from industrial waste heat. UNEP considers the scheme as a success: *"The CDM and the carbon markets as a whole are one of the great success stories of international cooperative action on climate change. The challenge now is to streamline it and overcome some of the hurdles that are keeping back projects in areas such as the building sector and forestry. (...) By 2012 we estimate that over 8,000 CDM projects may be up and running or in the pipeline generating financial flows from*

Name	INT - CDM - Clean Development Mechanism
	North to South of well over $30 billion. The calculation is based on the CDM generating an estimated 1.6 billion Certified Emission Reduction" carbon credits worth $20 each. In doing so the CDM is not only emerging as one key and creative instrument for combating climate change but an important stimulus package to developing country economies." [UNEP, press release, 11 December 2008] Under the 2006 Nairobi Framework, special action was taken to help developing countries in sub-Saharan Africa, to improve their level of participation in the CDM and enhance the CDM's geographical scope. In May 2009 there are 30 registered CDM projects in 8 countries. These project activities are expected to generate 51 million tonnes of CO2 equivalent by 2012. [Source: UNFCCC fact sheet: the Nairobi Framework, June 2009]. There are currently 3 projects in the CDM pipeline that refer to Jatropha, all three at a validation stage: • CDM3450. Country: Mali. Title: Jatropha Curcas Plantation Project. Type: Reforestation. Average CO2 reduction 1st period: 8 kT/yr. Credit start date: 1-Jan-09. • CDM4259. Country: Senegal. Title: Partial Substitution of Coal by Jatropha Fruits and Biomass Residues in the Production of Portland Cement. Type: Biomass energy. Average CO2 reduction 1st period: 89 kT/yr. Credit start date: 1-Jun-09. • CDM5282. Country: Congo RD. Title: Jatropha curcas Cultivation in the Democratic Republic of Congo. Type: Afforestation. Average CO2 reduction 1st period: 107 kT/yr. Start date comment process: 16-Jun-09. There is currently 1 new methodology that refers to Jatropha in the comment process of the small scale panel: • SSC-NM9. Country: Madagascar. Title: Jatropha Biodiesel from Degraded Land in Madagascar. Type: Biofuel. GHG reduction/yr: 3,8 kt CO2. Start date comment process: 30-May-08. There is 1 methodology related to Jatropha that was proposed to the CDM Executive Board but was rejected: • 224. Country: India. Title: Manufacturing of Bio-diesel from Crude Palm oil and Jatropha Oil. Type: Biofuel. GHG reduction/yr : 60 ktCO2. Decision date: 19-Oct-07. Reasons for rejection: The observations made by the Methodologies Panel (of UNFCCC) , seem to suggest that the ideal applicants for Credits (under switching fossil fuels category) may not be manufacturers because they have no control over the ultimate utilization of the biodiesel. The credits under this category should accrue to the agency that actually replaces the fossil fuel with Bio-Diesel, such as Oil Companies, Railways, road transport Cos., Power generation etc. There is 1 project in the CDM pipeline in Mozambique, at validation stage: • CDM3011. Country: Mozambique. Title: Cimentos do Mozambique – Matola Gas Company Fuel Switch Project. Type: Fossil fuel switch. Average CO2 reduction 1st period: 46 kT/yr. Credit start date: 1-Jan-08. Recently a new proposed methodology with relevance for Jatropha has been approved: • ACM0017 - "Production of biodiesel for use as fuel". The methodology is applicable to "project activities that reduce emissions through the production, sale and consumption of blended biodiesel that is used as fuel" where the biodiesel is produced either from waste oil and fat or "Vegetable oil that is produced with oil seeds from plants that are cultivated on dedicated plantations established on lands that are degraded or degrading at the start of the project activity." This is a very important new for Jatropha since up to now the only possibility was to split the project activities along the Jatropha supply chain according to

Name	INT - CDM - Clean Development Mechanism
	existing methodologies: Afforestation/Reforestation and then Renewable Energy Production, without taking in account the production of fuel for transportation.
Outlook	The CDM has enabled industrialised countries to fund CO2 reduction projects in the developing world in exchange for CERs. However, EU negotiators are critical of the way the CDM has created a flood of cheap and low-quality CERs. They are urging China and other developing countries to accept a "sector-based" mechanism in which entire industries will be obliged to substantially cut their emissions. The CDM reform was on the agenda at the Copenhagen negotiations in December 2009 but no outstanding agreements were made. Investors in the CDM scheme and the firms that audit the clean energy projects registered under it, argue that delaying reforms is perpetuating uncertainty and discouraging new investment. [Source: Reuters, 21 Oct 2009, Carbon scheme reform may get lost in Copenhagen].
Certification	All projects that aim to generate CERs under the CDM rules must meet the essentially the same criteria and complete the same steps. This process is commonly known as the CDM project cycle. However, in order to reduce the relative transaction costs associated with the CDM, streamlined procedures and standardized baselines for small-scale projects have been approved by the CDM Executive Board. CDM Project Cycle  [Source:Sindicato de Industriales de Panama] **Contents of the Project Design Document (PDD)** A. General description of project activity B. Baseline methodology C. Duration of the project activity / Crediting period D. Monitoring methodology and plan E. Calculations of GHG emissions by sources F. Environmental impacts G. Stakeholders comments
Usefulness as assessment framework for Jatropha Mozambique	Jatropha Project participants willing to validate / register a CDM project activity shall use one of the approved baselines and monitoring methodologies or propose a new one. On the basis of the scope of the project, the methodology chosen might vary between those 3 listed below. 1. Methodologies for afforestation and reforestation CDM project activities Sequestration of carbon dioxide (CO2) by the cultivation of Jatropha curcas; • Regeneration of degraded soils and protect them against erosion; • Empowerment of local communities to develop sustainable agro-forestry practices, and • Provision of an alternate livelihood potential for local communities. The methodology for implementing the project is:

Name	INT - CDM - Clean Development Mechanism
	Proposed main baseline methodology • AR-AM0001 methodology applicable for carbon accumulated in Jatropha trees. The price of the offsets credits are highly variable depending on the market demand. In the voluntary market, where demand is higher than in the compliance market, the value per credit ranges 0,5 to 3 €. [source: South Pole,2009] There are key conditions to overcome in order to implement reforestation carbon project. • No grazing allowed within the plantation • No shift of pre-project activities • Use of land severely degraded is eligible and deforested land not. • Height of Jatropha trees must be above thresholds for the definition of forest (communicated by the Designated National Authority, DNA) • Long term monitoring (20 to 100 years) 2. Methodologies for CDM project activities Production of biodiesel from Jatropha curcas seeds. It is anticipated that biodiesel produced locally from Jatropha seeds will replace available diesel fuel, which is currently used to generate electricity. The biodiesel will provide an alternative source of energy for sustainable development. Proposed Baseline methodology • ACM0017, for production of biodiesel for use as fuel. [Source: UNFCC CDM Methodology] 3. Methodologies for small-scale CDM project activities This is a simplify baseline for small scale projects. The applicability of jatropha projects within this methodology is highly restricted to the origin and treatment of the biomass e,g. Electrification of rural household from Jatropha oil mechanically produced complies with it , with biodiesel power produced from Jatropha seeds: Proposed Baseline methodology AMS III.T Plant oil production and use for transport applications. Key conditions : • Only transportation use • Only plant oil use as a blend up to 10% or pure, No esterification techniques to extraxt the oil are eligible • No shift of pre-project activities • No forest on plantation area in the past 10 years [Source: southpolecarbon.org] AM 47. Only for waste oil/fats,new version (vs.3) including plant oil use has been proposed in September 2008 but it hasn't been approved yet. Possible sort of Jatropha projects that could obtain CER´s • A combination of small scale AR projects • A combination of methane capture from byproducts (de-oiled) cake and subsequent power generation projects. • Credits for fuel substitution, bundled small scale projects in some cases and stand alone in other cases, depending on the scale of operation A bundle of integrated solid waste management (waste to energy) projects. The volume of credits and the demand from buyers is relatively high especially in the

Name	INT - CDM - Clean Development Mechanism
	compliance market. Thus providing higher cash-in per credit (5-7 €) compared to AR projects (0,5-3€).
Remarks	There is little interest by Jatropha projects so far, capacity in sub-Saharan Africa is building up. Likewise, new methodologies proposed tackling specifically Jatropha cases are still on the pipeline or have been rejected. In fact, we have no information regarding CDM Jatropha projects being approved so far. Some project developers have expressed dissatisfaction towards CDM procedures. In their report "*A Comparison of Carbon Offset Standards*", published by WWF Germany, SEI and Tricorona (2008) formulate it as follows: *"The CDM is part of the Kyoto protocol and aims to create economic efficiency while also delivering development co-benefits for poorer nations. It has been successful in generating large numbers of offsets. Whether it also has delivered the promised development co-benefits is questionable."*
Sources	http://cdm.unfccc.int http://cdm.unfccc.int/EB/050/eb50_repan03.pdf http://cdm.unfccc.int/Reference/Manuals/accr_man01.pdf http://ec.europa.eu/energy/res/sectors/doc/bioenergy/sustainability_criteria_and_certification_systems.pdf http://en.wikipedia.org/wiki/Clean_Development_Mechanism http://www.senternovem.nl/carboncredits/index.asp http://www.vrom.nl/pagina.html?id=22990#b22075 www.cdmcapacity.org www.cdmpipeline.org www.reuters.com www.cdmpipeline .org www.industriales.org/simposio/HISATOME%205%20PDF.pdf http://cdm.unfccc.int/UserManagement/FileStorage/F1UNE5XIAP87HOZ6MVJQ3R4LK0TGDW http://www.netinform.net/KE/files/pdf/PDD_PJM_ARAM0004_080317.pdf http://cdm.unfccc.int/UserManagement/FileStorage/CDM_ACMXXRJY0KM1HPYFDRDZF2R2BMQZ3TPJD http://assets.panda.org/downloads/developermanual_gs_cer.pdf www.southpolecarbon.com

I.4 INT - COMPETE - Good Practice Assessment for Bio-energy Projects

Name	INT - COMPETE Good Practice Assessment for Bio-energy Projects
Website	www.compete-bioafrica.net
Objective	The purpose of the good practice assessment is to assess the social, environmental and economic effects of projects and policies to ensure that they are as sustainable as possible. It is an integral part of good plan-making and should not be seen as a separate activity. Though it is always difficult to draw an understanding of the relationships of the different pillars it is still possible to do it through different principles, especially through the understanding of international agreements, policies or directives which reflect consensus on the approaches to achieving sustainability.
Context	The good practice assessment methodology for bio-energy projects was developed within the project COMPETE (Competence Platform on Energy Crop and Agroforestry Systems for Arid and Semi-arid Ecosystems – Africa) and is co-funded by the European Commission in the 6th Framework Programme – Specific Measures in Support of International Cooperation (INCO-CT-2006-032448).
Principles	The sustainability framework contains 12 principles, classified in 4 categories, which aim to provide a clear and balanced guideline. Environmental 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 Social 4. Community participation (from planning) 5. Women's participation (from planning) 6. Skills transfer (management, business, agriculture) Economic 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 infrastructures (energy supply, health) and /or reinvestment of revenue within the community Policy and Institutions 10. Compliance with National and/or guidelines for bioenergy policy in place 11. Compliance with Local programmes, regulations and/or plans in place 12. Respect land rights and avoid displacement
Members/ stakeholders	The assessment methodology was developed by the CEP Imperial College London within the COMPETE project. The COMPETE Consortium consisted of 44 partners from 5 continents. African partners are from Botswana, Burkina Faso, Kenya, Mali, Senegal, South Africa, Tanzania, and Zambia. European partners are from Austria, Belgium, Germany, Italy, Norway, The Netherlands, Sweden, and United Kingdom. Asian partners are from China, India, and Thailand. Latin American partners are from Brazil and Mexico. International partners are the AFDB (African Development Bank), CI (Conservation International Foundation), and FAO (Food and Agriculture Organisation of the United Nations).

Name	INT - COMPETE Good Practice Assessment for Bio-energy Projects
Users	Producers, (companies and farmers), policy makers, NGOs, academics and consultants.
Usefulness of scheme for users	The principles of the assessment methodology intend to provide a clear and balanced guideline for Good Practices. There is no intention of these guidelines to provide definitive criteria and indicators as the principles do not attempt to be a certification or verification system in any form. Nevertheless, the guidelines can be used by different stakeholders when considering: • to initiate or assess a bioenergy proposal or project • to assess the sustainability of a feasibility report for a bioenergy proposal or project • to review policy guidelines and assist in the decision-making process of a bioenergy proposal or project • to review and/or assess an ongoing bioenergy proposal/project • Finally, the principles are not exhaustive and may differ under different frameworks, projects, experts, countries or any other stakeholders' opinion.
History	The scheme was developed as part of the COMPETE project that started in January 2007. The concern was to develop a simple methodology to assess the use of good practices in bio-energy projects.
Outlook	It is unclear how exactly the methodology will evolve. Focus now is on finalising the COMPETE project that ended on 31 December 2009. The methodology is not aimed to be part of a bigger certification or verification initiative but to provide project developers with a practical tool that can help to assess the use of good practices of initiatives or projects.
Certification	The main objective of the sustainability assessment is to evaluate the sustainability performance of the economic, environmental, social and political processes or products (in this case bioenergy projects or initiatives). For an effective sustainability assessment there must be clear delineated principles and if possible decision criteria based on well integrated understanding of the key requirements for sustainability. The links between the different themes of sustainability will also contribute to the better understanding of the sustainability process and assessment. Good Practice Guidelines aims to provide a more balanced view including the perspectives of different stakeholders to what is considered necessary to assure sustainability issues in practice for a bioenergy project.
Usefulness as assessment framework for Jatropha Mozambique	The main aim is to provide a general assessment on principles that are seen important in some developing countries, particularly in Africa. These guidelines for Good Practice do not attempt to serve as certification tool but the simplicity and coherence of the concepts employed can be of great application in Jatropha plantations focused on the national market.
Remarks	The assessment of the sustainability of any sort of bioenergy project is considered to be done according to basic information given from the initiative or project. This information needs to have as minimum the following points: - Type of initiative (e.g. private, government, community, NGO, other) - Agreements or reviews of the initiative with local, regional and national authorities (e.g. for the compliance with regulations and policies of Principles 10 and 11) - Type of land use for the bioenergy project (agricultural land, forest, grassland, other) - Type of feedstock (e.g. cassava, Jatropha, palm oil, sugar cane, other) - Production scheme (community, out-growers, cooperative, private, other)
Sources	http://www.compete-bioafrica.net/publications/publications.html: WP3 Personal communications Rocio A Diaz-Chavez

I.5 INT - GS - Gold Standard

Name	INT – GS - Gold Standard
Website	http://www.cdmgoldstandard.org
Objective	The Gold Standard (GS) is a full-fledged carbon offset standard. The Gold Standard (GS) requires social and environmental benefits of its carbon offset projects and has a very well developed stakeholder process.
Context	It was designed to ensure that carbon credits are not only real and verifiable but that they make measurable contributions to sustainable development worldwide. Its objective is to add branding, a label to existing and new Carbon Credits generated by projects which can then be bought and traded by countries that have a binding legal commitment according to the Kyoto Protocol.
Principles	The Gold Standard is the world's only independent standard for creating high-quality emission reductions projects in the Clean Development Mechanism (CDM) Joint Implementation (JI) and Voluntary Carbon Market.
Members/ stakeholders	The Gold Standard Foundation is a non-profit organisation under Swiss Law, funded by public and private donors. The operational activities of the GS are managed by the Gold Standard secretariat based in Basel, Switzerland. The secretariat has currently a staff of 5. **The Foundation Board**: oversees the strategic and organizational development of the Gold Standard.The Board has currently 8 members. At least 50% of its members must be recruited from the Gold Standard NGO supporter community, and one member is at the same time the Chair of the Gold Standard Technical Advisory Committee (GS-TAC, see below). **Technical Advisory Committee (GS-TAC)** evaluates and approves projects, new methodologies for VER projects and is in charge of updating the GS rules and procedures. It is the equivalent of the CDM EB / Meth Panel for VER projects (Verified or Voluntary Emissions Reductions). The GS-TAC has currently 7 members, all acting in their personal capacities. The GS-TAC members are from the NGO community, multilateral organizations, aid agencies and the private sector. **Gold Standard NGO Supporters** decide on major rule changes (e.g.eligibility of project types).Gold Standard Supporter NGOs must be consulted as part of the Gold Standard stakeholder consultation in case they have operations in the relevant host country. **Supporter NGOs** are also invited to take part in the project reviewing process and can request an in-depth audit of GS projects both at the registration as well as issuance stage. **GS Auditors are UNFCCC accredited DOEs (Designated Operational Entities)** who carry out validation and verification of GS projects. DOEs are not allowed to do the validation and the verification for the same project, except for micro and small scale projects.
Users	The size of the Gold Standard project portfolio has grown from just 6 projects a few years ago to almost 200 projects now on stream or well along in the pipeline. CDM currently has 67 Gold Standard projects in the pipeline, with a regional and technology distribution that is consistent with the overall pattern for the CDM [Gold Standards Registry]
Usefulness of scheme for users	Project Type The GS accepts renewable energy (including methane-to-energy projects) and energy efficiency projects. It excludes large hydro projects above 15 MW capacity. Project Location

Name	INT – GS - Gold Standard
	Gold Standard VER projects cannot be implemented in countries with an emissions cap, except if Gold Standard VERs are backed by AAUs (Assigned Amount Unit i.e. tradable unit for 1 tCO2e being permanently retired. Project Size The Gold Standard does not have any project size minimum. Project sizes for Gold Standard VERs are: micro-scale (<5,000 tonnes CO2 per year), small-scale (5,000-60,000 tonnes CO2 per year) or large-scale (>60,000 tonnes CO2 per year). For Gold Standard CERs, the same size limits as for the CDM apply.
History	The GS was developed under the leadership of the WWF in order to ensure that emission reduction projects are real and provide social, economic and environmental benefits. The GS CDM was launched in 2003 after a two year period of consultation with stakeholders, governments, NGOs and the private sector from over 40 countries. GS VER was launched in 2006.The GS is endorsed by 56 NGOs.
Outlook	Gold Standard Version 2.1 which augments and improves Gold Standard Version 2.0 is available now. Version 2.1 incorporates recent decisions of the Gold Standard Technical Advisory Committee, a new fee structure and feedback from the market.
Certification	Environmental & Social Impacts Both Gold Standard CER and Gold Standard VER projects must show clear sustainable development benefits, including local and global environmental, social, and economic as well as technological sustainability.
Usefulness as assessment framework for Jatropha Mozambique	Gold Standard requires a number of additional steps compared to a conventional CDM project. These include matters relating to additionality and sustainable development and demonstrate that the project is environmentally, socially, economically and technologically sustainable. INDICATORS Local/regional/global environment • Water quality and quantity • Air quality (emissions other than GHGs) • Other pollutants: (including, where relevant, toxicity, radioactivity, POPs, stratospheric • ozone layer depleting gases) • Soil condition (quality and quantity) • Biodiversity (species and habitat conservation) Social sustainability and development • Employment (including job quality, fulfilment of labour standards) • Livelihood of the poor (including poverty alleviation, distributional equity, and access to essential services) Access to energy services • Human and institutional capacity (including empowerment, education, involvement, • gender) Economic and technological development

Name	INT – GS - Gold Standard
	• Employment (numbers) • Balance of payments (sustainability) • Technological self reliance (including project replicability, hard currency liability, skills development, institutional capacity, technology transfer)
Remarks	**Co-Benefits** Supplemental criteria of the GS that makes the validation more intensive. The GS improves this process of stakeholder involvement considered rather poor in CDM [WWF,2008] by having clear and detailed definitions of the stakeholder consultation process. **Additionality** Additionality attempts to establish whether an offset project would have happened anyway. The emissions that would have occurred if the market for offsets did not exist need to be estimated in order to calculate the quantity of emissions reductions that the project achieved. The GS addresses this issue by requiring that the additionality tool is also applied to small scale projects
Conclusions	It remains uncertain the capacity of GS to handle and certificate large quantities of emission reductions. At the moment, with only a few projects using Gold Standard, it is challenging to attract project developers, most of them not willing to invest in much additional work, while at the same time conserving the integrity of the standard.
Sources	http://www.businessgreen.com/business-green/news/2237333/government-clear-carbon-neutral http://www.businessgreen.com/business-green/news/2240517/government-boost-demand-cdm http://assets.panda.org/downloads/vcm_report_final.pdf www.cdmgoldstandard.org http://goldstandard.apx.com/resources/Documents.asp

I.6 INT - RSB - Roundtable on Sustainable Bio-fuels

Name	INT - RSB - Roundtable on Sustainable Bio-fuels
Website	http://cgse.epfl.ch/page65660-en.html
Objective	The objective of the RSB is to achieve global, multi stakeholder consensus around the principles and criteria of sustainable bio-fuels production.
Context	The Roundtable on Sustainable Bio-fuels (RSB) was initiated and is coordinated by the Energy Centre (CEN) of the Ecole Polytechnique fédérale de Lausanne, Switzerland. The RSB is a multi-stakeholder initiative, which develops a standard for sustainable bio fuel production through an international consultation process (it hosts 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. Major Institutions such as the UN Environment Programme, BP, the Swiss Government, the WWF, the IUCN or the Brazilian sugarcane growers association (UNICA) actively participate. The RSB is involved as an observer in the CEN/TC 383.
Principles	The requirements for bio-fuel producers are divided into the following twelve broad principles: 1. Legality 2. Planning, Monitoring and Continuous Improvement 3. Greenhouse Gas Emissions 4. Human and Labour Rights 5. Rural and Social Development 6. Local Food Security 7. Conservation 8. Soil 9. Water 10. Air 11. Use of Technology, Inputs, and Management of Waste 12. Land Rights
Members/ stakeholders	Farmers, companies, non-governmental organizations, experts, governments, and inter-governmental agencies concerned with ensuring the sustainability of bio-fuels production and processing
Users	The certification system envisaged is meant for bio-fuel producers.
Usefulness of scheme for users	The certification system is anticipated to enable bio-fuel producers to prove that they comply with the RSB sustainability requirements through a formal process. By complying with the RSB requirements, producers ensure that their production remains sustainable and beneficial compared to fossil energy.
History	In August 2008, the first draft of principles and criteria was released, after one year of international consultation held through virtual meetings and regional outreaches. These principles and criteria are generic and shall apply to any feedstock from first, second generation and onward, and to any region worldwide. In 2009 the RSB announced a new stakeholder governance system to take the RSB into the next phase of implementation of the RSB standard. Eleven sector-specific Chambers were set up,

Name	INT - RSB - Roundtable on Sustainable Bio-fuels
	including a Chamber on Jatropha. In November 2009 the RSB has finalised its 'Version One' of the first generic sustainability standard for bio-fuel production.
Outlook	The RSB foresees piloting its 'Version One' in 2010 and foresees that certification against the standard is possible by the end of 2010.
Certification	The RSB initiated the establishment of a certification system.
Usefulness as assessment framework for Jatropha Mozambique	This standard is highly useful because it is bio-fuel specific. The Roundtable process is lengthy and leads to many compromises, but the RSPO process has shown that the process has an impact on the building up of knowledge by all actors involved including regulators, and on the market. An operational standard and certification system is scheduled for end 2010.
Remarks	None
Sources	http://cgse.epfl.ch/page65660-en.html Telephone conferences and documents of the RSB September 2009 – May 2010 Personal communications of Maryline Guiramand and Sébastien Haye, RSB.

I.7 INT - RSB / Jatropha Working Group

Name	INT - RSB Jatropha Working Group
Website	RSB website (no specific website)
Objective	The objective of the RSB Jatropha Working Group is to develop a set of indicators for sustainable Jatropha production that can be used to assess Jatropha projects, in the planning phase or in implementation.
Context	The Jatropha working group is part of the new strategy of RSB to set up sector-specific Chambers.
Principles	As RSB
Members/ stakeholders	The Jatropha working group members are a mix of bio-fuel producers, energy companies, NGOs and knowledge providers are involved in the development of the set of indicators. Examples of members are: Agroils srl, Biogreen Oil, Cosmo Bio-fuels, D1-BP Fuel Crops, ENECO, Florida International University - College of Business Administration, GEXSI/Sustainable Jatropha Alliance, Royal Tropical Institute KIT Netherlands, Shell, World Vision, Carbon Poverty Reduction Initiative, Yale School of Forestry and Environmental Studies.
Users	The RSB certification system envisaged is meant for bio-fuel producers.
Usefulness of scheme for users	The RSB certification system is anticipated to enable bio-fuel producers to prove that they comply with the RSB sustainability requirements through a formal process.
History	The first announcement of setting up a RSB Jatropha workgroup was done in Mali in November 2008. In August 2009 started the work on the development of first draft of Jatropha Sustainability Indicators. In December 2009 the draft Version Zero was distributed. This version was developed taking the generic Version 1 of the RSB standard as basis.
Outlook	It is unclear whether the Jatropha-specific standard will move towards a formal standard because RSB has decided that the need for a Jatropha feedstock-specific standard should be better demonstrated before continuing the work on this feedstock-specific standard.
Certification	As RSB
Usefulness as assessment framework for Jatropha Mozambique	Usefulness is undetermined because it is unclear whether this Jatropha-specific sustainability standard will develop into a formal status.
Remarks	None
Sources	http://cgse.epfl.ch/page65660-en.html Telephone conferences and documents of the RSB Jatropha workgroup September 2009 – May 2010 Personal communications of Maryline Guiramand and Sébastien Haye, RSB. Personal communications of Arjen Brinkman, facilitator RSB Jatropha Working Group

I.8 INT - RSPO - Roundtable on Sustainable Palm Oil production

Name	INT - RSPO – Roundtable on Sustainable Palm Oil production
Website	www.rspo.org
Objective	The objective of the RSPO is to promote the growth and use of sustainable oil palm products through credible global standards and engagement of stakeholders
Context	RSPO is a not-for-profit association created by organisations carrying out their activities in and around the entire supply chain for palm oil to promote the growth and use of sustainable palm oil through co-operation within the supply chain and open dialogue with its stakeholders.
Principles	The RSPO standards is based upon the following principles: 1. Commitment to transparency 2. Compliance with applicable laws and regulations 3. Commitment to long-term economic and financial viability 4. Use of appropriate best practices by growers and millers 5. Environmental responsibility and conservation of natural resources and biodiversity 6. Responsible consideration of employees and of individuals and communities affected by growers and mills 7. Responsible development of new plantings 8. Commitment to continuous improvement in key areas of activity None of these principles has a direct link to energy or CO2 emissions since the standard was developed for food applications. A GHG workgroup was formed in 2008 but could not come to consensus so far.
Members/ stakeholders	The RSPO covers the entire supply chain for oil palm production. Member categories are: Oil Palm Growers, Palm Oil Processors and/or Traders, Consumer Goods Manufacturers, Retailers, Banks and Investors, Environmental/Nature Conservation NGOs, Social/Developmental NGOs. The multi-stakeholder representation is mirrored in the governance structure of RSPO such that seats in the Executive Board and project level Working Groups are fairly allocated to each sector. In this way, RSPO lives out the philosophy of a "roundtable" by giving equal rights to each stakeholder group to bring group-specific agendas to the roundtable, facilitating traditionally adversarial stakeholders and business competitors to work together towards a common objective and making decisions by consensus.
Users	Currently a vast majority (70-80% probably) of the palm oil suppliers is part of the RSPO. Initially users were from the food sector, later also from the energy sector.
Usefulness of scheme for users	The RSPO has had a certain impact on the palm oil sector. The following impacts are mentioned [Source: personal communication of Reinier de Man, 2009] 1. The management of the plantations has ameliorated (less erosion, more attention to biodiversity aspects, prevention of fire, etc.) 2. All involved stakeholders have built up a better understanding of 'sustainability aspects' of the palm oil sector. This includes international and local stakeholders. The RSPO is said to have only very little effect on deforestation. This is a conflicting issue: WWF participated with the wish to decrease deforestation. RSPO did not impact deforestation and is not geared to do so. The direct link between palm oil production and deforestation has never

Name	INT - RSPO – Roundtable on Sustainable Palm Oil production
	been proved. As one of the reasons for the limited impact of the RSPO is the voluntary multi-stakeholder process. This process is complicated because of the different interests of the stakeholders. For example, international NGOs and local NGOs were not always allies (environmental issues 'versus' socio-economic interests), neither were MNCs. The invisibility for the consumers is an element that impeded the impact as well. The customer will not be able to distinguish 'sustainable' palm oil from 'non-sustainable' palm oil, also because palm oil is used in products where palm oil forms only a small percentage of the ingredients.
History	In 2001, WWF gave an assignment to explore the possibilities for a Roundtable on Sustainable Palm Oil. The result was an informal co-operation among Aarhus United UK Ltd, Golden Hope Plantations Berhad, Migros, Malaysian Palm Oil Association, Sainsbury's and Unilever together with WWF in 2002. Two preparatory meetings were held in 2002. These organisations constituted themselves as an Organising Committee to organise the first Roundtable meeting and to prepare the foundation for the organizational and governance structure for the formation of the RSPO. The inaugural meeting of the Roundtable took place in Kuala Lumpur, Malaysia in August 2003 and was attended by 200 participants from 16 countries. The key output from this meeting was the adoption of the Statement of Intent (SOI) which is a non-legally binding expression of support for the Roundtable process. As of August 2004, 47 organisations signed the SOI. In April 2004, the RSPO was formally established under Article 60 of the Swiss Civil Code with a governance structure that ensures fair representation of all stakeholders throughout the entire supply chain. The seat of the association is in Zurich, Switzerland, while the secretariat is currently based in Kuala Lumpur.
Outlook	The RSPO is a voluntary private sector initiative. Everything that could be done was done. However, expectations were high and implicit at the start. Costs are a problem. Palm oil has to compete with oil and electricity which are very cheap at this moment. There is no motivation to pay more for 'sustainable' palm oil. It is necessary to offer added value, this is not the case in the current situation. Government regulation is mentioned as a way forward in order to really change the chain of custody into a more sustainable sector. RSPO may for instance be integrated in bio-fuel standards. [personal communication Reinier de Man, 2009]. This is partly already the case as RSPO is accepted as Qualifying Standard for both environmental and social aspects in the RTFO.
Certification	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. Accredited companies include Agrovet Austria, BSI Singapore, Control Union Certifications Netherlands, IBD Brazil, Moody International Malaysia, Mutuagung Lestari Indonesia, SAI Global Indonesia, SGS Malaysia, SIRIM QAS International Malaysia, Sucofindo Indonesia, TUV NORD Indonesia and TUV Rheinland Malaysia [last checked on 5 November 2009]. RSPO Certification audits need to be initiated by palm oil producer, by contacting one of the approved Certification Bodies. The cost of audits is in principle born by the producers. In November 2009, the RSPO website lists 10 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. The RSPO website also lists the RSPO audits undertaken and ongoing: 17 in 2008 (from March to December), 27 in December (from January to October). The award of RSPO certificates is not without critics. Down to Earth, a NGO campaigning on issues affecting rural and indigenous communities in Indonesia, mentions that some of the RSPO

Name	INT - RSPO – Roundtable on Sustainable Palm Oil production
	certified companies are involved in unresolved conflicts with local communities. [DTE newsletter, June 2009, http://dte.gn.apc.org/80jop.htm]
Usefulness as assessment framework for Jatropha Mozambique	The RSPO is not directly useable for the Jatropha plantations. However lessons can be learnt from the RSPO for the RSB and RSB Jatropha. It has been successful in developing and implementing a certification scheme for the sustainable production of palm oil. It is accepted as Qualifying Standard for both environmental and social aspects in the RTFO. It started works on including principles on GHG emissions in 2008, but could not come to a consensus on this point yet.
Remarks	None
Sources	www.rspo.org http://dte.gn.apc.org Personal communications Dr. R de Man (who was the RSPO Organising Committee's facilitator between 2001 and April 2004).

I.9 NL - Cramer Criteria

Name	NL - Cramer Criteria
Website	http://www.senternovem.nl/mmfiles/Testing%20framework%20for%20sustainable%20biomass%2001-02-2007_tcm24-295616.pdf
Objective	The objectives of the Cramer testing framework are: • Providing the national government with a set of testable criteria that can be applied in legislation around electricity production and bio-fuels • Starting a mental process to arrive eventually at the desired certification. • Developing a certificate is a long term undertaking and will, therefore, continue also after the termination of this project assignment
Context	This testing framework puts emphasis on biomass for electricity and heat production and as transportation fuel, the framework can also be applied to biomass as raw material in chemistry. The framework is applicable to biomass of all origins. Where possible the project group has made use of existing standards for specific biomass flows. It was aimed to achieve maximum consistency with similar initiatives abroad, such as in the United Kingdom. This international coordination will eventually improve the desired practical feasibility of the framework, for instance in the fields of verification and enforcement.
Principles	The principles of the Cramer testing framework are as follows: 1. The greenhouse gas balance of the production chain and application of the biomass must be positive. 2. Biomass production must not be at the expense of important carbon sinks in the vegetation and in the soil. 3. The production of biomass-for-energy must not endanger the food supply and local biomass applications (energy supply, medicines, building materials). 4. Biomass production must not affect protected or vulnerable biodiversity and will, where possible, have to strengthen biodiversity. 5. In the production and processing of biomass the soil and the soil quality are retained or improved. 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. 7. In the production and processing of biomass the air quality must be maintained or improved. 8. The production of biomass must contribute towards local prosperity. 9. The production of biomass must contribute towards the social well-being of the employees and the local population.
Members/ stakeholders	Private companies, social organisations, financial institutions and the government were represented in the project group.
Users	The obligation to report on the sustainability of biomass lies with the company that has to comply with sustainability criteria and indicators in the context of the relevant policy instruments in the Netherlands. Often a company will not itself be the producer of biomass, but will buy biomass from a provider or producer. A supply chain responsibility was chosen. This indicates that the obligation to meet sustainability is passed on to suppliers and eventually to the producers in the countries of origin. For example a company in the Netherlands, the purchaser, will ask the producer of biomass to report on the sustainability of the biomass. This

Name	NL - Cramer Criteria
	can be laid down in the contract. A dialogue with stakeholders is a requirement here.
Usefulness of scheme for users	The framework forms the basis for NTA 8080 (as described in the next template).
History	At the request of the government a project group was established: 'Sustainable production of biomass' under the chairmanship of Prof. Dr. Jacqueline Cramer. From the beginning of 2006 they have brough together the different views on sustainable production. On this basis the project group has drawn up a framework for the testing of the sustainability of biomass production. The Dutch government intends to incorporate sustainability criteria for biomass into relevant policy instruments (NTA 8080).
Outlook	The present testing framework is the result of an extensive analysis of all sustainability themes around the future large-scale production of biomass, and the views on it of various parties involved. The testing framework has now been worked out sufficiently to be tested in practice. However, research will be needed into the indicators that are still lacking at the moment.
Certification	For some types of biomass there already exist systems for certification of the (sustainable) quality. Not all these systems have been specifically set up for energy crop application. These certification systems already include many sustainability criteria for biomass and also contain minimum requirements. The Cramer criteria have kept in line as much as possible with these existing systems. Some certification systems already comply with a large part of the criteria of the testing framework. The emission reduction of greenhouse gases by a specific source for biomass does not form a part of any certification system, so this will always have to be tested additionally. The project group recommends that the Dutch government supports and stimulates the further international development of a certification system for biomass. NTA8080 is working on a certification scheme. The Cramer criteria are a starting point for the development of this certification standard.
Usefulness as assessment framework for Jatropha Mozambique	The Cramer criteria are broadly supported in the Netherlands and are considered a minimum requirement for the application of biomass-for-energy purposes.
Remarks	None
Sources	http://www.senternovem.nl/mmfiles/Testing%20framework%20for%20sustainable%20biomass%2001-02-2007_tcm24-295616.pdf

I.10 NL - NTA 8080 - Netherlands Technical Agreement 8080

Name	NL - NTA 8080 - Netherlands Technical Agreement 8080
Website	www.nen.nl
Objective	The NTA 8080 describes the requirements for sustainable biomass-for-energy purposes (power, heat & cold and transportation fuels). Biomass indicates solid as well as liquid and gaseous bio-fuels. It is not applicable to biomass and bioliquids, respectively, used outside the field of energy. [NTA 8080]
Context	Dutch stakeholders, both government and economic operators, need a certification scheme for sustainably produced biomass-for-energy purposes in the short term. The development of a European standard takes too long in this respect. A Dutch technical agreement (NTA) that includes verifiable generic requirements based on the Cramer criteria is a suitable instrument to provide for this need. [NTA 8080]
Principles	The working group has followed the Cramer criteria as close as possible, but on a number of points the sustainability requirements have been formulated differently.
Members/ stakeholders	The text of this NTA has been established by the working group "Sustainability criteria for biomass" after consultation of other stakeholders including the members of the mirror committee "Sustainability criteria for biomass" and representatives of industries in the field of (primary) production of biomass. The working group "Sustainability criteria for biomass" consists of representatives of research institutes, universities, private companies, (national and international) NGOs and governmental organisations.
Users	Many interested stakeholders (up to now this means people who downloaded the NTA 8080 file) are energy producers (actors in the chain of energy production). Transporters are represented as well. Both are national and international players use the document. The amount of international users will probably increase since the English version is available since a short time. This NTA is intended to be applied at organisations that: o want to produce biomass-for-energy purposes and to sell this as sustainably produced; o want to convert biomass and sell this as sustainably obtained and sustainably converted; o want to trade and/or transport biomass and have to demonstrate that (a part of) the charge is produced, converted and obtained as sustainable; o want to use (converted) biomass for generation of energy or as transportation fuel (pure or blend) and shall demonstrate that (a part of) the biomass is produced, converted and obtained as sustainable. NTA 8080 is written to be used by a certifying body or auditor that will check the economic operators' compliance with the standard.
Usefulness of scheme for users	NTA 8080 can be applied both to assess equivalence of existing certification systems for sustainable biomass and to set up new certification systems. The NTA 8080 is not limited to a specific verification of compliance with regard to the Chain of Custody (CoC). Different systems (i.e. book and claim, mass balance and segregation) can be used to verify compliance to the NTA 8080.
History	In March 2009, the Dutch Sustainability criteria for biomass-for-energy purposes (NTA 8080) was completed. This NTA 8080 document is the result of a further specification of the "Testing framework for sustainable biomass" (the final report that was produced by the Cramer-commission in February 2007).
Outlook	A Commission of Experts (for sustainable produced biomass-for-energy purposes) is working on a document with the 'rules of the game' for certifying according to NTA 8080. This certification

Name	NL - NTA 8080 - Netherlands Technical Agreement 8080
	scheme will be published as NTA 8081. As soon as this certification scheme will be published, companies can be certified according to NTA 8080. At the NTA 8080 web portal (www.nta8080.org) a register will be published with the certified companies, including the field of application of the certificate. The certification scheme will be published and managed by NEN.
Certification	Certification against the requirements of this NTA shall occur by a certification body that is independent and has the necessary competence to assess the sustainability of the production and processing and conversion of biomass flows as well as the chain of custody of the primary producer to end user and to verify the accuracy of the calculation of greenhouse gas balance. NEN is currently working on the development of a certification scheme. Pilots take place, both nationally and internationally. After test with the developed schemes in the national field, they will be further improved. The next step would be to ascertain and publish the certification schemes. The aim is to do that in the course of 2010, for a first version, including the experience of the national pilots. Later the schemes will be validated internationally. The Commission has developed a draft questionnaire.
Usefulness as assessment framework for Jatropha Mozambique	Useful as it is one of the European comprehensive biomass certification schemes against which bio-energy projects can be certified in near future (foreseen for 2010). It is biomass generic, not biofuel specific. In the long run it is destined for biomass imported into the Netherlands.
Remarks	None
Sources	http://connect.nen.nl/~/Preview.aspx?artfile=507881&RNR=136604 http://np-net.pbworks.com/f/IUCN+NL+De+Nie+(2009)+EU+Directive+Renewable+Energy+compared+to+Dutch+NTA+8080.pdf www.nta8080.org Personal communication with ir. J.E.J. Dakhorst (consultant energy production, secretary of the working group “sustainability criteria for biomass”)

I.11 UK - RTFO - Bio-fuel Sustainability Meta-Standard

Name	UK – RTFO - The Renewable Transport Fuel Obligation Bio-fuel Sustainability Meta-Standard
Website	http://www.renewablefuelsagency.gov.uk
Objective	The RTFO Biofuel Sustainability Meta-Standard was developed with stakeholders to encourage the supply of sustainable feedstocks for biofuel production, and to provide a clear and credible benchmark for sustainability reporting in the UK. The standard covers key social and environmental principles and criteria, such as biodiversity protection and land rights. The scheme was designed to enable existing feedstock sustainability standards, such as the RSPO, to demonstrate compliance with the Meta-Standard, provided that they cover sufficient criteria.
Context	In response to the significant threat posed by climate change, the UK has national and international commitments to substantially reduce its carbon emissions and to increase the use of renewable energy, including in transport. The RTFO sets targets for increasing the use of renewable fuels in UK road transport with the aim of reducing carbon emissions.
Principles	The RFA (Renewable Fuels Agency) awards Renewable Transport Fuel Certificates (RTFCs) to suppliers of biofuels in the UK, ensures that obligated suppliers meet their annual Obligation and runs a world leading carbon and sustainability (C&S) reporting system. The RFA encourages UK suppliers to source the most sustainable biofuels, and its reporting and research helps to move forward the biofuel sustainability agenda.
Members/ stakeholders	The RFA (Renewable Fuel Agency) is the UK's independent sustainable fuels regulator, charged by the UK Government with running the RTFO.
Users	Carbon, sustainability and the RTFO Meta-Standard Carbon reporting under the RTFO is based on lifecycle analysis of emissions from direct land-use change, cultivation, processing and transport of biofuels. Suppliers belonging to the chain between agricultural production and transport fuel can report using our default values for fuel type, feedstock and country of origin, or calculate actual emissions using real data.
Usefulness of scheme for users	The environmental principles are that biofuel cultivation should not cause loss of carbon stocks or biodiversity or damage air, soil or water quality. The social sustainability principles are that cultivation should respect land rights and workers rights. A scheme that covers an adequate number of the criteria meets the 'Qualifying Standard' and can be reported as assurance of the sustainability of a biofuel. It is also possible for a company to arrange its own independent auditing against the Meta Standard. Biofuels from wastes and by-products are considered to automatically meet the Qualifying Standard for social and environmental sustainability. For a company to report that their feedstock met the Qualifying Standard there must be robust and reliable audit procedures for agricultural production, and a chain of custody to link the fuel being supplied in the UK to sustainable production.
History	The RTFO Meta-Standard was the world's first operational reporting scheme for biofuels implemented by a national government, and was intended as a stepping stone to mandatory performance requirements. From December 2010, biofuels that count towards either the RED or Fuel Quality Directive (FQD) targets will have to meet mandatory carbon and sustainability requirements defined by the EC. These include a minimum GHG saving threshold and the exclusion of feedstock from land with high biodiversity or high carbon stock. The requirements also include reporting items on environmental and social issues such as impacts on air, soil and water and labour conditions. The EC will report in 2010 on the impact of iLUC on GHG emissions from biofuels and ways to minimise that impact.

Name	UK – RTFO - The Renewable Transport Fuel Obligation Bio-fuel Sustainability Meta-Standard
Outlook	The RTFO is more than two years in operation. Several developments are ongoing. First of all the RFA is bringing the RTFO in line with the RED. The RFA is also supporting the development of new schemes like the Better Sugarcane Initiative; has benchmarked the testing versions of developing schemes like the Round Table on Responsible Soy (RTRS); is engaging with existing schemes like the Roundtable on Sustainable Palm Oil (RSPO) to explore improvements; and continuously monitors the effectiveness and compliance with the Meta-Standard of benchmarked schemes. The methodology addressed in the Gallagher Review should enable individual companies to initiate projects that can demonstrate that the resultant biofuel has a low risk of indirect effects. It sets out the criteria that would need to be complied with for this purpose and how compliance with these criteria could be demonstrated and verified. The RFA has included this methodology as an option for fuels supplied under the RTFO from April 2010 and will put it forward for consideration for inclusion in other biofuel sustainability schemes such as RSB and policies such as the RED.
Certification	Under the RTFO, where over 450,000 litres of biofuel per annum have been supplied by a supplier, the reliability of carbon and sustainability (C&S) information submitted to the RFA must be demonstrated through independent verification. The verifier's report must be submitted to the RFA alongside each supplier's Annual Report. The RFA does not currently provide a list of 'approved verifiers', but verifiers must be qualified to carry out audits against the International Standard on Assurance Engagements (ISAE 3000), which defines the requirements for limited scope engagements. Of the 2008/09 data, 94.3% has been verified. Another 0.3% of data from smaller suppliers was not subject to verification. The remaining 5.4% is from suppliers who did not adequately verify their data. Here are some valuable figures that might be interesting for Jatropha oil suppliers: • 1,284m litres of biofuel were supplied • 2.7% of UK road transport fuel was biofuel, above the Government's target of 2.5% • 82% of biofuel supplied was biodiesel • 46% average greenhouse gas saving was achieved, above the Government's target of 40% • 64% of requested data was reported, above the Government's target of 50% • 9% of fuel came from UK feedstocks • 20% of biofuel feedstocks met the Environmental Qualifying Standard, below the Government's target of 30% • 18% of biofuel feedstocks met the Social Qualifying Standard • 67m litres came from feedstock grown to a qualifying sustainability standard • 75m litres were independently audited to fully meet, or qualify against, the RTFO Meta-Standard • 157m litres came from wastes and by-products • 89m litres came from feedstock grown to a benchmarked standard • 99% of fuel from UK feedstocks met the Environmental Qualifying Standard

Name	UK – RTFO - The Renewable Transport Fuel Obligation Bio-fuel Sustainability Meta-Standard
Usefulness as assessment framework for Jatropha Mozambique	The UK – RTFO sustainability meta-standard is an operational standard that has proven its success and that covers carbon, environmental and social issues. It has templates, guidance and experience available building upon more than 2 years of operation. RTFO contains default values for the GHG-performance of Jatropha biodiesel in India. There are also some actual values available: bio-fuel producer D1 Oils has commissioned a study on the GHG lifecycle performance of Jatropha biodiesel in India following the RTFO GHG calculation methodology (Ecofys 2008)
Remarks	The indirect effects of biofuels are currently unaccounted for in the RTFO carbon methodology. The Gallagher Review found that greenhouse gas emissions from indirect land‐use change driven by the use of biofuels could be very large. If left unchecked, these could potentially cause an increase in overall carbon emissions rather than a reduction. However, it is extremely challenging to assess the impacts accurately and precisely.
Sources	www.renewablefuelsagency.gov.uk Personal communications Danilo Krahl, RFA

Annex II – List of other examples of sustainability assessment schemes

>> This annex provides an overview of other schemes and methodologies that have a general interest for the study.

This annex provides an overview of other schemes and methodologies that have a general interest for the development of a sustainability assessment for Jatropha production. The schemes are sorted following their geographical origin mentioned by country abbreviations (BE = Belgium, DE = Germany, INT = international, etc.).

These schemes were for various reasons not selected for detailed description under this study. The schemes and their content are briefly described hereafter. This list is the fruit of literature[27] and web search; it must be considered as a list of examples and is by definition not complete. For additional info and feedback: please contact the authors!

Name	Website and source	Short description and relevance for the study
BE Electra-bel	www.electrabel.be www.laborelec.com	Electrabel label is a certification procedure for imported biomass and developed by Electrabel, a European energy company based in Belgium, part of the GDF Suez group. For Electrabel, it is necessary to inform a potential supplier of all requirements made by Electrabel concerning the sustainability criteria for being accepted within the Belgian green certificate systems and the technical specifications of the product for firing it in a thermal power plant. The requirements for biomass to be accepted according to Electrabel's standards are concentrated in a document called ''Supplier Declaration''. This document is signed by a representative of the producer and verified and stamped by a certified inspection body before being delivered to the Belgian authority.
BR / SE Verified Sustainable Ethanol Initiative	www.sustainableethanoliniti ative.com	Together with Brazilian ethanol producers, the Swedish company SEKAB developed the Verified Sustainable Ethanol Initiative. Since August 2008 the first verified and traceable ethanol is available in Swedish pumps. An independent international company will be performing on-site checks to make sure the producers are meeting the system's requirements. Main sustainability aspects are included, as well as a CO2 reduction target: at least 85 % reduction in fossil carbon dioxide compared with petrol, from a well-to-wheel perspective. This initiative is important as a way of bridging the gap between production of sustainable ethanol and production of non-sustainable ethanol until EU legislation is in place.

[27] Several overviews of schemes exist in literature. We refer for example to BTG (2008), GBEP (2008), SEI and Tricorona (2008), Van Dam et al (2008), Imperial College (2010).

Name	Website and source	Short description and relevance for the study
BR Social Carbon	www.socialcarbon.org	SOCIALCARBON® is a (voluntary) Standard developed by the Ecologica Institute (Brazilian NGO (since 2000) specialized in Climate Change and the voluntary carbon market) to strengthen co-benefits of carbon offset projects and to enhance active participation of stakeholders. It is usually used in conjunction with another standard, for example, the VCS, ISO 14.064-2, TUV NORD Climate Change Standard or the CDM. Six aspects of the sustainability project are individually measured using the SOCIALCARBON hexagon: carbon, biodiversity, social, financial, human and natural. Two key elements of SOCIAL CARBON are the focus on a project's lifelong sustainability and the active participation of local communities. The methodology is applied and independently verified every year in order to encourage continuous improvement and to ensure that promises are kept.
DE Carbon Fix	www.carbonfix.info	CarbonFix is a non-profit organisation registered under the German law. CarbonFix is a leading climate forest Standard, with the aim to increase the amount of sustainable managed forests and decreasing global CO2 levels. The CarbonFix Standard follows the principles that projects should be "real, additional, measurable, permanent, independently verified, unique and have sustainable development benefits".
DE Renewable Energy Law DE Biomass Sustainability Ordinance	www.erneuerbare-energien.de/files/pdfs/allgemein/application/pdf/eeg_2009_en.pdf	On 1 January 2007 the Biofuel Quota Act came into force in Germany. The act introduces a quota for the minimum addition of biofuels to petrol and diesel in Germany (progressively increasing in the next years) and empowers the Government to establish sustainability criteria for biofuels that are eligible to participate in the quota system and benefit from tax relief. On 5 December 2007 the German government approved a national ordinance on requirements regarding the sustainable generation of biomass to be applied as bio-fuel. With this Biomass Sustainability Ordinance (BSO) (German: Biomasse-Nachhaltigkeitsverordnung, BioNachV) minimum requirements for the generation of biomass as biofuels are defined, the fields of CO2 savings and the main sustainability criteria are included. The BSO was notified both to the European Commission for review and to the WTO–Technical Barriers to Trade (TBT) Committee for comments.
EU FLEGT	http://webarchive.nationalarchives.gov.uk/ www.dfid.gov.uk/eupresidency2005/flegt.asp	The EU Action Plan for Forest Law Enforcement, Governance and Trade (FLEGT) is the European Union's response to the global problem of illegal logging and the international trade in illegally-harvested timber. The Action Plan sets out a new and innovative approach to tackling illegal logging, linking good governance in developing countries with the legal trade instruments and leverage offered by the EU's internal market.

Name	Website and source	Short description and relevance for the study
INT IDB Biofuels Sustainability Scorecard	www.iadb.org www.iadb.org/biofuelsscorecard/ www.biofuelstp.eu/sustainability.html	The Sustainable Energy and Climate Change Initiative (SECCI) and the Structured and Corporate Finance Department (SCF) of the Inter-American Development Bank (IDB) have created the IDB Biofuels Sustainability Scorecard based on the sustainability criteria of the Roundtable on Sustainable Biofuels (RSB). The Scorecard has been designed to be useful for project developers, including people at all stages of production; financial institutions; private investors; and environmental and social safeguard reviewers. While the Scorecard addresses many sustainability issues, it should not be used as a replacement for certification schemes and/or life-cycle assessment tools, but rather should inform these processes.
INT BSI	www.bettersugarcane.org	The Better Sugar Cane Initiative (BSI) is an open voluntary non profit multi-stakeholder organisation aiming to improve the social, environmental, and economic sustainability of sugar cane production. In November 2009 BSI released Version 2 of its standard for public consultation. BSI anticipates that Version 3 will be approved in March 2010. Auditor training is expected to start in February 2010 and the first real audits (as opposed to pilot audits already being carried out) are intended to start in Brazil in April 2010. Trading of BSI certificates is expected to commence in September 2010. The standard has members in key sugarcane producer countries including Brazil, Australia, India and the Dominican Republic. Membership coverage is expected to extend to Colombia and Thailand shortly. RTFO has benchmarked the BSI draft standard. It appears that the standard will meet the full RTFO Meta-Standard level for social aspects. The standard currently does not meet the Environmental Qualifying Standard level but comes very close. The standard is fully compliant with all mandatory environmental criteria, with the exception of one only (relating to restrictions on burning, which is widely practised in the manual harvesting of sugarcane in developing countries).
INT CCBS	www.climate-standards.org	The Climate, Community and Biodiversity Project Design Standards (CCB Standards) was developed by the Climate, Community and Biodiversity Alliance (CCBA) with feedback and suggestions from independent experts. CCBA is a partnership of non-governmental organizations, corporations and research institutes, such as Conservation International, The Nature Conservancy, CARE, Sustainable Forestry Management, BP and CATIE. The CCBS evaluate land-based carbon mitigation projects in the early stages of development. The CCB Standards foster the integration of best-practice and multiple-benefit approaches into project design and evolution. The standards: • Identify projects that simultaneously address climate change, support local communities and conserve biodiversity. • Promote excellence and innovation in project design. • Mitigate risk for investors and increase funding opportunities for project developers.

Name	Website and source	Short description and relevance for the study
INT E+Co	www.eandco.net	E+Co makes clean energy investments in developing countries. E+Co has created a detailed methodology to determine and evidence its impact. To calculate the return on investment, E+Co measures its enterprises across a menu of 34 social, environmental and financial indicators. The goal is to present a multi-level view of the impacts of alternative energy enterprises. E+Co collects data from each investee enterprise biannually and then compiles the results into an organizational summary - the Impacts Table. Capturing the impact of the clean energy investments is critical to demonstrating the effectiveness of E+Co's approach.
INT Fairtrade	www.fairtrade.net	Fairtrade Labelling Organizations International (FLO) is the organization that coordinates Fairtrade labelling at an international level. FLO unites the producer-, market- and business facing activities within the Fairtrade Labelling system. FLO develops the Fairtrade Standards; promotes the empowerment of Fairtrade-certified producers by supporting them in gaining and maintaining Fairtrade Certification and capitalizing on market opportunities; and facilitates global Fairtrade markets, to optimise benefits for producers.
INT FSC	www.fsc.org	In the FSC system, all forest certification standards should be in accordance with a set of International Forestry Principles and Criteria developed by FSC International. With equal votes for economic, social and environmental stakeholders. FSC already covers a large area and volume of certified forest. FSC certifies wood and fibre products only and is therefore not of direct relevance for first generation biofuels. Nonetheless, FSC may become a standard for the use of biomass for second generation biofuels, as well as for electricity and heat generation. RTFO benchmarked FSC. It meets is a RTFO Qualifying Standard for environmental matters, not for social matters.
INT GLOBAL GAP	www.globalgap.org	GLOBALGAP (formerly known as EUREPGAP) is a key reference for Good Agricultural Practices in the global market place. EUREPGAP started in 1997 as an initiative by retailers belonging to the Euro-Retailer Produce Working Group (EUREP). British retailers in conjunction with supermarkets in continental Europe were the driving forces. They reacted to growing concerns of the consumers regarding product safety, environmental and labour standards and decided to harmonise their own often very different standards. In 2007 the name was changed from EUREPGAP to GLOBALGAP. GLOBALGAP is a private sector body that sets voluntary standards for the certification of agricultural products around the globe. The aim is to establish ONE standard for Good Agricultural Practice with different product applications capable of fitting to the whole of global agriculture. GLOBALGAP is a pre-farm-gate standard, which means that the certificate covers the process of the certified product from farm inputs like feed or seedlings and all the farming activities until the product leaves the farm. GLOBALGAP is a business-to-business label and is therefore not directly visible to consumers.

Name	Website and source	Short description and relevance for the study
		GLOBALGAP certification is carried out by more than 100 independent and accredited certification bodies in more than 100 countries. It is open to all producers worldwide. GLOBALGAP consists of a set of normative documents. These documents cover the GLOBALGAP General Regulations, the GLOBALGAP Control Points and Compliance Criteria and the GLOBALGAP Checklist. As many other on-farm assurance systems have been in place for some time prior to the existence of GLOBALGAP, a way had to be found to encourage the development of regionally adjusted management systems and so to prevent farmers from having to undergo multiple audits. This is done by recognising existing national or regional farm assurance schemes that have successfully completed their benchmarking process, as an equivalent to GLOBALGAP. GLOBALGAP does not mention energy crops. Doesn't mention Jatropha as crop. RTFO has benchmarked GLOBALGAP and it does neither qualify on environmental issues nor on social issues. However, it was found to come very close to meeting the requirements of a Qualifying Environmental Standard.
INT IEA task force 40	www.ieabioenergy.com www.bioenergytrade.org	IEA Bioenergy provides an umbrella organisation and structure for a collective effort where national experts from research, government and industry work together with experts from other member countries. The core objective of the Task is to support the development of a sustainable, international, bioenergy markets, recognising the diversity in resources, biomass applications. Eventually, biomass may develop into commodity market, which could have multiple benefits, such as much improved market stability and competitive prices. International markets for bioenergy are immature and volatile and Task 40 has identified a range of barriers in the 2004-2006 working period that hamper sound development of (international) biomass markets at the moment and that should effectively be addressed. The vision of the Task on global bioenergy trade is that it will develop into a real 'commodity market' which will secure supply and demand in a sustainable way. Sustainability provides the key ingredient for long-term security.
INT ISO	www.iso.org	Use of ISO guidelines to monitor and prove independence of the standard setting process, accreditation and certification activities. ISO/TC 248 aims to prepare a global standard for sustainability criteria for bioenergy. The Secretariat of ISO/TC 248 is in hands of Germany (DIN) and Brazil (ABNT). Currently, it has 18 participating countries and 11 observing countries. Preparatory meetings for ISO/TC 248 have taken place and the first formal meeting is expected to take place in the first quarter of 2010 in Brazil.

Name	Website and source	Short description and relevance for the study
INT LEAF	www.leafuk.org	LEAF (Linking Environment and Farming) is a supplementary standard focusing on sustainable agriculture (viable agriculture which is environmentally and socially acceptable and ensures the continuity of supply of wholesome, affordable food while conserving and enhancing the fabric and wildlife of the countryside for future generations). LEAF was established in the UK to develop and promote Integrated Farm Management (IFM). Farms cannot be certified by LEAF alone, but first need a base standard such as GlobalGAP or ACCS. Inspections for LEAF and the base standard can be combined, thereby reducing costs. LEAF demonstrates IFM principles through a nationwide network of volunteer Demonstration Farms carrying out IFM and showing other farmers how to adopt it. LEAF works globally (members in 18 countries worldwide including Mozambique) and has members and LEAF Marque certified farms in many countries giving consumers the ability to choose food grown to IFM farming principles from around the globe. RTFO has benchmarked LEAF. LEAF meets the Qualifying Environmental Standard level, not the Social level.
INT PEFC	www.pefc.org	The PEFC Council (Programme for the Endorsement of Forest Certification schemes) is an independent, non-profit, non-governmental organisation, founded in 1999 which promotes sustainably managed forests through independent third party certification. The PEFC provides an assurance mechanism to purchasers of wood and paper products that they are promoting the sustainable management of forests. PEFC is a global umbrella organisation for the assessment of and mutual recognition of national forest certification schemes developed in a multi-stakeholder process. These national schemes build upon the inter-governmental processes for the promotion of sustainable forest management, a series of on-going mechanisms supported by 149 governments in the world covering 85% of the world's forest area.
INT Plan Vivo	www.planvivo.com	The Plan Vivo system is a set of standards, processes and tools used to develop and register payments (VERs) for ecosystem services (PES) projects in developing countries. Plan Vivo was recommended by the UK Government's Carbon Trust as one of four voluntary standards that meet its "VALID" criteria. Stakeholders and supporters include the United Nations Development Programme (UNDP), World Conservation Union (IUCN), United Nations Convention to Combat Desertification (UNCCD), the Clinton Foundation, the Hunter Foundation, Rainforest Alliance and others. Eligible project activities are: • Community-based agroforestry and woodlots • Restoration of degraded forests • Forest management and conservation (avoided deforestation) Three Plan Vivo projects are fully operational in: Mexico (Scolel Té), Uganda (Trees for Global Benefit), Mozambique (N'hambita Community Carbon) with two more under development in Malawi and Rwanda. No

Name	Website and source	Short description and relevance for the study
		reference to Jatropha or other energy crops in the projects registered.
INT RTRS	www.responsiblesoy.org	The soy industry is fundamental for economical growth and job creation in producer countries, but it has imposed the expansion of agricultural frontiers at a high social and environmental cost. The Round Table on Responsible Soy Association is an international multi-stakeholder initiative that brings together those concerned with the impacts of the soy economy. It's working to define what is responsibly-grown and processed soy and to promote the best available practices to mitigate negative impacts throughout the value chain. The RTRS's main instrument is dialogue between groups with different interests and backgrounds, in order to define common ground for action. RTRS was officially founded in November 2006. In 2007 the first set of draft criteria for the RTRS was published. A 'Field Testing Version' of the standard was published in May 2009. Field tests are planned to take one year. Alongside these, RTRS are working on the creation of guidelines to accredit certification bodies and the development of a certification system. The intention is to have all of these elements ready to be approved by members at the General Assembly meeting on 10 June 2010, at which point the standard, if approved, will go live. Work on the Chain of Custody system that RTRS will use began in November 2009. A paper is being developed to analyse the best options for RTRS. All options are being considered, but recognising the importance of mass balance to be accepted in the EU. Field tests are currently being carried out in Argentina, Brazil, Paraguay, and India, giving a representative spread of different plantation areas, production systems and technologies. These are also the countries for which national interpretations are being developed. RTRS operates an outreach programme to try to encourage other countries to join. In the medium term (2009/10) producer target countries are China, the US, Uruguay and Bolivia. In the longer term (aim 2011) RTRS is looking to expand to Africa (South Africa, Tanzania), Australia, and Canada. RTFO benchmarked the draft field testing version of the RTRS standard. This benchmark suggests that the standard will meet a Qualifying Environmental Standard level and the full RTFO Meta-Standard level on the social side.
INT SA 8000	www.sa-intl.org/index.cfm?fuseaction=Page.viewPage&pageID=473	In 1997, Social Accountability International (SAI) was established and convened an expert, international, multi-stakeholder, Advisory Board to partner in developing standards and systems to address workers' rights. Representatives of trade unions, human rights organizations, academia, retailers, manufacturers, contractors, as well as consulting, accounting, and certification firms, by consensus, cooperated to develop the Social Accountability 8000 (SA8000) Standard. Published in late 1997 and revised in 2001, the SA8000 Standard and verification system is a credible, comprehensive and efficient tool for assuring humane workplaces.

Name	Website and source	Short description and relevance for the study
INT SAN/RA	www.rainforest-alliance.org	The SAN a large coalition of NGOs striving to improve commodity production in the tropics, develops criteria for responsible farm management. Under the auspices of the Sustainable Agriculture Network (SAN), an international coalition of leading conservation groups, the Rainforest Alliance works with farmers to ensure compliance with the SAN standards for protecting wildlife, wild lands, workers' rights and local communities. Farms that meet these rigorous standards are awarded the Rainforest Alliance Certified seal. The standards development processes comply with the Code of Good Practice for Setting Social and Environmental Standards of the International Social and Environmental Accreditation and Labeling (ISEAL) Alliance. The ISEAL Alliance is an association of leading voluntary international standard-setting and conformity assessment organizations that focus on social and environmental issues. Through the collaboration of ISEAL members, certification processes are continually improved. SAN has a generic standard and several crop-specific standards for bananas, cacao, citrus, coffee, ferns and flowers. A standard addendum was issued in April 2009 for energy crops; covering palm oil, sugarcane, soy, and sunflower. Jatropha is excluded because of the toxicity of Jatropha fruit, which may have negative implications for children and communities around Jatropha farms. RTFO benchmarked the SAN/RA standard. The SAN/RA standard meets the Qualifying Environmental and Social Standard levels. It nearly covers the full Social RTFO Meta-Standard level.
INT UTZ	www.utzcertified.org	An UTZ certification allows coffee producers to demonstrate good agricultural practices and efficient farming. UTZ CERTIFIED enables producers of all sizes and origins to distinguish from conventional growers and creates access to fast growing buyer markets worldwide. UTZ CERTIFIED takes the anonymity out of the coffee market. It shows where the coffee comes from and gives the assurance that the coffee was produced in a responsible way. The Track and Trace monitoring system gives the opportunity to demonstrate responsibility throughout the coffee chain.
INT VCS	http://www.v-c-s.org/	The Voluntary Carbon Standard is designed to be a global benchmark standard for project-based voluntary verified emission reductions that provides a degree of standardization to the Voluntary Carbon Market and creates a credible voluntary emission reduction credit, the VCU that can be trusted, traded and used by VCM participants. Work to develop the Voluntary Carbon Standard was initiated by The Climate Group, the International Emissions Trading Association and the World Economic Forum in late 2005. Projects can apply for VCS, except projects that can reasonably be assumed to have generated GHG emissions primarily for the purpose of their subsequent reduction, removal or destruction (e.g. new HCFC-22 facilities). In February 2010 the list of VSC registered projects listed about 250 projects. No Jatropha projects have been registered so far, nor any palm oil or sugar cane projects. Although there are no restrictions on location, only one project in (sub-Saharan) Africa has been registered: a

Name	Website and source	Short description and relevance for the study
		reforestation project in Tanzania by GREEN RESOURCES. Yet over 30 fuel switch have been registered. The vast majority of these projects are in Brasil. The VCS Registry System is a custodial system for Voluntary Carbon Units (VCUs), the carbon offsets generated under the VCS Program. The VCS Registry System enables the tracking of all VCUs, from issuance to retirement. The VCS Registry System consists of three international companies that are contracted to act as registries. Project Proponents can achieve validation and verification for their GHG Project under either through individual validation and verification of a GHG project or through any combination of GHG projects or project categories that meets the requirements of the VCS 2007.1 as a grouped project. Although it is hard to provide exact prices of the carbon market and prices largely depend on the project type, an indication is provided in [SEI and Tricorona 2008]. They state that VCS version 1 VCUs are traded at €5 to €15.
NL GGL	www.greengoldcertified.org	Green Gold Label was established in 2002 by Dutch energy company Essent and Skall International (now Control Union Certifications). The Green Gold Label (GGL) programme is a certificate system for sustainable biomass. The system is currently owned by the independent Green Gold Label foundation. It covers production, processing, transport and final energy transformation. Green Gold Label (GGL) offers standards for specific parts of the supply chain, as well as standards for track&trace: it aims at a track and trace system for biomass from (by-) products from the power plant (and its green power it produces) back to the sustainable source. In this system mixing or contamination with non-intrinsic or environmentally harmful materials is prohibited. In every link of the chain written proof must be available that the GGL quality system is supported, sustained and maintained.
US Renewable Fuel standard (RFS)	www1.eere.energy.gov/biomass/ www.epa.gov/OMS/renewablefuels/ www.afdc.energy.gov/afdc/progs/view_ind_fed.php/afdc/390/0	As required by the Energy Policy Act of 2005, the U.S. Environmental Protection Agency (EPA) finalized RFS Program regulations in 2007. EPA, , is responsible for revising and implementing regulations to ensure that gasoline sold in the United States contains a minimum volume of renewable fuel. The Renewable Fuel Standard program will increase by four the volume of renewable fuel required to be blended into gasoline by 2022. The new RFS program regulations are being developed in collaboration with refiners, renewable fuel producers, and many other stakeholders.

Annex III – Comparison principles and criteria RSB, NTA 8080 and RED

>> This annex contains a detailed comparison of the principles and criteria of RSB, NTA 8080 and RED.

Background

In order to assess the completeness of the key assessment methodologies mentioned in the workplan, it was decided to compare the principles and criteria of the RSB principles and indicators, the NTA8080 principles and indicators and the sustainability criteria of the RED.

Process

The three methodologies were compared to each other per 'subject' as defined in column B of the Table. The principles of the three methodologies are provided in column C and the criteria in column D. A difficult aspect of the comparison was the question to what level of detail do we compare the methodologies. For example, RSB names the use of chemicals in principle 11d. NTA8080 also includes information about the use of chemicals but at a higher level of detail, which results in the fact that this aspect can be found in the table for RSB but not for NTA8080. Taking this in consideration, conclusions from the table should be drawn with great caution.

Sources / versions used:

- RSB (Roundtable on Sustainable Biofuels) version 1 (12 November 2009)
- NTA8080 (March 2009) supplied at 2009/10/29, published by NEN (Netherlands Standardization Institute)
- For RED we used the official text published in the Official Journal of the European Union on 6 June 2009, pages 16 - 62.

Scope

Scope of the three methodologies: RSB focuses on biofuels, the sustainability criteria of RED focus explicitly on biofuels and bioliquids, and NTA 8080 on all biomass-for-energy purposes and. In this sense NTA 8080 has a broader scope.

Conclusions

The table shows that RSB and NTA 8080 do not differ in a great extent from each other. All main subjects are covered by the requirements of both methodologies.

RED is somewhat different when comparing with RSB and NTA 8080, since it sets the basis for a mandatory standard, unlike the others. RED is more focused than RSB and NTA 8080 and contains targets for greenhouse gas reduction, former land use, and cross-compliance with EU agri-environmental legislation. The RED does not contain strict requirements for other subjects but has foreseen reporting requirements for these.

Another difference between the three methodologies is related to the reduction of the greenhouse gas emission and its calculation. RED has strict targets on greenhouse gas reduction. NTA8080 complies with

the RED targets. RSB expects to setting targets for greenhouse gas reduction in 2011 and is working on an appropriate greenhouse gas calculation methodology.

>> For the comparison table: see separate pdf document.

Annex IV – Bibliographic references

>> This annex contains a selection of the references used for this report.

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Anna Lerner, GTZ-ProBEC

Arjen Brinkman, RSB Jatropha Working Group, facilitator

Bernd van Dijk, TNT, in charge of TNT's Jatropha project in Malawi

Denilo Krahl, Renewable Fuels Agency, RTFO C&S team

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Maryline Guiramand, RSB, Senior Advisor Implementation

Petra Tanos, Marketing Associate, Sustainable Agriculture, Rainforest Alliance

Reinier de Man, private consultant, former facilitator RSPO

Rocio A Diaz-Chavez, Imperial College London, Research fellow

Sébastien Haye, RSB, Manager Environmental Affairs

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Annex V – Relevant sections of the project workplan

>> This annex contains the relevant sections of the project workplan.

V.1 Excerpt section 3.1 GRAM Description

	Project results + realisation date	Explanation in keywords
1	Methodology for the sustainability assessment of the Jatropha plantations approved by the international and local project teams by 1 January 2010	A criteria list will be developed on the basis of existing sustainability frameworks, such as the Testing framework for sustainable biomass/NTA8080, Version 1 Roundtable for Sustainable Bio-fuels, and the EU Renewable Energy Directive. It will take account of the specific circumstances of Jatropha projects. An operational assessment methodology will be developed. Criteria list and methodology will be proposed for approval to the international and local project teams.
2	Local stakeholder advisory group set up by 1 February 2010, and is positive about the work done by 1 August 2010	The process aims to involve and consult non-governmental organisations, research centres and policy makers in Mozambique on the sustainability of Jatropha biofuels, and to induce cooperation on sustainability issues between the different Jatropha projects in Mozambique.
3	Local data collection and compilation completed by 1 April 2010	So far, very little data on socio-economics and environment is compiled on the ground. Local teams will be contracted to assess relevant data for the sustainability assessment.
4	Sustainability assessment conducted by 1 July 2010 for the three participating plantations	The participating members of the Jatropha Alliance will conduct a sustainability assessment. The management letter accompanying the assessment report will include conclusions and recommendations at two levels: at company level and at macro level.
5	Results fed back into international forums by 1 August 2010	The results are fed back into the forums that currently develop frameworks for sustainability certification of biofuels, such as EU/CEN, Dutch government/NEN and the Roundtable for Sustainable Biofuels.
6	Results largely disseminated within the Jatropha industry worldwide by 1 September 2010	The documentation of the Mozambique case study will provide a benchmark for other Jatropha companies, in Mozambique and in other countries, to conduct similar sustainability assessments. The Jatropha Alliance will promote such assessments as an industry-wide best practice with the aim to set up similar regional initiatives outside Mozambique.
7	The project is managed well and finalised by 1 October 2010	The project is managed well during the whole project period. All activities are satisfactorily completed at the foreseen end-date.

V.2 Excerpt section 3.2 Activities and results

Activity 1	Translating the available sustainability criteria into a practical assessment methodology
Type of activity	Knowledge building
Result	Methodology for the sustainability assessment of the Jatropha plantations approved by the international and local project teams by 1 January 2010
Project period	Q4 2009

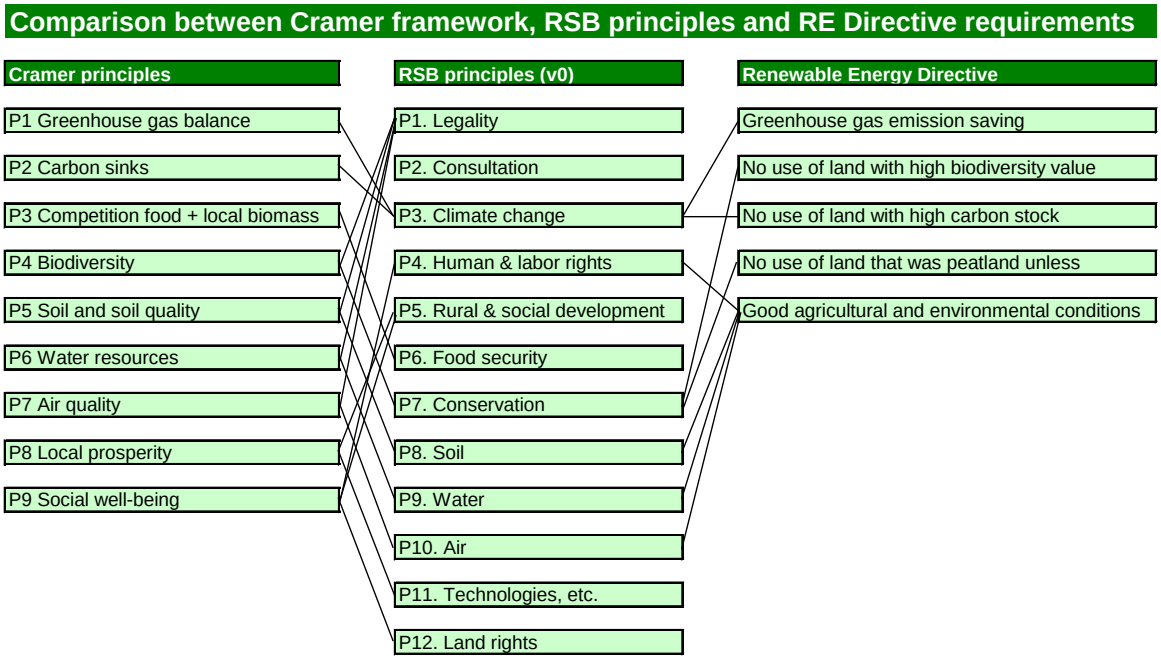
Numerous public and private initiatives of certification schemes that encourage sustainable biomass production are currently being undertaken; they are in various stages of development ranging from the discussion phase to full implementation.

The project team will review the most advanced and most relevant schemes, and use these as a framework for the sustainability assessment of the Jatropha plantations. As we see it today the primary focus will be on:

1. *Netherlands – "Testing framework for sustainable biomass*" (2007 – Cramer Commission). Technical agreement "*Sustainability criteria for biomass-for-energy purposes*" (NTA 8080 - March 2009). Certification scheme expected in course of 2009.
2. *International private initiative – Roundtable on Sustainable Bio-fuels (RSB*): A multi-stakeholder initiative to develop standards for the sustainability of bio-fuels. Draft Principles and Criteria (version 0) are open for consultation and discussion since August 2008. Version 1 is expected in the course of 2009.
3. *European Union – Renewable Energy Directive*, adopted on 17 December 2008. Sets sustainability criteria for bio-fuels and other bioliquids.

Chart 3.1 presents a schematic overview of the different principles used in these three criteria frameworks. The project team will continue to screen other frameworks and certification schemes, such as schemes developed in Germany (ISCC), United Kingdom (RTFO) and internationally (IEA Task Force 40), and give these schemes appropriate attention if important new developments occur.

Chart 3.1: schematic presentation of different frameworks



After the review, the project team will develop a draft methodology for the sustainability assessment of the three plantations. This methodology will take account of the specific circumstances for Jatropha projects and will use existing material and studies[28]. The methodology will contain a detailed questionnaire for data collection on the ground. A workshop will be scheduled in Mozambique in order to discuss the draft assessment methodology and the requirements for data collection with the staff of the plantations. They will be requested to comment the methodology, especially on local relevance and feasibility. Their comments will be incorporated.

[28] Examples of recent studies regarding sustainability aspects of Jatropha:
- Ecofys (2008) "*GHG performance Jatropha biodiesel*", commissioned by D1 Oils plc, June 2008. Study focusing on greenhouse gas emissions of the Jatropha chain, being one element of the sustainability frameworks. Effect of land use change is not included.
- German Advisory Council on Climate Change (2008): "World *in Transition - Future Bioenergy and Sustainable Land Use*", R&D project conducted for the German Federal Ministries of Research and Environment, October 2008. Comparison of different biomass crops including Jatropha. Study focusing on sustainable land use including long-term soil fertility, former land use, climate change mitigation potential, cost effectiveness.
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Activity 2	Regional embedding
Type of activity	Capacity building
Result	Local stakeholder advisory group set up by 1 February 2010, and is positive about the work done by 1 August 2010
Project period	Q4 2009 – Q3 2010

This activity aims to involve and consult non-governmental organisations, research centres and policy makers in Mozambique on the sustainability of Jatropha biofuels, and to induce cooperation on sustainability issues between the different Jatropha projects in Mozambique. The three local companies will set up and manage a regional stakeholder advisory group. Examples of organisations to be consulted are listed in Text box 3.1. The advisory group will be consulted to comment the assessment methodology as well as the assessment results. The advisory group will also be instrumental in setting up a regional chapter of the Jatropha Alliance in Mozambique.

Text box 3.1: examples of local stakeholders that will be consulted

- National Biofuel Council
- Ministries involved in the new biofuels strategy:
  - Ministry of Agriculture (MINAG)
  - Ministry of Energy (ME)
  - Ministry of Industry and Commerce (MIC)
  - Ministry of Science and Technology (MCT)
- Implementing organisations of the MINAG
  - Research agency (IIAM)
  - Rural extension services, under the Direcções Provinciais de Agricultura (DPAs), which assist over 175,000 small-scale farmers (approximately 15% of total) in nearly 90 districts throughout the country
  - Specialised organisations, e.g. the Centro de Promoção Agricola (CEPAGRI) on commercial crops
  - Departments, such as the Direcções Distritais de Agricultura (DDAs) managing agricultural programs on quality assurance, phytosanitary standards and land management (PROAGRI, Geografia e Cadastro).
- FUNAE, the National Energy Fund. FUNAE promotes low-cost power solutions throughout Mozambique, with the goal, to supply financial assistance to enterprises that contribute to rural energy supply.
- Local NGOs
  - Associacao Milha 8
  - Caritas Manica
  - Associacao Tchungamoio
  - Local NGOS of workers, villagers and smallholder farmers
- Local Jatropha projects and research
  - Community based Jatropha project in Mozambique of the Dutch FACT foundation. This project is intended to provide a linkage between the abstract sustainability discussion and on-the-ground work.
  - Technoserve, a business incubator looking into pro-poor biofuel business strategies, with an office in Maputo. Technoserve worked on Jatropha in the past.
  - ICRISAT (the International Crop Research Institute for the Semi-Arid Tropics) is a leading Jatropha research center with an office in Maputo. It cooperates closely with the Institute of Agricultural Research of Mozambique (IIAM).

Activity 3	Data collection and compilation
Type of activity	Knowledge building
Result	Local data collection and compilation completed by 1 April 2010
Project period	Q1 2010

So far, very little data on socio-economics and environment is compiled on the ground. Local socio-economic scientists, agricultural/forestry and biodiversity experts will be contracted to assess relevant data for the sustainability assessment. The experts will conduct in-depth on-the-ground assessment and interview to learn about the practical results and challenges of implementing pro-poor business models. Fieldwork will thus consist of a combination of opinion and fact finding. The methodology foresees in a detailed questionnaire that will guide the experts in their work, while the local and international teams will be available for further guidance if required.

Activity 4	Sustainability assessment
Type of activity	Knowledge building
Result	Sustainability assessment conducted by 1 July 2010 for the three participating plantations
Project period	Q2 2010

In this activity the actual sustainability assessment will take place. The data collected will be compiled and assessed, following a standard grid developed for the project. An example of the outcome summary of the sustainability assessment is given below in Chart 3.2. A comprehensive assessment report will document the methodology and results of the assessment. As part of the assessment, a workshop will be organised in Mozambique to discuss the draft results with the plantation management and with the local experts involved. Recommendations will be developed at the local and international levels:

- *Local Jatropha industry*: recommendations for improvement of the data availability and quality, for improvement on the sustainability of the biomass chain;
- *International Jatropha industry*: recommendation regarding the sustainability of the biomass chain, use of sustainability assessments and participation in certification schemes.

Chart 3.2: example outcome of the sustainability assessment (for illustrative purposes only)

Example - tentative outcome summary of the sustainability assessment	Site	Site 1	Site 2	Site 3
	Company	M1 Elaion	M2 Sun	M3 Agro
Principles (P) and criteria C - Testing framwork for sustainable biomass	Location	Dondo	Chimoio	Gondola
P1 The greenhouse gas balance of the production chain and application of the biomass must be positive.				
C1.1 The emission reduction of greenhouse gases amounts to at least 30% for biofuels		1.00	1.00	1.00
P2 Biomass production must not be at the expense of important carbon sinks in the vegetation and in the soil.				
C2.1 Conservation of above-ground (vegetation) carbon sinks when biomass units are installed.		0.50	0.25	0.25
C2.2 Conservation of underground (soil) carbon sinks when biomass units are installed.		0.50	0.50	0.75
P3 The production of biomass for energy must not endanger the food supply and local biomass applications (energy supply, medicines, building materials).				
C3.1 Insight into the change of land use in the region of the biomass production unit		1.00	0.75	0.75
C3.2 Insight into the change of prices of food and land in the area of the biomass production unit		0.25	0.25	0.25
P4 Biomass production must not affect protected or vulnerable biodiversity and will, where possible, have to strengthen biodiversity.				
C4.1 No violation of national laws and regulations that are applicable to biomass production and the production area.		0.00	0.75	0.75
C4.2 In new or recent developments, no deterioration of biodiversity by biomass production in protected areas.		0.25	0.25	0.25
C4.3 In new or recent developments, no deterioration of biodiversity in other areas with high biodiversity value, vulnerability or high agrarian,		0.25	0.25	0.25
C4.4 In new or recent developments, maintenance or recovery of biodiversity within biomass production units		0.25	0.25	0.25
C4.5 Strengthening of biodiversity where this is possible, during development and by the management of existing production units		0.25	0.25	0.25
P5 In the production and processing of biomass the soil and the soil quality are retained or improved.				
C5.1 No violation of national laws and regulations that are applicable to soil management.		0.75	0.50	0.75
C5.2 Best practices must be applied to retain or improve the soil and soil quality.		0.75	0.75	0.75
C5.3 The use of residual products must not be at variance with other local functions for the conservation of the soil.		0.50	0.50	0.50
P6 In the production and processing of biomass ground and surface water must not be depleted and the water quality must be maintained or improved.				
C6.1 No violation of national laws and regulations that are applicable to water management.		0.00	0.00	1.00
C6.2 Best practices must be applied to restrict the use of water and to retain or improve ground and surface water quality.		1.00	1.00	1.00
C6.3 No use must be made of water from non-renewable sources.		0.00	1.00	1.00
P7 In the production and processing of biomass the air quality must be maintained or improved.				
C7.1 No violation of national laws and regulations that are applicable to emissions and air quality.		0.00	0.00	1.00
C7.2 Best practices must be applied to reduce emissions and air pollution.		0.75	0.75	0.75
C7.3 No burning as part of the installation or management of biomass production units (BPUs).		0.50	0.75	0.75
P8 The production of biomass must contribute towards local prosperity.				
C8.1 Positive contribution of private company activities towards the local economy and activities.		0.00	0.50	0.75
P9 The production of biomass must contribute towards the social well-being of the employees and the local population.				
C9.1 No negative effects on the working conditions of employees.		0.75	0.50	0.75
C9.2 No negative effects on human rights		0.75	0.75	0.75
C9.3 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 s		1.00	0.75	1.00
C9.4 Positive contribution to the well-being of local population		0.75	0.50	1.00
C9.5 Insight into possible violations of the integrity of the company		0.00	0.25	0.25
Total number of criteria with a score > 0.5		**10**	**10**	**17**
Scale: [0] = no compliance or data absent > [1] full compliance				

Activity 5	Interaction with European institutions
Type of activity	Knowledge and capacity building, knowledge transfer
Result	Results fed back into international forums by 1 August 2010
Project period	Q3 2010

The draft assessment report will be fed into the forums that currently develop frameworks for sustainability certification of biomass and biofuels. Feedback will be actively sought through personal contacts with the project team. These forums might include:

- Compete (Competence Platform on Energy Crop and Agroforestry Systems for Arid and Semi-arid Ecosystems – Africa)
- Dutch Ministries of Agriculture and Environment/NEN
- European Commission/CEN
- International Fund for Agricultural Development
- Roundtable of Sustainable Biofuels
- United Nations Environment Programme (UNEP), roundtable on bio-energy
- United Nations Conference on Trade and Development (UNCTAD), Biofuels Initiative.

Activity 6	Dissemination within Jatropha Industry
Type of activity	Capacity building and knowledge transfer
Result	Results largely disseminated within the Jatropha industry worldwide by 1 September 2010
Project period	Q3 2010

The board of the Jatropha Alliance will discuss the assessment report and set the agenda for future work and orientations. The Jatropha Alliance will publish the assessment report on its website and will alert specialised media and other stakeholders through news alerts and a press release. The documentation of the Mozambique case study will provide a benchmark for other Jatropha companies to conduct similar sustainability assessments. The Jatropha Alliance anticipates to promote such assessments as an industry-wide best practice.

Activity 7	Project management
Type of activity	NA
Result	The project is managed well and finalised by 1 October 2010
Project period	Q4 2009 – Q3 2010

The Jatropha Alliance will manage the project and monitor progress. The Jatropha Alliance team has successfully implemented many projects of similar complexity.