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SUSTAINABILITY REPORTING WITHIN THE RTFO: FRAMEWORK REPORT

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This paper has been produced by Ecofys for and in consultation with the Department for Transport. It has undergone a peer review process involving a project Advisory Group and other stakeholders. It sets out the principles behind the advice which led to the Requirements and Guidance for Carbon and Sustainability Reporting contained in the consultation document Carbon and Sustainability Reporting within the Renewable Transport Fuel Obligation.

This paper was written at the same time as the detailed RTFO scheme design was being developed. Although details of the scheme design may have changed since the writers of this paper were briefed, such changes do not affect the validity of the contents of this paper.

With thanks to members of the Advisory Group: Biofuels Corporation, BP, Imperial College, DFID, EIC, Neste Oil, National Farmers Union, Oxfam UK, Royal Society for the Protection of Birds, SenterNovem, UK Petroleum Industries Association and to all stakeholders who offered comments.

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Content

1 Introduction

Background

The UK implements the Renewable Transport Fuels Obligation (RTFO) in 2008. This Obligation will require companies to sell a minimum of 2.5% renewable transport fuels in the UK in 2008/2009: a percentage which will increase to 5% in 2010/2011. While biofuels are widely promoted for their greenhouse gas reduction potential, there has been an increasing concern about the sustainability of biofuel production. In order to address this concern, it is proposed that the Administrator of the scheme will require companies to report on the sustainability and greenhouse gas performance of the biofuels they sell in the UK.

Two projects have been commissioned to recommend the design of a system for the proposed sustainability and carbon reporting. One on carbon reporting and one on sustainability reporting. This document is focussed on sustainability reporting but also contains information which is common to both carbon and sustainability reporting, such as the Chain of Custody.

About this document

This report is the Second Draft of Framework Report for the sustainability reporting. It is a revised version of the First Draft Framework Report which was issued in January 2007. Revisions have been made to the First Draft Framework Report based on additional research and feedback received from the appointed Sustainability Advisory Group, wider stakeholders and peers including those from similar initiatives in The Netherlands. A separate report is available for carbon reporting.

How to read this document

This second draft Framework Report describes the proposed sustainability criteria fuel suppliers are expected to report and how this reporting is proposed to work in practice. Thereby this report recommends the framework for the Technical Guidance which describes in detail the proposals for exactly what, when and how fuel suppliers are expected to report on to the RTFO administrator with respect to the sustainability of their biofuels.

Chapter 2 describes the proposed scope for sustainability reporting and defines the environmental and social criteria and indicators recommended to be reported on. In addition it identifies sustainability risks which are difficult to tackle through sustainability criteria and proposes alternative measures to address these risks.

Chapter 3 describes the proposed Meta-Standard approach for sustainability reporting in which maximum use is made of existing sustainability standards. For this purpose, existing standards have been benchmarked against the criteria of the Meta-Standard. In addi-

tion the current availability of certified energy crops and the potential for expansion have been analysed. Based on these analyses several standards are proposed as Qualifying Standards in the RTFO sustainability reporting: certification against a Qualifying Standard would be considered proof of an acceptable level of sustainability. It is proposed that higher levels of sustainability can be obtained through supplementary checks. Furthermore, practical solutions are proposed for crops for which currently no internationally accepted standard is operational.

The proposed monthly and annual reporting requirements are illustrated in Chapter 4. This includes the recommended definition of a batch for the purpose of monthly batch reporting. In addition, guidelines are proposed for what constitutes 'adequate reporting' and how this could develop over time.

Chapter 5 discusses three different methods which can provide a link between the sustainability claims by a fuel supplier and actual sustainable feedstock production on a farm: bulk commodity systems, mass-balance systems and book-and-claim systems. The pros and cons for each of these systems for the RTFO sustainability reporting are discussed in addition to their practical compatibility with the proposed Meta-Standard. This chapter also addresses the issue of equivalence trading.

Verification of company reporting is addressed in Chapter 6. Proposals are made for both the rigour and scope of verification, building on existing methodologies for verification of sustainability reporting.

Other documents

This document describes the proposed framework for sustainability reporting. Two other documents exist for RTFO carbon and sustainability reporting at the time of writing:

- Carbon reporting within the RTFO: Methodology (E4tech 2007).
- Carbon and sustainability reporting within the RTFO: second draft Technical Guidance (Ecofys & E4tech 2007).

2 Sustainability criteria

This chapter defines the proposed environmental and social sustainability criteria and indicators for the RTFO sustainability reporting. The definition of the criteria and indicators has to a large extent been inspired by existing standards for sustainable agriculture and forestry. The criteria defined in this chapter are proposed to form the base of the RTFO sustainability reporting scheme as described in this Framework Report. Several sustainability risks are particularly difficult to capture in sustainability criteria at the farm or field level. These issues are discussed separately and possible solutions to tackling these issues are proposed.

2.1 Scope

Selecting the scope of the sustainability criteria is a key decision for the comprehensiveness, focus and complexity of the system.

It is proposed to limit the scope of the sustainability criteria to the plantation and exclude processing and transportation activities.

The reasons for this are:

- Risk-based: attention should focus on the most pressing sustainability issues. While there are also sustainability risks in processing and transport activities, the sustainability risks associated with biofuel production (at the plantation or field) are considered most pressing. The inclusion of processing and transportation in the initial scope would allocate scarce resource away from the stage of greatest concern.
- Meta-Standard: the Meta-Standard focuses on making maximum use of existing standards. Several of the existing standards for sustainable agriculture and forestry are so called farm-gate standards: they deal with activities within the farm gate. Extending the scope beyond the farm gate would make a rapid implementation of a Meta-Standard more difficult.

  It should be noted however that in the standard for palm oil (RSPO), where there is a specific risk with waste water effluent, feedstock processing is included in the scope. Sustainability standards for soy and sugar cane are still in development but may also include feedstock processing. In these cases, because the proposed Meta-Standard approach (see Chapter 3) identifies feedstock certified by existing standards, feedstock processing will de facto be included in the scope.

After the initial phase of the RTFO (2008-2011), in the expectation that sustainability reporting is well in place, the RTFO-administrator is advised to reassess the scope of the sustainability criteria. It is thereby recommended to first assess the possibility of includ-

ing initial feedstock processing which, after feedstock cultivation, is the phase considered to have the highest sustainability risks (e.g. waste water discharge).

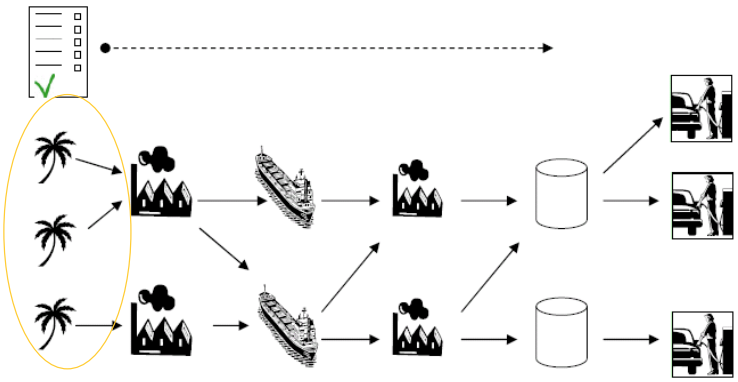

Figure 2-1 Proposed initial scope of sustainability reporting: focus on feedstock cultivation.

Remarks

Note that the proposed scope of carbon reporting covers the entire chain, see the methodology report for carbon reporting (E4tech 2007).

By-products

By-products are recommended to be dealt with differently in sustainability reporting as their impacts on environmental and social issues are fundamentally different from the impacts of energy crops. Therefore,

It is proposed that for by-products (also including waste products) reporting on the sustainability characteristics of the by-product are not required.

Definition of a by-product

By-products are products that have an economic value of less than 10% of the value of the crop as a whole as it leaves the farm or of the total value of product leaving the factory. Thereby the by-product should be a fundamentally different product than the main product[1]*. By-products also include used products which have a value of less than 10% of the value of the same unused product.*

The reasons for the recommendation of not requiring sustainability data in case of by-products are:

1. The production of biofuels from by-products, generally, carries fewer sustainability risks and should therefore be promoted. For example, palm oil as a feedstock for biofuel carries certain sustainability risks, most notably deforestation of tropical rainforest. If palm oil by-products such as palm kernel shell are used for bioenergy purposes, no additional palm oil will be grown in order to provide these by-products as their value is too low for this. Also the use of used-cooking oils or tallow for the produc-

[1] Refining fractions, for example, are not considered by-products

tion of biofuels (or manure and municipal solid waste for biogas production) is generally considered desirable from a sustainability point of view.

2. If by-products constitute less than 10% of the farm gate value, the biofuel producer which buys these by-products will have little influence on the sustainability of the production process which generates the by-products. For example, a biofuel producer buying tallow will have little influence on the way the cattle are reared: because of the limited fraction of the total value made up by tallow, the cattle owner will not be inclined to change its production practices to please the buyer of tallow.

It is often argued that once by-products become scarce, and thereby more valuable, the production process producing the by-products will become more profitable. This would then lead to an increase in production with the associated sustainability risks. An example for this is the production of biodiesel from tallow. The increased demand for tallow could drive up the price of tallow which will make the cattle business more profitable which in turn will drive increased cattle production. However, if this were indeed the case, the value of the by-products (tallow) could rise above 10% and therefore reporting on sustainability criteria would become applicable. At this point it would also be reasonable for the biofuel producers to report on the sustainability of the tallow: due to the higher value of the tallow the biofuel producer will now become a more important player for the cattle grower and the biofuel producers can now start to influence the way the cattle and their feedstock is produced.

In line with the above, Figure 2-2 shows the value of several biofuel feedstocks expressed as a percentage of the total farm gate value. For example, as the production of palm oil yields relatively few valuable by-products, the palm oil itself represents a large fraction of the total farm gate value. Because in the production of soy oil a significant amount of valuable soy meal is generated, soy oil represents a smaller fraction of the total farm gate value. However, this fraction is still significantly higher than 10% for soy oil and sustainability reporting would thus still be required. Tallow and straw are two examples of biofuel feedstock which represent less than 10% of the farm gate value and reporting on sustainability criteria would therefore not be applicable. The small fraction of the farm gate value of tallow and straw also illustrates the very limited influence the buyer of these products will have on the sustainability of the production process which generates these products.

It is recognised that the use of some by-products for energy purposes, however small their economic value, is not without sustainability risks. Especially excessive harvesting of field residues (such as straw) for electricity generation or second generation biofuels can have detrimental effects on the nutrient balance and organic matter content of the soil. However, because second generation biofuels are not yet being produced on a commercial scale and because electricity production is outside the scope of this reporting scheme, the benefits of using by-products are believed to outweigh their risks. Therefore it is recommended that the RTFO does not require reporting on the sustainability of the feedstock in case of by-products.

When the production of second generation biofuels from residues increases significantly and/or the production of electricity is included in the scope of the sustainability reporting, the RTFO-administrator is advised to reassess the need for sustainability reporting for by-products.

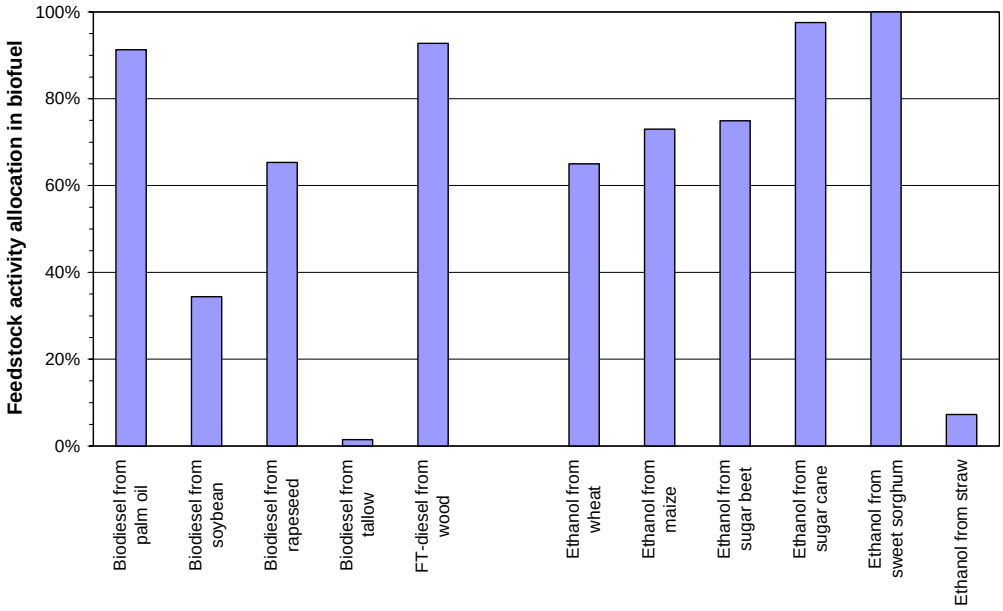

Figure 2-2 Fraction of the total farm gate value which can be allocated to the biofuel feedstock: a measure for the influence a biofuel producer has on the production of its feedstock. (Source: Hamelinck 2006)

2.2 Environmental principles and criteria

Principles and criteria

The environmental principles, criteria and indicators which together make up the 'RTFO Sustainable Biofuel Meta-Standard' are given in Table 2-1. All 'minimum requirement' criteria and indicators are proposed to be met in order to meet the full RTFO Sustainable Biofuel Meta-Standard. The 'recommended' criteria and indicators are proposed not to be required for the RTFO Sustainable Biofuel Meta-Standard but are considered good practice. They indicate where the RTFO Sustainable Biofuel Meta-Standard should develop towards in the long term.

The principles are categorized in 5 areas with specific impact focus:

- *carbon storage*
- *biodiversity conservation*
- *soil conservation*
- *sustainable water use*
- *air pollution*

In defining the RTFO sustainability criteria and indicators, the draft criteria from the ECCM report (ECCM 2006) have been taken as a basis. Modifications have been made to these draft criteria based on the following:

- An analysis of criteria and indicators in existing standards for sustainable agriculture and forestry. Except for carbon storage, existing standards for sustainable agriculture and forestry are concerned with the same sustainability issues. Their experience therefore provides a valuable input. In order to define criteria as much as possible in harmony with existing standards, criteria not commonly found in these existing standards were only added if they are considered of critical importance to the sustainability of biofuel production (such as carbon storage). In addition to a thorough review of the criteria of these standards, several interviews with the organisations which manage these standards have been held which provided useful insights for the RTFO criteria.
- Publication of WWF: "Sustainability standards for biofuels" (Fritsche 2006).
- Intensive discussion with the Dutch working group on environmental criteria in order to reach a common set of criteria. It should be noted that this was only done on the environmental criteria and not on the social criteria as the differences with the Dutch draft criteria on social issues were considered too large at this time. The Dutch working group on environmental criteria consisted of representatives of Shell, IUCN, WWF, AIDenvironment and the Dutch ministries of Economic Affairs, Environment and Agriculture.
- Feedback received from the Advisory Group of the RTFO Sustainability Reporting project as well as from other stakeholder groups consulted during the project.

The most notable aspects of the environmental criteria are:

- Criterion on the conservation of carbon stocks. Land use changes may or may not be reported on. Therefore, carbon stock changes resulting from land use change are not always included in the RTFO carbon intensity reporting, see (E4tech 2007). Because a positive contribution to the reduction of greenhouse gas (GHG) emissions is considered essential to the sustainability of biofuels, and the destruction of carbon stocks is irreversible in the short to medium term, criteria for carbon stock conservation need to be included in the sustainability criteria[2]. Note that if the effects of changes in above and below ground carbon stocks resulting from land use change would always be in-

[2] In practice the carbon stock criteria will have a strong overlap with the criteria on land-use change defined for biodiversity reasons. In cases where measuring biodiversity is a more complex endeavour than measuring above ground carbon storage, it will be more practical to consider the criteria for carbon storage first. In many cases where forest conversion is involved, conversion to plantations will be excluded based on the carbon storage criteria and a more complex debate on biodiversity will not be necessary.

cluded in the carbon intensity calculations, the carbon stock criteria would not need to be included in the sustainability criteria.

The size of the recommended acceptable carbon stock destruction is expressed in terms of a "carbon pay back time": the number of years a biofuel feedstock crop needs to be grown before the destruction of the carbon storage resulting from land use change has been compensated. This can be calculated by: (carbon stock destruction expressed in resulting tonne C/ha) / (annual C abatement as a result of biofuel production which is a function of crop yield and carbon intensity of the biofuel chain.) A carbon payback time allows the destruction of a larger carbon stock if the resulting feedstock plantation will have a higher yield and/or a better GHG-performance. In addition the cultivation of perennial crops is stimulated as they store more carbon on average than annual crops, resulting in a smaller net carbon stock destruction.

The maximum payback time is proposed as 10 years. The rationale for this is that IPCC calculations on emissions from land use change assume a new land use type to exist for a period of 20 years. The norm applied here is that an energy crop plantation should contribute to an actual reduction in greenhouse gases at least 50% of its lifetime. The exact calculation methods are based on IPCC methodologies and are worked out in the Technical Guidance.

- The reference date for land use change is proposed as November 2005. The recent reference date is recommended in order to stimulate biomass production on degraded lands, even if these have been created recently. Excluding degraded lands which have been created relatively recently would diminish the opportunity for sustainable biofuel production on degraded land. In addition, November 2005 is consistent with the reference date of the most recent initiative for sustainable energy crop production which has defined criteria for land use change, the Roundtable on Sustainable Palm Oil.
- For biodiversity conservation the concept of High Conservation Values (HCV) are used. It is recognized that these HCV's have not yet been determined for many areas. Therefore the areas considered of importance for the conservation of biodiversity have been specified further by referring to specific areas as defined by authorities such as the IUCN.
- Compliance with national law and good agricultural practices are recommended as minimum requirements for soil conservation, sustainable water use and air pollution.

Table 2-1 Environmental sustainability criteria and indicators for the RTFO Sustainable Biofuel Meta-Standard. Below, all criteria and indicators are 'minimum requirements' unless stated otherwise.

Principle 1: CARBON CONSERVATION	**Biomass production will not destroy or damage large above or below ground carbon stocks**
Criterion	Indicators
1.1 Preservation of above and below ground carbon stocks (reference date 30-11-2005).	• Evidence that biomass production has not caused direct land use change with a carbon payback time exceeding 10 years[1]. • 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

1) Guidance on the 'carbon pay back time' calculations is given in the Technical Guidance.

Principle 2: BIODIVERSITY CONSERVATION	**Biomass production will not lead to the destruction or damage of high biodiversity areas**
Criterion	Indicators
2.1 Compliance with national laws and regulations relevant to biomass production and the area where biomass production takes place.	• Evidence of compliance with national and local laws and regulations with respect to: o Land ownership and land use rights o Forest and plantation management o Protected and gazetted areas o Nature and wild life conservation o Land use planning o National rules resulting from the adoption of CBD[3] and CITES[4]. • The company should prove that: o It is familiar with relevant national and local legislation o It complies with these legislations o It remains informed on changes in legislation
2.2 No conversion of high biodiversity areas after November 30, 2005	• Evidence that production does not take place in gazetted areas. • Evidence that production does not take place in areas with one or more HCV areas[5]: o HCV 1, 2, 3 relating to important ecosystems and species o HCV 4, relating to important ecosystem services, especially in vulnerable areas o HCV 5, 6, relating to community livelihoods and cultural values. • Evidence that production does not take place in any areas of high biodiversity as listed below this table.
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.	• Documentation of the status of rare, threatened or endangered species and high conservation value habitats in and around the production site. • Documented and implemented management plan on how to avoid damage to or disturbance of the above mentioned species and habitats.
Recommendation	
2.4 Preservation and/or improvement of biodiversity on production sites	• Evidence that a minimum of 10% of the production area is set aside and properly managed for nature conservation and ecological corridors. • Evidence of good agricultural practices with respect to the conservation and improvement of biodiversity on and around the production site.

[3] http://www.biodiv.org/com/convention/convention.shtml
[4] http://www.cites.org/eng/disc/text.shtml
[5] The definition of the 6 High Conservation Values can be found in Annex A and at http://www.hcvnetwork.org.
Currently no comprehensive maps exist which define HCV areas. For many areas it will therefore still be necessary to assess whether HCV's are present or not. The following initiatives are helpful in defining areas with one or more HCV's:
- Conservation International - Biodiversity Hotspots
- Birdlife international - Important Bird Areas
- The WWF G200 Ecoregions : the regions classified 'vulnerable' or 'critical/endangered'.
- European High Nature Value Farmland

Principle 3: SOIL CONSERVATION	**Biomass production does not lead to soil degradation**
Criterion	Indicators
3.1 Compliance with national laws and regulations relevant to soil degradation and soil management.	• Evidence of compliance with national and local laws and regulations with respect to: o Environmental Impact Assessment o Waste storage and handling o Pesticides and agro-chemicals o Fertilizer o Soil erosion • Compliance with the Stockholm convention (list of forbidden pesticides). • The company should prove that: o It is familiar with relevant national and local legislation o It complies with these legislations o It remains informed on changes in legislation
3.2 Application of *good agricultural practices* with respect to: o Prevention and control of erosion o Maintaining and improving soil nutrient balance o Maintaining and improving soil organic matter o Maintaining and improving soil pH o Maintaining and improving soil structure o Maintaining and improving soil biodiversity o Prevention of salinisation	• Documentation of soil management plan aimed at sustainable soil management, erosion prevention and erosion control. • Annual documentation of applied good agricultural practices with respect to: o Prevention and control of erosion o Maintaining and improving soil nutrient balance o Maintaining and improving soil organic matter o Maintaining and improving soil pH o Maintaining and improving soil structure o Maintaining and improving soil biodiversity o Prevention of salinisation *Recommendations* • Records of annual measurements of: o Soil loss in tonnes soil/ha/y o N,P,K balance o SOM and pH in top soil o Soil salts content
Recommendation	
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.	• Evidence 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. • Evidence that the use of by-products does not occur at the expense of the soil nutrient balance or soil organic matter balance.

Principle 4: SUSTAINABLE WATER USE	**Biomass production does not lead to the contamination or depletion of water sources**
Criterion	Indicators
4.1 Compliance with national laws and regulations relevant to contamination and depletion of water sources.	• Evidence of compliance with national and local laws and regulations with respect to: o Environmental Impact Assessment o Waste storage and handling o Pesticides and agro-chemicals o Fertilizer o Irrigation and water usage • The company should prove that: o It is familiar with relevant national and local legislation o It complies with these legislations o It remains informed on changes in legislation
4.2 Application of *good agricultural practices* to reduce water usage and to maintain and improve water quality.	• Documentation of water management plan aimed at sustainable water use and prevention of water pollution. • Annual documentation of applied good agricultural practices with respect to: o Efficient water usage. o Responsible use of agro-chemicals o Waste discharge *Recommendations* • Records of annual measurements of: o Water sources used (litres/ha/y) o BOD level of water on and nearby biomass production and processing.

Principle 5: AIR QUALITY	**Biomass production does not lead to air pollution**
Criterion	Indicators
5.1 Compliance with national laws and regulations relevant to air emissions and burning practices	• Evidence of compliance with national and local laws and regulations with respect to: o Environmental Impact Assessment o Air emissions o Waste management o Burning practices • The company should proof that: o It is familiar with relevant national and local legislation o It complies with these legislations o It remains informed on changes in legislation
5.2 No burning as part of 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[6];
- IUCN List of Protected Areas categories I, II, III and IV[7], according to the list available from 2003[8] or more up to date lists or national data;
- RAMSAR sites (wetlands under the Convention on Wetlands)[9], according to the available list[10] of more up to date lists or national data;

Macro issues: displacement effects

The above discussed criteria govern the sustainability of the farm or field on which the feedstock is grown. However, these criteria do not address so called "indirect" land use changes - also called "leakage" or "displacement effects". Indirect land use change can occur when the production of biofuel feedstock displaces certain activities to other areas where they may cause negative land use changes such as deforestation. An example of this is where demand for palm oil for the biofuel market is met from existing plantations which used to supply to the food market, see Figure 2-3. As palm oil is now supplied to the energy sector, the food sector is confronted with a shortage in supply. In the short run this will lead to higher prices as supply is slow to adapt to the new market circumstances. In time, the higher prices will attract new producers and supply will be increased. This additional supply will require additional plantations. Where these additional plantations will be located is uncertain, and more importantly, is out of control of the energy sector.

[6] http://whc.unesco.org/en/list/

[7] 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: 1a: Strict nature reserve/wilderness protection area; 1b: 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/fileadmin/fm-wwf/pdf-alt/waelder/WWF-position_Protected_Areas_03.pdf.

[8] http://www.unep-wcmc.org/wdpa/unlist/2003_UN_LIST.pdf

[9] http://www.ramsar.org/

[10] http://www.ramsar.org/index_list.htm

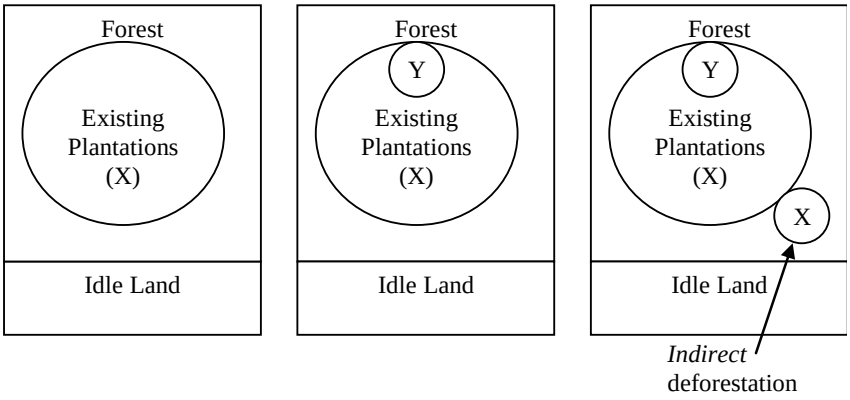

Figure 2-3 Example of displacement mechanism causing indirect deforestation. Y is new demand from biofuel sector from existing plantations. X is expansion of existing plantations as a result of displacement effects. (Dehue 2006)

Monitoring of displacement effects and Land Use reporting

The above described displacement effects form one of the largest and most difficult risks to sustainable biofuel production. It is recognised that these macro issues are difficult to tackle through company certification and will also require measures at a higher level. In that respect, the UK government and/or scheme Administrator is recommended to initiate monitoring of unwanted displacement effects on a macro level in co-operation with producing countries and to assist these countries in setting up and enforcing proper land use planning. Proper land use planning is considered an effective tool in addressing displacement effects. In doing so, it should be recognised that displacement effects spread beyond national borders and monitoring should therefore preferably take place at a regional or global level.

To assist the government and/or Administrator in monitoring displacement effects the following measure is proposed:

Companies will be required to report on the land use in a stated reference year (2005 for the RTFO) for the land on which the feedstock is produced.

This will give an insight to which extent displacement effects are likely to take place. For example, if the land use in 2005 was already cropland, and the land is now used to supply biofuel feedstock, it is likely that the original agricultural activity was displaced to another area with all the possible risks associated with displacement. Based on the information reported by fuel suppliers, the RTFO Administrator can perform an ex-post analysis of the risk that biofuel feedstock production for the UK market causes displacement effects. The proposed land use categories for this purpose (based on IPCC) are[11]:

[11] The land use categories are also of importance to the carbon reporting. Carbon reporting will calculate the carbon intensity of a biofuel both without land use change effects and with land use change effects if the land use change is known.

Table 2-2 Land use categories distinguished for sustainability reporting.

Land use	Description
Cropland	This category includes cropped land, including rice fields, and agro-forestry systems where the vegetation structure falls below the thresholds used for the Forest Land category. Including set-aside – provided it has not been set aside for more than 5 years.
Forest land	Land spanning more than 0.5 hectare with trees higher than 5 meters 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.

Promotion of production on idle land

In addition to government monitoring, effective methods to prevent displacement effects also exist at the level of field or farm certification. Displacement effects can be prevented with certainty at the level of the field or farm if the production of biofuel crops were to be limited to areas which do not have, and are not expected to acquire in the near future, any function which would relocate to other areas if they were displaced by the production of energy crops. (For example, this excludes the production of biofuels on cattle land as this would displace the cattle grazing to other areas where they may cause negative land use change.) In popular terms this is the production of energy crops on "degraded or idle lands". Several authors have indicated the large potential of energy crops on degraded land (Dehue 2006, Diemont 2001, Hoogwijk 2004, Lal 2006). A practical example is the large area of Imperata Grasslands in Asia which can be used for sustainable palm oil production.

To promote the production on idle land, the following measure is proposed:

In their annual report, fuel suppliers are asked to report on their activities to promote production on idle land and, if possible, which feedstock volumes have been sourced from plantations established on previously idle land[12].

While no universal definition of "idle land" exists a guideline to the interpretation of idle land for the purpose of the RTFO is proposed below.

[12] After several years of experience with sustainability and carbon reporting for the RTFO, the Administrator can assess the possibilities of including reporting on idle land in the monthly batch reporting process.

For the purpose of the RTFO, idle land is land which meets the following criteria:

- Compliance with all criteria of the RTFO Sustainable Biofuel 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 Sustainable Biofuel 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 Sustainable Biofuel 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'[13].

Reporting on the overall sustainability of feedstock producers

It is proposed that, in their annual report, companies should report on the overall sustainability of their main feedstock producers in terms of the fraction of the total production of these producers which is produced according to a qualifying sustainability standard.

The rationale behind this is that in sourcing their feedstocks, fuel suppliers and biofuel producers should strive to give preference to crop producers who practice sustainability production on *all* their production units, instead of only on those production units which are used to supply the UK biofuels market. This can be a strong measure in preventing feedstock producing companies to supply the UK biofuels market from their existing plantations while shifting supply to their traditional customers to unsustainable production areas.

2.3 Social principles and criteria

Principles and criteria

The social criteria for the sustainable production of biofuel feedstock have largely been based on the work of SASA (Social Accountability in Sustainable Agriculture)[14]. For the exact definitions, those proposed by SASA as well as the definitions used by existing standards such as SA8000, SAN, RSPO, Basel and IFOAM have been analysed. Furthermore, SASA focuses only on labour conditions and not on land right issues. Therefore,

[13] If land was fallow on the specific date but is part of a rotational scheme, the land is still considered to be productive and therefore does not classify as idle land.

[14] Members of SASA include:

1. Social Accountability International (SAI)
2. Fairtrade Labelling Organizations International (FLO)
3. International Federation of Organic Agriculture Movements (IFOAM)
4. Sustainable Agriculture Network (SAN)

additional criteria were added to deal with land right issues and the effects of the feedstock production unit on the local community[15].

The resulting social principles, criteria and indicators are listed in Table 2-3*. As with the environmental criteria, a distinction is made between 'minimum requirements' and 'recommendations'. It is proposed that the 'recommendations' are not required for the RTFO Meta-Standard but are considered good practice.*

[15] ISEAL (International Social and Environmental Accreditation and Labelling) Alliance is the organization which runs the SASA program. In our interview with ISEAL it was clearly stated that indeed criteria for land right issues should make part of any standard for sustainable biofuel feedstock production.

Table 2-3 Social criteria and indicators for the RTFO Sustainable Biofuel Meta-Standard. All 'minimum requirement' (MR) criteria and indicators are proposed as requirements to meet for the full RTFO Sustainable Biofuel Meta-Standard. The 'recommended' (R) criteria and indicators are not proposed as requirements to meet the RTFO Sustainable Biofuel Meta-Standard but are considered good practice.

Criteria	Indicators	
6. Biomass production does adversely effect workers rights and working relationships		
C 6.1 Compliance with national law on working conditions and workers rights	Certification applicant should comply with all national law concerning working conditions and workers rights.	MR
C 6.2 Contracts	Certification applicant should apply all category of employees (including temporary workers) with a legal contract which covers the criteria mentioned here.	MR
C 6.3 Provision of information	Certification applicant must show evidence that all workers are informed about their rights (incl. bargain rights).	MR
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 provide its services under the same environmental, social and labour conditions as required for this standard.	MR
C 6.5 Freedom of association and right to collective bargaining	Certification applicant must guarantee the rights of workers to organize and negotiate their working conditions (as established in ILO conventions 87 en 98). Workers exercising this right should not be discriminated or suffer repercussions.	MR
C 6.6 Child labour	Certification applicant must guarantee that no children below 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 (workday inclusive school and transport max. 10 hours).	MR
C 6.7 Young workers	The work carried out shall not be hazardous or dangerous to the health and safety of youth workers (age 15 -17). It shall also not jeopardise their educational, moral, social and physical development.	MR
C 6.8 Health and safety	All certification applicants should be required to 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.	MR
	All certification applicants shall ensure that workers have received regular health and safety training appropriate to the work that they perform.	MR
	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.	MR
C 6.9 Wages/compensation	Wageworkers must be paid wages at least equivalent to the legal national minimum wage or the relevant industry standard, which ever is higher.	MR
	Workers must be paid in cash, or in a form that is convenient to them and regularly.	MR
	The certification applicant must pay the workers for unproductive time due to conditions beyond their control.	R
	Housing and other benefits shall not be automatically deducted from the minimum wage/or relevant industry wage as an in kind payment.	R
	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 (which ever is higher) during normal working hours and under normal operating conditions).	R

C 6.10 Discrimination	In accordance with ILO Conventions 100 and 111, there is no discrimination (distinction,exclusion, or preference) practised that denies or impairs equality of opportunity, conditions, ortreatment 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 and those with HIV/AIDS, seasonal, migrant and temporary workers.	MR
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 are not required to work on the farm.	MR
C 6.12 Working hours	Usual working hours shall not exceed eight hours a day and 48 hours a week.	R
	Workers must have a minimum of 24 hours rest for every seven day period.	R
	Overtime during seasonal peaks is allowed but needs to be voluntary and should be paid at premium rate. Adequate brakes (every 6 h, 30 minutes). For heavy or dangerous work shorter periods and longer breaks should be allowed.	R
7. Biomass production does not adversely affect existing land rights and community relations		
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.	MR
C 7.2 Consultation and communication with local stakeholders	No new plantings are established on local peoples' land without their free, prior and informed consent. The farm can demonstrate that it has and implements policies and procedures for consulting and communicating with populations and local interest groups regarding plans for expansion, construction, sale or change of owner, administrative or operative restructuring or other changes that could affect these groups.	MR

Remarks

Criteria on working hours are not proposed as a minimum requirement for the RTFO Meta-Standard. The reasons for this are:

- Longer working hours are not considered unwanted in all situations. Individuals may choose to work longer hours for various reasons. Biofuel production in which individual workers make such voluntary choices is still considered sustainable.
- Most of the existing sustainable agricultural standards analysed (see later chapters) do not include criteria on working hours. Having criteria on working hours as a minimum requirement in the RTFO Meta-Standard will therefore be inconsistent with most existing standards.

Smallholders

The exclusion of smallholders is an often cited problem of certification. The know-how and management systems required for certification are often unavailable to smallholders, or may form an excessive financial burden[16].

Being a Meta-Standard which makes effective use of existing standards, the proposed RTFO sustainability standard itself has no special provisions for smallholders. Instead, it

[16] The RSPO has a separate working group on smallholders and publishes several writing on smallholders on its website: www.rspo.org.

is incumbent upon the existing standards used in the Meta-Standard (such as RSPO, FSC, etc.) to develop and implement proper provisions for smallholders such as group certification, reduced fees or less stringent criteria. In fact, most of the standards which were benchmarked in this study either already have options for group certification (EurepGAP, RA, FSC, IFOAM) or are developing these options (RSPO, LEAF). SAN/RA also specified special indicators for smallholders which are less stringent than for larger farms. Such special treatment of smallholders is encouraged and is recommended to be accepted within the RTFO as long as it does not jeopardise the RTFO sustainability criteria.

Mechanised production and reporting on labour conditions

It is proposed that social reporting is required for all countries, including developed countries. Not reporting on social issues in developed countries would be in contradiction with trade rules on non-preferential treatment. In addition, the risk of bad labour conditions also exists in developed countries, especially where work is performed by migrants.

However, certain energy crops such as rapeseed, soy, maize and wheat are heavily mechanized and involve very little labour. Sugar cane too is increasingly harvesting mechanically. It is proposed that:

Production units using limited labour per hectare (mechanised production) are not required to report on labour conditions. Note that this does not include the social criteria on land right issues. Thereby, mechanised production units are production units for which the labour requirements do not exceed 5 man-days/ha/y.

The labour intensity of various energy crops has been analysed. The results are shown in Table 2-4.

Table 2-4 Labour intensity for various energy crops.

Crop	Labour intensity (man-days/ha/y)
Rape	2.1[1]
Maize	1.3[1]
Wheat	2.1[1]
Sugar beet	4.5[1]
Soy	1.3[2]
Palm	18.5[3]
Sugar cane (manual harvest)	23.9[4]

1) Source: Biewinga 1996. Assuming 1 man-day is 8 hours.
2) Source: University of Kentucky 2004, Assuming 1 man-day is 8 hours.
3) Source: Corley 2003. Taking the average from Indonesia and Malaysia and assuming 1 man-day is 8 hours.
4) Source: Guilhoto 2002 for employment numbers and FAO 2007 for harvested area. For the conversion of number of employees to man-days it is assumed 1 employee works 45 weeks of 5 days a week of 8 hours per day. Mechanised harvesting in 1997 was 15% but was taken to be 0% in our calculations. The resulting labour requirements are therefore considered conservative.

Macro issues: competition with food

No criteria have been included for issues relating to the competition of biofuel feedstock with food.

The reason for this is that there is no proof of or clear casual connection between bioenergy production and food insecurity. The lack of understanding in the relationship between food security and biofuel feedstock production makes it difficult to define criteria for companies to comply with or to report on to prevent negative effects on food security.

Globally, food production is balanced (i.e. enough food of adequate quality is available), but there is unequal access to food within developing countries (WBGU 2004). In other words, food security is not just a problem of production of food but also of access to food. Again, the effects of biofuel feedstock production on access to food is uncertain and will differ for different countries or groups. In general, countries which export biofuel feedstocks will benefit from additional demand for feedstock (and possible accompanying higher prices) while net importers of these feedstocks (and food in general) are more likely to be negatively affected through higher prices.

Quantified expressions of food-security levels only seem possible on a countrywide scale, where factors such as employment, income distribution, import and export products, welfare expenditure, legal rights (especially to land ownership), and education can be far more important than the impact of local bioenergy crop production (FAO 2005; FAO 2006b; Fritsche 2006).

While difficult to capture in company criteria, competition with food is a risk which should be taken seriously. Therefore, the UK government and RTFO Administrator are advised to support international research and monitoring of food security to better understand the dynamics of food insecurity and the interaction with biofuel feedstock production.

2.4 Conclusions

This Chapter described a set of environmental and social sustainability criteria. Together these are recommended to make up the RTFO Sustainable Biofuel Meta-Standard which will be discussed in more detail in the next chapter. It was found that several issues are difficult to capture in criteria at the farm or field level, most notably displacement effects. Because displacement effects are considered a serious risk to the sustainability of biofuels several measures have been proposed to at least partly tackle this issue. This includes:

- reporting on the previous land use on which biofuel feedstocks are grown,
- stimulating production of biofuel feedstocks on idle land
- stimulating feedstock suppliers to achieve sustainable production on all their plantation and not only on those which are used to supply the UK biofuel market.

The next chapter will explain in detail the proposed workings of the RTFO Sustainable Biofuel Meta-Standard. The measures proposed to tackle displacement effects will come back in Chapter 4 on monthly and annual reporting.

3 Meta-Standard

This chapter describes how conformance to the criteria defined in the previous chapter will be promoted by adopting existing sustainability standards. It explains the preferred Meta-Standard approach compared to the development of a completely new standard and how the RTFO Meta-Standard can operate. For this purpose the following aspects are discussed:

- ***Benchmark of existing standards against the RTFO criteria.***
- ***Assessment of the auditing requirements of existing standards.***
- ***Assessment of the short and medium term potential of the Meta-Standard by looking at the current coverage of existing standards: how much energy crop production is currently certified by Qualifying Standards and the potential of future certification.***
- ***Based on the above, recommendations will be given for the RTFO Meta-Standard for the period 2008-2011. This will include a list of Qualifying Standards where these exist and a set of recommendations on how to deal with crops for which currently no operational sustainability standard exists. Proposals for supplementary checks on top of Qualifying Standards up to the level of the RTFO Meta-Standard are also made.***
- ***The final section of this chapter summarises the proposed approach and what it aims to achieve.***

3.1 Why a Meta-Standard?

The idea behind the Meta-Standard for sustainably produced biofuels is that many standards already exist for sustainable agriculture and forestry and that it would therefore be unnecessary and even undesirable to develop yet another standard against which producers need to be certified. Existing standards such as from Forest Stewardship Council, Rainforest Alliance and LEAF as well as promising initiatives such as the Roundtable on Sustainable Palm Oil were all designed to stimulate sustainable feedstock production. The sustainability concerns for biofuel feedstock production are no different from the sustainability concerns which drove the development of these standards: a lot of the work effectively has already been done and it is doubtful at least whether yet another sustainability standard is desirable. Farms which are already certified by a food safety standard such as EurepGAP and which have recently also been certified by LEAF or RSPO are unlikely to welcome yet another standard to which they will need to be certified if they wish to supply to the UK biofuel market.

The fact that proper standards are available and duplication is undesirable thus forms the main reason for choosing to build upon existing standards in a Meta-Standard. In addition

to this, it would be impossible to develop a completely new standard within the short time frame available which would still be credible. WTO[17], ISO[18] and ISEAL[19] have drawn up Codes of Good Practice for the development of standards. In addition to preventing duplication and stimulating international harmonisation of standards in line with the Meta-Standard approach, one of the main requirements by WTO and ISEAL is proper stakeholder consultation. All parties which will be affected by the standard to be developed need to be identified and consulted. Because such a global standard would need to encompass many crops and many countries, potential affected parties are numerous and the development process is likely to be slow. The time consuming nature of credible standard development is also illustrated by the experience of existing standards or initiatives such as FSC and RSPO which took several years to develop. Looking at the short time frame at which sustainability reporting on biofuel feedstock is desired, it seems unrealistic that such a standard developing process will deliver results in time for the launch of the RTFO.

3.2 How will the RTFO Meta-Standard work?

Qualifying standards as proof of sustainability

The RTFO Sustainable Biofuel Meta-Standard aims to make maximum use of existing standards. If it can be shown that a specific batch of biofuel feedstock originates from a farm which is certified by a certain existing sustainability standard, this should be accepted as proof of sustainable feedstock production.

Clearly it will be very important for the RTFO Meta-Standard to determine which standards it accepts as proof of sustainable feedstock production. *These standards are called Qualifying Standards.* In order for an existing standard to be accepted as a Qualifying Standard for the RTFO, it is proposed the following requirements have to be met by the standard:

1. *The principles and criteria of the standard give a sufficient good coverage of the RTFO sustainability criteria and indicators as defined in Chapter 2.*
   This benchmark has been performed for the most promising standards and is discussed later in this chapter.

[17] WTO Code of Good Practice for the Preparation, Adoption and Application of Standards
[18] ISO/IEC Guide 59:1994. Code of good practice for standardization
[19] ISEAL Code of Good Practice for Setting Social and Environmental Standards. The International Social and Environmental Accreditation and Labelling (ISEAL) Alliance is a formal collaboration of leading international standard setting and conformity assessment organisations focussed on social and environmental issues. Its members are:
- International Federation of Organic Agriculture Movements (IFOAM)
- Forest Stewardship Council (FSC)
- Marine Aquarium Council (MAC)
- Marine Stewardship Council (MSC)
- SAN Rainforest Alliance (RA)
- Social Accountability International (SAI)
- Fairtrade Labelling Organisation (FLO)

2. *The standard should have proper auditing procedures in place such that certification by its standards gives sufficient guarantee that the certified production unit indeed meets the required criteria.*
   These auditing procedures are also discussed in this chapter[20].

None of the existing standards currently cover all RTFO sustainability criteria. *The RTFO sustainability criteria which are not covered by an existing standard are called the 'gap criteria' of the existing standard.* If the Meta-Standard is to become operational in 2008, it will not be feasible to require full compliance with the RTFO sustainability criteria in order to qualify as a Qualifying Standard.

This 'norm for Qualifying Standards' must therefore provide a good trade-off between a credible level of sustainability and the feasibility of having an operational standard by 2008. However, given the importance of certain 'gap criteria' such as carbon stock conservation it is recommended the norm for Qualifying Standards tightens over time until all 'minimum requirement criteria' of the RTFO Meta-Standard must be complied with by a Qualifying Standard. This timeline should allow existing standards enough time to make the necessary adjustments, taking into account the time-consuming stakeholder consultation processes this will require.

A good example of a gap criterion is the RTFO criterion on carbon stock conservation. Existing standards for sustainable agriculture and forestry have not been targeted at reducing greenhouse gas emissions and therefore often do not contain (sufficient) criteria on carbon stock conservation. Requiring inclusion of all carbon stock criteria from the start of the RTFO would likely disqualify all existing standard and would leave the market with zero availability of feedstock considered 'sustainable' for the RTFO. At the same time, compliance with the carbon criteria is considered an important element of sustainable feedstock production and non-compliance should therefore only be permitted as a transitional phase towards full compliance.

Supplementary checks to claim compliance with the full RTFO Sustainable Biofuel Meta-Standard

As will be shown later in this chapter, none of the benchmarked standards cover 100% of the criteria of the RTFO Meta-Standard, although several come very close. In order to claim compliance with the RTFO Meta-Standard (on top of a Qualifying Standard) it is proposed that 'supplementary checks' can be performed to fill in the so called 'gap-criteria' between the RTFO Meta-Standard and the existing standard. This effectively creates two levels of sustainability which can be claimed for a biofuel feedstock:

[20] It should be noted that benchmarking other standards against a (Meta)-Standard is not a new approach. Both IFOAM and EurepGAP have procedures for benchmarking other standards against their Standard. Standards which pass the test are allowed to use the EurepGAP or IFOAM label in addition to their own label or claim EurepGAP equivalence. FSC too, has procedures in place to accredit national FSC standards.

1. Qualifying standard: meaning that the feedstock has been produced according to one of the Qualifying Standards which meet most (but not all) RTFO sustainability criteria.
2. RTFO Sustainable Biofuel Meta-Standard: meaning that the feedstock is produced according to one of the Qualifying Standards and that supplementary checks have been performed on all the gap-criteria (the criteria covered by the RTFO Meta-Standard which are not sufficiently covered by the Qualifying Standard).

3.3 Benchmark of existing / developing standards

Procedures for benchmarking Standards

It is recommended that the RTFO-administrator puts in place procedures for benchmarking existing sustainability standards. The existing benchmark procedures of IFOAM and EurepGAP as well as the accreditation procedures for national standards of FSC can form a good basis for such a procedure. The overall benchmark should at least include a benchmark of:

- *Sustainability criteria*
- *Audit and certification quality*

For a number of standards this exercise has been done by Ecofys and DNV. The results are discussed in the next sections.

Overview of benchmarked standards

The standards and initiatives which are benchmarked on their sustainability criteria and audit quality are:

1. Assured Combinable Crops Scheme (ACCS).
2. EurepGAP, integrated farm assurance (IFA), Combinable Crops.
3. LEAF
4. Sustainable Agriculture Network / Rainforest Alliance (SAN/RA), farm assurance scheme.
5. Round Table on Responsible Soy (RTRS)
6. Roundtable on Sustainable Palm Oil (RSPO)
7. Forest Stewardship Council (FSC)
8. International Federation of Organic Agriculture Movements (IFOAM)

ACCS is a UK standard for combinable crops which started in 1997. The main focus of ACCS is food safety and not so much environmental and social sustainability. ACCS is a wholly owned subsidiary of Assured Food Standards (red tractor label) for the production of assured barley, oats, oilseeds, pulses, wheat and other crops.

EurepGAP, Integrated Farm Assessment, Combinable Crops is a world wide standard for combinable crops. Much like ACCS, EurepGAP focuses mainly on food safety with limited criteria on environmental and social sustainability. Until recently NGO's showed lit-

tle interest in EurepGAP and stakeholders consisted mainly of growers, retailers and consumer representatives. Several palm oil plantations in Malaysia are currently certified by the Fruit and Vegetable Standard of EurepGAP.

LEAF is a supplementary standard focussing on sustainable agriculture which was launched in 2003 in a reaction to increasing demand for environmental sustainability in addition to food safety. Development of the LEAF standard involved wide stakeholders consultation including NGO's. Farms can not be certified by LEAF alone but need a base standard such as EurepGAP or ACCS. Inspections for LEAF and the base standard can be combined, thereby reducing costs. Being a relatively new standard, LEAF certification is not as widespread as yet but is expanding rapidly. While the initial focus was on the UK, the standard is now extending its activities beyond the UK.

SAN has a generic standard and several crop specific standards for coffee, banana's, flowers, citrus, cacao and flowers and ferns. While no specific standards yet exist for energy crops the generic standard gives a good coverage of the sustainability issues (see next section) and RA has stated that it is interested in developing standards for energy crops if demand for such certified produce arises.

RSPO is a multi stakeholder initiative for the development and implementation of a standard for sustainable palm oil. Its criteria were adopted in November 2005 and it is hoped that the standard will become operational by the end of 2007. The criteria give a relatively good coverage of the sustainability criteria of the Meta-Standard and its membership covers roughly 40% of world palm oil production.

RTRS is a similar initiative as the RSPO but then for soy. The RTRS is not as far developed as the RSPO. The organisation was officially funded in November 2006 and no criteria have been formulated by the RTRS yet. For the benchmark we used the Basel criteria which were formulated with a somewhat limited stakeholder consultation commissioned by COOP to provide a working set of criteria for sustainable soy until an international standard has been developed.

FSC is the well known standard for sustainably produced wood and fibre products and is operational since 1994. However, FSC certifies wood and fibre products only and is therefore not of direct interest for first generation biofuels. For biomass for electricity and second generation biofuels FSC forms a promising standard.

IFOAM is actually a Meta-Standard by itself as it focuses on accrediting other standards for organic agriculture according to the general criteria set out by IFOAM. Currently IFOAM has accredited 33 organic standards over the world for a variety of crops.

SA8000 from SAI is a social standard only which was initially designed to address labour conditions in factories. Of the more than 1000 facilities which are certified today, most are factories. Nonetheless, plantations are also certified to SA8000, most notably banana

and pineapple plantations. Chiquita for example has its banana plantations certified by both SAN/RA and SA8000.

Note on cross compliance

The Cross Compliance requirements[21] which EU farmers must meet them to receive EU Farmer Support Payments have not been benchmarked in detail. The reasons for this are:

- The Cross Compliance requirements are implemented differently in each member state and sometimes even differently in different regions within the same member state. This has lead to significant differences in Cross Compliance requirements between member states and regions within member states.
- Member State authorities must undertake inspections on at least one per cent of farms claiming the Single Payment to ensure that the standards are being met. This is in sharp contrast with the voluntary certification schemes mentioned above which all require annual verification of 100% of farms (or groups in case of group certification).
- Inspections are performed by a government appointed authority which is not necessarily equivalent to an accredited certification body (as is the norm for the voluntary certification schemes mentioned above) in terms of audit quality.

Nonetheless, farmers who already collect evidence that they comply with Cross Compliance requirements, may be able to also use this evidence to show compliance with the requirements of one of the above mentioned voluntary standards. By accepting the same evidence, Cross Compliance and voluntary certification schemes can reduce the burden they place on farmers.

Benchmark on sustainability criteria

The criteria of the above mentioned standards have been benchmarked against the criteria of the RTFO Meta-Standard. Three scores have been assigned in the benchmark:

- Y: indicating that the Meta-Standard criterion and its indicators are sufficiently met by the benchmarked standard.
- N: indicating that the Meta-Standard criterion and its indicators are not or insufficiently met by the benchmarked standard
- P: indicating that the Meta-Standard criterion and its indicators are partly 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 an indicator of the Meta-Standard is addressed but less stringent. 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 score "P".

[21] Cross compliance was introduced as part of the CAP Reform of 2003 with Regulation 1782/2003. It is a mechanism to enforce compliance with:
- Existing EU legislation, laid down in Statutory Management Requirements for 19 pieces of EU legislation.
- A set of standards developed to ensure that agricultural land is maintained in Good Agricultural and Environmental Condition (GAEC), laid down in 17 GAEC standards.

- The Meta-Standard indicators are fully met but are not mandatory for certification. IFOAM for example covers most issues but many of them are recommended only and certification by IFOAM thereby does not guarantee that all these criteria are met.

The results are summarised in Table 3-1. The detailed benchmark results are included in Annex B.

Table 3-1 Summarised results of the benchmark of RTFO Meta-Standard criteria against the criteria of existing/developing standards. The results are shown here at the level of principles.

	SAN/RA	RSPO	Basel	LEAF	ACCS	EurepGAP	FSC	SAI	IFOAM
P1. Conserve carbon stocks	P	P	P	P	P	N	P	N	P
P2. Conserve biodiversity	P	Y	Y	P	N	N	Y	N	P
P3. Soil conservation	Y	Y	Y	Y	Y	Y	Y	N	Y
P4. Sustainable water use	Y	Y	Y	Y	Y	Y	P	N	P
P5. Air quality	Y	Y	Y	Y	Y	P	P	N	Y
P6. Labour conditions	Y	Y	Y	N	N	N	N	N	N
P7. Land rights and community relation	Y	Y	Y	Y	N	N	Y	N	N

The main conclusions of the benchmark on criteria are:

- SAN/RA gives overall the best coverage of all sustainability issues: both environmental and social. Only criteria on soil carbon conservation are insufficient and criteria for conversion of above ground carbon stocks or biodiversity areas lack a reference year.
- RSPO and Basel give a very good coverage of the Meta-Standard criteria. The strong point is that they both have reference years for land use change (RSPO 2005 and Basel 2004). What misses next to specific criteria on carbon storage are criteria on proper contracts for workers.
- IFOAM gives a reasonable coverage of the Meta-Standard criteria but many of the issues it addresses are only recommendations and are not mandatory for certification. Thereby IFOAM gives less certainty that these issues are actually addressed than for example Basel, RSPO or SAN/RA. In addition, IFAOM has no criteria on complying with national legislation which leads to only partial compliance on the principles for soil, water and biodiversity which all contain a criterion on national legislation.
- LEAF gives reasonable coverage of the environmental criteria. Its shortcomings are that it lacks a reference year for land use change as well as specific criteria on soil carbon conservation.
- FSC gives reasonable coverage of the environmental criteria but a more limited coverage of social criteria. This can partly be attributed to the fact that only wood production is certified which is principally different from most energy crops for first generation biofuels. Strong point is that it contains a reference year for land use change (1994).
- SA8000 gives very good coverage on the labour conditions but, being tailored to factory work, its general standard does not include land right issues. Clearly SA8000 does not cover any of the environmental criteria and should thus always be complemented by a standard focussing on the environmental issues.

- EurepGAP and ACCS give insufficient coverage of the sustainability issues. Social issues are hardly addressed beyond health and safety issues and also on environmental issues important criteria are missing. Compliance is good on water and soil quality (focussed on existing plantations) but no satisfactory criteria were found to protect against unwanted land use change, which is considered one of the most important issues.

Initial norm for Qualifying Standards

Earlier in this Chapter it was stated that the norm set for Qualifying Standards for the RTFO must form a balanced trade-off between achieving a credible level of sustainability and achieving an operational Meta-Standard in 2008. The norm recommended for the start of the RTFO is given below. A distinction is made between Environmental Qualifying Standards and Social Qualifying Standards. An existing standard can be both an Environmental and a Social Qualifying Standard.

Norm for environmental Qualifying Standards

To become a Qualifying Environmental Standard it is proposed that 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.
- Thereby, full compliance with a criterion is only awarded if the RTFO criterion is met by a mandatory criterion in the benchmarked standard.

Norm for social Qualifying Standards

To become a Qualifying Social Standard it is proposed that 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.
- Thereby, full compliance is only awarded if the RTFO criterion is met by a mandatory criterion in the benchmarked standard.

Benchmark of audit and certification quality

The level of assurance that can be placed on a sustainability certificate depends on more than the scope of the standard that is audited against. Assurance is also dependent on the quality of the audit and the system supporting the audit.

ISO19011 provides guidelines for the auditing of quality and/or environmental management systems. Examples of how audit failings can result in insufficient assurance are given in Table 3-2.

Table 3-2 Examples of Audit Programme failures and Associated Implications

Audit Programme aspect	Examples of potential problems
Auditor competence	Auditors might have poor personal attributes, insufficient knowledge and skills, or insufficient education or audit experience.
Evaluation of auditors	Poor work continues – maybe the auditor competence requirements did not prevent a poor auditor from being approved.
Scope of audits	Audits are not made against the full scope of the standard.
Frequency of audits	Audits are carried out too infrequently to provide the required assurance.
Audit planning	Audits are carried out in a haphazard fashion.
Audit activities	Too much is reliance is placed on desk-based auditing, such that the situation on 'the ground' is not examined sufficiently.
Level of quality control	Mistakes are not picked-up.
Audit co-ordination	A lack of auditor rotation results in oversights persisting.

The existing standards have been analysed on their audit quality. The full results of this analysis are included in Annex C. The main conclusions of this benchmarking are:

- Nearly all standards require certified farms to be visited at least once a year.
    - The SA8000 standard audit process allows surveillance audits between full audits, which is standard auditing practice.
    - Risk-based auditing is currently allowed by IFOAM (where high-risk farms might be visited more than once per year and low-risk farms less). Again, this is standard auditing practice. LEAF is considering introducing risk-based auditing for small-scale farms.
- When setting auditor competency requirements, the requirements vary but appear clear and appropriate. FSC and IFOAM actively comply with ISO19011.
- All certification must be carried out by accredited certification bodies, with the exception of a few LEAF marque certifications where the accreditation cost would not be proportional
- Accreditations for all standards, except SA8000, are made against ISO 65[22] (EN 45011) often with modifications to make the accreditation context specific. SA8000 has its own rigorous accreditation process.
- All standard organisations have a rigorous system to ensure that audits are carried out to a sufficient quality, with the exception of LEAF which does not have a mechanism to review the quality of audits not carried out by a non-accredited body.

From the above analysis it appears that different standards have different approaches to control the quality of the audit and certification process for their standards. This makes it difficult to define a common set of minimum criteria for the audit and certification process.

All currently benchmarked standards are judged to provide sufficient credibility for the purpose of the RTFO, with the exception of LEAF Marque certificates that have been issued by a body that is not accredited[23].

Guidelines for the RTFO administrator on future requirements on audit quality are given in the table below.

Table 3-3 Guidelines for the Administrator for *future* requirements for the auditing quality of qualifying sustainability standards.

Who is responsible for accreditation?	What accreditation process is required?	Do all farms need to be audited annually?	How are audit programmes and audit activities to be managed?	What is the required competence of verifiers?
Certification bodies must be accredited by the body that is responsible for the standard in question. Where standard bodies look to national accreditation bodies (such as UKAS) to organise accreditation, accreditation must be achieved through the appropriate national accreditation body. These bodies must be Accreditation Body Members of the International Accreditation Forum (IFA)[1].	Standards will only be accepted that have a rigorous accreditation process (compliant with ISO Guide 65, which is due to be replaced by ISO 17021 in 2008), or justified equivalent.	Yes (surveillance checks are acceptable if the farms have received a full audit within three years). Risk-based auditing is acceptable where management systems are common and co-ordinated.	As stated in ISO19011, or justified equivalent. The 'Plan, Do Check and Act' of the audit programme must be managed appropriately.	As stated in ISO19011, or justified equivalent. Lead auditors must have carried out at least three complete audits for a total of at least 15 days of auditing experience acting in the roles of an audit team leader, under the direction and guidance of an auditor competent as an audit team leader. These three audits should be completed within the last two consecutive years.

1) A full list of IAF Accreditation Body Members are listed on the IAF website (www.iaf.nu).

3.4 Short and medium term potential of the Meta-Standard

The previous sections illustrated which standards can in principle be used in the UK bio-fuel Meta-Standard. However, the short term potential of such a Meta-Standard depends on how much energy crop production is currently certified by existing standards. Based on the interviews with these existing standards both the current coverage and the potential for 2011 have been analysed.

Current coverage and outlook for 2011

The benchmarked standards were interviewed and asked to what extent they currently certify energy crops for biofuels and how this could develop in the next 3-4 years if demand for certified produce from UK biofuel producers picks up. The current areas certified per crop and standard are shown in Table 3-4. The main conclusions with respect to the current area certified and the potential for 2011 are:

- EurepGAP is known to have a wide coverage throughout the world but the exact area certified for the specified energy crops are currently unavailable from EurepGAP. Nonetheless EurepGAP has indicated that all of the crops mentioned in Table 3-4 have one or more farms certified under EurepGAP.

[22] ISO 65 sets out the general requirements for bodies operating assessment and certification of quality systems.

[23] Approximately 10% of all LEAF Marque certificates are issued by non-accredited certification bodies.

- ACCS has a very good coverage in the UK. According to ACCS they have certified roughly 85% of combinable crops grown in the UK. No coverage outside UK.
- LEAF is starting to emerge in the UK. f its 2800 current members, 300 are certified. LEAF expects rapid expansion with a target of 10,000 farms certified by 2010. LEAF is also starting to expand its activities beyond the UK.
- SAN/RA certifies crop according to crop specific standards, mainly in Central and South America and West Africa. Currently no standards exist for the energy crops. RA indicated that this is caused by a lack of demand for certified produce of these crops. As indicated above, RA is interested in developing crop specific standards for the energy crops, such as sugar cane, when a demand for such produce emerges from the UK biofuels market. In that case, certified produce could be on the market within 2-4 years time according to RA.
- Because RSPO is not yet operational, no RSPO certified palm oil is available on the market today. The current membership of RSPO is substantial, with about 40% of world production covered by its members. It is expected that the RSPO will become operational in 2007 and that 20% of global production can be certified within the next 2-4 years. In the meantime some producers have already been audited against the RSPO criteria. While they can not claim to sell RSPO palm oil they can claim that they produce according to the RSPO criteria.
- The RTRS is not as far as the RSPO and has not defined criteria as yet. It has been estimated that with proper funding the RTRS could be operational by 2008/2009. In the meantime, producers could be audited against the Basel criteria.
- IFOAM and the many standards which have been accredited by IFOAM cover many areas in the world. However, no data was received on the area of energy crop certified under these standards.
- FSC certifies wood production only and will therefore not be relevant for first generation biofuels.
- SA8000 focussed on social issues only. While it does certify plantations, most notably banana and pineapple, it does not yet certify any area of the energy crops. SAI indicated that its standard is certainly suitable for this and that they take a positive position towards certifying energy crop plantations.

Table 3-4 Certified area for important energy crops by standard (1000 ha). RSPO and RTRS are not yet operational. In these cases the area represented by the membership has been indicated. A "+" indicates that the crop is certified by the standard but that the exact area is unknown. (Source: interviews with respective standards.)

	Eurep-GAP, IFA	ACCS	LEAF	SAN/RA, farm	*RSPO*	RTRS	IFOAM	FSC	SA8000
Soy	+	0	0	0	-	+	?	0	0
Palm oil	+	0	0	0	*3,800*	-	?	0	0
Sugar cane	+	0	0	0	-	-	?	0	0
Rapeseed	+	600	11	0	-	-	?	0	0
Sugar beet	+	25	0	0	-	-	?	0	0
Wheat	+	2,600	40	0	-	-	?	0	0
Corn/maize	+	0	0	0	-	-	?	0	0

3.5 Recommended Meta-Standard for 2008-2011

Based on the benchmark of criteria, the current certified production areas and the potential for expansion of these areas in the near future, the following recommendations are made for the operation of a Meta-Standard for biofuels:

- Accept LEAF as a Qualifying Standard. The crops to be certified in the short term are most likely to be wheat, maize, rapeseed and sugar beet. With much of these crops already certified by food safety standards such as ACCS and EurepGAP it will be relatively straightforward to supplement these food safety standards with LEAF certification. While at the beginning of the RTFO LEAF coverage may still be limited, supply is able to grow to significant volumes by 2010-2011. An alternative approach to additional certification is for existing food standards, for example under the Assured Food Standards, to expand their current criteria to the extent necessary to meet either the Qualifying Standard or RTFO Sustainable Biofuel Meta Standard.
- Accept the RSPO standard for palm oil as a Qualifying Standard. While supply may still be scarce at the start of the RTFO it is expected that supply will be able to meet demand by the end of the RTFO. If supply is tight at the start of the RSPO due to a slow certification procedure it will be acceptable if producers source palm oil from plantations which:
  - Are a member of RSPO and,
  - Have been successfully audited against the RSPO criteria by an independent auditing body.
- Awaiting an internationally accepted standard for soy by the RTRS or similar body, accept auditing against the Basel criteria, excluding requirements on genetically

modified material[24], *in combination* with membership of the RTRS as a Qualifying Standard. It is recommended to phase out the Basel criteria when an internationally Qualifying Standard becomes operational (if it meets the sustainability criteria sufficiently).

- The crop for which no ready set of internationally accepted criteria exists today is sugar cane. Until such a standard exists and becomes operational, a transitional solution is provided. Sugar cane from producers which meet the following requirements are proposed to be regarded as meeting the RTFO Meta-Standard:
    - Producers which are audited against the RTFO Meta-Standard principles, criteria and indicators discussed in Chapter 2.
    - In addition producers need to be a member of promising initiative for standard development such as the Better Sugar Cane Initiative (BSI). This requirement ensures that internationally accepted standards for sugar cane are developed.
- Accept SAN/RA as a Qualifying Standard. It should be noted however, that at present the SAN/RA standards do not certify energy crops and that crop specific standards would still need to be developed. Thereby it should be noted that there seems an overlap between the SAN/RA general standard and the round tables such as RSPO, RTRS and BSI. Before starting new initiatives with RA or other like minded organisations it is recommended to consult with the existing round tables and to seek collaboration and prevent duplication. Nonetheless, the SAN/RA standard gave the best results in the benchmark and its application is therefore encouraged.
- IFOAM scores less well on the benchmark than may have been expected. It includes many recommended criteria which give no guarantees, lacks a reference year for conversion and does not contain criteria on compliance with national law. Based on this the IFOAM standard is currently not accepted as a Qualifying Standard. However, the standards accredited by IFAOM may be more specific and may well do better on the benchmark. It will be up to the RTFO-administrator to benchmark any of these standards if the need arises (see last bullet).
- EurepGAP and ACCS are currently not proposed to be accepted as Qualifying Standards for the RTFO as they provide insufficient coverage of the sustainability criteria (having been developed as food safety standards). Nonetheless their existing infrastructure can facilitate a quick roll-out of additional criteria or add-on/bolt-on standards. Such a bolt-on standard may be formed by new standards such as LEAF but may also be filled in by ACCS and EurepGAP themselves. EurepGAP has indicated it is working on the development of an add-on standard for social issues. ACCS has already initiated a meeting based on the preliminary outcomes of the benchmark to dis-

[24] The exclusion of the Basel criteria on genetically modified material is based in the following considerations:
- The RTRS criteria will replace the Basel criteria and the RTRS has indicated explicitly that it will not include requirements on genetically modified material.
- The RTFO Meta-Standard neither includes requirements on genetically modified material.

cuss the potential inclusion of additional criteria in ACCS to better meet the RTFO Meta-Standard requirements[25].

For non operational standards (such as RSPO) it is recommended that audits must be carried out by certification bodies accredited by UKAS (or equivalent) to ISO Guide 65/ ISO 17021 and the audits should be carried out to ISO19011. This recommendation helps ensure a minimum quality for audit for certificates recognised by the RTFO.

On request, the RTFO administrator could benchmark additional standards.

3.6 Gap reporting

General

From the benchmark on criteria it has become evident that for each of the Qualifying Standards, a gap exists between the criteria of the RTFO Meta-Standard and the criteria of each of the benchmarked standards. This section illustrates the options for performing supplementary checks on 'gap criteria' for feedstock producers which have been certified by one of the Qualifying Standards. This would allow them to claim a higher level of sustainability of their feedstock: compliance with the full RTFO Sustainable Biofuel Meta-Standard.

In considering the possibilities for gap reporting (i.e. allowing reporting on single or multiple criteria), the following two aspects have been taken into account:

- Added value: what is gained by adding any combination of gap reporting in terms of sustainability?
- Complexity: how much complexity is added to the system by adding any combination of gap reporting?

Based on these aspects, the following system for gap reporting is being proposed, graphically illustrated in

Figure 3-1:

It is proposed to limit gap reporting to a single level in which all gaps between the Qualifying Standard and the RTFO Meta-Standard are filled with supplementary checks.

[25] Where possible, ACCS could focus on making effective use of evidence already collected by farmers for Cross Compliance, as far as these cover the current gap-criteria of ACCS. This would reduce the additional burden placed on farmers.

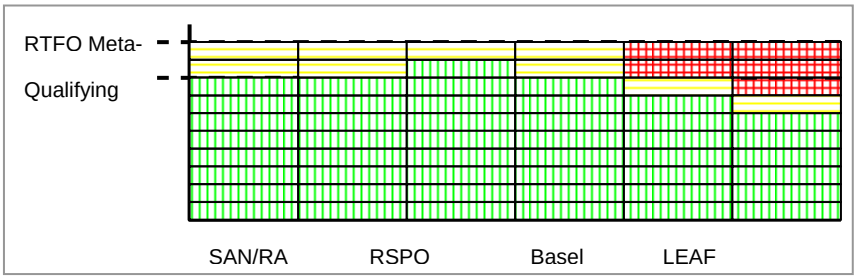

Figure 3-1 It is proposed that two levels of sustainability can be reported in the RTFO: 1) Qualifying Standard achieved by certification against a Qualifying Standard; 2) RTFO Meta-Standard, achieved by supplementing the Qualifying Standard with supplementary checks on all the gap criteria with the RTFO Meta-Standard. The figure shows the varying levels of sustainability for a selection of standards. Each square represents one criteria of the RTFO Environmental standard (social criteria have not been included for transparency reasons). The bar for Qualifying Standard is indicative only.

The reason for the resulting two tier system (Qualifying Standard, RTFO Meta-Standard) is that it gives a good trade-off between complexity and added value. Enabling all possible combinations of supplementary checks would create too much complexity and will damage the transparency of reporting with many different “in between” performance levels.

It is recommended that supplementary checks on an existing standard should be performed by certification bodies accredited by the relevant standard.

With respect to gap reporting it should be noted that the infrastructure for this does not yet exist, as it does for existing standards. The level of ambition for gap reporting will therefore be lower than for reporting on qualified standards. In addition, gap-reporting is explicitly seen as a *temporary* measure. Over time existing standards and the RTFO Meta-Standard should converge such that gap reporting will become obsolete.

Practical example

As a practical example consider reporting on biodiesel from palm oil. The palm is sourced from a RSPO certified farm in Indonesia. Looking at the detailed benchmark of the criteria of RSPO against the criteria of the RTFO Meta-Standard the following figure can be drawn, see Figure 3-2.

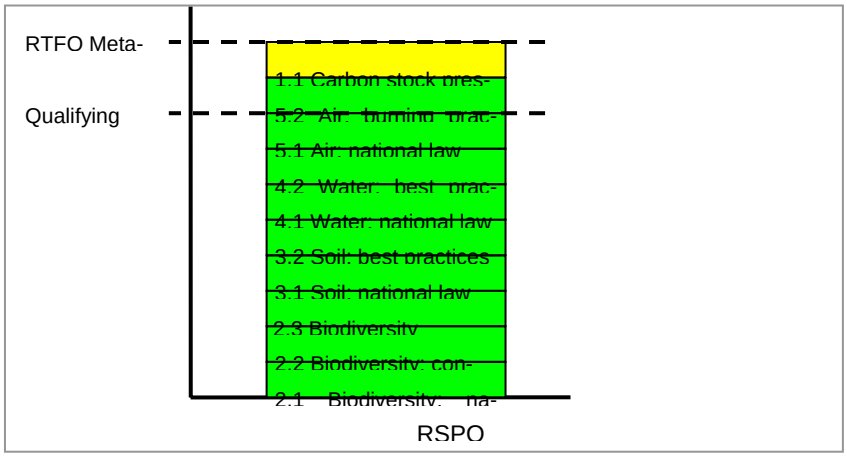

Figure 3-2 Example of the two levels of sustainability for RSPO certified palm oil.

- The figure shows that from the 10 environmental sustainability criteria of the RTFO Meta-Standard, 9 are fully met by RSPO (green in Figure 3-2). RSPO offers insufficient criteria on carbon stock conservation (yellow in Figure 3-2). A fuel supplier which can demonstrate that a batch of biodiesel was produced from palm oil from a RSPO certified farm can, without any additional auditing, report the feedstock meets the RSPO standard. This will be accepted as meeting a Qualifying Standard. If the fuels supplier wishes to claim a higher level of sustainability for the palm oil batch, it can organise for an independent auditing body to perform supplementary checks on the gap criteria between RSPO and the RTFO Sustainable Biofuel Meta-Standard. This will mean supplementary checks on:
    - Criterion 1.1 carbon stock conservation: showing that the conversion to the plantation did not destruct significant carbon stocks after 2005.

  Note that most palm oil plantations will be able to meet this supplementary criterion relatively easy as most productive palm oil plantations today already existed in November 2005. Furthermore, compliance with this criterion will not change over time for a specific plantation (which means auditing on this supplementary criterion may not need to be repeated annually). If the audit has a positive outcome, the fuel supplier would be able to claim its batch meets the full RTFO Sustainable Biofuel Meta-Standard on top of its RSPO certification.

3.7 Conclusions

The Meta-Standard approach makes effective use of existing standards and avoids duplication. A method has been proposed with two sustainability levels at the start of the RTFO.

In the Meta-Standard approach, it is proposed that certification by one of the Qualifying Standards is considered proof of an 'acceptable level of sustainability'. In addition, it is proposed that supplementary checks by an accredited organization can be used to claim conformance to the full RTFO Meta-Standard.

This approach seeks to:

- Stimulate wide scale adoption of internationally accepted sustainability standards such as SAN/RA, LEAF, RSPO and SA8000. Achieving wide scale adoption of these standards is seen as a practical and credible method to achieve a base level for sustainable biofuels which does not require development of new standards.
- Stimulate the development of standards where they do not exist yet such as for soy and sugar cane by stimulating membership of the round tables or similar initiatives aimed at developing sustainability standards for these crops. By the involvement of the biofuel sector in this development it will be possible to influence the criteria which will be set for these standards, thereby converging the criteria of these standards with those of the RTFO. Careful attention should be given to potential proliferation of standard development initiatives in a reaction to the demand for sustainability by the biofuel sector. Collaboration and coordination with existing initiatives without duplication is encouraged.
- Stimulate a long term process by which current gap criteria are considered for inclusion by existing sustainability standards. Carbon related criteria do not currently appear within existing sustainability standards and the demand for carbon sustainability is envisaged to stimulate their inclusion in future versions of these standards[26]. It is thereby envisaged that on the long term, gap reporting will be phased out as the gaps are closed by converging of the RTFO Meta-Standard with existing standards.

Important notes beyond the direct design of a Meta-Standard

Two recommendations are made beyond the scope of sustainability reporting by fuel suppliers:

- The sustainability requirements for biofuel feedstock producers will require some producers to change their production methods. Resource scarce and small-scale producers may find these requirements particularly onerous. It is therefore recommended that the UK government considers supporting the adoption of sustainable production by concrete producer focussed support programmes: especially for resource scarce and small-scale producers.
- The development of comprehensive and cost-effective sustainability standards for all energy crops will be essential to a proper functioning of the RTFO Meta-Standard. Therefore, the UK government and/or RTFO Administrator or other bodies from the biofuel sector should consider supporting (e.g. through funding) carefully selected initiatives for standard development to facilitate their development and implementation.

[26] Note that is was stated in Chapter 2 that carbon stock conservation can also be achieved by mandatory inclusion of land use change effects in the carbon intensity calculation methodology. In that case, carbon stock criteria do not need to be included in the Meta-Standard.

4 Reporting requirements

This chapter describes the proposed monthly and annual reporting requirements for fuel suppliers. In addition, recommendations are made for what constitutes adequate reporting. This chapter also addresses the effectiveness of sustainability reporting in terms of stimulating sustainable biofuel production.

4.1 Monthly reporting

In the RTFO scheme, it is expected that obligated suppliers must provide carbon and sustainability information on a monthly basis and other fuel suppliers must provide this information at any time they wish to claim Renewable Transport Fuel Certificates. Certificates are proposed only to be issued if the volume reports are complemented by proper carbon and sustainability reporting. The proposed reporting requirements are set out below.

Batch reporting

Monthly carbon and sustainability reporting will be *per batch.* A batch of fuel refers to the feedstock out of which it was made because the sustainability of the resulting biofuel is determined by the sustainability of the feedstock production. For each batch of fuel the following characteristics need to be reported:

- Fuel type: indicating the fuel type: biodiesel, bioethanol, biomethane or bio-ETBE.
- Feedstock: the feedstock type from which the fuel is made
- Feedstock origin: the country of origin of the feedstock[27]
- Environmental standard to which the feedstock has been grown
- Social standard to which the feedstock has been grown
- Land-use in 2005

Thereby a batch must have *homogeneous* sustainability characteristics (listed above). Different batches with similar sustainability characteristics but different carbon characteristics can be aggregated into a single batch (see Technical Guidance for technical details).

Examples of combinations of fuels which can not form a single batch are:

- Fuels from different feedstock: e.g. palm oil and rapeseed oil. This will form two batches, one palm oil batch and one rapeseed oil batch.
- Fuels from different regions: e.g. rapeseed oil from Germany and rapeseed oil from the UK. This will form two batches: one from the UK and one from Germany.

[27] Reporting on a more detailed regional level (in which each country consists of multiple regions) was judged to add too much burden on reporting companies compared to the added value of regional information. The aim is to start with a simple and robust reporting mechanism which may be expanded to include more sophisticated reporting over time.

- Fuels from the same country and feedstock which are produced according to different standards: e.g. RSPO certified palm oil and non-RSPO certified palm oil. This will form two batches: one for the RSPO palm oil and one for the non-RSPO palm oil.
- Fuels with a different land use in the reference year: e.g. ethanol from sugar cane from an existing plantation and ethanol from sugar cane from a new plantation on previously forested area. Again, this will form two batches.

Format

The reporting requirements discussed in this report result in a format for carbon and sustainability reporting, see Table 4-1. All boxes would allow only 1 predefined data entry to allow for quick data analysis.

Confidentiality

Monthly reports will be treated confidentially by the RTFO administrator. Verification of batch reporting will take place annually (see Chapter 6).

Table 4-1 Format for monthly reporting. Columns on carbon reporting are explained in the Carbon Reporting Methodology document.

Batch number	Fuel type	Quantity of fuel (litres or kg)	Biofuel Feedstock	Feedstock Origin	Sustainability Information			Carbon Information		
					Env. Standard	Social Standard	Land use in Nov 2005	Carbon intensity	Impact of LUC	Accuracy level
								g CO_2e / MJ		
33001	Bioethanol	250,000	Wheat	UK	LEAF	Mechanised + LEAF	Cropland	72	0	2
33002	Bioethanol	100,000	Wheat	France	-	Mechanised	Cropland	76	0	2
33003	Bioethanol	250,000	Sugar beet	UK	ACCS	Mechanised	Cropland	45	0	4
33004	Bioethanol	1,000,000	Sugar cane	Brazil	-	-	Cropland	19	0	2
33005	Bioethanol	500,000	Unknown	Unknown	-	-	Unknown	72	Unknown	0
33006	Biodiesel	1,000,000	Oilseed rape	UK	ACCS	Mechanised + RTFO	Cropland	79	0	2
33007	Biodiesel	250,000	Oilseed rape	Unknown	-	Mechanised	Unknown	79	0	2
33008	Biodiesel	500,000	Palm oil	Malaysia	RSPO + RTFO	RSPO + RTFO	Cropland	49	Unknown	2
33009	Biomethane	150,000	Dry manure	UK	By-product	By-product	By-product	36	0	2
33010	Bio-ETBE	500,000	Wheat	UK	LEAF	Mechanised + LEAF	Cropland	12	0	2

4.2 Annual reporting

Scope

The annual report should consist of three sections:

1. Section on the policies of the reporting company to improve the sustainability of its biofuels.
2. Section containing aggregated information from the monthly reports.
3. Section which provides additional information on the sustainability of the biofuels delivered to the UK market: e.g. information on production on idle land.
4. Verifier statement.

Recommended formats for aggregated monthly reporting information are provided and are discussed below. Furthermore, guidelines are given on the items to be reported on in section three (additional information on sustainability of biofuels). Verification of reported information is addressed in Chapter 6.

Aggregated monthly information

The core information in the annual report from the fuel supplier consists of the aggregated data from monthly reports over a single obligation period (April 15th to April 14th). Volume information will be treated confidentially. The formats proposed for the annual report are shown below. The tables include 'supplier targets'. These targets are explained in section 4.3.

Table 4-2 Summary of feedstock mix, percentage of known reporting, percentage of feedstock which meets Qualifying Standards or the RTFO Sustainable Biofuel Meta-Standard and carbon intensity. Supplier targets are included in this table between brackets and are based on the targets for 2009/10. This table contains example data.

Feedstock	General		Environmental		Social		Carbon	
	% Fuel supplied by feedstock type (by volume)[1]	% Data reported on sustainability characteristics[2]	%Meeting Qualified standard[3]	% Meeting RTFO Sustainable Biofuel Meta-Standard	% Meeting Qualifying standard[3]	% Meeting RTFO Sustainable Biofuel Meta-Standard	Average carbon intensity g CO_2e / MJ	Average % GHG saving
Biodiesel								
Palm oil	10	30 (65)	50 (50)	10	50 (50)	15	51	41
Rapeseed oil	70	40 (65)	85 (50)	15	85 (50)	15	77	11
Soy oil	20	40 (65)	40 (50)	10	40 (50)	10	59	31
Bioethanol								
Sugar cane	20	20 (65)	10 (50)	10	10 (50)	10	20	76
Corn	10	30 (65)	70 (50)	30	70 (50)	30	62	27
Wheat	40	50 (65)	80 (50)	0	80 (50)	0	65	23
Sugar beet	20	60 (65)	75 (50)	40	75 (50)	40	51	40
Unknown	10	0 (65)	0 (50)	0	0 (50)	0	78	8
Average		**36 (65)**	**43 (50)**	**12**	**43 (50)**	**12**	**60**	**10 (50)**

1) Unknown feedstocks must be included in the table. and the total feedstock mix per biofuel type must add up to 100%.

2) Percentages are calculated as a percentage of total data fields with known reporting for the following data fields: Biofuel Feedstock, Feedstock origin, Environmental Standard, Social Standard and Land Use in November 2005. For example if for soy oil the feedstock type and country of origin are always known, the Environmental and Social standard are known for 50% of the volume and no Land Use information is known, the overall percentage of known reporting for soy is (100%+100%+50%+50%+0%) / 5 = 60%.

3) Percentages meeting a Qualifying Standard include the fraction of feedstock which meets the RTFO Sustainable Biofuel Meta-Standard.

Table 4-3 Carbon and sustainability characteristics of a specific feedstock. For each feedstock type, e.g. palm oil, a separate table must be included in the annual report. A separate table is not required if the feedstock represented less than 3% of the annual total. This table contains example data for palm oil.

General info		Sustainability info			Carbon		
%[1] of total palm oil[2]	Feedstock origin	Env. Standard	Social Standard	Land use in Nov 2005	Carbon intensity (g CO_2e / MJ)	Impact of LUC (g CO_2e / MJ)	GHG saving (%)
20	Malaysia	RSPO	RSPO	Cropland	51	0	41
60	Malaysia	-	-	Unknown	45	Unknown	48
20	Indonesia	-	-	Unknown	51	Unknown	41

1) Percentages are calculated on the basis of the energy in the fuel supplied.

2) Any batches of fuel with identical sustainability information that contributed less than 3% of the fuel produced from this feedstock may be aggregated or can be identified separately.

Additional sustainability information

In addition to the aggregated monthly batch information, it is proposed that fuel suppliers are requested to provide additional information on the sustainability of their biofuels which is not captured in the monthly reports. Thereby this section covers those sustainability issues which are not covered by the Meta-Standard (e.g. production on idle land, sustainability of the biofuel chain beyond feedstock production, etc.). The subjects to be included are proposed as:

- Information on fuel supplier:
  - Past year's and planned policies and specific activities to improve proportion of sustainably sourced feedstock.
  - Past year's and planned policies and specific activities to support standard development for sustainable biofuel feedstock (membership of RSPO, RTRS, BSI, etc)
  - Past year's and planned policies and specific activities to promote feedstock production on idle land and, where possible, an indication of the volume of fuel originating from such idle land is given. While no universal definition of "idle land" exists a guideline to the interpretation of idle land for the purpose of the RTFO are given in Chapter 2.
  - Environmental management system certificates held e.g. ISO 14001
  - Existing verified environmental / corporate responsibility reports
- Information on feedstock producers
  - 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[28].

[28] In sourcing their feedstocks, fuel suppliers and biofuel producers should strive to give preference to crop producers who practice sustainability production on *all* their

- Information on other parties in the biofuel supply chain (biofuel producers/transport/processing companies)
    - Environmental management system certificates held e.g. ISO14001.

Fuel suppliers are free to include additional information they deem relevant in their annual reports.

Confidentiality

It is expected that annual reports will be public. They form the backbone of the reporting system which is based on transparent information to civil society by which fuel suppliers are differentiated on the sustainability of their biofuel activities. Volume information is confidential and is therefore not included in the annual report.

4.3 Adequate reporting levels

It is recommended the RTFO administrator sets 'supplier targets' for what it considers 'adequate reporting'. This will set clear expectations for fuel suppliers which they are expected to meet, or even better, outperform. Norms for adequate reporting will also be valuable tool for civil society in judging whether sustainability reporting by an obligated supplier has been adequate.

Based on the analysis from the previous chapters it is recommended that:

- The Administrator assesses the performance of reporting based on providing known information in the following data fields within the monthly report: feedstock, country, land use, environmental standard and social standard. Where a by-product is used as the feedstock, reporting "by-product" would be counted as a completed report. Similarly, reporting "mechanised" would be counted as a completed field. Fields that are completed with 'unknown' will not count towards this target.
- The level of adequate reporting for information provision and feedstocks that meet Qualifying Standards would be low in the first year as companies will need time to put up their systems with which they can demonstrate the sustainability of their feedstock. Companies will also need to find producers, processors or traders willing to supply biofuel feedstock which meets the standards.
- The level for adequate reporting should rise rapidly. When companies have their systems in place the main bottleneck to large scale sustainability reporting is the availability of certified feedstock. Many of the interviewed standards noted that the supply of this feedstock will be demand driven and that large scale certification can be achieved by 2010-2011.

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production units, instead of only on those production units which are used to supply the UK market, see Chapter 2.
If the identity of crop producers and intermediate processors remains confidential, anonymous information can be reported. For example, for crop producers the percentage of total production which is produced according to respected sustainability standards can be reported without stating the identity of the supplier. The information has to be verifiable by the verifier but will remain confidential.

- No indicative targets for supplementary checks (to meet the RTFO Meta-Standard). The reason for this is that wide scale compliance with Qualifying Standards is considered more important than the supplementary checks. From a practical point of view, managing the information on supplementary checks throughout the supply chain is expected to be rather complex and will thus represent a relatively large burden. In the long run, supplementary checks are hoped to become unnecessary as RTFO and existing standards converge. The proposed approach in this report stimulates such converging of standards by stimulating adoption of existing standards and active membership of standard development initiatives. Nonetheless, supplementary checks are a good opportunity for fuel suppliers to distinguish themselves from their competitors and fuel suppliers are encouraged to report superior sustainability performance by meeting the full RTFO Meta-Standard through supplementary checks.
- For several crops no operational standard exists today and fuel suppliers will initially be allowed to compensate such difficult feedstock through higher achievements on other feedstocks. In other words, the targets are initially set as an overall target and not as a target per feedstock. This allows fuel suppliers a greater flexibility in achieving their targets. Over time, with operational standards in place for all main energy crops it is advised to set targets *per feedstock* because the different feedstocks have very different risk profiles. Ultimately, bad performance on one feedstock can not be compensated by good performance on another feedstock.

The above recommendations lead to the proposed supplier targets for adequate reporting as listed in Table 4-4.

Table 4-4 Supplier targets for adequate reporting. The indicative targets are not mandatory but illustrate what level of reporting is expected from fuel suppliers. The targets are valid for each obligated supplier.

	2008/2009	2009/2010	2010/2011
% feedstock meeting a Qualifying Standard	20%	50%	80%
Data reporting of sustainability characterics	35%	65%	80%

4.4 Effectiveness of company reporting

It is expected that RTFO sustainability reporting will be required in order to obtain RTFO certificates. It is also expected that, "don't know" reporting is permissible and does not lead to formal penalties. The effectiveness of sustainability reporting in stimulating sustainable biofuel production therefore depends on:

- Transparency to civil society: the sustainability reporting has been designed such that it provides transparent information on the sustainability of the feedstock a fuel supplier sources. This transparency is at the heart of many of the design choices made for the RTFO sustainability reporting scheme. The annual report, which will be public,

forms the backbone of the system as it is the annual report which provides the information to civil society.

- Differentiation: companies need to be able to differentiate from each other in terms of sustainability performance. The difference in sustainability performance will provide information to civil society on the ranking of sustainability performance of the various fuel suppliers. Again, the design of the reporting has been kept simple and transparent such that it will be straightforward for civil society to judge the difference in company performance.

In order to maximise transparency to civil society and differentiation between companies it is recommended that the RTFO administrator publishes a report annually in which the sustainability performance of the fuel suppliers are compared.

5 Chain of Custody

The RTFO will require fuel suppliers to provide information on the sustainability of their feedstock. The previous chapters discussed proposals for what is considered sustainable and what data fuel suppliers are expected to report on. However, in order to be able to supply information on the sustainability of their feedstock, fuel suppliers need to be able to make a link between their biofuel feedstock and a farm or plantation producing the feedstock according to certain sustainability standards. As this chapter explains, this link does not necessarily need to be a physical link. This chapter discusses three main methods to establish this link between the biofuel feedstock used in the UK and sustainable biofuel feedstock production (which may take place anywhere). The three methods discussed are: bulk commodity, mass-balance and book-and-claim. The chapter concludes which of these methods are suitable and therefore recommended for sustainability reporting under the RTFO. Finally, the conditions for equivalence trading, as commonly practiced in European agriculture, are analysed in the context of the RTFO sustainability reporting.

5.1 Introduction to main alternatives

Bulk-commodity

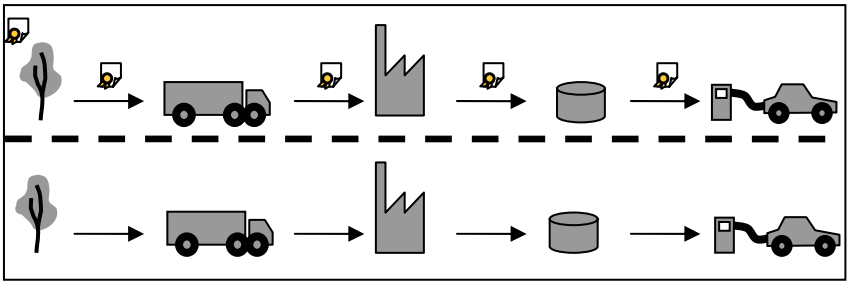

Figure 5-1 Example of bulk commodity system.

The bulk-commodity system should not be confused with a track-and-trace system. In a track-and-trace system, units are traceable back to their origin, in this case a plantation. While this is common in the postal service, this is not common in commodity markets. Even organic labels or fair trade labels will normally not be able to trace back a batch of, for example, coffee to an individual plantation or farm[29]. The essence of a bulk-

[29] They may be able to trace back a batch of product (e.g. coffee) to a specific region or group of farms, but typically not to an individual farm.

commodity approach is that it physically segregates produce from certified plantation from other produce (from not certified plantations).

The main characteristics of a bulk commodity system are:

- Claim which can be made: it can be claimed that that the physical feedstock which ends up in the biofuel originates from *a* plantation which produces according to the sustainability standard. It can not be said which specific plantation the commodity originates from.
- Traceability: no traceability of the physical product to the plantation from which it originates.
- Segregation: certified and non-certified produce remain physically separated throughout the supply chain: no mixing.
- Participating parties: all companies in the supply chain take part in the system.
- Used in:
    - Soy market: in the soy market systems are in place which physically separate genetically modified soy from non-genetically modified soy throughout the supply chain.
    - Food sector: organic food, Rainforest Alliance[30].

Book-and-claim

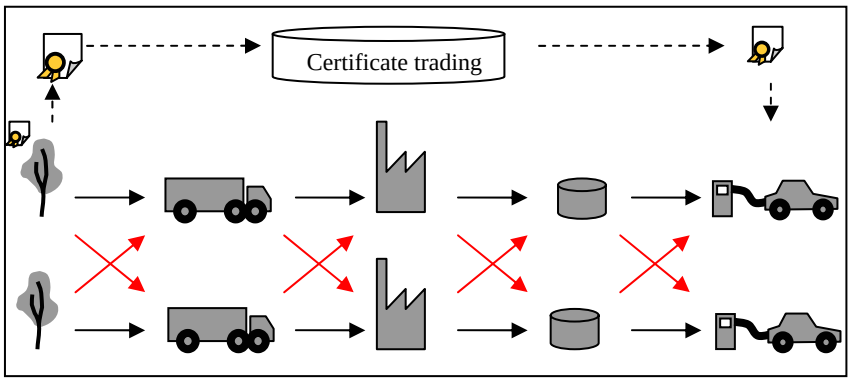

Figure 5-2 Example of a book-and-claim system.

In a book-and-claim system the trade in physical products is completely decoupled from the trade in sustainability certificates. The main characteristics of a book-and-claim system are:

- Claim which can be made: the certified product claimed by a party at the end of the supply chain has been added to the market. It can *not* be claimed that the physical product used in the biofuel is the actual physical product which originates from a certified plantation. In a book-and-claim system there is a direct link between the *amount*

[30] Actually these systems do not focus on bulk commodities but on niche markets. They may offer some extent of traceability (to a country or region for example) but will generally not be able to trace products back to an individual plantation.

of sustainability certificates bought by fuel suppliers and the *amount* of sustainably produced feedstock. Increasing the demand for sustainability certificates thus leads to an increase in the production of sustainable feedstock.

- Traceability: no traceability of the physical product to the plantation from which it originated.
- Segregation: certified and non-certified produce are mixed throughout the supply chain. Also at an administrative level *no* segregation takes place in the supply chain.
- Participating parties: this depends on the design of the system. The example graph above shows the extreme situation in which the certificate is issued at the plantation and redeemed by the fuel supplier or distributor. In this case only the feedstock producer and the obligated supplier participate in the system. Intermediate processors and traders do not take part in the system. However, different configurations are possible. In the case of soy, soy bean certificates can be issued at the plantation and redeemed at the crushing facility. At the crushing facility a new certificate could be issued for soy oil, redeemed at the biodiesel factory. Finally a new biodiesel certificate could be issued at the biodiesel factory and redeemed at the obligated company. The participating companies in a book-and-claim system thus depend on the design of the system.
- Used in: electricity sector, trade in electricity from renewable sources (RECS).

Conversion factors

Note that in a book-and-claim system measures need to be implemented on how to deal with conversion factors. Clearly, one tonne of soy bean certificates does not suffice for one tonne of biodiesel from soy. If the book-and-claim system is designed such that intermediary parties are skipped, default values will have to be assumed for the conversion factors in these facilities. If the book-and-claim system is designed such that all main processing parties participate in the supply chain, real and verifiable data for such conversion factors could be used.

No shopping

In a book-and-claim system the carbon and sustainability data should to refer to the same farm or plantation: it should therefore not be permitted to claim the sustainability properties of one plantation while claiming the carbon data of another plantation. Equally it should not be allowed to shop around for carbon data: e.g. acquire Nitrogen fertilizer application data from farm A and yield figures from farm B in order to administratively compute the perfect low carbon biofuel supply chain.

A system in which obligated companies can shop around for the various properties of their biofuels will be extremely complex and will suffer from severe transparency problems. In addition there are several factual reasons why *shopping* should not be permitted:

- Different properties are mutually dependent. For example applying more fertilizer will increase yields. It is therefore incorrect to report the low fertilizer application of farm A and the high yield of farm B.
- Shopping for separate properties does not drive sustainable production. The reason for this is that many of the properties such as N-fertilizer have no value in the main (food)

market. The fertilizer property will therefore be abundantly available and will thus be (nearly) free: after all, using it for the biofuel feedstock does not create a shortage in the (food) market. The total demand for biofuels is expected to be too small to actually create a market for low fertilizer application with scarcities (and therefore incentives for bringing down actual fertilizer application).

Only if the demand from the biofuel market acquires properties which also have value in the food market will sustainable production actually increase. In that case the demand from the biofuel market creates a new shortage for a traded commodity (e.g. claiming the LEAF certificate) which in turn will lead to higher prices and increased production.

Mass-balance

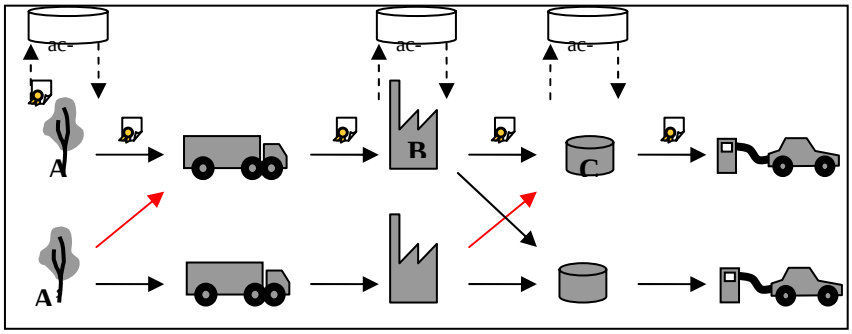

Figure 5-3 Example of a mass-balance chain of custody.

The mass-balance approach has a lot in common with a book-and-claim system although it is often perceived very different by stakeholders. The main difference with a book-and-claim system is that the physical product and the sustainability information are sold together as one package while in a book-and-claim system the trade in sustainability certificates is decoupled from the trade in physical product.

There are different ways in which a mass-balance system can deal with transportation between companies but within each company a mass-balance system acts the same as a book-and-claim system. This is best illustrated with a practical example and a graphical illustration as shown below.

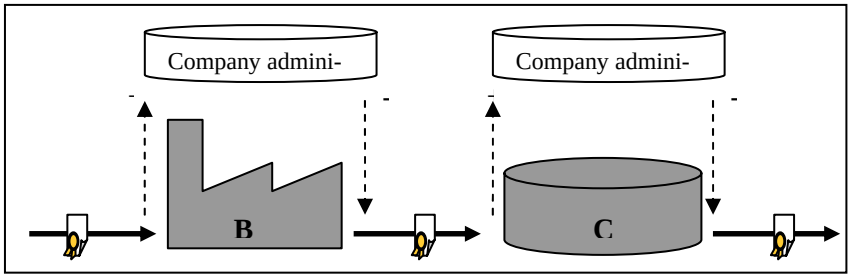

Figure 5-4 In a mass-balance approach a book-and-claim system is applied *within* each company in the supply chain.

Practical example

In the above figures company B buys 100 certified units of palm oil from plantation A and 50 non-certified units of palm oil from plantation A'. Company B will administer in its accounts that it bought 100 certified units from plantation A. Having administered the certified quantities which entered company B, company B does not need to keep the physical units from plantation A and plantation A' separated in its physical processes. It then sells 80 certified units to company C which are deducted from its internal account. Because the physical palm oil from plantations A and A' are mixed within company B, it can not be guaranteed that the 80 units sold to C as "certified" palm oil actually originate from certified plantation A. After the sale to company C, company B still has 20 certified units of palm oil which it may sell. It cannot sell more than these 20 units as "certified" because it can not sell more certified units than it bought.

The main characteristics of a mass-balance approach are:

- Claim which can be made: the claim which can be made with a mass-balance system is identical as the claim which can be made with a book-and-claim system. That is, the sustainable volumes claimed at the end of the supply chain have actually been added to the market. An oil seed crusher can not claim that the oil it sells through a mass-balance system is pressed from oil seeds which physically originate from a sustainable plantation. However, in contrast with a book-and-claim system, the oil seed crusher can claim that he at least also buys physical oil seeds from certified plantations. Through a book-and-claim system this claim can not be made because in such a system trade in certificates and physical product are decoupled.
- Traceability: no traceability of the physical product to the origin of the biomass.
- Segregation: certified and non-certified produce are mixed throughout the supply chain. Segregation does take place at an administrative level where certified and non-certified produce are documented separately.
- Participating parties: all companies in the supply chain take part in the system. They do not need to keep the certified and non-certified products physically separated but do have to administrate the amount of certified product which entered and exited the company.
- Used in: Wood sector, FSC-mixed ("credit system" is the name used by FSC).

5.2 Analysis of pro's and con's

Bulk commodity

Advantages

1. Credibility and transparency: companies working through a bulk commodity system can claim that the physical feedstock they have sourced has indeed been produced according to the sustainability standard. This system thereby is most credible and transparent to civil society.

2. In line with existing Standards: the UK biofuel sustainability reporting is foreseen to make maximum use of existing systems for sustainable agriculture and forestry. Where these systems have a COC in place these are currently most often based on physical segregation.

Disadvantages

1. Costs: because certified and non-certified products need to be kept physically separated throughout the chain, additional investments need to be made in the logistical infrastructure. Considering the bulk nature of most biofuel feedstocks, separation is not straightforward and these costs could be significant, especially at lower volumes. Therefore a bulk-commodity approach will only be economic at high volumes of certified produce, as currently witnessed in the soy market for non-genetically modified soy.
2. Implementation: implementation of a separate logistical infrastructure for certified produce will take considerable time.

Book-and-claim

Advantages

1. Costs: as a book-and-claim system does not require any modifications in the way the physical product is traded and, depending on its design, does not require additional documentation by intermediary parties in the supply chain, it can be a cost effective approach. However, a central authority needs to be created which issues and redeems certificates. In addition, for trade in certificates to become effective, sufficient volumes must be traded to create a real market for such certificates. Nonetheless, at significant volumes it is considered an economic system.
2. Benefits to the farmer: because the certificate in a book-and-claim system is bought directly from the farmer, decoupled from the physical product, the farmer is more likely to reap the benefit from sustainable production. In the other systems there is a higher risk that other parties in the supply chain such as processors or traders take most of the added value of sustainable production.

Disadvantages

1. Setting up a credible book-and-claim system requires a central authority which issues and redeems certificates. The system must be set up in a robust way to prevent double counting. Setting up such a robust system will require high start up costs and is unlikely to finish in time for the start of the RTFO.
2. Depending on how the book-and-claim system is designed, intermediary supply chain parties are excluded: this has two disadvantages:
    a. For the GHG calculations information will be needed on intermediary processors. A full book-and-claim system will not allow for this. Therefore, using a full book-and-claim system (from plantation to obligated company) will assume the (conservative) default values for all intermediary steps of the supply chain.

b. No incentive or influence for intermediary supply chain parties: while intermediary parties in the supply chain are not burdened by the system they also can not participate in the system if they wish to do so. Thereby, such a book-and-claim system takes away both the responsibility and the opportunity of these intermediary parties to put pressure on their suppliers to produce sustainably. With a pure book-and-claim system a trader or refiner will not be able to distinguish himself from his competitors based on its sustainable feedstock.

A more inclusive book-and-claim system in which several book-and-claim systems operate in the total supply chain (e.g. one for each commodity) to cover all major parties in the supply chain would avoid these weaknesses.

3. Not in line with existing standards: in the agricultural and wood sector there are no known examples of a book-and-claim system. It is uncertain whether existing sustainability standards are willing to allow a book-and-claim system with claims referring to their label. Again, this makes it unlikely to have a book-and-claim system operational for the start of the RTFO in 2008.
4. A book-and-claim system suffers from transparency and credibility problems. This is especially problematic with a scheme such as the RTFO sustainability reporting which has no formal penalties for nil-reporting. The effectiveness of the sustainability reporting depends on how it is picked-up and acted upon by civil society. If civil society renders the system incredible the whole system fails.

Mass-balance

Being a hybrid solution, the advantages and disadvantages are less extreme as with the bulk commodity and pure book-and-claim system. Nonetheless, the following qualifications can be made on the mass-balance approach:

1. Credibility and transparency: while the credibility and transparency of a mass-balance system is inferior to a bulk commodity system it is still better than the book-and-claim system as a link between companies which trade *physical product* is still maintained. Note that in both book-and-claim and mass-balance, no claim can be made on the fraction of sustainable feedstock which ends up in the final product (biofuel).
2. Costs: because no physical separation is needed, the costs for a mass-balance system will be significantly lower than for a bulk commodity system. However, each company in the chain does need to keep additional administration on the incoming and outgoing amounts of certified produce. Clearly this forms an administrative burden.
3. Implementation: implementation of a mass-balance system does not require investments in the logistical infrastructure. It neither requires the formation of central authority that issues and redeems certificates. Of the three options the mass-balance systems is therefore considered most likely to be operational at the start of the RTFO. However, as a mass-balance approach maintains a chain of custody between parties, all parties in the supply chain need to participate and need to implement the necessary administration systems. It will still take time to organise a chain of custody in which all parties are willing to participate and put their systems in place.

5.3 Chain of custody in existing standards

Not all of the existing standards or initiatives come with a chain of custody which can be used. If an existing standard does not have a certified chain of custody the fuel supplier will need to find other ways to ensure he can make a claim on the sustainability of his feedstock, based on one of the three approaches discussed in this chapter[31].

To give an insight into the availability of a chain of custody from existing standards, Table 5-1 summarises the COC for the standards discussed in Chapter 3. The main conclusions are:

- Several standards do not (yet) include a chain of custody such as EurepGAP Combinable Crops, SA8000 and LEAF.
- None of the standards currently work through a book-and-claim system.
- Only one of the analysed standards currently works with a mass-balance approach, FSC.

Table 5-1 COC for several existing standards and initiatives.

	Bulk Commodity	Mass-balance	Book-and-claim
FSC	Yes	Yes	-
SAN/RA	Yes	-	-
IFOAM	Yes	-	-
LEAF	-	-	-
RSPO	Under development: all COC options still open		
RTRS	Under development		
SA8000	-	-	-
ACCS	-	-	-
EurepGAP, Combinable Crops	-	-	-

5.4 Recommended approach for RTFO

Based on the above it can be concluded that the different systems all have their pros and cons. There seems to be no factual reason why not to allow any one of the three systems discussed: bulk commodity, mass-balance and book-and-claim. The claim which can be made with a book-and-claim and mass-balance approach is deemed appropriate for the purpose of the RTFO: for each unit of sustainable biofuel claimed by an obligated company and equivalent amount of sustainably produced feedstock has been added to the market (taking into account conversion factors). This claim is deemed appropriate because:

1. The goal is not the *consumption* of sustainable feedstock but the *production* of sustainable feedstock.
2. Both a book-and-claim system and a mass-balance system can guarantee the sustainable *production* feedstock and that this sustainable feedstock has been added to the market.
3. If the UK uses more feedstock for biofuels and demands more sustainable feedstock through a mass-balance or book-and-claim system, this will drive an increase in production of sustainable feedstock.

[31] This is exactly what the Dutch Electricity producer Essent did for the Green Gold Standard it developed for the biomass which it sources.

It addition there are no strong arguments why several systems could not be operated in parallel. However, a significant obstacle to implementing a book-and-claim system is its acceptance by civil society as well as existing standards. The Meta-Standard approach builds on existing standards and depends on information to civil society. If existing standards do not accept a book-and-claim system or if civil society does not believe in the sustainability merits of a book-and-claim system, a book-and-claim system may not be politically acceptable. Furthermore, in a book-and-claim system where certificates are issued at the plantation and only redeemed at the fuel supplier, no information is available on the GHG performance of intermediary supply chain parties which means that (conservative) fuel level default values will need to be used.

Based on the above it is recommended that:

All three chain of custody mechanisms, bulk commodity, mass-balance and book-and-claim are allowed for carbon and sustainability reporting under the RTFO. If a book-and-claim system is used:

- *The farm or plantation from which the certificate originates is used for both sustainability reporting and carbon reporting: carbon and sustainability data can not originate from different farms or plantations.*
- *Carbon default values will have to be used for all processing steps not covered by the book-and-claim system: this depends on the design of the system.*

Regardless of the mechanism used for the chain of custody, a proper system needs to be in place to prevent double counting.

Certification or verification of the COC

As discussed in section 5.3, most existing standards currently do not have a suitable chain of custody for the RTFO. This means companies will need to set up their own chain of custody for the purpose of the RTFO. The RTFO Technical Guidance gives a detailed description of a mass-balance approach which companies can use for the RTFO. However, also the chain of custody approach described in the Technical Guidance is not a formal standard to which parties in the supply chain can get certified. Therefore, when the data reported by fuel suppliers are verified by an independent third party (see Chapter 6), the proper functioning of the chain of custody will also need to be checked. In time, new chain of custody standards may develop to which parties in the supply chain can get certified. Having a certified chain of custody will make it unnecessary to check the proper functioning of the chain of custody again during the annual verification of the data submitted by fuel suppliers.

5.5 Equivalence trading

Background

Equivalence trading is a mechanism used for the EU Single Farm Payment scheme. With respect to bioenergy, the most relevant Single Farm Payments are those for energy crops on set-aside land and the energy crop premium (on non-set-aside land). In order to be allowed to grow energy crops on set aside land or to be able to receive the energy crop premium farmers need to be able to show a contract with a processor for energy purposes (or other non-food purposes in the case of set-aside land).

However, some farms are far away from bioenergy producers and they would therefore be effectively excluded from these benefits. To address this problem the concept of equivalence trading has been introduced. It allows a farmer in Germany to produce rapeseed for which it can arrange a contract with a UK biodiesel producer. With this contract the German farmer is now eligible for EU subsidies such as the energy crop premium. Because it would be expensive and inefficient to transport the German produced rapeseed to the UK biodiesel producer the German produced rapeseed is "swapped" for UK produced rapeseed nearby the biofuel factory. The German produced rapeseed thereby does receive the subsidy but does not physically end up in the UK biodiesel. The principle of equivalence trading is graphically illustrated in Figure 5-5.

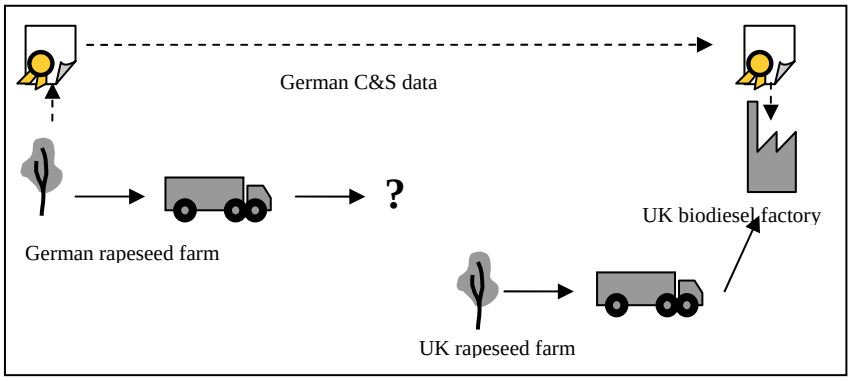

Figure 5-5 Example of equivalence trading. A German rapeseed farm has a contract with a UK biodiesel factory and receives EU income support for growing energy crops. To avoid the long distance transportation the physical rapeseed is swapped with rapeseed produced by a UK rapeseed farm close to the factory.

Which farm can be reported on in case of equivalence trading?

Carbon and sustainability reporting under the RTFO does not directly affect the principle of equivalence trading. However, the question for the RTFO is whether the carbon and sustainability information of the *contracted* farm can be reported or whether the carbon and sustainability information of the farm which actually delivered the rapeseed which was used in the biofuel must be reported.

In fact, equivalence trading is simply a form of a book-and-claim system. As discussed above, in a book-and-claim system the physical product is traded completely decoupled from the sustainability information, which is exactly what happens with equivalence trading. In the previous section it was recommended that a book-and-claim system should be allowed but that several conditions need to be met:

1. Double counting has to be prevented. This means that a verifiable system needs to be in place which ensures that sustainability certificates claimed for the biofuel can not be claimed again.
2. The farm which supplies the data for the sustainability reporting also supplies the data for the carbon reporting: i.e. no shopping. For the transportation distance for carbon reporting it is advised to use the default value in these cases.

A biofuel company may prefer to report on the sustainability and carbon information of the farm which supplied the physical feedstock: e.g. through a mass-balance approach. Note, that unless physical segregation is practised throughout the supply chain there will actually be no guarantee that the physical feedstock actually originated from a particular farm, see section 5.1 and 5.2.

Summarising the above, the recommendation with respect to equivalence trading is:

In case of equivalence trading a fuel supplier may report the sustainability and carbon characteristics of the contracted farm if the following conditions are met:

1. A verifiable system is in place to prevent double counting.
2. Sustainability data and carbon data originate from the same farm.

It is important to note that the Renewables Obligation Order[32] does not allow energy crop Renewable Obligation Certificates to be awarded to crops that are traded under the principal of equivalence. For consistency reasons the UK Government and/or RTFO Administrator may therefore decide not to allow reporting on the contracted farm in cases of equivalence trading.

[32] The Renewables Obligation Order is UK legislation for electricity from renewable sources.

6 Assurance of company reporting

For credible carbon and sustainability reports it is important that information provided is verified by third parties. This chapter describes proposals for the main aspects of third party verification such as the level of assurance required, the scope of verification and estimates of auditor days required for verification. The recommended approach is for verification rather than certification, since the emphasis is on providing assurance on the quality of reported data, rather than on the quality of the management systems.

6.1 Terminology

DNV and Ecofys recognise the variety in use of terms to describe 'assurance' and related statements and believe that homogeneity may come about as sustainability reporting and assurance becomes more standardised. However, in the meantime we have adhered to the following definitions as stated by the European Federation of Accountants (FEE).

"Assurance can be defined as the provision of confidence or certainty by an independent assurance provider to a party or group of persons in relation to certain subject matters (FEE 2003)."

"Verification can be defined as a test of detail in which a matter is confirmed by reference to very persuasive evidence, such as checking a disclosure to third-party documentation (FEE 2002)."

6.2 Recommended approach

It is recommended that verification is performed annually and covers all data in the monthly and annual reports.

This will ensure that the verification opinion covers all information in the public domain as well as all information reported to the RTFO Administrator in the monthly reports. Monthly verification opinions are not recommended as the associated verification costs and disruptions are viewed as disproportionate to the benefits.

It is proposed that there is no requirement to pass evidence from farms, processors or other suppliers through the supply chain.

Passing physical evidence of compliance with all sustainability criteria down the supply chain would be very difficult due to the administrative burden this will create. Additionally, agents in the supply chain may be unwilling to disclose commercially sensitive information. Instead it is recommended that the company which generates the carbon and/or sustainability data retains this evidence. In verifying the carbon and sustainability data re-

ported by a fuel supplier, the verifier is able to work back up the supply chain to the source data using the chain of custody, as described in Chapter 5.

Certificates of Qualifying Standards are recommended to be accepted as proof of compliance

With respect to sustainability data, certificates of Qualifying Standards awarded by appropriately accredited organisations should be considered proof of compliance with the criteria and indicators of that standard: these should not be verified again.

If it is claimed that the full RTFO Sustainable Biofuels Meta-Standard is met, audit results of the supplementary checks should be required as evidence.

It is proposed that evidence for all other carbon and sustainability data reported by a fuel supplier is subject to verification, for example evidence for:

- Land Use in November 2005
- Carbon data (if default values are not used)
- Other information provided in the annual report

Verification can be risk-based to reduce costs.

With risk-based verification, assurance is gained from the sampled assessment of data and the controls around the data. All information is not required to be verified independently, rather a sample is investigated from each company's submission. Risk-based approaches are used to provide the same level of assurance at a reduced cost.

Under RTFO legislation, fuel suppliers have the responsibility for obtaining opinions on their RTFO sustainability report.

The RTFO will impose a legal obligation on suppliers of fossil fuel for road transport to supply a specific percentage of renewable fuel from 2008. Responsibility for verification of information supplied to the Administrator therefore rests with the fuel suppliers. It should be acceptable, however, for agents within the supply chain to obtain verification opinions for their data to reduce the verification effort required by the obligated suppliers. This might be attractive if fuel suppliers offer a price incentive. However, verification bodies contracted to the fuel suppliers may still need to carry out checks along the entire supply chain, although this work could be reduced as a result of the assurance gained from previous verifications.

For the first phase of the RTFO, assurance engagements should aim to provide at least 'moderate' assurance (from a limited assurance engagement)

This recommendation is consistent with the ability of biofuels supply chains to provide good sustainability and GHG data. The supply chains of fuel suppliers are currently being developed and the reporting systems along the supply chains will take time to mature. (Comparisons of the verification effort that would be expected for 'limited assurance engagements' and' reasonable assurance engagements' are given below). In the future, the

merits of increasing the level of assurance should be considered. Assurance engagements could aim to provide "reasonable" assurance.

It is recommended that the Administrator, when established, sets up an approval process for verification bodies for the annual verification of fuel suppliers' sustainability and carbon reporting.
Some of the approval requirements that the Administrator may wish to consider are listed at the end of this section (6.5).

6.3 Levels of assurance

The concepts of limited assurance and reasonable assurance engagements are set out in the 'International Standard on Assurance Engagements 3000 Revised Assurance Engagements Other Than Audits or Reviews of Historical Financial Information' (ISAE 3000 Revised). The International Auditing and Assurance Standards Board (IAASB) issues ISAE 3000 Revised, under the auspices of the IFAC, the global organisation for the accountancy profession. ISAE 3000 Revised requires compliance with a system of quality control (in accordance with International Standard on Quality Control (ISQC) 1) and relevant parts of the IFAC Code of Ethics, including independence.

The difference between limited and reasonable assurance is summarised below.

Table 6-1 Differences between limited and reasonable assurance.

Heading	Limited assurance engagements	Reasonable assurance engagements
Form of opinion expression	Negative.	Positive.
For example	"nothing has come to our attention that causes …. to believe that internal control is not effective, in all material respects".	"the company's sustainability reporting gives a true and fair representation …".
Level of assurance	Moderate.	High.
Verification activities	Review of information provided and enquiries of those responsible for producing the data. Limited assurance audits are largely desk-based.	The emphasis is on the verifier to obtain all evidence required to come to an opinion. Reasonable assurance audits are site orientated.
Examples	Frequently used for non-financial reporting, such as by the Carbon Trust.	EU Emission Trading Scheme, Financial Audits.

Limited assurance engagements

With limited assurance engagements, the verifier does not actively seek evidence to support the organisation's assertion that things are as they say they are. Rather the verifier only reviews the information provided, although would conduct limited enquiries. With limited assurance engagements, the verifier will give a report which contains a 'negative form of expression' of its conclusions. For example, the conclusion of a limited assurance engagement might be: "nothing has come to our attention that causes us to believe that internal control is not effective, in all material respects, based on XYZ criteria".

Reasonable assurance engagements

For a reasonable assurance engagement, the verifier actively seeks evidence to support the organisation's assertion, and is therefore a more rigorous approach. With this level of evidence, the verifier is expected to produce a report giving 'positive form of expression' of its conclusions. For example, the practitioner could state: "In my opinion management has implemented suitable systems which function effectively to reduce the risk error based on XYZ criteria"

Comparison of requirements

The cost of a reasonable assurance verification is estimated to more than double that for limited assurance verification. The cost of reasonable assurance verification, however, could be considerably more if verification was not straight forward, particularly if agents in the supply chain were not cooperative, the supply chain was complex or the data flow was complex.

The difference between the costs of limited and reasonable assurance engagements was made for an example with the following assumptions.

- Organisations cooperate fully and quickly with the verifier.
- The reporting system is effective.
- There is no certified chain of custody.
- The supply chain is defined and is formed as in Figure 6-1.

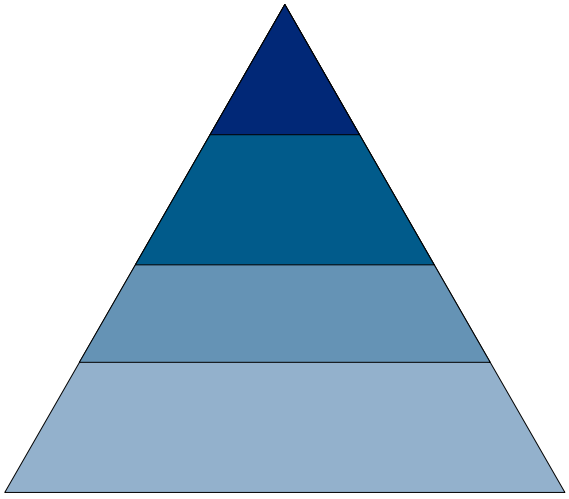

Figure 6-1 Assumption on the number of parties involved in the supply chains of an obligated company. These assumptions are used for a cost estimate of verification, see table below.

Table 6-2 Estimates of the number of auditors days required for sustainability reporting verification

Tasks	Estimate of the number of auditor days for a Limited Assurance Engagement	Estimate of the number of auditor days for a Reasonable Assurance Engagement
Desk-based risk-based review of sustainability report	1	1
Visit to meet obligated company data coordinator and review consolidation process.	1	1
Telephone interviews half of biofuels companies and reviewing of materials (2 per day)	5* (5 biofuels companies and 5 merchants)	13* (3 biofuels companies and 10 merchants)
Telephone interviews with farms and reviewing of evidence (5-10 per day)	4*	7* (50 is the near the square route of 2000)
Site visits	0	3*
Reporting	1	2
Quality control/ Management review/ Issuing of opinion and report	1	2
Total	**13**	**29**

*The number of days will depend on the findings of the risk-based review.

The estimates above are necessarily crude as the 'pass' requirement is largely a matter of professional judgement of the verifier. All verifiers need to carry out the amount of investigation that is consistent with reasonable expectations of the users of the opinion.

6.4 Reducing the cost of verification

As the RTFO matures, it is anticipated that the cost of verification may reduce because:

- The focus of verifications can shift more to the system level once controls are demonstrated to be effective. Verifications are more costly when there are requirements for relatively large amounts of data testing; system-level checks are relatively much quicker to carry out. However, if material errors are found during audits, this is will prevent the possible shift in audit focus to the system level. The graph below shows the theoretical trade-off between the audit focus on data testing against system-level checks, for the same level of assurance.
- The development of a certified chain of custody will reduce the verification effort required for the same level of assurance.

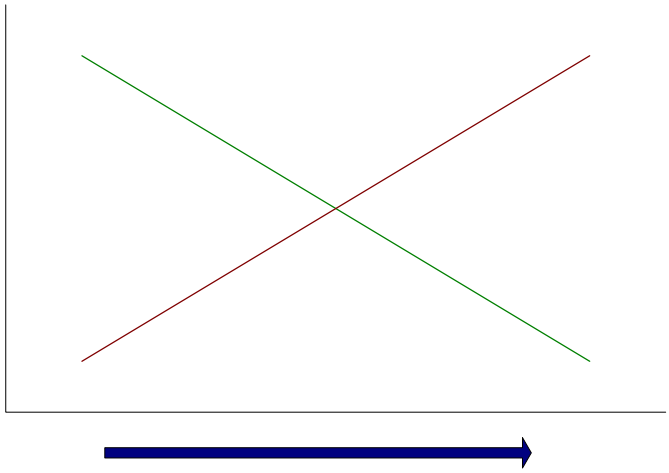

Figure 6-2 Relation between system-level auditing and data-level auditing for a given level of assurance.

6.5 Approval of verification bodies

It is recommended that the Administrator, when established, sets up an approval process of verification bodies for the annual verification of fuel suppliers sustainability and carbon reporting.

There are a number of requirements for the approval of verification bodies that the administrator may wish to consider. 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.

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Annex A High Conservation Values

The following High Conservation Values have been developed by the HCV network[33].

HCV1. Areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g. endemism, endangered species, refugia).

For example, the presence of several globally threatened bird species within a Kenyan montane forest.

HCV2. Globally, regionally or nationally significant large landscape-level areas where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.

For example, a large tract of Mesoamerican flooded grasslands and gallery forests with healthy populations of Hyacinth Macaw, Jaguar, Maned Wolf, and Giant Otter, as well as most smaller species.

HCV3. Areas that are in or contain rare, threatened or endangered ecosystems.

For example, patches of a regionally rare type of freshwater swamp in an Australian coastal district.

HCV4. Areas that provide basic ecosystem services in critical situations (e.g. watershed protection, erosion control).

For example, forest on steep slopes with avalanche risk above a town in the European Alps.

HCV5. Areas fundamental to meeting basic needs of local communities (e.g. subsistence, health).

For example, key hunting or foraging areas for communities living at subsistence level in a Cambodian lowland forest mosaic.

[33] See: http://www.hcvnetwork.org.

HCV6. Areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).

For example, sacred burial grounds within a forest management area in Canada.

Currently no comprehensive maps exist which define HCV areas. For many areas it will therefore still be necessary to assess whether HCV's are present or not. The following initiatives are helpful in defining areas with one or more HCV's:

- Conservation International - Biodiversity Hotspots[34]
- Birdlife international - Important Bird Areas[35]
- The WWF G200 Ecoregions[36]: the regions classified "vulnerable" or "critical/endangered".
- European High Nature Value Farmland[37]

[34] http://www.biodiversityhotspots.org/xp/Hotspots/
[35] http://www.birdlife.org/action/science/sites/index.html
[36] http://www.panda.org/about_wwf/where_we_work/ecoregions/ecoregion_list/index.cfm
[37] http://reports.eea.europa.eu/report_2004_1/en/EEA_UNEP_Agriculture_web.pdf

Annex B Detailed benchmark of criteria

The tables below shows the detailed results of the benchmark performed on the RTFO criteria against the criteria of existing standards.

Principles and Criteria	SAN/RA		RSPO		Basel		LEAF		ACCS		EurepGAP IFA		FSC		SA8000		IFOAM	
P 1. Carbon Conservation																		
C 1.1 Preservation of above and below ground carbon stocks (reference date 01-11-2005).	P	P2 carbon capture C 2.1 (ecosystem conserv') C 9.5 cutting of natural forest cover for new production areas is forbidden	P	7.3 no conversion primary forest and HCVA nov 2005 7.4 No plantation on peat soil > 3m	P	3.1.1, no conversion of primary and HCVA july 2004 3.1.2. no forest conversion without compensation 1994	P	P6	P	1.0 Awareness of Defra COPs for soil, air and water Conservation of peat lands	X		P	10.1 natural forest conservation and restoration.	X		P	2.1.2. clearing of primary ecosystem is prohibited
P2. Biodiversity conservation																		
C 2.1 Compliance with national laws and regulations relevant to biomass production and the area where biomass production takes place.	✓	1.1 manage social and environmental aspects in compliance with applicable law 1.6 / 2.4	✓	2.1 in general	✓	1.1 general	✓	1.4 farm policy need to comply with all regulatory and legislative requirements	✓	1.0, 1.1 compliance with legislation is part of COP compliance	✓	Introduction: any applicable legislation stricter than EurepGAP must be complied with	✓	P 1 general	X		X	
C 2.2 No conversion of high biodiversity areas after 01-11-2005	P	P9 P2 (ecosystem conservation) 2.2 no specific date	✓	7.3 no conversion primary forest and HCVA **Nov 2005**	✓	3.1.1 No conversion after **31 July '04** 3.1.2 compensation from 1 **Jan '95 - 31 July '04**	P	P6 Extensive set of criteria	X		X		✓	6.10 no conversion in HCV forest. 10.9 no conversion from natural forest after **November 1994**	X		P	2.1.2. clearing of primary ecosystem is prohibited
C 2.3 Indentification and conservation of important biodiversity on and around the production unit.	✓	2.3 within 1 km, communication with owner of natural park	✓	5.2 (+on-farm practice)	✓	3.3.1 and 3.3.2	✓	P6 Integrate farming and biodiversity management	X		P	1.6 only recommendations and minor musts.	✓	P6 conserve biodiversity	X		✓	2.1 Organic farming benefits the quality of ecosystems 2.1.2. clearing of primary ecosystem is prohibited
Recommendations																		
2.4 Preservation and/or improvement of biodiversity on production sites	✓	P 2	P	5.2	✓	3.3.2	P	6.2.2 5%	X		P	1.6.2.2 Action plan to enhance habitats and biodiversity on the farm (Minor must)	✓	P6 .4	X		P	2.1 / 2.1.2. as above

Principles and Criteria	SAN/RA		RSPO		Basel	LEAF		ACCS		EurepGAP IFA		FSC		SA8000		IFOAM	
P3. Soil conservation																	
C 3.1 Compliance with national laws and regulations relevant to soil degradation and soil management.	✓	1.1 general compliance national law	✓	2.1	✓ 1.1 general	✓	1.2.1	✓	COP for soil and water	✓	Introduction: any applicable legislation stricter than EurepGAP must be complied with	✓	P 1 general	X		X	
C 3.2 Application of best practices to maintain and improve soil quality. o Erosion control o Soil nutrient balance o Soil organic matter o Prevention of salinisation o Soil structure	✓	P9 missing salinisation	✓	4.2 / 4.3 missing salinisation	✓ 2.1.1 / 2.1.2 / 2.1.3, 2.4.2 missing salinisation	✓	2.2.1 –2.2.10 Soil erosion section, 2.4.1 – 2.4.14 Crop nutrition	✓	COP for soil and water	✓	2.3.soil and substrate management / 2.4 fertilizer	✓	6.5 control erosion, 10.6 improve or maintain soil structure, fertility an d biol. Activity	X		✓	2.1 2.2.1 t-m 2.2.5 4.3.1 en 4.4
Recommendations																	
3.2 a Measurements	✓	P9	X		X	✓	2.4 / 2.10	✓	COP for soil and water	P	2.4 Records on fertilizer use 2.6 records on chemicals	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.	✓	10.1 used as fertilizer	P	5.3 recycled and reused	X	✓	2.4	X		X		X		X		✓	2.2.3 used as fertilizer
P 4. Sustainable Water Use																	
C 4.1 Compliance with national laws and regulations relevant to contamination and depletion of water sources.	✓	4.2 / 4.4 / 4.5	✓	2.1	✓ 1.1 general	✓	1.2.1	✓	Covered by compliance with soil and water COPs [C.1.1 above]	✓	Introduction: any applicable legislation stricter than EurepGAP must be complied with	✓	P 1 general	X		X	
C 4.2 Application of *best practices* to reduce water usage and to maintain and improve water quality.	✓	P4	✓	4.4	✓ 2.1.4 / 2.1.5 / P 2.2 chemical use	✓	2.7.1 –2.7.8 Irrigation and water storage / 3.7.4	✓	Covered by compliance with soil and water COPs [C.1.1 above]	✓	1.5.2.1 waste man. plan to avoid contamination of water 1.6.1.4 advice from water authorities	P	10.6 impacts on water quality , quantity	X		✓	2.1 2.2.4 t-m 2.2.6
Recommendations																	
4.2 b Records	✓	P4	X		X	✓	2	X		P	2.5.1.3 records of irrigation water usage	X		X		X	
P5. Air quality																	
C 5.1 Compliance with national laws and regulations relevant to air emissions and burning practices	✓	1.1 / 10.2 / 10.3 / 10.4 /	✓	2.1	✓ 1.1 general	✓	1.2.1	✓	1.0, 1.1 compliance with legislation is part of COP compliance	✓	Introduction: any applicable legislation stricter than EurepGAP must be complied with	✓	P 1 general	X		X	
C 5.2 No burning as part off land clearing or waste disposal	✓	9.4 / 10.2	✓	5.5	✓ 3.2.3 no fire for land clearing 3.4.1 avoid burning of waste	✓	1.2.1	✓	Covered by compliance with Air COP	X		X		X		✓	2.2.2 restricted to the minimum

Principles and Criteria	SAN/RA		RSPO		Basel		LEAF		ACCS		EurepGAP IFA		FSC		SA8000		IFOAM	
P6. Workers rights and working relationships																		
C 6.1 Compliance with national laws concerning working conditions and workers rights	✓	P 5 (ILO, Un. Decl. of Human Rights and Children's right convention) 5.1 Complying with labour laws and internat. Agreements	✓	2.1	✓	1.1 / 4.2.1	✓	1.2.1	X		✓	Introduction: any applicable legislation stricter than EurepGAP must be complied with	✓	P 1 general	✓	9.1 general	P	Recommendation all ILO conventions and UN Charter of Rights for children
C 6.2 Contracts	✓	5.3	X		X		X		X		X		X		X		P	8. Recom.
C 6.3 Provision of information	✓	5.1 / 5.13	✓	1.1 / 6.2	✓	4.2.1	X		X		X		X		✓	9.1	X	
C 6.4 Subcontracting	✓	1.8 / 5.3	X		X		✓	1.9 (1.2.6)	P	9.0 not related to working conditions	X		X		✓	9.6 till 9.9	X	
C 6.5 Freedom to associate and bargain	✓	5.12	✓	6.6	✓	4.2.2 ILO (87 & 98)	X		X		X		✓	4.3 as outlined in ILO	✓	4.1 4.2 4.3	✓	8.4
C 6.6 Child labour	✓	5.8 / 5.9	✓	6.7 no Child labour, except on fam. Farm without interfering with school	✓	4.3.1 No child labour, min 15 under 18 no hazardous work. Child on family farm, without skipping school	X		X		X		X		✓	1.1 , 1.2 1.3 1.4 should provide school + no longer than 10 hours (school, work and transport)	✓	8.6
C 6.7 Young workers (15-17)	✓	5.8	X		✓	4.3	X		X		X		X		✓	1.3 1.4	X	
C 6.8 Health and Safety	✓	5.14 (housing) / 5.15 (water quality) / 5.16 (medical services) / P6 (health and safety)	✓	4.7 health and safety plan 4.8 training	✓	4.3.2 health and safety policy 4.3.3 training	X		P	2.7.1	✓	1.4	✓	4.2 meet all applicable law and regulation covering health and safety of employees + families	✓	3.1 till 3.6 shall point out a responsible, provide trainings, clean bathrooms and dormitories	P	8. Recom.

Principles and Criteria	SAN/RA		RSPO		Basel		LEAF		ACCS		EurepGAP IFA		FSC		SA8000		IFOAM	
C 6.9 Wages	✓	5.4 / 5.5	✓	6.5 at least legal min. standards and sufficient to meet basic needs	✓	4.2.1 at least min wages and adequate standard of living	X		X		X		X		✓	8.1 8.2 min standards and sufficient to meet basic needs, no deductions for disciplinary purposes	P	8. Recom.
C 6.10 Discrimination	✓	5.2	✓	6.8, 6.9	✓	4.2.3 equality for all employees and contractors	X		X		X		X		✓	5.1 5.2 5.3	✓	8.5
C 6.11 Forced labour	✓	5.1	X		✓	4.3.1 No forced labour	X		X		X		X		✓	2.1 no support forced labour, nor should personnel be required to lodge deposits or identity papers	✓	8.3
Recommendations																		
C 6.12 Working hours	✓	5.6 working hours must not exceed legal maximum or ILO 5.7 Overtime	X		X		X		X		X		X		✓	7.1 max 48 h /wk	X	
P 7 Land right issues and community relations																		
C 7.1 Land right issues	✓	P7 Community relations	✓	2.2right to use land can be demonstrated 2.3 landuse not diminish legal rights other users 7.5 7.6		4.4.1 right can be demonstrated and local interpretations on land right should be identified	P	8.3.7	X		X		✓	2.1 till 2.3 / 3.1 till 3.3	X		P	8. Recom.
C 7.2 Consultation and communication local stakeholders	✓	P7 Community relations	✓	1.1 / 2.3 / 6.2 / 6.3 / 6.4	✓	4.1.2.	✓	1.10	X		X		✓	4.4	P	9.12 communication, but no consultation	X	

Annex C Benchmark of Audit quality

The standards considered for recognition by the RTFO have been benchmarked to compare the controls around audit quality. The quality of the audit is equally as important as the depth and scope of the standard. If a standard covers all relevant sustainability criteria but has poor audit procedures, actual compliance with the sustainability criteria remains uncertain. The full benchmarking results are shown in the table below.

Table 0-1 – Benchmark results auditing quality

Standards	How many certification bodies are accredited to use the standard?	How often do audits need to be carried out?	Do all farms need to be audited?	What is the required competence of auditors?	What percentage of verification is carried out by nationally accredited organisations (such as by UKAS)?	What is required for certification bodies to be accredited to audit against your standard?	How do you retrospectively ensure audits are carried to the required standard?
Basel	The standard is currently being developed						
LEAF	5 (~40 auditors are approved).	Yearly	Yes. In the future it might be able to bundle small farms, particularly for small African farms where incomes are low and certification costs are prohibitive.	The qualifications for the baseline schemes (i.e ACCS red tractor) on the farm, plus a training day with LEAF. At least one auditor must be LEAF Marque trained.	About 90% of audits be carried out by UKAS accredited certification bodies. Of the five certification companies approved, two are UKAS accredited and the other three are in the process of accreditation.	The Certification body must demonstrate that its understands LEAF Marque's requirement specifications and audit requirements, and must be accredited to ISO 65 (EN 45011) for LEAF MaRque Scope. For justified reasons, such as where the accreditation cost would be not proportional, reduced accreditation requirements can be accepted.	UKAS oversees the quality of audits for baseline schemes.
The Forest Stewardship Council (FSC)	15	Yearly. There are, however, reduced auditing rates for small and low intensity managed forests.	Yes	Auditor requirements comply with ISO19011 (which includes at least 5 years work experience and 40 hours of audit training; Lead Auditors must have completed three complete audits for a total of 15 days of audit experience under the direction and guidance of a Lead Auditor).	FSC accredits organisations.	Certification bodies must comply with ISO 65 and the additional requirements of the FSC (see out in FSC-STD-20-001). Accreditation Services International accredits the certification bodies on behalf of FSC.	FSC surveillance audits are conducted at least annually, as per ISO 65. Surveillance audits can be unannounced.

Standards	How many certification bodies are accredited to use the standard?	How often do audits need to be carried out?	Do all farms need to be audited?	What is the required competence of auditors?	What percentage of verification is carried out by nationally accredited organisations (such as by UKAS)?	What is required for certification bodies to be accredited to audit against your standard?	How do you retrospectively ensure audits are carried to the required standard?
Roundtable On Sustainable Palm Oil (RSPO)	The standard is currently being developed						
SA8000	14	Certification audits are carried out every 3 years, with surveillance audits every 6 months.	Yes	Social Accountability International (SAI) sets out minimum requirements for training and qualification of SA8000 auditors. However, each certification body determines their own qualifications.	SAI accredits organisations.	The accreditation process includes documentation review, site audits, and observation of auditors in the field by SAI. Ultimately, recommendation for accreditation is determined by a three-member panel from the SAI Advisory Board, including one staff member, one NGO or trade union representative and one business representative.	SAI has an oversight system in place to ensure audits are carried out sufficiently well. Each certification body is accredited for three years. Throughout that three year cycle, SAI will conduct a minimum of two surveillance audits per year, including office and witness audits, with the number increasing as the number of SA8000 certifications increase. At the end of the three year cycle, the certification body must undergo reaccreditation.
Sustainable Agriculture Network (SAN) / Rainforest Alliance (RA)	None - Auditors are hired by the SAN. For-profit certifiers are not accredited.	Yearly	Yes	The SAN auditors are trained through a formal program managed by the Rainforest Alliance. This Programme includes week-long course, which combines field and classroom exercises in order to participate in an audit as a junior inspector. They must then participate in enough audits so that their coach is assured that that can serve as a lead auditor. All auditors must go through specialised or 'brush-up' courses at least once a year.	None	Rainforest Alliance works to ISO 65 certification (in the Sustainable Agriculture Program).	Every report is reviewed by experts in the secretariat. This quality control exercise is to ensure that auditors are correctly interpreting the standards and issuing consistent results farm-to-farm and country-to-country.

Standards	How many certification bodies are accredited to use the standard?	How often do audits need to be carried out?	Do all farms need to be audited?	What is the required competence of auditors?	What percentage of verification is carried out by nationally accredited organisations (such as by UKAS)?	What is required for certification bodies to be accredited to audit against your standard?	How do you retrospectively ensure audits are carried to the required standard?
Assured Combinable Crops Scheme (ACCS)	4 (more than 120 auditors are approved)	Routine audits are carried out once in every crop cycle prior to harvest (i.e. once every year) and there can be a minimum of six months or a maximum of 18 months between assessments because ACCS try to vary the time of year each assessment is made, so that they can assess conditions at different times of the year and crop cycle.	Yes	As a minimum, assessors of the AFS Combinable Crop standards must have: - a minimum of 5 years experience in agriculture relevant to combinable crops; - completed the Training Course for the NPTC certificate of Competence in Farm Inspection (Combinable Crops)* within 3 months of beginning assessments; - successfully passed the NPTC Farm Inspection (Combinable Crops) Course, or equivalent within 6 months of beginning assessments. Qualifications in the following are also desirable: - Auditing - Food Hygiene - HACCP	100%	First, certification bodies have to be accredited to ISO65 (EN45011). Then, they must obtain an extension of scope under ISO65 (EN45011) accreditation for the AFS ACCS Combinable Crops standards.	UKAS carries out an annual surveillance visit at each of the certification bodies licensed to audit to the standards. This involves a check of all the procedures and a shadow audit. ACCS send out a post-audit questionnaire sent to producers. ACCS also carry out spot checks and have a complaints and rejections procedure which receivers use to notify us of any problems with deliveries of crops etc. Problems are investigated.
EurepGAP IFA	About 100 (more than 1000 auditors are approved)	Yearly	Yes	Lead Auditors must have tertiary qualification (or equivalent), have attended a recognised Lead Auditor training course (37 hours minimum), and have practical experience of ISO9000 or IS14000 (15 days minimum).	100%	All Certification Bodies that have received ISO Guide 65 (EN 45011) accreditation to the scope of EurepGAP 'Integrated Farm Assurance'.	Accreditation bodies operate surveillance system that complies with ISO Guide 65 (EN45011).

Standards	How many certification bodies are accredited to use the standard?	How often do audits need to be carried out?	Do all farms need to be audited?	What is the required competence of auditors?	What percentage of verification is carried out by nationally accredited organisations (such as by UKAS)?	What is required for certification bodies to be accredited to audit against your standard?	How do you retrospectively ensure audits are carried to the required standard?
International Federation of Organic Agriculture Movements (IFOAM)	59	Normally yearly. Audits could be more/less frequent if farms are viewed as high/lower risk by the certification body. Comprehensive audits are required at least every three years.	No, audits can be risk-based .	Auditor requirements comply with ISO19011 (which includes at least 5 years work experience and 40 hours of audit training; Lead Auditors must have completed three complete audits for a total of 15 days of audit experience under the direction and guidance of a Lead Auditor). Auditors must be rotated at least every five years.	The International Organic Accreditation Service (IOAC) accredits certification bodies for IFOAM. For accreditation, a 5-10 day audit is carried out, which involves office audits, shadowing of audits and interviews with producers.	Accreditations are carried out against IFOAM's accreditation criteria, which is based on ISO65. The accreditation criteria ISO65 has been adapted to meet the requirements of the organic industry.	Surveillance audits are conducted as part of a planned programme. At least two surveillance audits will be carried out within each four yearly cycle, after which full reaccredidation is required.