

# **Carbon and Sustainability Reporting Within the Renewable Transport Fuel Obligation**

Technical Guidance Part 1

**Renewable Fuels Agency**

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The RFA is the UK's independent sustainable fuels regulator. Further information about biofuels in the UK can be found on the RFA website, [www.renewablefuelsagency.org](http://www.renewablefuelsagency.org).

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# Preface

Developing a sustainable market for renewable transport fuels is the focus of the Renewable Fuels Agency (RFA). Biofuels can deliver valuable greenhouse gas savings but carry the risk of accelerating local environmental degradation and social issues. Growing demand for biofuels is also increasing pressure on land and contributing to rising food prices. The RFA has a key role in facilitating the sustainable sourcing of biofuels and informing Government about the wider implications of the biofuels market created by the Renewable Transport Fuel Obligation (RTFO).

The RFA requires suppliers wishing to claim Renewable Transport Fuel Certificates (RTFCs) to provide a carbon and sustainability (C&S) report. This technical guidance describes how these reports are to be provided. Reporting is an important first step in creating a market for sustainable biofuels, but to be successful the scheme requires commitment from all parties in the biofuel supply chain and their stakeholders. The RFA acknowledges that information companies are being asked to provide is not routinely available and must be provided through supply chains. The RFA expects, and Government targets recognise the need for, continuous improvement such that by 2010 comprehensive sustainability data is provided for almost all biofuels supplied to the UK.

The RFA nevertheless expects companies to operate the Guidance to the best of their abilities from the start of the scheme. The RFA will rigorously enforce the provisions of the RTFO elaborated in this guidance; and where necessary, make use of all its powers to ensure companies deliver upon their responsibilities to source sustainable biofuels. The RFA will also report regularly on the performance of companies including recognising both excellent and under performance.

The Guidance has been developed following extensive stakeholder engagement and consultation and detailed piloting and is based upon the best available knowledge at the current time. The RFA will continue to develop the Guidance through benchmarking additional standards and producing new default factors and fuel chains and will periodically update the guidance in consultation with stakeholders. In updating the Guidance it will take account of, and seek to influence EU and global schemes for assurance of biofuels. Users of the guidance should also refer to the RFA website [www.renewablefuelsagency.org](http://www.renewablefuelsagency.org) for updates and notes for clarification.

## Acknowledgements

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A wide range of stakeholders input to the development of the guidance providing both expertise and advice. This includes the advisory groups that oversaw the work, companies who piloted the guidance and stakeholders that responded to the consultation.

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- Jeremy Woods – Imperial College

## Lead Piloting Companies

- BP
- Greenergy
- Harvest Energy
- Neste Oil
- Petroplus

The RFA are grateful to the ongoing support of stakeholders in developing the guidance, including through responding to the consultation for version 2.



# Executive Summary

## The Renewable Transport Fuel Obligation

The Renewable Transport Fuel Obligation (RTFO) is one of the Government's main policies for reducing greenhouse gas emissions from road transport. The RTFO commenced on 15 April 2008 and is intended to deliver reductions in carbon dioxide emissions from the road transport sector of 2.6 - 3.0 million tonnes per annum (equivalent to carbon savings of 700,000 - 800,000 tonnes) by 2010<sup>1</sup>, by encouraging the supply of renewable fuels.

The greenhouse gas (GHG) and sustainability impacts of different biofuels vary significantly. The GHG benefits of biofuels depend, among other things, on the system of cultivation, processing and transportation of feedstock. The introduction of biofuels can also lead to unintended negative environmental and social impacts. Maintaining public confidence in biofuels requires Government and the biofuels industry to find effective ways to manage the potential negative impacts of their increased demand.

## The Reporting Framework

To encourage suppliers to source sustainable biofuels the Renewable Fuels Agency (RFA) requires biofuel suppliers to submit reports on both the net GHG saving and the sustainability of the biofuels they supply, in order to receive Renewable Transport Fuel Certificates (RTFCs). These reports address the *direct* impacts arising from biofuel cultivation that are potentially within the influence of companies sourcing or producing biofuels through effective supply chain management. The RFA will separately monitor the potential *indirect* impacts of biofuel production such as indirect land use change or changes to food and other commodity prices.

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<sup>1</sup> The Government have consulted on a [draft RTFO amendment order \(2009\)](#) with revised targets in the light of the Agency's [Gallagher review recommendations](#), leading to 5% biofuels being reached in 2013/14 rather than 2010/11.

A reporting framework will encourage the supply of those biofuels which deliver a high level of greenhouse gas savings in a sustainable way and is an essential 'stepping-stone' towards a mandatory assurance scheme. The Government announced on 21 June 2007 that it:

- i. aims to reward biofuels under the RTFO in accordance with the **carbon savings that they offer from April 2010**, provided that this is compatible with World Trade Organisation rules and EU Technical Standards requirements, and is consistent with the policy framework being developed by the European Commission as part of the review of the Biofuels Directive, and subject to consultation on its environmental and economic impacts
- ii. aims to reward biofuels under the RTFO **only if the feedstocks from which they are produced meet appropriate sustainability standards from April 2011**, subject to the same provisos and consultation as above and subject to the development of such standards for the relevant feedstocks.<sup>2</sup>

This first step is necessary due to the currently limited availability of data and the need to test the robustness of the criteria and methodology in the absence of comprehensive internationally agreed standards. There are also concerns that the unilateral adoption by the UK of a mandatory assurance scheme at this early stage could give rise to possible breaches of World Trade Organisation rules.

The RFA will allow transport fuel suppliers, at least initially, to report that they do not have information on the sustainability or otherwise of their biofuel. This is in recognition of the fact that it may be difficult to provide information for some fuels – particularly those purchased on the spot market.

The RFA also requires annual, independently verified reports of overall supplier performance from suppliers applying for certificates. These reports will demonstrate suppliers' performance in sourcing sustainable biofuels with good GHG savings<sup>3</sup>.

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<sup>2</sup> The Government is expected to consult on the implementation of the Renewable Energy Directive, and the Fuel Quality Directives, later in 2009.

<sup>3</sup> Suppliers claiming fewer than 450,000 RTFCs in an obligation period will not need to submit an annual report.

## Targets

The Government has set targets for three key aspects of the reporting scheme. The targets are not mandatory (and there is no penalty for failing to meet them) but illustrate the level of performance which the Government expects from fuel suppliers.

| <b>Annual supplier target</b>                                       | <b>2008-2009</b> | <b>2009-2010</b> | <b>2010-2011</b> |
|---|------------------|------------------|------------------|
| Percentage of feedstock meeting a Qualifying Environmental Standard | 30%              | 50%              | 80%              |
| Annual GHG saving of fuel supplied                                  | 40%              | 45%              | 50%              |
| Data reporting of renewable fuel characteristics                    | 50%              | 70%              | 90%              |

The RFA will publish reports of individual supplier performance on GHG savings and sustainability on an annual basis and possibly more frequently. The RFA will also make available other information on the environmental impact of the RTFO including information from annual and monthly carbon and sustainability (C&S) reports that identifies individual suppliers. This will be undertaken in a manner which is consistent with the requirements of the Freedom of Information Act 2000 and Environmental Information Regulations 2004. The RFA will make information available in a way that is accessible to consumers and which could inform their purchasing decisions. In compiling this information the RFA will recognise and protect the commercial sensitivity of information such as individual suppliers' sales volumes from which market shares can be deduced.

## Reporting Requirements

Obligated suppliers who wish to claim RTFCs must submit monthly and (if they apply for 450,000 or more certificates in an obligation period) annual C&S reports. Monthly reports should be submitted by the 15th day of the month following the month in which the fuel was supplied, or the next working day where this falls on a weekend or public holiday. This would mean that, for example, reports for the period 15 June 2009 to 14 July 2009 (inclusive) would be due by 17 August 2009. Non-obligated suppliers must report whenever they wish to claim RTFCs.

Under the RTFO Order, obligation periods run from April 15 to April 14 of the following calendar year. Annual reports must be submitted by 28 September in the same year and must be accompanied by an independent verifier's statement. The annual report will not initially be linked to the issuing of certificates, but failure to submit an annual report is in breach of a requirement which may incur a civil penalty.

## Monthly Reports

As explained above, obligated suppliers must report monthly on the fuels they have supplied, and non-obligated suppliers must report whenever they wish to receive RTFCs for the fuel they supply. The term 'monthly reporting' is used throughout this document to differentiate these reports from annual reports.

Monthly reports must list the 'administrative batches' of feedstock or fuel. An 'administrative batch' is one with homogenous sustainability characteristics. For example, three tanker movements of fuel with identical sustainability characteristics (e.g. palm oil from Malaysia meeting the requirements of the Roundtable on Sustainable Palm Oil (RSPO)) could be reported as a single batch. But a separate tanker movement of palm oil from Malaysia without any form of assurance would have to be reported as a different batch to the ones above, as its sustainability characteristics would be different. The summary monthly data sheet is represented in Table A.

**Table A Monthly reporting summary format – example data**

| General Information |                                  |            |                           |                   |                  | Sustainability Information |           |              |                         | Carbon Information                       |                |
|---------------------|----------------------------------|------------|---------------------------|-------------------|------------------|----------------------------|-----------|--------------|-------------------------|--|----------------|
| Batch number        | Internal Batch number (optional) | Fuel type  | Quantity of fuel (litres) | Biofuel Feedstock | Feedstock Origin | Standard                   | Env Level | Social Level | Land use on 30 Nov 2005 | Carbon intensity g CO <sub>2e</sub> / MJ | Accuracy level |
| 33001               |                                  | Bioethanol | 250,000                   | Wheat             | UK               | LEAF                       | QS        | -            | Cropland                | 61                                       | 2              |
| 33002               |                                  | Bioethanol | 100,000                   | Wheat             | France           | GlobalGAP                  | -         | -            | Grassland               | 157                                      | 2              |
| 33003               |                                  | Bioethanol | 250,000                   | Sugar beet        | UK               | ACCS                       | RTFO      | -            | Cropland                | 35                                       | 5              |
| 33004               |                                  | Bioethanol | 1,000,000                 | Sugar cane        | Brazil           | Meta-Standard              | RTFO      | RTFO         | Cropland                | 25                                       | 2              |
| 33005               |                                  | Bioethanol | 500,000                   | Unknown           | Unknown          | Unknown                    | -         | -            | Unknown                 | 115                                      | 0              |
| 33006               |                                  | Biodiesel  | 1,000,000                 | Oilseed rape      | UK               | ACCS                       | RTFO      | RTFO         | Cropland                | 55                                       | 2              |
| 33007               |                                  | Biodiesel  | 250,000                   | Oilseed rape      | Unknown          | Unknown                    | -         | -            | Unknown                 | 93                                       | 2              |
| 33008               |                                  | Biodiesel  | 500,000                   | Palm oil          | Malaysia         | RSPO                       | QS        | QS           | Cropland                | 47                                       | 2              |
| 33009               |                                  | Biodiesel  | 500,000                   | Soy               | Argentina        | Basel                      | QS        | QS           | Grassland               | 166                                      | 2              |
| 33010               |                                  | Biodiesel  | 250,000                   | UCO               | UK               | By-product                 | QS        | QS           | By-product              | 13                                       | 2              |
| 33011               |                                  | Biogas     | 150,000                   | Dry manure        | UK               | By-product                 | QS        | QS           | By-product              | 36                                       | 2              |

QS = Qualifying Standard; RTFO = RTFO Meta-standard

## Annual Reports

Annual reports contain aggregate monthly information and in addition details of:

- Actions that have been taken to increase the sourcing of sustainable biofuels and biofuels with a lower carbon intensity, including actions to promote production on idle land.
- Environmental management system certificates.
- Successful prosecutions for breaches of compliance with any environmental and/or social regulations related to biofuels activities;
- Existing verified environmental / corporate responsibility reporting

## Scope and Principles for RTFO C&S Reporting

### Greenhouse Gas Calculation Methodology

The GHG calculation methodology is based on a well-to-wheel approach that includes all significant sources of GHG emissions. This enables direct comparison of fuel chain GHG savings on a like for like basis. Detailed calculations have been made for the principal feedstocks supplying the UK biofuel market:

- Bioethanol and ETBE from: cheese by-product, corn, molasses, sugar beet, sugar cane, sulphite liquor and wheat.
- FAME (fatty acid methyl ester) biodiesel from: coconut, corn oil, jatropha, oilseed rape, palm, soya beans, sunflower, tallow and used cooking oil
- Hydrogenated Vegetable Oil (HVO) biodiesels from: coconut, jatropha, oilseed rape, palm, soya beans, sunflower and tallow.
- Biogas from anaerobic digestion of MSW (municipal solid waste) and manure.
- Pure plant oil from: Oilseed rape and soya beans.

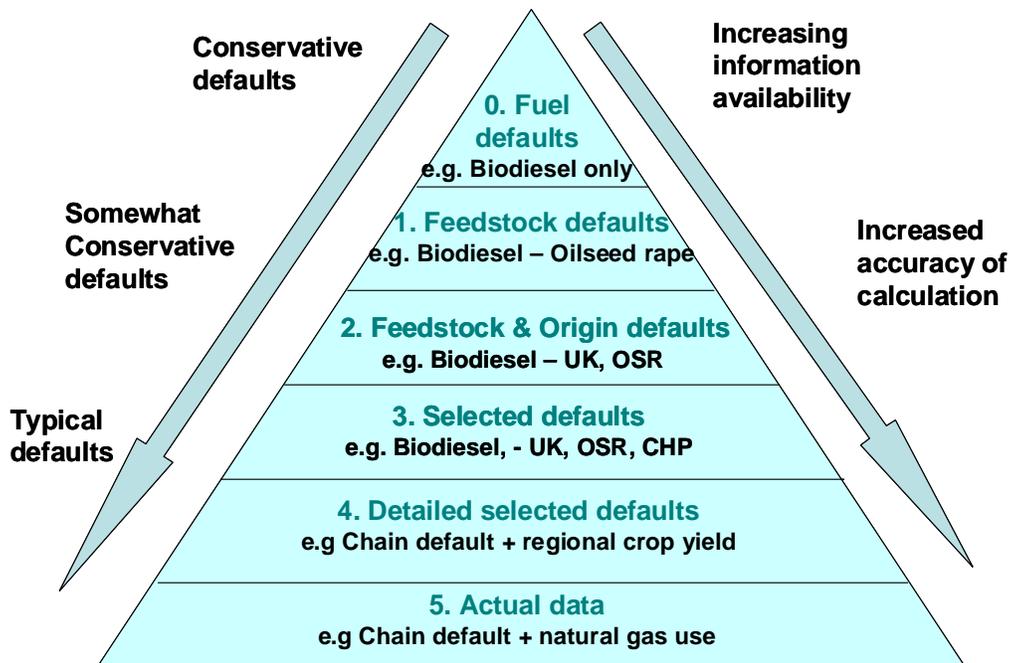
The Government is likely to extend the RTFO order to other renewable transport fuels if they are introduced into the UK market on a significant scale. It is also possible that new feedstocks or production

pathways become available for existing renewable transport fuels covered by the scheme. In these circumstances, the RFA will develop new fuel chains and/or default values for these fuels.

The calculation methodology uses default values that provide estimates of the carbon intensity of different fuel chains. This enables suppliers with specific information about their supply chain to provide additional qualitative or quantitative data to improve the accuracy of the calculation. High level default values (where little is known about the origin of the supply chain) represent conservative GHG savings; but typical default factors (where the calculation includes more detailed information) are less conservative in order to encourage the supply of information. This is illustrated in Figure 2. This flexible calculation method provides a practical, cost-effective and credible reporting system. Suppliers are also required to report on the type of information used in their calculations through reporting the accuracy levels 0 to 5 illustrated in Figure 2.

There is a software tool for fuel suppliers called the [Carbon Calculator](#) which can help prepare monthly reports to the RFA. This tool can also help calculate carbon intensity values using actual data for fuel chains.

**Figure 1 Hierarchy of default values used**



## Land Use Change

Where information on previous land use has been supplied the calculation includes the effect on overall GHG savings. Default values for specific land use changes are based on Intergovernmental Panel on Climate Change (IPCC) guidelines. Where information is not provided (i.e. 'unknown' is reported) the calculation does not require the use of a default value for land use change impacts. This is because the systems providing assurance on the provenance of fuels are in the very early stages of development, and applying an assumed land use change carbon impact 'penalty' to the fuels in question would be overly conservative. This approach is unlikely to be acceptable in the longer term, particularly if biofuels are rewarded on the basis of the amount of carbon saved and if mandatory sustainability standards apply. In the meantime the RFA will conduct an analysis of the potential emissions associated with 'unknown' land use changes as part of its regular reports to the Secretary of State.

## Environmental and Social Principles

The principal environmental and social risks arising from biofuel production (such as deforestation and loss of biodiversity) arise at the farm/plantation. Therefore sustainability reporting is focused on this part of the supply chain. A future evolution of the scheme may encompass the wider supply chain including processing and transportation of feedstock.

The reporting scheme is based on a 'meta-standard' approach under which existing voluntary agri-environment and social accountability schemes have been benchmarked against the RTFO Biofuel Sustainability Meta-Standard. The Meta-Standard comprises seven principles identified in Table B. Existing schemes have been benchmarked to assess the extent to which the feedstock produced in accordance with each scheme can be considered sustainable.

**Table B Environmental and social principles**

| <b>Environmental principles</b>  |
|--|
| 1. Biomass production will not destroy or damage large above or below ground carbon stocks     |
| 2. Biomass production will not lead to the destruction of or damage to high biodiversity areas |
| 3. Biomass production does not lead to soil degradation  |
| 4. Biomass production does not lead to the contamination or depletion of water sources         |
| 5. Biomass production does not lead to air pollution   |
| <b>Social principles</b>   |
| 6. Biomass production does not adversely affect workers rights and working relationships       |
| 7. Biomass production does not adversely affect existing land rights and community relations   |

Benchmarked standards that meet the required level of sustainability are called Qualifying Standards. Additional standards will be benchmarked as they become available. Suppliers are able to report any standard that has been benchmarked against the Meta-Standard.

Suppliers are also able to provide evidence of successful supplementary checks to demonstrate that feedstock complies with all the Meta-Standard criteria if they so wish.

The RFA recognises that there are some wider environmental and social issues (such as land use change arising as an indirect result of biofuel production and/or the impacts of biofuels on commodity prices) that are difficult to monitor and manage effectively at the fuel supplier level. The RFA will report on these potential effects as part of its annual report to the Secretary of State.

**Table C** Benchmarked and Qualifying Standards (see Annex A for further details)

| Benchmarked standard   | RTFO Environmental Meta-Standard? | RTFO Social Meta-Standard? | Qualifying Environmental Standard? | Qualifying Social Standard? |
|--|-----------------------------------|----------------------------|------------------------------------|-----------------------------|
| Assured Combinable Crops Scheme (ACCS)                       | Yes                               | No                         | Yes                                | No                          |
| Basel criteria for soy (Basel)                               | No                                | No                         | Yes                                | Yes                         |
| Forest Stewardship Council (FSC)                             | No                                | No                         | Yes                                | No                          |
| Genesis Quality Assurance (QA)                               | Yes                               | No                         | Yes                                | No                          |
| Linking Environment And Farming Marque (LEAF)                | No                                | No                         | Yes                                | No                          |
| Roundtable on Sustainable Palm Oil (RSPO)                    | No                                | No                         | Yes                                | Yes                         |
| Round Table on Responsible Soy (RTRS) <sup>4</sup>           | No                                | No                         | Yes                                | Yes                         |
| Sustainable Agriculture Network/Rainforest Alliance (SAN/RA) | No                                | No                         | Yes                                | Yes                         |
| Standards that do not meet Qualifying Standard level         |                                   |                            |                                    |                             |
| FEDIOL   | No                                | No                         | No                                 | No                          |
| German Qualität und Sicherheit (QS)                          | No                                | No                         | No                                 | No                          |
| GlobalGAP  | No                                | No                         | No                                 | No                          |

<sup>4</sup> RTRS is a standard in development

|  |    |    |    |    |
|--|----|----|----|----|
| International Federation of Organic Agriculture Movements (IFOAM) <sup>3</sup> | No | No | No | No |
| Proterra   | No | No | No | No |
| Scottish Quality Crops (SQC)   | No | No | No | No |
| Social Accountability 8000 (SA8000)  | No | No | No | No |

## Treatment of by-products

To minimise the burden on business, suppliers are not required to report on criteria where the risk of adverse impacts is minimal. An objective, risk-based metric has been used to develop this principle. Therefore, where a feedstock represents less than 10% of the farm or factory gate value it is considered a by-product.

However, recent analysis has indicated that using by-products for biofuels can potentially have significant indirect effects, including on the net lifecycle greenhouse gas emissions biofuels offer. Refer to 2.3 for an explanation of these issues.

Biofuel producers purchasing these by-products will have little influence on the sustainability of the production process for the original product. For example, a biofuel producer buying tallow will have little or no influence on the standards applied to rearing the cattle. All feedstock considered by-products (such as cooking oil and tallow) are listed in Annex Band suppliers are not required to report on the sustainability standard or land use in respect of biofuels produced from these feedstocks. Instead, suppliers should report all general information required and then enter 'by-product' into the remaining sustainability columns within the monthly report. Suppliers are however still required to report the carbon intensity of such fuels, and this should be derived using the GHG calculation methodology.

## Chain of Custody

To validate the accuracy of C&S reports a Chain of Custody must be established from the feedstock producer to the fuel supplier. Where an existing standard operates its own certifiable Chain of Custody this should be used to report the carbon and sustainability information. The Chain of Custody must be specific to the feedstock and standard it represents.

Where the existing assurance scheme does not operate its own Chain of Custody, or where the Chain of Custody is broken within the supply chain a 'mass balance' approach should be used. This requires suppliers in the supply chain to account for their product on a 'units in – units out' basis but does not require physical separation of certified feedstock or fuel from uncertified feedstock. It ensures that for every unit of sustainable biofuel sold the corresponding sustainable feedstock has been produced.

A 'mass balance approach' requires suppliers throughout the chain to keep input and output records of the feedstock characteristics entering and leaving the plant or process stage. The feedstock or fuel sold will have its C&S characteristics described on an invoice or related document. Each physical batch of fuel taken out of a containment should be supplied with feedstock information which is representative of the actual feedstock mix of the fuel in the containment. Within a feedstock type a company can freely allocate available C&S data to outgoing batches.

'Equivalence trading' is practiced under the Common Agricultural Policy of the EU under which crops grown under contract for energy use can be substituted by other material from within the EU which has not been grown under an energy contract. The RTFO will not affect this practice. The C&S characteristics of the feedstock may be substituted in such exchanges as long as certain conditions, specified in this document, are met.

## Verification

The reliability of claims made in annual C&S reports must be demonstrated through an independent verification (or assurance engagement) and the verifier's report must be submitted to the RFA alongside the annual report. The annual reports must be verified by auditors who are qualified to carry out audits against the International Standard on Assurance Engagements (ISAE 3000), which defines

requirements for limited-scope engagements. The annual report and verifier's statement will be made publicly available.

Additional guidance for verifiers can be found on the [RFA website](#).

# 1 Introduction

This chapter introduces the concepts behind the report's requirements.

## 1.1 The Renewable Transport Fuel Obligation (RTFO)

The UK's Renewable Transport Fuel Obligation (RTFO) commenced on 15 April 2008. It is intended to deliver reductions in carbon dioxide emissions from the road transport sector of 2.6 - 3.0 million tonnes per annum (equivalent to carbon savings of 700,000 - 800,000 tonnes) by 2010, by encouraging the supply of renewable fuels<sup>5</sup>.

The RTFO Order ([2007 No. 3072](#)) imposes a legal obligation on suppliers of fossil fuel for road transport ('obligated suppliers') to produce Renewable Transport Fuel Certificates (RTFCs) demonstrating that an amount of renewable fuel has been supplied which is equivalent to a specified percentage of their total fuel sales. The certificates can be earned from the suppliers' own sales of renewable fuels, or can be acquired from other suppliers of renewable fuels. Alternatively, obligated suppliers can 'buy out' of their obligation by paying a buy-out price to the Office of the Renewable Fuels Agency (RFA). Suppliers of renewable transport fuels who are not obligated suppliers will also be able to apply for RTFCs.

## 1.2 Biofuels and the environment

The greenhouse gas (GHG) and sustainability impacts of different biofuels vary significantly. The GHG benefits of biofuels depend, among other things, on the system of cultivation, processing and transportation of feedstock. The production of biofuels can also lead to unintended negative environmental and social impacts. Key issues include potential competition with food crops leading to increased

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<sup>5</sup> The Government have consulted on a [draft RTFO amendment order \(2009\)](#) with revised targets in the light of the Agency's [Gallagher review recommendations](#), leading to 5% biofuels being reached in 2013/14 rather than 2010/11.

commodity prices. Increased pressure for land may lead directly to deforestation to make way for new plantations with biodiversity impacts and loss of carbon stocks that negate any GHG savings. Changes in land use may also occur indirectly where existing agricultural activities are displaced into areas of high conservation value by crops for energy. The Agency's [Gallagher review](#) concluded that these indirect effects are potentially significant and cannot be ignored if biofuels are to provide a genuinely sustainable part of the suite of measures required to reduce GHG emissions from transport. Currently methodologies are not yet sufficiently well developed to adequately account for indirect effects and therefore these technical guidelines do not take such effects into account. The RFA will support the development of measures to account for indirect effects for the future, and has consulted on a draft methodology to consider the effects of using wastes and by-products for biofuels (c.f. [C&S consultation part 3](#)).

Some biofuels production has also been associated with social concerns including labour rights, land conflicts and health concerns related to improper use of agrochemicals. Biofuel demand can also create local economic benefits, however, including employment opportunities.

### 1.3 Managing concerns about biofuels

Maintaining public confidence in biofuels requires Government regulators and the fuels industry to find effective ways to manage potential negative impacts of their increased demand. Most risks can be managed by suppliers through effective assurance schemes that demonstrate that biofuels are sourced sustainably. Competition with food and indirect land use changes need to be managed by national governments and international bodies through other policy mechanisms.

Although there are a number of standards for the sustainable production of some of the feedstocks used to produce biofuels, there are no internationally agreed standards that define sustainable biofuels. The unilateral adoption by the UK of a mandatory assurance scheme at this early stage could give rise to international trade issues.

Under the [Renewable Transport Fuel Obligation Order 2007](#) it is a pre-condition for issue of a Renewable Transport Fuel Certificate (RTFC) that a carbon and sustainability report is made to the RFA. The reporting requirement should lead to more information being made

public about the impacts of biofuels and should help consumers to compare the environmental and social benefits of the different biofuels supplied to the market.

## 1.4 About this document

This document is the Technical Guidance for suppliers on the requirements for carbon and sustainability reporting under the RTFO, as updated for 2009/10 following public consultation.

The development of the original document was informed by two separate advisory groups comprising representatives from the oil and biofuel industries as well as from environmental NGOs and other key stakeholders. It was overseen by a steering group comprising representatives from the Department for Transport, the Department for Environment Food and Rural Affairs and the Low Carbon Vehicle Partnership.

The detailed contents of this document derive from two projects by independent consultants to develop:

- a practical methodology for the quantification of the greenhouse gas savings offered by different biofuels; and
- instructions and guidance to enable suppliers both to apply the methodology effectively and to report on the environmental and social aspects of biofuels being supplied to the UK market.

The Renewable Transport Fuel Obligation Order 2007 implemented the RTFO scheme and established the Office of the Renewable Fuels Agency (RFA) to act as the RTFO Administrator.

Suppliers who apply for RTFCs have to provide C&S reports to the RFA as a pre-condition of certificate issue. However, the information that is reported requires the engagement of the renewable fuel supply chain and therefore several chapters are relevant for other entities involved in the production and distribution of biofuels including agricultural producers, fuel refiners, traders and distributors.

This document is in two parts and sets out the detail of the reporting scheme including how and what parties should report. The reporting frequencies and how information should be passed through the supply chain are also described. High level default values for the carbon intensity of different renewable fuels are also provided. In addition, this document also sets out the Government's targets for supplier reporting performance. These targets are set by the Government, not the RFA.

Chapter 2 sets out the basic principles of GHG intensity calculation and the use of standards in determining sustainability of feedstock production.

Chapter 3 sets out the recommended details of the monthly reporting requirements for suppliers who wish to claim RTFCs.

Chapter 4 sets out who must report on an annual basis and what should be included within the annual report.

Chapter 5 sets out the Government's targets for supplier reporting performance.

Chapter 6 sets out how the required information within the supply chain should be passed from one party to another within the supply chain and how a chain of custody should be operated.

Chapter 7 sets out an overview of verification requirements and provides advice on good practice to assist with the verification process.

Annex A – Annex F provide further guidance and detail on sustainability reporting including a list of standards that suppliers may use to report on the sustainability of their renewable fuels, the results of the benchmarking exercise, a list of feedstocks considered by-products and guidance on the definition of idle land.

Annex G - Annex I provide the relevant information the RFA requires on the GHG savings of the fuel supplied. High level default values are provided where little is known about the supply chain.

Annex J identifies the 'standard terms' to be used for entering data into the RFA's reporting systems.

Part 2 of this document – Carbon reporting Default values and Fuel Chains - sets out the fuel chains and how to carry out calculations to assess the carbon intensity of specific fuels chains. Those parties who have more detailed information on the fuel supply chain, either qualitative information (e.g. the biofuel production facility uses a combined heat and power (CHP) system) or quantitative information (e.g. specific natural gas use in the conversion plant) can use it to undertake their own calculations rather than rely on the high level defaults provided in this document.

### **Guidance for Verifiers**

In addition, the RFA has produced guidance specifically for verifiers responsible for providing an assurance statement on the annual reports individual suppliers are required to produce. As this document

goes to press, this guidance forms [part 2 of an RFA consultation document available](#). A final version will be published on the RFA website shortly.

### **Additional documents**

Additional documents that summarise the principles behind this Guidance are available from the [RFA website](#) and comprise:

- a) *Sustainability reporting within the RTFO: Framework report*. This document, written by Ecofys, describes the principles behind the reporting requirements for environmental and social issues.
- b) *Carbon reporting within the RTFO: Methodology*. This document, written by E4tech, provides the principles behind the carbon calculation methodology.
- c) Documents providing detailed benchmarks on feedstock standards are also available on the [RFA website](#).

## 2 Scope and Principles for RTFO C&S Reporting

This chapter provides a high level description of the methodology for greenhouse gas calculations and the meta-standard approach for sustainability reporting.

### 2.1 Greenhouse Gas Calculation Methodology

The GHG calculation methodology is based on a well-to-wheel approach that includes all significant sources of GHG emissions. This enables direct comparison of fuel chain GHG savings on a like for like basis. Detailed calculations have been made for the principal feedstocks supplying the UK biofuel market:

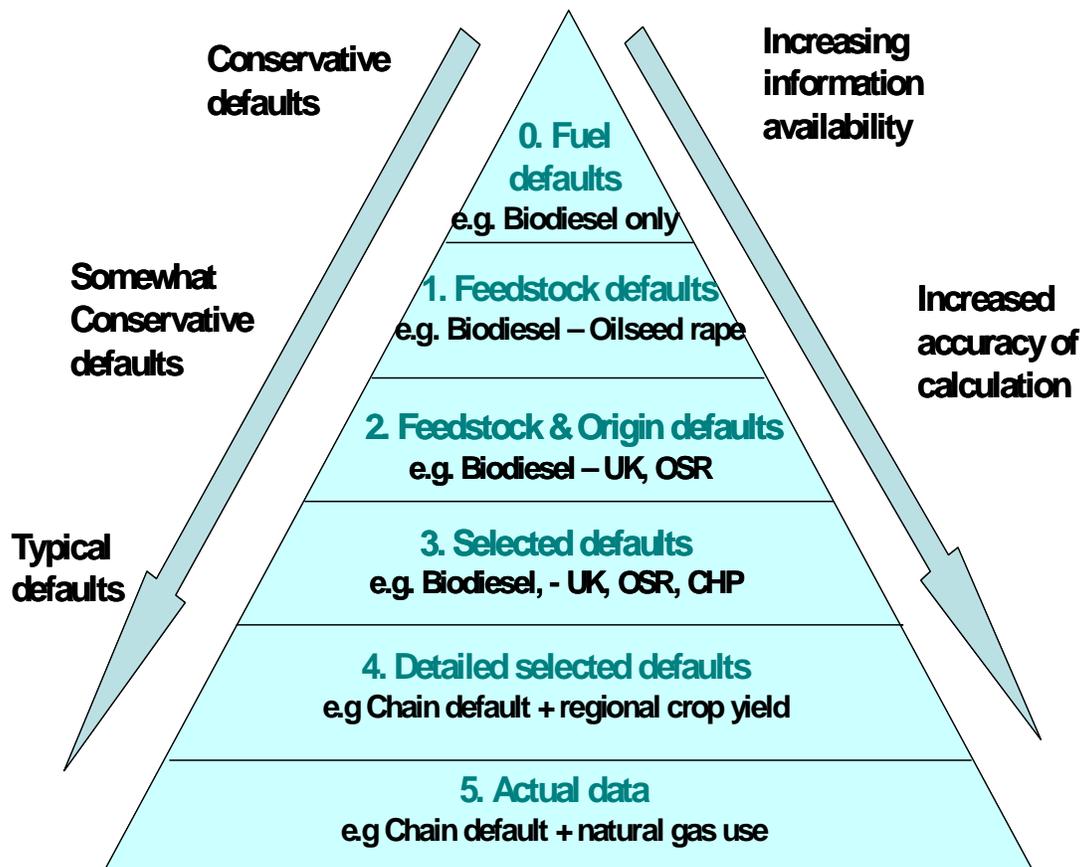
- Bioethanol and ETBE from: corn, cheese by-product, molasses, sugar beet, sugar cane, sulphite liquor and wheat;
- FAME biodiesel from: coconut, corn oil, jatropha, oilseed rape, palm, soya beans, sunflower, tallow and used cooking oil;
- Hydrogenated biodiesels from: coconut, jatropha, oilseed rape, palm, soya beans, sunflower and tallow;
- Biogas from anaerobic digestion of MSW and manure;
- Pure plant oil from: Oilseed rape and soya beans.

The guidance covers all biofuels currently covered by the scheme and the main feedstocks for their production. The Government is likely to extend the RTFO order to other renewable transport fuels if they are introduced into the UK market on a significant scale. It is also possible that new feedstocks or production pathways will become available for existing renewable transport fuels covered by the scheme. In these circumstances, new calculations and default values will be developed. This document provides instructions for reporting on fuel chains not currently defined.

The calculation methodology uses default values that provide estimates of the carbon intensity of different fuel chains. It enables suppliers with specific information about their supply chain to supply

additional qualitative or quantitative data to improve the accuracy of the calculation. The approach is designed to encourage better reporting of data by applying more conservative GHG savings to high level default values (where little is known about the origin of the supply chain); but typical default factors where the calculation includes more detailed information. This is illustrated in Figure 2. Suppliers are also required to report on the type of information used in their calculations through reporting the levels 0-5 illustrated in Figure 2.

**Figure 2 Hierarchy of default values used**



## 2.2 Land use change

Where information on previous land use has been supplied the calculation includes the effect on overall GHG savings. Default values for specific land use changes are based on Intergovernmental Panel on Climate Change guidelines. Where information is not provided (i.e. 'unknown' is reported) the calculation does not require the use of a default value for land use change impacts. This is because the systems providing assurance on the provenance of fuels are in the

very early stages of development, and applying an assumed land use change carbon impact 'penalty' to the fuel in questions would be an overly conservative approach. This approach is unlikely to be acceptable in the longer term however, particularly if biofuels are rewarded on the basis of the amount of carbon saved and if mandatory sustainability standards apply. In the meantime the RFA will conduct an analysis of the potential emissions associated with 'unknown' land use changes as part of its regular reports to the Secretary of State.

## 2.3 Sustainability Reporting

The principal environmental and social risks arising from biofuel production (such as deforestation and loss of biodiversity) arise at the plantation. The sustainability reporting therefore focuses on this part of the supply chain. A future evolution of the scheme may encompass the wider supply chain including processing and transportation of feedstock.

The sustainability reporting approach makes use of existing voluntary agri-environment and social accountability schemes to minimise the cost and administrative burden of compliance. These existing schemes have been benchmarked against the RTFO Biofuel Sustainability Meta-Standard. The Meta-Standard comprises seven principles identified in Table 1 and includes a number of criteria and indicators (as set out in Annex C) to assess the extent to which the feedstock produced in accordance with each scheme can be considered sustainable.

**Table 1 Environmental and social principles**

| <b>Environmental principles</b>  |
|--|
| 1. Biomass production will not destroy or damage large above or below ground carbon stocks   |
| 2. Biomass production will not lead to the destruction or damage to high biodiversity areas  |
| 3. Biomass production does not lead to soil degradation                                      |
| 4. Biomass production does not lead to the contamination or depletion of water sources       |
| 5. Biomass production does not lead to air pollution   |
| <b>Social principles</b>   |
| 6. Biomass production does not adversely affect workers rights and working relationships     |
| 7. Biomass production does not adversely affect existing land rights and community relations |

The RFA will monitor the wider environmental and social principles that are not within the control of the supply chain, including indirect land use change and competition with food prices and separately report on these.

A comprehensive range of existing sustainability standards and certification schemes<sup>6</sup> have been benchmarked as illustrated Table 2. Benchmarked standards that meet the required level of sustainability are called Qualifying Standards. The RFA will benchmark additional standards as they become available and will also review the effectiveness of existing standards on a regular basis. Suppliers are able to report any standard that has been benchmarked against the RTFO Meta-Standard in Table 2 and Table 3.

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<sup>6</sup> Note a 'standard' is a document that sets out system and/or performance norms (in this case sustainability principles and criteria). In many cases a standard is a key component of a broader certification scheme. A 'certification scheme' typically includes a standard, a mechanism for certification and an accreditation system. The RFA has benchmarked both sustainability standards (e.g. Basel criteria) and certification schemes (e.g. RSPO).

Unless specified otherwise, the term sustainability standard as used in this Technical Guidance refers to both standards and certification schemes benchmarked by the RFA.

Qualifying Standards meet most, but not all, of the RTFO Biofuel Sustainability Meta-Standard criteria (as indicated in Annex C). The criteria which are not fully met by a Qualifying Standard are called 'gap criteria'. Suppliers are able to provide evidence of additional supplementary checks against these 'gap criteria' to demonstrate that feedstock complies with all the Meta-Standard criteria and therefore meet the highest sustainability level.

**Table 2 Benchmarked standards that meet at least Qualifying Standard level (see Annex A for further details)**

| Benchmarked standard   | RTFO Environmental Meta-Standard? | RTFO Social Meta-Standard? | Qualifying Environmental Standard? | Qualifying Social Standard? |
|--|-----------------------------------|----------------------------|------------------------------------|-----------------------------|
| Assured Combinable Crops Scheme (ACCS)                       | Yes                               | No                         | Yes                                | No                          |
| Basel criteria for soy (Basel)                               | No                                | No                         | Yes                                | Yes                         |
| Forest Stewardship Council (FSC)                             | No                                | No                         | Yes                                | No                          |
| Genesis Quality Assurance (Genesis QA)                       | Yes                               | No                         | Yes                                | No                          |
| Linking Environment And Farming Marque (LEAF)                | No                                | No                         | Yes                                | No                          |
| Roundtable on Sustainable Palm Oil (RSPO)                    | No                                | No                         | Yes                                | Yes                         |
| Round Table on Responsible Soy (RTRS) <sup>7</sup>           | No                                | No                         | Yes                                | Yes                         |
| Sustainable Agriculture Network/Rainforest Alliance (SAN/RA) | No                                | No                         | Yes                                | Yes                         |

Those benchmarked standards that do not meet the Qualifying

<sup>7</sup> RTRS is a standard in development

Standard level can still be reported. Reporting these non-qualifying standards will count towards the target for data reporting, but will not count towards the Qualifying Standard target. The standards to which this applies are shown in Table 3.

**Table 3 Benchmarked standards that do not meet Qualifying Standard level (see Annex A for further details)**

| Benchmarked standard  | RTFO Environmental Meta-Standard? | RTFO Social Meta-Standard? | Qualifying Environmental Standard? | Qualifying Social Standard? |
|---|-----------------------------------|----------------------------|------------------------------------|-----------------------------|
| FEDIOL  | No                                | No                         | No                                 | No                          |
| German Qualität und Sicherheit (QS)                               | No                                | No                         | No                                 | No                          |
| GlobalGAP   | No                                | No                         | No                                 | No                          |
| International Federation of Organic Agriculture Movements (IFOAM) | No                                | No                         | No                                 | No                          |
| Proterra  | No                                | No                         | No                                 | No                          |
| Scottish Quality Crops (SQC)                                      | No                                | No                         | No                                 | No                          |
| Social Accountability 8000 (SA8000)                               | No                                | No                         | No                                 | No                          |

To minimise the burden on business the RFA does not currently require suppliers to report on criteria from by-products where the risk of adverse sustainability impacts has been thought to be minimal. An objective, risk-based metric has been used to develop this principle. Where a feedstock represents less than 10% of the farm or factory gate value it is considered a by-product (see Annex B).

However, recent analysis has indicated that using by-products for biofuels can potentially have significant indirect effects, including on the net lifecycle greenhouse gas emissions biofuels offer. For example,

in the case of tallow, a report commissioned by the Department for Transport found that the Renewable Transport Fuel Obligation could create an incentive to divert tallow away from its existing uses to biodiesel production. According to the [report](#), this diversion could result in a net increase in GHG emissions due to more carbon intensive feedstocks replacing tallow in its existing uses – as a result biodiesel produced from tallow would achieve no GHG saving.

Following the publication of this report, the Government asked the RFA to consider revising the default carbon intensity values for tallow biodiesel. The RFA has considered the AEA Technology report and has discussed the technical details of the arguments surrounding the report with the biodiesel, tallow and oleochemical industries. The RFA agrees that there may be indirect GHG emissions caused by using tallow for biodiesel, and that these should be taken into account when assessing GHG savings for biofuel support policies. However, the RFA does not believe that changing the default values under the RTFO at the present time is appropriate, for the following reasons:

- The RTFO default values will have to be revised to be in line with the default values and methodology proposed under the Renewable Energy Directive (RED);
- The boundaries of the RED GHG assessment methodology currently preclude consideration of GHG emissions which occur as an indirect consequence of using tallow (or wastes / by-products more generally) for biofuel production.

The RFA has consulted on a methodology for considering the indirect emissions of using by-products and set out a programme of work it will follow in 2009/10 to gain a better understanding of indirect GHG emissions from wastes and by-products (c.f. [consultation](#)).

## 3 Monthly reporting

This chapter sets out the requirements for monthly C&S reporting by fuel suppliers to the RFA. It illustrates the format for monthly reporting and describes how monthly reporting relates to the issuing of RTFCs.

For simplicity, the C&S reports included in an application for RTFCs are referred to as 'monthly' reports throughout this chapter to distinguish them from annual reports.

Some of the sustainability data requirements are not applicable to certain feedstocks: recommended instructions are provided on reporting in these cases.

This chapter is likely to be of particular interest to obligated suppliers and any other fuel suppliers who wish to claim RTFCs.

### 3.1 Reporting frequency and timetable

C&S reports will be required as part of any application for certificates. Monthly reports must be submitted to the RFA in the month after the month in which the duty payment on the fuel was reported to HM Revenue and Customs. Further detail of reporting frequencies and timetables are found within the Operational Guidance on the RTFO.

### 3.2 What to report

C&S reports on biofuels must be per 'administrative batch', where an administrative batch is any amount of product with identical sustainability characteristics which are:

- Fuel type
- Biofuel feedstock
- Feedstock Origin
- Standard(s) (including supplementary checks where these have been performed)
- Land use on 30 November 2005

The **total volume of the administrative batches in a C&S report should equal the volume of fuel reported in the application for certificates** i.e. the volume of renewable fuel supplied in the period.

The RFA requires a C&S report for every application for an RTFC, and will not issue RTFCs where no such report has been provided.

### 3.3 Reporting on the sustainability of renewable fuels

The reporting scheme aims to make maximum use of existing voluntary agri-environmental and social accountability schemes. It therefore encourages transport fuel suppliers to demonstrate that their biofuel feedstock is produced in accordance with the criteria of the RTFO Biofuel Sustainability Meta-Standard, through certification where possible to an existing accountability scheme, such as the Assured Combinable Crops Scheme (ACCS).

Through a benchmarking process that compares existing schemes against the Meta-Standard, two different levels of feedstock sustainability for the RTFO have been defined. Existing accountability schemes have been classified as meeting either:

- The 'Qualifying Standard' for social and/or environmental criteria - representing an acceptable level of sustainability; or
- The 'RTFO Biofuel Sustainability Meta-Standard' - representing a higher level of sustainability - by meeting fully the requirements of the RTFO Biofuel Sustainability Meta-Standard.

Transport fuel suppliers are able to report that their feedstock meets an accountability scheme that does not achieve these levels of performance, provided it has been benchmarked against the Meta-Standard and is listed in Table 3 / Annex A.

#### 3.3.1 The Qualifying Standard

##### What is it?

Existing standards which meet most, but not all, of the RTFO sustainability criteria underlying the principles outlined in Chapter 2 are accepted as proof of an acceptable level of sustainability. These standards are called Qualifying Standards.

The RTFO Biofuel Sustainability Meta-Standard criteria which are not fully met by a Qualifying Standard are called 'gap criteria'. The number of criteria that an existing standard must address to be accepted as a Qualifying Standard is described in Annex A.

Several existing standards only address either environmental issues or social issues. Therefore the Qualifying Standard is defined separately for environmental and social criteria. If the existing standard sufficiently addresses both environmental and social criteria it can be an environmental Qualifying Standard and a social Qualifying Standard.

Current standards which meet at least the Qualifying Environmental Standard level are:

- Assured Combinable Crops Scheme (ACCS)
- Basel Criteria for Soy (Basel)
- Forest Stewardship Council (FSC)
- Genesis Quality Assurance (Genesis QA)
- Linking Environment and Farming (LEAF)
- Roundtable on Sustainable Palm Oil (RSPO)
- Round Table on Responsible Soy (RTRS)<sup>8</sup>
- Sustainable Agriculture Network/Rainforest Alliance (SAN/RA)<sup>9</sup>

Current standards which meet at least the Qualifying Social Standard level are:

- Basel Criteria for Soy (Basel)
- Roundtable on Sustainable Palm Oil (RSPO)
- Round Table on Responsible Soy (RTRS)<sup>8</sup>
- Sustainable Agriculture Network/Rainforest Alliance (SAN/RA)<sup>9</sup>

For further details on all the standards that have been benchmarked and can be reported see Annex A.

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<sup>8</sup> RTRS is a standard under development. The RFA will benchmark the next version when it is available.

<sup>9</sup> Note that this benchmark result refers to the November 2005 version of the SAN standard, which is not permitted for use for a number of key biofuel feedstocks (sugarcane, palm oil and jatropha). SAN plan to publish an addendum to their main standard, which can be used for these feedstocks in March 2009. The RFA intend to benchmark the addendum once available.

## How to claim a Qualifying Standard

There are three methods a party can use to demonstrate compliance with the Qualifying Standard level:

- a) Using an existing Qualifying Standard;
- b) Using a non-Qualifying Standard with evidence of successful independent audit against gap criteria; or
- c) Successful independent audit against the full RTFO Meta-Standard, in which it is found that the farm/plantation meets the Qualifying Standard level.

For a biofuel supplier to claim that its feedstock was grown in accordance with a Qualifying Standard that is an operational certification scheme, it must be able to show that the farm from which the feedstock originates has a certificate which proves that it is certified to the Qualifying Standard level. In the case where the Qualifying Standard operates a book and claim system with tradable certificates (which has been approved for use by the RFA), the biofuel supplier must be able to show sufficient of the relevant certificates for the amount of biofuel claimed. For more details, see Chapter 6 on the Chain of Custody.

If the Qualifying Standard is an operational standard with no associated certification scheme, companies must provide evidence of a successful third party independent audit against the standard's criteria. The audit must meet the requirements of the RFA's Norm for Audit Quality (see section A.5 in Annex A), with the exception of criteria 2 (Management of the audit programme) and 7 (Accreditation process for Accreditation Bodies). MINOR MUSTs in the norm should be treated as recommendations only.

It is also permissible to report that a feedstock was grown to a qualifying standard level if a non-Qualifying Standard (from those listed in Table 3) is complemented by supplementary checks on the 'gap criteria' which show that the farm meets the Qualifying Standard level. In this case proof must be provided of certification against the non-Qualifying Standard in addition to documented proof of a successful audit against the gap criteria as they relate to the Qualifying Standard claimed. In this case, both certification against the existing standard and the supplementary checks must meet the RFA's Norm for Audit Quality (see section A.5 in Annex A), with the exceptions listed above. MINOR MUSTs in the norm should be treated as recommendations only.

Note the RFA **strongly recommends** that in cases where an existing Qualifying Standard is operational, parties do not look to carry out independent audits against the RTFO Biofuel Sustainability Meta-Standard (option c)).

For situations where there is no operational Qualifying Standard, or standards are still under development (e.g. the Better Sugarcane Initiative (BSI) and the Round Table on Responsible Soy (RTRS)), short term solutions are recommended for sustainability reporting under the RTFO. These are described in Annex A.

### 3.3.2 The RTFO Biofuel Sustainability Meta-Standard

#### **What is it?**

The full RTFO Biofuel Sustainability Meta-Standard sets out the aim for sustainability performance under the RTFO in the medium term. Two existing standards meet the full RTFO Meta-Standard for the Environmental criteria. However, it is recognised that for many feedstocks there are no operational standards that meet the full RTFO Meta-Standard requirements. It is anticipated that, where available, companies will focus on using the mechanisms developed by existing sustainability assurance schemes and will primarily aim to report a Qualifying Standard. It is hoped that existing Qualifying Standards and non-Qualifying Standards will address the gap criteria within their standard (e.g. by establishing a reference year for land use change) and will thereby develop towards full equivalence with the RTFO Sustainable Meta-Standard.

Standards which meet the full RTFO Environmental Meta-Standard level are:

- Assured Combinable Crops Scheme (ACCS)
- Genesis Quality Assurance (QA)

There are currently no standards that meet the full RTFO Social Meta-Standard level. For further details on all the standards that have been benchmarked and can be reported see Annex A.

#### **How to claim the RTFO Biofuel Sustainability Meta-Standard**

It is recognised that the RTFO Biofuel Sustainability Meta-Standard level is currently not available for a wide range of biofuel feedstocks. However there are four alternative methods a party can use to demonstrate compliance with the full RTFO Biofuel Sustainability Meta-Standard:

- a) Using a standard that meets the full RTFO Meta-Standard;
- b) Using an existing Qualifying Standard with evidence of successful independent audit against gap criteria to reach full RTFO Meta-Standard level;
- c) Using a non-Qualifying Standard with evidence of successful independent audit against gap criteria to reach full RTFO Meta-Standard level; or
- d) Successful independent audit against the full RTFO Meta-Standard.

In the same way as claiming an existing Qualifying Standard above, a party can provide evidence of certification against an existing operational sustainability certification scheme which meets the full RTFO Biofuel Sustainability Meta-Standard.

A party can alternatively provide proof of certification against one of the Qualifying Standards listed in Table 2, and proof of a successful audit against the gap criteria between the Qualifying Standard reported and the RTFO Meta-Standard level.

In such cases, supplementary checks must be performed by a body which is accredited to the Qualifying Standard and with qualifications relevant to the gap criteria.

Parties may also provide proof of certification against one of the benchmarked standards that does not meet a Qualifying Standard level, listed in Table 3, and proof of a successful audit against the gap criteria between the benchmarked standard reported and the RTFO Meta-Standard level. In this case, both certification against the existing standard and the supplementary checks must meet the requirements of the RFA's Norm for Audit Quality (see section A.5 in Annex A), with the exception of criteria 2 (Management of the audit programme) and 7 (Accreditation process for Accreditation Bodies). MINOR MUSTs in the norm should be treated as recommendations only.

Parties may also carry out an independent third party audit against the full RTFO Biofuel Sustainability Meta-Standard criteria, in which the requirements of the RFA's Norm for Audit Quality (see section A.5 in Annex A) are met, with exceptions as listed above. MINOR MUSTs in the norm should be treated as recommendations only.

Note the RFA **strongly recommends** that in cases where an existing standard which meets the full RTFO Meta-Standard level or the Qualifying Standard is operational, parties do not look to carry out

independent audits against the RTFO Biofuel Sustainability Meta-Standard (option d)).

### 3.3.3 How are biofuels produced from by-products treated?

For by-products such as manure and tallow, data on the sustainability characteristics (sustainability standard and land use) of the by-product are not required. Annex B sets out the list of those considered by-products for the start of the RTFO C&S reporting.

In a monthly report, suppliers are required to complete the general batch information columns with information on Biofuel Feedstock and Feedstock Origin, and to report 'by-product' for the sustainability information columns. Reporting the carbon intensity of the biofuel is still required and can be derived using the default values in Annex G or calculated using Part 2 of this document.

Reporting 'by-product' in the relevant fields achieves both the environmental and social Qualifying Standard level.

## 3.4 Filling in the monthly report

The following table and text provides a summary of the information that is required within the monthly C&S report. An example summary of reported batches is shown in Table 4 to illustrate particular points.

### 3.4.1 Providing general batch information

**The following general information is required on each batch:**

- (Administrative) Batch Number: Each batch number will be unique and generated automatically by the RTFO Operating System. The batch refers to an administrative batch, not necessarily a physical batch. An administrative batch is any amount of fuel with homogeneous sustainability characteristics (Biofuel feedstock, country of origin, standard and land use on 30 November 2005);
- Internal Batch Number: optional data field for the supplier to record their own batch number for reference purposes;
- Quantity of fuel: expressed in standard litres for liquid fuel or kilograms in the case of gas. In the case of BioETBE only the renewable component (47% of the volume) should be reported in line with HMRC requirements;

- Fuel type: biodiesel, bioethanol, or biogas. Note that BioETBE should be reported as bioethanol in line with HMRC requirements;
- Biofuel Feedstock: the feedstock type from which the fuel is made e.g. used cooking oil, wheat;
- Feedstock Origin: the country of origin of the feedstock.

**Table 4 Illustrative monthly reporting requirement for Carbon and Sustainability information - example data**

| General Information      |  |   |  |  |   | Sustainability Information   |   |              |                                     | Carbon Information   |                |
|--------------------------|--|---|--|--|---|--|---|--------------|-------------------------------------|--|----------------|
| Batch number             | Internal Batch number (optional)                         | Fuel type   | Quantity of fuel (litres)  | Biofuel Feedstock                                    | Feedstock Origin  | Standard   | Env Level   | Social Level | Land use on 30 Nov 2005             | Carbon intensity g CO <sub>2</sub> e / MJ                      | Accuracy level |
| 33001                    |  | Bioethanol  | 250,000  | Wheat  | UK  | LEAF   | QS  | -            | Cropland                            | 61   | 2              |
| 33002                    |  | Bioethanol  | 100,000  | Wheat  | France  | GlobalGAP  | -   | -            | Grassland                           | 157  | 2              |
| 33003                    |  | Bioethanol  | 250,000  | Sugar beet   | UK  | ACCS   | RTFO  | -            | Cropland                            | 35   | 5              |
| 33004                    |  | Bioethanol  | 1,000,000  | Sugar cane   | Brazil  | Meta-Standard  | RTFO  | RTFO         | Cropland                            | 25   | 2              |
| 33005                    |  | Bioethanol  | 500,000  | Unknown  | Unknown   | Unknown  | -   | -            | Unknown                             | 115  | 0              |
| 33006                    |  | Biodiesel   | 1,000,000  | Oilseed rape   | UK  | ACCS   | RTFO  | RTFO         | Cropland                            | 55   | 2              |
| 33007                    |  | Biodiesel   | 250,000  | Oilseed rape   | Unknown   | Unknown  | -   | -            | Unknown                             | 93   | 2              |
| 33008                    |  | Biodiesel   | 500,000  | Palm oil   | Malaysia  | RSPO   | QS  | QS           | Cropland                            | 47   | 2              |
| 33009                    |  | Biodiesel   | 500,000  | Soy  | Argentina   | Basel  | QS  | QS           | Grassland                           | 166  | 2              |
| 33010                    |  | Biodiesel   | 250,000  | UCO  | UK  | By-product   | QS  | QS           | By-product                          | 13   | 2              |
| 33011                    |  | Biogas  | 150,000  | Dry manure   | UK  | By-product   | QS  | QS           | By-product                          | 36   | 2              |
| Automatically generated. | Optional column for company's internal reference number. | For standard terminology see Annex J. BioETBE is reported as bioethanol | Report in litres for liquid biofuel, and kg for gaseous biofuel. | For standard terminology see Annex J or RFA website. | Country of feedstock origin. See Annex J or <a href="#">RFA website</a> . | See Annex A for a list of standards. See Annex J for a list of standard terms. | See section 3.3 for explanation of sustainability levels. |              | See Annex H for land use categories | See Annex G for default values and Annex I for Accuracy Level. |                |

## Explanations of example data in Table 4 – the summary monthly data report

**Batch 33001** represents 250,000 litres bioethanol from wheat of UK origin.

- The biofuel supplier can verify that the wheat is LEAF certified - 'LEAF' is reported in the 'Standard' column.
- LEAF is an environmental Qualifying Standard (see Annex A). The 'Env Level' should therefore contain 'QS'. LEAF is not a social Qualifying Standard therefore the 'Social Level' is blank. The software used for reporting will add this automatically.
- The supplier knows the feedstock and origin of the biofuel but knows no further information. Using Annex G the supplier looks up the relevant default. As the land use was cropland on the reference date the default tables in Annex H provide a default for the impact of LUC as 'zero' and the combined carbon intensity figure for fuel and the impact of land use can be reported. Annex I identifies the Accuracy Level used for the carbon intensity figure as 2 which is reported in the relevant field.

**Batch 33002 and 33009:** both represent biofuels reported with land use change.

In both cases the land use on 30 November 2005 has been identified as Grassland (definitions provided in Annex H). The default value in Table 31 identifies the carbon intensity impact of this land use change. This is added to the default value for the wheat ethanol of French origin or soy from Argentina found in Annex G. The combined carbon intensity is reported in the relevant field.

**Batches 33003 and 33006:** both represent biofuel from the UK from ACCS certified feedstock.

- Batch 33003 represents a standard case - ACCS is an RTFO environmental Meta-Standard and therefore 'RTFO' is reported in the Env Level column. ACCS is not a social RTFO Meta-Standard or Qualifying Standard therefore the Social Level column is blank. Actual data has been used to carry out the carbon calculation in Batch 33003 rather than relying on the high level defaults and Annex I illustrates that Accuracy Level 5 should be reported where actual data is used.
- In the case of batch 33006, supplementary checks have been carried out on all gap criteria by the ACCS auditor and the farm also complies with all the criteria of the RTFO Biofuel Sustainability Social Meta-Standard. This is illustrated by reporting 'RTFO' in the 'Social' column.

**Batch 33004:** represents bioethanol from sugar cane of Brazilian origin.

- The sugar cane is not certified by any standard; however a full audit has been carried out against all the criteria of the RTFO Biofuel Sustainability Meta-Standard. 'Meta-Standard' is reported in the 'Standard' field. The appropriate level of sustainability achieved following the audit should then be reported in the 'Env Level' and 'Social Level' columns. In this case the full RTFO Biofuel Sustainability Meta-Standard has been achieved.

**Batches 33005 and 33007:** represent batches with some unknown data.

- For the general and sustainability sections 'unknown' should be reported.
- The default value from Annex G is used to report the carbon intensity and the default value in Annex H defines the default value of zero in the case of unknown land use.

**Batch 33008:** the palm oil is verified as being RSPO certified.

- RSPO is both an environmental and social Qualifying Standard and therefore 'QS' should be reported in both the 'Env Level' and 'Social Level' columns.

**Batches 33009 and 33010:** represent biofuels from feedstocks considered by-products.

- The country of origin of the by-product is reported.
- 'By-product' should then be entered in the 'Standard' and 'Land use' fields. 'QS' should be reported in both the 'Env Level' and 'Social Level' fields.
- No detailed information has been used available to calculate the carbon intensity therefore Annex G is used to look up the relevant default value. Annex I is used to identify the relevant Accuracy Level undertaken for the calculations – in this case a feedstock and origin default represents an Accuracy Level of 2.

**Batch 33011** is biogas, and so the mass is entered, expressed in kilogrammes not litres.

### 3.4.2 Providing sustainability information for each administrative batch

Suppliers can report any standard benchmarked against the RTFO Biofuel Sustainability Meta-Standard. Table 2 and Table 3 contain the full list of standards available to be reported, whether they are qualifying or non-qualifying.

#### **'Standard'**

- This column is used to report the sustainability standard to which the feedstock reported was produced.
- If the feedstock is not certified, report 'none – feedstock not certified', or if the data is not known, report 'unknown' (as shown in Batch 33007 in Table 4).
- If the feedstock is a by-product, report 'by-product' (as shown in Batch 33009 in Table 4).

If a specific audit has been carried out on the farm/plantation against the RTFO Meta-Standard criteria (in the absence of an available standard) report 'Meta-Standard' (as shown in Batch 33004 in Table 4).

#### **'Env Level' and 'Social Level'**

- The two entry fields labelled 'Env Level', for environmental level, and 'Social Level' identify the level of sustainability achieved: either a Qualifying Standard (shown as 'QS'), RTFO Biofuel Sustainability Meta-Standard (shown as 'RTFO'), or blank if the standard reported does not meet either the Qualifying Standard or the RTFO Meta Standard.
- If supplementary checks have been performed successfully on all of the gap criteria within the existing standard, the 'Env Level' and/or the 'Social Level' fields should illustrate the new level attained - either 'QS' or 'RTFO' (e.g. Batch 33006 in Table 4).
- Where a specific audit has been carried out on the farm/plantation against the RTFO Meta-Standard and the full RTFO Biofuel Sustainability Meta-Standard level has been reached, 'RTFO' should be reported in this field.
- Where a specific audit has been carried out on the farm/plantation against the RTFO Meta-Standard and the equivalent of a Qualifying Standard level has been reached, 'QS' should be reported in this field.

- For by-products, 'QS' should be reported in the 'Env Level' and 'Social Level' fields.

#### **'Land use'**

- This field is used to report the land use relevant to the feedstock on 30 November 2005,
- For guidance on how to determine the land use on 30 November 2005, see Annex H.
- If the feedstock is considered a by-product (see Annex B) fill in: 'by-product'.

### 3.4.3 Unknown reporting

For any data field in the general or sustainability information sections for which verifiable information is not available, 'unknown' should be reported. It should be noted that the EU Renewable Energy Directive will require the introduction of mandatory sustainability standards. Once this is implemented at the national level 'unknown' reporting is unlikely to be acceptable.<sup>10</sup>

### 3.4.4 Providing carbon information for each administrative batch

Fuel suppliers are required to report the carbon intensity of all renewable fuels, including by-products.

#### **'Carbon intensity'**

- This entry field is used to report the carbon intensity expressed in g CO<sub>2</sub>e / MJ<sup>11</sup>. The carbon intensity calculation, and therefore the figure reported, includes the impact of any direct land use change.
- For guidance on assessing the carbon intensity of an administrative batch of biofuel see Annex G.
- For guidance on assessing the carbon intensity of the impact of land use change see Annex H.

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<sup>10</sup> The EU Renewable Energy Directive is expected to be published in the EU Official Journal in May 2009. Member States have 18 months to implement the Directive into national legislation following publication. This would indicate the introduction of mandatory standards in 2011.

<sup>11</sup> Grams carbon dioxide equivalent per megajoule.

### **'Accuracy Level' column**

- The accuracy level is a measure of the type of data used to derive the carbon intensity of a batch of biofuel.
- For guidance on establishing the Accuracy Level see Annex I.

## **3.5 Further guidance**

For further guidance on environmental and social sustainability standards, see Annex A.

For a full list of criteria and indicators of the RTFO Biofuel Sustainability Meta-Standard, see Annex C.

A detailed overview of the results of the benchmark of existing standards is provided in Annex D. This Annex also illustrates the gap criteria for each benchmarked standard.

For guidance on the relationship between reporting land use in the monthly report and reporting on production on idle land in the annual report, see Annex E.

## **3.6 Changing C & S data after monthly reporting deadline**

If new evidence about the C&S characteristics of a fuel emerges after a monthly report has been submitted but before RTF certificates have been awarded, the data can be corrected by editing the submitted reports. However, if certificates have already been awarded, suppliers will need to obtain permission from the RFA to change the data. This will involve resubmitting the entire data set for the month.

Permission from the RFA may be sought to submit revised C&S data until September 28th following the end of the obligation period in which the C&S information was submitted.

## **3.7 Reporting on purchased certificates**

It is only the supplier who first applies for the RTFC who must complete a C&S report. Account holders who purchase an RTFC do not

have any reporting requirements with respect to the purchased RTFCs.

### **3.8 Publication of Information**

The RFA will publish reports on individual supplier performance in the categories of carbon intensity and sustainability, including a comparison with the targets set out by Government, on at least an annual basis. The RFA may also choose to make available other information on the environmental impact of the RTFO as a whole, including information from monthly C&S reports which identifies individual suppliers.

The RFA currently reports monthly on the Obligations as a whole, and quarterly on the performance of individual suppliers.

## 4 Annual reporting

Transport fuel suppliers are required to submit annual C&S reports as evidence to support the C&S information included in applications for RTFCs. This chapter sets out the requirements for annual reporting, including the information that fuel suppliers are expected to report on in their annual reports. This chapter also includes details on how the RFA may use the C&S information provided.

### 4.1 Small supplier exemption

Suppliers applying for fewer than 450,000 RTFCs during an obligation period will not be required to submit an annual report.

### 4.2 What to report

The core information in the annual report from the fuel supplier consists of the aggregated data from monthly reports over a single obligation period (15 April to 14 April inclusive). This aggregated quantitative data must incorporate any changes that have been made by a supplier submitting a variance report (see section 3.6). The annual report also requires fuel suppliers to provide additional qualitative information relevant to the sustainability and GHG saving of their renewable transport fuels.

While the information detailed below is a requirement of annual reports, the structure as outlined below is not essential but is provided for guidance.

**Chapter 1:** Introduction. A general introduction setting out the scope and context of the report and the overall approach and philosophy of the supplier in sourcing renewable transport fuels.

**Chapter 2:** Should contain the aggregate summaries of the C&S characteristics of the fuel supplied during the obligation period (from the monthly data sheets) in the formats illustrated in Table 5 and Table 6.

**Chapter 3:** This chapter should include information on the following items (where information is available):

- Fuel supplier information:
  - Past year's and planned activities to improve the proportion of sustainably sourced feedstock and reduce average carbon intensity;
  - Past year's and planned activities to support standard development for sustainable biofuel feedstock (membership of RSPO, RTRS, BSI, etc);
  - Past year's and planned activities to promote feedstock production on idle land and, where possible, an indication of the volume of fuel originating from such idle land. While no universal definition of 'idle land' exists a guideline to the interpretation of idle land for the purpose of the RTFO is provided in Annex E<sup>12</sup>;
  - Past year's and planned activities to improve the type of carbon data which is being used – e.g. the different default values or actual data;
  - Environmental management system certificates;
  - Successful prosecutions for breaches of compliance with any environmental and/or social regulations related to biofuels activities;
  - Existing verified environmental / corporate responsibility reports.
- Information on other parties within the supply chain:
  - Where fuel suppliers have information on their main crop producers, information should be provided on the percentage of that company's total production which meets respected sustainability standards. If parties do not wish to disclose the identity of crop producers and intermediate processors, anonymous information can be reported. The information has to be verifiable by the verifier but the identity will not be published;
  - Environmental management system certificates held, e.g. ISO14001;
  - Successful prosecutions for breaches of compliance with any environmental and/or social regulations related to biofuels activities.

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12 In light of experience with C&S reporting under the RTFO, the Administrator will assess the possibilities to include reporting on idle land in the monthly reporting process at a later stage.

Suppliers are free to include any additional information they deem relevant in their annual reports including any comments specific to the verification exercise.

*In addition*, a verifier's opinion must be submitted to the RFA along with the annual report. For further guidance on verification, see Chapter 7 and the separate guidance document for verifiers (available on the [RFA website](#)).

**Table 5 Annual report table – example data**

Summary of feedstock mix; percentage of verifiable data reported; percentage of feedstock which meets the Qualifying Standards and/or RTFO full Biofuel Sustainability Meta-Standard; average carbon intensity and corresponding GHG savings. This table contains example data.

| Feedstock                    | General                                       |  | Environmental                             | Social                                    | Carbon   |                      |
|------------------------------|---|--|---|---|--|----------------------|
|                              | % Fuel supplied by feedstock type (by volume) | % Data reported on biofuel characteristics | % Meeting Qualifying and/or RTFO standard | % Meeting Qualifying and/or RTFO standard | Average carbon intensity<br>g CO <sub>2</sub> e / MJ | Average % GHG saving |
| Biodiesel                    |   |  |   |   |  |                      |
| Palm oil                     | 10  | 30   | 50  | 50  | 43   | 50                   |
| Rapeseed oil                 | 70  | 40   | 85  | 85  | 77   | 11                   |
| Soy oil                      | 20  | 40   | 40  | 40  | 59   | 31                   |
| Bioethanol                   |   |  |   |   |  |                      |
| Sugar cane                   | 20  | 20   | 10  | 10  | 20   | 76                   |
| Corn                         | 10  | 30   | 70  | 70  | 62   | 27                   |
| Wheat                        | 40  | 50   | 80  | 80  | 65   | 23                   |
| Sugar beet                   | 20  | 60   | 75  | 75  | 51   | 40                   |
| Unknown                      | 10  | 0  | 0   | 0   | 78   | 8                    |
| Weighted average (all fuels) |   | 39   | 65  | 65  | 63   | 26                   |

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|                     |   |    |    |   |   |    |
|---------------------|---|----|----|---|---|----|
| Target<br>(2009/10) | - | 70 | 50 | - | - | 45 |
|---------------------|---|----|----|---|---|----|

## How to fill in Table 5: Annual Summary Table.

- **Percentage fuel supplied by feedstock type (by volume)**

This column is a summary of the feedstock mix for the whole obligation period. The feedstock mix for each different biofuel should be shown separately. Unknown feedstocks must be included in the table under the appropriate biofuel and the total feedstock mix per biofuel type must add up to 100% including any unknown percentage.

Example: Biodiesel supply during this period was 10% palm oil, 70% rapeseed oil and 20% soy oil.

- **Percentage of data reported**

This column shows how much actual data has been reported by the supplier, instead of reporting 'unknown', for the following fields: 'biofuel feedstock', 'feedstock origin', 'standard' and 'land use'.

The percentages are calculated on the volume of fuel for which actual data has been reported, not on the number of batches.

Example: A supplier supplies a volume of renewable fuel that represents 80% biodiesel and 20% bioethanol. The biodiesel comprises palm (30%), soy (20%) and oilseed rape (50%).

100% of the palm has reported on Feedstock;

60% of the palm has also reported on the Origin;

50% of the palm has also reported a standard and

0% of palm has reported anything under land use (unknown has been reported).

Therefore  $(100\% + 60\% + 50\% + 0\%) / 4 = 52.5\%$  has been reported for palm. Palm represents 30% of the volume of biodiesel supplied and biodiesel makes up 80% of the total volume of renewable fuel supplied. Therefore the contribution of palm to the total data capture target for all supplied renewable fuels for this party is  $52.5 \times 30\% \times 80\% = 12.6\%$ . The same calculation is carried out for the other biodiesel feedstocks as well as the ethanol feedstocks. The sum of the contributions of all feedstocks is reported as the weighted average for all renewable fuels supplied.

- **Percentage of feedstock which meets the environmental and social Qualifying Standards**

Percentages are calculated for each feedstock as a percentage of the total volume of biofuel from that feedstock for which a

Qualifying Standard or RTFO Biofuel Sustainability Meta-Standard has been reported in the monthly data reports. The percentage meeting the environmental Qualifying Standard is not necessarily the same as the percentage meeting the social Qualifying Standard. The percentages meeting a Qualifying Standard should include the fraction of feedstock which meets the full RTFO Biofuel Sustainability Meta-Standard.

- The percentages are weighted averages with the volume of fuel providing the weighting.
- **Average carbon intensities** are weighted averages, with the volume of fuel providing the weighting. By way of an example consider the first row of the table: two batches of palm oil biodiesel have been supplied:

Batch 1: 1,000 litres, carbon intensity = 50 g CO<sub>2</sub>e / MJ;

Batch 2: 2,000 litres, carbon intensity = 40 g CO<sub>2</sub>e / MJ.

Batch one contributes 33% of the total volume ( $1000 / (1000 + 2000) = 33\%$ ) and Batch 2 contributes 67% of the total volume ( $2000 / (1000 + 2000) = 67\%$ ). Therefore the weighted average carbon intensity is 43.3 g CO<sub>2</sub>e / MJ ( $33\% \times 50 + 67\% \times 40 = 43.3$ ).

- **Average GHG saving** is a comparison of the average carbon intensity of the renewable fuel described above against that of the relevant fossil fuel. See Annex G for the relevant fossil reference values.

**Table 6 Example C&S characteristics for palm oil**

| General information |                  | Sustainability information |           |              |                         | Carbon information                          |                |
|---------------------|------------------|----------------------------|-----------|--------------|-------------------------|---|----------------|
| % of total palm oil | Feedstock origin | Standard                   | Env Level | Social Level | Land use on 30 Nov 2005 | Carbon intensity (g CO <sub>2</sub> e / MJ) | GHG saving (%) |
| 20                  | Malaysia         | RSPO                       | QS        | QS           | Cropland                | 47  | 46             |
| 60                  | Malaysia         | Unknown                    | -         | -            | Unknown                 | 47  | 46             |
| 20                  | Indonesia        | Unknown                    | -         | -            | Unknown                 | 47  | 46             |

### How to fill in Table 6: Feedstock specific information

A separate table must also be included in the annual report for each feedstock type supplied in the obligation period, e.g. palm oil, rapeseed oil etc. (unless the feedstock represented less than 3% of the annual total volume of biofuel supplied). These tables aggregate all the administrative batches, with weighted average carbon intensity for each aggregation. Any batches of fuel with identical Feedstock, Origin and Sustainability Information may be aggregated into a single row in the table.

- 'Percentage of total feedstock' column - for each individual feedstock, e.g. palm oil. This is the amount of fuel, expressed as a percentage of the total fuel supplied from this feedstock, with the characteristics described.
- The remaining columns correspond directly to the columns in the monthly data reports: Feedstock Origin, Standard, Env Level, Social Level, Land use on 30 November 2005, and Carbon intensity information.
- Any batches of fuel with identical sustainability information that contributed less than 3% of the fuel from this feedstock may be aggregated or can be identified separately.

Note: carbon data should be presented as a weighted average. See Annex G for information on how to calculate combined carbon intensity figures.

In the example in Table 6: 20% of the total palm oil biodiesel from the company was of Malaysian origin and was RSPO certified (RSPO is

both an environmental and social Qualifying Standard); 60% of the palm oil biodiesel was of Malaysian origin but with unknown sustainability characteristics; and the remaining 20% palm oil biodiesel was of Indonesian origin with unknown sustainability characteristics.

### **4.3 When to report**

Each annual C&S report should cover one obligation period. The annual C&S report is due by 28th September after the end of the obligation period which it covers.

### **4.4 How will the RFA use annual reporting data?**

Suppliers' annual reports will be used by the RFA in preparing the annual report to Parliament on the operation of the scheme. The annual report will not influence the award of RTFCs, but is used as evidence of information supplied in application for RTFCs. Annual reports will be publicly available via the RFA website. They will be used to provide information for comparing supplier performance against the performance targets set by the Government.

## 5 Expected reporting levels and targets

This chapter defines the expected reporting level targets established by the Government and how to report against them.

The Government, through the Secretary of State for Transport, has set targets relating to three aspects of the C&S data. There will be no legal penalty for failing to meet the targets, but the targets are intended to illustrate the level of performance which the Government (and RFA) expects fuel suppliers to deliver. The Government and RFA will keep these targets under review to ensure that they remain challenging but realistic, and to take account of the development of new standards for individual feedstocks. While the targets are the responsibility of the Government, the RFA will provide relevant information to Government to assist in the review of the targets.

### 5.1 Sustainability performance targets

**The first set of targets relate to the percentage of fuel supplied in each obligation period that should meet a Qualifying Environmental Standard (or higher).**

The targets will be overall targets for all feedstock reported by a fuel supplier.

| Annual supplier target  | 2008-2009 | 2009-2010 | 2010-2011 |
|---|-----------|-----------|-----------|
| Percentage of feedstock meeting a Qualifying Environmental Standard | 30%       | 50%       | 80%       |

The percentage of feedstock that meets at least the environmental Qualifying Standard level is calculated as an overall percentage for all feedstock.

*Example: A supplier supplies a volume of renewable fuel that consists of 80% biodiesel and 20% bioethanol. The biodiesel comprises palm (30%), soy (20%) and oilseed rape (50%). All of the palm oil is RSPO certified, none of the soy meets a Qualifying Environmental Standard*

and 10% of the oilseed rape is certified to ACCS. Therefore  $(100\% \times 30\%) + (10\% \times 50\%) = 35\%$  meets at least a Qualifying Environmental Standard. The bioethanol comprises 100% sugar beet, which is all ACCS certified. The overall percentage of the renewable fuel supplied meeting at least a Qualifying Environmental Standard is therefore  $(35\% \times 80\%) + (100\% \times 20\%) = 48.0\%$ .

## 5.2 Greenhouse Gas (GHG) saving

The second set of targets relate to the overall level of GHG saving achieved by the biofuel supplied in each obligation period.

| Annual supplier target             | 2008-2009 | 2009-2010 | 2010-2011 |
|------------------------------------|-----------|-----------|-----------|
| Annual GHG saving of fuel supplied | 40%       | 45%       | 50%       |

The level of GHG saving is an overall target for all fuels and feedstocks reported by a fuel supplier.

*Example: A supplier supplies a volume of renewable fuel that represents 80% biodiesel and 20% bioethanol. The biodiesel comprises palm (30%). The combined carbon intensity of all the palm oil supplied = 45g CO<sub>2</sub>e/MJ.*

*The reference value for the carbon intensity of diesel is 86.4g CO<sub>2</sub>e/MJ. The average GHG saving would be  $(86.4 - 45) / 86.4 = 48\%$ . Palm represents 30% of the total volume of biodiesel therefore  $30\% \times 48\% = 14.4\%$  GHG saving. Biodiesel represents 80% of the fuel supplied ( $14.4\% \times 80\% = 11.5\%$ ). The resulting GHG saving is reported as a combined percentage across all fuels and feedstocks.*

## 5.3 Data reporting on biofuel characteristics

The third Government target is for **the amount of actual data provided by transport fuel suppliers** as opposed to reporting 'unknown' against the four sustainability requests: Biofuel Feedstock, Feedstock Origin, Standard, and Land use on 30 November 2005. The target is an overall target based on the portfolio of fuels supplied in the obligation period.

| Annual supplier target                           | 2008-2009 | 2009-2010 | 2010-2011 |
|--|-----------|-----------|-----------|
| Data reporting of renewable fuel characteristics | 50%       | 70%       | 90%       |

Whilst 'unknown' reporting is permitted, suppliers will be encouraged to identify and report accurate information about the feedstocks used.

Where a by-product has been used as the feedstock, reporting information on the Biofuel Feedstock and reporting 'by-product' for the remaining general information and sustainability information fields will be counted as a completed report. Reporting a non-Qualifying Standard (from Table 13) is also counted as a completed data field for the Standard column. Where 'unknown' or 'none – feedstock not certified' is reported this does not count towards the data capture target.

*Example: A supplier supplies only biodiesel and that comprises palm (30%), soy (20%) and oilseed rape (50%).*

*100% of the palm has reported on Biofuel Feedstock;*

*60% of the palm has also reported on the Origin;*

*50% of the palm has also reported a standard; and*

*0% of palm has reported anything under land use (unknown has been reported).*

Therefore  $(100\% + 60\% + 50\% + 0\%) / 4 = 52.5\%$  has been reported for palm. Palm represents 30% of the volume of renewable fuel supplied. Therefore the contribution of palm to the total data capture target for all supplied renewable fuels for this party is  $52.5 \times 30\% \times 80\% = 12.6\%$ . The same calculation is carried out for the other biodiesel feedstocks. The sum of the contributions of all feedstocks is reported as the weighted average for all renewable fuels supplied.

## 6 The Chain of Custody

Reported C&S data must be verifiable. Therefore the C&S data reported by the fuel supplier has to be traceable back to the party or parties who generated the information. This chapter explains which types of Chain of Custody systems are permitted and gives specific guidance for setting up a (temporary) Chain of Custody where none yet exists.

### 6.1 General

#### 6.1.1 Terminology

Throughout this chapter the following terminology will be used:

- Administrative batch: any amount of product with identical sustainability characteristics. The sustainability characteristics are:
  - Fuel type;
  - Biofuel feedstock;
  - Feedstock Origin;
  - Standard(s) (including any supplementary checks where these have been performed);
  - Land use on 30 November 2005.
- Input: any physical input sourced by any party in the supply chain. For example rapeseed sourced by a rapeseed crusher or rapeseed oil sourced by a biodiesel producer.
- Output: any physical output supplied by any party in the supply chain. For example rapeseed supplied by a rapeseed farm or rapeseed oil supplied by a rapeseed crusher.
- Conversion factor: refers to the amount of output produced per unit of input. For example the oil extraction rate or the amount of biodiesel produced per unit of vegetable oil.
- Inventory: refers to a stock of physical product or C&S data.
- Chain of Custody: for the purpose of the RTFO C&S Guidance, a Chain of Custody is a system which links the reported volumes of biofuel with certain C&S characteristics to the volumes of feedstocks which possess the same C&S characteristics. An

essential aspect of the Chain of Custody system therefore is that it must be able to guarantee that for each unit of biofuel with certain carbon and sustainability characteristics reported to the RFA an equivalent amount of feedstock with the same sustainability characteristics has been added to the market.

### 6.1.2 Aggregating multiple administrative batches

Multiple batches can be aggregated at any point in the supply chain provided the individual batches have identical sustainability characteristics as defined above. Administrative batches with different carbon intensities but identical sustainability characteristics can be aggregated – the resulting carbon intensity is calculated as a weighted average of the individual batches (based on volume for liquid products) – See Annex G.

## 6.2 Which Chain of Custody systems are permitted for C&S reporting under the RTFO?

To validate the accuracy of C&S reports a Chain of Custody must be established from the party which generates the C&S information to the reporting party. In general, three different types of Chain of Custody systems are distinguished:

- Bulk commodity systems (physical segregation);
- Mass balance systems (units in = units out);
- Book and claim systems (tradable certificates)<sup>13</sup>.

The Chain of Custody must operate reliably and prevent abuse such as double counting. It must also be relevant to the feedstock which is used in the production of the biofuel. For example, a biodiesel producer which produces biodiesel from 100% rapeseed oil, is not permitted to report the fuel as being sourced from palm oil.

Where existing certifiable systems are in operation (as identified in Table 7) they can be used under the RTFO. Where they are not in operation a mass balance approach should be used<sup>14</sup>.

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<sup>13</sup> If approved by the RFA. To request that a new book and claim system be considered for approval please contact the RFA directly.

Few book and claim Chain of Custody systems are currently operational for biofuel feedstocks. As and when such systems become available and are made known to the RFA, the RFA intend to assess the reliability of the Chain of Custody and determine whether the system is permitted to be used in making C&S claims under the RTFO.

To date, one book and claim system has been benchmarked by the RFA and accepted for inclusion in the RTFO:

GreenPalm (RSPO certified palm oil)<sup>15</sup>

## 6.3 When to set up a Chain of Custody

Several existing Qualifying Standards, such as the Forest Stewardship Scheme (FSC), have defined their own Chain of Custody. In this case a certified Chain of Custody already exists and can be used. The supplier must be able to provide proof that its producer sourced the relevant feedstocks through the certified Chain of Custody of the existing standard.

However, there are several limitations in using a Chain of Custody system of an existing standard:

- At the time of writing, a number of the Qualifying Standards do not have an operational Chain of Custody, see Table 7.
- Existing Qualifying Standards currently do not contain GHG data and therefore no claims can be made concerning performance in these cases: default values must be used.
- The Chain of Custody may not be in place between the biofuel producer and the ultimate supplier who is applying for RTFCs.

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<sup>14</sup> The mass balance approach should be operated at least at the level of a site that a company owns/operates. i.e. the RFA does NOT allow companies to operate one single mass balance (units in = units out) approach over their whole global operations.

<sup>15</sup> In June 2008 the RFA assessed GreenPalm's book and claim system for use within the RSPO. GreenPalm was found to be a reliable Chain of Custody system and was approved for use in making C&S claims during the 2008/2009 RTFO obligation period, provided a number of recommendations were met by the end of 2008. A second review took place in January 2009, which confirmed that these recommendations had been met. A final review of the system to check operational performance of its first full-year of operation is scheduled for November 2009. Further details can be found at the Greenpalm [website](#).

**Table 7 Existing Chain of Custody for several standards and initiatives**

| Standard name   | Bulk commodity                  | Mass balance | Book and claim |
|---|---------------------------------|--------------|----------------|
| Assured Combinable Crops Scheme (ACCS)                        | -                               | -            | -              |
| Forest Stewardship Council (FSC)                              | Yes                             | Yes          | -              |
| Genesis Quality Assurance (Genesis QA)                        | -                               | -            | -              |
| Linking Environment And Farming (LEAF)                        | -                               | -            | -              |
| Roundtable on Sustainable Palm Oil (RSPO)                     | Under development <sup>16</sup> | Yes          | Yes            |
| Round Table on Responsible Soy (RTRS)                         | Under development               |              |                |
| Sustainable Agriculture Network/ Rainforest Alliance (SAN/RA) | Yes                             | -            | -              |

These limitations imply that it will be necessary for many suppliers to set up their own Chain of Custody: at least until existing standards develop their own Chain of Custody. For these situations more detailed guidance on operating a reliable mass balance type of Chain of Custody is given below. The mass balance type of Chain of Custody is expected to provide the least number of obstacles to short term implementation.

Suppliers may set up different types of Chains of Custody if they wish to do so, provided it can be shown a) that they function reliably and

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<sup>16</sup> RSPO are in the process of setting up Bulk Commodity chain of custody systems (Segregation and Identity Preserved), which they aim to have in operation by the summer of 2009.

are permitted by the RFA and b) are accepted by the standards for which they are used.

## 6.4 Guidance for operating a mass balance type of Chain of Custody

### 6.4.1 Scope

Each party in the biofuel supply chain, who is at any point the legal owner of the product, needs to put in place the administration necessary to maintain the Chain of Custody. If any party in the supply chain, who takes legal ownership over the product, does not keep the required records, the Chain of Custody stops at this point and no claims related to C&S data can be made by parties further downstream. The consequences of a break in the Chain of Custody are that the fuel supplier will have to use the default values to report carbon intensity and may have to state that the provenance of their biofuel is 'unknown'.

### 6.4.2 Responsibilities and procedures

Each company in the Chain of Custody should:

- Appoint a person or position with overall responsibility for compliance with the Chain of Custody procedures explained below;
- Have written procedures and/or work instructions to ensure implementation of the requirements as explained below.

### 6.4.3 Selling products with C&S data

A company that sells products with C&S data must specify the C&S data on the invoice or on a document to which the invoice refers. The invoice or relevant document must include the following information:

- The name and address of the buyer;
- The date on which the invoice was issued;
- Description of the product – this must correspond to the description of the product given in the input and output records;
- The quantity of the products sold with specific C&S data. If the invoice contains products with different C&S data, these shall be

identified separately in such a way that it is clear to which products the C&S data refers.

A party<sup>17</sup> in the Chain of Custody can not sell more output with certain C&S data than its sourced input with the same C&S data (taking into account the relevant conversion factor). The periodic inventory of C&S data must not be negative.

For any transaction, the traded amount of C&S data can not exceed the traded amount of physical product.

#### 6.4.4 Record keeping

Each company party in the Chain of Custody should keep the following records that should concur with the information on the invoices:

- Input and output records of C&S data. Input records refer to the C&S data of products purchased from a supplier. Output records refer to the C&S data of products sold to a buyer. For each administrative batch these records should include at least:
  - Invoice reference(s)
  - A description of the physical product to which the C&S data refer
  - The volume of physical input/output to which the C&S data refer
  - The supplying/receiving company
  - Transaction date
  - Any C&S data.
- Conversion factor records. These records refer to the conversion factor of inputs to outputs (e.g. rapeseed to rapeseed oil). Each party in the supply chain can maintain records of its own conversion factors. A party may have more than one conversion factor. If no records are kept for the conversion factor the default value for the respective conversion factor must be used. For each conversion factor it must be clear from the records:
  - To which input product it refers
  - To which output product it refers
  - The units in which the conversion factor is expressed

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<sup>17</sup> Note that the mass balance approach should be operated at least at the level of a site that a company owns/operates. i.e. the RFA does NOT intend companies to operate one single mass balance (units in = units out) approach over their whole global operations.

- The value of the actual conversion factor
- When the specific conversion factor was valid. The period of validity is one year.
- The conversion factors may also be integrated in the input, output or inventory records as long as the requirements listed here are met.
- Periodic inventory of C&S data. These records provide an insight into the balance of C&S data. Besides helping a company to manage its input-output balance these records also assist in the verification of a party's Chain of Custody records. The period between inventories must be no longer than one month and records should include:
  - The inventory of C&S data at the beginning of the respective period (including the carbon intensity of the stock). It must be clearly specified whether this is expressed in input-equivalents (before conversion factor) or output-equivalents (after conversion factor);
  - The volumes of inputs with identical C&S data in the respective period. These volumes must coincide with the input records described above;
  - The volume of outputs with identical C&S data in the respective period. These volumes must coincide with the output records described above;
  - The conversion factor(s) used in the respective period;
  - The inventory of C&S data at the end of the respective period (including the carbon intensity of the stock). It must be clearly specified whether this is expressed in input-equivalents (before conversion factor) or output-equivalents (after conversion factor).

Example formats for the records described above are illustrated in Annex F.

#### 6.4.5 Records to keep of products from unknown origin

When the origin of the inputs is unknown, the only information required in the input record is the product description (e.g. rapeseed or rapeseed oil) and the volume.

## 6.4.6 Proportionate feedstock reporting

In passing C&S information through the supply chain, it is permitted to use a mass balance approach to freely allocate C&S data to outgoing batches *within a feedstock type* (e.g. oil palm or rapeseed oil). However, information on feedstock type must be representative of the actual feedstock mix of the containment from which the batch was drawn.

### *Concrete example*

Party A sources biodiesel which contains a mixture of PME and RME. It sells half of this for consumption in the UK and the other half is exported to France. Can A sell the biodiesel for consumption in the UK with only RME data or does the C&S data of each outgoing batch need to be representative of the actual feedstock mix?

### *Terminology*

- Reporting representative feedstock information will be called '**proportionate feedstock reporting**'.
- If parties allocate only RME data to an outgoing batch which contains both RME and PME, this is called '**non-proportionate feedstock reporting**'.

The RFA requires that for the purposes of C&S reporting under the RTFO, each physical batch taken out of a containment be supplied with feedstock data which is representative of the actual feedstock mix of the fuel in the containment. **Within a feedstock type** C&S data can be allocated freely from the C&S data a company holds.

Companies should employ a transparent and consistent approach to reporting the proportion of different feedstocks in the fuel that they bring to the market.

**Note that companies who only supply biofuel into the RTFO will automatically fulfill this requirement and no further steps need to be taken.** Companies may, however, be required to show that they only supply biofuel into the RTFO.

Under a proportionate feedstock reporting approach companies are free to use their own internal systems to track the feedstock mix of

the fuel they supply<sup>18</sup>. Companies can calculate the 'actual' feedstock mix of the fuel as it exits a mixed-feedstock containment either on a continuous or a discrete basis:

- **Continuous** calculation of the feedstock mix would involve calculating the feedstock proportions in a containment each time a new batch enters the tank. The feedstock proportions reported for an outgoing batch then represent the actual feedstock mix in that tank at that point in time;
- Calculation on a **discrete** basis is designed to involve less frequent re-calculation. When a tank is 'full' the overall feedstock mix and volume in the tank is recorded. That feedstock proportion is then used for all the outgoing batches until the tank is 'empty'.

*E.g. A theoretical tank holds 1000 litres. The feedstock proportion is determined and recorded when 1000 litres have been added to the tank. This feedstock proportion is assigned to the next 1000 litres that exit the tank. The process is then repeated for the next (for example) 1000 litres added to the tank. Note that this methodology can still be used when fuel is continuously inputted and outputted from a tank – the concept of the tank being filled and emptied is purely for administrative purposes.*

## 6.5 Equivalence trading

Equivalence trading refers to the practice under the Common Agricultural Policy of the EU where crops grown under contract for energy use (either grown on set-aside or claiming the EU Energy Aid

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<sup>18</sup> The requirement for proportionate feedstock reporting does not necessarily preclude companies from using their existing methods for tracking biofuel such as First In First Out (FIFO). For example, FIFO may be appropriate if companies are supplying only to the UK market, or if used to track movements of blends of biofuel which already meet the technical fuel specifications. In this situation blends of feedstock types representative of supply onto the UK market are then reported.

However FIFO may not be appropriate to use for the tank in which different feedstock types that do not all meet the technical specifications are blended. In this situation parties would input batches of biofuel from single feedstock types, blend them to meet the technical specifications, but then report 'output' batches of biofuel of a single feedstock type (matching the input batches). As different feedstock types have both different economic characteristics and different sustainability risk profiles, this would give rise to a risk of an unfair competitive advantage to companies who operate internationally and would be able to report certain feedstock types on the UK market and others outside the UK, while in fact they are supplying a blend of those feedstocks to the UK market.

Payment) can be substituted by other material from within the EU which has not been grown under an energy contract.

Under the RTFO C&S Guidance, the C&S characteristics of the feedstock may be substituted in this exchange. Therefore the C&S characteristics of the contracted farm, which does not actually deliver the physical feedstock, may be used for C&S reporting.

### 6.5.1 Rules for C&S data in the case of equivalence trading

The following requirements must be met to practice C&S data swapping in an equivalence trade:

- All requirements as defined in the Common Agricultural Policy for equivalence trading need to be met.
- Data swapping is only permitted within the same feedstock in an equivalence trade.
- Trade of C&S data through equivalence trading only takes place between the farm providing the data and the first buyer of the feedstock. From the first buyer onwards the trade in C&S data should continue with the certified Chain of Custody where it exists or through the mass balance approach described in this chapter.
- All the C&S data reported must originate from the same contracted farm (i.e. it is not permitted to use carbon intensity data from one farm and sustainability information from the other). In calculating the carbon intensity of the fuel the default transportation distance should be used.
- A verifiable system is in place at the farm which provides the C&S data to prevent double counting of C&S data. If, for example, the farm is LEAF certified and this is claimed by the biofuel chain through equivalence trading, the LEAF mark cannot be claimed again with the sale of the physical product.

## 7 Verification of company reporting

This chapter provides guidance on the verification requirements for suppliers who submit annual C&S reports as part of the RTFO, and provides examples of good practice to assist with verification procedures.

*Further guidance for verifiers is available on the [RFA website](#).*

### 7.1 General

In order to provide confidence in the C&S reports of suppliers, information submitted in the annual RTFO C&S report will be subject to independent verification. The RFA may impose a civil penalty on any supplier that does not supply the required independent verification.

Information in the annual report will include aggregated monthly C&S data, as amended by any variance reports received, and other qualitative information about the operations of the fuel supplier as set out in Chapter 4. The audit is likely to be undertaken through a risk-based sampling approach and therefore not every single piece of data will be checked.

Following verification, the verifier will provide the fuel supplier with a formal limited-assurance opinion (a verification statement) about the quality of the annual reporting. The term 'limited-assurance' is defined in the International Standard on Assurance Engagements (ISAE 3000).

It is the responsibility of reporting suppliers to provide an independent opinion on the annual report to the RFA by 28th September. This opinion must be supplied regardless of the conclusion reached. Organising the verification is the responsibility of the fuel supplier.

### 7.2 Setting up a system for Carbon and Sustainability Reporting

To be able to produce data that is of sufficient quality for reporting, fuel suppliers need to ensure that they and others in their supply chain have effective systems for C&S reporting.

Fuel suppliers should appoint a single point of contact with responsibility for C&S reporting.

### 7.2.1 Good practice

It is good practice to:

- Liaise with the supply chain to ensure awareness of the need for co-operation and for a Chain of Custody;
- Produce data in a manner that is transparent and is as consistent as possible between years (allowing for improvements in method);
- Remove unnecessary complexity from the reporting system;
- Organise internal checks of the data;
- Ensure all people supplying data are aware of the rigour required and that responsibility for supplying the data is allocated;
- Map the data flow within the organisation, such as between spreadsheets;
- Minimise the manual transfer of data;
- Ensure adequate controls around the data;
- Document the system (who does what, when etc.);
- Track data over time to help identify any mis-statement.

## 7.3 Which data will be verified?

There is no requirement to pass physical evidence (such as copies of invoices etc) from farms, processors or other suppliers along the supply chain. The party which generates the carbon and/or sustainability data retains this evidence. In verifying the C&S data reported by a fuel supplier, the verifier may expect to work back up the supply chain to the source data using the Chain of Custody records. The co-operation of those in the supply chain is therefore vital.

With respect to sustainability data, certificates of Benchmarked Standards are sufficient proof of compliance with the criteria and indicators of that standard. If it is claimed that the RTFO Biofuel Sustainability Meta-Standard is met, documented proof from the supplementary checks will be required as evidence. Similarly, documented proof is needed of assessment against gap criteria in the case they are used to claim a Qualifying Standard.

Other C&S data is subject to verification, for example:

- Carbon data
- Evidence of Land use on 30 November 2005
- Chain of Custody records
- Other information provided in the annual report.

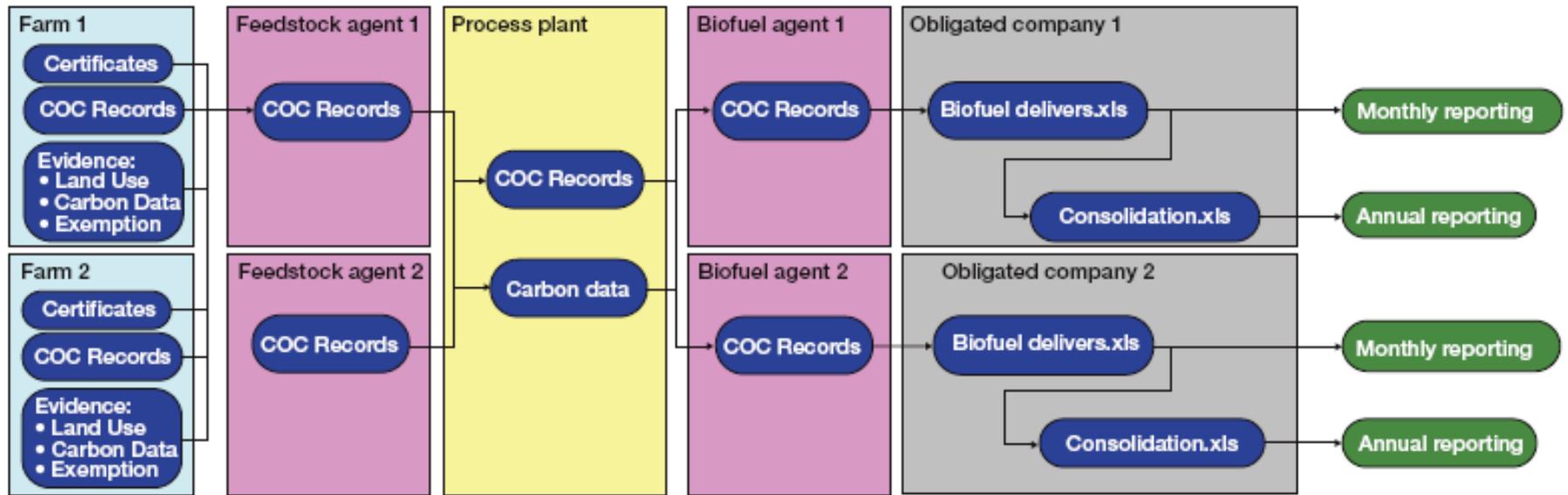
An example of the data flow with a simplified supply chain is shown in Figure 3.

Note that each party keeps Chain of Custody records but that evidence does not need to be passed to parties downstream in the Chain of Custody. Through the Chain of Custody records, the verifier will be able to trace back to the party that generated the carbon and/or sustainability data to check the evidence.

### 7.3.1 Good systems reduce the cost of verification

The greater the confidence that can be placed on controls the less effort that needs to be given to verifying the data for the same level of assurance. The cost of verification can, therefore, be reduced if the verifier has confidence in the system that produced the data. Evidence of the effectiveness of controls can come from internal sources, such as management reviews and internal audits, as well as external audits, for example, of the Chain of Custody.

**Figure 3 Example of the records kept by each party in the supply chain**



## 7.4 How to organise the verification

The fuel supplier is responsible for engaging a verifier approved to carry out a **limited-assurance** audit of the annual C&S report. The term 'limited-assurance' is defined in the International Standard on Assurance Engagements (ISAE 3000).

In selecting a verifier suppliers may wish to consider the following guidance. For example, the verification body could be required to demonstrate that it:

- Is independent of organisations involved in the production of biofuels;
- Has established and maintains personnel records, which demonstrate that the verification personnel are competent;
- Has effective procedures for the training and recruitment of competent staff (employees and contractors);
- Ensures that the personnel involved in verification are competent for the functions they perform;
- Has systems to monitor the performance of auditors and reviewers, which are reviewed regularly;
- Keeps up with verification best practice.

Limited assurance audits aim to provide moderate assurance that the annual C&S report is without material mis-statement. As such verifiers need to state that nothing has come to their attention to indicate material mis-statement, given an appropriate level of investigation. ISAE 3000 provides guidance to verifiers about how they must go about the audit. It should normally be possible for verifiers to obtain moderate assurance from a site visit to the fuel supplier and telephone interviews along the supply chain.

Verification of the annual report will require the fuel supplier to go through the following steps:

1. Engage a verification body approved to carry out a limited-assurance audit of the annual C&S report as set out in ISAE 3000
2. Submit the draft annual C&S report to the verifier
3. Submit supporting information and evidence held by the fuel supplier

4. Host any visits from the verifier
5. Respond to any verifier questions
6. Correct any material mis-statement identified by the verifier
7. Submit the verification opinion with the annual report.

The verifier will wish to visit the fuel supplier. The verifier will review the consolidation process and meet the person responsible for the submission.

The verifier will work along the supply chain, tracing the data flow and testing controls. The verifier may select a risk-based approach; therefore not every organisation in the supply chain is likely to be contacted. The exact approach may vary with each verifier and supply chain.

The duration of the verification process may take a number of weeks, particularly if the supply chain is complex or long and responses to information requests from the verifier are delayed. It is recommended that suppliers engage the verifier long before the deadline date for submission of the annual report and verification statement to the RFA. The verifier may wish to carry out tests during the year to reduce any end of year bottlenecks.

#### 7.4.1 Good practice

It is good practice to engage a verifier as early as possible in the process to maximise a company's opportunity to learn from the verifier and to help identify any mistakes early. Common verification practice is for data to be supplied to the verifier in an organised evidence pack. This would be expected to include:

- The draft annual C&S report;
- High-level description of supply chain (as is known, to help the verifier);
- Chain of Custody records;
- Contact details of the organisations in the previous stages in the supply chain (at least);
- Calculation spreadsheets (preferably supplied electronically so that verifiers can test the formulae);
- Physical evidence to support qualitative statements which refer to the fuel supplier itself.

All the above information would be needed to verify the data. If not provided in an ordered fashion, the verifier will need to request information, which increases the verification effort required.

## 7.5 Verifier opinions

The verifier will submit an opinion on the annual C&S report. The verifier's opinion forms part of the annual reporting requirements set out in Chapter 4.

The verifier will use their experience and judgement to determine if they believe that there may, or may not, be material errors in the annual report or the data used to compile monthly reports.

An 'unqualified' opinion for the annual C&S report could be worded, for example, as below:

'Nothing has come to our attention that causes us to believe that internal control is not effective, in all material respects.'

If there is material mis-statement, the opinion could be worded, for example, as below:

'Nothing has come to our attention that causes us to believe that internal control is not effective, in all material respects, with the exception of:

- X
- Y
- Z.'

It is standard practice for the verifier to submit a report, in addition to the opinion, to the client. It is considered good practice if this report includes information on the overall effectiveness of the system in place to generate C&S data as well as recommendations for improvement. Such information is intended to assist both the RFA and parties submitting verified annual reports to understand the process and improve performance. In addition, such information maximises the knowledge transfer of the verifier to the party submitting their verified annual reports.

## 7.6 Further Guidance

Further guidance for verifiers has been developed, which adds detail to the information contained in this chapter and is available on the [RFA website](#). The additional guidance is aimed at verifiers for the RTFO annual reports, though it may also be a useful resource for obligated and other parties preparing for verification. The guidance includes:

- An overview of the purpose of verification;
- A description of the assurance process, including the key features of ISAE 3000 and the steps in an assurance engagement for RTFO reports;
- The criteria for undertaking an RTFO assurance engagement;
- The testing procedures that will be required;
- The evidence that should be obtained;
- An overview of the main features of an assurance statement; and
- A description of the competencies for verifiers.

# Annex A Guidance on sustainability standards

## A.1 Benchmarked standards

A selection of existing standards has already been benchmarked against the RTFO Biofuel Sustainability Meta-Standard. Those that meet an acceptable level of sustainability are called Qualifying Standards. The results of the benchmarking exercise are shown in Annex D. Any standard that is listed can be reported under the RTFO and will count towards a company's data capture target but only standards that meet at least the Qualifying Standard count towards a company's Qualifying Environmental Standard target.

The detailed results of the benchmarking exercise are included in Annex D. More standards will be benchmarked by the RFA as appropriate.

**Table 8 List of benchmarked standards**

The table illustrates whether the standard is an environmental or social Qualifying Standard or neither. Notes on standards below table.

| Benchmarked standard  | RTFO Environmental Meta-Standard? | RTFO Social Meta-Standard? | Qualifying Environmental Standard? | Qualifying Social Standard? |
|---|-----------------------------------|----------------------------|------------------------------------|-----------------------------|
| Standards that meet at least Qualifying Standard level                    |                                   |                            |                                    |                             |
| Assured Combinable Crops Scheme (ACCS)                                    | Yes                               | No                         | Yes                                | No                          |
| Basel criteria for soy (Basel)  | No                                | No                         | Yes                                | Yes                         |
| Forest Stewardship Council (FSC)  | No                                | No                         | Yes                                | No                          |
| Genesis Quality Assurance (Genesis QA)                                    | Yes                               | No                         | Yes                                | No                          |
| Linking Environment And Farming Marque (LEAF) <sup>A</sup>                | No                                | No                         | Yes                                | No                          |
| Roundtable on Sustainable Palm Oil (RSPO)                                 | No                                | No                         | Yes                                | Yes                         |
| Round Table on Responsible Soy (RTRS) <sup>B</sup>                        | No                                | No                         | Yes                                | Yes                         |
| Sustainable Agriculture Network/Rainforest Alliance (SAN/RA) <sup>C</sup> | No                                | No                         | Yes                                | Yes                         |
| Standards that do not meet Qualifying Standard level 3                    |                                   |                            |                                    |                             |
| FEDIOL <sup>D</sup>   | No                                | No                         | No                                 | No                          |
| German Qualität und Sicherheit (QS) <sup>E</sup>                          | No                                | No                         | No                                 | No                          |

|  |    |    |    |    |
|--|----|----|----|----|
| GlobalGAP <sup>F</sup>   | No | No | No | No |
| International Federation of Organic Agriculture Movements (IFOAM) <sup>G</sup> | No | No | No | No |
| Proterra <sup>H</sup>  | No | No | No | No |
| Scottish Quality Crops (SQC) <sup>I</sup>                                      | No | No | No | No |
| Social Accountability 8000 (SA8000) <sup>J</sup>                               | No | No | No | No |

### Notes on standards

A) Approximately 10% of LEAF Marque certificates are issued by non-accredited certification bodies. LEAF can only be reported as a Qualifying Environmental Standard if the certificate has been issued by an accredited body.

B) RTRS is a standard in development.

C) The SAN standard contains all relevant social criteria to meet the full Social RTFO Meta-Standard level. However for certification to be awarded, a plantation must meet 14 critical criteria and at least 80% of the other criteria. The 14 critical criteria do not cover all RTFO social criteria. The RFA therefore considers that there is not sufficient guarantee that certified produce would meet all the social criteria of the RTFO Meta-Standard, and therefore SAN/RA is considered to meet only the Qualifying Social Standard level.

Note also that this benchmark result refers to the November 2005 version of the SAN standard, which is not permitted for use for a number of key biofuel feedstocks (sugarcane, palm oil and jatropha). SAN plan to publish an addendum to their main standard, which can be used for these feedstocks in March 2009. The RFA intend to benchmark the addendum once available.

D) These standards have been benchmarked against the RTFO Biofuel Sustainability Meta-Standard, but not found to meet the Qualifying Standard level. The standards can currently be reported under the RTFO and therefore be counted towards a company's data capture

target, but they will not count towards a company's Qualifying Environmental Standard target.

D) FEDIOL's Code of Practice serves as voluntary industry guidelines for quality management, food safety and control in the value chain of the oilseed processing industry. It is not intended as a sustainability standard or certification scheme and (sustainable) feedstock production is not part of the code's scope.

F) The German Qualität und Sicherheit (QS) guidelines have a strong focus on food safety, quality assurance and traceability. The main attention of the standard is on fertiliser and pesticide use. It is not intended as a sustainability standard and contains mainly recommendations and relatively few mandatory requirements.

G) Although GlobalGAP did not meet the requirements for either an Environmental or Social Qualifying Standard, it was found to come very close to meeting the requirements of a Qualifying Environmental Standard.

H) IFOAM itself is a Meta-Standard, it focuses on accrediting other standards for organic agriculture according to the general requirements set out by IFOAM. Unfortunately, several important criteria are only included as recommendations in IFOAM, thereby giving no guarantees of compliance. While these have not been benchmarked, some of the organic standards accredited by IFOAM may actually include stricter criteria and could therefore meet the Qualifying Standard level.

I) The Proterra criteria and indicators alone suggest that the standard could meet the Qualifying Standard level. However, most of the criteria included in Proterra are not mandatory for certification with no set deadline for meeting them. Therefore Proterra certification currently does not guarantee that these important criteria are complied with. Furthermore, the Proterra standard does not offer an independent accreditation process, and as such does not guarantee the audit quality. It is therefore not currently a Qualifying Standard.

J) Scottish Quality Crops currently does not meet the criteria required to be either an Environmental or Social Qualifying Standard. The standard is directed more towards food safety than broader sustainability for the purposes of feedstock cultivation for bioenergy.

K) The Social Accountability 8000 standard provides a good coverage of worker rights and working relationship concerns, but does not cover land rights or community relations sufficiently well for it to meet the Social Qualifying Standard level.

## A.2 Short term solutions for standards in development

Several of the benchmarked standards are not yet operational. To offer a short term solution for these cases, the RFA accepts the alternatives detailed in this section for the purposes of reporting under the RTFO.

Note the RFA **strongly recommends** that once a certification scheme becomes fully operational for a particular feedstock, parties should aim to move away from the short term solution and look to operate within the certification scheme as soon as possible. The RFA intends to phase out temporary solutions for particular feedstocks after an operational certification scheme for that feedstock becomes available that meets at least the Qualifying Standard level. The RFA will engage with stakeholders on an appropriate time-frame over which such phasing out should occur.

- **Palm oil:** the Roundtable on Sustainable Palm Oil (RSPO) developed into a fully operational standard, including its auditing, verification and Chain of Custody systems, during 2008. The GreenPalm book and claim Chain of Custody system has been assessed and approved for use within the RTFO (see section 6.2). However, it is recognised that significant volumes of certified feedstock will take time to become available on the market.

The following temporary solution therefore remains acceptable as meeting the RSPO criteria and thereby the Qualifying Environmental and Social Standard level of sustainability for the RTFO:

- Successful independent third party audit against the RSPO criteria and indicators, and
- Feedstock producer (or justified equivalent) is a member of the RSPO or equivalent.
- **Soy oil:** the Round Table on Responsible Soy (RTRS) is not fully operational at the time of writing (March 2009). A draft of the RTRS criteria and indicators was published for consultation in November 2008. The RFA benchmarked this version of the standard and found it to meet both the Environmental and Social Qualifying Standard level (subject to publication of the final version of the standard and development of the auditing and certification requirements). The RTRS plan to publish a 'Field Testing Version' of the standard following their consultation in early March. The RFA intend to benchmark this version when published.

The Basel criteria for soy is a standard which covers soy, but this is not intended to develop into a full certification scheme.

The following are currently accepted as meeting the Qualifying Environmental and Social Standard level of sustainability for the RTFO:

- Successful independent third party audit against the Basel criteria and indicators, (criterion 2.3 on genetically modified material is not required), or
- Successful independent third party audit against the RTRS criteria and indicators (November 2008<sup>19</sup>), and
- (For both) Feedstock producer (or justified equivalent) is a member of the RTRS or equivalent.
- **Sugar cane:** the Better Sugarcane Initiative (BSI) is under development but not yet fully operational. At the time of writing the RFA are engaged with BSI to benchmark their draft criteria and indicators, but no results are available.

The following is currently accepted as meeting the RTFO Biofuel Sustainability Meta-Standard level:

- Successful independent third party audit against the RTFO Biofuel Sustainability criteria and indicators, and
- Feedstock producer (or justified equivalent) is a member of the Better Sugarcane Initiative (BSI) or equivalent.

The independent third party audits must meet the requirements of the RFA's Norm for Audit Quality (see section A.5 in Annex A), with the exception of criteria 2 (Management of the audit programme) and 7 (Accreditation process for Accreditation Bodies). MINOR MUSTs in the norm should be treated as recommendations only.

## A.3 Benchmarking additional standards

A company or standard owner can request that the RFA benchmarks an additional certification scheme that it wishes to be considered for

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<sup>19</sup> The RFA intend to benchmark the Field Testing Version of the RTRS criteria and indicators when published in 2009. If the Field Testing Version is still found to meet the Qualifying Environmental and Social Standard level, this version will replace the November 2008 consultation version as the appropriate standard to audit against.

use within the RTFO<sup>20</sup>. The request should be to [rfa.info@rfa.gsi.gov.uk](mailto:rfa.info@rfa.gsi.gov.uk) and include the following information:

- The formal description of the Standard;
- The most recent version of the Standard's Criteria and Indicators;
- The most recent version of the Standard's procedures and requirements for the auditing/certification process; and
- The most recent version of the standard's accreditation procedures and requirements for certification bodies.

The RFA will acknowledge the receipt of the e-mail within ten working days and publish an announcement on its website that a benchmark will be performed for this certification scheme. The RFA will then begin the technical review of the certification scheme (i.e. benchmark of sustainability Principles and Criteria, Audit quality).

An overview of the procedure for benchmarking of additional standards will be made available on the RFA website.

In a similar manner, a company or standard owner can request that the RFA benchmarks a new version of a sustainability standard or certification scheme that has previously been benchmarked against the RTFO.

## A.4 The norm for Qualifying Standards

The following norms are used for conducting the benchmarks of sustainability principles and criteria.

To become a Qualifying Environmental Standard the following criteria requirements must be met:

- Full compliance with all criteria referring to compliance with national legislation (2.1, 3.1, 4.1, 5.1);
- On all principles one 'partial compliance' criterion is permitted per principle, with a maximum of three in total.

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<sup>20</sup> The RFA will give due consideration as to whether a benchmark of the requested standard or certification scheme is appropriate, but is not obliged to conduct a full benchmark. Appropriate standards or certification schemes are likely to be third party sustainability certification schemes that can be used to certify feedstocks of relevance to the biofuels market.

Full compliance with a criterion is only awarded if the RTFO criterion is met by a corresponding mandatory criterion in the benchmarked standard.

To become a Qualifying Social Standard the following criteria requirements must be met:

- Of the 11 minimum requirement criteria of principle 6, 7 must be fully complied with;
- On principle 7 on land right issues and community relations, one partial compliance is permitted.

Full compliance with a criterion is only awarded if the RTFO criterion is met by a corresponding mandatory criterion in the benchmarked standard.

Note that the benchmark also considers how a certification decision is made within a scheme. For a criterion to be fully met, the certification process must guarantee that the criteria required to meet the Qualifying Standard / full RTFO Meta-Standard level are all met for certification to be awarded, or at least that there is a provision for all relevant criteria to be met over a specified period of time.

## A.5 The norm for Audit Quality

A norm for audit quality has also been developed (Table 9). The norm is based on 7 criteria, with each criterion assigned a conformance level of either 'MAJOR MUST' or 'MINOR MUST'.

For a Standard to be accepted as a Qualifying Standard it must be in compliance with all MAJOR MUSTS. The MINOR MUSTS are optional but highly recommended criteria.

**Table 9 Norm for Audit Quality**

| <b>Criterion</b>                               | <b>Norm</b>   | <b>Conformance</b>       |
|--|---|--------------------------|
| <b>Certification</b>                           |   |                          |
| 1. Requirements for CBs                        | ISO Guide 65: 1996, ISO 17021: 2006, or justified equivalents   | MAJOR MUST               |
| <b>Audit</b>                                   |   |                          |
| 2. Management of the audit programme           | ISO 19011: 2002, or justified equivalent  | MINOR MUST               |
| 3. Audit frequency                             | Once every 5 years for a full certification audit and once a year for a surveillance audit  | MAJOR MUST               |
| 4. Audit competency                            | ISO 19011: 2002, or justified equivalent<br>Specific requirements relevant to the product that the CB is certifying should be added as training requirements where appropriate.   | MAJOR MUST<br>MAJOR MUST |
| 5. Stakeholder consultation                    | To include a range of relevant stakeholders.  | MINOR MUST               |
| 6. Public summaries of the certification audit | To include overall findings of the certification audit, any details of non-compliance and any issues identified during the stakeholder consultation. Information should be available in both English and the relevant local language(s), if applicable. | MINOR MUST               |
| <b>Accreditation</b>                           |   |                          |
| 7. Accreditation process for ABs               | 'Commitment to comply' with ISO 17011: 2004, or justified equivalent, independently peer-reviewed and approved by an auditor that is recognised by either ISEAL or the IAF  | MAJOR MUST               |

The existing Qualifying Standards have been benchmarked against the norm for audit quality, the results of which are detailed in Annex D. Existing Qualifying Standards have a period of 12 months to address any non-conformances (i.e. until the end of the 2009/2010 obligation period). Note that, given the allowed 12 month period, all existing Qualifying Standards will continue to be accepted for use in the RTFO for the obligation period 2009/2010.

For new standards, if the standard is not compliant with all MAJOR MUSTS when being benchmarked for inclusion in the RTFO, then it will not be accepted as a Qualifying Standard. In this case, the standard can address the non-conformances and re-apply to have the audit quality benchmarked for inclusion in the RTFO.

Further details on the norm can be found at the [RFA website](#).

## **A.6 Procedure for downgrading a standard**

Should an existing Qualifying Standard be amended and found to not meet the norm for audit quality or sustainability criteria, the standard owner will be informed by the RFA and given a period of 12 months to address the non-conformance. Failure to do so will result in the standard no longer being accepted as a Qualifying Standard or full RTFO Meta-Standard in the RTFO. The RFA reserves the right to disqualify standards at shorter notice for serious non-conformances.

## Annex B Eligible by-products

Definition: a feedstock that represents less than 10% of the farm or factory gate value.

The biofuel producer purchasing these by-products will have little influence on the sustainability of the production process for the original product. For example, a biofuel producer buying tallow will have little or no influence on the standards applied to rearing the cattle.

For the purpose of the Guidance, the following products are considered by-products:

- Tallow;
- Used cooking oil;
- Municipal Solid Waste;
- Animal manure;
- Molasses;
- Cheese by-products;
- Corn oil.

As outlined in Chapter 2, recent analysis has indicated that using by-products for biofuels can potentially have significant indirect effects, including on the net lifecycle greenhouse gas emissions biofuels offer. For example, in the case of tallow, a report commissioned by the Department for Transport found that the Renewable Transport Fuel Obligation could create an incentive to divert tallow away from its existing uses to biodiesel production. According to the [report](#), this diversion could result in a net increase in GHG emissions due to more carbon intensive feedstocks replacing tallow in its existing uses – as a result biodiesel produced from tallow would achieve no GHG saving.

There is no agreement on a methodology to take into account such indirect effects at present. The RFA has consulted on a methodology for considering the indirect emissions of using by-products and set out a [programme of work](#) it will follow in 2009/10 to gain a better understanding of indirect GHG emissions from wastes and by-products.

# **Annex C RTFO Biofuel Sustainability Meta-Standard Criteria & Indicators**

## **C.1 Environmental criteria and indicators**

The tables below illustrate the environmental sustainability criteria and indicators for the RTFO Biofuel Sustainability Meta-Standard. All criteria and indicators must be met for the RTFO Biofuel Sustainability Meta-Standard. The 'recommended' criteria and indicators listed at the bottom of each table are not required for the RTFO Biofuel Sustainability Meta-Standard but are considered good practice. They indicate where the RTFO Biofuel Sustainability Meta-Standard should develop in the long term.

The RFA will keep the criteria and indicators for the RTFO Biofuel Sustainability Meta-Standard under review to ensure their continuing relevance. The status of mandatory and recommended criteria will also be kept under review.

**Table 10 Environmental criteria and indicators for the RTFO Biofuel Sustainability Meta-Standard**

All the listed criteria and indicators must be met for the RTFO Biofuel Environmental Sustainability Meta-Standard.

| <b>Principle 1: CARBON CONSERVATION</b>   | <b>Biomass production will not destroy or damage large above or below ground carbon stocks</b>  |
|---|---|
| Criterion   | Indicators  |
| 1.1 Preservation of above and below ground carbon stocks (reference date 30-11-2005). | <p>Evidence that biomass production has not caused direct land use change with a carbon payback time exceeding 10 years<sup>21</sup>.</p> <p>Evidence that the biomass production unit has not been established on soils with a large risk of significant soil stored carbon losses such as peat lands, mangroves, wetlands and certain grasslands.</p> |

<sup>21</sup> Guidance on the 'carbon pay back time' is given in Annex H.

| <b>Principle 2:<br/>BIODIVERSITY<br/>CONSERVATION</b>   | <b>Biomass production will not lead to<br/>the destruction or damage of high<br/>biodiversity areas</b>  |
|---|--|
| Criterion   | Indicators   |
| 2.1 Compliance with national laws and regulations relevant to biomass production in the area and surroundings where biomass production takes place. | <p>Evidence of compliance with national and local laws and regulations with respect to:</p> <p>Environmental Impact Assessment</p> <ul style="list-style-type: none"> <li>• Land ownership and land use rights</li> <li>• Forest and plantation management</li> <li>• Protected and gazetted areas</li> <li>• Nature and wild life conservation</li> <li>• Land use planning</li> <li>• National rules resulting from the adoption of CBD<sup>22</sup> and CITES<sup>23</sup>.</li> <li>• The company should prove that: <ul style="list-style-type: none"> <li>• It is familiar with relevant national and local legislation</li> <li>• It complies with these legislations</li> <li>• It remains informed on changes in legislation</li> </ul> </li> </ul> |
| 2.2 No conversion of high biodiversity areas after November 30, 2005  | <p>Evidence that production does not take place in gazetted areas.</p> <p>Evidence that production does not take place in areas with one or more HCV areas<sup>24</sup>:</p>   |

<sup>22</sup> <http://www.biodiv.org/com/convention/convention.shtml>

<sup>23</sup> <http://www.cites.org/eng/disc/text.shtml>

<sup>24</sup> The definition of the 6 High Conservation Values can be found at <http://www.hcvnetwork.org>

|  |  |
|--|--|
|  | <ul style="list-style-type: none"> <li>• HCV 1, 2, 3 relating to important ecosystems and species</li> <li>• HCV 4, relating to important ecosystem services, especially in vulnerable areas</li> <li>• HCV 5, 6, relating to community livelihoods and cultural values.</li> </ul> <p>Evidence that production does not take place in any areas of high biodiversity.</p> |
| <p>2.3 The status of rare, threatened or endangered species and high conservation value habitats, if any, that exist in the production site or that could be affected by it, shall be identified and their conservation taken into account in management plans and operations.</p> | <p>Documentation of the status of rare, threatened or endangered species (resident, migratory or otherwise) and high conservation value habitats in and around the production site.</p> <p>Documented and implemented management plan on how to avoid damage to or disturbance of the above mentioned species and habitats.</p>  |

**Recommendation only:**

**Criterion:**

Preservation and/or improvement of surrounding landscape.

**Indicators:**

Representative samples of existing ecosystems within the landscape shall be protected in their natural state and recorded on maps, appropriate to the scale and intensity of operations and the uniqueness of the affected resources.

Currently no comprehensive maps exist which define HCV areas. For many areas it will therefore still be necessary to assess whether HCVs are present or not.

The following initiatives are helpful in defining areas with one or more HCVs:

- Conservation International – Biodiversity Hotspots
- Birdlife international – Important Bird Areas
- The WWF G200 Eco-regions : the regions classified ‘vulnerable’ or ‘critical/endangered’.
- European High Nature Value Farmland

| <b>Principle 3: SOIL CONSERVATION</b>   | <b>Biomass production does not lead to soil degradation</b>  |
|---|--|
| Criterion   | Indicators   |
| <p>3.1 Compliance with national laws and regulations relevant to soil degradation and soil management.</p>  | <p>Evidence of compliance with national and local laws and regulations with respect to:</p> <ul style="list-style-type: none"> <li>– Environmental Impact Assessment</li> <li>– Waste storage and handling</li> <li>– Pesticides and agro-chemicals</li> <li>– Fertilizer</li> <li>– Soil erosion</li> </ul> <p>Compliance with the Stockholm convention (list of forbidden pesticides).</p> <p>The company should prove that:</p> <ul style="list-style-type: none"> <li>– It is familiar with relevant national and local legislation</li> <li>– It complies with these legislations</li> <li>– It remains informed on changes in legislation</li> </ul> |
| <p>3.2 Application of good agricultural practices with respect to:</p> <ul style="list-style-type: none"> <li>– Prevention and control of erosion</li> <li>– Maintaining and</li> </ul> | <p>Documentation of soil management plan aimed at sustainable soil management, erosion prevention and erosion control.</p> <p>Annual documentation of applied good agricultural practices with respect to<sup>25</sup>:</p>  |

<sup>25</sup> Recommendations only

Records of annual measurements of:

- Soil loss in tonnes soil/ha/y
- N,P,K balance
- SOM and pH in top soil
- Soil salts content

|  |  |
|--|--|
| improving soil nutrient balance<br>– Maintaining and improving soil organic matter<br>– Maintaining and improving soil pH<br>– Maintaining and improving soil structure<br>– Maintaining and improving soil biodiversity<br>– Prevention of salinisation | – Prevention and control of erosion<br>– Maintaining and improving soil nutrient balance<br>– Maintaining and improving soil organic matter<br>– Maintaining and improving soil pH<br>– Maintaining and improving soil structure<br>– Maintaining and improving soil biodiversity<br>– Prevention of salinisation. |
|--|--|

### Recommendation only

#### Criterion:

The use of agricultural by-products does not jeopardize the function of local uses of the by-products, soil organic matter or soil nutrients balance.

#### Indicators:

- Documentation that the use of by-products does not occur at the expense of important traditional uses (such as fodder, natural fertilizer, material, local fuel etc.) unless documentation is available that similar or better alternatives are available and are applied.
- Documentation that the use of by-products does not occur at the expense of the soil nutrient balance or soil organic matter balance.

| <b>Principle 4: SUSTAINABLE WATER USE</b>  | <b>Biomass production does not lead to the contamination or depletion of water sources</b>   |
|--|--|
| Criterion  | Indicators   |
| <p>4.1 Compliance with national laws and regulations relevant to contamination and depletion of water sources.</p>     | <p>Evidence of compliance with national and local laws and regulations with respect to:</p> <ul style="list-style-type: none"> <li>– Environmental Impact Assessment</li> <li>– Waste storage and handling</li> <li>– Pesticides and agro-chemicals</li> <li>– Fertilizer</li> <li>– Irrigation and water usage</li> </ul> <p>The company should prove that:</p> <ul style="list-style-type: none"> <li>– It is familiar with relevant national and local legislation</li> <li>– It complies with these legislations</li> <li>– It remains informed on changes in legislation</li> </ul> |
| <p>4.2 Application of good agricultural practices to reduce water usage and to maintain and improve water quality.</p> | <p>Documentation of water management plan aimed at sustainable water use and prevention of water pollution.</p> <p>Annual documentation of applied good agricultural practices with respect to:</p> <ul style="list-style-type: none"> <li>– Efficient water usage.</li> <li>– Responsible use of agro-chemicals</li> <li>– Waste discharge</li> </ul>   |

**Recommendations only**

Records of annual measurements of:

- Agrochemical inputs (input/ha/y), such as fertilizers and pesticides (specified per agrochemical)
- Water sources used (litres/ha/y)
- BOD level of water on and nearby biomass production and processing.

| <b>Principle 5: AIR QUALITY</b>   | <b>Biomass production does not lead to air pollution</b>  |
|---|---|
| Criterion   | Indicators  |
| 5.1 Compliance with national laws and regulations relevant to air emissions and burning practices | <p>Evidence of compliance with national and local laws and regulations with respect to:</p> <ul style="list-style-type: none"> <li>– Environmental Impact Assessment</li> <li>– Air emissions</li> <li>– Waste management</li> <li>– Burning practices</li> </ul> <p>The company should prove that:</p> <ul style="list-style-type: none"> <li>– It is familiar with relevant national and local legislation</li> <li>– It complies with these legislations</li> <li>– It remains informed on changes in legislation</li> </ul> |
| 5.2 No burning as part off land clearing or waste disposal.                                       | Evidence that no burning occurs as part of land clearing or waste disposal, except in specific situations such as described in the ASEAN guidelines on zero burning or other respected good agricultural practices.   |

### List of protected areas referred to in criterion 2.2

UNESCO World heritage sites<sup>26</sup>;

IUCN List of Protected Areas categories I, II, III and IV<sup>27</sup>, according to the list available from 2003<sup>28</sup> or more up to date lists or national data;

<sup>26</sup> <http://whc.unesco.org/en/list>

RAMSAR sites (wetlands under the Convention on Wetlands)<sup>29</sup>, according to the available list<sup>30</sup> of more up to date lists or national data.

## C.2 Social criteria and indicators

Table 11 illustrates the social criteria and indicators for the RTFO Biofuel Sustainability Meta-Standard. The RFA will keep these criteria and indicators under review to ensure their continuing relevance. The status of mandatory and recommended criteria will also be kept under review.

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<sup>27</sup> IUCN defines a protected area as: an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means, and subdivides protected areas into six categories: I a) Strict nature reserve/wilderness protection area; I b) Wilderness area; II) National park; III) Natural monument; IV) Habitat/Species management area; V) Protected landscape/seascape; VI) Managed resource protected area. Source: [www.wwf.de/fi\\_leadadmin/fm-wwf/pdf-alt/waelder/WWF-position\\_Protected\\_Areas\\_03.pdf](http://www.wwf.de/fi_leadadmin/fm-wwf/pdf-alt/waelder/WWF-position_Protected_Areas_03.pdf)

<sup>28</sup> [http://www.unep-wcmc.org/wdpa/unlist/2003\\_UN\\_LIST.pdf](http://www.unep-wcmc.org/wdpa/unlist/2003_UN_LIST.pdf)

<sup>29</sup> <http://www.ramsar.org/>

<sup>30</sup> [http://www.ramsar.org/index\\_list.htm](http://www.ramsar.org/index_list.htm)

**Table 11 Social criteria and indicators for the RTFO Biofuel Sustainability Meta-Standard**

All the listed criteria and indicators must be met for the RTFO Biofuel Social Sustainability Meta-Standard.

| <b>Principle 6:<br/>WORKERS RIGHTS</b>                                      | <b>Biomass production does adversely affect workers rights and working relationships</b>  |
|---|---|
| Criteria  | Indicators  |
| C 6.1 Compliance with national law on working conditions and workers rights | Certification applicant must comply with all national law concerning working conditions and workers rights.   |
| C 6.2 Contracts   | Certification applicant must supply all categories of employees (incl. temporary workers) with a legal contract in which the criteria below are registered.   |
| C 6.3 Provision of information  | Certification applicant must show evidence that all workers are informed about their rights (incl. bargaining rights).  |
| C 6.4 Subcontracting  | When labour is contracted or subcontracted to provide services for the certification applicant, the certification applicant must demonstrate that the subcontractor provides its services under the same environmental, social and labour conditions as required for this standard. |
| C 6.5 Freedom of association and right to collective bargaining             | Certification applicant must guarantee the rights of workers to organise and negotiate their working conditions (as established in ILO conventions 87 en 98). Workers exercising this right must not be discriminated against or suffer repercussions.                              |
| C 6.6 Child labour  | Certification applicant must guarantee that no children below the age of 15 are employed. Children are allowed to work on family farms if not interfering with children's educational, moral, social and physical development (the  |

|                           |   |
|---------------------------|---|
|                           | workday, inclusive of school and transport time, to be a maximum of 10 hours).  |
| C 6.7 Young workers       | The work carried out shall not be hazardous or dangerous to the health and safety of young workers (age 15 -17). It shall also not jeopardise their educational, moral, social and physical development.  |
| C 6.8 Health and safety   | All certification applicants must meet basic requirements including potable drinking water, clean latrines or toilettes, a clean place to eat, adequate protective equipment and access to adequate and accessible (physically and financially) medical care. Accommodation, where provided, shall be clean, safe, and meet the basic needs of the workers. |
|                           | All certification applicants shall ensure that workers have received regular health and safety training appropriate to the work that they perform.  |
|                           | All certification applicants shall identify and inform workers of hazards, and adopt preventive measures to minimise hazards in the workplace and maintain records of accidents.  |
| C 6.9 Wages/ compensation | Wageworkers must be paid wages at least equivalent to the legal national minimum wage or the relevant industry standard, whichever is higher.   |
|                           | Workers must be paid in cash, or in a form that is convenient to them and regularly.  |
| C 6.10 Discrimination     | In accordance with ILO Conventions 100 and 111, there must be no discrimination (distinction, exclusion, or preference) practised that denies or impairs equality of opportunity, conditions, or treatment based on individual characteristics and group membership or association like: race, caste, national origin, religion, disability, gender,        |

|                      |  |
|----------------------|--|
|                      | sexual orientation, union membership, political affiliation, age, marital status, those with HIV/AIDS, seasonal, migrant and temporary workers.  |
| C 6.11 Forced Labour | Standards shall require that the certification applicant not engage in or support forced labour including bonded labour as defined by ILO conventions 29 and 105. The company must not retain any part of workers' salary, benefits, property, or documents in order to force workers to remain on the farm. The company must also refrain from any form of physical or psychological measure requiring workers to remain employed on the farm. Spouses and children of contracted workers should not be required to work on the farm. |

|  |   |
|--|---|
| <b>Principle 7: Land rights.</b>                             | <b>Biomass production does not adversely affect existing land rights and community relations</b>  |
| Criteria   | Indicators  |
| C 7.1 Land right issues                                      | The right to use the land can be demonstrated and does not diminish the legal or customary rights of other users and respects important areas for local people.   |
| C 7.2 Consultation and communication with local stakeholders | Procedures are in place to consult and communicate with local populations and interest groups on plans and activities that may negatively affect the legal or customary rights, property, resources, or livelihoods of local peoples. |

### List of recommended only social criteria

These recommended criteria and indicators are not required for the RTFO Biofuel Sustainability Meta-Standard but are considered good practice. They indicate the direction the RTFO Biofuel Sustainability Meta-Standard should develop in the long term.

- Criteria: Wages and compensation
  - The certification applicant must pay the workers for unproductive time due to conditions beyond their control.
  - Housing and other benefits shall not be deducted from the minimum wage/or relevant industry wage as an in kind payment without the expressed permission of the worker concerned.
  - Where the certification applicant uses pay by production (piecework) system, the established pay rate must permit the worker to earn the minimum wage or relevant industry average (whichever is higher) during normal working hours and under normal operating conditions).
- Criteria: Working hours
  - Usual working hours shall not exceed eight hours a day and 48 hours a week.
  - Workers must have a min. of 24 hours rest for every seven day period.
  - Overtime during seasonal peaks allowed, needs to be voluntary, should be paid at premium rate. Adequate breaks (every 6 h, 30 minutes). For heavy or dangerous work shorter periods and longer breaks should be allowed.
- Criteria: Growers and mills should deal fairly with smallholders and other local businesses
  - Current and past prices for produce are publicly available.
  - Pricing mechanisms for produce, inputs and services are documented.
  - Evidence is available that all parties understand the contractual agreements they enter into, and that contracts are fair, legal and transparent and that all costs, fees and levies are explained and agreed in advance.
  - Agreed payments are made in a timely manner.

## Annex D Benchmark of Standards

This annex includes the detailed results of the benchmarks performed of existing or developing sustainability standards against the RTFO Biofuel Sustainability Meta-Standard. Benchmarks have been performed on two aspects:

- The criteria and indicators of the sustainability standard;
- The audit quality of the sustainability standard

Note standards that have been benchmarked, but do not meet the Qualifying Standard level, can still be reported under the RTFO and be counted towards a company's data capture target, but they will not count towards a company's Qualifying Standard target.

### D.1 Criteria and indicators

Table 12 and Table 13 and show the detailed results of the benchmarks performed on the criteria and indicators of existing sustainability standards against the RTFO Biofuel Sustainability Meta-Standard criteria and indicators. Table 12 shows detailed benchmark results for standards which meet at least the Qualifying Standard level. Table 13 shows detailed benchmark results for standards which do not meet the Qualifying Standard level. The tables also indicate which version of the standards have been benchmarked.

Three scores have been assigned in the benchmark:

**Y:** Yes the RTFO criterion and its indicators are sufficiently met by the benchmarked standard

**X:** No the RTFO criterion and its indicators are not or insufficiently met by the benchmarked standard

**P:** indicating that the RTFO criterion and its indicators are partially met by the benchmarked standard. There can be three reasons for this:

- Of the various indicators for one criterion several are met and several are not met
- The subject covered by a criterion is addressed but in a less stringent manner. For example, several standards state that

destruction of primary forest is forbidden but do not give a reference year. As the reference year is considered important this leads to a partial compliance score 'P'

- The RTFO Meta-Standard indicators are fully met by the benchmarked standard but are not mandatory for certification.

All Ps and Xs form gap criteria. In order to be able to claim the full RTFO Biofuel Sustainability Meta-Standard, successful supplementary checks on all gap criteria of the Qualifying Standard are required.

Supplementary checks can also be used to comply with gap criteria between a non-Qualifying benchmarked standard and the Qualifying Standard level, or indeed to comply with gap criteria between a non-Qualifying Standard and the full RTFO Biofuel Sustainability Meta-Standard level.

## D.2 Auditing quality

Table 14 below shows the detailed results of the benchmark performed on the audit quality of Qualifying standards against the RTFO norm for audit quality.

Two scores have been assigned in the benchmark:

- Y: Yes the RTFO criterion is sufficiently met by the benchmarked standard
- X: No the RTFO criterion is insufficiently met by the benchmarked standard

**Table 12 Detailed benchmark of existing Qualifying Standards**

| Principles and Criteria   | ACCS      | Basel   | FSC        | Genesis QA  | LEAF          | RSPO  | RTRS          | SAN/RA   |  |   |   |   |   |   |   |   |  |
|---|-----------|---|------------|---|---------------|---|---------------|--|--|---|---|---|---|---|---|---|--|
| Benchmarked version   | July 2007 | August 2004   | April 2004 | 2007/08-SF.063 iss 02   | December 2006 | March 2006  | November 2008 | November 2005  |  |   |   |   |   |   |   |   |  |
| <b>P 1. Carbon Conservation</b>   |           |   |            |   |               |   |               |  |  |   |   |   |   |   |   |   |  |
| C 1.1 Preservation of above and below ground carbon stocks (reference date 30-11-2005).   | Y         | 1.0 Awareness of Defra COPs for soil, air and water<br>Conservation of peat lands<br>5.16 Assessment of carbon stock changes but no limit | P          | 3.1.1, no conversion of primary and HCVA July 2004<br>3.1.2. no forest conversion without compensation 1994 | P             | 10.1 natural forest conservation and restoration.   | Y             | 3.12 EIA required and assessment & record keeping of carbon losses             | P  | P6  | P | 7.3 no conversion primary forest and HCVA Nov 2005<br>7.4 No plantation on peat soil > 3m | P | 4.3: 4.3.2: may be further developed (p. 14), 4.5: 4.5.1-4.5.4 (carbon stock as such not mentioned) | P | P2 carbon capture<br>C 2.1 (ecosystem conserv)<br>C 9.5 cutting of natural forest cover for new production areas is forbidden |  |
| <b>P2. Biodiversity conservation</b>  |           |   |            |   |               |   |               |  |  |   |   |   |   |   |   |   |  |
| C 2.1 Compliance with national laws and regulations relevant to biomass production and the area where biomass production takes place. | Y         | 1.0, 1.1 compliance with legislation is part of COP compliance  | Y          | 1.1 general   | Y             | P 1 general   | Y             | General compliance with national legislations and 3.3.7: local legislations    | Y  | 1.4 farm policy need to comply with all regulatory and legislative requirements | Y | 2.1 in general  | Y | 1.1: 1.1.1 / 1.1.2. & 1.2: 1.2.1  | Y | 1.1 manage social and environmental aspects in compliance with applicable law 1.6 / 2.4                                       |  |
| C 2.2 No conversion of high biodiversity areas after 30-11-2005   | Y         | 5.16  | Y          | 3.1.1 No conversion after 31 July '04<br>3.1.2 compensation from 1 Jan '95 - 31 July '04                    | Y             | 6.10 no conversion in HCV forest.<br>10.9 no conversion from natural forest after November 1994 | Y             | 3.12 EIA required  | P  | P6 Extensive set of criteria  | Y | 7.3 no conversion primary forest and HCVA Nov 2005  | Y | 4.5: 4.5.1-4.5.4 (although dates differ)  | P | P9 P2 (ecosystem conservation)<br>2.2 no specific date  |  |
| C 2.3 Identification and conservation of important biodiversity on and around the production unit.                                    | Y         | 5.11 Refers to GAEC and SMR. Assessed for England.  | Y          | 3.3.1 and 3.3.2   | Y             | P6 conserve biodiversity  | Y             | 3.3.7. identify and conserve important features of biodiversity (GAEC and SMR) | Y  | P6 Integrate farming and biodiversity management                                | Y | 5.2 (+on-farm practice)   | Y | 4.1: 4.1.1 / 4.1.2 & 4.4: 4.4.1-4.4.3 & 4.6: 4.6.1  | Y | 2.3 within 1 km, communication with owner of natural park   |  |
| <b>Recommendations</b>  |           |   |            |   |               |   |               |  |  |   |   |   |   |   |   |   |  |
| 2.4 Preservation and/or improvement of surrounding landscape  |           | Note this criterion is substantially changed from when the original benchmark was carried out and is therefore left blank.                |            |   |               |   |               | P  | 4.1: 4.1.1 / 4.1.2 (no landscape impact mentioned) |   |   |   |   |   |   |   |  |

| Principles and Criteria  | ACCS | Basel                  | FSC | Genesis QA  | LEAF | RSPO   | RTRS | SAN/RA   |   |  |   |                                |   |   |   |                                     |    |
|--|------|------------------------|-----|---|------|--|------|--|---|--|---|--------------------------------|---|---|---|-------------------------------------|----|
| <b>P3. Soil conservation</b>   |      |                        |     |   |      |  |      |  |   |  |   |                                |   |   |   |                                     |    |
| C 3.1 Compliance with national laws and regulations relevant to soil degradation and soil management.  | Y    | COP for soil and water | Y   | 1.1 general                                       | Y    | P 1 general  | Y    | 3.3.6. Producer should be aware of erosion risk and mitigation measures & general compliance | Y | 1.2.1  | Y | 2.1                            | Y | 1.1: 1.1.1 / 1.1.2 & 1.2: 1.2.1 & 5.7: 5.7.1 & 5.8: 5.8.1 | Y | 1.1 general compliance national law |    |
| C 3.2 Application of best practices to maintain and improve soil quality.<br>o Erosion control<br>o Soil nutrient balance<br>o Soil organic matter<br>o Prevention of salinisation<br>o Soil structure | Y    | COP for soil and water | Y   | 2.1.1 / 2.1.2 / 2.1.3, 2.4.2 missing salinisation | Y    | 6.5 control erosion, 10.6 improve or maintain soil structure, fertility and biol. Activity | Y    | 3.3.6. Mostly focussing at erosion and soil analysis, soil organic matter                    | Y | 2.2.1 – 2.2.10 Soil erosion section, 2.4.1 – 2.4.14 Crop nutrition | Y | 4.2 / 4.3 missing salinisation | Y | 5.4: 5.4.1-5.4.3 & 5.8: 5.8.2                             | Y | P9 missing salinisation             |    |
| <b>Recommendations</b>   |      |                        |     |   |      |  |      |  |   |  |   |                                |   |   |   |                                     |    |
| 3.2 a Measurements   | Y    | COP for soil and water | X   |   | X    |  | Y    | 3.3.5. Soil analysis every 4-5 years   | Y | 2.4 / 2.10   | X |                                |   |   |   | Y                                   | P9 |
| C 3.3 The use of agricultural by-products does not jeopardize the function of local uses of the by-products, soil organic matter or soil nutrients balance.  | X    |                        | X   |   | X    |  | Y    |  | Y | 2.4  | P | 5.3 recycled and reused        | P | 4.3: 4.3.2 (by-production not specifically mentioned)     | Y | 10.1 used as fertilizer             |    |

## Carbon And Sustainability Reporting Within The Renewable Transport Fuel Obligations

| Principles and Criteria   | ACCS | Basel  | FSC | Genesis QA  | LEAF | RSPO                                     | RTRS | SANRA   |   |   |   |     |   |   |   |                            |
|---|------|--|-----|---|------|--|------|---|---|---|---|-----|---|---|---|----------------------------|
| <b>P 4. Sustainable Water Use</b>   |      |  |     |   |      |  |      |   |   |   |   |     |   |   |   |                            |
| C 4.1 Compliance with national laws and regulations relevant to contamination and depletion of water sources. | Y    | Covered by compliance with soil and water COPs [C.1.1 above]   | Y   | 1.1 general   | Y    | P 1 general                              | Y    | 2.2.1.1 Access to general publications  | Y | 1.2.1   | Y | 2.1 | Y | 1.1: 1.1.1 / 1.1.2 & 1.2: 1.2.1 & 5.8: 5.8.1  | Y | 4.2 / 4.4 / 4.5            |
| C 4.2 Application of best practices to reduce water usage and to maintain and improve water quality.          | Y    | Covered by compliance with soil and water COPs [C.1.1 above]   | Y   | 2.1.4 / 2.1.5 / 2.2 chemical use                                | P    | 10.6 impacts on water quality , quantity | Y    | 2.5.2; 2.5.3; 2.11.3.1; 2.11.4; 3.2.10; 3.2.11; 3.2.14; 3.2.16                        | Y | 2.7.1 –2.7.8 Irrigation and water storage / 3.7.4 | Y | 4.4 | Y | 5.1: 5.1.1-5.4.3 & 5.2: 5.1.1-5.4.3 & 5.3: 5.1.1-5.4.3  | Y | P4                         |
| <b>Recommendations</b>  |      |  |     |   |      |  |      |   |   |   |   |     |   |   |   |                            |
| 4.2 a Records   | X    |  | X   |   | X    |  |      |   | Y | 2   | X |     | Y | 5.1: 5.1.2 / 5.2: 5.2.1 / 5.3: 5.3.1 / 5.4: 5.4.1 / 5.5: 5.5.4  | Y | P4                         |
| <b>P5. Air quality</b>  |      |  |     |   |      |  |      |   |   |   |   |     |   |   |   |                            |
| C 5.1 Compliance with national laws and regulations relevant to air emissions and burning practices           | Y    | 1.0, 1.1 compliance with legislation is part of COP compliance | Y   | 1.1 general   | Y    | P 1 general                              | Y    | 2.2.1.1 Access to general publications & general compliance with national legislation | Y | 1.2.1   | Y | 2.1 | Y | 1.1: 1.1.1 / 1.1.2 & 1.2: 1.2.1   | Y | 1.1 / 10.2 / 10.3 / 10.4 / |
| C 5.2 No burning as part off land clearing or waste disposal  | Y    | Covered by compliance with Air COP                             | Y   | 3.2.3 no fire for land clearing<br>3.4.1 avoid burning of waste | P    |  | Y    | 2.11.3. most waste may not be burned  | Y | 1.2.1   | Y | 5.5 | Y | 4.6: 4.6.1 (risk assessment) & 4.2: 4.2.1 (no burning of crop residues/waste) & Land clearing not mentioned | Y | 9.4 / 10.2                 |

| Principles and Criteria  | ACCS | Basel  | FSC | Genesis QA  | LEAF | RSPO  | RTRS | SANRA  |   |             |   |  |   |   |   |   |
|--|------|--|-----|---|------|---|------|--|---|-------------|---|--|---|---|---|---|
| <b>P6. Workers rights and working relationships</b>                                  |      |  |     |   |      |   |      |  |   |             |   |  |   |   |   |   |
| C 6.1 Compliance with national laws concerning working conditions and workers rights | X    |  | Y   | 1.1 / 4.2.1   | Y    | P 1 general   | Y    | General compliance with national legislations                                      | Y | 1.2.1       | Y | 2.1  | Y | 1.1: 1.1.1 / 1.1.2 & 1.2: 1.2.1   | Y | P 5 (ILO, Un. Decl. of Human Rights and Children's right convention)<br>5.1 Complying with labour laws and internat. Agreements |
| C 6.2 Contracts  | X    |  | X   |   | X    |   | X    |  | X |             | X |  | X | Contract as such  | Y | 5.3   |
| C 6.3 Provision of information   | X    |  | Y   | 4.2.1   | X    |   | X    |  | X |             | Y | 1.1 / 6.2  | Y | 2.2: 2.2.1 / 2.2.2  | Y | 5.1 / 5.13  |
| C 6.4 Subcontracting   | P    | 9.0 not related to working conditions but to the requirements of the ACCS standard | X   |   | X    |   | P    | 2.4.0.   | Y | 1.9 (1.2.6) | X |  | P | 2.2: 2.2.1 / 2.2.2 & Some criteria cover subcontractors, but not explicitly mentioned | Y | 1.8 / 5.3   |
| C 6.5 Freedom to associate and bargain   | X    |  | Y   | 4.2.2 ILO (87 & 98)   | Y    | 4.3 as outlined in ILO  | X    |  | X |             | Y | 6.6  | Y | 2.4: 2.4.1-2.4.4  | Y | 5.12  |
| C 6.6 Child labour   | X    |  | Y   | 4.3.1 No child labour, min 15 under 18 no hazardous work. Child on family farm, without skipping school | X    |   | X    |  | X |             | Y | 6.7 no Child labour, except on fam. Farm without interfering with school | Y | 2.1: 2.1.4 / 2.1.5  | Y | 5.8 / 5.9   |
| C 6.7 Young workers (15-17)  | X    |  | Y   | 4.3   | X    |   | X    |  | X |             | X |  | Y | 2.1: 2.1.4  | Y | 5.8   |
| C 6.8 Health and Safety  | P    | 2.7.1  | Y   | 4.3.2 health and safety policy<br>4.3.3 training  | Y    | 4.2 meet all applicable law and regulation covering health and safety of employees + families | Y    | 2.1 comply with legal requirements, and annually reviw policy, written policy plan | X |             | Y | 4.7 health and safety plan<br>4.8 training                               | Y | 2.2: 2.2.1 / 2.2.2 & 2.3: 2.3.1-2.3.8   | Y | 5.14 (housing) / 5.15 (water quality) / 5.16 (medical services) / P6 (health and safety)  |

| Principles and Criteria                                 | ACCS                     | Basel  | FSC                           | Genesis QA | LEAF            | RSPO   | RTRS   | SANRA   |
|---|--------------------------|--|-------------------------------|------------|-----------------|--|--|---|
| C 6.9 Wages   | X                        | Y 4.2.1 at least min wages and adequate standard of living                                     | X                             | X          | X               | Y 6.5 at least legal min. standards and sufficient to meet basic needs                                 | Y 2.5: 2.5.1 / 2.5.2   | Y 5.4 / 5.5   |
| C 6.10 Discrimination                                   | X                        | Y 4.2.3 equality for all employees and contractors   | X                             | X          | X               | Y 6.8, 6.9   | Y 2.1: 2.1.6 / 2.1.7   | Y 5.2   |
| C 6.11 Forced labour                                    | X                        | Y 4.3.1 No forced labour   | X                             | X          | X               | X  | Y 2.1: 2.1.1 / 2.1.2 / 2.1.3   | Y 5.1   |
| Recommendations   |                          |  |                               |            |                 |  |  |   |
| C 6.12 Working hours                                    | X                        | X  | X                             | X          | X               | X  | Y 2.5: 2.5.3- 2.5.6  | Y 5.6 working hours must not exceed legal maximum or ILO 5.7 Overtime |
| <b>P 7 Land right issues and community relations</b>    |                          |  |                               |            |                 |  |  |   |
| C 7.1 Land right issues                                 | Y Operating procedures 2 | Y 4.4.1 right can be demonstrated and local interpretations on land right should be identified | Y 2.1 till 2.3 / 3.1 till 3.3 | X          | P 8.3.7         | Y 2.2 right to use land can be demonstrated 2.3 land use not diminish legal rights other users 7.5 7.6 | Y 1.2: 1.2.1   | Y P7 Community relations  |
| C 7.2 Consultation and communication local stakeholders | X                        | Y 4.1.2.   | Y 4.4                         | X          | Y 1.10 and 1.13 | Y 1.1 / 2.3 / 6.2 / 6.3 / 6.4  | Y 1.3 (optional): 1.3.1 & 3.1: 3.1.1 / 3.1.2 & 3.2: 3.2.1 & 3.3: 3.3.1 | Y P7 Community relations  |

**Table 13 Detailed benchmark of standards that do not meet Qualifying Standard level**

| Principles and Criteria   | FEDIOL   | German QS  | GlobalGAP      | IFOAM           | ProTerra   | SQC         | SA8000  |   |   |
|---|--|------------|----------------|-----------------|--|-------------|---|---|---|
| Benchmarked version   | March 2002   | March 2008 | September 2007 | 2005 (May 2006) | April 2007   | August 2007 | 2001  |   |   |
| <b>P 1. Carbon Conservation</b>   |  |            |                |                 |  |             |   |   |   |
| C 1.1 Preservation of above and below ground carbon stocks (reference date 30-11-2005).   | X  | X          | X              | P               | 2.1.2. clearing of primary ecosystem is prohibited   | P           | 2.1.2.3.1 (BR) no conversion / 2.1.2.3.1.1 (PR L1) no conversion after 1994 | X | X |
| <b>P2. Biodiversity conservation</b>  |  |            |                |                 |  |             |   |   |   |
| C 2.1 Compliance with national laws and regulations relevant to biomass production and the area where biomass production takes place. | X  | X          | Y              | X               | Any applicable legislation that is stricter than GlobalGAP must be complied with   | P           | 1.1.1 / 1.1.2 environment in general  | X | X |
| C 2.2 No conversion of high biodiversity areas after 30-11-2005   | X  | X          | X              | P               | 2.1.2. clearing of primary ecosystem is prohibited   | Y           | 2.1.2.3.1 (BR) no conversion / 2.1.2.3.1.1 (PR L1) no conversion after 1994 | X | X |
| C 2.3 Identification and conservation of important biodiversity on and around the production unit.                                    | X  | X          | P              | Y               | AF5.1. Written action plan to enhance biodiversity on farm (minor must), other are recommendations<br>2.1 Organic farming benefits the quality of ecosystems<br>2.1.2. clearing of primary ecosystem is prohibited | P           | 2.1.2.3.2 / 2.1.2.3.3   | X | X |
| Recommendations   |  |            |                |                 |  |             |   |   |   |
| 2.4 Preservation and/or improvement of surrounding landscape  | Note this criterion is substantially changed from when the original benchmark was carried out and is therefore left blank. |            |                |                 |  |             |   |   |   |

| Principles and Criteria  | FEDIOL | German QS | GlobalGAP  | IFOAM | ProTerra  | SQC | SA8000                           |                                      |         |  |  |   |
|--|--------|-----------|--|-------|---|-----|----------------------------------|--------------------------------------|---------|--|--|---|
| <b>P3. Soil conservation</b>   |        |           |  |       |   |     |                                  |                                      |         |  |  |   |
| C 3.1 Compliance with national laws and regulations relevant to soil degradation and soil management.  | X      | P         | 4.5.3 Conformity with relevant regulation on fertilisers, soil improvers, culture substrates or plant growing aids (recommendation).<br>4.6.2 Regulations on plant protection measures are to be taken into account (recommendation).    | Y     | Any applicable legislation that is stricter than GlobalGAP must be complied with                  | X   | P                                | 1.1.1 / 1.1.2 environment in general | P       | 1.4 Read and follow applicable regulations on protection of soil, air, water | X  |   |
| C 3.2 Application of best practices to maintain and improve soil quality.<br>o Erosion control<br>o Soil nutrient balance<br>o Soil organic matter<br>o Prevention of salinisation<br>o Soil structure | X      | P         | 4.3.2 Actual erosion control and soil conservation practice depends on local conditions (recommendation).<br>4.5.3 Compliance with good technical practice to be obvious from the records annexed to the documentation (recommendation). | Y     | CB 4, best practices are minor musts, others are recommendations                                  | Y   | 2.1 2.2.1 t-m 2.2.5 4.3.1 en 4.4 | P                                    | 2.1.2.6 | Y  | 1.4-1.12: requirements on fertiliser use | X |
| <b>Recommendations</b>   |        |           |  |       |   |     |                                  |                                      |         |  |  |   |
| 3.2 a Measurements   | X      | Y         | 4.3.1 Field-based tillage records, 4.5.1 Field-based records of fertilisation 4.5.2 Analysis nutrient content of combinable crop soils every six years.  | P     | CB 4.1. soil maps, CB 5.3 records of fertiliser application, CB 8.2 pesticide application records | X   |                                  | X                                    |         | X  |  |   |
| C 3.3 The use of agricultural by-products does not jeopardize the function of local uses of the by-products, soil organic matter or soil nutrients balance.  | X      | X         | 4.2.3 Farmers to show what happened to the by-products (removed from field yes/no) (recommendation).   | X     |   | Y   | 2.2.3 used as fertilizer         | X                                    |         | X  |  |   |

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| Principles and Criteria   | FEDIOL   | German QS  | GlobalGAP   | IFOAM                             | ProTerra   | SQC  | SA8000 |
|---|--|--|---|-----------------------------------|--|--|--------|
| <b>P 4. Sustainable Water Use</b>   |  |  |   |                                   |  |  |        |
| C 4.1 Compliance with national laws and regulations relevant to contamination and depletion of water sources. | X  | P (4.5.3, 4.6.2) Compliance with regulations related to fertilisers, pesticides and agro-chemicals (recommendations)   | Y Any applicable legislation that is stricter than GlobalGAP must be complied with  | X                                 | P 1.1.1 / 1.1.2 environment in general           | P 1.4 Read and follow applicable regulations on protection of soil, air, water | X      |
| C 4.2 Application of <i>best practices</i> to reduce water usage and to maintain and improve water quality.   | X 8.4 Reference to Clean Water Directive or equivalent as quality requirement for processing aids. | X 5.2.3 Evidence of water quality and water analysis results. Field-based documentation of irrigation and evidence of quality of supplementary water (recommendations for vegetables and fruits) | Y CB 6.1 methods for calculating water use (recommendation), justification of the method used (minor must); CB6.4 (minor musts) | Y 2.1 2.2.4 t-m 2.2.6             | P 2.1.2.4./ 2.2.2/2.2.4/2.2.5/ 2.3.3/2.3.4/2.3.5 | X  | X      |
| Recommendations   |  |  |   |                                   |  |  |        |
| 4.2 a Records   | X  | P 5.2.3 Evidence of water quality and water analysis results. Field-based documentation of irrigation and evidence of quality of supplementary water (recommendations for vegetables and fruits) | P CB6.2.3. records are recommended  | X                                 | X  | X  | X      |
| <b>P5. Air quality</b>  |  |  |   |                                   |  |  |        |
| C 5.1 Compliance with national laws and regulations relevant to air emissions and burning practices           | X  | X  | Y Any applicable legislation that is stricter than GlobalGAP must be complied with  | X                                 | P 1.1.1 / 1.1.2 environment in general           | P 1.4 Read and follow applicable regulations on protection of soil, air, water | X      |
| C 5.2 No burning as part off land clearing or waste disposal  | X  | X  | P AF4.2.1. Avoid the use of landfill or burning (recommendation only)   | Y 2.2.2 restricted to the minimum | P 2.1.2.5  | X  | X      |

| Principles and Criteria  | FEDIOL   | German QS  | GlobalGAP  | IFOAM  | ProTerra  | SQC   | SA8000   |
|--|--|--|--|--|---|---|--|
| <b>P6. Workers rights and working relationships</b>                                  |  |  |  |  |   |   |  |
| C 6.1 Compliance with national laws concerning working conditions and workers rights | X  | X  | Y Any applicable legislation that is stricter than GlobalGAP must be complied with                       | P Recommendation all ILO conventions and UN Charter of Rights for children | P 1.1.1 - 1.1.2   | X   | Y 9.1 general  |
| C 6.2 Contracts  | X  | X  | X  | P 8. Recom.  | Y 1.2.2.1.1   | X   | X  |
| C 6.3 Provision of information   | P 3. Employees must be kept abreast of developments and evolution in their area of responsibility  | X  | P AF 3.5.2 Only recommendation   | X  | P 1.1.1.2   | X   | Y 9.1  |
| C 6.4 Subcontracting   | X  | X  | P AF 3.6 (minor musts)   | X  | Y 1.2.2.1.1   | X   | Y 9.6 till 9.9   |
| C 6.5 Freedom to associate and bargain   | X  | X  | X  | Y 8.4  | P 1.2.4   | X   | Y 4.1 4.2 4.3  |
| C 6.6 Child labour   | X  | X  | X  | Y 8.6  | Y 1.2.1.2 (BR)  | X   | Y 1.1, 1.2 1.3 1.4 should provide school + no longer than 10 hours (school, work and transport)  |
| C 6.7 Young workers (15-17)  | X  | X  | X  | X  | P 1.2.6.4.1 (BR) handling of pesticides not < 18                    | X   | Y 1.3 1.4  |
| C 6.8 Health and Safety  | P 3. Guidelines for: training related to safety and hygiene; garments to ensure safe and hygienic working conditions; frequent health checks for employees | X 5.4.5 Employees are to be informed by a qualified person about how to hygienically deal with fresh crop products | Y AF3.1; AF3.2 written risk assessment for health & safety working conditions & procedures (minor musts) | P 8. Recom.  | P 1.2.6.4 1.2.6.4.1. (BR) / 1.2.6.5. (BR) only regarding pesticides | P 2.9 Certificate of competence and in general requirements are set for fertiliser and pesticide application and handling | Y 3.1 till 3.6 shall point out a responsible, provide trainings, clean bathrooms and dormitories |

## Carbon And Sustainability Reporting Within The Renewable Transport Fuel Obligations

| Principles and Criteria                                 | FEDIOL | German QS | GlobalGAP | IFOAM | ProTerra  | SQC | SA8000  |   |   |   |
|---|--------|-----------|-----------|-------|-----------|-----|---|---|---|---|
| C 6.9 Wages   | X      | X         | X         | P     | 8. Recom. | P   | 1.2.5   | X | Y | 8.1 8.2 min standards and sufficient to meet basic needs, no deductions for disciplinary purposes   |
| C 6.10 Discrimination                                   | X      | X         | X         | Y     | 8.5       | P   | 1.2.1.3 ILO convention 111  | X | Y | 5.1 5.2 5.3   |
| C 6.11 Forced labour                                    | X      | X         | X         | Y     | 8.3       | P   | Not specific mentioned however 1.2.2.1.1 contract signed by employer and employee | X | Y | 2.1 no support forced labour, nor should personnel be required to lodge deposits or identity papers |
| Recommendations   |        |           |           |       |           |     |   |   |   |   |
| C 6.12 Working hours                                    | X      | X         | X         | X     |           | P   | 1.2.2.1.3 rules shall be established if no specific legislation is available      | X | Y | 7.1 max 48 h /wk  |
| <b>P 7 Land right issues and community relations</b>    |        |           |           |       |           |     |   |   |   |   |
| C 7.1 Land right issues                                 | X      | X         | X         | P     | 8. Recom. | P   | 1.2.6.3   | X | X |   |
| C 7.2 Consultation and communication local stakeholders | X      | X         | X         | X     |           | P   | 1.2.6.2   | X | P | 9.12 communication, but no consultation   |

**Table 14 Detailed audit norm benchmark of existing Qualifying Standards**

| Principles and Criteria              | ACCS   | FSC  | Genesis QA   | LEAF  | RSPO  | SAN/RA   |
|--------------------------------------|--|--|--|---|---|--|
| <b>Certification</b>                 |  |  |  |   |   |  |
| 1. Requirements for CBs              | Y<br>All audits are carried out by CBs that are accredited by UKAS (EN 45011: 1998). The CBs that ACCS use are National Britannia, NSF-CMi Certification, PAI and SAI Global.                  | Y<br>The CB shall comply with the requirements of ISO Guide 65: 1996, and with the additional requirements and guidance specified in this standard (FSC, 2004a, section 1.1).  | Y<br>All audits are carried out by PAI, which is accredited by UKAS (EN 45011: 1998).              | Y<br>In order to grant a certificate with LEAF Marque Logo, the Certification Body must be accredited to EN 45011 or ISO 65 with LEAF Marque Scope (LEAF, 2007).  | Y<br>CBs must be accredited by national or international ABs, such that their organisation, systems and procedures confirm to ISO Guide 65 and/or Guide 66 (RSPO, 2007, section 3.3).   | X<br>RA have created a new legal entity, 'Sustainable Farm Certification (SFC) www.sustainablefarmcert.com' to serve as an independent CB. SFC is in the process of becoming accredited to ISO Guide 65, and is expected to achieve this by Q1 2009. |
| <b>Audit</b>                         |  |  |  |   |   |  |
| 2. Management of the audit programme | X<br>No specific mention of ISO 19011 in the standard documentation.   | X<br>This is only partly covered by the FSC standard, but further emphasis will be given to this in future revisions (FSC, 2005, section 1.1.).  | X<br>Genesis does not require their CBs to be accredited to ISO 19011 (or a justified equivalent). | X<br>LEAF does not require their CBs to be accredited to ISO 19011 (or a justified equivalent).   | X<br>Only requirements for the assessment process and auditor competences. E.g. The CB must define the procedures relating to the assessment process. As a minimum these must be consistent with the specifications defined in 19011: 2002 (RSPO, 2007, section 4.2).   | X<br>While SFC is stating that ISO 19011: 2002 is used as a guidance for the audit process, no specific reference could be found.  |
| 3. Audit frequency                   | Y<br>The surveillance assessment frequency will be once in every crop cycle, prior to harvest, with a minimum of six months and a maximum of eighteen months between assessments (ACCS, 2008). | Y<br>The period of validity of an FSC certificate shall not exceed 5 years (FSC, 2004a, section 7.1). The CB shall carry out a surveillance operation to monitor the certificate holder's continued compliance with the requirements of the applicable FSC standard at least annually (FSC, 2004b, section 4.1.1). | Y<br>All farms are fully assessed on an annual basis (Genesis AQ, 2007, pp. iii).                  | Y<br>The first inspection will take place following registration and will be arranged at a mutually suitable time when the farmer is prepared for the inspection. Following renewal, inspections will take place between 6 months and 18 months but, in any case, once within the scheme year. This will enable the inspectors to see the farm during different seasons. The timing will also depend on the inspection frequency and rules of the other foundation schemes where joint inspections are taking place. (LEAF, 2008) | Y<br>The maximum validity of the certificate is 5 years. A re-assessment of compliance must take place before the end of the 5 year period (RSPO, 2007, section 4.2.6). During the lifetime of the certificate, monitoring or surveillance assessments to check continued compliance must take place at least annually (RSPO, 2007, section 4.2.7). | Y<br>Once every 3 years for a full certification audit and every year for a surveillance audit (RA, 2008, IV).   |

## Carbon And Sustainability Reporting Within The Renewable Transport Fuel Obligations

| Principles and Criteria   | ACCS                              | FSC   | Genesis QA                        | LEAF   | RSPO   | SAN/RA   |
|---------------------------|-----------------------------------|---|-----------------------------------|--|--|--|
| 4. Auditor competency (a) | X Further clarification required. | Y ISO 19011: 2002 (E) is a minimum requirement (FSC, 2005, section 1.1)   | X Further clarification required. | Y Audit competences are as per the baseline standard that the LEAF Marque is certifying. ACCS and GlobalGAP both meet the requirements of criterion - 4. Auditor competency.                       | Y As a minimum, these must be consistent with the specifications defined in ISO 19011: 2002 (RSPO, 2007 section 4.1.1).                      | Y ISO 19011 is used as a reference for auditor competency. Minimum education levels, Personal competence, Personal qualifications and Other requisites are specified as pre-requisites for auditors and lead auditors (RA, 2008).  |
| 4. Auditor competency (b) | X Further clarification required. | Y Appropriate modifications to take into account special requirements of forest and chain of custody evaluation (FSC, 2005, section 1.1). | X Further clarification required. | Y The CB must have sent a qualified inspector or auditor of the LEAF Marque scheme evaluation team to an LEAF Marque Ltd approved training course and have been issued a certificate (LEAF, 2007). | Y With modifications to take into account the specified requirements of palm oil and chain of custody evaluation (RSPO, 2007 section 4.1.1). | Y Education requirement that Bachelor's degree in an academic career is accepted by the CB which qualifies them to evaluate the environmental and social topics included in the Standard for Sustainable Agriculture (SAN) (RA, 2006, 6.1.1). Successful completion of the RA certification training course workshop for auditors lacking the accreditation, or prior experience as auditors of another recognized certification system (RA, 2006, 6.2.1). |

| Principles and Criteria     | ACCS   | FSC   | Genesis QA   | LEAF  | RSPO   | SAN/RA   |
|-----------------------------|--|---|--|---|--|--|
| 5. Stakeholder consultation | X Stakeholder consultation is not part of the audit process. Stakeholder consultation is part of the standard development. | Y The CB shall consult with a range of stakeholders who can provide relevant information as to an applicant's compliance with the environmental, legal, social, and economic requirements of the FSC Standard (FSC, 2004c, section 1.1) | X Stakeholder consultation is not part of the audit process. Stakeholder consultation is part of the standard development. | Y The LEAF standard states that, "You must on an annual basis have some mechanism to do this (i.e to promote and inform interested parties of activities on the farm, and encourage feedback on how your business is perceived and what LEAF Marque and integrated farming means for consumers), such as open days, farm walks or participate with local community initiatives. If you have public access to the farm on public rights of way, the erection of information boards is one way of informing people of your activities. Websites and other means of communication can be used, such as writing in the local parish newsletter." (LEAF, 2009) | Y Procedures for certification assessment must include gathering from all relevant stakeholders [ ] to ensure that all relevant issues concerning compliance with the RSPO criteria are identified (RSPO, 2007 section 4.3.1). | X SAN's Sustainable Agriculture Standard Principle 7, considers 'Community Relations' and the consultation with the community regarding environmental and social issues (SAN, 2008). The CB also has procedures for receiving and attending complaints with regard to certified operations, although the process is not a formal stakeholder consultation (RA, 2006b & RA, 2006c). |

| Principles and Criteria                        | ACCS  | FSC  | Genesis QA   | LEAF  | RSPO  | SAN/RA  |
|--|---|--|--|---|---|---|
| 6. Public summaries of the certification audit | X<br>Public summaries of the certification audit are not made available.  | Y<br>1. The CB shall prepare a forest certification public summary report for each forest management enterprise or group enterprise which is FSC certified (FSC, 2004d, A). 2. The public summary shall include 'A list of all non-compliances' (FSC, 2004d, Box 5.2). 3. Public summaries should be made available in: one of the official languages of the FSC, and at least one of the official language(s) of the country (FSC, 2004d, 1.1). | X<br>Public summaries of the certification audit are not made available.                                 | X<br>Public summaries of the certification audit are not made available.  | Y<br>The CB must make publicly available upon request, and on their website: Where a certificate has been issued, a summary report following standard format outlining the result of the certification assessment, including summary of findings, any non-compliances, and issues raised by the stakeholder consultation. The report will be made available on the RSPO website in appropriate languages (RSPO, 2007, section 4.4.1). | X<br>Currently, the audit result and reports (or summaries) are not published by any of the inspection bodies or the CB.  |
| <b>Accreditation</b>                           |   |  |  |   |   |   |
| 7. Accreditation process for ABs               | Y<br>All audits are carried out by CBs that are accredited by UKAS, the UK National Accreditation Body and member of the IAF. | Y<br>ASI is managing the FSC accreditation program on behalf of the FSC. ASI is operating a management system according to ISO 17011:2004 and is a member of the ISEAL Alliance (2006, section 3).   | Y<br>All audits are carried out by PAI, which is accredited by UKAS, the UK National Accreditation Body. | Y<br>The AB to which the CB applies must be part of either the European Accreditation (EA), Multilateral Agreement (MLA) on Product Certification, or members of the IAF which have been subject to a peer evaluation in the product certification field and have a positive recommendation in its report (LEAF, 2007). | Y<br>The AB must be operating in accordance with requirements of ISO 17011: 2004. This must be demonstrated either as a signatory to the appropriate IAF MLA or through full membership of ISEAL (RSPO, 2007, section 3.4)  | X<br>SAN is working towards creating an accreditation scheme for its CBs. Currently SFC is the sole CB, other independent CBs are expected to become accredited in the next 18 months in different geographic areas. SAN intends to create procedures and policies for the CBs, using ISO 17011 as a reference. |



## D.3 References:

ACCS, 2008: Assured Combinable Crops and Sugar beet standards operating procedures 2008/2009, July 2008

FSC, 2004d: Forest certification public summary reports, FSC-STD-20-009 (Version 2-1) EN

FSC, 2004b: Forest management evaluation, FSC-STD-20-007 (Version 2-1) EN

FSC, 2004a: General requirements for FSC Accredited Certification Bodies: Application of ISO/IEC Guide 65:1996 (E) FSC-STD-20-001 (Version 2-1) EN

FSC, 2004c: Stakeholder consultation for forest evaluation, FSC-STD-20-006 (Version 2-1) EN

FSC, 2005: Qualifications for FSC Certification Body Auditors, FSC-STD-20-004 (Version 2-2) EN

FSC, 2006: ASI\_PRO\_20\_110

Genesis, 2007: Genesis QA Arable & Sugar Beet Standards 2007/08

LEAF, 2007: Approved LEAF Marque Certification Body Requirements

LEAF, 2008: LEAF Marque certification scheme rules v2

LEAF, 2000: Leaf Marque Global Standard 2000

RSPO, 2007: RSPO Certification systems, Final document approved by RSPO Executive Board, 26th July 2007

RA, 2008: Farm certification policy, Rainforest Alliance Certified

RA, 2006a: Policy for requisites for auditors

RA, 2006b: Procedimiento de manejo de apelaciones (Procedure to handle appeals), AG-PSC-5-1

RA, 2006c: Manejo de quejas y reclamos (Procedure to handle complaints), AG-PSC-4-1

SAN, 2008: Sustainable Agriculture Standard, Sustainable Agriculture Network Guideline on definition of idle land

## Annex E Guideline on definition of idle land

Displacement effects are considered a significant risk to the sustainability of biofuel production. By producing biofuel feedstock on idle land, displacement effects can be prevented. Companies are encouraged to report the volumes of fuel which they have sourced from plantations on previously idle land in their [annual reports](#). For the purpose of the RTFO the following guideline is used for the definition of 'idle land'.

Idle land is land which meets all the following criteria:

- Compliance with all criteria of the RTFO Biofuel Sustainability Meta-Standard on Carbon storage (criterion 1.1), i.e. no destruction of large carbon stocks may have taken place.
- Compliance with all criteria of the RTFO Biofuel Sustainability Meta-Standard on Biodiversity (criteria 2.1/2.3), i.e. no conversion in or near areas with one or more High Conservation Values.
- Compliance with all criteria of the RTFO Biofuel Sustainability Meta-Standard on land rights and community relations (criteria 7.1/7.2), i.e. no violation of local people's rights.
- On 30-11-2005, the land was not used for any other significant productive function, unless a viable alternative for this function existed and has been applied which does not cause land use change which is in violation with any of the criteria for 'idle land'.

Note: in monthly data reports parties are required to report land use on 30 November 2005 by selecting one of the land use categories listed in Annex H. These land use categories are based on IPCC definitions and do not relate directly to the definition of idle land above as the IPCC definitions do not include characteristics such as biodiversity and land rights. There is, at present, no internationally agreed definition of idle land.

To meet the definition of idle land stated above, idle land is reported in a monthly C&S report as 'Grassland - non-ag. use'.

## Annex F Example records for Chain of Custody

**Table 15** Example of an output record from a farm supplying certified rapeseed to crusher C131

| Order Number | Transaction date | Receiving Company | Quantity (tonne) | Product  | Product Origin | Standard | Land use on 30 Nov 2005 | Crop yield (t/ha) | Nitrogen fertiliser (kg/ha) |
|--------------|------------------|-------------------|------------------|----------|----------------|----------|-------------------------|-------------------|-----------------------------|
| 22001        | 15-4-2008        | C1                | 1,000            | Rapeseed | UK             | LEAF     | Cropland                | 3.0               | 180                         |

**Table 16** Example of an input record from a rapeseed crusher which takes in certified rapeseed from farm F1 and F2 and non-certified rapeseed from farm F3

| Order Number | Transaction date | Supplying company | Quantity (tonne) | Product  | Product Origin | Standard | Land use on 30 Nov 2005 | Carbon intensity (g CO <sub>2</sub> e / tonne) |
|--------------|------------------|-------------------|------------------|----------|----------------|----------|-------------------------|--|
| 22001        | 15-4-2008        | F1                | 1,000            | Rapeseed | UK             | LEAF     | Cropland                | 949  |
| 22002        | 15-4-2008        | F2                | 1,000            | Rapeseed | UK             | LEAF     | Cropland                | 987  |
| 22001        | 15-4-2008        | F3                | 1,000            | Rapeseed | UK             | -        | Cropland                | 987  |

<sup>31</sup> Note: a farmer (or any other supply chain actor) has the option of passing either raw data or a calculated carbon intensity figure along the chain. In this example the farmer has chosen to provide raw data for crop yield and nitrogen fertiliser application rate – the oilseed crusher must then use default values for the remaining inputs to the carbon intensity calculation.

**Table 17 Example record of crusher conversion factor**

| <b>Name conversion factor</b> | <b>Rapeseed to rapeseed oil</b> |
|-------------------------------|---------------------------------|
| Input                         | Rapeseed                        |
| Output                        | Rapeseed oil                    |
| Unit                          | kg rapeseed oil / kg rapeseed   |
| Value                         | 0.40                            |
| Valid from                    | 1-1-2008                        |
| Valid until                   | 1-6-2008                        |

**Table 18 Example of an output record from a crusher supplying certified rapeseed oil to biofuel producer B (RSO = rapeseed oil)**

| <b>Order Number</b> | <b>Transaction date</b> | <b>Receiving Company</b> | <b>Quantity (tonne)</b> | <b>Product</b> | <b>Product Origin</b> | <b>Standard</b> | <b>Land use on 30 Nov 2005</b> | <b>Carbon intensity (g CO<sub>2</sub>e / tonne)</b> |
|---------------------|-------------------------|--------------------------|-------------------------|----------------|-----------------------|-----------------|--------------------------------|---|
| 23001               | 20-4-2008               | B                        | 400                     | RSO            | UK                    | LEAF            | Cropland                       | 2287  |
| 23002               | 20-4-2008               | B                        | 400                     | RSO            | UK                    | -               | Cropland                       | 2287  |

**Table 19** Example of an input record from a biofuel producer which takes in certified rapeseed oil from crusher C1

| Order Number | Transaction date | Supplying company | Quantity (tonne) | Product | Product Origin | Standard | Land use on 30 Nov 2005 | Carbon intensity (g CO <sub>2</sub> e / tonne) |
|--------------|------------------|-------------------|------------------|---------|----------------|----------|-------------------------|--|
| 23001        | 20-4-2008        | C1                | 400              | RSO     | UK             | LEAF     | Cropland                | 2287   |
| 23002        | 20-4-2008        | C1                | 400              | RSO     | UK             | -        | Cropland                | 2287   |

**Table 20** Example of an inventory record of C&S data for crusher C1

| Product | Product Origin | Standard | Land use on 30 Nov 2005 | Carbon intensity (g CO <sub>2</sub> e / tonne) | Inventory (tonne) 15-4-2008 | Input (tonne) | Output (tonne) | Inventory (tonne) 15-5-2008 |
|---------|----------------|----------|-------------------------|--|-----------------------------|---------------|----------------|-----------------------------|
| OSR eq  | UK             | LEAF     | Cropland                | 2287   | 1,000                       | 800           | 400            | 1,400                       |
| OSR eq  | Romania        | -        | Cropland                | 2287   | 2,000                       | 0             | 0              | 2,000                       |
| OSR eq  | UK             | -        | Cropland                | 2287   | 0                           | 400           | 400            | 0                           |

**Table 21** Example of an input record from biofuel company B who takes in several batches of vegetable oil

| Order Number | Transaction date | Supplying company | Quantity (tonne) | Product | Feedstock Origin | Standard | Land use on 30 Nov 2005 | Carbon intensity (g CO <sub>2</sub> e / tonne) |
|--------------|------------------|-------------------|------------------|---------|------------------|----------|-------------------------|--|
| 22001        | 20-4-2008        | C1                | 1,200            | RSO     | UK               | LEAF     | Cropland                | 2287   |
| 22002        | 20-4-2008        | C1                | 4,800            | RSO     | Unknown          | -        | Unknown                 | 2287   |
| 22005        | 20-4-2008        | C2                | 400              | CPO     | Malaysia         | RSPO     | Cropland                | 1343   |
| 22006        | 20-4-2008        | C2                | 600              | CPO     | Malaysia         | -        | Unknown                 | 1343   |

**Table 22** Example of an output record from biofuel company B who supplies 2,000 tonnes biodiesel to oil major X, of which 400 tonnes meet a reportable standard

| Order Number | Transaction period | Receiving company | Quantity (tonne) | Fuel type | Feedstock | Feedstock Origin | Standard | Land use on 30 Nov 2005 | Carbon intensity (g CO <sub>2</sub> e / tonne) |
|--------------|--------------------|-------------------|------------------|-----------|-----------|------------------|----------|-------------------------|--|
| 33001        | 4-2008             | X                 | 300              | Biodiesel | RSO       | UK               | LEAF     | Cropland                | 2894   |
| 33002        | 4-2008             | X                 | 1,400            | Biodiesel | RSO       | Unknown          | -        | Unknown                 | 2894   |
| 33005        | 4-2008             | X                 | 100              | Biodiesel | PO        | Malaysia         | RSPO     | Cropland                | 1861   |

|       |        |   |     |           |    |         |   |         |      |
|-------|--------|---|-----|-----------|----|---------|---|---------|------|
| 33006 | 4-2008 | X | 200 | Biodiesel | PO | Unknown | - | Unknown | 1861 |
|-------|--------|---|-----|-----------|----|---------|---|---------|------|

**Table 23 Example of an input record from oil major X who receives 2,000 tonnes biodiesel from biodiesel producer B, of which 400 tonnes report a standard**

| Order Number | Transaction period | Supplying company | Quantity (tonne) | Fuel type | Feedstock | Feedstock Origin | Standard | Land use on 30 Nov 2005 | Carbon data (g CO <sub>2</sub> e / tonne) |
|--------------|--------------------|-------------------|------------------|-----------|-----------|------------------|----------|-------------------------|---|
| 33001        | 4-2008             | B                 | 300              | Biodiesel | RSO       | UK               | LEAF     | Cropland                | 2894                                      |
| 33002        | 4-2008             | B                 | 1,400            | Biodiesel | RSO       | Unknown          | -        | Unknown                 | 2894                                      |
| 33005        | 4-2008             | B                 | 100              | Biodiesel | PO        | Malaysia         | RSPO     | Cropland                | 1861                                      |
| 33006        | 4-2008             | B                 | 200              | Biodiesel | PO        | Unknown          | -        | Unknown                 | 1861                                      |

## **Annex G Assessing carbon intensity and calculating direct GHG saving**

This Annex briefly summarises how to assess the carbon intensity of an administrative batch of biofuel in order to submit carbon data for monthly reports. Further details on assessing carbon intensity are provided in Part 2 of the document: Carbon Reporting – Default values and fuel chains.

The carbon intensity of a batch of biofuel can be assessed by:

- Collecting information about the way in which it was produced in order to calculate a 'known' carbon intensity or
- Selecting an appropriate 'fuel chain default value' based on qualitative information about the fuel.

### **G.1 Calculating and reporting a 'known' carbon intensity**

Information about activities which take place during the production of a biofuel can be used to calculate its carbon intensity. The information collected could be either:

- Quantitative 'actual data' about inputs used during the production of a biofuel – for example, that 9,000 MJ of natural gas are used for every tonne of bioethanol produced
- Qualitative data about processes used during the production of a biofuel – for example, that the biofuel plant uses biomass to provide heat and power. This qualitative data also enables the use of 'selected defaults' – These are default values which are either defined by the RFA or established by companies themselves or other stakeholders and made publicly available.

Parties who wish to calculate a known carbon intensity value should use the procedures set out in Technical Guidance Part Two - Default values and fuel chains.

There is a large amount of data companies could collect in order to derive a known carbon intensity. However, only a small number of data points can have a significant influence on the final carbon intensity of a biofuel. Table 24 highlights the data points which

have the most influence on final carbon intensity and which should be the focus of data collection efforts.

**Table 24 Focus for data collection**

| Step in the supply chain                                   | Focus for data collection   |
|--|---|
| Crop production  | Nitrogen fertiliser application rate<br>Crop yield & moisture content<br>Fuel consumption for cultivation |
| Feedstock and liquid fuel transport                        | Transport distances   |
| Conversion – either biofuel conversion or oilseed crushing | Yield <sup>32</sup><br>Fuel demand<br>Electricity demand<br>Co-product treatment                          |

## G.2 Reporting using the fuel chain default values

When information about how a biofuel was produced is not available, a fuel chain default value must be used in order to report its carbon intensity. Different types of fuel chain default values are available based on the information which is known about the fuel. The type of fuel chain default value that can be used depends on what is known about:

- The feedstock used to produce the fuel, and
- The country the feedstock originated from.

Table 25 summarises which fuel chain default values can be used on the basis of the information that is known and provides a cross reference to the default value tables below. The appropriate default value selected from the tables below is then reported in a supplier's monthly C&S report.

<sup>32</sup> i.e. tonnes of product (e.g. biodiesel) per tonne of input (e.g. rapeseed oil)

NB. Fuel chain default values are defined 'conservatively' (i.e. a higher carbon intensity) in order to provide an incentive for companies to collect more data. The use of conservative default value means that the values in the tables below should not be interpreted as being an accurate assessment of the GHG saving potential of biofuels.

**Table 25 Cross-reference to relevant default value table**

| Origin  | Feedstock | Type of default value | Default value table |
|---------|-----------|-----------------------|---------------------|
| Unknown | Unknown   | Fuel                  | Table 26            |
| Unknown | Known     | Feedstock             | Table 27            |
| Known   | Known     | Feedstock & Origin    | Table 28            |

### G.3 Approach to setting default values

- a) For Fuel level defaults (i.e. unknown feedstock and country of origin), the carbon intensity default is equal to the fuel chain with the highest carbon intensity provided in the guidance.
- b) For Feedstock level defaults (i.e. known feedstock, unknown country of origin), the carbon intensity default is equal to the fuel chain with the highest carbon intensity, providing that fuel chain is 1% or more of the feedstock type.

If 'unknown' country of origin reporting becomes significant for a particular feedstock (>1%), the RFA will take into consideration which feedstock/origin combination is likely to contribute significantly to the 'unknown' quantities, and set the feedstock default value accordingly. In general default values will only be changed for the following obligation period after public consultation. However, the RFA reserves the right to alter defaults during the obligation year in the case that mistakes are identified or 'unknown' reporting becomes significant for a particular feedstock.

## G.4 Default value tables

**Table 26 Fuel default values**

Note that these figures are conservative.

| <b>Fuel</b>    | <b>Carbon Intensity (grams CO<sub>2</sub>e / MJ)</b> | <b>Carbon saving (%)</b> |
|----------------|--|--------------------------|
| Bioethanol     | 115  | -36                      |
| Biodiesel      | 93   | -8                       |
| Biogas         | 36   | 58                       |
| Bio-ETBE       | 115  | -36                      |
| Pure plant oil | 87   | -1                       |

**Table 27 Feedstock default values**

Note that these figures are conservative.

| Fuel                                   | Feedstock             | Carbon Intensity (grams CO <sub>2</sub> e / MJ) | Carbon saving (%) |
|--|-----------------------|---|-------------------|
| Bioethanol                             | Wheat                 | 61  | 28                |
|  | Sugar cane            | 25  | 71                |
|  | Sugar beet            | 50  | 41                |
|  | Molasses              | 40  | 53                |
|  | Corn                  | 108   | -27               |
|  | Spent sulphite liquor | 6   | 93                |
| Biodiesel (Methyl Ester)               | Oilseed rape          | 93  | -8                |
|  | Soy                   | 78  | 10                |
|  | Palm                  | 47  | 46                |
|  | Tallow                | 17  | 80                |
|  | Used cooking oil      | 13  | 85                |
|  | Sunflower             | 69  | 20                |
|  | Coconut               | 41  | 53                |
|  | Jatropha              | 25  | 71                |
|  | Corn oil              | 18  | 79                |
| Biodiesel (Hydrotreated vegetable oil) | Oilseed rape          | 102   | -18               |
|  | Soy                   | 86  | 0                 |
|  | Palm                  | 51  | 41                |
|  | Sunflower             | 75  | 13                |
|  | Coconut               | 44  | 49                |
|  | Jatropha              | 26  | 70                |

|  |                       |     |     |
|--|-----------------------|-----|-----|
| Biodiesel (Co-processed hydro-treated vegetable oil) | Oilseed rape          | 93  | -8  |
|  | Soy                   | 78  | 10  |
|  | Palm                  | 47  | 46  |
|  | Sunflower             | 68  | 21  |
|  | Coconut               | 40  | 54  |
|  | Jatropha              | 24  | 72  |
|  | Tallow                | 16  | 81  |
| Biogas   | Manure                | 36  | 58  |
|  | Municipal solid waste | 36  | 58  |
| BioETBE  | Wheat                 | 61  | 28  |
|  | Sugar beet            | 50  | 41  |
|  | Sugar cane            | 25  | 71  |
|  | Molasses              | 40  | 53  |
|  | Corn                  | 108 | -27 |
|  | Spent sulphite liquor | 6   | 93  |
| Pure plant oil                                       | Oilseed rape          | 87  | -1  |
|  | Soy                   | 71  | 18  |

**Table 28 Feedstock & origin default values**

Note that these figures represent worst 'common' practice and do not necessarily represent typical practice.

| Fuel                  | Feedstock  | Origin                   | Carbon Intensity (grams CO <sub>2</sub> e / MJ) | Carbon saving (%) |
|-----------------------|------------|--------------------------|---|-------------------|
| Bioethanol            | Wheat      | Canada                   | 80  | 6                 |
|                       |            | France                   | 65  | 23                |
|                       |            | Germany                  | 59  | 30                |
|                       |            | Ukraine                  | 103   | -21               |
|                       |            | United Kingdom           | 61  | 28                |
|                       | Sugar beet | United Kingdom           | 50  | 41                |
|                       | Sugar cane | Brazil                   | 25  | 71                |
|                       |            | Mozambique               | 30  | 65                |
|                       |            | Pakistan                 | 115   | -36               |
|                       |            | South Africa             | 113   | -33               |
|                       | Molasses   | Pakistan                 | 77  | 9                 |
|                       |            | South Africa             | 88  | -4                |
|                       |            | United Kingdom           | 40  | 53                |
|                       | Corn       | France                   | 49  | 42                |
|                       |            | United States of America | 108   | -27               |
| Spent sulphite liquor | Sweden     | 6                        | 93  |                   |
| Biodiesel             | Oilseed    | Australia                | 71  | 18                |

|                |                  |                          |    |    |
|----------------|------------------|--------------------------|----|----|
| (Methyl Ester) | rape             | Canada                   | 56 | 35 |
|                |                  | Finland                  | 54 | 38 |
|                |                  | France                   | 46 | 47 |
|                |                  | Germany                  | 48 | 44 |
|                |                  | Poland                   | 45 | 48 |
|                |                  | Ukraine                  | 60 | 31 |
|                |                  | United Kingdom           | 55 | 36 |
|                |                  | United States of America | 93 | -8 |
|                | Soy              | Argentina                | 48 | 44 |
|                |                  | Brazil                   | 78 | 10 |
|                |                  | Canada                   | 52 | 40 |
|                |                  | Spain                    | 46 | 47 |
|                |                  | United States of America | 58 | 33 |
|                | Palm             | Malaysia                 | 47 | 46 |
|                |                  | Indonesia                | 47 | 46 |
|                | Used cooking oil | United Kingdom           | 13 | 85 |
|                | Tallow           | Denmark                  | 14 | 84 |
|                |                  | United Kingdom           | 13 | 85 |
|                |                  | United States of America | 17 | 80 |
|                | Sunflower        | Argentina                | 34 | 61 |
|                |                  | China                    | 64 | 26 |
|                |                  | France                   | 55 | 36 |

|  |                          |                          |     |     |
|--|--------------------------|--------------------------|-----|-----|
|  |                          | Russian Federation       | 69  | 20  |
|  |                          | Ukraine                  | 62  | 28  |
|  |                          | United States of America | 21  | 76  |
|  | Coconut                  | India                    | 37  | 57  |
|  |                          | Philippines              | 41  | 53  |
|  |                          | Indonesia                | 36  | 58  |
|  | Jatropha                 | India                    | 25  | 71  |
| Corn oil                               | United States of America | 18                       | 79  |     |
| Biodiesel (Hydrotreated vegetable oil) | Oilseed rape             | Australia                | 79  | 9   |
|  |                          | Canada                   | 62  | 28  |
|  |                          | Finland                  | 58  | 33  |
|  |                          | France                   | 50  | 42  |
|  |                          | Germany                  | 52  | 40  |
|  |                          | Poland                   | 48  | 44  |
|  |                          | Ukraine                  | 66  | 24  |
|  |                          | United Kingdom           | 61  | 29  |
|  |                          | United States of America | 102 | -18 |
|  | Soy                      | Argentina                | 52  | 40  |
|  |                          | Brazil                   | 86  | 0   |
|  |                          | Canada                   | 56  | 35  |
|  |                          | Spain                    | 50  | 42  |
|  |                          | United States of America | 64  | 26  |

|  |              |                          |    |    |
|--|--------------|--------------------------|----|----|
|  | Palm         | Indonesia                | 51 | 41 |
|  |              | Malaysia                 | 51 | 41 |
|  | Sunflower    | Argentina                | 36 | 58 |
|  |              | China                    | 69 | 20 |
|  |              | France                   | 60 | 31 |
|  |              | Russian Federation       | 75 | 13 |
|  |              | Ukraine                  | 67 | 22 |
|  |              | United States of America | 21 | 76 |
|  |              |                          |    |    |
|  | Coconut      | Indonesia                | 39 | 55 |
|  |              | India                    | 39 | 55 |
|  |              | Philippines              | 44 | 49 |
|  | Jatropha     | India                    | 26 | 70 |
| Biodiesel (co-processed hydro-treated vegetable oil) | Oilseed rape | Australia                | 73 | 16 |
|  |              | Canada                   | 57 | 34 |
|  |              | Finland                  | 56 | 35 |
|  |              | France                   | 47 | 46 |
|  |              | Germany                  | 49 | 43 |
|  |              | Poland                   | 46 | 47 |
|  |              | Ukraine                  | 62 | 28 |
|  |              | United Kingdom           | 57 | 34 |
|  |              | United States of America | 93 | -8 |
|  | Soy          | Argentina                | 47 | 46 |
|  |              | Brazil                   | 78 | 10 |

|        |           |                          |                |    |    |
|--------|-----------|--------------------------|----------------|----|----|
|        |           | Canada                   | 51             | 41 |    |
|        |           | Spain                    | 45             | 48 |    |
|        |           | United States of America | 58             | 33 |    |
|        | Palm      | Indonesia                | 47             | 46 |    |
|        |           | Malaysia                 | 46             | 47 |    |
|        | Sunflower | Argentina                | 33             | 62 |    |
|        |           | China                    | 63             | 27 |    |
|        |           | France                   | 56             | 35 |    |
|        |           | Russian Federation       | 68             | 21 |    |
|        |           | Ukraine                  | 61             | 29 |    |
|        |           | United States            | 21             | 76 |    |
|        | Coconut   | Indonesia                | 36             | 58 |    |
|        |           | India                    | 36             | 58 |    |
|        |           | Philippines              | 40             | 54 |    |
|        | Jatropha  | India                    | 24             | 72 |    |
|        | Tallow    | Denmark                  | 15             | 83 |    |
|        |           | United Kingdom           | 14             | 84 |    |
|        |           | United States of America | 16             | 81 |    |
|        | Biogas    | Municipal Solid Waste    | United Kingdom | 36 | 58 |
|        |           | Manure                   | United Kingdom | 36 | 58 |
|        | Bio-ETBE  | Wheat                    | Canada         | 80 | 6  |
| France |           |                          | 65             | 23 |    |

|                |                       |                          |           |     |
|----------------|-----------------------|--------------------------|-----------|-----|
|                |                       | Germany                  | 59        | 30  |
|                |                       | Ukraine                  | 103       | -21 |
|                |                       | United Kingdom           | 61        | 28  |
|                | Sugar beet            | United Kingdom           | 50        | 41  |
|                |                       | Molasses                 | Pakistan  | 77  |
|                | South Africa          |                          | 88        | -4  |
|                | United Kingdom        |                          | 40        | 53  |
|                | Sugar cane            | Brazil                   | 25        | 71  |
|                |                       | Mozambique               | 30        | 65  |
|                |                       | Pakistan                 | 115       | -36 |
|                |                       | South Africa             | 113       | -33 |
|                | Corn                  | France                   | 49        | 42  |
|                |                       | United States of America | 108       | -27 |
|                | Spent sulphite liquor | Sweden                   | 6         | 93  |
|                | Pure plant oil        | Oilseed rape             | Australia | 64  |
| Canada         |                       |                          | 48        | 44  |
| Finland        |                       |                          | 45        | 48  |
| France         |                       |                          | 36        | 58  |
| Germany        |                       |                          | 38        | 56  |
| Poland         |                       |                          | 35        | 59  |
| Ukraine        |                       |                          | 52        | 40  |
| United Kingdom |                       |                          | 46        | 47  |

|  |     |                          |    |    |
|--|-----|--------------------------|----|----|
|  | Soy | United States of America | 87 | -1 |
|  |     | Argentina                | 38 | 56 |
|  |     | Brazil                   | 71 | 18 |
|  |     | Canada                   | 42 | 51 |
|  |     | Spain                    | 36 | 58 |
|  |     | United States of America | 49 | 43 |

## G.5 What to do if there is no appropriate default value

There may be certain situations in which an appropriate default value is not available for a batch of renewable fuel – for example, when a biofuel produced from a new feedstock (e.g. biodiesel from algae) or a new type of fuel is imported into the UK.

In this situation the fuel supplier should inform the RFA in order that a new fuel chain may be defined. Requests for new fuel chains should be made via the RFA contact email address<sup>33</sup>. The procedure the RFA uses for setting up new fuel chains will be made available on the [RFA website](#). The RFA will issue a temporary default value in the meanwhile based on the average carbon intensity for that type of fuel/feedstock combination.

Temporary default values will be valid until such time as a new value has been established and approved by the RFA.

## G.6 Calculating direct GHG saving using carbon intensity values

The direct GHG savings of a biofuel are established by comparing the biofuel's carbon intensity against the displaced fossil fuel's carbon intensity. This comparison must be done using carbon intensity values given on an energy basis i.e. grams CO<sub>2</sub>e / MJ. For

<sup>33</sup> [rfa.info@rfa.gsi.gov.uk](mailto:rfa.info@rfa.gsi.gov.uk)

all fuels it is assumed the energy efficiency (i.e. kilometres per MJ) of vehicles is the same and, therefore, that 1 MJ of biofuel displaces 1 MJ of fossil fuel.

The direct GHG saving (as a percentage) is calculated using the following formula:

$$\text{GHG saving} = \frac{\text{Carbon intensity of fossil fuel displaced} - \text{carbon intensity of biofuel}}{\text{Carbon intensity of fossil fuel}} \times 100$$

Note that a negative result denotes an increase in GHG emissions

The carbon intensities of fossil fuels are as follows:

- Gasoline: 84.8 grams CO<sub>2</sub>e / MJ
- Diesel: 86.4 grams CO<sub>2</sub>e / MJ
- Natural gas: 62.0 grams CO<sub>2</sub>e / MJ
- MTBE: 84.7 grams CO<sub>2</sub>e / MJ

#### **Example: Ethanol replaces gasoline**

A fossil fuel company blends ethanol produced from UK sugar beet with gasoline. The percentage GHG saving is calculated as follows:

Carbon intensity of biofuel = 50 g CO<sub>2</sub>e / MJ

Carbon intensity of gasoline = 84.8 g CO<sub>2</sub>e / MJ

GHG saving = (84.8 – 50)/84.8 x 100 = 41%

## **Annex H Assessing the impact of land use change**

This Annex summarises how to report on land use and how to assess the impact of any changes in land use on the carbon intensity of an administrative batch of biofuel.

### **H.1 Land use on 30 November 2005**

The RFA will monitor both direct and indirect changes in land use. Fuel suppliers must therefore report on how the land used to produce a biofuel was being used on 30 November 2005. Table 29 describes the different land use categories which exist.

**Table 29 Land use type definitions**

| Land use  | Description  |
|---|--|
| Cropland  | This category includes cropped land, (including rice fields and set-aside <sup>34</sup> ), and agro-forestry systems where the vegetation structure falls below the thresholds used for the Forest Land category.  |
| Forest land   | Land spanning more than 0.5 hectare with trees higher than 5 metres and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural (or urban) land use.  |
| Grassland (and other wooded land not classified as forest) with agricultural use    | This category includes rangelands and pasture land that are not considered Cropland but which have an agricultural use. It also includes systems with woody vegetation and other non-grass vegetation such as herbs and brushes that fall below the threshold values used in the Forest Land category and which have an agricultural use. It includes extensively managed rangelands as well as intensively managed (e.g., with fertilization, irrigation, species changes) continuous pasture and hay land. |
| Grassland (and other wooded land not classified as forest) without agricultural use | This category includes grasslands without an agricultural use. It also includes systems with woody vegetation and other non-grass vegetation such as herbs and brushes that fall below the threshold values used in the Forest Land category and which do not have an agricultural use.  |

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<sup>34</sup> Set-aside is a term related to the EU's Common Agricultural Policy (CAP). It refers to land taken out of production to reduce the risk of food surpluses, while increasing the opportunity for environmental benefits. From 2007 set-aside land has been abolished under the CAP.

## H.2 Default values

This section provides default values for CO<sub>2</sub>e emissions per unit of biofuel in two situations:

- a) Where default fuel chain values are used (based on feedstock and origin) – See Table 30, and
- b) Where actual data is used for the fuel chain – Table 31 provides a list of default values which can be used in monthly reports based on what is known about:
  - Land use on 30 November 2005
  - Type of biofuel
  - Biofuel feedstock
  - Feedstock country of origin.

The default values reported in Table 30 assume the default fuel chain is used to produce each fuel (i.e. crop production and conversion plant yields are taken from the appropriate default fuel chain). The impact of land use change is amortised over a 20 year period (full details on this and other the assumptions made in calculating these default values are available in *Carbon reporting within the RTFO: Methodology*).

**Table 30 Default values, including the impact of land use change (grams CO<sub>2</sub>e/MJ biofuel)**

| Fuel         | Feedstock    | Origin         | Land converted from: |            |           |
|--------------|--------------|----------------|----------------------|------------|-----------|
|              |              |                | Cropland             | Forestland | Grassland |
| Bioethanol   | Corn         | France         | 49                   | 291        | 117       |
|              |              | United States  | 108                  | 337        | 135       |
|              | Sugar beet   | United Kingdom | 50                   | 281        | 110       |
|              | Sugar cane   | Brazil         | 25                   | 238        | 99        |
|              |              | Mozambique     | 30                   | 223        | 57        |
|              |              | Pakistan       | 115                  | 302        | 153       |
|              |              | South Africa   | 113                  | 331        | 122       |
|              | Wheat        | Canada         | 80                   | 1033       | 192       |
|              |              | France         | 65                   | 394        | 157       |
|              |              | Germany        | 59                   | 424        | 181       |
|              |              | Ukraine        | 103                  | 988        | 398       |
|              |              | United Kingdom | 61                   | 505        | 176       |
|              | Biodiesel ME | Coconut        | India                | 37         | 251       |
| Indonesia    |              |                | 36                   | 822        | 492       |
| Philippines  |              |                | 41                   | 1058       | 41        |
| Jatropha     |              | India          | 25                   | 353        | 25        |
| Oilseed rape |              | Australia      | 71                   | 1217       | 171       |
|              |              | Canada         | 56                   | 746        | 138       |
|              |              | Finland        | 54                   | 738        | 373       |
|              |              | France         | 46                   | 382        | 139       |
|              |              | Germany        | 48                   | 409        | 168       |
|              |              | Poland         | 45                   | 568        | 220       |
|              |              | Ukraine        | 60                   | 1013       | 378       |
|              |              | United Kingdom | 55                   | 583        | 192       |

|               |               |                    |           |      |     |     |
|---------------|---------------|--------------------|-----------|------|-----|-----|
|               |               | United States      | 93        | 738  | 168 |     |
|               | Palm          | Indonesia          | 47        | 245  | 162 |     |
|               |               | Malaysia           | 47        | 202  | 100 |     |
|               | Soya beans    | Argentina          | 48        | 1051 | 166 |     |
|               |               | Brazil             | 78        | 2261 | 668 |     |
|               |               | Canada             | 52        | 1169 | 183 |     |
|               |               | Spain              | 46        | 1096 | 163 |     |
|               |               | United States      | 58        | 1038 | 173 |     |
|               | Sunflower     | Argentina          | 34        | 607  | 100 |     |
|               |               | China              | 64        | 1077 | 249 |     |
|               |               | France             | 55        | 533  | 184 |     |
|               |               | Russian Federation | 69        | 1268 | 424 |     |
|               |               | Ukraine            | 62        | 1046 | 385 |     |
|               |               | United States      | 21        | 473  | 72  |     |
|               | Biodiesel HVO | Coconut            | India     | 39   | 279 | 39  |
|               |               |                    | Indonesia | 39   | 919 | 550 |
| Philippines   |               |                    | 44        | 1183 | 44  |     |
| Jatropha      |               | India              | 26        | 393  | 26  |     |
| Oilseed rape  |               | Australia          | 79        | 1361 | 190 |     |
|               |               | Canada             | 62        | 835  | 153 |     |
|               |               | Finland            | 58        | 824  | 415 |     |
|               |               | France             | 50        | 426  | 155 |     |
|               |               | Germany            | 52        | 457  | 187 |     |
|               |               | Poland             | 48        | 634  | 243 |     |
|               |               | Ukraine            | 66        | 1133 | 421 |     |
|               |               | United Kingdom     | 61        | 652  | 214 |     |
| Palm          |               | Indonesia          | 51        | 273  | 180 |     |
| United States | 102           | 814                | 187       |      |     |     |

|               |                    |                |           |      |     |
|---------------|--------------------|----------------|-----------|------|-----|
|               |                    | Malaysia       | 51        | 225  | 111 |
|               | Soya beans         | Argentina      | 52        | 1176 | 184 |
|               |                    | Brazil         | 86        | 2531 | 746 |
|               |                    | Canada         | 56        | 1307 | 203 |
|               |                    | Spain          | 49        | 1225 | 180 |
|               |                    | United States  | 64        | 1161 | 193 |
|               |                    | Sunflower      | Argentina | 36   | 663 |
|               | China              |                | 69        | 1189 | 277 |
|               | France             |                | 60        | 579  | 204 |
|               | Russian Federation |                | 75        | 1402 | 473 |
|               | Ukraine            |                | 67        | 1153 | 429 |
|               | United States      |                | 21        | 512  | 79  |
|               | Biodiesel CHVO     | Coconut        | India     | 36   | 252 |
| Indonesia     |                    |                | 36        | 829  | 496 |
| Philippines   |                    |                | 40        | 1067 | 40  |
| Jatropha      |                    | India          | 24        | 355  | 24  |
| Oilseed rape  |                    | Australia      | 73        | 1218 | 173 |
|               |                    | Canada         | 57        | 742  | 139 |
|               |                    | Finland        | 56        | 735  | 378 |
|               |                    | France         | 47        | 375  | 141 |
|               |                    | Germany        | 49        | 403  | 171 |
|               |                    | Poland         | 46        | 563  | 222 |
|               |                    | Ukraine        | 62        | 1013 | 383 |
|               |                    | United Kingdom | 57        | 578  | 195 |
| United States |                    | 93             | 734       | 170  |     |
| Palm          |                    | Indonesia      | 47        | 236  | 163 |
|               |                    | Malaysia       | 46        | 191  | 101 |
| Soya beans    | Argentina          | 47             | 1048      | 166  |     |

|                |                |                    |           |      |      |     |
|----------------|----------------|--------------------|-----------|------|------|-----|
|                |                | Brazil             | 78        | 2271 | 674  |     |
|                |                | Canada             | 51        | 1168 | 184  |     |
|                |                | Spain              | 45        | 1094 | 163  |     |
|                |                | United States      | 58        | 1036 | 175  |     |
|                | Sunflower      | Argentina          | 33        | 598  | 100  |     |
|                |                | China              | 63        | 1073 | 250  |     |
|                |                | France             | 56        | 525  | 186  |     |
|                |                | Russian Federation | 68        | 1264 | 427  |     |
|                |                | Ukraine            | 61        | 1040 | 387  |     |
|                |                | United States      | 21        | 463  | 73   |     |
|                | Pure plant oil | Oilseed rape       | Australia | 64   | 1313 | 173 |
|                |                |                    | Canada    | 48   | 800  | 136 |
|                |                |                    | Finland   | 45   | 791  | 393 |
| France         |                |                    | 36        | 402  | 138  |     |
| Germany        |                |                    | 38        | 432  | 170  |     |
| Poland         |                |                    | 35        | 605  | 225  |     |
| Ukraine        |                |                    | 52        | 1090 | 398  |     |
| United Kingdom |                |                    | 46        | 622  | 195  |     |
| United States  |                |                    | 87        | 791  | 170  |     |
| Soya beans     |                | Argentina          | 38        | 1132 | 167  |     |
|                |                | Brazil             | 71        | 2451 | 714  |     |
|                |                | Canada             | 42        | 1261 | 186  |     |
|                |                | Spain              | 36        | 1181 | 163  |     |
|                |                | United States      | 49        | 1118 | 175  |     |

**This table should be used to report the carbon intensity impacts of land use change where default fuel chain values are used for the fuel chain (based on feedstock and origin).**

If a party has actual data for the fuel chain calculation (in particular crop production and conversion plant yields) the impact of carbon

intensity in grams CO<sub>2</sub>e / MJ can be calculated using the default values given in Table 31. An example of how to undertake the calculation is provided below this table.

**Table 31 Impact of changes in land use on carbon intensity (tonnes CO<sub>2</sub>e/hectare)**

This table should be used where a party has actual data on the fuel chain.

| Country      | Land use on 30 November 2005 |                    |                 |                    |
|--------------|------------------------------|--------------------|-----------------|--------------------|
|              | Forest land                  |                    | Grassland       |                    |
|              | Annual cropland              | Perennial cropland | Annual cropland | Perennial cropland |
| Argentina    | -17                          | -15                | -2              | 0                  |
| Australia    | -23                          | -21                | -2              | 0                  |
| Brazil       | -37                          | -26                | -11             | 0                  |
| Canada       | -17                          | -16                | -2              | 0                  |
| China        | -27                          | -23                | -5              | -1                 |
| Finland      | -15                          | -8                 | -8              | -1                 |
| France       | -18                          | -14                | -5              | -1                 |
| Germany      | -21                          | -14                | -7              | -1                 |
| India        | -10                          | -7                 | -4              | 0                  |
| Indonesia    | -33                          | -31                | -20             | -18                |
| Malaysia     | -37                          | -26                | -11             | 0                  |
| Mozambique   | -24                          | -19                | -4              | 0                  |
| Pakistan     | -16                          | -12                | -4              | 0                  |
| Philippines  | -37                          | -26                | -11             | 0                  |
| Poland       | -21                          | -14                | -7              | -1                 |
| Russia       | -20                          | -14                | -6              | -1                 |
| South Africa | -26                          | -24                | -2              | 0                  |
| Spain        | -18                          | -16                | -2              | 0                  |
| Ukraine      | -18                          | -13                | -6              | -1                 |

|                |     |     |    |    |
|----------------|-----|-----|----|----|
| United Kingdom | -27 | -20 | -7 | -1 |
| USA            | -17 | -16 | -2 | 0  |

*Note 1: the impact of land use change is amortised over a 20 year period. Full details on this and other the assumptions made in calculating these default values are available in Carbon reporting within the RTFO: Methodology*

*Note 2: it is assumed that there is no net change in carbon stocks when perennial crop land is converted to annual crop land (and vice versa). It may be possible to accurately calculate such changes in carbon stock at the project level; however, the IPCC methodology currently does not provide sufficient data to facilitate accurate calculations for this type of land use change.*

The default values in Table 31 are given in units of tonnes (of CO<sub>2</sub>e emissions) per hectare per year, for monthly reports these values must be converted to grams per MJ of biofuel. To complete this conversion carry out the following steps (using either a default value or actual data):

- Divide the impact of land use value from Table 31 by the feedstock crop yield [tonnes per hectare per year]
- Divide the result by all conversion plant yields (e.g. oilseed crushing plant [tonnes of oil per tonne of feedstock] and biofuel plant yields [tonnes of biofuel per tonne of feedstock (oil or crop)])
- Multiply the result by any allocation factors given in conversion or crop production modules
- Convert the result from a weight basis to an energy basis using the lower heating values given in Part II of this document

For example: If Brazilian soy is produced on land which was forested land in December 2006, the appropriate default value from Table 31 is 26 t CO<sub>2</sub>e / hectare / year. This value is converted to grams per MJ by:

- Dividing by the default value by the soy yield:
  - $26 \text{ [t CO}_2\text{e / hectare / year]} / 2.5 \text{ [t soya bean / hectare / year]} = 10.4 \text{ [t CO}_2\text{e / t soya bean]}$
- Dividing the result by the soy crushing conversion yield:
  - $10.4 \text{ [t CO}_2\text{e / t soya bean]} / 0.17 \text{ [t soy oil / t soya bean]} = 61.2 \text{ [t CO}_2\text{e / t soy oil]}$
- Dividing the result by the biodiesel conversion yield:

- $61.2 \text{ [t CO}_2\text{e / t soy oil]} / 0.95 \text{ [t biodiesel / t soy oil]} = 64.4 \text{ [t CO}_2\text{e / t biodiesel]}$
- Multiplying by the biodiesel conversion allocation factor
- $64.4 \text{ [t CO}_2\text{e / t biodiesel]} \times 90\% = 58.0 \text{ [t CO}_2\text{e / t biodiesel]}$
- Dividing the result by the lower heating value of biodiesel
- $58.0 \text{ [t CO}_2\text{e / t biodiesel]} / 37,200 \text{ [MJ / t biodiesel]} = 0.001558 \text{ [t CO}_2\text{e / MJ biodiesel]}$
- Converting the result from tonnes to grams of CO<sub>2</sub>e
- $0.001558 \text{ [t CO}_2\text{e / MJ biodiesel]} \times 1,000,000 = 1,558 \text{ grams CO}_2\text{e / MJ biodiesel}$

The figure 1,558 is added to the carbon intensity of the fuel and reported in the monthly report in the column 'carbon intensity'.

If more detailed information is known (e.g. soil types, climate zones etc) then more accurate calculations can be carried out using the more advanced approaches set out in the IPCC guidelines<sup>35</sup> for assessing the impact of land use change within national reporting on GHG emissions – see Volume 4 Agriculture, Forestry and Other Land use.

## H.3 Calculating carbon payback time

The carbon payback time is calculated by dividing the total carbon loss as a result of land use change (not the annualised carbon loss) by the amount of carbon which is saved annually by the type of biofuel which will be grown on the converted land. The total carbon loss is calculated by multiplying the annualised carbon loss in Table 31 by 20 (the period over which land use change emissions have been amortised). The amount of carbon saved is calculated by subtracting the appropriate fuel & origin default value (given in Table 28) from the carbon intensity of the fossil fuel which is displaced, which are as noted below. This comparison must be done using carbon intensity values given on an energy basis i.e. grams CO<sub>2</sub>e / MJ. For all fuels it is assumed the energy efficiency (i.e. kilometres per MJ) of vehicles is the same and, therefore, that 1 MJ of biofuel displaces 1 MJ of fossil fuel.

- Gasoline: 84.8 grams CO<sub>2</sub>e / MJ

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<sup>35</sup> IPCC 2006, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme, Eggleston H.S., Buendia L., Miwa K., Ngara T. and Tanabe K. (eds). Published: IGES, Japan.

- Diesel: 86.4 grams CO<sub>2</sub>e / MJ
- Natural gas: 62.0 grams CO<sub>2</sub>e / MJ
- MTBE: 84.3 grams CO<sub>2</sub>e / MJ

In the case of Brazilian soy produced on land which was forested in December 2006, the total emissions based on Table 31 are  $2,261 \times 20 = 44,020$  g CO<sub>2</sub>e / MJ. The carbon intensity of Brazilian soy based on default values in Table 28 is 78 gCO<sub>2</sub>e / MJ, and the amount of CO<sub>2</sub>e saved is  $86.4 - 78 = 8.4$  g CO<sub>2</sub>e/MJ.

Therefore, the carbon payback time is  $44,020 / 8.4 = 5,240$  years.

## Annex I Accuracy level

In addition to reporting the carbon intensity of an administrative batch of biofuel, suppliers must also report on what 'type' of data has been used to derive the carbon intensity which is reported – i.e. whether it is based on a fuel default, feedstock default, feedstock & origin default or whether qualitative or quantitative information was used. This information will be used by the RFA mainly to understand whether or not companies are collecting actual data about how a biofuel has been produced and will an indication of the accuracy of the reported carbon intensities.

Each type of data is attributed a certain accuracy level, based on the amount of effort a company would have to put into data collection. Table 32 shows the accuracy levels which should be reported for administrative batches.

**Table 32 Accuracy levels corresponding to type of default value or data used**

| Type of default value or data       | Accuracy level |
|-------------------------------------|----------------|
| Fuel default                        | 0              |
| Feedstock default                   | 1              |
| Feedstock & origin default          | 2              |
| Selected default – RFA defined      | 3*             |
| Selected default – Industry defined | 4*             |
| Actual data                         | 5*             |

\* Part 2 of the Guidance should be used for detailed calculations (Accuracy Levels 3, 4 and 5).

This Guidance does not specify the exact requirements of evidence for Accuracy Level 4 – Selected Defaults. Use of selected defaults will however be subject to verification in the same way as actual data and therefore robust evidence should be available. In providing selected defaults for Accuracy Level 4 parties should pay particular attention to key areas of potential inconsistency with the RTFO carbon calculation methodology – e.g. scope and boundaries of analysis, treatment of co-products, etc.

## I.2 Selected defaults or actual data

Accuracy Levels of 3 or 4 or 5 are only used for qualitative or quantitative data points which generally contribute 5% or more of the GHG emissions within a default fuel chain.

- If a selected default defined by the RFA is used for any of the data points specified then a score of 3 is given for that batch of fuel;
- If an industry defined selected default value is used then a score of 4 is given

In both cases the data points eligible for a score of 3 or 4 are illustrated in Table 33.

- If actual (real) data is used then a score of 5 is given.

**Table 33 Data points which are eligible for accuracy level scores of 3 (if it is a default value defined by the RFA) or 4 (if it is a default value selected from another source)**

| Section of biofuel chain | Data points eligible for higher accuracy level   |
|--------------------------|--|
| Crop production          | Crop yield; nitrogen fertiliser application rate; nitrogen fertiliser emissions co-efficient; diesel use for cultivation   |
| Drying and storage       | Moisture removed during drying; amount of fuel used for heating  |
| Feedstock transport      | Distances and modes (where the default is greater than 300 kilometres by truck, or 1,500 km by ship)   |
| Conversion               | Process yield; amount of natural gas or other fuel used; emissions co-efficient of fuel used; amount of electricity used; all data related to co-products; amount of methanol used (biodiesel only); treatment of palm oil mill effluent |
| Other                    | Alternative waste treatment credit (biogas and UCO & tallow to biodiesel only)   |

### 1.3 Combining batches

When two or more batches of fuel are combined the new accuracy level is equal to the accuracy level of the old batch which makes up more than 50% (by volume) of the new combined batch. However, if none of the old batches make up 50% (by volume), then, the new accuracy level is equal to the weighted-average (on a volume basis) of all of the old batches, rounded to zero decimal places.

For example: a company has two batches of fuel: Batch 1 = 1,000 litres, Accuracy Level 5; Batch 2 = 3,000 litres, Accuracy Level 3. The accuracy level of the new, combined batch is equal to 3 – because it makes up more than 50% of the total volume of the new combined batch.

If the company had a third batch: Batch 3 = 3,000 litres, Accuracy Level 4, then the accuracy level will be 4. This new accuracy level must be calculated using a weighted average of the old accuracy levels, because no individual batch makes up more than 50% of

the new combined batch (Batch 1 = 14%; Batch 2 = 43%, Batch 3 = 43%). So, the new the accuracy level is equal to:  $14\% \times 5 + 43\% \times 3 + 43\% \times 4 = 3.7$  and 3.7 rounded to zero decimal places is 4.

## Annex J Standard Terms

**Table 34 Standard terms for reporting the renewable fuel type in C&S reports**

| Full Name      | Standard term for report |
|----------------|--------------------------|
| Biodiesel      | D589                     |
| Bioethanol*    | P595                     |
| Biogas         | G591                     |
| Pure plant oil | D589                     |

\* **BioETBE should be reported as bioethanol**

**Table 35 Selection of standard terms for feedstock origin**

| Country   | ISO Country Code |
|-----------|------------------|
| Argentina | ARG              |
| Australia | AUS              |
| Belgium   | BEL              |
| Brazil    | BRA              |
| Canada    | CAN              |
| Denmark   | DEN              |
| Finland   | FIN              |
| France    | FRA              |
| Germany   | DEU              |
| India     | IND              |
| Indonesia | IDN              |
| Ireland   | IRL              |
| Malaysia  | MYS              |

|                    |     |
|--------------------|-----|
| Mozambique         | MOZ |
| Netherlands        | NLD |
| Nigeria            | NGR |
| Pakistan           | PAK |
| Poland             | POL |
| Portugal           | PRT |
| Romania            | ROU |
| Russian Federation | RUS |
| South Africa       | ZAF |
| Spain              | ESP |
| Ukraine            | UKR |
| United Kingdom     | GBR |
| United States      | USA |
| Unknown            | U/K |

**Table 36 Standard terms for feedstock type**

| <b>Feedstock Name</b> | <b>Code</b> |
|-----------------------|-------------|
| Cheese by-product     | CHEESE      |
| Coconut               | COCO        |
| Corn                  | CORN        |
| Corn oil              | COIL        |
| Jatropha              | JATRA       |
| Manure                | MANURE      |
| Molasses              | MOL         |
| Municipal Solid Waste | MSW         |
| Oilseed rape          | OSR         |

|            |       |
|------------|-------|
| Palm       | PALM  |
| Soy        | SOY   |
| Sugar beet | SBEET |
| Sugar cane | SCANE |
| Sulphite   | SULI  |
| Sunflower  | SUN   |
| Tallow     | TALL  |
| UCO        | UCO   |
| Unknown    | U/K   |
| Wheat      | WHEAT |

**Table 37 Standard terms for feedstock standard**

| <b>Standard</b>   | <b>Code</b> |
|---|-------------|
| Assured Combinable Crops Scheme                           | ACCS        |
| Basel criteria for soy                                    | Basel       |
| Better Sugarcane Initiative                               | BSI         |
| By-product  | BYPRO       |
| Fediol  | FED         |
| Forest Stewardship Council                                | FSC         |
| Genesis Quality Assurance                                 | GEN         |
| GlobalGAP   | GGAP        |
| International Federation of Organic Agriculture Movements | IFOAM       |
| Linking Environment And Farming Marque                    | LEAF        |
| None – feedstock not certified                            | None        |
| ProTerra  | PROT        |
| Qualität und Sicherheit (German Standard)                 | QUS         |
| RTFO Biofuel Sustainability Meta-Standard                 | Meta        |
| Roundtable on Sustainable Palm Oil                        | RSPO        |
| Round Table on Responsible Soy                            | RTRS        |
| Social Accountability 8000                                | SA8000      |
| Scottish Quality Cereals                                  | SQC         |
| Sustainable Agriculture Network/Rainforest Alliance       | SANRA       |
| Unknown   | U/K         |

**Table 38 Standard terms for land use on 30 November 2005**

| <b>Land Use</b>        | <b>Code</b> |
|------------------------|-------------|
| Cropland               | Crop        |
| Unknown                | U/K         |
| By-product             | BYPRO       |
| Forest land            | FORST       |
| Grassland - ag.use     | GRAG        |
| Grassland - non-ag.use | GRNAG       |