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International Technical Assistance Project № GF/UKR/11/004

**«Improving Energy Efficiency and Promoting Renewable
Energy in the Agro-Food and Other Small and Medium
Enterprises (SMEs) in Ukraine»**



Biomass sustainability schemes in the EU and scenarios for implementing similar schemes in Ukraine

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Kyiv 2012

Table of Content

Glossary	4
Abbreviations.....	5
1. Introduction	6
2. Legal framework for sustainable biofuels in the EU	8
2.1. Greenhouse Gas Savings criteria.....	8
2.1.1. Calculation of greenhouse gas performance.....	9
2.2. Land use criteria.....	10
2.3. “Cross compliance” criteria	11
2.4. Company reporting requirements.....	11
2.5. Verification Systems	12
2.5.1. Claims to be made by companies.....	12
2.5.2. Standards for verification	13
2.6. Review of the sustainability criteria	14
3. Compliance with the sustainability scheme for transport biofuels.....	16
3.1. Voluntary certification schemes	16
3.1.1. ISCC System.....	18
3.1.2 RTRS EU RED	19
3.1.3 RSB RED	21
3.1.4. 2BSvs.....	22
3.1.5. RBSA Scheme.....	23
3.1.6. Bonsucro EU	24
3.1.7. Other schemes under consideration by the European Commission	25
3.1.7.1 REDcert	27
3.1.7.2 NTA8080/81	28
3.1.7.3. Biograce	29
3.1.7.4. Red Tractor	29
3.1.7.5. Green Gold Label	30
3.1.7.6. RSPO RED.....	31
3.2. Member State implementation – national verification Systems	32
3.2.1. Germany	33
3.2.2. Sweden.....	36
3.2.3. United Kingdom	37
3.2.4. Ireland.....	39
3.2.5. Hungary	40
3.2.6. The Netherlands.....	41
3.2.7. Luxembourg	42
3.2.8. Austria.....	42
3.2.9. Romania.....	43
3.2.10. Denmark.....	43
3.2.11. Slovakia	44
3.2.12. Portugal.....	46
3.2.13. Spain.....	46
3.2.14. France.....	46
3.2.15. Malta.....	46
3.2.16. Czech Republic.....	47
3.2.17. Italy.....	47

3.2.18.	Finland.....	47
3.2.19.	Greece	48
3.2.20.	Bulgaria	48
3.2.21.	Cyprus	48
3.2.22.	Belgium.....	48
3.2.23.	Lithuania	49
3.2.24.	Estonia	49
3.2.25.	Slovenia	50
3.2.26.	Latvia.....	50
3.2.27.	Poland	50
3.3	Agreements with third countries.....	51
4.	Biomass sustainability schemes for electricity and heating.....	52
4.1.	European Commission recommendation of 2010.....	52
4.2.	National schemes.....	53
4.3.	Voluntary schemes.....	55
4.3.1.	Sustainable forest management schemes.....	55
4.3.2.	Government-led biomass sustainability schemes	55
4.3.3.	Company-led biomass sustainability schemes	56
5.	Comparison of schemes.....	56
5.1.	Cost of certification	58
6.	Scenarios	61
7.	Conclusion	65

Glossary

Biomass, the biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste;

Biofuels, liquid or gaseous fuel for transport produced from biomass;

Bioliquids, liquid fuel for energy purposes other than for transport, including electricity and heating and cooling, produced from biomass;

Sustainability scheme, a scheme designed by government to put in place a set of criteria to ensure the sustainable production and consumption of products, such as biomass, biofuels, bioliquids, incentives for meeting the criteria, and verification options for checking compliance with the criteria, (the EU's sustainability scheme is contained in Directive 2009/28/EC);

Sustainability criteria, are a set of requirements to ensure sustainable consumption of biomass/biofuels/bioliquids. In Directive 2009/28/EC the criteria refer to greenhouse gas savings, land with high biodiversity value and land with high carbon stock;

Standard, is a concept, norm or principle established by agreement, authority or custom and used as an example or model to compare or measure the quality or performance of a practice or procedure. In voluntary schemes, standards are the rules and guidelines for company's activities or for their performance on sustainability;

Voluntary scheme, is a scheme developed by governments or private organisations on their own initiative to show that some or all of the sustainability criteria have been met by economic operators participating in the scheme;

Certification scheme, is the process through which an organisation grants recognition to an individual, organisation, process, service, or product that meets certain established criteria. Certification is voluntary.

Verification system, is the procedure set up by an organisation, such as a certification scheme, or by a government to check that a product, service, or system meets the requirements (criteria and standards) and fulfils its intended purpose.

Audit, is an evaluation of a person, organisation, system, process, enterprise, project or product against a set of criteria and standards.

Abbreviations

2BSvs	The French Biomass Biofuels voluntary scheme
CEN	European Committee for Standardisation
CN Code	Combined Nomenclature Code
CHP	Combined Heat and Power
CO ₂	Carbon Dioxide
CH ₄	Methane
N ₂ O	Nitrous Oxide
EC	European Commission
EU	European Union
FSC	Forest Stewardship Council
GGL	Green Gold Label
GHG	Greenhouse Gas
IAF	International Accreditation Forum
ILUC	Indirect Land Use Change
ISCC	International Sustainability and Carbon Certification System
ISEAL	International Social and Environmental Accreditation and Labelling Alliance
ISO	International Standardisation Organisation
IWPB	Initiative for Wood Pellets Buyers
MJ	Megajoule
MW	Megawatt
NGO	Non-Governmental Organisation
OHSAS	Occupational Health and Safety Advisory Services
PEFC	Programme for Endorsement of Forest Certification
RBSA	Abengoa Bioenergy Sustainability Assurance scheme
RED	Renewable Energy Directive, No. 2009/28/EC
RSB	Roundtable on Sustainable Biofuels
RTRS	Roundtable on Responsible Soy
RSPO	Roundtable on Sustainable Palm Oil
SFM	Sustainable Forest Management

1. INTRODUCTION

European Union (EU) legislation sets mandatory targets for its 27 Member States for the share of renewable energy consumption in final consumption. Each Member State has a national target (ranging from 10% for Malta and 49% for Sweden), but the legislation does not prescribe sectoral or technology specific targets. It is up to each Member State how they reach their national targets, whether through wind, solar, bio-energy, geothermal or hydro and whether in the heating, electricity or transport sectors.

As an exception to this rule, the Renewable Energy Directive¹(RED) does include one specific target, and that is a 10% share of renewable energy in transport by 2020. This target is the same for all Member States, but note that the target is not a biofuels target but a renewable transport target.

From an analysis of the 27 Member States' action plans for 2020², it appears that the 10% target will be largely met from traditional **'first-generation'** biofuels: bioethanol, biodiesel from traditional agricultural feedstock, such as rape, palm, wheat, soy etc. However, the development of so-called **'second-generation'** biofuels, using agricultural or forest residues and wastes, such as cellulosic ethanol and Fischer-Tropsch diesel, are being developed and expected to come onto the market by 2013-2014³. Moreover, the development of electric cars will also account for a small share of the renewable transport target by 2020.

The expected overwhelming usage of first-generation biofuels in meeting the transport target, prompted EU legislators to design a **sustainability scheme** for biofuels, in order to avoid the consumption of fuels that have little environmental benefits over traditional fuels, such as petrol and diesel.

In particular the **two risks** identified were **deforestation** to make space for more agricultural land, and feedstock conversion processes that require substantial fossil energy, leading to little benefit in **greenhouse gas (GHG) emissions** over the life-cycle of the fuel.

The sustainability scheme puts in place specific **criteria for all biofuels used in transport**, but also for liquid biofuels (bioliquids) that are used in the heating and electricity sectors. This was to avoid the same fuels being diverted from the transport sector to other end-uses that have no sustainability standards or criteria in place.

Moreover, the RED was finalised with the agreement that the European Commission (EC) will also study the need for a sustainability scheme for **solid and gaseous biomass used for heating and electricity**, so that all biomass, whether in liquid, solid or gaseous form used for all energy purposes would be covered by sustainability criteria. To this date, the EC has issued a recommendation to Member States to implement the same sustainability criteria for all types biomass, but on a voluntary basis (see section 4.1). It is possible however, that the EC will propose a mandatory sustainability scheme if it finds that the sustainability of the bio-energy sector is at risk.

As a signatory to the Energy Community Treaty, Ukraine and other Energy Community partners are in the process of deciding whether or not to include the RED under the Treaty. If included, Ukraine would need to comply with the sustainability requirements therein. Ukraine is a significant exporter of agricultural and forest materials and biofuels to the EU, so it is in the interest of its companies to comply with the requirements.

¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:EN:PDF>

² http://ec.europa.eu/energy/renewables/transparency_platform/action_plan_en.htm

³ Under RED, biofuels derived from wastes and residues are 'double counted' i.e. they are worth twice as much, by volume, when calculating towards the 10% renewable transport target.

This report will focus on two issues: guidance on complying with current EU and national requirements and recommendations on developing standards/criteria, a national verification system or a certification scheme for biofuels/ biomass used in transport/electricity and heating in Ukraine.

2. LEGAL FRAMEWORK FOR SUSTAINABLE BIOFUELS IN THE EU

The Renewable Energy Directive (RED) establishes a sustainability scheme for biofuels used in transport (and for bioliquids used in other sectors). It is important to note that EU Member States cannot set more strict criteria than those in the RED. This is to ensure that biofuels and bioliquids do not face trade restrictions within the EU. Member States may, however, design their support schemes (financial aid) so that biofuels and bioliquids that have better performance than the required minimum, but cost more, receive extra support to take this extra cost into account. So better performing biofuels, e.g. in terms of GHG performance or feedstock used, can benefit from higher support as long as there is a higher cost justification. Biofuels that do not meet the requirements cannot benefit from any support and cannot count to the 10% target of any Member State.

RED establishes **three sets of criteria** to be met by biofuels and bioliquids consumed in the EU: GHG savings, land use and ‘cross-compliance’. It also allows Member States to ask companies for information related to other environmental protection and social protection measures, such as air, soil and water protection, and puts in place requirements for verifying claims made by companies (verification systems). Finally, RED includes possibilities for reviewing the sustainability requirements.

2.1. GREENHOUSE GAS SAVINGS CRITERIA

GHG criteria apply to all biofuels and bioliquids, whether domestically produced or imported. The criteria depend on when the installation started its operations.

Installation ‘operation’ start date	No GHG savings criteria	35% GHG savings	45% GHG savings	50% GHG savings	60% GHG savings
Before 23/01/2008	until 31/03/2013	until 31/12/2016	Until 31/12/2016 if ‘ILUC review’* raises GHG savings above 45%	From 01/01/2017 (protected at 50% until 31/12/2017)	Not applicable
between 24/01/2008 and 31/12/2012 and production started by 31/12/2013	Not applicable	From 01/06/2009 until 31/12/2016	Until 31/12/2016 in case ‘ILUC review’ raises GHG savings above 45%	From 01/01/2017 (protected until 31/12/2017 in case ILUC review)	Not applicable
Production starts between 1/01/2013 and 31/12/2016	Not applicable	Until 31/12/2016	Not applicable	From 01/01/2017	Not applicable
Production starts from 1 Jan 2017	Not applicable	Not applicable	Not applicable	Until 31/12/2017	From 1/01/2018

* ILUC review is explained in section 2.6.

A capacity increase in a biofuel production plant that happens after a cut-off date is considered as a new plant and has to meet the more stringent requirements. However, if the capacity increase happened before 31 December 2012, the new capacity is protected from having to meet more stringent GHG savings due to the ‘ILUC review’.

2.1.1. Calculation of greenhouse gas performance

The GHG emissions of fuels are calculated on a lifecycle basis. This means that emissions from the cultivation of raw material (e.g. fertiliser use), land use change (e.g. conversion of grassland to cropland), fuel production (e.g. energy use in the production plant) and transport (e.g. fuel use by lorries carrying the fuel to filling stations) are all taken into account. GHG savings are calculated by comparing the life cycle emissions of biofuels and bioliquids with the life cycle emissions of the fossil fuel they replace.

To help companies prove that they comply with the required GHG savings, **default values** are provided for different biofuel production pathways. Companies can also use **actual values** to prove compliance. In this case, the method to be used for the calculation of actual values is provided in the legislation⁴.

ELEMENTS TO CALCULATE ACTUAL EMISSION VALUES

The following equation determines the total emissions (E) of biofuels through its life-cycle:

$$E = e_{ec} + e_l + e_p + e_{td} + e_u - e_{sca} - e_{ccs} - e_{ccr} - e_{ee}$$

- (1) e_{ec} emissions from **extracting** oil from the ground or **cultivation of** crops, as they require machines that use fossil energy or fertiliser whose production causes emissions and triggers emissions of nitrous oxide (N₂O) (a greenhouse gas).
- (2) e_l emissions from **converting land** in order to allow crops to be cultivated, which may lead to losses of carbon that has been stored in plants or soil, combining with oxygen in the atmosphere to form carbon dioxide, CO₂ (a greenhouse gas).⁵
- (3) e_p emissions from **processing** the oil or crops to turn them into fuels, where “process energy” is used, often from fossil energy (causing emissions), though bioenergy (without emissions) is also used in making biofuels.
- (4) e_{td} emissions from **transporting** the oil or crops to the place where they are processed into fuel, and to transport the fuel to the places where it will be sold to customers. Fossil energy (causing emissions) is used to power ships, barges, pipelines and lorries.
- (5) e_u emissions from the fuel **used** by being burnt in an engine.
- (6) e_{sca} emission savings from management techniques such as “low till farming” allow more carbon to be stored in the soil (“**soil carbon accumulation**”), reducing the amount of CO₂ in the atmosphere.
- (7) e_{ccs} emission savings from **capturing and storing** CO₂, avoiding its emission to the atmosphere.
- (8) e_{ccr} emission savings from capturing CO₂ released during processing and using it to **replace** CO₂ produced from fossil sources such as the carbonisation of drinks).
- (9) e_{ee} emissions savings can come through **combined heat and power** plants, which produce more electricity than is needed for biofuel production. The excess electricity can be used to replace electricity that would otherwise have to be generated using fossil fuels.

Not all biofuel pathways are listed in the RED; therefore some producers would have to use actual values to prove compliance. This will involve calculating the quantity of process energy they have used for production, or the intensity with which fertiliser was applied to the crop.

Default values are made up of three steps: emission values for cultivation, for processing and for transport/distribution. Default values can always be claimed by producers, unless the raw material comes from land whose use has changed – in a way that caused a carbon stock loss - since January 2008. An example would be when the raw material comes from land that has been converted from (high-carbon) forest to (lower-carbon) cropland. If this is the case, the GHG effect of this change must be taken into account in the GHG calculation⁶. However, even if this is the case, the default

⁴ The following document provides an annotated example of the GHG calculation of a wheat to ethanol pathway: http://ec.europa.eu/energy/renewables/biofuels/doc/2010_bsc_example_ghg_calculation.pdf

⁵ Further definition and guidance on land carbon stocks is provided here: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:151:0019:0041:EN:PDF>

⁶ The following document provides an annotated example of calculating GHG emissions of land use change from grassland to cropland, used for the cultivation of sugar beet in the East of England:

http://ec.europa.eu/energy/renewables/biofuels/doc/2010_bsc_example_land_carbon_calculation.pdf

values for the processing, and transport/distribution part of the pathway can still be used by the company in question. They will only have to recalculate the emission values from cultivation.

Another exception to using default values relates only to feedstock cultivated in the EU. It is presumed that there are certain regions in the EU where the soil generates high emissions of N₂O (a greenhouse gas) when cultivated or where higher fertiliser inputs are needed per unit of crop produced. In these cases crops from those regions cannot use default values for cultivation and producers from these regions will need to determine the actual level of emissions. Member States have produced a list of such regions⁷, but unless the Ukraine procures crops from these regions, this element of the RED is not applicable.

RED also allows a **bonus** to be added to the GHG performance of biofuels where raw materials were cultivated on severely degraded or heavily contaminated land. The bonus is 29 gCO₂eq/MJ can be added as emission savings in case the land was not in use for agriculture or any other activity in January 2008; and is severely degraded⁸, including former agricultural land, or heavily contaminated⁹.

The bonus of 29 gCO₂eq/MJ can apply for a period of up to 10 years from the date of conversion of the land to agricultural use, provided that a steady increase in carbon stocks and reduction in erosion are ensured and that soil contamination is reduced.

To put this into perspective, the fossil fuel comparator used to determine GHG savings is 83,8 gCO₂eq/MJ for biofuels and 91 gCO₂eq/MJ for bioliquids, i.e. the bonus accounts for a 35% savings in the case of biofuels and a 32% savings with regards to bioliquids. Note that the EC is due to report on further definitions of areas that could be regarded as severely degraded or heavily contaminated land, expected by the summer of 2012.

2.2. LAND USE CRITERIA

Firstly, the RED contains certain 'no-go' areas for the production of raw materials used to make biofuels.

The purpose of this prohibition is to avoid carbon stock losses from land use change or to avoid environmental damage caused by cultivation or harvesting. N.B. the land use criteria do not apply to biofuels and bioliquids produced from wastes and residues, other than agricultural, aquaculture, fisheries and forestry residues.

Category 1: Land from which raw material may never be taken (even if the status of the land is unchanged)

- Primary forest and other wooded land; are those that show no significant sign of human intervention including wooded land where collection of non-wood forest products occurs, provided the human impact is small.
- Certain nature protection areas; which have been designated by law or by competent authorities for nature protection purposes and areas designated for protection of rare, threatened or endangered ecosystems or species recognised by international agreements or included in lists drawn up by intergovernmental organisations or the International Union for the Conservation of Nature
- Highly biodiverse grassland, including natural grassland (which would remain grassland in the absence of human intervention) and non-natural grassland (which would revert to forest in the absence of human intervention) are both included¹⁰.

⁷ http://ec.europa.eu/energy/renewables/transparency_platform/emissions_en.htm

⁸ Land that, for a significant period of time, has either been significantly salinated or presented significantly low organic matter content and has been severely eroded

⁹ Land that is unfit for the cultivation of food and feed due to soil contamination

¹⁰ The EC is required to establish the criteria and geographic ranges to determine what areas must be considered as highly biodiverse grassland

N.B. EXCEPTIONS

- Raw material can be taken from nature protection areas if its production did not interfere with the nature protection purpose – for example, raw material from traditionally managed farms.
- Raw material can be taken from non-natural highly biodiverse grassland if its harvesting is necessary to preserve the area’s grassland status – for example, mown grass.

Category 2: Land from which raw material may not be taken if the status of the land has changed since January 2008

- Wetlands;
- Certain forested areas; with canopy cover of 30% or more. For areas with canopy cover of between 10% and 30%, a check should be made of the carbon stock consequences of the land conversion, i.e. any emission from land use should be added in the calculation of GHG savings.
- Peatland that has not previously been drained to any extent.

2.3. “CROSS COMPLIANCE” CRITERIA

This criterion only applies to biofuels produced from agricultural crops in the EU. To receive support payments under the EU Common Agricultural Policy (CAP), farmers have to comply with a set of environmental requirements. This obligation is known as “cross-compliance” because an instrument of Community agricultural policy is used to enforce compliance with requirements of Community environmental, health and animal welfare law. RED applies the environmental cross-compliance rules to crops produced for the biofuels and bioliquids market. It is not possible to extend the same requirement to non-EU countries, because EU legislation sets requirements that are to be fulfilled by farmers rather than by consignments of crops, where farmers that are liable receive a cut in their direct payments from EU funds.

2.4. COMPANY REPORTING REQUIREMENTS

The RED requires that Member States can request economic operators to submit information on their compliance with the sustainability criteria for biofuels and bioliquids. In addition to information on compliance with the criteria, Member States can request economic operators to submit information on:

- Measures taken for soil, water and air protection
- Measures taken for the restoration of degraded land
- Measures for the avoidance of excessive water consumption in areas where water is scarce
- Information concerning measures taken on a variety of social issues relating to ratification and implementation of the following conventions:
 - Convention concerning Forced or Compulsory Labour (No 29),
 - Convention concerning Freedom of Association and Protection of the Right to Organise (No 87),
 - Convention concerning the Application of the Principles of the Right to Organise and to Bargain Collectively (No 98),
 - Convention concerning Equal Remuneration of Men and Women Workers

(outside as well as inside the territory of the Community). There has been a public consultation in 2010 and the report is expected before the summer of 2012.

- for Work of Equal Value (No 100),
- Convention concerning the Abolition of Forced Labour (No 105),
- Convention concerning Discrimination in Respect of Employment and Occupation (No 111),
- Convention concerning Minimum Age for Admission to Employment (No 138),
- Convention concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labour (No 182),
- Cartagena Protocol on Biosafety,
- Convention on International Trade in Endangered Species of Wild Fauna and Flora.

However, according to an EC Decision of January 2011¹¹, Member States may only ask for the above information from companies that participate in a voluntary scheme. This is to avoid excessive administrative burden for operators in general or for smallholder farmers, producer organisations and cooperatives in particular.

Member States may also ask companies (with the exception of biofuels and bioliquids produced from waste and residues) for information on whether the GHG calculation included in the sustainability scheme includes a factor reflecting emission savings from soil carbon accumulation via improved agricultural management, or a bonus if biomass is obtained from restored degraded or contaminated land.

2.5. VERIFICATION SYSTEMS

Each Member State will need to set up a system to check compliance with the criteria; these are called ‘verification systems’(to distinguish them from ‘certification schemes’ that are used to make claims for meeting the sustainability criteria.)

Verification systems put in place by each of the 27 Member States will have to define how **claims of companies** will be checked. They will also define what is an acceptable standard of independent auditing that companies have to abide by.

2.5.1. Claims to be made by companies

Companies have to show that they are complying with the above criteria, by issuing some sort of claim that they do so.

Companies have to make at least two claims:

- The **type of fuel** and its **raw material** (to allow the use of a default value to show compliance with the minimum GHG savings), and
- The **geographical location** from which the raw material came (to allow verification of compliance with the land use requirements).

Where default values are not provided or do not meet GHG savings criteria for certain raw materials or production/distribution processes, companies will also have to claim the differences in the type of crop or process energy used, providing quantities or types of process energy; quantities of fertiliser used; or other aspects of cultivation, processing, transport or distribution as required.

Companies also have to provide evidence on the sustainability of the raw materials and biofuels throughout the production chain. The production chain for biofuels has several steps:

¹¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:009:0011:0012:EN:PDF>

cultivation/harvesting, transport, storage, transport again, processing and distribution for supply to fuel users. Information on emissions at all stages of the chain will need to be transmitted along the chain so that it can form part of the claim made by the eventual fuel supplier. This process of transmission is known as the **chain of custody**.

RED requires companies to use the “**mass balance**” chain of custody system to provide information about the biofuel’s production pathway. This system allows biofuels that meet the sustainability criteria to be mixed¹² with non-sustainable fuels, as long as record is kept of the quantity of material in the container that is subject to the sustainability claim. So if 30% of the mixed material was sustainable before mixing, only 30% of the mixed material can be identified as sustainable after the mixture is separated. This is to avoid for instance 35 tons of sustainable mixed with 65 tons of non-sustainable material and then the shipper claiming that 100% of ALL the material is 35% sustainable, (this is what happens under some forestry certifications). The issue here is that there should be no such thing as a consignment being a little sustainable, it is either sustainable or not.

Mass balance is also used to ensure that movement of commodities is physically tracked, so that each certificate travels with the commodity and cannot be sold on the open market separate from the biofuel it certifies (as under the ‘book and claim’ system). Mass balance is less rigorous than another so-called ‘track and trace’ system, because under ‘track and trace’, consignments subject to sustainability claims cannot be mixed with other consignments (such as under the EU’s GMO rules to avoid cross-contamination between consignments). Voluntary schemes therefore can use the ‘track and trace system’ as it is more stringent than mass balance. They may wish to do so, in order to claim higher sustainability standards vis-à-vis their customers or stakeholders.

In practice, the ‘balance’ in the system can occur over a period of time, as long as there is no ‘deficit’, i.e. where at any point in time more sustainable material is withdrawn than is added. The EC suggests this balancing period be no more than a year. In both cases it is necessary for appropriate arrangements to be in place to ensure that the balance is respected.

2.5.2. Standards for verification

The EC recommended certain standards for verification systems, whether used by voluntary schemes or by Member States to check claims made by companies.

1. Documentation management

Companies should have an auditable system to check evidence related to the claims they make, where evidence is kept for a minimum of five years, and where companies accept responsibility for preparing any information related to the auditing of such evidence.

2. Adequate standard of independent auditing

Companies should be audited before gaining membership in a voluntary scheme or when Member States decide to accept claims through a national verification system. ‘Group auditing’ e.g. for small-holders, cooperatives can be performed based on a sample of units, but for land related criteria only acceptable when the areas concerned are near each other and have similar characteristics. Similarly, group auditing for the purpose of calculating GHG savings is only acceptable when the units have

¹² A ‘mixture’ can be in the form of a container, processing or logistical facility or site.

similar production systems and products.

There should be at least yearly retrospective audits of a sample of claims, and the verification (audit) should not be performed by the company or the voluntary scheme itself, should be independent, and have skills for performing audits, and for conducting the audit related to the scheme's criteria¹³.

3. Auditor's responsibility

The auditor should be able to identify the activities undertaken by the company which are relevant to the scheme's criteria, identify the relevant control systems and be able to check the effective implementation of these systems.

The auditor should establish at least a 'limited assurance level' in the context of the nature and complexity of the company's activities, analyse the risks which could lead to a material misstatement, based on the verifier's professional knowledge and the information submitted by the company.

The auditor draws up verification plans which corresponds to the risk analysis and the scope and complexity of the company's activities, and which defines the sampling methods to be used with respect to that company's activities.

The auditor carries out the verification plan by gathering evidence in accordance with the defined sampling methods, plus all relevant additional evidence, upon which the verifier's verification conclusion will be based, and requests the operator to provide any missing elements of audit trails, explain variations, or revise claims or calculations, before reaching a final verification conclusion.

In addition to these recommendations, the European Committee for Standardisation (CEN) was asked to develop a standard to help the verification of sustainable biofuels. The draft standard is available for comments by national standardisation bodies and is expected to be approved in the coming months. The standard has four parts:

- prEN 16124-1 defines the terminology used in RED, such as the definition of residue, which needs to be distinguished from waste, as RED does not define these.
- prEN 16124-2 describes the production chain and explains the mass balance method that is required to calculate the GHG emissions. This part is aimed at certification bodies, but also at national authorities, who need to judge biofuel producers or suppliers.
- prEN 16124-3 provides explanations on biodiversity and environmental aspects, such as checking biomass harvesting locations and laying down the necessary controls for preventing growth in nature protection areas, biodiverse grasslands and peatland. In addition to the criteria and verifiers, templates of data provision lists are presented
- prEN 16214-4 provides a calculation methodology for the GHG emission balance using a life cycle analysis.

2.6. REVIEW OF THE SUSTAINABILITY CRITERIA

The Renewable Energy Directive came into force in June 2009, but foresees specific reviews of the sustainability criteria. One of these concerns the continuous update of GHG default values. This is

¹³ For instance, experience of carrying out audits in conformity with standard ISO 19011 establishing guidelines for quality and/or environmental management systems auditing could ensure independence and experience, and accreditation against standard ISO 14065 establishing requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition can be used to ensure specific skills.

done through a comitology process, where the EC recommends new default values (for existing or new crops and production processes) to Member States, who approve the values with the scrutiny of the European Parliament. Updating values may be due to new scientific information and data about emissions from cultivation, the effect of regional and climatological conditions and the effects of cultivation using sustainable agricultural and organic farming methods. The first such update is due to take place after the summer of 2012.

It is also foreseen to report on the issue of “indirect land use change” (ILUC) (under which even if biofuels themselves are made using raw materials from land already in arable use, the net increase in demand for crops worldwide caused by the promotion of biofuels could lead to a net increase in agricultural area. This could affect high carbon stock land, which would result in damaging carbon stock losses). In December 2010, the EC published a report¹⁴, which acknowledges that ILUC can reduce GHG emissions savings associated with biofuels, but also identifies a number of uncertainties associated with the available models forecasting future emissions. The EC is currently conducting an impact assessment of potential changes to the existing legislation, which could result in increasing the minimum GHG saving threshold for biofuels and bioliquids; or the introduction of additional sustainability requirements on certain categories of biofuels and bioliquids; or the attribution of a quantity of GHG emissions to biofuels reflecting the estimated ILUC impact. The report is expected by the summer of 2012.

A report, due in 2012, will also consider whether mandatory requirements on air, soil and water protection are necessary. It is expected that the EC will continue to oppose mandatory requirements, as these would make the criteria impractical.

A review, to be carried out by 2014, will also look at whether the proposed increases in GHG savings due in 2017/2018 from 35% to 50% for existing installations and 60% for new installation is appropriate.

The EC is also considering whether to develop mandatory sustainability criteria for solid and gaseous biomass used in electricity and heating. This will probably lead to an amendment of the GHG criteria for bioliquids used in electricity and heating, because the method for calculating GHG savings should be consistent with the end-use (electricity, heat) (see section 4 for more information). This will also have an impact on partner countries of the Energy Community, because inclusion of the RED in the Energy Community Treaty would also encompass the inclusion of sustainability requirements.

Despite the reviews, it is generally considered that the sustainability criteria should remain as stable as possible, to give investors in the biofuels market certainty. Some fuel producers are looking at investments into so-called second-generation biofuels to avoid regulatory uncertainties due to the prospective reviews. Second generation biofuels have the advantage of not coming from raw materials taken from agricultural land, thereby avoiding any potential risks of an ILUC review. However, second-generation biofuels are seen as expensive and not able to compete with traditional fuels in the near future, and to substantially contribute to achieving the 2020 targets.

¹⁴ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0811:FIN:EN:PDF>

3. COMPLIANCE WITH THE SUSTAINABILITY SCHEME FOR TRANSPORT BIOFUELS

There are three ways of complying with the sustainability criteria: through voluntary schemes, national verification systems, or bilateral agreements with third countries.

3.1. VOLUNTARY CERTIFICATION SCHEMES

The EC has already ruled on eight voluntary schemes that are deemed to provide reliable evidence of compliance with the sustainability criteria. These are: the International Sustainability and Carbon Certification System (ISCC), Bonsucro, the Roundtable on Responsible Soy version 2 with RED requirements (RTRS RED), the Roundtable on Sustainable Biofuels certification scheme with RED requirements (RSB RED), the Biomass Biofuels voluntary scheme (2BSvs), the Abengoa RED Bioenergy Sustainability Assurance scheme (RBSA), Greenergy and the Ensus scheme. EC approved voluntary schemes must be accepted by Member States as evidence of fulfilling the sustainability criteria and the information requirements on other environmental and social issues.

A voluntary scheme that wants to be approved at EU level for meeting some or all of the sustainability criteria, also needs to include a verification system, so that Member States do not need to check again the claims made by the scheme. Member States can also approve voluntary schemes, but in that case other Member States are not obliged to recognise them as complying with the criteria.

The eight EU approved schemes have been extensively evaluated by other reports; an overview of the main elements of the schemes is presented below:

	Number of users	Certificate costs*	Feedstocks/end use	Geography	Criteria fulfilled	Limitations	Criteria for soil, air, water and social issues	Verification
ISCC www.iscc-system.org	1000+ (first certificate issued Apr 2010)	€50-500/certificate according to size and turnover of company and €0.02-0.03/ton sold to interfaces with/without ISCC membership.	wide range/biofuels but being extended to food, feed, bioplastics and solid biomass through ISCC PLUS ¹⁵	Global	All		Biodiversity, good agricultural practices for protection of soil, water and air, human and labour rights, worker health and safety	DE Food Agency accredits certifying bodies: AbCert, AgroVet, ASG Analytik, Bureau Veritas, Dekra, DQS, Global Creative Energy, GUTCert, Intertek, Lacon, PCU, SGS, TUV Nord, TUV Rheinland, TUV SUD, TUV Thuringen ISCC General Assembly approves rules for certification
Bonsucro www.bonsucro.com	18 (first certificate issued Sept 2011)	Mandatory membership fee determined by the Board (estimated range: \$0-23,000/year) ¹⁶	Sugar cane	Global	All except Art 17(3)c – highly biodiverse grasslands	Only accepts default values for GHG emissions	None	Recognition of certification bodies in conformity with ISO 17011 or equivalent. SGS, Control Union, Agricontrol, CertID, IBD, IFBQ, SCS are recognised.
RTRS RED www.responsiblesoy.org	19 (first certificate issued in June 2011)	€0,30/ton certified soy at producer level, Mandatory membership fee: €250 (local organisation, observers) €2,500 (industry, producer, global civil society)	Soy	Global	All		None	Independent Body Organismo Argentino de Acreditación (OAA) accredits certification bodies: Schutter is accredited and others are preliminarily recognised: Control Union, SGS, LSQA, CertID.
RSB RED	1	Not available	wide range	Global	All		Human and labour	Independent Body RSB

¹⁵ ISCC is conducting a public consultation on ISCC PLUS ending 31 May 2012: http://www.iscc-system.org/e865/e7625/index_eng.html

¹⁶ <http://www.future-science.com/doi/pdfplus/10.4155/bfs.11.138>

	Number of users	Certificate costs*	Feedstocks/end use	Geography	Criteria fulfilled	Limitations	Criteria for soil, air, water and social issues	Verification
rsb.epfl.ch	(First certificate issued in Feb 2012)	(membership fee range \$250-10,000, but membership not mandatory)					rights, rural development, food security, conservation (biodiversity), soil degradation, water and air quality, land use rights	Services accredited certification bodies: SGS, Norske Veritas, and NCS International. Under consideration are: Control Union, Rainforest Alliance, BM Trada.
2BSvs http://en.2bsvs.org	486 (first certificate issued in July 2011)	first gathering points: €500/year, processing economic operators: €150-4000/year (depends on tonnes of product/year) traders: €3000/year	Feedstocks with default GHG emissions	Global	All except Art 17(3)c – highly biodiverse grasslands	Only accepts default values for GHG emissions	Biodiversity, soil, water and air protection, social issues related to ILO conventions included, but not mandatory	Recognition of certification bodies: Bureau Veritas, Certis, Control Union, Moddy Int (Interterk), Ocacia A-Ver, SQS, SGS (and lists qualified auditors of these organisations).
RBSA www.abengoa.bioenergy.com	First delivery of RBSA certified product in April 2012 ¹⁷	No cost**	Wide range	Global	All		None	Company-own verification
Greenery www.greenery.com	Not available	No cost**	Sugar cane	Brazil	All except Art 17(3)c – highly biodiverse grasslands	Only accepts default values for GHG emissions	Yes	Company-own verification
Ensus Scheme	Not available	No cost**	Wheat	UK or EU	All		None	Relies on EU approved schemes for verifying compliance with land-related criteria, and appoints an independent audit body to verify compliance with the rest of the criteria.

* Certification costs here do not include membership, auditing or compliance cost. These costs are discussed in section 3.1.7.

** RSBA and Greenery and industry-specific schemes with certification limited to their business partners, so there is no cost of certification apart from entering into contracts with Abengoa and Greenery in exchange for certification support.

For Ukrainian producers, Bonsucro and Greenergy are not relevant, but Bonsucro is included in the analysis, because its verification system can be useful in establishing best practices. The following section outlines the basic verification requirements, such as checking the evidence, and the responsibilities of the various actors. This evaluation can serve as comparison to the national verification systems set up by Member States and discussed under section 3.2.

Certification schemes are made up of three parts: the **standard** (set of principles, criteria, indicators and compliance requirements); the **verification system** (the procedures for verifying the standards), and the **accreditation system** (the terms or requirements to be met by those who are responsible for certifying or verifying compliance). The standards or rules are similar in all cases, applying the RED sustainability criteria and going further on other social and environmental issues. The verification system determines how the process of verification of the standard is to be undertaken by the accredited certification bodies, whereas the accreditation requirements are all those requirements that certification bodies must meet in order to be able to carry out these certification audits. The verification and accreditation systems can be quite different from scheme to scheme; therefore the following analysis will focus on these aspects of the voluntary schemes.

¹⁷ http://www.abengoa.bioenergy.com/corp/web/en/prensa/noticias/historico/2012/bio_20120409_2.html

3.1.1. ISCC System

The ISCC scheme is a German government-sponsored certification scheme. The German Ministry for Food, Agriculture and Consumer Protection (BMELV), together with the German Agency for Renewable Resources (FNR) financed a pilot project on sustainability certification of biomass and bioenergy, in order to differentiate sustainable products on the market. The scheme was later adapted to the RED requirements. The ISCC Association is a non-profit organisation, responsible for decisions on the definition and further development of the system, and the operation of the system is the responsibility of Meo Carbon Solutions GmbH.

ISCC is based on three important elements: self-declaration of farmers, certification for each actor in the supply chain, and a risk-based approach in auditing all actors in the chain.

ISCC uses self-declarations of farmers that are quite elaborate in the information requested, such as on field sizes, field use and yields, maps or geo-coordinates of fields, proof of ownership, satellite images/farm records to prove land status before 2008, farm records for 3 years, contractual agreements with all first gathering points, weighbridge protocols for each crop delivery, contracts with subcontractors, GHG calculation and their sources etc. Further to this, ISCC put in place requirements for auditors to verify the producers' claims, through an assessment of documents, interview of personnel/stakeholders etc and visual inspection of areas and the companies' facilities and infrastructure. National or Regional Technical Working Groups can adapt these rules to local conditions by the means of a specification.

In some cases, ISCC specifications provide for a list of proofs that are accepted by the auditor, e.g. in the case of verification of whether the fields were used in the same agricultural manner before 2008; accepted proofs are:

- Satellite pictures, definitely showing the field use before January 2008
- Plans of land utilisation or comparable documents
- Document of proof by an officially accredited expert (i.e., based on soil analyses created before January 2008)
- GPS based yield data of agricultural harvesters, showing exact details of the crop yield of the fields per measuring point via the producers' software
- File with register of lots or comparable records
- Applications for land area payments or comparable documents

For proving that sustainability is assured throughout the supply chain, each actor in the supply chain must be certified. Evidence of preserving the mass balance requirements is obtained through delivery notes issued by certified elements of the supply chain. The delivery note details information such as certificate number, unique number of the delivery note, name and address of the supplier and of the receiving party, contract number, kind of incoming sustainable products, date of issue, quantity of product, and GHG emissions.

Within the ISCC System it is required to identify the relevant risk factors for every element of the supply chain. It is based on each actor in the supply chain carrying out a risk assessment based on specific risk indicators, and adapting their management system in a way to minimise the identified risks. Risk indicators include:

- Specification of the responsibilities and decision-making power
- Expertise, education and training of all employees
- Proportion of permanent, temporary and seasonal employees, communication and language diversity
- Organisation and documentation of work flows (in-house processes)

- Number, structuring, organization and controlling of the subcontractors
- In-house quality management system, internal audits
- Transparency
- Mechanisms for conflict resolution
- Risk of corruption

In their audits, the certification bodies take into account the results of the self-assessment and minimum samples (depending on the individual risk factor) are defined, however the auditor may increase the sample size if appropriate.

The approval and surveillance of ISCC and of the certification bodies is the responsibility of the German Food Agency (BLE), but they do not take part in the rule-making of ISCC.

ISCC rules prescribe that certification bodies have to fulfil ISO 17021. They perform the following work: risk evaluation, conduct of audits, register of participants, transmission of data to the competent authority, storage and handling of information. Certification bodies must archive results of inspections, and copies of all certificates that they issue for a period of at least 10 years. All elements of the supply chain that want to be audited must register with ISCC. The validity of an ISCC certificate is 1 year. Due to this, an annual ISCC certification audit must take place for every element of the supply chain.

ISCC has a General Assembly, which assesses its strategies and procedures, including the implementation of National or Regional Initiatives. It also accepts/refuses resolutions made by the Board (voting by simple majority), which consists of the Assembly's Chairperson, two Vice-Chairpersons and up to 3 other members representing biomass producers and processors, traders, logistics providers or users, and NGOs. The Board is responsible for running the register of members, preparing by-laws and issuing activity reports.

3.1.2 RTRS EU RED

The documentation of RTRS EU RED is as vigorous as for other schemes, with requirements to keep records of purchase and sales documents, training records, production records, GHG data and volume summaries for at least five years. Records of the status of the land can include management plans showing area under cultivation in 2008, maps, aerial photographs and must not be discarded after 5 years.

RTRS certificates are however valid longer than ISCC certificates, i.e. 5 years, but with an annual surveillance assessment to confirm continued conformance with the requirements. For conformity with mass balance, a separate certificate of chain of custody is issued, also for a period of 5 years with annual conformance surveillance assessments. For the chain of custody certificate, each organization must have up-to-date records of all suppliers of RTRS input material, including identification of the supplier, the supplier's RTRS Chain of Custody certificate number and the scope of the supplier's Chain of Custody certificate. In addition, the organisation has to verify the validity and scope of the supplier's RTRS certificate at least every 6 months.

The following information must be in all invoices:

- Identification of the organization
- Identification of the customer
- Date when the document was issued
- Description of the products
- Quantity of the products sold
- The applicable RTRS Chain of Custody system used
- The organisation's RTRS Chain of Custody certificate number

As in ISCC, RTRS requires the identification of risk factors in the supply chain, i.e. all critical control points where there is a risk of uncontrolled mixing or substitution between RTRS certified and uncertified material.

Auditing is done through annual surveillance assessments, carried out by a team of assessors, looking at legal compliance e.g. to check land rights or conservation of native vegetation, social issues including community relations, labour rights and health and safety, environmental issues including biodiversity, water and pollution, good agricultural practices including expertise on integrated pest management. It is the Certification Body that is responsible for defining the minimum competencies of assessors and for ensuring that they are qualified and meet the RTRS minimum requirements for competencies and qualifications. For compliance with RED, and in particular where actual GHG emissions are calculated, the certification body has to comply with the requirements of ISO 14065:2007, and/or have experience of carrying out audits in conformity with ISO 14064-3:20062.

The verification system is similar to ISCC in that compliance is mainly checked through publicly available data, interviews with staff and stakeholders and field observations. Self-declarations are not used however and the standards are less rigid on which pieces of evidence can be supplied by companies. This can make the verification more cumbersome, as assessors have to collect all data and records without a harmonised format, which provides less clarity and oversight on what information companies must retain. At the same time, the scheme provides more flexibility for actors and countries that have different administrative regimes. In fact, RTRS explicitly encourages each soy-producing country to make a national interpretation of the standards using the Guidance for National Interpretation, which, once endorsed by the RTRS, can become the basis for certification in that country. It allows national interpretations to provide further definition of what constitutes acceptable evidence, produce a list of possible indicators, which can voluntarily be selected by the producer (certification applicant) to demonstrate continual improvement; e.g. soil carbon content, use of agrochemicals, state of riparian vegetation etc. Argentina, Brazil and Uruguay have already completed national interpretations, and India, Paraguay, China and Bolivia are in the process of preparing national interpretations.

RTRS has made an agreement with the United Kingdom's Feed Materials Assurance Scheme (FEMAS) to jointly operate in the context of soy certification. A newly developed FEMAS and RTRS module combines the RTRS sustainability criteria at farm level with the already existing supply chain certification of the FEMAS scheme. The FEMAS scheme is focused on food and feed safety. The new module enables dual FEMAS/RTRS certification.

Accreditation of certification bodies may be National or International Accreditation bodies, but must be members of the International Accreditation Forum (IAF), and members of the IAF Multilateral Recognition Arrangement (MLA) or full membership of the International Social and Environmental Accreditation and Labelling Alliance (ISEAL). Currently the only accreditation body operational is the national accreditation body, Organismo Argentino de Acreditación (OAA) of Argentina.

RTRS has a General Assembly, which makes decisions on strategy and procedures, equally represented by participating members of three constituencies, each having one third of the total votes. They can delegate operational activities and most decision making to the Executive Board composed of the same three constituencies, each having five seats on the Board. The three constituencies are: producers, industry, trade and finance and civil society.

3.1.3 RSB RED

The RSB scheme, like RTRS was specially adapted to comply with RED requirements. However, unlike in RTRS RED, RSB certified operators must also comply with standards on air, water and soil quality and social standards.

The verification system starts with each operator (feedstock producers, feedstock processor, biofuel blenders and biofuel producer) undertaking an impact and risk assessment to ensure sustainability through the development of effective and efficient implementation, mitigation, monitoring and evaluation plans. This process can become lengthy and costly, as the impact assessment requirements include for example stakeholder consultations which is gender sensitive and results in consensus-driven negotiated agreements, an assessment of possibilities to use local labour where there is an excess of unemployed labour in the locality of the operations, as well as an assessment of the risks of food security, where the mitigating measures include for instance, setting aside land for food growing, increasing yields, or providing opportunities for workers to carry out household-level food production.

The verification system of these standards is further complicated, because not only the claims of sustainability have to be audited, but also the results of the impact assessment process, i.e. the screening exercise results, have to be audited by an independent third party.

Under the RSB scheme, documentation and record have to be kept for at least five years. The certification body has to comply with the generic requirements of ISO/IEC Guide 62, ISO/IEC Guide 65, ISO/IEC Guide 66, ISO 19011, ISO 14064, ISAE 3000 and has to keep records for at least 7 years of all applications, certificate evaluations, contracts. The accreditation body has to keep all records for at least 10 years.

Interestingly, the certificates are issued for a maximum period of 2 years for lower risk operations, and 3 months for the highest risk operations. As for other schemes, the verification is largely based on 'compliance claims' or self-assessments, which describe the company's degree of compliance with the standards. But under RSB, operators also have to submit a 'self risk-assessment', which allows certification bodies to determine the risk category of the company. Certification bodies are responsible for evaluating in detail a representative sample of RSB compliance claims, to satisfy the certification body identification of compliance or non-compliance with the RSB standards and the RSB certification scheme. The minimum sample level of the RSB compliance claims range from 10% (low risk 1) to 100% (risk 5), but no compliance claims are possible for risk 6. The maximum audit interval (for a desk based audit) is 12 months for participating operators in risk class 1. The interval is less for participating operators with higher risk classes (12 months for an office and field audit for risk class 3, decreasing to 3 months for risk class 6). Therefore a key aspect of the process is the completion of the self risk-assessment. After the initial evaluation of risk and acceptance of an operator into the scheme, a field audit takes place, to determine if the operator will be able to implement the applicable requirements.

The accreditation body and/or certification body have to ensure that all auditors for the RSB certification schemes (accreditation and certification) complete an auditor training program on RSB standards and RSB certification schemes, including, as a minimum: primary production, chain of custody, local and international auditing and GHG accounting.

RSB is led by a multi-stakeholder Steering Board, where each member represents one of the seven RSB chambers, which comprise of farmers, biofuel producers, the transportation industry, environmental and social NGOs, research institutes, governments and investors. RSB is a full member of the International Social and Environmental Labelling and Accreditation (ISEAL) Alliance. RSB Services is the entity in charge of the implementation and management of the RSB

standard. It provides the information and compliance management database and maintains the systems' administration. RSB Services also manages licensing, branding, claims and training. RSB Services is also an independent accreditation body that accredits certification bodies on behalf of RSB.

3.1.4. 2BSvs

A consortium composed of key players of the French biofuels industry, and Bureau Veritas, developed 2BSvs. The scheme covers the whole chain, but to avoid an excessive burden for operators, it makes "first gathering entities" responsible for designing a quality and management system for downstream producers and collection sites to demonstrate conformity of the biomass with the sustainability criteria. It is therefore the task of the first gathering entity to collect data and information about the origin of the biomass and its sustainability characteristic, to develop and document a control system to ensure that "sustainability characteristics" remain assigned to "consignments" as under mass balance, and to perform a risk analysis and assessment of the producer. This also means that the first gathering entity is allowed to define the data, documents and/or records needed from its suppliers (to be kept for 5 years), and can request a self-declaration from its suppliers of biomass¹⁸. Biomass producers can be grouped under one certificate, as long as they are near each other and share similar characteristics.

As the above show, first gathering entities have a major responsibility in the certification process, in particular as they are also registering in a credit account the origin of the feedstock, type of raw material, biomass feedstock, year of harvest, intermediate products used, volume, sustainability, GHG characteristics for all the potentially sustainable biomass that it received. With the register, they ensure through monthly monitoring, that no credit is claimed before an equivalent credit of sustainable biomass has been harvested, purchased, received and/or registered in the credit account. The credit claim period for first gathering entity and related suppliers cannot exceed 18 months from the starting date of harvesting.

The documentation management system of the first gathering entity is audited by an independent verification body annually, and at least once in every calendar year for all certified entities, i.e. including transformation/production units and traders.

The first gathering entity must clearly indicate which biomass producers are group members within the certification unit, and the lead auditor ensures that a minimum number of sites are verified through site audits. The sample size for auditing depends on a risk assessment. In case risks are reduced through direct management of all sites by the central office using the same management system and procedures, then the auditor can reduce the sample to a minimum of 3% of sites. During the initial certification, the minimum number of group members to be audited is the square root of the total number of members in the group. Within that sample, 75% of group members are audited following risk analysis and 25% are selected at random.

Once the audit report has been finalised, the audit team leader makes a recommendation regarding the conformity with the requirements of the Scheme and the relevant Verification Body takes the certification decision within a month.

Independent Verification Bodies are accredited by the Steering Committee of 2BSvs once they demonstrate their independence and competence through formal accreditation against ISO Guide 65, or similar accreditation standard, by an independent IAF member and that they are able to perform biofuels certification activities in conformity with ISO standards ISO Guide 65 or ISO 17021.

¹⁸ Model of Self-declaration by first gathering entity in non-EU country : http://en.2bsvs.org/fileadmin/user_upload/documents-pdf-EN/110510-Declaration-NON-EU-1-7-EN.PDF

Verification Bodies then need to set-up a procedure to qualify their auditors, ensuring that they have followed and passed an approved training course, are qualified Management System auditors in conformity with ISO 19011 and have experience in carrying audits in conformity with ISO 9001, 14001, 14065 and/or 14064-3. Verification bodies must also ensure that its approved auditors perform the activities according to certain standards. Auditors have to undergo training and examination provided by the Technical Advisor of 2BSvs, who delivers a qualification certificate valid for 5 years. In the case of major updates required by the EC, the Steering Committee can decide to impose an additional training session for all auditors to remain qualified.

3.1.5. RBSA Scheme

RBSA is a scheme developed by Abengoa, a bio ethanol producer with a presence in the U.S., Europe and Brazil. Abengoa Bioenergy is member of the ISCC Association, but has developed its own scheme to reduce burden on their supply chain, using an internal IT solution for GHG, Mass Balance and Land Use records.

To be validated under the scheme, biomass or biofuel suppliers have to apply for validation covering a number of installations owned by them, or installations/premises of other economic operators in the supply chain. All these declared installations have to be qualified prior to operating in the RBSA scheme, permitting grouping rules (for first collector and for intermediate biomass/biofuel suppliers) only when specific requirements are accomplished. Validated suppliers can also operate with involved suppliers, in order to preserve confidentiality of their supply chain. Involved suppliers are those economic operators that have to meet RBSA validation requirements, but instead of being awarded an RBSA certificate, they receive an RBSA verification of conformity, which is then presented to their validated supplier.

Economic operators opting to be validated must present the certification body auditor the list of premises they want to have audited in order to be included in the RBSA certificate. All premises have to be audited, unless applying for group certification, where the number of audits can be reduced. Group certification of economic operators is only allowed when there is an adequate management relationship among validated suppliers (e.g. parent/daughter/sister company) and there is a common management system in place (e.g. a legal relationship for the management of the activities of the premises), integrating the necessary aspects for accomplishing with RBSA requirements. Auditors can always increase the size of the samples at any time, if needed on a risk-based decision.

For agricultural production units, small-holder farmers, producer organisations and cooperatives, grouping is also possible (e.g. when they are managed by a first collector supplier) when the areas concerned are near each other and have similar agricultural characteristics, but only for land use and mass balance aspects, not for GHG calculation.

Once validated, companies can issue sustainable biomass attestations or declarations for a one-year period. After this time, validated suppliers are obliged to undergo an annual retrospective surveillance process, through sampling of their operations from the previous year to check the accuracy of their operations, and the operations of their suppliers. After a 5-year period a full compliance audit has to be carried out again. Companies must keep all documents relating to the sustainability criteria for a minimum of 5 years.

Verification of IT systems and associated procedures for GHG and map development is to be performed by auditing companies against ISAE 3000 – at least a limited assurance level verification report on compliance with the methodology is needed prior to the use of this IT system, not only

for calculation or compliance with the methodology, but also for the gathering of input and proper maintenance of the entire methodologies.

Annual report on the overall operation of the RBSA scheme will be generated and externally verified, specifically covering:

- IT systems and associated procedures usage for GHG calculations,
- Sustainable map generation,
- Agents registered and validity of compliance verification documents
- The list of invalid suppliers
- RBSA database and other external control and auditing guarantees.

Certification bodies must be independent and not have worked for the client during the last 3 years. Any certification body seeking RBSA scheme recognition must, at minimum, be accredited for the requirements of ISO/IES guide 65:1996. To ensure that certification bodies are appropriately accredited they have to be:

- Accredited by a national accreditation body affiliated to the IAF; or
- Accredited as a full member or 'associate' member of ISEAL; or
- 'Committed to comply' with ISO 17011:2004 or justified equivalent, within 3 years

The approval of the certification bodies is decided by the Abengoa Bioenergy Sustainability Committee, based on the recommendation of an appointed third party, RBSA Manager, who is responsible for the management of the scheme and for approving certification bodies.

3.1.6. Bonsucro EU

Bonsucro is a multi-stakeholder scheme, formerly known as the Better Sugarcane Initiative. The "Bonsucro Production Standard" covers production from sugar cane and all sugarcane-derived products in the cane supply area and in the milling operations including the transport from cane to the mill. The "Bonsucro Mass Balance Chain of Custody Standard" covers tracking of claims along the entire supply chain.

Economic operators wishing to comply with Bonsucro EU must comply 100% with RED and operate an auditable system and comply with the additional requirements for identification of RED compliant consignments. The mass balance chain of custody system is the only permitted system, and each consignment has a unique number for identification. Product declarations with the unique number are passed on to the next economic operator in the chain of custody specifying properties, sustainability characteristics and GHG emission data of a defined consignment.

To guarantee that the sugarcane included in the scope of certification was actually processed by the mill, the mill must have a quality management system based on the principles of ISO 9000:2005 in order to control that the sugarcane processed at the mill is coming from a given field. The economic operator has to retain documentation for a period of at least five years. The validity of a certification is 3 years with annual surveillance audits.

The economic operator wishing to be certified must be a registered member of Bonsucro prior to requesting the audit. Bonsucro approved certification bodies can carry out audits and the audit must cover the full annual harvest cycle. The certification is valid for 3 years with annual surveillance audits. Group certification is not allowed. Best efforts must be made for stakeholder consultation and this can be part of the verification process.

The certification body is obligated to determine the audit duration individually for each economic operator depending on the size and complexity of the company, technology, outsourcing of activities, results of previous audits, number of sites etc. Prior to the audit, risk assessment is

optional, but the certification body has to pre-examine the company's management system, and send an audit plan to the company before the on-site visit.

After each audit, the economic operator receives a compliance audit report identifying major or minor non-conformities, and any agreed corrective actions. If there is systematic failure to implement the requirements, then the certification is suspended, and the suspension publicised. If the company does not comply within 1 month, the certificate is withdrawn.

Sampling is only used in audits of the sugar cane plantations supplying a mill, and the sample size depends on the volume provided by sugarcane suppliers to the mill. 100% of farms have to be audited in case they each provide more than 25% of the volume of sugarcane to the mill, 50% audited in case they provide between 10-25%, 25% audited in case providing 5-10%, 10% audited when they provide between 1-5%, and 5% audited when farms provide between 0.5-1%. When small-scale farmers constitute the majority of the supply base of a mill, providing each less than 0.5 % of the volume, a minimum 20 farms should be sampled randomly.

If there are known risks in specific areas, auditors have to adapt the sampling method to cover risk areas, and ensure that the sample is representative of the diversity of production methods (e.g. mechanized harvesting, manual harvesting). In surveillance audits and re-audits, the auditor should attempt to sample farms not previously sampled, in order to achieve a greater coverage of all farms/estates over time.

Multi-site certification is permitted for chain of custody only when one single economic operator is operating more than one site, on the condition these sites have similar processes and products and are covered under one overarching management system which controls, enforces, verifies and documents implementation of and compliance with Bonsucro standards. Audits have to include the main site and a sample of the subsidiaries so that during the period of 3 years all subsidiaries must have been audited at least once.

The auditor must have the following competences:

- Having attended Bonsucro training
- Technical skills and qualification related to land use and GHG calculations such as demonstrable experience in other relevant certification schemes
- Successful completion of an ISO 9001/14001 lead auditor course
- Working English and local language skills
- Supervised period of training in practical auditing by a qualified lead auditor.

The audit team must have at least one independent expert with sugarcane experience including all sugarcane derived products and familiarity with EU legislative requirements.

The Certification Body is required to operate their Bonsucro certification schemes in accordance with the requirements of ISO IEC Guide 65/EN45011. Bonsucro monitors and evaluates the performance of the certification body in line with the Certification Protocol. Only accredited certification bodies that are approved by Bonsucro are allowed to audit against the Production Standard and Chain of Custody Standard. The certification body is required to hold accreditation to ISO IEC Guide 65/EN 45011 by an accreditation body that is member of IAF or European Co-operation for Accreditation (EA) and signatory of the applicable Multilateral Agreement.

3.1.7. Other schemes under consideration by the European Commission

The following table depicts the certification schemes that are being considered by the EC for EU recognition. There are other schemes that are not on this list, because those schemes have not made

it public information that they have applied for EU recognition.

	Number of users	Certificate costs*	Feedstocks /end use	Geography	Limitations	Criteria for soil, air, water and social issues	Verification
REDCert www.redcert.org	1000+ (first certificate issued June 2010)	Fees for contracted parties (mandatory) Base fee: €150-200-250 for very small, small and normal companies Scaled fee: €25-50/site depending on number of sites And €0.035/ton veg oil and €0.027/ton ethanol	wide range	EU (only feedstock can be non-EU)		None	DE Food Agency accredits certifying bodies: AbCert, AgroVet, ASG Analytik, Bureau Veritas, Dekra, DQS, Global Creative Energy, GUTCert, Intertek, Lacon, PCU, SGS, TUV Nord, TUV Rheinland, TUV SUD, TUV Thuringen
NTA8080/81 www.sustainable-biomass.org	14 (first certificate issued 2011)	<u>Members:</u> €50-€5,000/year, based on turnover/year <u>Non-members:</u> Annual fee per certificate: smallholder €50, others €200 and €0.03/ metric ton	Wide range	Global		Competition with food and local applications, soil, water and air quality, local prosperity, well being of local population and employees	Dekra, Quality Services Certification, Control Union, Bureau Veritas, SGS, Kiwa
Biograce www.biograce.net	No certificates issued	None, project funded by EU	Wide range	Global	Only GHG criteria verified	None	None
Red Tractor https://assurance.redtractor.org.uk	29 (under crops and sugarbeet scheme)	Annual license fee, scaled per amount of product certified (fee not publically available)	Wide range	UK only	Only certifies production, not other parts of chain	Storage, application and disposal of fertilisers, pesticides, manures to prevent pollution of watercourses, soil, air and wildlife habitats, contamination and spread of disease	NSF-CMi Certification, PAI Ltd and SAI Global are licensed to operate the certification scheme for Crops & Sugar Beet standards.
Green Gold Label www.greengoldcertified.org	22 (First certification in 2002)	Annual subscription fee based on membership type and a fee is based on the quantity of traded sustainable biomass	Wide range	Global		Agricultural management system, e.g. land resources planning, conservation and rehabilitation, ensurance of fresh water supply and quality, integrated pest management and control Forest management plan, e.g. flora and fauna, pests and chemicals, roads, waterways and air routes, harvests, reforestation and pollution control	Control Union
Roundtable on Sustainable Palm Oil www.rspo.org	650+ (first certification in August 2008)	Membership fees: € 2000/year or for small grower < 500 ha: € 500/ year Affiliate Member: € 250/ year: Supply Chain Associate: € 100/year and Palm oil trading fees: \$2/MT UTZ certified and \$1/MT contribution of RSPO	Palm Oil	Global		Transparency: information and public documents, legal rights (e.g. to land), economic and financial viability (e.g. 3-year business management plan), use of best practices for soil and water quality, pest management and agrochemicals, health and safety, waste management, energy efficiency, labour rights (e.g. no child labour), social and environmental impact assessment	
Neste Oil certification	Not known	None	Palm oil, Jatropha, rape oil and other vegetable oils, waste animal fats	Global		Human rights, health and occupational safety, business ethics, water footprint, nutrients	Bureau Veritas, SGS

Neste Oil certification is a company verification system, ensuring that its supply chain is audited or certified for the RED sustainability criteria. It uses existing schemes such as RSPO or ISCC, or its own verification tools. It is not a certification scheme as such and will not be further discussed.

3.1.7.1 REDcert

REDcert is a German agricultural and biofuel industry-led certification scheme, approved by the German Agency for Agriculture and Food (BLE) to fulfil the requirements of the German Biomass Sustainability Ordinances (BioSt-NachV and Biokraft-NachV), in June 2010. It was created in order to allow companies to have a simple, practical and cost-effective scheme for complying with sustainability requirements. REDcert also applied for EU recognition.

REDcert covers all operators along the biofuel chain representing the agriculture level, primary distributor, supplier and the final interface. The biomass producer issues a self-declaration that the biomass supplied was sustainably produced and that the biomass cultivated and supplied meets the requirements of the Biomass Sustainability Ordinances¹⁹. For distributors, suppliers and the final interface, a certificate is granted upon verification that they comply with the German/EU requirements, but is restricted to European biofuels and bioliquids, only the producer can be in a non-EU country. Verification can be provided in the form of a certificate (valid for 12 months) or a contract with REDcert.

The general requirements of the inspection process are specified by ISO 19011:2002. The certification body first carries out an initial inspection and a monitoring inspection after 6 months of the certificate being issued. A certificate is valid for 12 months. The audit intervals for small and very small operations are less strict; for small and very small operations²⁰, recertification is required after 3 and 5 years respectively.

Two types of audits are possible. A system audit checks compliance with system requirements on-site in accordance with the REDcert checklists specific to each process steps. The certification body defines the duration of the inspection, but REDcert can define a minimum duration for the purpose of quality assurance. Special audits are the second type; these can be organised by REDcert following negative inspection results. In case there are minor discrepancies, correction measures are agreed with the dates specified and the certificate can be issued once the inspector responsible has accepted the correction measures proposed by the operations and the deadlines for their implementation. In case of major discrepancies, no certificate is given, and either sanctions are imposed or correction measures agreed.

REDcert has a simple organisational structure, as there is no standard setting body because the sustainability criteria are directly taken from the German Renewable Energy Law and its Ordinances (i.e. transposing EU requirements). Other scheme requirements, such as auditing, are directly taken from international standards, such as ISO. RedCert is managed by ORGAINVENT Entwicklungs- und Koordinationsgesellschaft GmbH, in charge of implementing the standard in the market. The accreditation of certification bodies is left to BLE. REDcert has just two committees:

- The 'Advisory Committee' advises the executive management and initiate and coordinate measures to maintain and further develop the REDcert certification scheme.
- The 'Sanctions Committee' is required by the German Biomass Sustainability Ordinance and its objective is to penalise non-compliance. It is an independent, neutral committee.

REDcert is keen to provide synergy effects for the operators between sustainability and other certifications, e.g. by combined auditing, integrated auditor trainings etc. While certification and

¹⁹ Self-declaration for non-EU producers available at: http://www.redcert.org/images/self-declaration_of_the_farm_17.02.2012_Non-EU_ka_EN.pdf

²⁰ The definition of small and very small is based on the number of the operation's "productive sites", i.e. sites that need a sustainability certification, and its sales volume. Small farms are operations whose productive land is more than 75% below the area farmed on average in the country and/or secondary farms that generate more than 50% of their operating/family income outside of agriculture.

auditing cost cover an estimated two third of the overall cost for sustainability certification, this has an important influence on the system's acceptance in the market.

3.1.7.2 NTA8080/81

NTA8080 is a Dutch standard that was proposed by a project group 'Sustainable production of biomass'²¹ under the Direction of the Netherlands Standards Institute (NEN) in 2007. The standard was proposed before the EU's sustainability criteria were adopted, but was never made binding, in light of the emerging EU requirements. Instead, the standard was developed into a voluntary certification scheme NTA8081, which could also be used to comply with EU requirements i.e. with "NTA RED", if they do not yet fulfil all of the requirements of NTA 8080. However, after 1 January 2013 no new NTA RED certificates will be issued.

It is important to note that NTA8080 is a standard applied to transport biofuels and to electricity from biomass. The scheme is based on the principle of Plan-Do-Check-Act (PDCA), where the objectives need to be implemented and monitored to see if action is required to improve performance. So instead of having absolute criteria, the NTA8080 prescribes goals to be achieved, such as "ensure good practices concerning working conditions, human rights and integrity". This could mean different actions in different circumstances. Any organisation that wishes to comply with NTA 8080 therefore needs to implement a management system.

The scheme covers the full chain: producers, converters, traders and users of biomass for energy generation or as transporting fuel, and is made up of the following steps:

First each organisation must do a self-assessment, through an online "system plan", a practical tool for this purpose: <http://www.sustainable-biomass.org/publicaties/4853>. After the necessary improvements have been implemented, the operator contracts a certification body, and registers to be a member. The certification body carries out a pre-audit, based on documentation, e.g. all permits and research reports, and makes a risk analysis and draws up the audit plan accordingly. Documents must be kept for at least five years or longer if required by prevailing laws and regulations.

To prove mass balance, organisations have to declare that no mixing has occurred with material that has not been certified according to NTA 8080 or equivalent. No temporary deficits of biomass are allowed, as a consequence of having delivered more biomass than is being supplied and stored. Each transaction certificate must therefore have a unique identification number of the delivery, to trace the issued certificate in the internal traceability system. As part of the traceability, the certified organization gives out a transaction certificate for each delivery that includes a reference to the above-mentioned certificate. (Organisations in the beginning of the chain do not receive transaction certificates, but only issue transaction certificates).

Auditors are provided with a detailed table about the verification methods. It is the certification body that decides if a certificate is granted or not and informs the scheme manager, who publishes the name and certificate details of the organisation in a public register.

The certificate is granted for a maximum period of five years. Surveillance audits are carried out at least once a year to assess compliance with the certification criteria. If the organisation continues to comply with the certification criteria, the certificate remains valid. Otherwise, the certificate will be suspended or withdrawn²². Re-certification audits have to be done at least 3,5 months before the certificate expires.

²¹ http://www.sustainable-biomass.org/dynamics/modules/SFIL0100/view.php?fil_id=857

²² In case of major non-conformities, the organization has to make corrections within 3 months. In case of minor, the organisation provides within 2 weeks an action plan concerning the implementation of corrective measures for review by the certification body, which is verified at the next audit.

NTA8080 recently made adjustments in its certification scheme, to make group certification possible for all biomass producers instead for smallholders only. Group certification is possible where the production units operate within the same juridical entity to which the same national laws and regulations apply, are centrally managed, with a central quality system and the data in the central registration is kept per production unit. It is also required that similar processes take place at the production units, so that in case of multiple sites under the same certificate, the mass balance is operated at site-level.

There is a possibility of less stringent requirements for smallholders (producers with less than 250 hectares), who are exempted from certain requirements regarding consultation of stakeholders, prosperity, working conditions, contribution to social well-being of local population and integrity of the company. Smallholders may choose to be certified as a group, if the group is managed by an independent legal entity and as long as the smallholders are homogeneous with respect to region, production activities, land use and climatic conditions. The group members do not receive a certificate individually. In this case, audit sampling is crucial, and sample size must be based on a risk assessment.

Certification bodies must consult the direct stakeholders during the auditing process at least 30 days preceding an audit, and these views to be taken into account as evidence of compliance or non-compliance.

Certification bodies that have entered into an agreement with NEN are the only ones allowed to issue certificates, and must have an applicable accreditation declaration from an IAF/MRA partner and be recognised on the basis of the requirements in ISO/IEC Guide 65 or equivalent. They have to demonstrate expertise in relation with the technical and sustainability aspects of the specific biomass flow (concerning legal, environmental and social context) and audit teams must comply with the guidelines in ISO 19011.

3.1.7.3. Biograce

Biograce is not a certification scheme, but a tool for calculating GHG emissions of biofuels, designed to help companies verify their biofuel GHG calculations. Nevertheless, the BioGrace GHG calculation tool has been sent to the EC with the request to recognise it as a voluntary scheme. As Biograce does not intend to certify companies, it does not check the actual calculations made by companies, it only provides the tool for calculation.

Biograce uses the GHG calculation methodology contained in RED, and in order to help organisations calculate their emissions, Biograce produced and published a list of standard values to convert input data into GHG emissions. For instance, lower heating values to convert 1 kilogramme nitrogen fertiliser or 1 mega joule of natural gas into GHG (CO₂, CH₄ and N₂O) emissions, and the conversion factors that were used for calculating the default values in the RED.

GHG calculators are also being developed in Germany, the Netherlands, Spain, and the UK, all in co-operation with BioGrace. Once these calculators are finalised, economic operators may insert their individual input values into a template and the GHG emissions of their biofuel pathway are calculated immediately. The template is adjusted to local production characteristics.

3.1.7.4. Red Tractor

Red Tractor Assurance is a scheme developed for the UK farming sector, to promote sustainability standards for the whole food industry, covering standards for farms as well as other links in the food supply chain. It is included in this analysis as an example of how industry can develop

certification for only part of the biofuel chain. The advantage of Red Tractor is that the certificate can be used for a variety of end-uses, biofuels, food, feed etc.

Red Tractor's Combinable Crops and Sugarbeet Scheme has been adapted to take into account the land use requirements of RED, as these crops can also be sold to the biofuels market. The crops covered by the scheme include, wheat, barley, oilseeds, rye, pulses and sugarbeet. The Crops and sugarbeet sector has its own Technical Advisory Committee (TAC), which is responsible for reviewing and developing standards. Before standards are adopted, organisations from within the industry; including retailers, consumers, and government agencies are consulted.

Standards relate to the managing of storage, application and disposal of fertilisers, pesticides, manures and other potential pollutants in accordance with legislation and best practice to prevent pollution of the environment (including watercourses, soil, air and wildlife habitats), contamination and spread of disease. The requirements can be detailed and specific, as an example, it is recommended that the store for pesticides, including any doors but not the roof, must be made of materials which will resist fire for 30 minutes or longer.

Certification requires examination of the performance of aspects of the business against to the requirements of the Assurance standards, such as farm premises, the production process, the production environment and assessment of the quality management system. Specialist certification bodies (accredited against EN45011/ISO Guide 65, by the UK Accreditation Service, UKAS) are licensed to independently verify that producers are adhering to the published standards. Through the Certification Bodies all members are subject to routine surveillance assessments and random audits. Red Tractor Assurance regularly reviews the performance of all Certification Bodies to ensure they are operating in accordance with the scheme procedures correctly and consistently. Red Tractor maintains a central database of all producers and businesses certified against the standards.

Assured producers and businesses must comply with all the standards to gain or retain their certificates of Assurance. If shortcomings are identified, an action plan will have to be agreed with the Certification Body to correct things within an agreed timescale or the Assurance certificate can be suspended until the business has rectified them. Red Tractor Assurance provides industry users with access to an up to date checker-system, which identifies the current assurance status of members' certificates and lists all businesses with a suspended certificate.

3.1.7.5. Green Gold Label

Green Gold Label (GGL) has been operational since 2002 developed by the Dutch energy supplier Essent and Skal International (now Control Union Certifications), in light of concerns over the sustainability of biomass in electricity production. GGL has been adapted in anticipation of the NTA8080, and with the RED GHG requirements in mind.

The GGL standards apply at different points in the biomass supply chain, which covers producers, processing, transport, trade and final energy transformation (power plants). The standards are categorised as "Major Musts" or "Minor Musts", i.e. mandatory requirement where if a company does not comply the certificate is withdrawn, versus mandatory requirement if a company does not comply, corrective actions must be verified 3 months after finding.

GGL offers different options of compliance with standards, depending on the type of business applying to be certified, so in the case of forest materials, existing forestry certificates can be used (FSC, PEFC²³, CSA-SFM, SFI, FFCS) and in the case of agricultural materials, GlobalGAP and programmes that certify organics as per EU, Japanese or US regulations can be used. GGL requires track and trace chain of custody, where mixing or contamination with non-intrinsic or

²³ PEFC is an umbrella scheme that has endorsed CSA, SFI and FFCS

environmentally harmful materials is prohibited. In every link of the chain written proof must be available that the GGL quality system is supported, sustained and maintained. A specific standard, GGLS3 is aimed at First Entry Point, traders, conversion units which process, convert or trade agricultural or forestry products applying for certification for the production of biomass/bio-liquid/biofuels.

GGL requires an annual audit by an accredited independent third party on the sustainable origin of the material.

The UK has approved GGL-RED under the Renewable Obligations Orders (ROO). The Dutch Emissions Authority (DEA) has temporarily accepted GGL on a global basis for a variety of raw materials and for all sustainability criteria from 1 July 2011 until 1 July 2012 (pending EU recognition). GGL is also establishing partnerships with the Dutch NTA8080 and the EU CEN.

3.1.7.6. RSPO RED

The Roundtable on Sustainable Palm Oil (RSPO) is a global, multi-stakeholder initiative on sustainable palm oil. The principles and criteria were adopted in 2005, well before the RED and in response to concerns that palm oil plantations were leading to deforestation in particular in Malaysia and Indonesia.

The criteria are generic, so that countries may adapt them in line with national laws. RSPO RED version is an “add-on” module to comply with EU requirements, and must be used in conjunction with the RSPO standard.

Accreditation Services International (ASI) accredits independent certification bodies, whose accreditation is reviewed annually against ISO/IEC Guide 65: 1996, where the generic accreditation is also supplemented by a set of specific RSPO certification process requirements. RSPO requires ASI to notify RSPO if a complaint about a certification body is received from any RSPO stakeholder concerning their competency or process or the outcome of an accreditation audit or implementation.

RSPO certification assessments need to be initiated by palm oil producers, by contacting one of the approved certification bodies. The cost of audits will be borne by the producer who seeks RSPO certification.

Certification bodies are responsible for making a public announcement of an impending assessment at least one month before to invite the relevant stakeholders to participate. Producers (growers) are required to undergo initial certification assessments and subsequent monitoring or surveillance assessments, to collect evidence, including documentation review, field checks, interviews with external stakeholders etc. For chain of custody certification, certification bodies must review the Supply Chain records retrospectively, relating to the receipt, processing and supply of certified palm oil being supplied to customers wishing to make an RSPO claim.

Each audit report is made publically available and the public has a right to comment within 30 days. (If a matter cannot be resolved, the comments are referred to a Grievance Panel of the Executive Board of the RSPO). The producer is certified when RSPO’s audit review panel accepts the audit report.

Certification is granted for five years, but before certification is granted and during the five-year period, at least annual audits (surveillance) are necessary. Major nonconformities raised during surveillance assessments must be addressed within 60 days, or the certificate will be suspended. Minor nonconformities will be raised to major if they are not addressed by the following surveillance assessment. For growers with multiple sites, auditor must use sampling as follows: for

the initial assessment, the square root of the total number of sites, rounded up to a whole number for each Set x 0.8, plus auditing of the central office; for the surveillance audit (at least annually): square root of the total number of sites, rounded up to a whole number for each set x 0.6, plus central office; and for re-certification: the square root of the total number of sites, rounded up to a whole number for each Set x 0.8, plus central office. Small grower can be certified as a group if they supply the same mill.

3.2. MEMBER STATE IMPLEMENTATION – NATIONAL VERIFICATION SYSTEMS

Voluntary schemes are voluntary which means there is no legal requirement for producers to obtain certification under a voluntary scheme. In fact, Member States must have other means of verifying whether the company is making a true claim.

To date, not all Member States have fully implemented their national verification system. In fact, the EC has only officially accepted the German verification system as complying with RED, all others are still being scrutinised.

The RED leaves a wide discretion to determine how to comply with the verification obligations. When comparing the national schemes, it is evident that Member States have chosen systems that are best suited to their individual circumstances. With regards to implementation, some countries, such as Austria, required information to be submitted by producers as early as 2010, whereas Spain, Portugal and Belgium have postponed implementation until 2013 while a national verification system is being finalised.

However, the building blocks of the national verification system have many similarities. The institutional architecture that supports the monitoring of implementation is usually an independent agency or the government, and the information requested from producers and other actors in the chain are essentially the same (although the amount of information required for companies to report differs: Germany, the Netherlands, Spain and the UK require exhaustive reports; Belgium Italy, Portugal and Sweden require a medium level of information in their reports; France requires at the moment the minimum level of information from companies.)

There are two types of national verification systems: those that base themselves on voluntary certification schemes (e.g. Denmark, Netherlands and UK) and others that request sustainability declarations (e.g. Germany, Slovakia and Austria), i.e. they do not require a certificate from a scheme, a declaration that the company complies backed up by an independent audit is also sufficient (in Germany only temporarily until the certification schemes are fully operational). Many countries use self-declarations as a tool for companies to submit information to the authorities.

Voluntary schemes: Some Member States (Bulgaria, Finland, France, Hungary, Ireland, Lithuania, Portugal and Italy) only approve voluntary schemes, which are approved by the EU. Others have an assessment procedure to recognise voluntary schemes next to the ones approved by the EU (Netherlands, UK, Austria, Cyprus, Germany). Most countries accept voluntary schemes approved by other Member States, but France, UK and Portugal will not unless also approved by EU.

Audit quality: With respect to auditing, there is a difference in Member States' approach. Some require accreditation of auditors, whereas others are content with recognition of auditors that meet certain standards²⁴. Some countries use a combination of both options. Also the standards for audit quality vary a lot. Some Member States have obligations for a specific standard (Belgium, Bulgaria, Cyprus, Spain, Hungary), others not (Denmark, Germany, Netherlands, Ireland, UK).

²⁴ Accreditation means that the auditors' practices are certified as acceptable by accreditation bodies (each Member State has one, e.g. BELAC Belgian Accreditation Body), while under recognition, the Member State simply accepts that certification bodies meet certain standards, such as relevant ISO standards for auditing.

Moreover, in some countries there is a national body doing the verification of the sustainability criteria (Austria, Hungary), but in most countries, the verification of the criteria has to be done by verifiers who have to be accredited by an accreditation counsel (e.g. Belgium, Spain, Netherlands, Malta, France). In other Member States, accreditation is done by the government (Cyprus, Finland, Germany, Sweden), and in others still, verifiers do not have to be accredited (Denmark, Ireland, Hungary, UK).

Mass balance: Mass balance is treated differently; for instance differences exist on whether physical and administrative batches can be treated separately. In some countries they must be treated together and separation is not permitted (e.g. Austria, Cyprus, France, Germany, Cyprus, France, Hungary, Ireland, Portugal, UK), in others separation is allowed under some circumstances (e.g. Netherlands, Denmark, Spain, Malta, Sweden).

Other differences include exceptions for small producers/suppliers and penalties resulting from non-compliance, the type of economic operator (e.g. biofuel producer, fuel supplier) obligated to report, how to count double for second-generation biofuels. Consequently, national requirements and interpretations of voluntary certification scheme also need to adapt to those differences between Member States.

In section 2.4, the EC's recommended standards for verification systems were outlined. In the next section, some of the existing national verification regimes are analysed²⁵.

3.2.1. Germany

Germany was the first to implement the sustainability requirements. For administrative reasons the implementation was split into two separate regulations, one for biomass used for electricity production (*BioSt-NachV*) and one for biomass used for biofuel production (*Biokraft-NachV*), published in the German Federal Gazette on 5 October 2009, and applied to biofuels marketed as of 1 July 2010. Biofuels, marketed between 1 July 2010 and 31 December 2010, are exempted on the condition of proof that the biomass was harvested prior to 1 January 2010. The *Biokraft-NachV* contains details on the sustainability criteria and compliance verification.

The sustainability criteria are identical with those in the RED, but provide more details on some of the individual criteria, for example, the definition of land with "high biodiversity value".

The German system relies on evidence provided by the last interface of the supply chain, but all interfaces have to be certified by a recognised certification scheme, also called "proof of sustainability" (POS), and be submitted to the competent main customs office, the biofuels quota control body or network operator. POSs can be issued by certification bodies that are approved by the German Federal Agency for Agriculture and Nutrition (BLE)²⁶, or by environmental verifiers approved according to EU regulation 1221/2009 and who work with an approved certification scheme. At this time, two certification schemes (i.e. the International Sustainability and Carbon Certification (ISCC) and REDcert) were granted approval.

BLE has put on its website a guidebook "Leitfaden nachhaltige Biomasseherstellung" that provides detailed information on the requirements for sustainable biomass production as well as on the requirements for the approval of a certification scheme and certification bodies. The guidebook is available in English²⁷.

²⁵ So far not all Member States have transposed the sustainability requirements into national law. Those that have not are: Poland, Greece

²⁶ http://www.ble.de/EN/02_ControlLicencing/05_SustainableBiomassProduction/SustainableBiomassProduction_node.html;jsessionid=82CA0007D8D871986657DE8760F6F7CF.1_cid137

²⁷ http://www.ble.de/EN/02_ControlLicencing/05_SustainableBiomassProduction/01_InformationMaterials/InformationMaterials_node.html

The BLE is also responsible for keeping a central register of installations that convert liquid biomass into electricity, balancing the proofs of sustainability and issuing partial proofs of sustainability through its web-application “Sustainable Biomass System” (Nachhaltige Biomasse System – nabisy), storing data for the biofuel quota body and the main customs offices, respectively network operators that are relevant for the crediting against the biofuels quota, and for a tax relief and other support.

In the field of biofuels a proof that the biofuels have been sustainably produced must be provided in order to be able to claim a tax relief according to the Energy Tax Act (EnergieStG), or calculate the biofuels towards the national targets pursuant to the Federal Emissions Control Act (BimSchG).

In the field of bio-electricity the operator of an installation must provide proof that the liquid biomass has been sustainably produced in order to be able to claim remuneration in accordance with the Renewable Energy Sources Act (EEG) and for claiming the NawaRo-Bonus (grant for renewable raw materials) from the network operator.

In some cases, e.g. small-scale farmers not part of a certification scheme, can also issue self-declarations (see Box A for the model form), declaring to fulfil all requirements in relation to the sustainable production of biomass. Germany has provided a model for such declarations (see below). The self-declaration has to be deposited with the first gathering point²⁸ of the raw material and travels with the consignment through the supply chain. It is stipulated that a minimum of 5% of growers in third countries will be monitored by recognised certification bodies, i.e. including farmers not party to a certification scheme.

To be approved by a German certification body, the first gathering point of biomass must document the following:

- Persons in the operation and operational site responsible for the documentation of the sustainability of the biomass
- Participation in a certification scheme
- Ensuring that all up- and downstream operations and operational sites, which themselves are not interfaces, comply with the specifications of the certification scheme of the first gathering point, and that they have themselves controlled by the certification body of theirs
- Registration number of the certificate for the first gathering point, certifying body issuing the certificate
- Names and addresses of all arable farms
- Contracts concerning the production of biomass
- Scope of the contracts, structured by sustainable and not
- Verification of area under cultivation
- Self-declaration of the arable farms
- Documents for the calculation of the GHG emissions of the arable farms and of the transport
- Calculation of the GHG emissions which have already been generated
- Names and addresses of all stocks of merchandise, operations and operational sites for the physical receipt of the goods, classified by sustainable and not sustainable biomass
- Warehousing contract
- Delivery documents about kind, amount and date of the received biomass
- Letter of agreement of the stock owners concerning the control and access rights of the certification body of the first gathering point
- Input in and output out of the corresponding process
- Kind of the process, especially explanation of the weight loss

²⁸ Operations that receive the biomass from farmers and harvesters of biomass, with the purpose of trading. According to German law, they are the first interfaces in need of certification.

- Names and addresses of the downstream operations and operational sites as well as interfaces
- Supply documents concerning kind, amount and date of the further delivered sustainable biomass
- Contracts of purchase
- Calculation of the GHG emissions which have already been generated
- GHG emission values by internal processes (real values or standard values) especially:
 - Energy intake (electricity, heat, fuel)
 - Amount of waste / effluent
 - Emission of the production residues
 - Emission of the transport
- Disclosure of relevant data to downstream operations, operational sites as well as interfaces

First interfaces will be controlled every six months in the first year, afterwards once a year, by a recognised certification body.

Box A – German model for self-declaration of biomass producers outside the EU

Model

Self-declaration by the agricultural operation on the sustainability of biomass pursuant to the biomass-electricity-sustainability ordinance (BioSt-NachV) and the biofuel sustainability ordinance (Biotkraft-NachV) – grown outside the European Union

I hereby confirm that the biomass I have produced and supplied meets the requirements pursuant to the sustainability ordinances and that all supporting documentation has been submitted:

1.	<input type="checkbox"/>	The biomass stems from arable land that has been arable land already prior to 1 January 2008. Furthermore it does not come from areas worthy to be protected (Arts. 4 through 6 of the sustainability ordinances) that have been converted into arable land after 1 January 2008.				
2.	<input type="checkbox"/>	The biomass stems from land within special protection areas where management activities have been permitted. The requirements resulting from the special protection area status are complied with.				
3.	<input type="checkbox"/>	The documentation on the location where the biomass is grown (proof drawn as a polygon pursuant to Art. 26 of the sustainability ordinances, or comparable proofs of the surface areas of the lots as to field blocks, field parts or cuts) <table style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 20px;"><input type="checkbox"/></td> <td>has been received by me and can be accessed at any time</td> </tr> <tr> <td><input type="checkbox"/></td> <td>has been made available to the first gathering point of the biomass I have supplied.</td> </tr> </table>	<input type="checkbox"/>	has been received by me and can be accessed at any time	<input type="checkbox"/>	has been made available to the first gathering point of the biomass I have supplied.
<input type="checkbox"/>	has been received by me and can be accessed at any time					
<input type="checkbox"/>	has been made available to the first gathering point of the biomass I have supplied.					
4.	<input type="checkbox"/>	For the calculation of greenhouse gas balancing the default value shall be applied (Arts. 8 and Annex II).				

Note: With this self-declaration the agricultural producer acknowledges that auditors of certification bodies that are recognized by the Federal Office for Agriculture and Food (BLE) may check whether the requirements pursuant to Arts. 4 through 7 of the sustainability ordinances are complied with. It must be tolerated that they may be accompanied by BLE inspectors where applicable.

Place, date
Signature

3.2.2. Sweden

In Sweden, the sustainability criteria are implemented through 'lag om hållbarhetskriterier' (the Act on sustainability criteria), Act 2010:598, in force as of 1 Jan 2011. Further detailed secondary legislation (Ordinance 2011:1088 and Regulation 2011:2) is in place since February 2011.

Unlike the German system, Swedish operators are free to design their own verification systems, as long as they are independently audited. There are no nationally approved certification bodies, but the Swedish Energy Agency (SEA)²⁹ ultimately decides if the sustainability claims submitted (through a reporting obligation) are accepted or not. As of February 1, 2012, biofuels will need a Sustainability Decision from the SEA to be eligible for tax incentives or to count for mandatory national renewable energy targets.

In order to receive a Sustainability Decision, the economic actor with a reporting obligation must have a verification system in place that ensures that sustainability criteria are fulfilled in accordance with the legal framework. The reporting obligation is designated to those who:

- are taxable for fuel that is partly or completely comprised of biofuel or bioliquid according to the Energy Tax Act 1994:1776; *or*
- are economic operators that in their business activity use biofuel or bioliquid that is neither partly nor completely taxable according to the Energy Tax Act.

In practice, all economic actors in the production chain are indirectly affected and must have procedures in place and deliver information concerning sustainability to their clients.

The verification system is comprised of the following steps:

1. Company applies for a sustainability decision
2. Sustainability decision issued by authority: Swedish Energy Agency
3. Company to report every year (by 1 April) on sustainable volumes of biofuels and bioliquids)
 - first reporting by 1 April 2012.

The sustainability decision will depend on whether the company has carried out the following:

- Have a verification system in place that ensures sustainability for the entire production chain
- Prepare written guidelines and procedures, particularly for sampling and mass balance
- Risk assessment of operations,
- Take account of how the GHG emission saving is calculated
- Be auditable regarding the basic data pertaining to the assurance of sustainability that is saved for at least 10 years
- Be managed with a clear distribution of responsibility and functions within the organisation
- Include a specific deviation management system³⁰ with a designated responsible person.

The economic operator with a reporting obligation is responsible for contracting an independent auditor to check the above. The application for a sustainability decision must include a statement from the independent auditor and a description of the independent auditor's competence and assurance of independence.

²⁹ <http://www.energimyndigheten.se/en/About-us/Mission/Instruments/Sustainability-criteria-for-biofuels-and-bioliquids/>

³⁰ Deviation management is a quality management tool to ensure errors are minimised, such as through eliminating the potential of lost information by electronically and securely managing all information in a centralised, scalable, and reliable system.

The annual reporting by companies (to be submitted electronically) will create a data register of the delivered and used quantities of biofuels that fulfil the sustainability criteria. This information will in conjunction with the calculation of national target fulfilments be combined with other statistical data from the official energy statistics.

The Swedish Energy Agency is able to issue sustainability decisions since 1 November 2011. The decision is valid until further notice, but is to be reviewed periodically.

3.2.3. United Kingdom

In the UK, verification of sustainability requirements is done through a link to the Renewable Transport Fuel Obligation (RTFO),³¹ which obliges fuel suppliers to reach a 5% share of biofuels in transport by 2013³². Obligations fall on suppliers that supply at least 450,000 litres of fuel to the market each year. Among suppliers, those that claim to have met the sustainability criteria at the point where the fuel is chargeable for duty, receive Renewable Transport Fuel Certificates (RTFC). Smaller suppliers that do not fall under the RTFO may also register to receive RTFCs, to enable them to participate in the trading of such certificates. Around 80 companies have registered with the Department for Transport, responsible for running the scheme.

Unlike in Germany, the UK's RTFO Administrator does not provide accreditation to verifiers, it is for the supplier to ensure that the verifier they appoint is suitable (as in Sweden).

To apply for RTFCs³³, a supplier must supply the Department with information on volume, Carbon and Sustainability information and submit a verifier's assurance report. RTFCs are issued electronically, per litre of renewable fuel (or per kilo of gaseous fuel) with double certificates for fuels coming from wastes, residues, ligno-cellulosic or non-food cellulosic materials.

In the UK, reporting is done online, and separately for fuels with identical consignment characteristics. The fields of reporting are as follows:

- Fuel type - biodiesel, bioethanol, or biogas
- Biofuel feedstock - cooking oil, wheat etc.
- Biofuel production process (if applicable) – needed for feedstocks where the production process may improve the GHG savings default e.g. ignite, natural gas or straw as process fuel in CHP plant for bioethanol from wheat; or methane (CH₄) capture (or not) for biodiesel from palm
- Country of origin
- EU NUTS2 region (for EU feedstocks only) – to see if default values can be used in according to regional N₂O emissions in soil
- Voluntary scheme(s) – including field audits for RTFO standard
- Land use on 1 January 2008
- GHG data - where actual data has been supplied for the cultivation stage, or for the entire fuel chain.
- Soil carbon accumulation – if applicable i.e. whether there has been any soil carbon accumulation due to improved agricultural practice
- Plant in operation on 23 January 2008
- Carbon intensity - Reporting a carbon intensity of 54 gCO₂e/MJ³⁴ or less meets the RED threshold of a minimum 35% GHG emission saving.

For proving compliance with the land use criteria, the supplier must also submit one of the following:

³¹ <http://www.dft.gov.uk/topics/sustainable/biofuels/rtfo>

³² 5% for 2013 as opposed to the 10% target for 2020, no decision on a 2020 target has been made, but note that the renewable transport target can also be met by other means, e.g. second generation fuels which count double towards the target, or electric cars.

³³ <http://assets.dft.gov.uk/publications/rtfo/guidance-pt1-process.pdf>

³⁴ Grams of CO₂ equivalent per megajoule

- 1) A voluntary scheme that covers the RED land-use criteria
 - EU approved schemes
 - RED Tractor has been recognised by the RTFO Administrator as meeting the biodiversity but not the carbon stocks criteria of the RED
- 2) The RTFO Biofuel Sustainability Standard

This has five environmental and two social principles and a norm for audit quality for independent auditing, which can be used to audit against RED criteria. The social criteria for instance includes compliance with national law on working conditions and workers rights, including supplying workers with legal contracts, workers having been informed about their rights (incl. bargaining rights), demonstration that any subcontractor provides its services under the same environmental, social and labour conditions, guarantee the rights of workers to organise and negotiate their working conditions, guarantee that no children below the age of 15 are employed etc.

- 3) The RTFO Biodiversity Audit

Once the definition of highly biodiverse grassland is available from the EC (expected in the summer of 2012), the RTFO Administrator intends to allow suppliers to conduct independent third party audits against the RED biodiversity criteria as a means of demonstrating compliance.

- 4) A land use on 1 January 2008

Reporting the status of land on January 1st 2008

For proving compliance with GHG emissions savings, one of the following must be reported:

- 1) Carbon intensity of 54.47 gCO₂e/MJ₄₅ or less (equivalent to a minimum 35% GHG emission saving)
- 2) Report that the biofuel was produced in an installation which was already operational on 23 January 2008;
- 3) Report that the biofuel meets a voluntary scheme recognised by the RTFO Administrator for demonstrating compliance with the GHG criteria;
- 4) And for EU crop-based feedstocks, parties must report whether the feedstock is from a compliant NUTS2 region.

The UK has benchmarked some voluntary schemes not approved by the EU to the EU recognised schemes, as shown below. It shows that some schemes, while not fully RED compliant, can be used to make claims to meet some of the criteria, e.g. RSPO for biodiversity.

Voluntary scheme name	Accepted under the RTFO from ¹	Scheme version no.	Scheme scope		RED sustainability compliance					
			Geographical	Feedstock	GHG	Biodiversity	Carbon stocks	Mass balance chain of custody	Audit quality	
EC recognised schemes²										
Abengoa RED Bioenergy Sustainability Assurance (RBSA)	10 August 2011	Various ³	Global	Multi-feedstock	Actual or default	Yes	Yes	Yes	Yes	Yes
Biomass Biofuels voluntary scheme (2BSi)s	10 August 2011	Various ³	Global	Multi-feedstock	Default only	Yes ⁴	Yes	Yes	Yes	Yes
Bonsucro EU (formerly Better Sugar Cane Initiative, BSI)	10 August 2011	v3.0 (March 2011)	Global	Sugar cane	Default only	Yes ⁴	Yes	Yes	Yes	Yes
Greenery Brazilian Bioethanol verification programme (Greenery)	10 August 2011	Various ³	Brazil	Sugar cane	Default only	Yes ⁴	Yes	Yes	Yes	Yes
International Sustainability and Carbon Certification (ISCC)	10 August 2011	v2.3 EU	Global	Multi-feedstock	Actual or default	Yes	Yes	Yes	Yes	Yes
Roundtable on Sustainable Biofuels EU RED (RSB EU RED)	10 August 2011	v2.0	Global	Multi-feedstock	Actual or default	Yes	Yes	Yes	Yes	Yes
Round Table on Responsible Soy EU RED (RTRS EU RED)	10 August 2011	Various ³	Global (outside of EU)	Soy	Actual or default	Yes	Yes	Yes	Yes	Yes
RTFO Administrator benchmarked schemes										
Forest Stewardship Council (FSC)	15 April 2011 ⁵	1996 (amended 2004)	Global	Wood	-	No	No	-	-	Yes
Genesis Quality Assurance (Genesis QA)	15 April 2011 ⁵	2008-2009	UK	Multi-feedstock	-	Yes	No	-	-	Yes
Linking Environment And Farming Marque (LEAF)	15 April 2011 ⁵	Oct-08 (version 8)	Global	Multi-feedstock	-	No	No	-	-	Yes
Red Tractor (formerly Assured Combilable Crops Scheme, ACCS)	15 April 2011 ⁵	Jul-08 (ACCS standard)	UK	Multi-feedstock	-	Yes	No	-	-	Yes
Roundtable on Sustainable Palm Oil (RSPO)	15 April 2011 ⁵	Oct-07	Global	Palm oil	-	Yes	No	-	-	Yes
Round Table on Responsible Soy (RTRS)	15 April 2011 ⁵	Jun-09 (Field Testing)	Global	Soy	-	No	No	-	-	-
Sustainable Agriculture Network/Rainforest Alliance (SAN/RFA)	15 April 2011 ⁵	Apr-09	Global	Multi-feedstock	-	Yes	No	-	-	Yes
Notes:										
1 - Subject to parties in the supply chain being assited against the version of the voluntary scheme that the EC Decision refers to. Note that in practice therefore, a scheme may not be able to be used from the date listed if recent changes have been made to the scheme to enable the EC to recognise the scheme.										
2 - Please refer to the EC Transparency Platform for further details: http://ec.europa.eu/energy/news/biofuels/sustainability_schemes_en.htm										
3 - Please refer to the EC Transparency Platform for the specific version numbers of the scheme documents: http://ec.europa.eu/energy/news/biofuels/sustainability_schemes_en.htm										
4 - With the exception of highly biodiverse grasslands (Article 17.2c of the RED)										
5 - These schemes were assessed by the Renewable Fuels Agency (RFA) and the assessment is valid until 14 April 2013 only										

The UK specifies that verification must be carried out to the requirements of ISAE 3000 developed by the International Auditing and Assurance Standards Board (IAASB) for assurance engagements other than audits or reviews of historical financial information. ISAE 3000 defines two levels of assurance: limited and reasonable. The level of assurance required for data submitted under the RTFO is 'limited' and relates to the level of engagement risk. This is the risk that the verifier expresses an inappropriate conclusion. As limited assurance involves limited evidence gathering activities, the assurance opinion is expressed in the negative form, for example: *"Based on our review, nothing has come to our attention to cause us to believe there are errors in the data."*

ISAE 3000 requires independence of the verifier, but does not itself preclude a professional accountant within the supplier's organisation (such as an internal auditor) from providing assurance. However, the RTFO Order requires that the assurance provider is neither the 'supplier' nor a 'connected person' of the supplier, and as such for the purposes of the RTFO, verification by a professional accountant within the supplier's organisation is not considered to be independent assurance. Competence to undertake assurance engagements under ISAE 3000 is a requirement for all verifiers under the RTFO. The extent to which expert skills and knowledge relating to sustainability information for biofuels is required will depend on the complexity of the fuel supply.

3.2.4. Ireland

Ireland has recently published its national implementing act (Statutory Instrument No. 33 of 2012). Like in the UK, an obligation is place for suppliers to meet a certain share of biofuels in overall transport fuel supply. In Ireland, all suppliers that fall under the obligation have to submit to the National Oil Reserves Agency³⁵ a statement (and evidence) of compliance with the sustainability requirements of RED. Compliance can be through an EU approved voluntary scheme, a scheme approved by other Member States, or through a procedure outlined in Regulation 4.

The information that has to be submitted to the Agency is more or less the exact same as in the UK, e.g. on whether default or actual values are used for GHG saving calculations, the type of raw material, the place of origin of the raw material etc. In Ireland however, the information also must include whether measures were taken for soil, water and air protection, the restoration of degraded land or the avoidance of excessive water consumption in areas where water is scarce. The EC

³⁵ http://www.nora.ie/biofuels/biofuels_obligation_scheme.476.476.html

requires this information to be submitted only in case the supplier is covered by a voluntary scheme, in order to avoid administrative burden on small suppliers who are not able to become members of such schemes.

Like in the UK, the verification has to be done by an independent person in accordance with ISAE 3000, annually, and records relating to the sustainability criteria kept for 3 years.

3.2.5. Hungary

Hungary transposed the sustainability requirements of RED through Act CXVII of 2010 on the promotion of the use of renewable energy for transport purposes and on the reduction of GHG emissions from energy used in transport (Büat), and the related Decree 343/2010 (XII. 28.) on the requirements and certification of the sustainable biofuel growth. There are two other detailed rules on the calculation of the avoidance of GHG emissions No. 36/2010 (XII. 31.), and in relation to the territorial impoundment of the sustainable growth of the stock of biofuel No. 42/2010 (XII. 20.). The rules are applied since 1 January 2011.

The National Food Chain Safety Office (NFCSSO) is the implementing body, responsible for keeping a registry related to the sustainability requirements, controlling certifications, and arranging for inspections of biomass producers, traders, processors and suppliers.

Biofuels can only be produced in territories categorised as 'fields', which are defined by taking into account the sustainability criteria as well as further rules arising from the cross-compliance requirement.

As in the German system, producers of biomass can issue self-declarations, which includes information about the company that makes the declaration, the company it sold the biomass to, the areas of production (fields), the amount of the produced biomass, whether default or actual values are used for GHG emissions and the date of the beginning of harvest³⁶. In case the producer does not benefit from agricultural payments in Hungary, the statement must be backed up by an audit.

Biomass producers can issue statements relevant to a certain biofuel stock only and until 31st of July after the harvest, and in the case of corn until 31st of August. Moreover, the statement cannot be used to issue a sustainability certification if the statement was issued more than 3 years before (after the 31st of December), and in case of destruction of biomass.

At the next level of the distribution chain, the biofuels suppliers (sellers), the biomass processors and traders, have to claim compliance with the sustainability criteria based on farmers' statements, and supply data to the NFCSSO every quarter. They also fill out a self-declaration on the sustainability of the biomass/ biofuels in order to register in the BÜHG (biofuel GHG emissions inventory). The form includes information on the company, the buyer of the biomass/biofuel, the type and amount of biomass (e.g. if waste material), its CN Code, and information about GHG emissions, i.e. whether default or actual values are used.

The NFCSSO keeps a registry related to the sustainability requirements, controls the certifications and arranges for inspections. It can also impose fines in case of false statements or supplied data in the inventory. There are around 500 recognised companies in the registry as at April 2012 (biomass producers do not need to register). If NFCSSO is satisfied with the information provided, the company is considered to have met the criteria and obtains a sustainability certificate either for an amount of biomass or processed biofuel (or an intermediate product).

³⁶ Forms can be downloaded in English or German from:
http://www.mgszh.gov.hu/szakteruletek/szakteruletek/foldmu_vig_nvomtatvanyok_fm/343_2010_nvomtatvanyok.html

In case another EU Member State doubts the sustainability claims of the Hungarian system, NFCSO may grant an official sustainability certificate (sustainability certificate of the authorities) to prove that the biomass, intermediate product or biofuels meet the sustainability requirements. Such a certificate can be issued only if the applicant is included in the BÜHG registry.

This system in fact relies on statements of farmers on areas of production and companies' claims for GHG emissions, and inspections by the authorities. But once the company is in the inventory, the biomass it supplies is regarded as sustainable unless proven otherwise. On the chain of custody, the verification system requires that companies must document any changes of ownership or physical/chemical transformation of a consignment of sustainable biofuels. It is claimed that the information provided by companies in the registry will be enough to determine the chain of custody of individual consignments of biofuels, because sustainability information will be submitted on all batches/consignments of biofuels. It is assumed that mass balance is fulfilled after the point of issuing sustainability certificates.

The system would require companies that do not have a registration number in Hungary to acquire one and it costs 60,000 Ft (circa 200 Euros) to be included in the registry. The authorities do not consider that further costs need to be accrued by companies to prove sustainability. The decision whether to include a company in the registry takes around 30 days and each company stays on the registry for one year, after which a new application must be made.

3.2.6. The Netherlands

RED is transposed by “Wet milieubeheer” (Environment protection law), the “Besluit hernieuwbare energie vervoer” (Decree on renewable energy in transport) and “Regeling hernieuwbare energie vervoer” (Regulation on renewable energy in transport), published in early 2011.

The Dutch National Emissions Authority (NEA) is responsible for implementation. Each biofuel supplier that is covered by an obligation to supply a certain share of biofuels each year (4.5% in 2012, 5% in 2013 and 5.5% in 2014 and 10% in 2016), is registered with the Authority and has to report every year on the sustainability of biofuels using a template which requires information on:

- The physical starting and closing stocks of biofuels
- The initial receipt or production of biofuel in the Netherlands
- Subsequent receipts of biofuel in the Netherlands;
- Releases of biofuel to other registered parties in the Netherlands
- Releases of biofuel to parties in other countries
- The administrative starting and closing stocks
- Purchases and sales of bio-tickets.

Companies that meet the annual obligation through biogas or renewable electricity used in road vehicles or by trading bio-tickets must provide a declaration to this effect.

Moreover, each registered company (that includes all permit holders of an excise warehouse and registered consignees that store or release petrol, diesel and biofuels for consumption) must specify:

- Details of the certification scheme used
- The CN code of the crop or the feedstock from which that relevant quantity was produced
- The country of origin of the crop or feedstock and
- The associated life cycle GHG emission saving.

The NEA registration system is still under development and is not expected to be fully operational before 2013. For now, registered companies must electronically submit to the NEA a completed biofuels balance (spreadsheet) within two months after the end of each half year. The reports on the GHG of fuels, of which the first will be in 2012, must be submitted electronically to the NEA before 1 March of the subsequent year. In 2013, an automated digital register managed by the NEA

will replace the spreadsheets.

The certification scheme used must be one that is approved by the EU or by the responsible Dutch Minister (ten have been approved until July 2012: ISCC, RTRS, NTA 8080/8081, a protocol for double counting of better biofuels³⁷; Green Gold Label; Dekra Inspection Protocol³⁸; Ensus, RSPO, REDcert and Biograce). The company's report must include a declaration by the verifier, that the EC or the Minister has approved the certification scheme used by the registered party. Note that several declarations may be necessary to verify different aspects of the sustainability criteria, e.g. the mass balance requirements, the independent auditing requirement etc., as an individual verifier may not be authorised to verify all requirements and criteria.

The independent verifier must be accredited by the Accreditation Council or by a national accreditation body, or started the accreditation or recognition procedure with the above institutions or with a competent national body in another Member State. The verifier has to check that:

- The sustainability information is delivered for all batches supplied,
- The information on quantity & quality of biofuels is correct.

Where biofuel is traded in the Netherlands, or transferred to another country, it must be accompanied by a sustainability declaration detailing the quantity of biofuel transferred and declaring the sustainability characteristics.

In effect, the Netherlands requires a voluntary certification scheme to prove compliance, there seems to be no alternatives other than the EU or Dutch approved certification schemes.

3.2.7. Luxembourg

The sustainability requirements are transposed into law through a regulation adopted on 27 February 2011. The "Administration de l'environnement" (part of the Ministry of Sustainable Development and Infrastructures) is responsible for its implementation. As Luxembourg imports all of its biofuels, the legislation states that biofuel suppliers must provide proof of compliance through using a voluntary scheme that is recognised by the EC or another EU Member State, or that has applied for EU recognition.

Each supplier has to submit to the Authority, by 1 March every year, a report on the GHG emission and energy intensity of fuels, providing at least the following information:

- a) The total volume of each type of fuel or energy supplied, indicating the place of purchase and origin of those products, and
- b) Emissions of GHG produced over the entire life cycle per unit of energy.

Reports and information on balances of biofuels are subject to annual audit by an approved body or other person qualified in this area, to be chosen and paid for by the supplier. A group of suppliers may choose to comply jointly, and in this case they are considered a single supplier for the purpose of meeting the biofuel obligations.

3.2.8. Austria

RED is partially transposed by "Verordnung des BMLFUW über landwirtschaftliche Ausgangsstoffe für Biokraftstoffe und flüssige Biobrennstoffe" (BGBl.II Nr. 250/2010) published on 27 July 2010, and in force since 1 December 2010. However, it only concerns agricultural raw materials and not

³⁷ The Dutch Energy Agency published the "Verificatieprotocol dubbel telling betere biobrandstoffen" in April 2011 with an aim to lay down basic rules and procedures for accredited inspection bodies to determine if biofuels made from non-agriculture, aquaculture, fisheries and forestry waste and residues qualify for double counting towards the renewable energy transport target. Further information available in Dutch: <http://www.agentschapnl.nl/sites/default/files/bijlagen/GAVE-11-01%20-%20Verificatieprotocol%203.0%20definitief.doc.pdf>

³⁸ Dekra provides certification and environmental services and published a protocol for carrying out biofuels sustainability inspections: <http://www.dekra.de/de/web/certification-nl/redcompliance>

the processed biofuels. Those will be covered by another ordinance, the “Kraftstoffverordnung 2011” (Fuel ordinance 2011), but is currently being negotiated.

Currently, Agrarmarkt Austria, AMA, is already active in registering farmers for complying with the sustainability requirements (since 2010). Biomass producers have to report to AMA:

- The date, amount and nature of any supply of agricultural raw materials;
- Default GHG emission value and the calculated actual value expressed in g CO₂eq/MJ,
- Year of harvest of agricultural raw materials,
- The country of origin or region of origin,
- The means of transport.

For domestic producers, AMA monitors ‘cross-compliance’ requirements, and all farms subject to cross-compliance controls are considered to be sustainably managed and complying with the biofuels criteria. Only companies that have not applied for direct payment need to submit an application to AMA for approval. In the case of third countries, Austria requires a sustainability certificate recognised by AMA or by the EU, and verified by accredited certification bodies, which in turn must also be approved by AMA. Following an application by each contractor (supplier, trader, processor), AMA reviews the requirements and officially registers the company and publishes it on its website. Inspection bodies may carry out random checks and controls of the agricultural market on a risk-based approach and AMA is responsible for the examination of evidence of record keeping and traceability of the flow of goods.

3.2.9. Romania

Originally, Romania transposed the sustainability requirements through Government Decision 829/2010, which required that raw materials for biofuels production should be harvested in an EU agricultural area, discriminating against feedstock and biofuels from third countries. This has now been rectified through Decision 935/2011 concerning the promotion of the use of biofuels and bioliquids, repealing the previous regulation.

The Ministry of Economy, Trade and Business Environment (METBE) is responsible for monitoring the compliance with these requirements. Economic operators which introduce biofuels and bioliquids into the market must submit to METBE annual reports with accurate information to prove the compliance. The first report was due by 31 March 2012. In addition to these annual reports, the same economic operators are responsible for submitting by 31 January each year the data on biofuels volume introduced on the market during the previous calendar year.

The verification system is also based on Declarations of Conformity, which is checked by the Certification Body, CertRom. Following a positive result of the assessment, the operator receives a Conformity Certificate with a 1-year validity. The registry of certificate holders is communicated to METBE.

3.2.10. Denmark

Denmark transposed the biofuels requirements of RED in “Lov om bæredygtige biobrændstoffer” (Law on sustainable biofuels), no. 468 of 12 June 2009. It puts an obligation on fuel suppliers to supply a certain share (5.75% in 2012) of biofuels in overall consumption.

The subsequent Order on sustainable biofuels requires that oil companies must document the quantity and sustainability of biofuels each year by 1 April, the first reporting was in 2011 for the previous year. Companies must demonstrate that an independent audit is established, and must ensure a sufficient standard for independent verification of information submitted to the DEA. Companies are not obliged to demonstrate this if they are certified under a voluntary scheme

approved by the EU. Until certification schemes are in place, the DEO accepts ex-post verification, according to international standards, but this will be phased out once certification schemes are fully operational. At that time, all economic operators in the biofuels production chain must be certified under a voluntary scheme approved by the EU, or schemes approved by other Member States after a “quicksan” for compliance by the DEA.

3.2.11. Slovakia

The sustainability requirements of RED are transposed through the amendment of Law No. 309/2009 on renewables. Detailed provisions are implemented through Decree no. 271/2011, which entered into force on 1 September 2011 and names the Slovak Hydrometeorology Institute (SHI) as the implementing agency.

Proof of compliance is provided through producers submitting to the SHI a certificate of origin for biofuels and bioliquids (see Box B). In case a recognised voluntary scheme is used, it must be indicated on the certificate of origin, in the field “Name Verifier / alternative verification”. For those not covered by voluntary certificates, a self-declaration³⁹ must be submitted about the sustainability characteristics of the biofuels.

Companies must also report each year (by 31 March) to the SHI on the GHG reductions achieved. According to the Decree, verifiers of GHG calculations must apply for a certificate of professional competence, and the Ministry will publish a list of competent verifiers on its website. (Slovakia recommends the use of Biograce for GHG calculation.)

Box B – Slovak Certification of biofuels/bioliquids origin

39

http://www.minzp.sk/files/declaration_by_the_producer_supplier_of_biomass_for_producing_biofuels_or_bioliquids_in_accordance_with_the_requirements_of_directive_2009_28_ec_article_17_vlozene_8_2_2012-1.pdf

CERTIFICATE OF ORIGIN OF BIOFUELS OR BIOLIQUIDS

SUPPLIER

Name of company:

Address:

ID/VAT NUMBER:

CUSTOMER

Name of company:

Address:

ID/VAT NUMBER:

GENERAL INFORMATION

Type of substance:	<input style="width: 90%;" type="text"/>	Quantity:	<input style="width: 90%;" type="text"/>	<input style="width: 90%;" type="text"/>	Energy content:	<input style="width: 90%;" type="text"/>	<input style="width: 90%;" type="text"/>
Sort:	<input style="width: 90%;" type="text"/>						
I. N. Code:	<input style="width: 90%;" type="text"/>						
Origin and % content:	<input style="width: 95%;" type="text"/>						
Sort:	<input style="width: 90%;" type="text"/>						
II. N. Code:	<input style="width: 90%;" type="text"/>						
Origin and % content:	<input style="width: 95%;" type="text"/>						
Sort:	<input style="width: 90%;" type="text"/>						
III. N. Code:	<input style="width: 90%;" type="text"/>						
Origin and % content:	<input style="width: 95%;" type="text"/>						

Produced from the waste or residue, including agriculture, aquaculture, fishing and forestry residues or non-food cellulosic material and lignocellulosic material:

Article I.	<input type="checkbox"/>	yes	<input type="checkbox"/>	no	Sort:	<input style="width: 90%;" type="text"/>				N. Code:	<input style="width: 90%;" type="text"/>
Article II.	<input type="checkbox"/>	yes	<input type="checkbox"/>	no		<input style="width: 90%;" type="text"/>				<input style="width: 90%;" type="text"/>	
Article III.	<input type="checkbox"/>	yes	<input type="checkbox"/>	no		<input style="width: 90%;" type="text"/>				<input style="width: 90%;" type="text"/>	

Notes:

<p>Greenhouse gas emissions during the life cycle:</p> <p>Total greenhouse gas emissions from the life cycle of biofuels/bioliquids [gCO₂eq/MJ] <input style="width: 50%;" type="text"/></p> <p>Declared saving of greenhouse gas emissions for biofuels/bioliquids [%] <input style="width: 50%;" type="text"/></p>	<p>Method of calculation:</p> <table style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;"> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">According to the default values</div> <input type="checkbox"/> yes <input type="checkbox"/> no </td> <td style="width: 50%; text-align: center;"> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">According to the actual values</div> <input type="checkbox"/> yes <input type="checkbox"/> no </td> </tr> </table> <p>Fuel comparator: <input style="width: 90%;" type="text"/></p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">According to the default values</div> <input type="checkbox"/> yes <input type="checkbox"/> no	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">According to the actual values</div> <input type="checkbox"/> yes <input type="checkbox"/> no
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">According to the default values</div> <input type="checkbox"/> yes <input type="checkbox"/> no	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">According to the actual values</div> <input type="checkbox"/> yes <input type="checkbox"/> no		

meets the conditions of sustainability by law 309/2009 Coll. as amended YES NO

Supplier's licence plate:	Name of statutory / Responsible person:	Date:	Signature&stamp / electronic signature:

Evidence number:	Name of verifier / Verify option:	Date:	Signature&stamp / electronic signature:

3.2.12. Portugal

RED is already partially transposed by Decreto-Lei no 117/2010. However, the implementing order (Order n. 8/2012 of 4 January 2012) regulates the functioning of the Sustainability Criteria Coordination Entity (ECCS), which will begin to control compliance with sustainability and the emissions of Biofuel Entitlements (TdB) from 1 January 2013. This authority will verify compliance with sustainability criteria and issue the so-called Certificates of Biofuels to producers and (in some cases) to importers selling their product to suppliers to the national market. These certificates account to the national target. However, Decree No. 6/2012 of 17 January 2012 postpones until 1 January 2013 the compliance of sustainability criteria for biofuels as requisite for the issuance of these Certificates.

3.2.13. Spain

Royal Decree 1597/2011 transposes the sustainability criteria provisions, including the national verification system into national legislation. Additional Orders and a Resolution regulating further details for implementation are currently being developed. A transition period is foreseen until the verification system is fully defined. The implementing authority is the National Energy Commission (CNE), but information to verify sustainability will only be required from 1 January 2013.

3.2.14. France

A Decree establishing the French national sustainability system for biofuels and bioliquids entered into force on 10 November 2011. A Ministerial Order of 23 November 2011 provided further details on the implementation and requisites to prove compliance under the French national system. A new Decree of 17 January 2012 lays down the rules for double counting of biofuels and lists the biofuels and bioliquids that are exempted from complying with land-use related sustainability criteria. An observatory of biofuels was created to monitor the various actions taken to meet the 2020 objectives⁴⁰, and make recommendations to help meet the targets.

In France, operators are required to make declarations of sustainability based on information collected and released at the time of consumption, to the body responsible for managing the sustainability scheme for biofuels and bioliquids. To take advantage of tax benefits provided by the Customs Code, they also have to make statements of sustainability to the customs administration.

French industry has developed its own voluntary certification scheme, 2BSvs, which has been approved by the EC as respecting the sustainability criteria defined by the RED. The scheme was developed by the French biodiesel and bioethanol sectors, including farmers, elevators and processors, and was validated by Bureau Veritas, detailing the actions they are willing to take to implement the sustainability criteria on France's biofuels production, whether processing domestically-grown or imported crops.

3.2.15. Malta

Malta transposed the sustainability requirements of RED through the Biofuels (Sustainability Criteria) Regulations of 24 December 2010. It has also amended its Resource Authority Act (CAP 423) to incorporate the verification requirements for sustainable biofuels. It requires that economic operators arrange for an adequate standard of independent auditing of the sustainability information and submit the evidence to the Resources Authority. Economic operators must ensure that such auditing and verification is compiled in accordance with the terms of the Accountancy Profession Act according to limited assurance engagements prescribed in ISAE 3000 or an equivalent standard

⁴⁰ The observatory is chaired by the Ministry of Ecology and Sustainable Development, and comprises representatives of biofuel producers and operators commercializing conventional and alternative fuels, vehicle manufacturers, consumer and environmental groups.

as proved to the satisfaction of the Authority by an economic operator; or through voluntary certificates approved by the EC or under national schemes approved by other Member States.

3.2.16. Czech Republic

Sustainability criteria are introduced in an amendment of the Air Protection Act no. 86/2002, which came into force on 1 January 2012⁴¹. This amendment is the main framework for the certification scheme for biofuels in the country. Biofuel suppliers and traders must show evidence of meeting the sustainability criteria by providing to the authorities a statement of compliance⁴². This statement must be accompanied by documentation of certification issued by an authorized person. Authorised persons are certification bodies authorised to issue certificates of compliance and include Bureau Veritas, SGS, PCU, TUV Sud, GUT, Dekra and the Slovak Hydrometeorological Institute. Accredited bodies must fulfil the requirements of standard EN 45011:1998 and submit a list of individuals who will carry out the verifications (audits) with proof of their qualifications and experience with the implementation of audits according to ISO 19011. Certificates are issued for a period of 12 months and reviewed annually.

If the certification or other similar authorisation is issued in accordance with the rules of another EU Member State, it may be accepted as a partial statement if it is registered with the Ministry of Environment. The Ministry registers all documents. The following documents must be submitted: identity of the applicant and contact details, certificate number, type of product, origin of biomass, information on how the value of GHG emissions are determined.

Producers of the raw material intended for the production of biofuels are not obligated to submit a statement of compliance, but they do need to have a declaration of compliance issued by the biofuel supplier or trader. In addition, the authorized auditor must inspect at least 3 percent of biomass producers from whom the supplier or trader obtained biomass.

Another Regulation No. 446/2011 was approved in December 2011, which contains the procedure for mass balance and for determining the GHG savings, in one of two ways: actual or default values. The Regulation also declares that biomass and biofuels produced in the EU in 2011 automatically meets the sustainability criteria.

3.2.17. Italy

RED has been transposed into Italian national legislation through Decree No. 28/2011. All the provisions referred to biofuels become effective on 1 January 2012. The decree sets Italy's obligatory share of biofuels in the car fuel mix at 4% for 2011 and is due to rise to 4.5% in 2012 and to 5% by 2014.

As for the sustainability criteria, Decree No. 55/2011 establishes that economical operators have to comply with a National System of sustainability certification and a Decree from 23 January 2012 establishes the national system for verification. Operators have until 31 August 2012 to prove compliance by demonstrating to the national authority (ISPRA) the possession of a sustainability conformity declaration independently verified by a certification body. So far, only three Italian biodiesel plants belonging to the companies Novaol and OXEM have obtained the 2BSvs certification, which guarantees all the sustainability criteria are fulfilled.

3.2.18. Finland

Finland has an obligation on fuels distributors to provide 20% renewable energy in final transport consumption (Act 446/2007 as amended in 2011) and biofuels/bioliquids are eligible for tax

⁴¹ http://www.mzp.cz/cz/kriteria_udrzitelnosti_ovzdusi&usg=ALkJrhVZTxfBPj06IesXLbXaWY7deAmRg

⁴² template available here (in Czech): http://www.mzp.cz/cz/kriteria_udrzitelnosti_ovzdusi

benefits (Act 1472/1994 as amended in 2011). A reference to the sustainability criteria and the verification system were introduced in both acts, but this is as an interim measure while the drafting of national legislation is under way. The EC has sent Finland a reasoned opinion⁴³ for not having transposed the RED into national legislation, which gives Finland two-months to fully transpose it (until 22 May 2012).

3.2.19. Greece

Law 3054/2002 on the "Organisation of the oil market and other provisions", which regulates tax exemptions and quota allocations for biodiesel, and Law 3423/2005 on the "Introduction to Greek Market biofuels and other renewable fuels" will be amended to transpose the sustainability requirements of RED. Greece is considering applying the CEN standard prEN 16214-1:2010 for verifying sustainable biofuels. However, the EC has sent Greece a reasoned opinion for not having transposed the RED into national legislation, which gives Greece two-months to fully transpose it (until 22 May 2012).

3.2.20. Bulgaria

The Renewable and Alternative Energy Sources and Biofuels Act (ZVAEIB) was amended in 2011 to transpose elements of the RED. An Ordinance is under preparation by the Ministry of Environment and Waters on the requirements for provision of information by economic operators and auditing for compliance with sustainability criteria.

3.2.21. Cyprus

In Cyprus biofuels are produced from imported raw material, therefore Cyprus relies on compliance with the criteria through voluntary schemes. Producers and suppliers of biofuels have to submit to the national competent authority information concerning the fulfilment of the criteria, the independent auditing and the use of a mass balance system. The competent authority assesses the documentation and approves the scheme. Cyprus will accept EU approved schemes as well as schemes approved by other Member States accompanied by the relevant proof or certificate.

3.2.22. Belgium

Biofuels policy is determined at federal level (as opposed to electricity and heat which is decided at regional level), and Belgium has used tax reductions as well as a quota system since 2006. Belgium transposed the sustainability requirements by amending the law on 'product standards to promote sustainable production and consumption patterns and to protect the environment and public health' (21 December 1998) by Royal Decree of 26 November 2011⁴⁴. The Royal Decree lays down the guidelines of a certification scheme, which includes the CEN standard prEN16214, independently verified, as one way for operators to prove compliance with the RED requirements. Companies can also use voluntary schemes as approved by the EU or Belgium. Most Belgian companies are currently operating with German certificates (ISCC, RedCert) because of their export to the German market⁴⁵.

The market introduction of biofuels is subject to the registration of all consignments of biofuels. The competent authority is responsible for analysing the certification schemes transmitted by organisations and advising the Minister on the recognition of schemes. Certification schemes that want to be recognised have to submit to the competent authority declarations of traders who engage in the various stages of mass balance and declarations of intent of the accredited inspection bodies that are responsible for verifying the information, and to show the way that controls are organised

⁴³ A reasoned opinion is issued before the EC can begin a court case against a Member State.

⁴⁴ <http://www.ejustice.just.fgov.be/cgi/api2.pl?lg=fr&pd=2011-12-07&numac=2011024352>

⁴⁵ http://www.bioenergytrade.org/downloads/t40_implsustcert_final-report_march-2012.pdf

and planned by the approved independent inspection bodies. The submission will be evaluated against the standard (pr) EN16214 by an independent inspection body. It is important to note that Belgium does not accept schemes that are based on self-declarations of suppliers, without them being subjected to verification by an accredited independent inspection body.

The biofuel producer must comply with a recognised certification scheme (national or EU recognised) and must register each consignments of biofuel with the competent authority (in Belgium there are three regions, each with its separate authority)⁴⁶. The product declarations are registered in a Web-accessible database (operational at the end of March 2012). The information in the product declaration is based on the prEN16214:

- Each product declaration is identified by a unique number
- Date of production declaration
- Identity of the biofuel producer
- Means of verification: national certification scheme, voluntary schemes, bilateral and multilateral agreements
- Quantity delivered; date of delivery; point of delivery
- Description of the product; - Biofuel type (Bioethanol FAME, etc)
- Cumulative GHG emission and calculation means (e.g. Biograce)
- A declaration by the biofuel producer certifying that the consignment fulfils the sustainability criteria
- Country of origin of the biomass
- Mention whether the biomass was produced on severely and heavily degraded grounds or whether the biofuel was produced from waste or residue etc.

Compliance with sustainability is not enforced until 2013 (no compliance for biofuels produced with feedstock harvested on 2012).

3.2.23. Lithuania

There is not much public information about Lithuania's plans to verify sustainability of biofuels. The last amendment of the Law on Biofuels, Biofuels for Transport and Bio-oils did not implement RED. According to Lithuania's National Renewable Energy Action Plan, the Ministry of Agriculture is responsible for implementing issues related to biofuels sustainability.

3.2.24. Estonia

Biofuels are exempt from excise duty since July 2005. According to the Alcohol, Tobacco and Fuel Excise Duty Act the biofuel producers and handlers must measure and keep records of the quantity of feedstocks, semi-finished products and final products (production of excise goods). These records must be complemented with data required for checking the compliance with sustainability criteria. If the records provide sufficient evidence that sustainability criteria are met, a conformity declaration proving the compliance with sustainability criteria may be issued. If a company does not apply for an excise duty exemption, an assessment of a competent independent body is needed to prove the compliance with requirements.

Estonia does not use mandatory standards for the audit quality. As the number of auditing bodies is limited, they are free to choose their procedures. Verifiers (bodies performing the audit of management systems) are subject to regular supervision and accreditation (after every five years). The procedures of the Estonian Accreditation Centre require one on-site visit every year to review the status of services and presence of competent personnel.

⁴⁶ Each competent authority that verifies the schemes must be accredited by the Belgian BELAC accreditation or equivalent and be approved by the Minister

3.2.25. Slovenia

The Excise Duty Act (OG RS, no. 02/2007) stipulates that biofuels shall not be subject to excise control and the payment of excise duties. If mixed with fossil fuels, the exemption from the payment of excise duties can be claimed up to a maximum of 5 %. The Decree on the promotion of the use of biofuels and other renewable fuels for the propulsion of motor vehicles (OG RS, no. 103/2007), requires distributors of fuels to ensure that the annual average content of marketed biofuels in all fuels is equal to at least 6 % in 2012, 6,5 % in 2013, at least 7 % in 2014 and at least 7,5 % in 2015. No information about the verification of the sustainability criteria could be found.

3.2.26. Latvia

Cabinet Regulation No.545 of 5 July 2011 on “Sustainability Criteria of Biofuels and Bioliquids, Mechanisms for their Implementation and Procedures of Supervision and Control” came into effect on 20 July 2011. The Rural Support Service (RSS) has been charged with compiling information regarding raw materials used for biofuel production and certification of their compliance with the sustainability criteria. RSS is also responsible for ensuring “cross-compliance” of agricultural actors.

The Regulation requires that biomass producer, first buyer of crops, refiners and traders register themselves with the RRS. In case of agricultural actors that are checked for cross-compliance, the RSS can issue a statement that the raw material is not obtained from land with high biodiversity value and from land with high carbon stock, and also determining the maximum volume of biomass for each biomass producer for which the statement applies.

First buyers of crops, refiners and suppliers must provide information on compliance with sustainability criteria, regarding the origin of the biomass as well as data on GHG emissions using calculated or default values. This data is entered in the RSS register. Once a year these economic operators must obtain an independent audit. It is foreseen that this system will be adapted based on the experience of implementation gained over time.

3.2.27. Poland

Poland has created a dedicated website for biofuels⁴⁷ (implemented by Quality Assurance Poland), where all information on the law as well as certification schemes (RedCert, 2BSvs and ISCC) are available. However, the sustainability requirements of the RED have not yet been transposed into national legislation, and the EC has sent Poland a reasoned opinion, which gives Poland two-months to fully transpose it (until 22 May 2012).

⁴⁷ <http://www.certyfikacja-biopaliv.pl/en/index.html>

3.3 AGREEMENTS WITH THIRD COUNTRIES

Another way that claims could be made is through agreements between the EU and third countries containing provisions on sustainability criteria that correspond to those of the RED. Such an agreement could for instance include provisions that agree on certain biofuels and bioliquids produced from raw materials in certain countries complying with the sustainability criteria in question.

So far, the United States and Brazil inquired about a bilateral agreement with the EU that would recognise U.S./Brazilian conservation and environmental protection laws as equivalent to the sustainability requirements in the RED.

The U.S. Energy Independence and Security Act (EISA) of 2007, requires that biofuels must meet certain lifecycle GHG reduction thresholds when compared to the baseline lifecycle emissions of petrol. The Renewable Fuel Standard (RFS2) of 2010 requires a 20% reduction in lifecycle GHG emissions for any renewable fuel produced at new facilities (those constructed after EISA enactment), a 50% reduction in order to be classified as biomass-based diesel or advanced biofuel, and a 60% reduction in order to be classified as cellulosic biofuel. EISA provides some limited flexibility for the Environmental Protection Agency (EPA) to adjust these GHG percentage thresholds downward by up to 10 percent under certain circumstances.⁴⁸

There are no sustainability criteria in Brazil as such. At national level, Brazil enacted agro-ecological zoning for sugarcane, including specific requirements regarding water use and atmospheric emissions. Investors who do not respect this zoning are not eligible for getting loans from public institutions. A similar system is currently developed for palm oil. The Social Biodiesel Programme in Brazil is in place to improve the welfare of farmers and reduce poverty in north-eastern Brazil. Biodiesel companies that use and buy feedstock at fair prices from smallholders and family farmers gain tax benefits from the state. There are sustainability initiatives that operate on a voluntary basis, such as Bonsucro, the INMETRO biofuel certification initiative and the Sao Paulo State Green Ethanol programme. Other private initiatives include the Biofuels Sustainability Scorecard, developed by the Inter-American Development Bank, where loans are provided only where the biofuels project meets certain environmental and social sustainability criteria, and the Verified Sustainable Ethanol Initiative by the Swedish company SEKAB which aims to certify sustainability of bioethanol from Brazil for the Swedish market.

Neither the U.S. nor Brazil can claim to have exactly the same legislative requirements as that of the RED. In fact, it would be difficult to have legislation in place that would wholly fulfil the requirements. This is because the RED is specifically dealing with one product: biofuels/ bioliquids, whereas legislation on land use, biodiversity etc, does not focus on the specific end-use of natural resources. This is why a certification scheme can better encompass all the requirements of the RED, and this is why Brazil and the U.S. did not pursue bilateral negotiations.

⁴⁸ <http://www.epa.gov/otaq/renewablefuels/420f09024.pdf>

4. BIOMASS SUSTAINABILITY SCHEMES FOR ELECTRICITY AND HEATING

4.1. EUROPEAN COMMISSION RECOMMENDATION OF 2010

The EC published a report⁴⁹ in January 2010 on the use of sustainability requirements for the use of solid biomass and biogas in electricity and heating. The objective of the report was to determine if the EU needs sustainability criteria for other types of biomass than transport biofuels (and bioliquids).

The report found that the risks of unsustainable biomass used in electricity and heating is smaller than in the transport sector, because very little biomass is imported for electricity and heating purposes (around 3% in 2009). In addition, over 80% of the biomass comes from EU forests, where the legal framework gives certain assurances for the sustainable management of forest and agriculture.

However, as sustainability standards and schemes (voluntary and mandatory) inside the EU are not necessarily complementary or compatible, the EC recommended that the same sustainability criteria are applied to all biomass (whether liquid, solid or gas) used in the energy sector (whether for transport, electricity or heating).

The recommended criteria are:

- A general prohibition on the use of biomass from land converted from forest, other high carbon stock areas and highly biodiverse areas (same as for biofuels);
- A common GHG calculation methodology which could be used to ensure that minimum GHG savings from biomass are at least 35% (rising to 50% in 2017 and 60% in 2018 for new installations) compared to the EU's fossil energy mix; (same as for biofuels)

The differences introduced are in the way that GHG emission are calculated, as illustrated below:



The first three steps are the same for the biofuels in transport chain, but the EC added the last one, because that's the most important step in terms of GHG emissions. Therefore, unlike in the case of transport biofuels, it is not the fuel that has to meet the 35% GHG savings criteria (i.e. not the pellets, wood chips etc), but the electricity/heat produced.

This being the case, the GHG methodology was adapted to take account of circumstances where both electricity and heat are generated (in combined heat and power - CHP- units). The EC proposed that emissions are allocated according to the temperature of the useful heat (exergy), so that higher temperature implies more emissions allocated to the heat relative to electricity. This facilitates the use of CHP plants, especially in an industrial context, where the co-produced electricity is not disadvantaged because of the heat delivered at high temperature (with the

⁴⁹ http://ec.europa.eu/energy/renewables/transparency_platform/doc/2010_report/com_2010_0011_3_report.pdf

unavoidable loss of overall energy efficiency).

Finally, a different fossil fuel comparator (average EU fossil electricity, heat and cooling) is used than for transport (where the comparator is petrol and diesel) to determine GHG savings: 198 g/MJ for electricity and 87 g/MJ for heat.

Default values are provided for various fuels, e.g. wood chips, pellets, charcoal, and it will be the utility converting the fuel into electricity or heat that is responsible for adding the efficiency of the plant to the GHG intensity of the fuel.

As an example, 6 g/MJ in up-stream emissions with an 80% efficient boiler for producing heat

» **6 / 0.8 = 7.5 g/MJ of heat**

The recommendation also encourages Member States to favour installations with higher energy conversion efficiency in their support schemes, and asks Member States to monitor the origin of biomass used in the energy sector.

It is also recommended not to apply sustainability criteria to wastes, as these must already fulfil environmental rules in accordance with waste legislation at national and at European level, and that the sustainability requirements should apply to larger energy producers of 1 MW thermal or 1MW electrical capacity or above.

The EC is conducting another review, due to be published in 2012, to see if its recommendations were followed by Member States, and if not, whether legally binding sustainability criteria are needed.

So far the only Member State that has introduced regulations in line with the EC's recommendations is the UK. Belgium has adopted GHG criteria for biomass but the methodology for calculating GHG savings is different from that of the EC recommendation. See more information in section 4.2.

The EC is analysing the impacts of national schemes (others include Germany and the Netherlands) on trade to and within the EU. A study carried out by a consortium led by VITO in Belgium is expected to be published at the same time as the EC's review in September 2012.

It is probable that the EC will propose to make these recommendations binding on all Member States in order to have a consistent sustainability framework throughout the EU. The criteria under consideration could follow a risk-based approach (with regard to risk of carbon/biodiversity loss), where for high-risk products additional forest management criteria could be applied. Apart from applying the criteria to installations above 1MW_e, the EC is also considering a threshold for large importers of biomass, so as to avoid leakage effects(i.e. unsustainable biomass being diverted to small users, such as domestic households in the form of pellet bags). A proposal from the EC will be debated and negotiated by Member States with the European Parliament, a process that could take 1-2 years depending on the political agenda.

4.2. NATIONAL SCHEMES

In the EU and worldwide, regulation to safeguard the sustainability of biomass has traditionally been covered through the requirement of Sustainable Forest Management (SFM) certification of woody biomass. The Forest Stewardship Council (FSC) and the Programme for Endorsement of Forest Certification (PEFC) schemes are the most widely used in Europe. States have relied on their existing agricultural and forestry regulations to address the sustainability of biomass production and harvesting, as far as domestic production is concerned. Sustainability of biomass imports has not been regulated in the past.

Energy regulation tends not to address sustainability of biomass. There are some exceptions, for instance where countries want to promote the use of local biomass in energy use with the view to create jobs and rural development opportunities or to limit certain feedstocks with the aim to protect other economic sectors relying on the same feedstocks (e.g. wood processing industry).

Some of the national regulations are presented below. The list aims to show the variety of different national approaches to sustainable biomass inside the EU.

Belgium	At national level, minimum requirements for wood pellets for use in non-industrial heating installations (requiring FSC, PEFC certified wood), and minimum efficiency and emission requirements for small-scale heating installations. At regional level, support to renewable electricity producers are based on GHG savings criteria, where the amount of Green Certificate awarded depends on the GHG savings made. In addition, electricity from biomass coming from the region of Flanders is not eligible for support, if the wood processing industry can use the feedstocks.
Germany	The Biomass Ordinance defines environmental requirements for biomass to obtain support (feed-in-tariffs) under the German Renewable Energy Act (EEG), and includes minimum efficiency requirements. The draft 2012 update of the EEG foresees higher support for feedstocks that do not compete for different uses, e.g. agricultural residues, and higher grants for forest residues from PEFC and FSC certified forests. In addition, it is proposed that the input of maize and cereal corn in biogas plants is limited to 50% of the energy content (to ensure diversity) and waste wood and liquid biofuels are no longer eligible for support.
Hungary	Support in the form of feed-in-tariffs is only given if the biomass used for electricity production comes from certified wood and for arable crops the supplier has the responsibility to prove that the biomass cannot be used for human food consumption. For waste biomass, power plants have to possess a declaration from the Environment Authority that the waste cannot be used for purposes other than fuel. Minimum efficiency requirements are also included.
Italy	The Budget Law of 2008 differentiates support in favour of local biomass obtained from less than a 70 km radius.
Netherlands	The Incentive Scheme for sustainable energy production (SDE) is an operating subsidy, for the production of renewable electricity and gas. It includes requirements on efficiency and emissions to obtain subsidies. In an update from 2012, co-firing will be excluded. The NTA8080 standard for biomass is a voluntary system and it is not clear if it will be implemented in the updated SDE+.
Poland	A draft decree on renewable electricity and heat was updated in 2011 so that roundwood is excluded from green certificates of large installations (>5MW), and only forestry residue are eligible for support, as well as a requirement for a minimum (increasing) share of agricultural biomass.
Slovenia	Two regulations, one on support for renewable electricity power plants and another on cogeneration entitle producers 10% higher referential costs if they use wood biomass from forest with FSC or PEFC certification (consequently allowing a higher subsidy).
United Kingdom	The Renewables Obligation requires electricity generators over 50kW to report annually on performance against sustainability criteria for biomass ⁵⁰ . GHG savings 60% as well as restrictions on biomass from high biodiversity and high carbon stock land. From April 2013, these criteria become mandatory for generators above 1MWe.

⁵⁰ <http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/bio-energy/5142-bioenergy-strategy-.pdf>

4.3. VOLUNTARY SCHEMES

4.3.1. Sustainable forest management schemes

The most widely used certification schemes related to biomass production, are sustainable forest management (SFM) schemes. In Europe, the most widely used are the Forest Stewardship Council (FSC)⁵¹ scheme and the Programme for the Endorsement of Forest Certification (PEFC)⁵². FSC was established in 1993 to develop forest management and chain of custody standards and it delivers certification and accreditation services to businesses and organisations in over 50 countries. PEFC is an umbrella organisation founded in 1999 and works by endorsing national forest certification schemes (around 30 have been endorsed), which can be tailored to local priorities and conditions.

SFM certification differs from biofuels/biomass certification in their fundamental approach. Whilst the biofuels/biomass certification starts from a land-use approach with a strong focus on precluding land-use change (=conversion of the forest), the SFM systems start from a management approach with a strong focus on guaranteeing sustainable forest management. The result is that biofuels/biomass schemes have strong criteria precluding conversion and typically no criteria focusing on forest management.⁵³ The SFM systems generally have only one criterion regarding conversion and have many criteria focusing on management aspects such as rights of indigenous peoples, conservation of species, maintenance of nutrients, management planning and monitoring of management activities. This is why the SFM certification schemes generally do not comply with the RED, amongst others no quantitative GHG balance is required, no prohibition of conversion of primary forest⁵⁴, and they are seen as complementary to RED.

4.3.2. Government-led biomass sustainability schemes

The **NTA8080** discussed in section 2 started off as a government-led scheme, which then adapted due to legislative developments at EU level. The **Nordic Swan Ecolabel**⁵⁵ is another government-led scheme that was established in 1989 by the Nordic Council of Ministers (Norway, Sweden, Finland and Denmark), which then later adapted certain aspects of the scheme to conform to the EU Ecolabel requirements.

The Nordic Swan has 63 product groups that have sustainability requirements and can apply for a Nordic Ecolabel licence. One of these products is the biomass pellet suitable for use in boilers and stoves for private use (the EU Eco-label has not developed criteria for biomass pellets). The Nordic Ecolabelling of pellets includes requirements on manufacturing methods, transportation and storage, protection of forests (high biodiversity values), reduction of GHG emission, increasing energy efficiency, and minimising risks to biodiversity health and the environment etc.

Purchased raw materials and pellets in production must be traceable. Each Nordic country has national offices with the responsibility for criteria development, licensing, marketing and auditing. As part of the application procedure, Nordic Ecolabelling inspects the plant at which the biofuel pellets are manufactured. This inspection covers, among other things, the relevant sections of the quality assurance process and documented procedures. In addition, documents supporting the application must be available at the manufacturer's premises. An independent third-party laboratory

⁵¹ www.fsc.org

⁵² www.pefc.org

⁵³ In the RED, there are criteria related to agricultural management (cross-compliance), but only for biomass cultivated in the EU, because there are common rules that exist for agricultural management. In the case of forest management, national rules are different even inside the EU.

⁵⁴ SFM systems have been established to provide an alternative to conventional logging practices in natural, often primary, forests, to provide the tools to manage and log the forests sustainably. That is the reason that primary forests per se are not qualified as no-go areas. In the rationale of SFM systems, giving the forest a value in terms of sustainable timber production is a strong driver for long-term conservation, sometimes even a stronger driver than fully protecting the forests, especially in countries with a weak legal framework and poor law enforcement.

⁵⁵ <http://www.nordic-ecolabel.org/>

carries out annual auditing, but the manufacturer is responsible for conducting daily inspections, checking samples from the production line for mechanical durability, fines and moisture content, dimensions, and density. An application fee is charged to companies applying for a licence. There is an additional annual fee based on the revenues produced by the pellets carrying the Nordic Ecolabel.

4.3.3. Company-led biomass sustainability schemes

Laborelec (GDF Suez-Electrabel) and SGS developed a verification system for their solid biomass (wood pellets) being used in power plants. The verification system found its origin in the fact that the three regions in Belgium demanded a verification of different criteria (energy balance, GHG balance, etc.). In this verification system a yearly energy and GHG balance is checked. Also the traceability of the primary resources and final products is to be controlled on a yearly basis. As discussed in section 2, Essent's Green Gold Label is also a company scheme, and there in addition are schemes by Drax Power in the UK⁵⁶, and Vattenfall in Sweden⁵⁷.

Laborelec initiated a working group called **'Initiative for Wood Pellets Buyers' (IWPB)**⁵⁸ in 2010, to work together with five other European power companies (Vattenfall, RWE, E.ON, Drax, Dong) which are all large purchasers of wood pellets, to have a common understanding on "what is sustainable and how it has to be verified/documentated".

They have agreed to include nine principles of sustainability, where the first three are fundamental in that they should be in line with the mandatory criteria of the RED and be verified by independent auditors⁵⁹:

Principle 1: GHG balance – 60% savings compared to fossil fuels

Principle 2: Carbon stock,

Principle 3: Biodiversity,

Principle 4: Protection of soil quality,

Principle 5: Protection of water quality,

Principle 6: Protection of air quality,

Principle 7: Competition with local food and water supply,

Principle 8: Local socio-economic performance,

Principle 9: Corporate responsibility

The last six sustainability principles are important issues that must be considered for sustainable solid woody biomass but they appear to be more difficult to verify extensively. Therefore the IWPB aims for those principles to be taken into consideration, and that a report is made by an independent body providing transparency on the way those principles are fulfilled. The IWPB expects that feedback of this report to the suppliers will allow them to improve their performance over time. It is expected that the IWPB will use an existing scheme (like GGL or ISCC) to be certified based on IWPB documentation.

5. COMPARISON OF SCHEMES

Voluntary certification schemes have different scopes, costs and levels of assurance. These differences are important elements for the selection of a system.

Issues like accreditation, sampling requirements, level of verification, stakeholder consultation,

⁵⁶ http://www.draxpower.com/biomass/sustainability_policy/

⁵⁷ The agreement of Vattenfall with the Senate of Berlin for the use of biomass as a sustainable fuel:

http://www.stadtentwicklung.berlin.de/umwelt/klimaschutz/aktiv/vereinbarung/download/vattenfall-ks_senguv.pdf

⁵⁸ <http://www.laborelec.be/ENG/initiative-wood-pellet-buyers-iwpb/>

⁵⁹ SGS, Inspectorate and Control Union are associated with the IWPB.

complaints procedures, transparency, or recognition of other EU systems, are not mentioned as requirements in the RED or are only generally defined. As a result there is a variation in between systems. The following table attempts to draw out the similarities and differences between the mainstream voluntary schemes.

Requirement / Scheme	ISCC	RSB RED	REDCert	RSPO	2BSvs	NTA8080	Bonsucro	RTRS
First certificate holder	First gathering entity	Farmers	First gathering entity	Mill	First gathering entity	Farmers	Mill	Farmers
Self-declarations	Self-declaration of farmers	No, self-assessment only which is verified by auditor	Self-declaration of farmers	For specific criteria	For specific criteria: historic land use	No, self-assessment only prior to audit	For specific criteria	No
Stakeholder consultation	Limited, only as part of an audit	Yes, even prior to audit to determine impacts	No	Yes	Limited	Yes, during audit	Yes	Extensive, prior to audit
Preliminary risk assessment	Yes, to decide audit intensity	Self-risk assessment determines audit type and interval	No	Yes	Yes, to decide if farm audit is necessary	Yes, to decide audit intensity	Recommended for complex organisations	Yes, to decide audit intensity
Sampling/group audits	No sampling or group audits for first gathering entities	Group certification through horizontal and vertical integration of operators	Lenient	Lenient as long as no land/labour disputes on grouped areas	Lenient	Strict	Not allowed, except for cane plantations supplying a mill, and for multi-site certification of operators in the supply chain after the mill	Strict sampling depends on the risk assessment
Chain of custody*	Continuous balancing method possible	Continuous balancing method required	Fixed inventory	Continuous balancing method required	Fixed inventory	Fixed inventory	Continuous balancing method possible	Continuous balancing method possible
Audit frequency	Annual audit for recertification each year	Desk audit annually, field audit depends on risk class (3-24 months interval)	Monitoring every 6 months, recertification on audit depends on size: annual for normal operators, 36/60 months for small/very small	Annual surveillance, recertification every 5 years	Annual surveillance, recertification every 5 years	Annual audit for recertification each year	Annual surveillance, recertification every 3 years	Annual surveillance, recertification every 5 years, certification body can do unannounced audits
Auditor competence	Audits in conformity with ISO 19011, and ISCC own training	Audits in conformity with ISO 19011, with some RSB training	Audits in conformity with ISO 19011, with REDCert training	Following guidance of ISO 19011, specific skills and RSPO training prescribed	ISO requirement not explicit	Audits in conformity with ISO 19011, with NT8080 training	Completion of ISO 9001/14001 lead auditor course and specific skills/Bonsucro training required	Completion of one of the following: ISO 9000, 14000, or OHSAS 18000 OR ISO 19011 course
Acceptance of other certification**	All EU recognised schemes	Schemes with similar standards	All EU recognised schemes	Schemes with similar standards	All EU recognised schemes through a multilateral agreement and gap analysis	Schemes with similar standards	Schemes with similar standards	Schemes with similar standards

* The continuous balancing method is considered more accurate than the fixed inventory period.

** Risk is that the claim of the end-user does not represent all the sustainability requirements of the system

The green shaded areas of the table represent elements of the scheme that reduce costs of the scheme, while the orange shaded cells with diagonal lines represent elements of a scheme that increases the costs of a scheme. Unshaded cells are elements of the scheme that are neutral in terms of cost comparison. The table shows that the RTRS and NT8080/8081 are the schemes containing the most elements that could increase costs. The least cost schemes are REDCert and 2BSvs. This

may help to explain why the former two schemes issued just a handful of certificates, while the latter two have issued hundreds.

The variations of the issues identified in the table also have another impact, which is the uncertainty for companies to know which certification schemes they should choose. As a result, companies rely on the reputation of the systems. Trustworthiness and market acceptance of a certification scheme is therefore as important for the market as costs and practicality.

On the issue of practicality, there seem to be some questions remaining about the implementation of the RED in different countries. The World Biofuels Market conference in March 2012 held an exchange of views on the different schemes⁶⁰. The auditors considered that the certification schemes are verifiable but have encountered problems because of the differences in the implementation at national level, the uncertainties around the definition of waste, and the GHG calculations. The main problem seemed to be the communication between the different bodies: regulators, the certification scheme and economic actors along the chain.

Of all schemes, ISCC, 2BSvs, REDcert and RSPO are the frontrunners in the number of certificates issued, mainly due to the large demand for certified biomass in Germany, France and the Netherlands (where a lot of the certified palm oil is supplied).

In conclusion, a company's most suitable certification scheme depends on the company's own strategy, costs, benefits, structure and position in the market.

5.1. COST OF CERTIFICATION

The cost of certification is generally made up of three variables: certification fees (membership, administrative and/or a quantity/size dependent fee), auditing fees and costs of internal adaptation to the certificate requirements. The first of these is easily accessible and publically available (see table in section 3.1). The auditing costs are more difficult to determine, as these will depend on commercial fees of auditors and the amount of days required for auditing a company's documents and sites. According to ISCC, Certification Bodies charge around \$800-1,000/day for auditing⁶¹.

The last of the variables is the more difficult to determine. Costs associated with the implementation of the standards depend on the conditions of the properties and on the producer's previous management practices.

SLC Agricola, one of the companies certified under RTRS claims that the main costs associated with achieving certification is the investments made to adjust the infrastructure and adoption of new management tools to fulfil legal requirements⁶². According to them, the major challenge is to make small and medium producers become involved in the certification process, because their certification costs are relatively high. Some certification schemes, such as RTRS, provide programs for supporting small and medium producers to achieve the RTRS Standard (BACP, SOYPSI). In order to stimulate smaller producers to participate in certification schemes, most of the certification schemes have adopted differentiated pricing levels or group auditing, so that smaller producers pay lower membership/certification fees.

The analysis of costs for certification includes direct and indirect costs. Complying with the sustainability requirements of a system has direct costs: certification fees and auditing costs, and indirect costs: the costs for meeting the requirements of the certification scheme. For direct costs,

⁶⁰ <http://www.agentschapnl.nl/en/content/panel-discussion-biomass-sustainability-certification-wbm-2012>

⁶¹ http://www.iscc-system.org/e1072/e2463/e2496/e2497/100908QACertificationKingsman_ger.pdf

⁶² <http://www.jhgreen.com.ar/?p=741>

the differences among the schemes are not large, but there are some differences in auditing costs, i.e. required auditing days are generally lower for 2BSvs and REDcert compared to the rest of the schemes. Indirect costs on the other hand can vary a lot, and can be significant for a company, especially in the first year of certification. There are administrative indirect costs and indirect costs related to sustainability compliance. The indirect costs are expected to be lower for schemes that require the minimum level of compliance, as required by RED, such as 2BSvs and REDcert. For schemes that require additional standards to be met, the costs are expected to be higher.

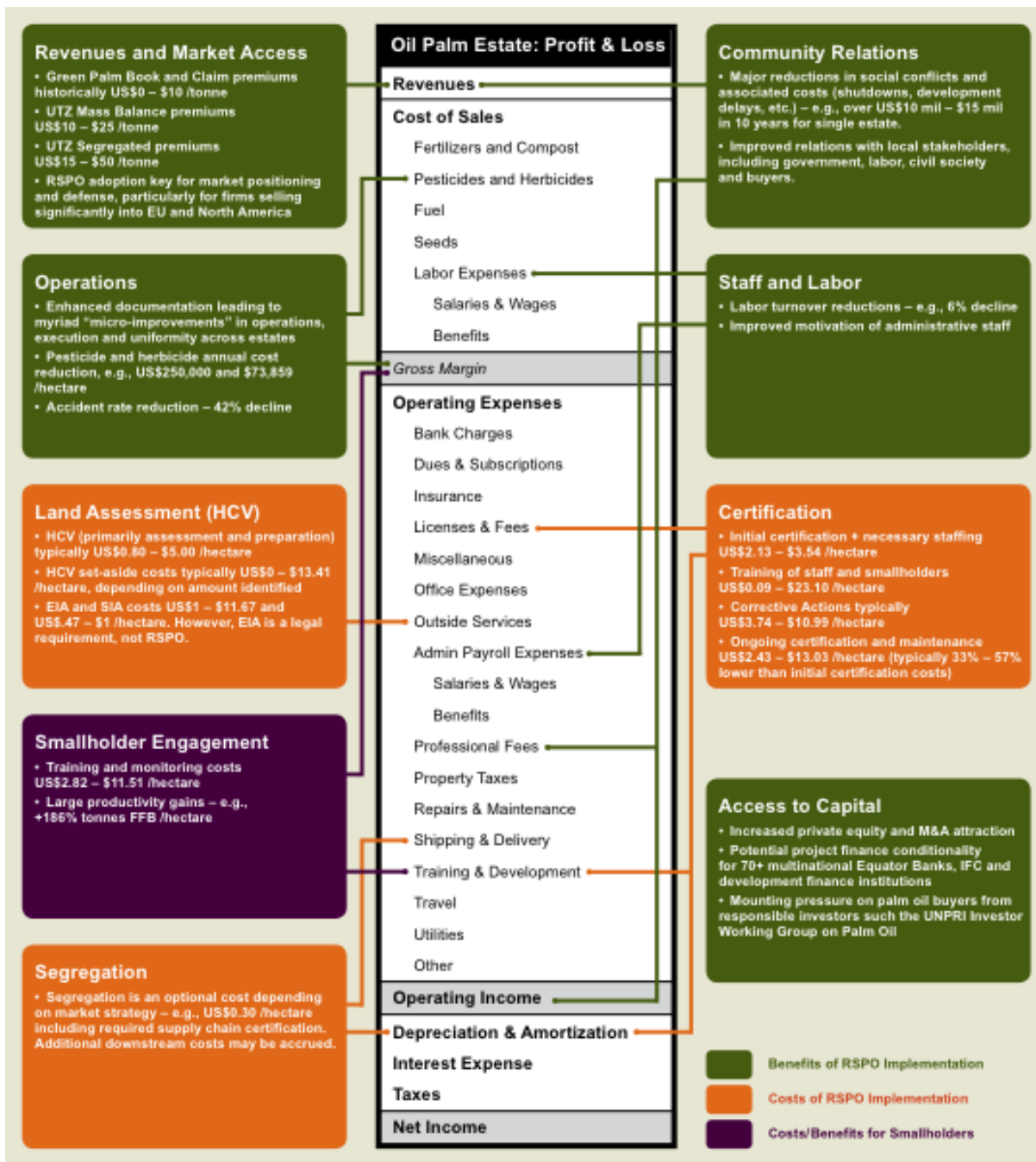
Generally, required auditing costs and indirect costs per year are highest at the start of the supply chain: at the farmer or the plantation. Indirect costs for certification will depend on the preparedness of an operator. Certification costs also depend on product volumes. Certification costs can be reduced substantially when a producer decides to handle larger product volumes or to merge his product with other product flows. Overall, certification cost seems to be relatively small in comparison to the total production cost – especially when larger volumes are handled. This does not mean that yearly (investment) costs may not be substantial for operators, especially for those with limited financial capacity.

The Jatropha Alliance carried out analysis of RSB certification costs⁶³ and found that there are significant costs before the RSB certificate is awarded. In the case of Sun Biofuels Mozambique, which planted 2600 hectares of Jatropha, employing 1500 people, significant costs included the establishment of an Environmental and Social Management Plan (ESMP), (~\$12,000), the implementation of a health and safety package (~\$41,000, the application and licensing fee (~\$36,000), conducting an Environmental and Social Impact Assessment for new land (~\$50,000), a baseline study for existing land (~\$95,000), and investments in environmental health and safety to comply with standards (~\$598,500). These costs have to be weighed against the benefits of the promise of new lucrative markets and potential internal benefits in a company, such as improved efficiency at farm/company level.

The figure below shows analysis of the World Wildlife Fund (WWF) of the costs and benefits of RSPO certification, acknowledging that while the price premiums of certified sustainable palm oil were not as high as expected, the larger financial gain often turned out to be resulting improvements in operations, documentation systems, labour relations, and other internal efficiency factors.⁶⁴

⁶³ http://www.agentschapnl.nl/sites/default/files/bijlagen/Jatropha_Alliance_Final%20Report_Roadmap_RSB_Certification_19July2011.pdf

⁶⁴ http://awsassets.panda.org/downloads/profitability_and_sustainability_in_palm_oil_production_update.pdf



6. SCENARIOS

The objective of this report is to formulate recommendations on what type of sustainability scheme Ukraine should implement. It is important to highlight that sustainability requirements are meaningful when there are strong incentives for using biomass sustainably e.g. renewable energy targets, or penalties for unsustainable practices e.g. fines.

Four scenarios are considered:

- 1) Adoption of **EU rules** on sustainable transport biofuels and bioliquids, and a national verification system to ensure biofuels consumed in Ukraine are sustainable. Standards could later be developed for all biomass once the EU takes a decision on EU-wide sustainability criteria for biomass used in electricity and heating.
- 2) Adoption of **national sustainability standards** (criteria) specific to Ukraine (whether for biofuels, biomass or both), to deal with country-specific sustainability concerns and a national verification system.
- 3) Ukraine to design its own **voluntary certification** scheme to fulfil requirements of EU market entry, while accounting for Ukraine's specific needs e.g. industry structure.
- 4) Encourage Ukrainian companies to join existing voluntary schemes, develop their own schemes, or find alternate ways of complying with international standards.

Scenarios 1 and 2:

These two scenarios are pertinent if the objective is to **ensure biofuels/biomass consumed domestically in the Ukraine are sustainable**. The two scenarios are essentially the same in terms of implementation, but with scenario 2, Ukraine might decide to also deal with country-specific issues not dealt with by the RED.

Under both scenarios, Ukraine would transpose all elements of the RED into Ukrainian legislation. This is because it is expected that all elements of the RED will be included in the Energy Community Treaty⁶⁵. The Permanent High Level Group (PHLG) of the Energy Community agreed on 21 June 2012 (attended by Ukraine's Ministry of Fuel and Energy) to send a proposal for the adoption of RED to the Ministerial Council of the Energy Community, to take place on 20 October 2012. Ukraine stated at the PHLG that it will carefully study the inclusion of RED and will submit its position in mid-July 2012. If the Ministerial Council agrees to the proposal to include RED in the acquis of the Energy Community Treaty, Ukraine would have to comply with all elements by 2014⁶⁶.

To transpose RED into national legislation, Ukraine would need to do the following:

- Legislate for a **binding national target** for renewable energy in final consumption⁶⁷ and sectoral targets for renewable energy in transport, heating and cooling and electricity,
- **Transpose sustainability criteria** into national legislation and develop rules for a national verification system to check that companies respect the criteria.
- Set **incentives** for meeting targets and for respecting the sustainability criteria for biofuels/bioliquids.
- Agree on a **national verification system** to check that biofuels that are claimed to be

⁶⁵ If the RED is included in the Energy Community Treaty, Ukraine would have to transpose the Directive and would be treated like any EU Member State. This scenario will look at the case where the RED is not included in the Treaty.

⁶⁶ Subject to the agreement of the Ministerial Council

⁶⁷ Likely to be between 11-12%

sustainable are in fact sustainable. As discussed in this report, this can be verified through certification schemes or through checks by the authorities of documentation (e.g. of audits) provided by companies. It is recommended to allow various different certification schemes to be used as proof as well as to allow companies to prove compliance with the criteria through other means, such as an independent audit, without certification.

The above actions relate only to biofuels/bioliquids sustainability, but under the RED, Ukraine will have various other obligations to fulfil. First, Ukraine would have to prepare a National Renewable Energy Action Plan (NREAP). The EC provided a template for Member States to prepare NREAPs⁶⁸. This template is useful in providing an overview of the issues to be tackled when implementing the RED at national level. On biofuel/bioliquids sustainability, States have to answer the following questions:

- How will the sustainability criteria for biofuels and bioliquids be implemented at national level? (Is there legislation planned for implementation? What will be the institutional setup?)
- How will it be ensured that biofuels and bioliquids that are counted towards the national renewable target, towards national renewable energy obligations and/or are eligible for financial support comply with the sustainability criteria set down in the RED? (Will there be a national institution/body responsible for monitoring/verifying compliance with the criteria?)
- If a national authority/body will monitor the fulfillment of the criteria, does such a national authority/body already exist or planned to be established?
- Please provide information on the existence of national law on land-zoning and national land register for verifying compliance with the land-use criteria of the RED. How can economic operators access this information? (Please provide information on the existence of rules and distinction between different land statuses, like biodiversity area, protected area etc; and on the competent national authority that will monitor the land register and changes in land status.)
- As far as protected areas are concerned, please provide information under which national, European or international protection regime they are classified.
- What is the procedure for changing the status of land? Who monitors and reports at national level on land status change? How often is the land zoning register updated (monthly, annually, bi-annually, etc.)?
- Does Ukraine intend to help develop voluntary 'certification' scheme(s) for biofuel and bioliquid sustainability as described in the second subparagraph of Article 18(4) of RED.? If so, how?

It is also important to consider that the PHLG also agreed to include in the Energy Community Treaty any new EU legislation on sustainability of solid and gaseous biomass used in electricity and heating. This would mean that sustainability criteria for all biomass, whether used for transport, heating or electricity, would need to be included in national legislation at a later date.

As it is not clear yet what the EC proposal for solid and gaseous biomass will contain, Ukraine should consider whether it is appropriate to develop a national legal framework for biofuels/biomass sustainability at this time. Unless there are specific issues to be tackled in Ukraine (scenario 2), it is recommended to wait and see what the Energy Community decides on including RED and what the EU decides on biomass sustainability.

Scenario 3 and 4:

These scenarios are recommended if the objective is to **facilitate imports of sustainable**

⁶⁸ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:182:0033:0062:EN:PDF>

biofuels/biomass to the EU. Scenarios 3 and 4 can coexist with scenarios 1 and 2, as a national sustainability scheme does not preclude having a national certification scheme. However, any certification scheme has to decide which standards and criteria to adhere to, be it EU criteria, national Ukrainian criteria or something else. It is therefore important to reflect on the objective of certification schemes.

Certification is the process of verifying that a product, process or service adheres to a given set of standards or criteria. A scheme has to:

1. Define the problem
2. Set the goal/objective
3. Design a standard/criteria to achieve the goal
4. Put in place a verification process to ensure the standards are met.

Existing biofuels certification schemes have responded to specific global issues: global warming, deforestation, poverty etc. Many schemes were developed in response to the EU RED criteria. The EU defined the problem (global warming), set the goal (reduction of GHGs and of deforestation), and designed the standard (RED criteria). Some schemes have added additional standards (e.g. social and environmental criteria to solve the problems of poverty or local pollution), to respond to specific issues raised by stakeholders.

In most instances, certification schemes that were developed before the RED criteria, adapted to include the RED criteria. For instance, the Dutch NTA8080 standard was developed on the initiative of the Dutch government to ensure the sustainability of the significant imports of biomass for the production of electricity, but the standard was later adapted to be in line with EU requirements. Red Tractor was developed with the aim of certification of agricultural products for the food industry in the UK, and later adapted to comply with EU standards for biofuels.

If Ukraine is to develop its own certification scheme, it may decide to use the standards and criteria set by the EU, or to design its own standards and criteria to solve specific problems.

All certification schemes currently used are **voluntary private schemes**, not enforced by state authorities. The EU approved eight schemes and may approve new ones, but companies are not forced to use these schemes, they are all voluntary.

Under scenario 3, if Ukraine is to design its own certification scheme for biofuels/ biomass, the following elements should be adhered to:

1. Credibility – When setting standards/criteria (if different from EU standards/criteria), the best available scientific knowledge should be used (including calculation methods, measurements, verification tools).
2. Multi-stakeholder approach – Standards and certification should be closely agreed with stakeholders: industry, agricultural producers, foresters, civil society actors, environmental bodies, traders etc. to ensure the scheme is credible and attainable, i.e. achievable by the companies that have to be certified.
3. Good governance – Transparent membership rules, appointments of key roles, responsibilities, code of conduct, fees etc.
4. Viability - Any new certification scheme should adhere to the principles set by the EU or other important markets, to ensure that the scheme is approved for use in such markets. It is only then that companies will choose to use the scheme. It is important therefore to ensure that economic operators have an auditable documentation management system, retrospective auditing for a sample of certified actors, that auditors approved under the scheme are independent, free from conflict of interest and competent, and that accreditation of certification bodies is done by a national accreditation body affiliated to the IAF or a full

or ‘associate’ member of ISEAL; or has a ‘Commitment to comply’ with ISO 17011: 2004 etc.

Advantages and disadvantages of a national certification schemes:

Advantage	Disadvantage
EU approval of a national scheme can help all economic actors within that country gain automatic acceptance in all 27 Member States.	No guarantee that EU will approve scheme
Can take account of national interests/economic structure, e.g. with a view to limit the costs of certification	No guarantee that economic actors will use scheme
Can set standards that respond to specific problems not identified by other schemes/or by EU or that respond to needs of other markets	Incurs extra time and costs on government and stakeholders in organising stakeholder meetings: can take months/years to design scheme and get approval
	Uncertainty due to potential changes to EU/ national legislation, requiring adaptation of the scheme

It is important to consider the time and cost for designing a voluntary scheme, when there already exist schemes that cater for the industry’s needs. It is therefore imperative to consider whether it is in Ukrainian companies’ interest to develop a national scheme. What benefits would a national scheme provide over existing schemes?

Ukraine should therefore take the following steps:

1. Identify the sustainability problems/issues. Are they the same for Ukraine as for EU? Are there other issues?
2. Consult stakeholders about the problem and involve them in the decision whether a national scheme is required. It should be considered which markets are important for Ukrainian stakeholders and whether the existing certification schemes cover sufficiently their needs.
3. Work together with all stakeholders to design a credible scheme, ideally coordinated by an independent body, and assisted by a certification body who would be willing to provide certification services for the scheme.

It is recommended NOT to:

- Make the certification scheme binding on economic actors; this will limit companies from joining schemes that are better suited to their needs.
- Set standards which are contradicting EU standards, as the EU will not approve the scheme.

Ukraine might consider that it might be simpler for companies to join existing certification schemes already approved by the EU. Designing a new voluntary scheme does not mean automatic recognition by the EU, and can also take time and resources. Under scenario 4, Ukraine could help companies join existing schemes, such as by providing information about the schemes to companies, holding workshops to explain the schemes, or by contributing financially or through giving resources to help with applications to the schemes and with the auditing requirements. Some schemes have funds available to help companies join the schemes; Ukraine could play a role in tapping into these funds for its companies.

7. CONCLUSION

The EU is still in the process of refining the transport biofuels sustainability scheme, with potentially extending the legal framework to solid and gaseous biomass in electricity and heating. There are several certification schemes that are approved as complying with the EU scheme. EU Member States are in the process of defining their verification systems to ensure that the biofuels that are claimed to be sustainable meet the EU sustainability criteria, with a lot of variation in the procedure for verification.

At the same time, Ukraine is negotiating within the Energy Community on the inclusion of RED in the Energy Community Treaty; which would mean Ukraine would be obliged to transpose the legal requirements of the sustainability scheme in national legislation.

The four scenarios in this report are different options for Ukraine to consider. The recommendations of this report are as follows:

1. Avoid Scenarios 1 and 2 in the short term: bearing in mind the developments at EU level and at the Energy Community, the recommendation for the short term is for Ukraine to avoid setting legal requirements on sustainability (whether on biofuels or biomass) until it is clear what the legal framework will be at EU/Energy Community level.

2. Carefully study the need for a national certification scheme before implementing Scenario 3: the recommendation is to organise a stakeholder meeting first to identify that there is a need for a national certification scheme, as it may be that economic actors are satisfied with the already available certification options. If a need is identified for a Ukrainian scheme, then Ukraine should work closely with all stakeholders as well as certification experts to prepare a draft scheme to be tested in a pilot phase. It is important that the certification scheme would fulfil all the sustainability criteria of the RED, as well as certification standards recommended by the EC.

3. Consider Scenario 4, to supporting Ukrainian companies to comply with RED: there is a lot of confusion among companies about the different certification schemes as well as verification system requirements of EU Member States. Workshops, information material, or financial aid to help meet certification costs could help companies immensely in this time of uncertainty.