sustainable quality | consult

SQ CONSULT B.V. IS PART OF THE SUSTAINABLE QUALITY GROUP

Accessibility and traceability in sustainable biofuel supply chains

- Final Report –

ORIGINAL

Prepared by
Jinke van Dam, Jinke van Dam Consulting
Sergio Ugarte, SQ Consult B.V.

Date: 15 May 2020

Registered under project number S/2019/USE/0041

Table of contents

Executive Summary

This report assigned by the Platform *Duurzame Biobrandstoffen* provides with recommendations addressed to policy makers, certification schemes, and in particular to companies in the Dutch biofuels sector to increase transparency and improve traceability of sustainability information and access to such information, especially for high risk supply chains.

Sustainability information is transferred along the different steps in biofuel supply chains. This information needs to be complete, correct and accessible. When this is not the case, concerns over sustainability risks grow. Sustainability risks may potentially materialise and provoke harmful stakeholder reactions. But even when such risks do not materialise, just the perception of risk can result in reputation damage and lead to other consequences. The interviews in this assignment have led to the identification of three major risks:

- Non-compliant feedstock/residue at origin
- Information altered at gathering/collection point
- Unclear Chain of Custody management

The summary table at the end of this Executive Summary gives an overview of identified risks, the supply chains they affect and the existing tools and approaches in the biofuel and other sectors to mitigate them.

In addition to these solutions, an EU-wide common traceability database has considered by interviewees as the transversal connecting solution for tightening the traceability of biofuel supply chains and improving transparency. A common EU-wide database aims to improve the management of the chain and helps economic agents to build their own market record by registering correct and complete sustainability information of the products they produce and trade. This database also turns into a source of information and tool to support auditors' work. Such needed connecting solution has been already foreseen independently by EU regulation and by sector organisations with broad European representativeness. Article 28 of the RED II establishes a Union database foreseen to be implemented not earlier than the second half of 2021. The need of a common database to tighten traceability has also been taken up seriously by the European biofuels sector currently working on developing and setting up an interim database that would operate until the European database is finally available. This report presents an overview of issues that should be discussed in-depth and agreed by promoters and users of the database during the its inception and development process. These issues include:

- Which type of data will be included in the database (from what supply chains and from where to where in the supply chain);
- Levels of access rights: which users get access and insight to which type of data; and,
- Levels of security and privacy requirements.

Finally, the report presents further recommendations stemming from the interviews and the workshop carried out during this assignment. There is no one single pathway towards increasing transparency and traceability, but multiple combinable options that can be implemented by EU and national regulation, certification schemes and by the European and Dutch biofuels sectors.

Recommendations at regulatory level

- **Monitoring and supervision of voluntary schemes:** The upcoming Implementing Act for voluntary schemes (2020/2021) gives the possibility to introduce measures for an EC driven (independent) supervision of voluntary schemes and their processes. To ensure a minimum quality on auditing and procedures, this could include a requirement on accreditation of certification bodies (e.g. through ISO 17001). Good monitoring practices through guidance notes from the European Commission could also contribute to a more efficient functioning of certification schemes.
- **Monitoring and supervision of certification and auditors with office / HQ in Europe:** The RED II recognises the need for stricter supervision of certification processes by Member States, and introduces the possibility of stricter supervision of auditors. These are processes that can be strengthened by Dutch regulation. For improving supervision of auditors operating outside the Netherlands, it is recommended to follow as first step the example set by Germany with its witness audits, and include within the scope of Dutch inspections the activities of those certification bodies headquartered in the Netherlands. An important condition is that inspection bodies have means and resources to act when discrepancies are found. Also, it is important to plead for harmonisation on European level to ensure a level playing field of supervision, to prevent shopping between certifiers.
- **Monitoring and supervision of certification and auditors with office / HQ outside Europe:** How to improve supervision of auditors operating outside Europe represents a complexity. The Netherlands has linked double counting with the Dutch verification protocol, which allows verifiers to do on-site inspections anywhere in the world, also allowing for supervision of auditors and their certification bodies with a headquarters outside Europe. Using this attribution provides the NEa an additional opportunity for monitoring double-counted biofuels.
- **Harmonising the interpretation of definitions and terminology:** Doing this at European level would avoid variation in interpretation in by the various member states, certification bodies and companies. This will also help the process of implementing the Union database, which will be linked with national databases and will require standardisation of data, a common format in reporting and harmonisation between registries.

Recommendations to certification schemes

- **Implementation of a Standard of Transparency:** Higher demands in assurance may lead to more audit work and larger certification costs. Certification schemes can implement the recommendations proposed by the Standard of Transparency developed by EWABA, and preferably together agree on what common actions and improvements they can make to ensure consistency and robustness to maintain a level playing field. This pleads for a strategy where the European Commission sets the standard and required improvements for certification schemes. These required improvements can be included in the upcoming Implementing Act for voluntary schemes (2020/2021) and form part of the (re) recognition of certification schemes that is yet to take place.
- **Increase sampling and auditing for higher risk supply chains:** In particular adjust the threshold for sampling points of origin in UCO supply chains, and increase intermediate surveillance audits 3 months after first certification of UCO collecting points.

- **Improve quality and role of auditors:** Certifications could allocate greater resources to policing, complaint-handling and follow-up in response to whistleblowing procedures. A broader role for auditors, not only focused on a check of the procedures of the certification standards, but based on truth finding for very specific cases could also be explored.
- **Increase cooperation and information exchange between certification schemes:** Increase of information exchange could for example prevent that companies whose certificate is withdrawn are allowed to apply for new certificates under other schemes or under different company names.
- **Support the development of an EU-wide common database to tighten traceability:** The wide uptake of one common traceability database will require, amongst others, its recognition and promotion by all certification schemes. This pleads for a pro-active role in its development to ensure that auditors are ready and capable to use it.

Recommendations to the Dutch sector

- **Identify and source from responsible hubs:** One of the most important and effective measures that the Dutch biofuel sector can implement entirely by itself is to promote responsible purchasing in the market. This is easily done by sourcing feedstock, UCO, wood residues and biofuels from suppliers with a proven track record of responsibility and sustainability, using best certification schemes and available tools that provide additional sustainability information to buyers.
- **Choose "best in class" certification schemes:** The Dutch biofuels sector can recommend companies operating in the Netherlands a "minimum" standard for responsible sourcing / production of biofuels, which lays down the minimum accepted level of quality, transparency and requirements for certification schemes.
- **Adoption and further development of tests:** For some specific supply chains and contexts, such as biofuels produced from UCO, it is worthwhile that the sector supports the development and adoption of reliable physical tests to proof the feedstock has not been altered.
- **Set a clear position about the development and use of the traceability database:** It is strongly recommended that the Dutch biofuels sector develops and adopts a clear position regarding a common EU-wide traceability database. The Dutch biofuels sector could support the broader European biofuel sector in taking the frontrunning role and start using a single interim database, and sharing practical experiences with the rest of Europe.
- **Finding common ground on acceptable level of risk**: The sector can take a leading role in the ongoing debate between stakeholders to better understand and clarify concerns of risks, and coming to an agreement on acceptable risk level to mitigate these. This requires also a better understanding in how far certain risks are indeed materialised, and which parameters are most sensitive for possible deviation.
- **Promote public accountability and transparency:** The Netherlands is one of the few European countries that publishes an annual report. The Dutch biofuels sector can promote the added value of such an annual report to other biofuel producing countries, and continue its work to communicate to the public in an understandable way about what the sector is doing, what the main feedstock are and where the sustainability risks and benefits lie.

Summary Table: Overview of identified risks and existing tools and approaches to mitigate them

Risk	Supply chain affected	Level of concern	Possible solution	Available examples
Non-compliant feedstock or residue at origin	Land-based feedstock supply chains	Relatively small concern of feedstock not complying with biomass criteria. Higher when smallholders are involved.	Tools using satellite imaging to improve accessibility and completeness of land-use based information.	GRAS tool. RSPO Fire monitoring. Fashion sector: Sourcing from sustainable hubs. Food sector: Regular Due Diligence.
		Medium concern. Land-use based sustainability risks (ILUC) associated.	ILUC Directive as regulatory response, but not certain if concern for its implementation are valid. Tools using satellite imaging.	GRAS tool.
	UCO supply chain	Medium concern of UCO alteration at origin. Concern is smaller for UCO at points of origin delivering small amounts (less incentive for fraud).	Tools and approaches to better assess compliance at origin.	RUCO: Registry of Points of Origin in India. Fashion sector: Sourcing from sustainable hubs. Food sector: Regular Due Diligence.
	Lignocellulosic advanced biofuels	Currently small concern for modification of virgin forest material into sawdust and mixed with residues at origin. Concern will increase when uptake of volume grows.	Tools and approaches to better assess compliance at origin.	NEPcon sourcing hub. Fashion sector: Sourcing from sustainable hubs.
Information altered at collection / gathering point	Waste and residues UCO supply chain	Medium to large concern of wrongfully labelling UCO.	Stringent information verification and audits. Some certification schemes (as ISCC) has adapted its audit requirements.	EWABA standard of transparency. Adoption and further development of tests. Fashion sector: Sourcing from sustainable hubs.

Risk	Supply chain affected	Level of concern	Possible solution	Available examples
				Various sectors: Setting standards for good practices.
	Lignocellulosic advanced biofuels	Currently small concern of wrongfully labelling of lignocellulosic waste for energy. Concern will increase when uptake of volume grows.	Stringent information verification and audits.	EWABA standard of transparency. Various sectors: Setting standards for good practices.
Unclear Chain of Custody management	Land-based feedstock supply chains. Biodiesel (UCO) supply chain.	Large concern for volumes sold wrongly designated as sustainable.	Improving the overall quality of supply chain management. Harmonising definitions and terminologies.	Standard Business Reporting (SBR). Alignment of data structuring and interpretation (IDDS). TRASE.
		Large concern for materials and documents duplication and fraud (selling certified batch twice, f. ex. to 2 different countries).	Improving the overall quality of supply chain management.	Fashion sector: Sourcing from sustainable hubs.
	Advance biofuels and complex supply chains	Medium concern for incorrect mass balance and allocation. Expected more complexity in allocation rules due to trade of blends, multiple outputs, and new fuels with complex proof of bio-origin.	Improving the overall quality of supply chain management. Harmonising definitions and terminologies.	Standard Business Reporting (SBR). Alignment of data structuring and interpretation (IDDS). TRASE.

1 » Introduction

The recast of the Renewable Energy Directive 2018/2001 (RED II) has established a binding renewable energy target for the EU for 2030 of at least 32%[1]. Member States, including the Netherlands, have to make efforts for increasing their share of renewable energy in transport. Eligible biofuels towards these targets must be produced in compliance with sustainability criteria for biofuels and bioliquids, as established in the RED II[2]. The revised Renewable Energy Directive also addresses the negative direct impact that the production of biofuels may have due to indirect land use change (ILUC) through the ILUC Delegated Act[3] (NEA, 2018).

The Netherlands has transposed the European obligations related to the sustainability of biofuels in the "Wet Milieubeheer" (Environment Act). Accordingly, the annual obligation of a company in the Netherlands needs to be fulfilled in the 'Register of Energy for Transport' (REV) from the Dutch Emissions Authority (NEa), (NEA, 2018). Companies that deliver renewable energy to the Dutch transport sector can claim the deliveries in their account in the 'REV' registry. They will receive renewable energy units, so-called "HEB's" for this. They can also trade their HBEs with companies that are subject to an obligation for Energy for Transport, or use them for their own obligation[4]. Additional information about the sustainability of the biofuel and its feedstock must also be provided and stated in the Proof of Sustainability (PoS), (NEA, 2018).

Companies may only book liquid and gaseous biofuels in the REV database when certified by a sustainability scheme recognised by the European Commission (NEA, 2018). The EC recognises voluntary schemes that can be used to demonstrate compliance with the sustainability criteria for biofuels as defined under the RED[5] (EC, 2020).

Following the RED, the Dutch Regulation strongly encourages the use of waste streams and residues for biofuel production[6], promotes advanced biofuels and allows for double counting of the energy content of waste-based biofuels (subject to conditions) (NEA, 2018). Companies that want to claim a biofuel as double-counting in the Netherlands must have a double-counting certificate, proving that double counting requirements have been confirmed by an independent verifier.

[1] with a clause for a possible upwards revision by 2023

[2] Also referring here to the original renewable energy directive (2009/28/EC)

[3] To address this risk of indirect land use change (ILUC), the recast Renewable Energy Directive has set limits on high ILUC-risk biofuels, bioliquids and biomass fuels through the ILUC Delegated Act, which aims to limit the use of conventional biofuels (produced from crops) and to stimulate the use of advanced biofuels. The ILUC Delegated Act requires an additional reporting on emissions due to ILUC by the Member States (NEa, 2018).
The Dutch Law has been amended in 2018 because of the implementation of two European Directives; the so-called ILUC Directive and the Implementation Directive for the Fuel Quality Directive.

[4] An important requirement is that the amount of liquid biofuel booked must be demonstrably 'released for consumption' for transport in the Netherlands

[5] The EC also recognises national biofuel sustainability schemes. For example: the Austrian Agricultural Certification Scheme.

[6] According to Dutch Law, companies that supply fuels to transport in the Netherlands are obliged to use an annually increasing share of renewable energy: from 8.5% in 2018 to 16.4% in 2020. This annual obligation is subdivided into a sub-objective for (i) the use of advanced biofuels and (ii) a limit on the use of conventional biofuels. In addition to the annual obligation, companies that supply fuels to transport must also ensure that the GHG emissions of their fuels are reduced by 6% in 2020 compared to the baseline value for 2010 (NEa, 2018)

1.1 The Platform's mission

This report was assigned by the Platform *Duurzame Biobrandstoffen* to make recommendations and gain understanding on the options the Dutch biofuels sector has to increase and improve transparency and traceability of sustainability information in biofuel supply chains.

The Platform's mission is to support organisations and companies in the Netherlands to increase the production and use of sustainable biofuels and stimulate the transition towards a biobased and circular economy in the Netherlands. Members of the Platform *Duurzame Biobrandstoffen* are firmly committed to bring sustainable biofuels with larger GHG reduction potential to the Dutch market. The Platform has the ambition to help its members accelerate the transition to a biobased and circular economy and supports the sector's efforts to grow a cost-effective advanced biofuels industry in the Netherlands. This support concerns, among others, efforts towards finding desired sustainable raw materials for the Dutch context, realising biorefinery conversion facilities in the Netherlands, promoting efficient conversion techniques, in particular those suitable to waste and residual flows, and ensuring sustainability and transparency in the chain.

Adequately managing and monitoring the transfer of sustainability information is a well-known strategy to mitigate the likelihood of sustainability risks and their possible consequences in the supply chain (Hajmohammad, 2014). When information in the supply chain is complete and accessible, the **trustfulness** of sustainability performance of supply chain processes is improved because:

- Performance and processes are transparent, which makes actors in the supply chain accountable;
- Adequate monitoring allows actors to act when information in the supply chain is incorrect and/or (potentially) leading to a sustainability risk.
- Adequate and transparent monitoring also gives actors in the supply chain insight in the opportunities and benefits that may arise because of changing social or environmental factors (WBCSD, 2016).

This report takes a closer look on how sustainability information is transferred through supply chains, what risks are perceived in this process, how upstream and downstream information can be accessed and checked and how companies are held accountable. After identifying the problems preventing or slowing down the improvement of transparency and traceability, the report analyses how those concerns are, and can be, addressed by regulation, by certification schemes and by the sector itself.

1.2 Objective and approach

The overall purpose of this assignment by the Platform was to contribute to an informed debate within the Dutch biofuels sector to come up with a set of recommended actions and initiatives that policy makers, certification schemes, and in particular companies can implement to increase transparency, and improve traceability of sustainability information and access to such information, especially for high risk supply chains.

This project has been carried out by consultants Jinke van Dam and Sergio Ugarte working under the supervision of the Platform management and under the guidance of an especially designated Experts Steering Committee.

The Platform management was represented by:

- Loes Knotter
- Eric van den Heuvel

The Steering Committee was composed by:

- Barend van Kooten (Den Hartog BV)
- Dorette Corbey
- Henk Wolthaus (VARO Energy)
- Jaap Bousema – NEA
- Marco Ubeda (Ministry of Infrastructure and Water Management)
- Paul Sinnige (RVO)

The inception of the assignment, project expectations and project timeline were discussed during a kick-off meeting in the month of January 2020. As result, the supply chains of most interest were agreed, and a preliminary list of sustainability concerns and potential risks was identified. Several other issues such as how the information is organised in different biofuel supply chains and the needs of information by the consumers, companies and authorities were discussed. Examples from good practices in supply chains from other sectors, such as in the food chain and fashion sector, were also identified and discussed.

Input information for elaborating this report was sourced from desk-top research and further complemented with a number of in-depth interviews with a selection of key sector experts:

- Angel Alvarez Alberdi - EWABA
- Carla Chidichimo - Sustainability consultant in the fashion sector
- Dickon Posnett - Director of Corporate Affairs at Argent
- Eddy Hesselink - MVO
- Frank Bergmans – MVO
- Jaap Bousema – NEA
- Johan den Hartog - GMP+ Feed Safety Standard
- Marco Ubeda (Ministry of Infrastructure and Water Management)
- Märiel Rouschop - Team leader for sustainability team at Argent
- Nicole Engel - NEA
- Patrick Lynch – Bioledger
- Sascha Wüstenhöfer - ISCC

The analysis of all collected information was used by the consultants to explore pathways that could lead to specific recommendations. Findings about sustainability concerns, risks perceived, implemented solutions, consequences of failure and improved mechanisms for increasing transparency, tightening traceability and

organising information sharing were discussed with key stakeholders on March 11th 2020, during a workshop organised by the Platform *Duurzame Biobrandstoffen* in the city of Amsterdam. Specific issues around competition, public scrutiny and governance and costs for sector's solution were raised and further discussed during this Workshop.

This report integrates all findings, analysis, conclusions and further suggestions of the consultancy team, experts interviewed and stakeholders participating in the Workshop.

1.3 Readership

This report consists of five chapters plus annexes:

- This chapter 1 introducing the work done under the project and describes the approach followed in this assignment.
- Chapter 2 defines the problem at stake, identifying concerns and risks perceived for the biofuel supply chains of interest. It also presents the current governance in place to mitigate those concerns.
- Chapter 3 discusses how identified concerns are addressed. In particular, it discusses solutions for the improvement of transparency at origin of materials and waste, improvement of certification processes, the harmonisation of definitions and standardisation of data, and tightening of traceability among others.
- Chapter 4 analyses options for a common database as transversal connecting solution. This chapter discusses issues such as accessibility and use of data, security of data and issues around the ownership and governance of a database.
- Finally, chapter 5 recommends pathways that different stakeholder groups, including the Dutch biofuels sector, can follow towards improved accessibility and traceability in biofuel supply chains.

2 » Problem definition

Sustainability information is transferred along the different steps in biofuel supply chains. This information needs to be complete, correct and accessible. When this is not the case, concerns over sustainability risks grow. Sustainability risks (see also box 1) may potentially materialise and provoke harmful stakeholder reactions. But even when such risks do not materialise, just the perception of risk can result in reputation damage and lead to other consequences.

In general, a larger concern over risks exists on biofuel supply chains that have some of the following characteristics ([8], 2020):

- They show a high level of complexity, for example in terms of rules and regulation they need to comply with, or in terms of complexity of the supply chain itself.
- They are long (international) chains with multiple interactions and trade through multiple countries.
- They receive important incentives: for example, the feedstock is subject for double counting and/or can be used for the sub-target set for "Advanced biofuels".
- They have a potential for modification (which cannot easily be checked).

Box 1: Defining sustainability risk

(Hajmohammad, 2014) defines 'supplier sustainability risk[7]' as a sustainability related condition or a potentially occurring event, located within a buyer's supply base and value chain. It may provoke harmful stakeholder reactions[8] that can result in damage of the buyer's reputation, cancellation of orders, etc. It is important to emphasize that a potential event[9] implies that buyers in the supply chain do not react to the realisation of an event, but to the possibility of having the event concretized (Hajmohammad, 2014). This also includes a certain risk perception: the subjective judgment that people make about the characteristics and severity of risk (WBCSD, 2016). How to act upon potential sustainability risks that companies face depends not only on the probability and potential impacts when those risks materialise, but also on other factors such as the size and visibility of the company, the location of the supply base or the salience of concerned stakeholders and their sector (Hajmohammad, 2014).

The interviews in this assignment have led to the identification of three major risks:

- Non-compliant feedstock/residue at origin
- Alteration of information at gathering/collection point
- Unclear or non-compliant Chain of Custody management

[7] WBCSD (2016) defines a sustainability risk as: an uncertain social or environmental event or condition that, if it occurs, can cause a significant negative impact on a company. It also includes the opportunities that may be available
to an organisation because of changing social or environmental factors (WBCSD, 2016).

[8] Supplier sustainability risk is linked to adverse stakeholder reactions and occurs when buyers are held accountable by customers, NGOs, or other salient stakeholders for their suppliers' misconducts related to the natural environment or social communities

[9] (Hajmohammad (2014) mentions that the term "potential event" is cumulative by nature: It can be seen as a sustainability-related supplier misconduct (event 1) detected by concerned stakeholders (event 2) who decide to communicate it broadly (event 3).

In this chapter, we take a detailed look at these risks and analyse their relevance for three differentiated biofuel supply chains in the Netherlands:

1. Biofuels from land-based feedstock (such as from food crops)
2. Biofuels from Used Cooking Oils (UCO)[10]; and,
3. Advanced biofuels (mainly from lignocellulosic feedstock).

2.1 Non-compliant feedstock/residue at origin

Negative sustainability impacts at origin are generally of highest concern as they may affect land use change, water, biodiversity and increase global warming potential. At origin, the sustainability risks for land-based feedstock production and waste and residues largely differ.

2.1.1 Land-based feedstock

Land-based feedstock, including food crops, can be considered relatively transparent supply chains with low risk of incomplete information (Kick_off_meeting, 2020), ([2], 2020). This, because the number of crop rotations, and consequently the number of harvesting, is often limited to once or twice per year, which largely simplifies auditing. However, this risk increases where many smallholders are involved[11] (as is for example the case in palm oil supply chains). Smallholders are generally subject to a lower number of field audits compared to large farms. The risks for incomplete or inaccessible information can be (partly) overcome by introducing the use of tools using methods such as satellite imaging (see also chapter 3).

Another specific concern in the food crops supply chain relates to the of risk of (indirect) land use change causing deforestation. This risk has been materialised in the past, especially for palm oil[12] (EC, 2018a), and has led to the ILUC Directive as regulatory response. The use of satellite imaging can also improve the accessibility and completeness of land-use based information ([2], 2020). The ILUC Directive lays down criteria for certifying low ILUC-risk biofuels, bioliquids and biomass fuels. Implementing ILUC certification is new and interviewees expressed their concerns related to the complexity of implementation (EC, 2018a):

- The evidence needed to identify the additional feedstock and substantiate claims regarding the production of additional feedstock: This needs to be thoroughly documented by the relevant economic operators. One of the conditions for the additionality measures is for example that they are applied for smallholders, which may be difficult to check or sensitive to modification;
- Also, RED II categorises cover crops used before and after main crops as non-food cellulosic material which is exempt from ILUC certification. Information should be clear and correct for making the

[10] Used Cooking Oils (UCOs) are oils and fats that have been used for cooking or frying in the food processing industry, restaurants, fast foods and households. UCO can originate from both vegetable and animal fats and oils.

[11] See for example Accountability framework: ". There are challenges to ensure that smallholders adhere to company commitments related to the protection of natural ecosystems and respect for human rights. These include insecure land tenure, insufficient access to inputs and finance, poor access to markets and information, lack of training and support and lack of economies of scale…." (AFI, 2019)

[12] According to the best available scientific evidence on agriculture expansion since 2008, presented in this report, palm oil is currently the only feedstock where the expansion of production area into land with high carbon stock is so pronounced that the resulting GHG emissions from land use change eliminate all GHG emission savings of fuels produced from this feedstock in comparison to the use of fossil fuels. Palm oil, hence, qualifies as high ILUC-risk feedstock for which a significant expansion into land with high-carbon stock is observed.

distinction between cover crops and other food or feed crops, also in documentation, without room for interpretation.

In 2018, mainly wheat and corn were used for those biofuels that were delivered to and consumed by the transport sector in the Netherlands. For the Netherlands, this feedstock mainly originates from Europe[13] , and it is used for bioethanol production (NEA, 2018). Evidence learns that this feedstock often concerns rejected or spoiled food ([5], 2019), which can no longer be used for feed or food. Note that the percentage of land-based feedstock used for biofuel production in the Netherlands (with transit to other countries in Europe) may be higher.

In addition, Parties in the Dutch Climate Agreement (SER, 2019) have agreed that no additional biofuels from food and forage crops will be used in the Netherlands than the reference volume that was used in 2020 to achieve the renewable energy target for transport[14]. Biofuels from agricultural crops (other than food and feed crops) with a low ILUC risk that comply with the legal frameworks of RED I and RED II are currently not used in the Netherlands. In 2020, the parties will make agreements about the potential future deployment of these crops for biofuels and the applicable sustainability framework. Policy directions in the Netherlands lead to a decrease use over time of food and forage crops for biofuels.

2.1.2 Waste and residues

The ambition from the European Commission and the Dutch Climate Agreement is that the increase in biofuels over time must be mainly derived from sustainable residues (including cascading), (SER, 2019). RED II stimulates the use of waste-based materials through various incentives to stimulate a transition in the market. Concerns over the possibility of feedstock or information alteration will therefore remain an issue over time. RED II will, however, limit the use of UCO and animal fats to 2030 (EC, 2018). Instead of UCO, other and more diverse waste and residue streams will likely be used such as POME, algae, waste wood and forestry residues.

In 2018, 83% of the total renewable energy for transport in the Netherlands consisted of double-counting biofuels (based on the calculated energy content). Used Cooking Oil (UCOs), mostly imported, was the most important raw material for biofuels in 2018 (see also Annex 1). Waste imports – in particular from outside the EU- could have unintended and significant consequences if they are in reality non-compliant with sustainability requirements (UK based consultancy NNFCC report[15]). Strong concerns over the risks around the alteration of UCO resulted in October 2014 in a response from the European Commission, recognising that voluntary certification schemes did not provide sufficient assurance as to the origin of the waste used (mostly restaurants in the case of UCO). The European Commission addressed a guidance note[16] to the voluntary certification schemes, proposing they develop specific control procedures for the origin of waste

[13] The United Kingdom and France were important countries of origin for wheat (33% and 25% respectively), while Hungary and Spain were important countries of origin for corn (30% and 14% respectively),

[14] This includes the additional 27 PJ

[15] Implications of Imported Used Cooking Oil (UCO) as a Biodiesel Feedstock, NNFCC, May 2019

[16] Guidance note called "Verification of the chain of custody of biofuels made from waste and processing residues" from 10 October 2014

and residues that relate to the operator where the waste or residues originate (Europese_Rekenkamer, 2016). The report from (Europese_Rekenkamer, 2016) concluded that the control of waste and residues had actually not been improved since then, as weaknesses in the monitoring of analysed certification schemes and in the maintenance of the requirements set out in the guidance note were found. At present, UCO collecting points (CPs) are audited based on documentation of their supplied materials from the Point of Origin. However, the audit process in most used certification schemes requires only signed self-declarations as proof for each point of origin. Different than in the case of land-use based feedstock coming from small farms, where there is the method of satellite imaging for checking no deforestation and no use of forbidden lands, there are no remote distance methods to check if UCO has not been diluted with virgin oil in sparsely distributed UCO's points of origin.

However, interviewees considered that the risk of UCO alteration at origin is limited since the common amounts of UCO delivered by each point of origin (usually restaurants) is small to make it attractive to commit any sort of fraud. Concern do exist over larger UCO producers– generating more than 120 tonnes/year – but also more measures have been taken in the last years to mitigate this risk. Large UCO producers are required to provide UCO samples within the CPs auditing framework.[17] Points of origin delivering large amounts of UCO can also be selected for being audited during the certification process ([2], 2020), based on the documentation of their supplied materials.

Advanced biofuels in the Netherlands accounted for only 0.1% of the transportation energy in 2017 and 1.6% of all biofuels delivered. According to ([8], 2020), there has been little discussion so far around the risk to use non-compliant lignocellulosic waste for the production of advanced biofuels. Lignocellulosic waste is at this moment mostly used as a solid biomass for heat and electricity in the Netherlands. To apply for the Stimulation of Sustainable Energy Production (SDE+) scheme, lignocellulosic waste must comply with the Dutch sustainability criteria for solid biomass. These criteria are stricter than the criteria under the RED II. The Dutch criteria are for example quite specific and detailed in its requirements[18] while the RED criteria for forest biomass are more guiding and generic. As secondary processing residue, sawdust does not have to meet the full range of Dutch sustainability criteria for woody biomass[19] when used for heat and electricity under the Stimulation of Sustainable Energy Production (SDE+) scheme. Under the RED II, sawdust is also considered a secondary processing residue. The critical risk here is the modification of virgin forest material into sawdust and mixed with residues at origin.

2.2 Information altered at collection/gathering point

Interviewees agreed that there is a higher risk of alteration of sustainability information in UCO supply chains at collection points and traders ([7], 2020). Interviewees mentioned incidences in which fraudulent collection points have created a list of fake restaurants and produced fake self-declarations. In such cases, collection points go through a certification process and pass the first audit, which is based on the analysis of self-

[17] https://certificates.iscc-system.org/cert-audit/EU-ISCC-Cert-IT206-36_audit.pdf

[18] The Dutch criteria have for example detailed criteria on sustainable forest management, and what this should entail.

[19] Secondary processing residues have to meet the criteria on GHG emission reduction and on Chain of Custody but do not have to meet the land-use based requirements, such as on sustainable forest management, preserving carbon stocks or on avoiding land use change.

declarations. After they have traded a large amount of fake UCO, within the first year after getting certified, the company closes down. In this way, they avoid any sample auditing of restaurants. This UCO, already in the market, becomes non-traceable ([2], 2020). These incidences have resulted in ISCC adapting its scheme requirements to have sampling auditing within the first year of certification and not after a year from first certification has passed.

Similar concerns are shared, especially by NGOs, in the labelling of lignocellulosic waste for energy purposes[20]. The concerns lie in how to proof (through information in the supply chain) that sawdust (or other woody) processing residues has been appropriately classified as secondary feedstock and that no virgin forest material, wrongfully processed into sawdust, has been purposely mixed with residues at the collection point. These concerns reveal that lignocellulosic waste may have in the future similar traceability/alteration problems as UCO has nowadays.

2.3 Unclear or non-compliant Chain of Custody management

Interviewees indicate that concerns over sustainability risks increase when chains are long, complex, and multiple times trading happens between countries. The risk of 'fake' certificates or the risk of having document duplication or document fraud leading to certificates and volumes sold twice between countries grow in complex chains (Workshop, 2020). When these risks materialise, they seriously undermine the trustfulness of the biodiesel sector.

In the Netherlands, significant volumes of biodiesel sold in 2015 and 2016 were wrongly designated as sustainable, with double-counting credits claimed as a result [21]. This happened in the Kampen biodiesel fraud case, which led to a criminal investigation, and also led to a parallel full analysis by the Dutch government to identify weak points in the application of the RED. The government analysis includes an on-going discussion whether the double counting of UCO has to be ended.[22]

Fraudulent situations in Italy and Poland[23] have also compromised the trade of biotickets. In the case of Poland, biodiesel volumes were sold twice and counted towards two national blending mandates. First towards the Polish blending mandate, and then at an unfair dumped price, in another EU Member State. In the Italian case, customs authorities had provisionally seized a large quantity of biodiesel declared as of Canadian origin. It was seized because customs had strong evidence indicating that biodiesel originated in the Unites States of America where it benefited from the $1/gallon US subsidy. A number of proofs converged to indicate that the cargo was part of wider trans-shipment traffic aimed at evading existing EU anti- dumping and anti-subsidy measures on US biodiesel.

[20] See: https://biogasnieuws.blogspot.com/2018/03/niet-duurzaam-zaagsel-toegestaan-als.html
[21] https://www.dutchnews.nl/news/2019/05/dutch-company-embroiled-in-biodiesel-scandal-earning-millions-vk/
[22] https://www.euractiv.com/section/agriculture-food/news/the-netherlands-mulls-end-to-used-cooking-oil-double-counting/
[23] See: Unfair Polish Low-priced Biodiesel Exports Continuous Damage To The EU Internal Market Of Renewable Fuels Needs To Be Stopped; Fraudulent Biodiesel Imports: Italian Authorities Confirm Venice Seizure

Multiple interviewees have mentioned that ensuring the completeness and accessibility of information from advanced biofuel supply chains will likely be more challenging in the future due to the increased complexity of their supply chains.

The following specific examples were mentioned:

- Some new advanced biofuels may not have a bio-origin; and therefore, they may have a chemical identity. There are for example first try-outs of using 'plastic soup' as renewable ([5], 2019). Although this development is promising, it is a question of how to label this product. In the current definition of the Dutch government it would not be possible to proof its bio origin ([8], 2020).
- An increase in blending and multiple outputs throughout the advanced biofuel supply chains will add complexity to allocation rules. This complexity will increase the risk of information about input and output volumes are incomplete or not correct ([5], 2019).
- Aligned with the transposition of the EU RED II in Dutch legislation, a "BKE" (Greenhouse Gas Emission Reduction Entity) will be introduced under Dutch policy– next to the already existing HBE. There are concerns over the risk of incomplete and wrong BKE data, as they may be difficult and complex to calculate ([8], 2020).
- The use of different LCA tools may result in differences in the allocations made at different steps of the Chain of Custody.

3 » How are concerns addressed: possible solutions

A requirement for managing the trustfulness of sustainability in biofuel supply chains is that information about procedures and processes in the supply chain is complete and accessible – meaning that the information can be obtained in the "upstream" part of the chain, also from the beginning of the supply chain. When this is not the case, there is a concern of risk. An important condition here is that the information (which then goes further through the supply chain) is also correct.

This section shows a selection of useful existing tools and approaches that have been developed in the biofuels sector, but also in other sectors, to further improve the completeness and correctness of information in the supply chain, and how access to this information can be obtained in the "upstream" part of the chain – also from the beginning of the supply chain.

In this chapter, the following possible pathways in solutions are discussed:

1. Tools and approaches to better assess compliance at origin;
2. Stringent information verification and audits
3. Improving the overall quality of supply chain management
4. Tightening traceability in individual supply chains
5. Blockchain as advanced technology
6. Examples from other sectors
7. Governance structure to mitigate risks

3.1 Better assessing compliance at origin

Mapping tools and registration methods can help improving transparency at origin, through improved accessibility and completeness of information, and monitor compliance with sustainability requirements. Several stakeholders across the supply chain can benefit of using them:

- Upstream stakeholders can make use of these tools and methods to show their customers that they comply with sustainability requirements. For example, smallholders for land-based feedstock can use satellite mapping tools to provide proof they abide to sustainability requirements related to land use. Restaurants for UCO can use registries for transparency and help curbing illegal practices.
- Auditors from certification schemes can consult data in such tools and registries for better sampling their field audits.
- Companies sourcing feedstock or residues for their biofuel production processes can consult results in those tools for ensuring they purchase feedstock and residues from trustable partners.

Three satellite mapping tools (GRAS, RSPO Fire monitoring and NEPCon Sourcing Hub) and the RUCO registry for UCO's point of origin in India are described as examples in the next sub-sections.

The GRAS tool helps smallholders to keep track of their land use related information, and helps auditors detect or discard possible problems, and consequently choose better their audit samples for field auditing ([2], 2020). Its tracking App improves the traceability of deliveries from point of origin to gathering point.

The RSPO Fire monitoring tool is an example how sustainability information (in this case the risk of fire) at the origin of the supply chain can be made accessible through satellite technology and publicly shared with all RSPO members, including upstream actors in the supply chain – also allowing them to act in case of a concern of risk. The NEPCon Sourcing Hub is a tool with the objective to support companies to source commodities responsibly and includes a risk assessment for timber, soy, palm oil and beef.

The Registry of Points of Origin in India (RUCO) improves traceability and transparency of information of UCO's points of origin. This information is publicly accessible for other actors such as certification schemes and interested parties, such as local NGOs measuring sustainability progress or alerting cases of higher risk.

3.1.1 GRAS Tool

The GRAS tool[24] is based on GIS and provides information on biodiversity, land use change, carbon stocks, and social indices for a total of 46 countries. GRAS is a database with land data characteristics for each small farm participating.

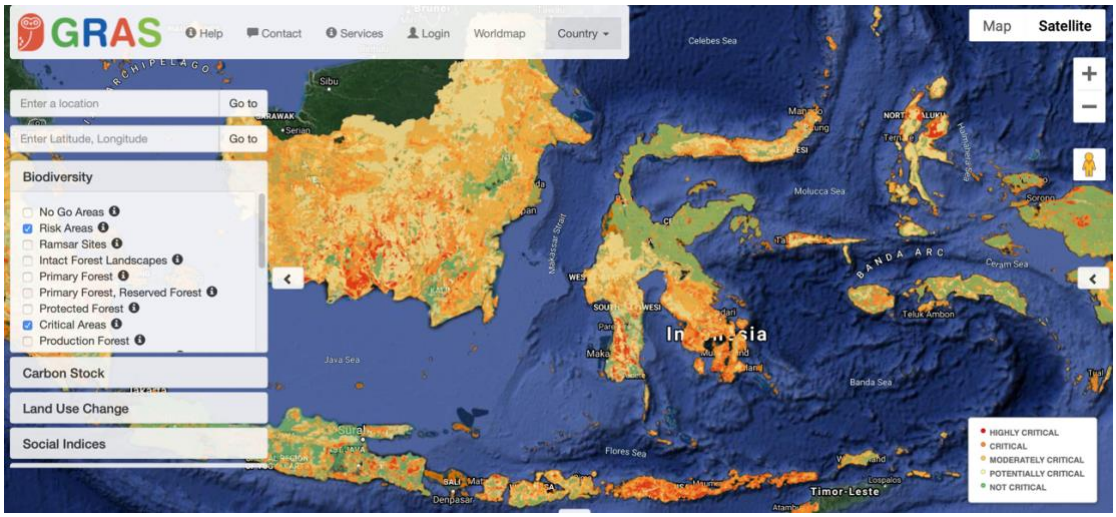

Figure 1: Image of the GRAS tool showing the critical biodiversity areas

The GRAS tool has two different Apps:

- The GRAS Independent Smallholder App allows to capture the field's polygons of each smallholder directly onsite. Field outlines and other collected data (e.g. geotagged photos, management practices, social and economic information) can be uploaded to a secure database and are automatically checked against deforestation and protected areas. With the development of the GRAS Independent Smallholder App, GRAS supports efficient and credible smallholder certification processes by enabling the efficient

24 https://www.gras-system.org/about-gras/the-gras-project/. The development of GRAS has been supported by the German Federal Ministry of Food and Agriculture through the Agency for Renewable Resources (FNR) within the project "Development of the GRAS prototype to support an environmentally friendly use of resources for a sustainable bioeconomy".

management, analysis, and visualisation of smallholder data (GRAS, 2020). Certification scheme ISCC promotes the use of the GRAS tool to promote the engagement of smallholders to actively gather, show and update their information so to improve the transparency in food supply chains. ([2], 2020).

- Through the GRAS tracking App, data on single deliveries (e.g. fresh fruit bunches) can be collected. This way, each delivery can be traced back down to the respective smallholder field, (GRAS, 2020).

3.1.2 RSPO Fire monitoring

The Principles and Criteria (P&C) from RSPO relating to fire prevention include a complete ban of the use of fire within RSPO certified units. The RSPO has been actively monitoring, with satellite technology, all detected fire hotspots within both RSPO certified and non-certified concessions in Malaysia and Indonesia. Since 2018, this satellite information, along with the location of member concession areas, is publicly available on the RSPO website through an interactive map application called GeoRSPO, displaying relevant data relating to members' concessions and land cover, including any active hotspots. Members can, also with help of this tool, monitor their concessions. If a hotspot is signalled, a company is informed and requested to take immediate action. If not, RSPO can take follow up measures (RSPO, 2020).

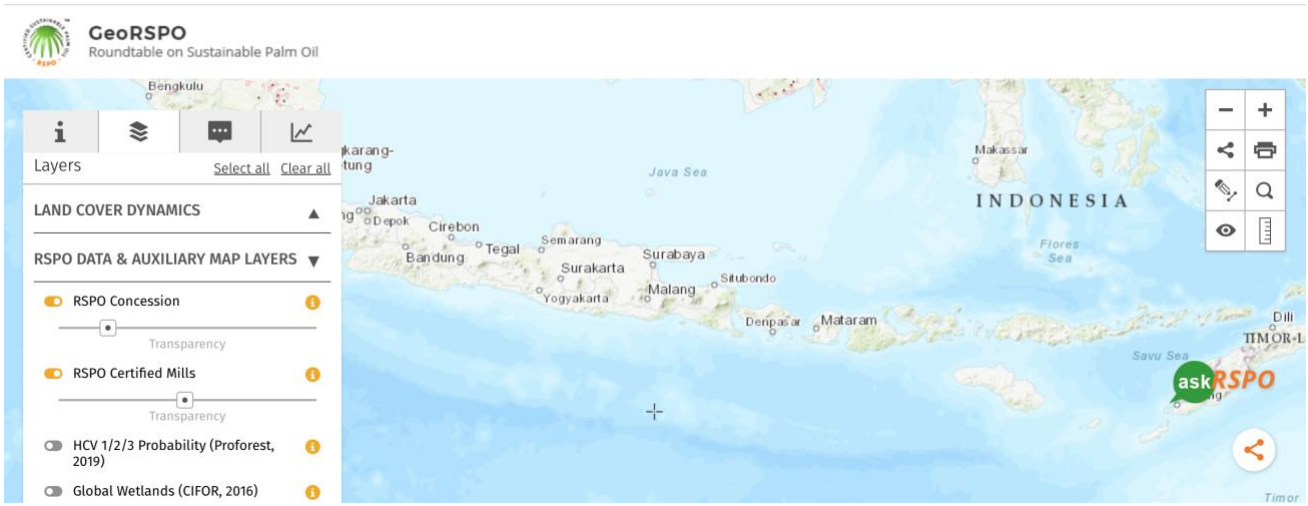

Figure 2: Image of interactive map application GEORSPO

3.1.3 NEPCon sourcing hub

The NEPCon Sourcing Hub is a tool with the objective to support companies to source commodities responsibly and includes a risk assessment for timber, soy, palm oil and beef. The Timber Risk score is for example based on an assessment by NEPCon of the risk of illegality occurring in 21 areas of law relevant to timber legality (NEPCon, 2020).

The NEPCon sourcing Hub tool shows how a risk assessment can help companies and a sector to prioritise action on geographical areas with higher risk of concern. In the biofuels sector, certification schemes could work with companies to map supply chain points/geographies/product categories of higher risk of concern; and adapt mitigation measures and monitoring accordingly.

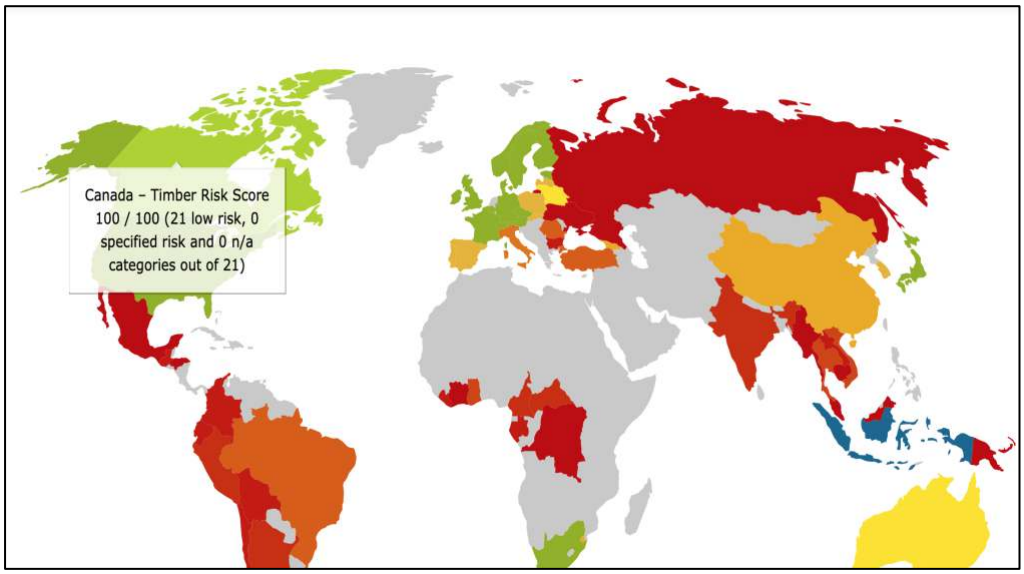

Figure 3: NEPCON Timber risk score: the countries are color coded depending on their Timber Risk Score. The lower the score, the more widespread the risks of illegality in the country (NEPCon, 2020).

3.1.4 RUCO: Registry of Points of Origin in India

There is an example of a registry in India where the Points of Origin need to be registered. This check of verification does not mean an additional certification (as it is verification). As part of its EEE (Education, Enforcement and Ecosystem) strategy to divert UCO from the food value chain and curb current illegal practices, the Food Safety and Standards Authority of India (FSSAI) has launched the 'Repurpose Used Cooking Oil' (RUCO) platform. RUCO is a technology platform that gives 100 percent traceable UCO based biodiesel to oil marketing companies. The RUCO initiative currently rolls in eight states (FSSAI, 2020). Accessibility and completeness of information is herewith improved, especially when also publicly accessible for other actors to use it. This means that auditors and certification schemes can check this information to improve their sampling audits, and other parties, such as local NGO's, to monitor sustainability implementation and progress, and – if needed - inform organisations in consuming countries in case of higher risk.

3.2 Stringent information verification and audits

The risk for alteration of sustainability information can be mitigated with stringent verification and audit methods. The EWABA standard of transparency, with recommendations for improvement to voluntary schemes especially at collection point, and the development of physical testing methods to proof origin (and non-modification) are discussed in the next sub-sections.

3.2.1 EWABA standard of transparency

EWABA presented in September 2019 the EWABA's Standard of Transparency (see also Annex 3). This Standard has identified weak points in transparency and assurance in the supply chains of especially UCO

biofuels and makes specific recommendations to voluntary schemes to improve their audit and verification rules. These recommendations are based on a risk-based approach.

The Standard of Transparency has been presented to all schemes and to the European Commission (DG Ener unit dealing with the Implementing Act for RED II), ([1], 2020) and EWABA is strongly recommending all voluntary schemes to adopt these recommendations. This is seriously considered by multiple schemes:

- ISCC has for example adopted in its scheme six of the recommendations as of 1.1.2020 (see letter from ISCC), ([1], 2020), ([6], 2020), see also Box 3;
- 2BSVS and REDCert considered the recommendations as useful ([6], 2020) and are considering adapting (some);
- RSB has proposed to draft them all into a voluntary standard for EWABA members.

Following up with this work, a meeting is going to be planned shortly with the relevant schemes for discussing the further adoption of the recommended measures. It is important to note that some of the recommendations are difficult to implement as an auditable standard ([6], 2020).

Box 3: Ongoing changes under ISCC

The acceptance of particular materials from other schemes may impose a significant risk to the integrity and credibility of ISCC and claims made under ISCC. A high risk especially applies to such materials, which are or may be eligible for extra incentives in individual EU Member States (e.g. double counting) or which are cultivated in high-risk areas. This includes, but is not limited to, waste, residues, and products derived therefrom. Therefore, ISCC does not accept other schemes for high-risk materials (ISCC, 2016).

ISCC has developed a procedure whereby stakeholders can (possibly) report irregularities via the website. ISCC has also been conducting integrity audits on the basis of this or based on its own insights. If irregularities are found, certificate holders are excluded, and this is reported on the website (ISCC, 2016).

3.2.2 Testing UCO at collecting point

Further using and improving the accuracy of physical tests on the composition of UCO, and potentially of other waste feedstock streams, helps to proof the origin of feedstock (and herewith the correctness of information). EWABA's Portuguese member Hardlevel has designed a new physical testing method differentiating UCO from virgin vegetable oils. Hard Level has made 500 tests and the test seems effective. The test and its results have been presented to the Commission with the aim to develop a specific standard within Technical Working Group CEN/TC 19 (Gaseous and liquid fuels, lubricants and related products of petroleum, synthetic and biological origin), ([1], 2020).

3.3 Improving the overall quality of supply chain management

Sustainability risks apply to different parts in the supply chain and incidences can occur at any step of the supply chain, regardless location (Netherlands, other EU Member States, other global locations). Mitigating sustainability risks require that the overall quality of chain management is as homogeneous as possible

everywhere. This is essential to cross-check information through the supply chain and also helps to create a level playing field for suppliers, also across different sectors other than bioenergy.

The following measures help to improve the overall quality of supply chain management:

- Harmonisation of definitions and terminologies
- Alignment of data structuring and interpretation (IDDS)
- Use of Standard Business Reporting
- Tools for creating overview of sustainability risks in supply chains (TRASE)

3.3.1 Harmonising definitions and terminologies

Transfer of sustainability information throughout the supply chain and across countries requires a harmonised interpretation of terminologies and definitions. A common shared language and harmonisation of data reporting support the effective collaboration among stakeholders involved and ensures that data are interpreted the same way by everyone. Within the Dutch context, the most urgent issues that require a more precise interpretation are the mass balance method and double counting rules.

In the mass balance model, the volume of certified product entering a company is controlled and an equivalent volume of product leaving the operations can be sold as certified (sustainable). The physical mixing of certified and non-certified product is allowed but not required, provided that the quantities are controlled in documentation (ISEAL, 2016). The mass balance method thus allows to allocate and transfer sustainability information and volumes to biofuels until it is registered and reaches the market. The complexity starts when blends of fossil fuels and biofuels are mixed and further traded. Then the application of the mass balance method may be subject to interpretation. According to the NEa and the Ministry of Infrastructure and Water Management, the mass balance applies exclusively to the biofuels share in a blend, not to the fossil fuel part in a blend. Biofuels can be blended with fossil fuels, but fossil fuels should be kept outside the mass balance. Consequently, there will always be a bio-component of biofuels in the mass balance (and a proof may be requested).

Interviewees indicate that the use of the mass balance method, and allocation rules, will get more complicated with the use of more advanced supply chains. Differentiating adequately all biofuels streams through mass balance is considered a challenge (Kick_off_meeting, 2020). Agreeing on a common interpretation of the mass balance method between authorities (NEa – Ministry), and between authorities and the sector ([7], 2020) is crucial, also to further promote the transition towards advanced biofuels in the sector. Various other terminologies identified by interviewees also deserve more clarification. These terminologies include “guarantee of origin” and “transaction certificate” to mention some.

3.3.2 Alignment of data structuring and interpretation (IDDS)

The exchange of sustainability information across countries (through national registries), through supply chains and between certification schemes requires a standardised use and interpretation of data. Acknowledging the importance of this, the Forest Stewardship Council (FSC) is partnering with the ISEAL

Alliance and other ISEAL members to develop the so-called Information and Data Standard for Sustainability (IDSS), which aims to provide a common framework of agreed-upon data definitions (e.g. what is deforestation?) and a roadmap of how data could be structured. The IDSS will also enable certification standards to better align the ways they communicate and demonstrate their sustainability performance (ISEAL, 2020).

3.3.3 Standard Business Reporting

Standard Business Reporting (SBR) is considered the national standard for the digital exchange of business reports[25]. It is a Dutch Government initiative (part of Logius) that has been developed and expanded in close cooperation with market parties. Around 100 companies and organisations have entered into a contract to continue developing SBR (SBR, 2019). SBR is about standardisation of data, processes and technology. SBR enables information in company records to be captured in a standard way. This means that the information can easily be reused for various reports to government agencies and a number of banks: a credit report goes for example to the bank and a tax return to the Tax and Customs Administration (SBR, 2019). More information about SBR can be found in Annex 2.

The main benefits of SBR are increased efficiency, standardisation, more transparency, increased security and a higher quality of data exchange (SBR, 2019) and this approach can be of interest for the biofuels sector (e.g. aligning national registries or Member State reporting), while recognising that the step before SBR is getting agreement on harmonisation and standardisation of definitions and terminologies (see 3.3.1 and 3.3.2).

Next to that, (Bharosa, 2015) mentions that that the benefits of SBR and herewith the coupling of IT systems between organisations must also consider the impact of increased dependency. Parties that want to have interconnectivity must jointly guarantee interoperability. This creates dependencies. For example, parties can no longer unilaterally implement changes in their data models, as doing so would affect the semantic interoperability. This can be impactful for those companies that have already developed their own internal data reporting systems, and processes needed for that.

3.3.4 Tools for creating overview of sustainability risks in supply chains (TRASE)

Creating an overview of risk by mapping volume flows of multiple supply chains (potentially supported with additional information about deforestation trends, land use change, financial trends) help companies and sectors, but also governments, to prioritise action on geographical areas with higher risk of concern and to support improved decision making around responsible production, sourcing and investments, as well as on monitoring.

[25] SBR applies international open standards, including XBRL and web services in a way that enables a high degree of automation within the business reporting processes; from data gathering and transfer to validation and processing.

The TRASE tool allows users to map supply chains of internationally traded agricultural commodities on a yearly basis, such as palm oil and soy, from the countries and regions where they are produced to the countries that import them, identifying the key supply chain companies along the way (TRASE, 2020). A comparable modality for the biofuels sector could for example monitor trade and production volumes of UCO, POME (or an alternative feedstock) on a yearly basis, their main sourcing regions and main destinations.

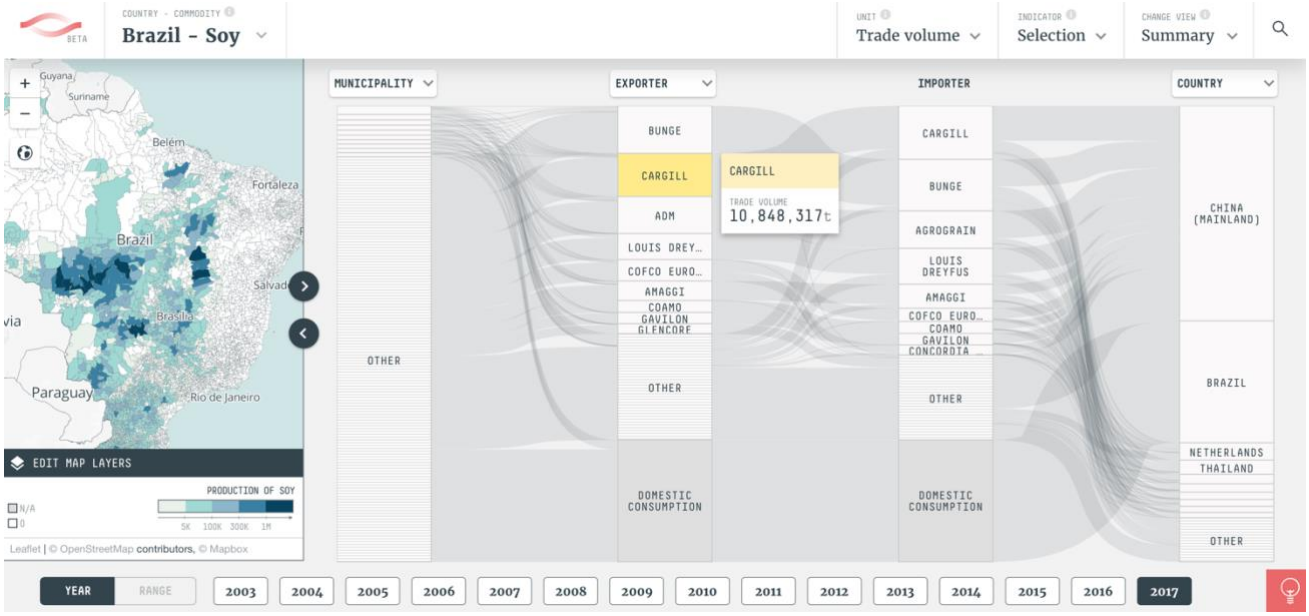

Figure 4: Trase showing volumes of soy through the supply chain from production region to consuming country

3.4 Tightening traceability in individual supply chains

Due to the complexity for tracing back and forth information in supply chains, there concerns of risk about unclear CoC management in the biofuels sector. Incidences of risk have also been identified. Mitigating concerns of around unclear CoC management requires therefore that information (which should be complete and correct) in the supply chain can be traced back and forth.

At this moment, it is technically feasible to trace back and forth the information in a supply chain up to its point of origin. The sustainability information transferred with a certificate by each economic agent to the next one in the chain of custody is uniquely identified and allows to trace back the underlying information. A question related to this is who is able to do this (see also chapter 3.7 on the governance structure). Economic agents have only the information that they receive from their previous economic agent. The Dutch end-market party receives for example the certificate from the trader with information about the certificate and the country of origin. To trace back the information through the supply chain requires the full cooperation from all its previous agents in the supply chain. This is a very complex task and time consuming for economic agents to do it themselves – an some of the data sharing can possibly be blocked by basic rules of

competition (sharing of providers info). Clearly the complexity increases when the number of interactions (e.g. between buyers-sellers) and number of processed outputs increase.

The exercise of tracing back the sustainability information is doable for certification schemes (in particular ISCC because of their large share of the market), as long as feedstock/products in all steps of the chain are certified by their own scheme. Although this is still a tedious and complex exercise, this is for example regularly done during the Integrity Assessments that ISCC conducts internally ([2], 2020). Complexity grows when multiple schemes are used in the supply chains; in such case, the economic operator in the Netherlands may receive an ISCC certificate although, because of cross-acceptance, another scheme (for example REDCert) is used at the beginning of the supply chain (which is not visible for the economic operator). (Kick_off_meeting, 2020).

Traceability databases can help improving the traceability of information through the supply chain. The traceability and tracking of data is then not a tedious exercise anymore, but can basically be done automatically by the database ([2], 2020). The possible added value of a traceability database to tighten traceability is also recognised by the European Commission and the biofuels sector (see also chapter 4). Multiple traceability tools have been developed in the last years. The following traceability databases are discussed in this section:

- Palm Trace
- TRACES
- Data Transfer System SBP
- Trace Your Claim and Bioledger as potential interim databases for the biofuels sector: discussed in more detail in chapter 4

3.4.1 Palm Trace

The need to improve traceability was discussed in the palm oil value chain some years ago. Since then traceability much improved. This has been through initiatives from the sector – also with strong support of RSPO, that has developed a strong traceability system ([9], 2020). RSPO PalmTrace is the RSPO's traceability system for certified oil palm products and is developed and managed by Rainforest Alliance. It was launched in 2012 and currently has around five thousand active users (Navigant, 2020). From the mill to the refineries, certified members of RSPO register their physical sales and processing activities of palm oil, palm kernel and its (double) fractions under the different supply chain models (RSPO, 2020a). The use of the tool is mandatory for participation in the RSPO voluntary scheme, incl. RSPO-RED (Navigant, 2020).

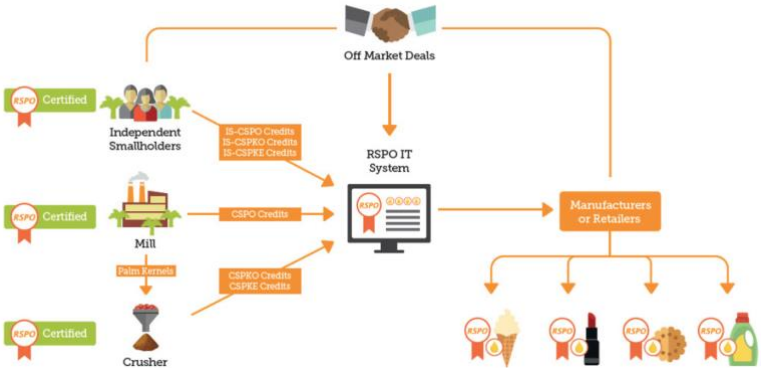

Figure 5: Infographic of Palm Trace – a traceability tool for RSPO certified palm oil

The Palm Trace tool can serve for the biofuels sector as an example of a traceability tool, that allows the registration of sales and processing activities of for certified palm oil products through the full supply chain under different supply chain models. Input and output volumes are registered (as condition for buying RSPO certified palm oil products) minimising the risk for duplication and manipulation of input and output volumes.

3.4.1 TRACES

The European database for tracing animal (by-) products[26], for the first time launched in 2004, is called TRACES ([9], 2020). TRACES stands for TRAde Control and Expert System (TRACES) and is an integrated web-based veterinary system for tracking movements of animals, products of animal origin and plants from both outside and within the European Union. It also covers imports to the European Union of feed and food of non-animal origin as well as plants, seeds and propagating materials. TRACES aims to improve the relationship between the private and public sectors, and to strengthen the cooperation between EU parties. It aims to facilitate trade, to enhance safety of the food chain and to protect the animal health ([9], 2020).

The TRACES database can serve for the biofuels sector as an example how a database can be organised in such way on European level that data of products can be traced in a supply chain and can be exchanged between multiple European countries in a secure way. More information about the governance of TRACES can be found in chapter 4.

3.4.2 Data Transfer System from SBP

The Data Transfer System (DTS) from the Sustainable Biomass Program (SBP) is developed as a reaction on requirements of National Regulations (in the Netherlands) that require energy generators to collect accurate, reliable and detailed information about the biomass throughout the supply chain. Currently, that information is often passed from organisation to organisation by email, in spreadsheets or on paper (SBP, 2020).

[26] The European Commission is preparing to amend the Animal By-product Regulation (ABPR) to include kitchen waste, including oils and fats (UCO). All imports of animal products covered by the EBPR are checked and controlled by the Customs.

The Data Transfer System from SBP allows transactions of SBP-certified material to be recorded and transmitted along the supply chain, including SBP claims (for example, SBP-compliant, SBP-controlled). An SBP Certificate Holder supplying biomass with an SBP claim uses the DTS to record details of the biomass being supplied. That information is then made available to the customer receiving the biomass, in turn that SBP claim can be passed on to the next customer in the biomass supply chain, and so onwards. All SBP Certificate Holders and SBP-approved Certification Bodies (CBs) have their own, unique usernames and passwords to access the system. SBP Certificate Holders that have recorded purchased or sold SBP-certified material in the DTS may request a Periodic Transaction Summary Report (PTSR) detailing all recorded data, which are also available for CBs. SBP transactions/claims will be accessible directly via the DTS platform[27]. CBs have access to the DTS and, once a supervisory 'Business Relationship' has been established with their client, to the transaction data (SBP, 2020).

The DTS is an interesting example to show that specific (country) requests on sustainability information from the point of origin (e.g. information on biomass category) to the supply chain can be transferred through a database.

3.4.3 Trace Your Claim (TYC) and Bioledger (as potential interim databases)

Both Trace Your Claim (TYC) and Bioledger are potential interim databases that the biofuels sector can start using on relatively short notice. More information about both databases can be found in chapter 4. TYC is a traceability database supported by ISCC and exists since 2013 and is in a pilot phase. Bioledger is currently developing the Bioledger traceability database and tool. The database is being developed by Bioledger, a company registered in the UK in October 2018, in cooperation with Oracle ([6], 2020). Its design is based on blockchain technology.

The development of these databases is interesting for the biofuels sector to tighten traceability in the Chain of Custody. If purchases by all economic agents at any chain step are registered in the database, a closed information management system will be created. The large advantage of a closed system is that no fake or wrong sustainability information can move across the chain, which will prevent that different mass balances are used, prevent hopping between different schemes and prevent the transfer of false or fake volumes ([10], 2020).

3.5 Block chain as advanced technology

Blockchain can be used to further tightening transparency in supply chains. By design, a blockchain is resistant to modification of the data. It is an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way Blockchains are tamper proof through cryptographic hash functions. Since any given block includes the hash of the previous block, altering one block practically means altering the entire Blockchain. The entire network should be outpower to rewrite its

[27] entered into DTS v1.0 after 1 September 2017

history, making it practically impossible to do so. Note that block chain is often combined with other advanced technologies such as Internet of Things[28] (IoT) or remote sensing technologies.

Blockchain and Internet of Things are both technologies in development, and they open new possibilities for tightening traceability in a secured way for complex supply chains. Structured data can for example automatically be collected through sensors (e.g. distance travelled to collect UCO from restaurants, via App in transporter mobile). Deviation from an expected range (e.g. deviation from a collection point) can flag a problem.

The following blockchain databases are discussed in this section:

- Blockchain used by Goodfuels
- Tony Chocolonely Bean Tracker

3.5.1 Blockchain used by GoodFuels

Blockchain Labs for Open Collaboration (BLOC) has collaborated with amongst others a Japanese shipping company NYK and biofuel company GoodFuels, to deliver sustainable biofuel to the NYK-owned bulk carrier – all via a BLOC's blockchain fuels assurance platform (Rajamanickam, 2019). The physical process was transferred in a digital form, with ensuring that the information being put in the system was correct (Rajamanickam, 2019). Unlike the traditional bunker delivery notes (a paper document), blockchain provided end-to-end traceability of marine bunkering transactions from storage, to the barge, and on to the vessel's fuel tank, thereby providing assurance to shipowners, shippers and charterers (GoodFuels, 2019). BLOC had to work on identifying the different information sources and delete results that were riddled with inconsistencies to ensure a correct and seamless end-to-end transaction process (Rajamanickam, 2019).

Blockchain and Internet of Things are technologies in development, and they open new possibilities for tightening traceability in a secured way for complex supply chains.

3.5.2 Tony Chocolonely Bean Tracker

This blockchain prototype allows to track the point of origin for specific shipments of cocoa beans, increasing transparency throughout the entire supply chain. Each new batch is logged in the system, giving real-time insights into the overall mass balance of cocoa beans as they move from the farms to the cooperative and onward to the exporter. This level of transparency is considered essential to a company like Tony's Chocolonely, as it allows them to trace issues with any given shipment back to the source and take steps to prevent those issues in the future. Products can be linked to specific shipments of raw materials and vice versa, increasing the level of traceability and transparency across the value chain (Accenture, 2020).

[28] Internet of Things (IoT) is often combined with blockchain technologies and is the network of physical devices, vehicles, home appliances, and other items embedded with electronics, software, sensors, actuators, and connectivity which enables these things to connect, collect and exchange data, creating opportunities for more direct integration of the physical world into computer-based systems (Kuljian, 2018).

This example learns that Blockchain allows a company to easily trace back batches in the supply chain, giving real-time insights in the processes and volume flows in the supply chain. The example is still a prototype and a broad uptake of this technology needs time.

3.6 Approaches in other sectors

3.6.1 Fashion sector: Sourcing from sustainable hubs

The fashion sector is trying to move forward to a circular approach. One of the most important measures to achieve larger sustainability in the sector is the recycling of polyester, which reduces the consumption of fossil fuels. Recycled polyester can be obtained from used plastic bottles (PET). It has been detected that many companies mix PET with new non-used plastic bottles and label it as "recycled polyester" ([3], 2020). Committed fashion brands promote therefore the establishment of "sustainable hubs", next to other tools to promote traceability (e.g. blockchain). "Sustainable hubs" are recycled PET collecting points and polyester manufacturers with enhanced reputation of 'not cheating'. This usually means companies with a long track record of being sustainable collecting points ([3], 2020).

Learning from this example, the biofuels sector could promote suppliers of biofuels feedstock, that have a track record with accessible and complete information that proof their reputation of being sustainable.

3.6.2 Feed sector: Early Warning system GMP+ to minimise contamination risks

The Early Warning System (EWS) of the GMP+ Feed Safety Standard is considered a safety net that helps limit the extent of, or mitigate, a (potential) problem of feed contamination at an early stage, with the help of adequate measures ([4], 2020).

The GMP+ Feed Safety Standard applies to every party in the value chain. All parties need to record their purchased and sold goods in their own company system and are responsible to check the level of permitted undesirable substances. In case of detected contamination, the company has the obligation – when a contamination is signalled -to (GMP+-FS, 2019), ([4], 2020):

- Take action forward within 4 hours to inform their suppliers and customers and do a first recall to take the products back;
- Take action to trace backwards the source of contamination (this can take longer time): Every earlier link in the supply chain (certified) has to take action on this until the source is found.
- Inform GMP+ (through the EWS): An EWS warning is published. In these warnings, the relevant product (generic name), the undesirable substance(s) and detected value(s) are specified as well as the country of origin. Details of the relevant company are never published. With this notification, companies can take (precautionary) measures and strengthen their risk analysis. NVWA is also notified in case there is an EWS message is going out.

The Early Warning System is an example on how actors in a value chain share the responsibility to monitor concerns of risk and to act immediately in case such a risk is materialised. The example shows that it

requires commitment through the full supply chain as earlier steps in the supply chain (certified) need to take action until the source of concern is found. This example also shows how an organisation (in this case a standard) can be informed in case of materialised risk and notify other companies in a sector so they can take precautionary measures as well. A difference with the biofuels sector is that feed contaminants are detectable by laboratory analysis, while the characteristic of risk for feedstock modification in biofuels supply chains is that they are not easily detectable ([4], 2020).

3.6.3 Food sector: Regular Due Diligence to minimise food safety for eggs

The risk level in the food sector, with the risk of contaminated food and therefore of people's health, is considered higher than in the biofuels sector ([5], 2019). Since 2017[29], after an accident on fipronil, every company in the Netherlands that works with eggs or processes eggs must recognise fipronil as a potential hazard. They must check whether the control measures they have taken are sufficient to eliminate this risk or to reduce it to an acceptable level (= Due Diligence). This means that these companies must check this themselves and ensure that they do not place eggs or egg products with fipronil above the maximum risk level (MRL).

The Dutch Food Safety Authority (NVWA) regularly checks eggs for fipronil in the retail trade. When eggs with fipronil are found, the sector is responsible for removing them from the trade channel. When the NVWA finds eggs with fipronil values above the MRL at the retail, the poultry farmer, the supermarket and the egg packing station are informed by letter. In this letter, the NVWA reminds the poultry farmer, the supermarket and the egg packing station of their responsibilities with regard to the marketing of eggs with fipronil values above the MRL. The companies must take immediate action and take eggs from the market to such parties. They must then report this to the NVWA. The NVWA has a supervising role (NWVA, 2019).

In this example, a sector agrees to take on sufficient control measures to eliminate this risk or to reduce it to an acceptable level. The example from the Dutch egg sector learns how companies in a sector and inspection bodies can work together to minimise concerns of sustainability risk with the sector taking responsibility to reduce risks to an acceptable level (according to Due Diligence) and take immediate action when needed. A difference with the biofuels sector is that food safety is related to health and the urgency to act is therefore much higher in case risk (for contamination) is materialised.

Also, to do Due Diligence, it is important to first clarify which risks are considered, and what should be monitored, and which precautionary actions are thus needed. A database (see 3.5) would allow to foresee the risks and a sector (or regulation) could then act upon that ([9], 2020).

[29] In the summer of 2017, the NVWA blocked a number of poultry farms because the prohibited substance fipronil was found in eggs.

3.6.4 Various sectors: Setting minimum standards for good practices

Examples of such a minimum standard already exist in other sectors:

- Associations / Trade Unions (like the BOVAG) hold up a certain standard for the sector ([5], 2019), which guarantees a certain quality and transparency, and also requires this from its members through e.g. a certain level of education, working according to certain quality norms and allowing a certain level of supervision.
- The FEFAC Soy Sourcing Guidelines are a professional recommendation to operators in the European feed industry who wish to purchase soy that is considered to be responsibly produced. The Guidelines consist of a set of minimum requirements related to the good environmental, social and agricultural practices of soy production (FEFAC, 2020), which results in an acceptance of certain voluntary standards that can be used for sourcing responsible soy (or not).
- The Dutch Bio-Energy Platform has recently explored with other sector parties the possibilities for drawing up a Code of Conduct[30]

3.7 Governance to mitigate identified risks

A governance structure has been established by the European Commission to ensure compliance with the sustainability criteria for biofuels, as established by the Renewable Energy Directive. The RED is based on co-regulation; private regulators (certification schemes) take part in different stages of the regulatory process. The following stakeholders play a key role in this governance structure to ensure sustainability compliance and to mitigate sustainability risks:

- The European Commission;
- National regulatory bodies (in the Netherlands: The Dutch Emissions Authority, or the NEa)[31];
- Private market parties (the biofuels sector); and,
- Certification schemes and their auditors.

[30] https://platformbioenergie.nl/2020/04/30/gedragscode-bio-energie/

[31] NEA is responsible for the database. Ultimately, the Central Bureau of Statistics (CBS) reports to the Commission.

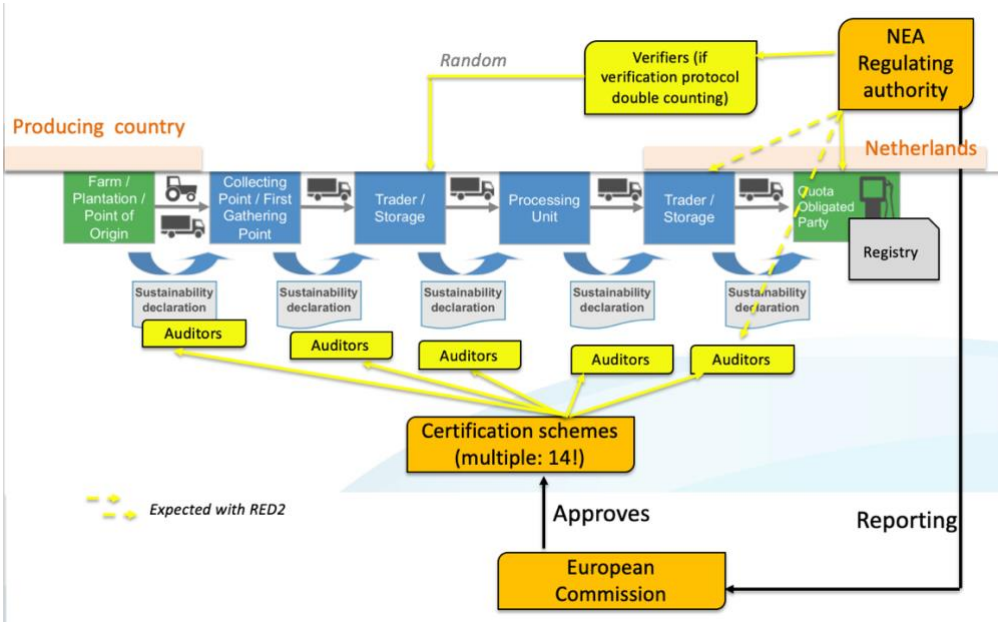

Figure 6: Governance structure to ensure compliance of sustainability criteria (as defined under the RED) for biofuels

The roles and responsibilities of these different stakeholders are further discussed in this section.

3.7.1 European Commission

Eligible biofuels towards these targets must be produced in compliance with sustainability criteria for biofuels and bioliquids established in the Renewable Energy Directive. The EC recognises a number of voluntary schemes that demonstrate compliance with the sustainability criteria for biofuels, or part of the criteria (partial compliance). This recognition is valid for a period of 5 years. Schemes may adopt their verification procedures but must notify changes that might be relevant to the Commission, such as changes in auditing procedures. A certificate issued under a recognised voluntary scheme is valid in all EU Member States.

The EC has no obligation under the RED to monitor voluntary schemes. The Commission argues in the report from (Europese_Rekenkamer, 2016) that the withdrawal of recognition of a scheme is the only control tool available for cases with evidence that the scheme's certification rules and requirements have been seriously infringed. This lack of monitoring makes it very unlikely that the EC could obtain sufficient evidence of infringement. Other parties have tried to fill this void. Certain Member States, like Germany[32], have for example introduced specific requirements regarding voluntary schemes and certification bodies, as attempt to compensate for the lack of supervision at EU level. The authors from (Europese_Rekenkamer, 2016) argue however, that this development can also undermine harmonisation of sustainability certification of biofuels in the EU. This is because the recognition by the Commission in certain Member States is in practice of no value if the voluntary scheme does not meet a number of specific conditions set by the Member State, which can be translated in a higher risk of discriminatory control practices across the EU.

[32] To be able to carry out certification activities on behalf of a voluntary scheme, certification bodies established in Germany must be approved by the German authorities and undergo additional checks in addition to the checks carried out by the voluntary scheme.

The EC has the opportunity to include additional guidance on the implementation of the new sustainability criteria and rules for voluntary schemes with the recast of the Renewable Energy Directive (EU) 2018/2001.

3.7.2 National regulatory bodies (in the Netherlands: The Dutch Emissions Authority, or the NEa)

The Dutch Emissions Authority (NEa) is the appointed entity to manage the REV database. Companies that deliver renewable energy to the Dutch transport sector claim their deliveries (with the Proof of Sustainability) in their account in the REV database. Other European Member States also have their own national registries with information about the sustainability of biofuels and their origin. Nabisy[33] is for example the German governmental web application for sustainable biomass, operated by the Federal Office for Agriculture and Food (BLE). These national registries are, however, not harmonised at this moment

Beside managing the REV registry, NEa also performs the inspections at the end of the supply chain to check whether economic operators comply with legislation and whether the Proof of Sustainability (PoS) is indeed correctly filled in. his includes for example an inspection on whether the mass balance is correct. Supervision of the annual obligation of companies also involves an exchange of information with customs and tax authorities. Further cooperation between NEa and Dutch customs is explored ([8], 2020).

According to current process to update the Environment Act, from 2022 onwards, the NEa will have more possibilities to do inspections at all certified economic operators in the Netherlands, and to verify that these certified economic operators manage and interpret the mass balance correctly ([8], 2020). Public supervision will, however, remain limited to the national border. The NEa has thus little insight on the first part of the value chain; mainly private parties play a role here ([7], 2020). Next to that, the RED II also instructs Member States to monitor correct data entry in the upcoming Union Database (see chapter 4) and to increase supervision on certification bodies. How this will be designed is not known at the moment of writing this report.

3.7.3 Private market parties (the biofuels sector)

In the Netherlands, the fuel suppliers are the obligated parties. They have to comply with the obligation and may book in their biofuels in the registry of the NEa. After booking their deliveries, bookers receive HBEs on their account in the REV, which they can use for their own annual obligation or for trade with other account holders. Companies must specify the feedstock from which the biofuel has been produced when submitting their claim. They must base this on the feedstock as stated in the Proof of Sustainability (PoS). Each company with certified locations may issue a proof of sustainability for fuel deliveries from those locations. The proofs

[33] Nabisy: Pursuant to the Biofuel Sustainability Ordinance and the Ordinance on Electricity Production from Sustainable Biomass, data relevant for the German market must be entered in Nabisy. The German main customs offices, the biofuel quota body, the German Emissions Trading Authority, network operators as well as the competent authorities of other member states of the European Union have direct access to this web application. Nabisy also serves as a source for the Experiences and Evaluation Report regarding EU Directive 2009/28/EC, to be drafted annually for the German government and the EU Commission (BLE, 2020). These registries are, however, not harmonised.

of sustainability eventually go through the entire production and commercial chain until a claiming company has claimed the sustainability. This is done by claiming the fuel delivery for the Dutch transport market in the REV registry and by drafting a proof of sustainability for the NEa, citing the relevant sustainability characteristics[34] (NEA, 2019).

The biofuels sector is in Europe represented by multiple Associations and Platforms in the biofuels sector. Although these associations do not have a role in the governance of the sector, they have an interest as sustainability risks may impact on the sector's reputation. Relevant associations are European Waste-to-Advanced Biofuels Association (EWABA), the European Biodiesel Board (EBB) or European Renewable Ethanol (ePURE).

3.7.4 Certification schemes and their auditors

Voluntary certification schemes help to ensure that biofuels are sustainably produced by verifying that they comply with the EU sustainability criteria. Currently (April 2020) there are 14 certification schemes recognised by the European Commission[35]:

1. ISCC (International Sustainability and Carbon Certification)
2. Bonsucro EU
3. RTRS EU RED (Round Table on Responsible Soy EU RED)
4. RSB EU RED (Roundtable of Sustainable Biofuels EU RED)
5. 2BSvs (Biomass Biofuels voluntary scheme)
6. Red Tractor (Red Tractor Farm Assurance Combinable Crops & Sugar Beet Scheme)
7. SQC (Scottish Quality Farm Assured Combinable Crops (SQC) scheme)
8. Red Cert
9. Better Biomass
10. RSPO RED (Roundtable on Sustainable Palm Oil RED)
11. KZR INIG System
12. Trade Assurance Scheme for Combinable Crops
13. Universal Feed Assurance Scheme
14. U.S. Soybean Sustainability Assurance Protocol EU (SSAP EU)

In 2018, The ISCC EU sustainability system was used by all obligated parties that supplied liquid biofuels in the Netherlands; it is not certain whether ISCC is also mainly used by earlier links in the supply chain. For the deliveries of biogas, the Better Biomass (formerly NTA8080) sustainability system was mainly used by the obligated parties for that year (NEA, 2018).

[34] These characteristics include: The name of the feedstock(s); the country of origin for the feedstock(s); the greenhouse gas emissions in the entire production chain of the biofuel; and, the voluntary scheme under which the delivery is taking place.
Some of these certification schemes have a limited scope and can only be used for one country of for part of the criteria. An overview table with a description of the scope of each of them is available at https://ec.europa.eu/energy/sites/ener/files/voluntary_schemes_overview_july_2019.pdf

Voluntary schemes recognised by the Commission will be required to adjust their certification approaches to the sustainability criteria and provisions established by the recast of the Renewable Energy Directive (EU) 2018/2001. The Commission plans to start the process of recognition of the voluntary schemes for covering the revised sustainability criteria during the first half of 2020 (EC, 2020).

Voluntary schemes are not only recognised by the European Commission to proof compliance with the RED's sustainability criteria, but are also recognised for other regulations and public policies, such as the Dutch procurement criteria for timber (TPAC), or for the Dutch sustainability criteria of biomass for energy application[36]. These sets of criteria are currently not fully aligned.

Any certification scheme remains voluntary and operates in a private market. The market of biofuel certification is competitive, and the systems compete in the market to get their share. Certification schemes with stricter rules and criteria are general more difficult to comply with, and considered more costly, in comparison with schemes with less strict rules. When rules and criteria of a scheme become too strict (and costly) in comparison with others, there may be a risk that market moves to "easier" schemes which may result in a race to the bottom (Workshop, 2020).

Schemes, through continuous improvement revise their standards and are therefore not static. Standard revisions anticipate on new developments (e.g. including new criteria, such as on ILUC or carbon stocks), inputs received from their own members (during annual meetings) or to anticipate on legislative changes (as in the RED). EU Recognised schemes are required to revise their standards with new legislative requirements (as mentioned in the RED) so they are again compliant.

Note 1 » [36] See: https://www.adviescommissiedbe.nl

4 » Tightening traceability with a common database

An EU-wide common traceability database is considered by interviewees as the transversal connecting solution for tightening the traceability of biofuel supply chains and mitigating all identified sustainability risks. Such a database improves the management of the chain and helps economic agents to build their own market record by registering correct and complete sustainability information of the products they produce and trade. This database becomes potentially also a source of information and tool to support auditors' work.

A traceability database offers the opportunity of registering the sustainability information starting at the origin of the feedstock or residues, regardless its location (within the EU or abroad). Traceability databases have in general the following key characteristics:

- There is a traceability mechanism: its scope (what, from where to where and when) depends on the purpose given to the database;
- All sustainability information is transferred through the traceability system, linked to a uniquely identifiable certificate; and,
- An assigned unique identifier is linked to the product for tracking the information along the supply chain.

The complexity of tracing back and forth information in supply chains, and the risk related to unclear Chain of Custody management (see chapter 2) has resulted in the reaction of the European Commission expressed in Article 28 of the RED II establishing a European traceability database. The concerned risk has also been taken up seriously by the biofuels sector. Various sector organisations with European representativeness have taken the initiative to propose the development and set up of an interim database following the RED II requirements that would operate until the European database is finally available.

In this chapter, the following aspects are discussed:

- Issues related to access and use of data.
- The scope and expected features of the RED II Union database.
- Progress of the proposed sector's interim database.
- Issues related to governance of the foreseen databases.

4.1 Access and use of data

The key assumption for a good traceability database is that data filled into the database are complete, reliable, understandable and accessible. These requirements open the debate to many relevant issues. An EU-wide common traceability database will need to electronically store an organised collection of data still to be defined. This requires a decision on:

- Which type of data will be included in the database (from what supply chains and from where to where in the supply chain);
- Levels of access rights: which users get access and insight to which type of data; and,
- Levels of security and privacy requirements.

4.1.1 Type and quality of data

The type of data to be included in the database is partly defined in Article 28 of the RED II (see section 4.2). Many interviewees were of the opinion that a traceability database should include at least those data that are key to mitigate the risks around the incorrectness or incompleteness of information in the Chain of Custody (see chapter 2). This means that the least requirement for a traceability system should be that input and output volumes, together with the unique identifier of certificate schemes, are stored in the database. Additional information could be decided at a later stage (Workshop, 2020), ([10], 2020). As example, under TRACES, data and their units depend on the product that is tracked. A tool like RSPO Palmtrace contains certified volumes of palm oil products (and chain of custody scope), linked to a unique traceability number (Navigant, 2020).

A traceability database system will likely have to cover most part of the supply chain (not just the end) to effectively mitigate sustainability risks identified in chapter 2 ([9], 2020). The production step may be appropriate starting point for supply chains with less risk for fraud (Workshop, 2020), while starting at the collection point, or even at the point of origin, may be needed for supply chains with higher risk, such as those entitled to double-counting benefits ([9], 2020).

A robust system for quality check of date will also be required. For example, TRACES has automated checks to prevent users from entering wrong data. Users can no longer change consignment data once submitted. Consignment data (and its history) can be inspected by control authorities throughout the whole trace process. A tool as RSPO Palmtrace has built-in plausibility checks on data registered (e.g. to prevent overselling), (Navigant, 2020).

The RED II states that for the European database "Member States shall take measures to ensure that economic operators enter accurate information into the relevant database" (see section 4.2). Certification schemes and auditors from certification bodies will also likely get a role in (i) checking the data in the database and (ii) cross-checking these data with what they see on the ground. For example: do the volumes match with e.g. the capacity of the tanks? the numbers of lorries? ([9], 2020). In addition, dealing with information on products that are processed and traded over time present some technical challenges for the database development[37], which need to be tackled during the quality check controls.

4.1.2 Levels of access rights

It is in principle the owner of the database, the party with the power and responsibility to assign access rights to the data stored in a database. However, the issues related to access rights and use of data are of the highest importance and need careful analysis and discussion before decisions in this respect are made. A bad use of those rights and data may affect the commercial strategy of companies, or directly infringe law and rights of the database participants. Moreover, the success for the broad adoption of a common EU-wide

[37] Small differences of data must be dealt with in the database. Registered and actual volumes of batches received may differ. The moments of transaction, physical reception of batch, and reception of certificate are usually different. For example: (i) once material is blended, it has to be moved to a different mass balance. Regardless of how 'small' the blend might be; (ii) feedstocks need to account for yield and moisture losses or (iii) there are for example many different CO2 levels to be checked, which change overtime, and this may create problems. A solution may be to start using default values only and expand the system later on to include actual values.

traceability database requires a broad consensus between authorities and companies participating regarding who gets access rights, to which data, and under which conditions this data can be used. The sharing of information also needs to comply with EU and national regulations. Laws and EU Regulations exist for example on information exchange between companies; situations exist where the exchange of information can be harmful for competition and this information may not be disclosed. There are also rules around the reliability and confidentiality of online information exchange to government parties (see also Annex 4).

A final consideration is at what point in time access rights can be used by the different permitted stakeholders. Auditors would need instant access during audits. They should be able to check the history of consignments when they do their audit work. National authorities will need different types of access rights. Entities with verification obligations may request to have a high level of access rights at any time, but this needs to be analysed and discussed in-depth and carefully as such a decision will have important links with EU competition law, good commercial practices, security requirements and privacy issues. Other national authorities will mostly need aggregated information at specific times for reporting they are mandated to do.

4.1.3 Security and privacy requirements

The combination of levels of access rights for different types of users, and the type of data they have access to, strongly determines the level of security and privacy requirements needed. Security and confidentiality of information was considered key by all stakeholders and experts interviewed. The database must guarantee traceability, but it is not intended that information about trade transactions should end up available to the wrong user, or to the competition.

As illustration of handling different data privacy requirements, the European database 'TRACES' applies rules on restrictions at different levels. Depending on the profile and user rights, users may access the data encoded within TRACES. Competent authorities are given the possibility to extract data from TRACES to facilitate targeted checks in the field, and perform data quality controls (TRACES, 2020). Securing confidentiality of information can amongst others be realised by:

- Technical management and characteristics of the database (strict security walls, encryption of data, anonymising some of the data);
- Auditing and monitoring of the database itself (see section 4.4 on governance issues);
- A variation in providing access to data (from open data to the public to secured data for only a limited group) has to be considered; and,
- More confidential data should only be available to parties that have functional reasons for this, in particular the auditor and the certifying institution. And the company as the owner of the data. Inspection bodies can get insight if there is a good reason to do so in the context of investigation ([9], 2020).

A separate question is whether the governing organisation gets access to all the information stored in the database. Related to this is the question whether the database will be a passive entity or have a more policing role tracking suspicious transactions and having access to data that can be considered sensitive commercial information. In all cases, strong data security is required.

4.2 RED II Union database

Article 28 of the RED II includes provisions with the aim to minimise the risk of single consignments being claimed more than once in the Union. It requires the Commission to set up a Union database to enable the tracing of liquid and gaseous transport fuels that are (Navigant, 2020):

- Eligible for being counted towards the new renewable energy target;
- Suitable for measuring compliance with renewable energy obligations; and
- Eligible for financial support for the consumption of biofuels, bioliquids and biomass fuels.

Consultancy company Navigant has been assigned by the European Commission - DG ENER with a scoping study and benchmark of technical solutions to assess what type of databases and technical features could suit better the European Commission's objective ([1], 2020), though details are still largely unknown. The indicated timeline of introduction of the European database is 2021 but an introduction in 2022 seems more realistic (Workshop, 2020).

4.2.1 Scope

The RED II states that for the European database that the "Commission shall ensure that a Union database is put in place to enable the tracing of liquid and gaseous transport fuels within the scope of the RED II (as further defined), indicating a broad coverage of supply chains.

The RED II also mentions that Member States shall require the relevant economic operators to enter into that database information ..[…].. starting from their point of production to the fuel supplier that places the fuel on the market. This indicates that a database will cover a large part of the supply chain. Interviewees have indicated that it is not yet certain from which point onwards the supply chain will be included in the database and this may vary from the Point of Origin up to the refinery (Workshop, 2020). Consultations from Navigant (2020) learn that there is a great call for a broader scope than the RED II strictly describes, preferably even from point of origin by the majority of the participants.

The RED II also states that a Member State may set up a national database that is linked to the Union database ensuring that information entered is instantly transferred between the databases. While Member States should be allowed to continue to use or establish national databases, those national databases should be linked to the Union database, in order to ensure instant data transfers and harmonisation of data flows. This stresses the importance of harmonisation of data between national registries.

4.2.2 Type of data to be included

The RED II states for the Union database that Member States shall require all relevant economic operators to enter information into that database on the transactions made and the sustainability characteristics of those biofuels, including their life-cycle greenhouse gas emissions. Transactions refer to the product volumes traced in the supply chain.

The review study from Navigant (2020), recommends that sustainability and transaction data are core data to be included. Transaction data relates to the transfer of a specific consignment between a buyer and seller at each step Contract data and supporting information could also be included in the database if there is demand for it and confidentiality is resolved.

4.2.3 Users

The RED II mentions various (potential) data users for being granted access to the Union database (next to the owner of the database). Those are fuel suppliers, economic operators and the Member States:

- Fuel suppliers shall enter the information necessary to verify compliance with the requirements (as further defined) into the relevant database;
- Member States shall require relevant economic operators to enter into that database information ..[…].. starting from their point of production to the fuel supplier that places the fuel on the market.

Some of the stakeholders that may have access to the data registered and stored in the Union database are mentioned in the next paragraphs.

4.2.3.1 Member States and their inspection bodies

The RED II mentions Member States as one of the users to have access to the Union database. The RED II makes a clear reference to the need to link national databases with the Union database, in order to ensure instant data transfers and harmonisation of data flows.

If the governance of the Union database would allow Member States to have access to data, then national authorities could potentially trace back and verify information for any supply chain ending in their national markets, and act in cases of concerns of risk ([2], 2020).

This level of accessibility (and potential for cross-checking of information) of course depends partly on the question to which data, and how far back in the supply chain, Member States get data access to. A consideration is that in principle inspection bodies can only get full insight when there is a good reason to do so in the context of investigation ([9], 2020).

4.2.3.2 Economic agents and fuel suppliers

The RED II states that economic operators shall enter accurate information into the Union database and Member States will take measures to ensure that this is indeed done. Registered users should in principle be given permission to see the information they register themselves, and the information they legally are entitled to know about the purchases they make (previous step in their supply chain). Additional access rights could infringe competition rules/laws (see Annex 4), or simply be considered as not good commercial practice.

4.2.3.3 Certification bodies and their auditors

Certification bodies and auditors are not mentioned in Article 28 of the RED II. It would be logical that they get access to (some) data when this has a functional reason ([9], 2020). This will facilitate and make more effective the work of auditors and certification schemes, and will enable them to cross-check information. The fact that information is traceable facilitates potential additional verifications when needed, or when any wrongdoing is suspected. It will also facilitate that a certification scheme conduct integrity assessment over the whole supply chain, regardless the certification scheme had certified all steps of the supply chain being assessed, or just part of it (with other certification schemes certifying the rest of the chain), ([2], 2020).

4.2.3.4 Players in other sectors with a functional reason

The Union database would make intra-trade (trade flows) between European countries more transparent. Potentially it could be of interest to link the Union database to other existing EU or Member States databases, such as TRACES for tracing animal (by-) products. This would facilitate doing cross-checks of information between different sectors. The possibility to link different sectors databases and do cross-checks requires above all harmonisation between registries and standardisation of data.

4.2.4 Quality of data

According to the RED II, Member States will check the accuracy of the data: this will become an additional activity for inspection bodies. In the Netherlands, this will be a task for the NEa. ([8], 2020). Likely, the European database may improve the oversight and transparency on intra-European trade. The instalment of such a database requires at least harmonisation between national Registries of Member States.

4.3 Sector's interim database

Sustainability risks are taken up seriously by the biofuels sector too. In part, also due to the results of investigations into fraud in the trade of biotickets ([9], 2020). Various European sector organisations have taken the initiative to look for an interim database solution ahead of the Union database, which is not expected earlier than the second half of 2021.

The Biofuels Database Stakeholder Group (BDSG) was initiated in 2019 by the biofuels group of the MVO in the Netherlands. It is a pan-European initiative with broad representation from stakeholders in the biofuels supply chain, such as BB, MVO, NVDB, APPA (Spanish renewable energy association), MVAK, VDB from Germany and EWABA and some traders. The BDSG supports the adoption of single biofuel database by EU biofuels supply chain as interim solution ahead of Union database, to prevent potential future fraud opportunities (10, 2020), (Navigant, 2020). The European Commission is looking at all options, including the interim option as well (10, 2020).

As part of this work, the BDSG is assessing two pilot test database candidates: Trace Your Claim (TYC) and Bioledger ([1], 2020). The results of this evaluation (based on operability, value and governance) will be communicated to the European Commission as well. The database considered most suitable in this

assessment would be recommended to the wider stakeholder group, including also major oil companies. The BDSG aim is that all promote using just one database.

There is a general agreement by interviewees that one common database, and not multiple databases, is needed to improve traceability, for various reasons: First, when (ideally) all types of supply chains are included in one European database, the risk for fraud is largely mitigated as complete oversight of traded sustainable volumes is gained (potentially such a database could also include non-sustainable material). Secondly, one European database also avoids potential risks for leakage to other countries. One common database also prevents duplication of paperwork for economic agents.

The issue is how to make the overall sector move towards one common database? ([2], 2020). European Competition Law (see Annex 4) aims to prevent or sanction anti-competitive conduct on the part of business, such as agreements between companies to fix prices or restrict choice, which negatively affect consumers (Brack, 2019). Following the laws on competition, companies cannot agree, jointly as one sector, to only require one common database. But the sector can promote it.

Some other considerations are related to the extra effort that will be required from companies to filling in the data in the database ([5], 2019). The more data to be filled in, the "heavier" and complex the database becomes. It is important to consider the cost/benefit of additional data in a database (Workshop, 2020).

The technical component of the database goes hand in hand with the practical development and implementation of it, and also here choices need to be made:

- The database can grow enormously in size, data coverage, data storage, and complexity. The higher the complexity of a database, the higher the cost.
- Related to this, a database goes also hand in hand with maintenance, technical support, a helpdesk and service provision (which has a cost and requires people as well).
- It is important that the technological features of a tool match the conditions, objectives and requirements of the users.
- A consideration is who would bear the cost for developing and maintaining the database.
- Ideally, the current database aligns with current practices in the market (as companies have already own systems and procedures in place).
- Timeline for readiness and the consideration to phase in some first supply chains and mechanism to introduce new supply chains. How will a database be implemented and start (small-scale?) ([7], 2020).

4.3.1 Trace Your Claim (TYC)

Trace Your Claim (TYC) is an online traceability database where economic agents from point of origin to blender can register the information of their certified feedstock, intermediate or final products. It is set up and owned by GRAS Global Risk Assessment Services GmbH. The first version of TYC was launched in 2013.

Initial pilots held in 2012-2013 focused on UCO biodiesel supply chains, as well as on soy and palm; 2019 pilots focussed on secure transfer of sustainability data (Navigant, 2020).

Participants can put forward only certified batches. This database automatically connects all chain steps, from origin to market, no matter the certification scheme(s) used in a specific chain. Additional supporting documentation can be permanently attached to volumes as they are bought and sold. Transactions must be confirmed by the buyer before volumes are registered – sustainability data cannot be edited by downstream parties (Navigant, 2020). The database is thus thought to be open to all certification schemes ([2], 2020).

The TYC database provides users with everything they need to comply with the complex requirements for 'single and double counting' material within the EU and its Member States. TYC facilitates compliance with the provisions of the Renewable Energy Directive (RED 2009/28) and the Fuel Quality Directive (FQD 200/30). Further on TYC provides access to existing national databases for economic operators (TYC, 2020). The (possible) components and governance of TYC is further discussed in chapter 4.

4.3.2 Bioledger

Bioledger is a private database supported in its development phase by Oracle, ISEAL ALLIANCE and RSB. RSB has guaranteed that five companies certified by RSB will test the pilot database. Greenergy also supports the development of the database. Data specifications will be subject to stakeholder consultation, but the aim is to cover sustainability and GHG data, consignment data and contract data. Bioledger aims to complete traceability along the supply chain to facilitate (voluntary scheme's) audit and (regulator's) verification processes, with a supply chain scope from either the point of origin or the fuel producer. The inclusion of point of origin could be facilitated through use of Bioledger Collector App and integration of handheld devices already used by collectors (Navigant, 2020). The Bioledger database is aligned with the 28 recommendations made by EWABA to certification schemes in EWABA's Standard of Transparency, see also Annex 3 ([6], 2020).

Bioledger is based on blockchain technology use and provides herewith a secure database solution. The use of the blockchain technology would allow for example, that UCO collectors will have access to it through an App in their mobiles. Every time that the collector collects UCO from a restaurant, or any other point of origin, the App will register the amount and id of the restaurant. The App will check if the location corresponds to the address of the restaurant (this works as proof of existence), will check if the amount collected is what the restaurant regularly delivers, and will check the distance driven from the restaurant to the collecting point or next restaurant. After registering the amount collected, the database immediately creates a "token" for the collected UCO. This token will travel with blockchain technology through all the supply chain until the biofuel is finally put in the market. In this way, the whole supply chain is traceable. The same concept applies to farmers delivering their crops, or to any feedstock ([6], 2020).

4.4 Governance of the foreseen database

4.4.1 RED II Union database

The RED II states that "The Commission shall ensure that a Union database is put in place" (see 4.1); the management of it could be organised by the Commission itself (as is the case for TRACES) or outsourced to an external party. The Commission tends to being both owner and manager (Navigant, 2020) A European database could learn from existing experiences, such as the governance of the TRACES database and the governance of the EU ETS database (Workshop, 2020). The collected data and information requested by the European database 'TRACES' are for example stored on the European Commission servers in Data Centre in Luxemburg, the operations of which underlie the Commission's security decisions and provisions established by the Directorate of Security for this kind of servers and services (TRACES, 2020a).

4.4.2 Sector's interim database

Neither TYC, nor Bioledger have decided their final governance structure. Bioledger preliminarily indicates that Bioledger should be managed by an independent body, and that some participation from the industry, industry associations, certification schemes and MS regulators could be expected. Trace Your Claim considers that in principle, the database should be managed by an entity independent from certification schemes, and independent from market interests influence. All this to ensure full transparency and reliability ([2], 2020).

In any case, both initiatives agree that such governance should be independent and operate on European level. They also agree to align governance with the guidelines/direction provided by the EC will for the Union database (art. 28 RED II), ([6], 2020).

5 » Recommendations for improved transparency and traceability in biofuel supply chains

This chapter presents recommendations to drive the biofuels market towards improved transparency, traceability and accessibility of sustainability information. Several measures that can be combined in different ways are recommended at regulatory level (both on country and on European level), to certification schemes and to the Dutch biofuels sector.

There is no one single pathway towards increasing transparency and traceability in the supply-chains for the biofuel sector. There are multiple options that together enhance improvement. Success in the application of proposed recommendations is based on the cooperation between the biofuels sector, certification schemes and the government and its authorities. Authorities like NEa, Customs (Douane) Environmental Inspections (ILT) and Food and Consumer Product Safety Authority (NVWA) must work together with companies to build up confidence in the biofuels sector, recognising the different roles, possibilities and responsibilities of public and private stakeholders. Combined inspection and monitoring of data stored in databases should lead to an effective risk-based approach in surveillance ([9], 2020; [10], 2020; Workshop, 2020).

Next to that, it is important that these recommendations are implemented across Europe, with possibly a front-running role in the Dutch biofuels sector. For the biofuels sector, it is important that a European level playing field is ensured in all circumstances (Kick_off_meeting, 2020).

5.1 What can regulation do?

Recommendations to drive the biofuels market towards improved transparency, traceability and accessibility of sustainability information is preferably harmonised on a European level. Three recommendations are given at regulatory level:

- Monitoring and supervision of voluntary schemes;
- Monitoring and supervision of certification processes and auditors; and,
- Harmonising the interpretation of definitions and terminology.

5.1.1 Monitoring and supervision of voluntary certification schemes

The EC approval of voluntary certification schemes is for 5 years and no pro-active monitoring of performance of approved schemes is currently carried out for the period in between. Some Member States, like Germany have introduced requirements regarding voluntary schemes and certification bodies but this may undermine harmonisation of supervision on European level (Europese_Rekenkamer, 2016). Independent supervision of certification schemes is organised at this moment differently – or not – under certification schemes themselves. Also, the large majority of schemes are not accredited. The Better Biomass (NTA8080) scheme is an exception as it is accredited through independent RVA Accreditation.

The upcoming Implementing Act for voluntary schemes (2020/2021) gives the possibility to introduce measures for an EC driven (independent) supervision of certification schemes and their processes. To ensure a minimum quality on auditing and procedures, this could include a requirement on accreditation of certification bodies (e.g. through ISO 17001). Next to that, good monitoring practices through guidance notes from the European Commission could also contribute to a more efficient functioning of certification schemes (Europese_Rekenkamer, 2016). The Dutch Ministry of Infrastructure and Water Management has the chance to provide the European Commission inputs on this, which may lead to a change of requirements for voluntary schemes applying to EC approval. The Dutch biofuels sector may also consider submitting this recommendation as its own to the Ministry and (on European level) to the European Commission (Kick_off_meeting, 2020).

5.1.2 Monitoring and supervision of certification and auditors

Most of the certification bodies (auditors) are accredited (e.g. against ISO/IEC 17065 establishing generic requirements such as being independent) and this is generally also a requirement from voluntary schemes. Schemes may impose additional requirements to auditors to ensure higher levels of expertise or to ensure through mandatory training that standard requirements are well understood. In this direction, the ISCC scheme has introduced integrity audits. However, those audits are carried out by ISCC itself, which may present conflicts of interest ([5], 2019).

The RED II recognises the need for stricter supervision of auditors by Member States ([8], 2020). The interpretation of this RED II requirement by the Netherlands is to have supervision on the auditors and on certified parts of the supply chain and (within the country) to check whether certification processes have been correctly implemented (based on the procedures from the standards); and whether auditors have followed standards procedures ([8], 2020). It is recommended to strengthen these processes.

How to improve supervision of auditors operating outside the Netherlands in Europe, but especially outside Europe, represents a complexity. For such cases, it is recommended to follow as first step the example set by Germany with its witness audits, and include within the scope of Dutch inspections the activities of those certification bodies headquartered in the Netherlands. This will allow to extend inspections to their auditors working outside the Netherlands ([8], 2020). An important condition is that inspection bodies have means and resources to act when discrepancies are found. Also, it is important to plead for harmonisation on European level to ensure a level playing field of supervision, to prevent shopping between certifiers.

Monitoring certification of double-counted biofuels is of particular importance. There are discussions at the Dutch Ministry of Infrastructure and Water Management on whether to keep or not the double counting for waste and residues after 2020. Keeping double counting has advantages and disadvantages. An important advantage is that it contributes to the transition towards advanced biofuels. Figures show that this is effective as palm and soy oils are no longer used for biofuels consumed in the Netherlands. On the other side, an important disadvantage is that incentives to double counting may become a risk for fraud. The Netherlands has linked double counting with the Dutch verification protocol, which allows verifiers to do on-site

inspections anywhere in the world. Using this attribution provides the NEa an additional opportunity for monitoring double-counted biofuels ([8], 2020). Most other Member States have not developed a verification protocol. A level playing field in the European biofuel sector would be better promoted if such verification protocol would be upscaled at European level. A European verification protocol could also precise definitions and criterial for all double-counted biofuels, and establish the mandatory use of a database by them ([2], 2020). These measures could help to clarify what kind of waste-based biofuels are the most sustainable and offer enough confidence that they will not be subject to fraud risk.

5.1.3 Harmonising the interpretation of definitions and standardization in datas

There is room for clarifying and harmonising the interpretation of different regulatory aspects and definitions used, such as the mass balance. This should ideally be done at European level to avoid variation in interpretation by the various member states. Note that a different interpretation of the mass balance between an inspection body, certification body and a company can – even unintentionally – easily lead to incorrect (false) information. Regulation can take a role in clarifying these interpretations, in cooperation with the biofuels sector and certification schemes ([5], 2019). Next to that, the upcoming Union database will be linked with national databases and will require a common format in reporting. This will require harmonisation between registries and standardisation of data.

5.2 What can certification schemes do?

There are opportunities to strengthen the role of voluntary certification schemes to close gaps in preventing potential forms of fraud and to improve transparency ([5], 2019). In this report, five recommendations are given to certification schemes:

- Implement a Standard of Transparency (as proposed by EWABA);
- Increase sampling and auditing for higher risk supply chains;
- Improve quality of auditors;
- Increase cooperation and information exchange between certification schemes; and,
- Support the development of an EU-wide common database to tighten traceability.

Note that certification schemes have the possibility to implement (part of) these recommendations by themselves. Alternatively, changes may be recommended or even imposed by regulation (see section 5.1).

5.2.1 Implement a Standard of Transparency

Certification schemes can implement the recommendations proposed by the Standard of Transparency developed by EWABA (see Annex 3), and preferably together agree (see 5.2.4) on what common actions and improvements they can make to ensure consistency and robustness. Higher demands in assurance may lead to more audit work and larger certification costs. It is therefore important that a level playing field is followed when implementing EWABA's recommendations. This is necessary to avoid "moving to the bottom" effect in users of certification schemes since schemes not adopting recommendations will end up being cheaper. This pleads for a strategy where the EC sets the standard and required improvements for

certification schemes ([9], 2020). These required improvements can be included in the upcoming Implementing Act for voluntary schemes (2020/2021) and form part of the (re) recognition of certification schemes that is yet to take place.

5.2.2 Increase sampling and auditing for higher risk supply chains

Determining the size of sampling and number of audits in certification follows generally a risk assessment approach. Increasing verification and the number of audits is beneficial for the transparency of biofuel supply chains, especially when there is a concern of high risk. However, more audits also mean an additional certification cost (Kick_off_meeting, 2020).

A Working Group (WG) promoted by ISCC has been looking at the risks with respect to UCO. There is the EU requirement to verify the existence of restaurants on a sample basis. This WG has focused on how to avoid that non-traceable but already certified UCO is cumulated downstream the supply chain. The Working group recommended to increase the size of sampling to include all those restaurants delivering significant amounts of UCO. The EWABA Standard of Transparency (see annex 3) also mentions the need to adjust the threshold for sampling at the Point of Origin. Restaurants delivering small amounts do not require such strict sampling, since the risk of fraud in these restaurants is considered marginal (small amounts of UCO are not sufficient incentive for fraud).

For mitigating the risk posed by fraudulent companies operating for less than one year after first certification to avoid first year auditing, ISCC has established a new requirement to do a surveillance audit 6 months after first certification. The Working Group recommends that ISCC conducts an additional surveillance audit 3 months after the first certification. This additional surveillance audit would be particularly important to reduce fraud risk in companies that operate with UCO and virgin oil ([2], 2020).

5.2.3 Improve quality and role of auditors

The quality and professional expertise of auditors impact how audits are performed. Requirements on auditing experience and professional background are often limited, although these qualifications are important to perform good quality verification of data, especially the complexities of GHG emissions, allocation of outputs in the mass balance and for the ILUC Directive ([5], 2019).

The EWABA Standard of Transparency mentions that the training and diligence of auditors together with certification schemes' responsiveness to allegations of fraud are in need of improvement. EWABA therefore requests certification schemes to allocate greater resources to policing, complaint-handling and follow-up in response to whistleblowing procedures.

A second aspect mentioned by interviewees is the fact that auditors only (can) look at the practices of the economic operator and his administration. It would be good if an auditor could do more cross-checks on what happened before and after ([8], 2020). Some of the interviewees plead for a broader role for auditors,

not only focused on a check of the procedures of the certification standards, but based on truth finding for very specific cases could be explored ([8], 2020).

5.2.4 Increase cooperation and information exchange between certification schemes

The report from (Europese_Rekenkamer, 2016) mentions the need for increasing information exchange, not only between the Commission and the Member States, but also between voluntary certification schemes. This report mentions the risk of operators, whose request for certification has been rejected by a particular certification body, to go to another certification body to obtain a certificate without having implemented the improvements demanded by the first certification body. Also, the EWABA Standard of Transparency (see annex 3) calls on certification schemes to reach an understanding to prevent that companies whose certificate is withdrawn are allowed to apply for new certificates under other schemes or under different company names.

5.2.5 Support the development of an EU-wide database to tighten traceability

The wide uptake of one common traceability database will require, amongst others, its recognition and promotion by all certification schemes ([2], 2020). Certification schemes and their auditors will likely get a role in using the database by checking the quality of the input data, and using the data from the database for cross-checks in the field. This pleads for a pro-active role in its development to ensure that auditors are ready and capable to use it.

5.3 What can the Dutch sector do?

Five recommendations are given to the Dutch biofuels sector to drive the biofuels market towards improved transparency, traceability and accessibility of sustainability information:

- Identify and source from responsible hubs;
- Choose "best in class" certification schemes;
- Adoption and further development of tests;
- Set a clear position about the development and use of the traceability database; and,
- Promote public accountability and transparency.

5.3.1 Identify and source from responsible hubs

One of the most important and effective measures that the Dutch biofuel sector can implement entirely by itself is to promote responsible purchasing in the market. This is easily done by sourcing feedstock, UCO, wood residues and biofuels from suppliers with a proven track record of responsibility and sustainability, for example:

- The Dutch biofuel sector could promote higher trustfulness of information by purchasing UCO from well-established, long-term certified collecting points/traders, in particular those using certification schemes that have stricter surveillance methods ([2], 2020).

- For the case of food crops supply chains, the sector could promote higher trustfulness of information by encouraging the purchase of feedstock coming smallholders that use tools that provide buyers with accurate and updated land-based data, such as GRAS ([2], 2020).
- The sector could promote responsible production and collection of biofuel feedstock by supporting innovative ideas, for example by purchasing from producers of virgin palm oil who deliver the cooking oil to the restaurants and take it back again for recycling (closed production cycle).
- For the identification of responsible hubs, the Dutch biofuels sector could further explore the use of tools that improve the transparency at the point of origin through satellite imaging (see for example the GRAS tool) and/or give more in-depth analysis of risk in certain countries or value chains (see for example the TRASE tool).

5.3.2 Choose "best in class" certification schemes

The Dutch biofuels sector can recommend companies operating in the Netherlands a "minimum" standard for responsible sourcing / production of biofuels, which lays down the minimum accepted level of quality, transparency and requirements for certification schemes. Examples for setting a minimum sector standard (for example based on a benchmark) are given in chapter 3.

5.3.3 Finding common ground on acceptable level of risk

At the same time, it should be realised that a complete avoidance of sustainability risks (which also change over time) is not possible and there should be a balance between an acceptable risk level (for all stakeholders involved) and the efforts that need to be undertaken for that, avoiding that the requirements and rules for monitoring become too strict, complex and costly (Workshop, 2020). The sector can take a leading role in the ongoing debate between stakeholders to understand and clarify concerns of risks, and coming to an agreement on acceptable risk level to mitigate these. This requires a better understanding in how far certain risks are indeed materialised, and which input parameters (e.g. GHG emissions, conversion factors) are most sensitive for possible deviation.

5.3.4 Adoption and further development of tests

For some specific supply chains and contexts, such as biofuels produced from UCO that need to proof their bio waste-content, it is worthwhile that the sector supports the development and promotes the adoption of reliable physical tests in place to proof the feedstock has not been altered.

5.3.5 Set a clear position about the development and use of a traceability database

It is strongly recommended that the Dutch biofuels sector develops and adopts a clear position regarding a common EU-wide traceability database; a key question here is what the database (at first start an interim database) should be able to do. The Dutch biofuels sector could support the broader European biofuel sector in taking the frontrunning role and start using a single interim database. This will also prepare companies in

the sector to the use of the upcoming EC database once available and its use likely mandatory. This should be done in cooperation with other relevant stakeholders as the uptake of a database requires substantial engagement and promotion from biofuel associations, and from all certification schemes ([2], 2020).

Next to that, the sector can collate experiences from companies that start using this interim database or have already built up experience in installing a company traceability system themselves. These practical experiences are useful to facilitate a smooth uptake of the database by the market.

5.3.6 Promote public accountability and transparency

The Netherlands is one of the few European countries that publishes an annual report. NGO's have difficulties to create an annual overview at EU level as this information is not published by all EU Member States ([8], 2020). The development of a European database may further facilitate annual reporting about progress made on the sustainability of biofuels on Member State level since most or all the required sustainability information for reporting will be stored in such database. The Dutch biofuels sector can promote the added value of such an annual report to other biofuel producing countries ([2], 2020).

Next to that, the Dutch biofuels sector can continue its work to communicate to the public in an understandable way what the biofuels sector is doing, what the main feedstock are and where the risks and benefits lie, as there is still misunderstanding about this under the general public. Also, this supports public accountability.

6 » Bibliography

- [1] (2020) to [10], 2020: *Interviews with market stakeholders*
- Accenture, 2020). *How we used blockchain to make supply chains transparent and traceable.* [Online] Available at: https://www.accenture.com/nl-en/blogs/insights/improving-physical-supply-chains-with-blockchain
- AFI, 2019). *Operational Guidance on Smallholder Inclusion in Ethical Supply Chains,* From: Accountability Framework Initiative.
- Bharosa, N., R. van Wijk, N. de Winne, et al, 2015. *CHALLENGING THE CHAIN: Governing the automated exchange and processing of business information.* Delft: ISBN: 978-1-61499-496-1 (print).
- BLE, 2020. *Nabisy.* Available at: https://nabisy.ble.de/nabima-web/app/locale?set=en
- Brack, D., 2019. *Towards sustainable cocoa supply chains: Regulatory options for the EU,* Published by: FERN, Tropenbos International and Fairtrade.
- EC, 2018. *DIRECTIVE (EU) 2018/2001 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2018 on the promotion of the use of energy from renewable sources (recast),* European Commission
- EC, 2018a. *Commission Delegated Regulation on supplementing Directive (EU) 2018/2001 as regards the determination of high indirect land-use change-risk feedstock for which a significant expansion of the production area into land with high carbon stock is observed,* European Commission .
- EC, 2020. *Voluntary schemes.* Available at: https://ec.europa.eu/energy/topics/renewable-energy/biofuels/voluntary-schemes_en?redir=1#recognition-criteria
- EC, 2019. *REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS on the status of production expansion of relevant food and feed crops worldwide,* Brussels
- Ecofys, 2014. *Trends in the UCO market - Input to PIR,* by order of: Department for Transport (DfT).
- Europese_Rekenkamer, 2016. *Speciaal verslag nr. 18 Het certificeringssysteem van de EU voor duurzame biobrandstoffen.*
- FairFood, 2019. *A chain of possibilities Scoping the potential of blockchain technology for agri-food production chains in low- and middle- income countries* Available at: https://fairfood.nl/wp-content/uploads/2019/05/A-Chain-of-Possibilities.pdf
- FEFAC, 2020. *FEFAC sourcing guidelines*. Available at: https://www.fefac.eu/fefac-positions/sustainability/21551/
- FSSAI, 2020. *RUCO Booklet.* Available at: https://fssai.gov.in/ruco/file/ruco_booklet.pdf
- GMP+-FS, 2019. *GMP+ FSA certification*. Available at: https://www.gmpplus.org/en/certification-scheme/gmpplus-fsa-certification/
- GoodFuels, 2019. *GoodFuels Marine and BLOC announce world's first bunker delivery using blockchain technology.* Available at: https://goodfuels.com/goodfuels-marine-and-bloc-announce-worlds-first-bunker-delivery-using-blockchain-technology/
- GRAS, 2020, Available at: https://www.gras-system.org
- Hajmohammad, S. and Vachon, S., 2014. Managing Supplier Sustainability Risk: Strategies and Predictors. *Academy of Management Annual Meeting Proceedings.*
- ISCC, 2016. *ISCC 201 System Basics Version 3.0 Valid from: 09 August 2016*

- ISEAL, 2016. *Chain of custody models and definitions A reference document for sustainability standards systems, and to complement ISEAL's Sustainability Claims Good Practice Guide*
- ISEAL, 2020. *A shared vocabulary: building a common language of sustainability*
  Available at: https://www.isealalliance.org/innovations-standards/innovations-projects/shared-vocabulary-building-common-language
- Kick_off_meeting, 2020. *Notes and findings from Kick off meeting*
- KPMG, 2019. *KPMG launches blockchain track and trace platform*
  Available at: https://home.kpmg/mt/en/home/media/press-releases/2019/12/kpmg-launches-blockchain-track-and-trace-platform.html
- Kuljian, N. Gerald A. Herrmann, Frank Gerriets, 2018. *Traceability and Technology: An Overview Study Vertragsnummer: 81230527 Projekt: 16.2190.3-0002.00,* Organic Services GmbH.
- Navigant (2020), Union Track and Trace Database for liquid and gaseous fuels, webinar info pack, 7 May 2020
- NEa, 2018. *Rapportage Energie voor Vervoer in Nederland 2018 Naleving verplichtingen wet- en regelgeving Energie voor Vervoer,* Den Haag: Nederlandse Emissie Authoriteit.
- NEa, 2019. *Claiming deliveries - energy for transport*
  Available at: https://www.emissionsauthority.nl/topics/claiming-deliveries---energy-for-transport/sustainability/proof-of-sustainability
- NEPCon, 2020. *NEPCon Sourcing Hub.*Available at: https://www.nepcon.org/sourcinghub/timber
- NWVA, 2019. *Resultaten monitoring eieren op fipronil in de retail.*
  Available at: https://www.nvwa.nl/onderwerpen/biociden/fipronil-in-eieren/resultaten-wekelijkse-monitoring-eieren-op-fipronil-in-de-retail
- Rajamanickam, V., 2019. *BLOC pioneers blockchain-based biofuel supply chain tracking for the maritime industry.*
  Available at: https://www.freightwaves.com/news/blockchain/bloc-pioneers-blockchain-based-biofuel-supply-chain-tracking-for-the-maritime-industry
- RSPO, 2020a. *Palmtrace,* Available at: https://rspo.org/palmtrace
- RSPO, 2020. *RSPO Hotspot monitoring,* Available at: https://rspo.org/news-and-events/announcements/rspo-hotspot-monitoring-updated-23-september-2019
- SBP, 2020. *Data Transfer System from Sustainable Biomass Partnership,*
  Available at: https://sbp-cert.org/data-transfer-system/
- SBR, 2019. *Standard Business Reporting,* Available at: https://www.sbr-nl.nl
- SER, 2019. *Klimaatakkoord Den Haag 28 juni 2019*
- TRACES, 2020a. *TRACES privacy statement,* Available at: https://webgate.ec.europa.eu/sanco/traces/security/privacy.do
- TRACES, 2020. *TRACES toolkit.*
  Available at: https://ec.europa.eu/food/sites/food/files/animals/docs/ah-traces-info-mat-toolkit_en.pdf
- TRASE, 2020. *TRASE tool,* Available at: https://trase.earth/about/faq.
- TYC, 2020. *Trace Your Claim,* Available at: https://www.trace-your-claim.com/home/
- WBCSD, 2016. *Sustainability and enterprise risk management: The first step towards integration,* World Business Council on Sustainable Development.
- Workshop, 2020. (March 2020).

Annex 1: Type of biofuels used in the Netherlands in 2018

The following types of liquid biofuels were registered in the REV in 2018 (NEA, 2018):

Biofuel replacements	Type of liquid biofuels used and registered
Diesel replacements	• Fatty acid methyl ester (FAME) (1) • Hydrotreated vegetable oil (hydrogenated vegetable oil; HVO)
Gasoline replacements	• Ethanol (ETOH) (2) • Ethyl tertiary butyl ether (ETBE) • Bionafta (3)

(1) Most important type of liquid biofuel for this category (97% in 2018), (2) Used for 70% in this group, (3) increasingly used and produced from double-counting waste (NEA, 2018).

Type of biofuels (including origin) in the Netherlands in 2018

- According to data from the REV (2018), liquid biofuels (petrol and diesel substitutes) made the largest contribution to renewable energy supplies for transport in 2018 in the Netherlands. Diesel replacements constitute the vast majority (79%) followed by petrol replacements (19%).
- In 2018, 83% of the total renewable energy for transport consisted of double-counting biofuels (based on the calculated energy content). This distribution indicates that waste streams and residues play the most important role as raw materials for the supplied renewable energy for transport in the Netherlands (NEA, 2018).
- The relative share of biofuels from waste streams and residues increased from 70% in 2017 to 72% in 2018. Waste streams and residues from the palm oil industry (e.g. wastewater from palm oil mill, empty palm oil clusters) were important for the production of advanced biofuels in 2018 (NEA, 2018).
- UCO was the most important raw material for biofuels in 2018 (55,6% compared to 61% in 2017). In addition, animal fat (8.1%), corn (10.5%) and wheat (9.6%) also made relatively large contributions (NEA, 2018).
- The majority of the raw materials for biofuels came in 2018 from Europe (53%), followed by Asia (30.5%) and North America (10.7%). China, Germany and the United States delivered together 37% of raw materials for biofuels in 2018. Other important countries were France and the United Kingdom (NEA, 2018).
- Some raw materials originate from many different countries, such as UCO, animal fats, corn and wheat. Other raw materials originate only from one or a limited number of countries, such as municipal waste, sugar beet or wastewater from palm oil mill (NEA, 2018).
- UCO originates largely from non-European countries, namely China (26%) and the United States (17%) while the Netherlands (13%) and Germany (9%) are the most important European countries of origin (NEA, 2018).
- Wheat and corn mainly come from European countries. The United Kingdom and France are important countries of origin for wheat (33% and 25% respectively), while Hungary and Spain are important countries of origin for corn (30% and 14% respectively), (NEA, 2018).
- Advanced biofuels in the Netherlands accounted for only 0.1% of the transportation energy in 2017 and 1.6% of all biofuels delivered. In 2018, the Dutch government increased the advanced biofuels mandate from 0.6% in 2018 to 1% by 2020.

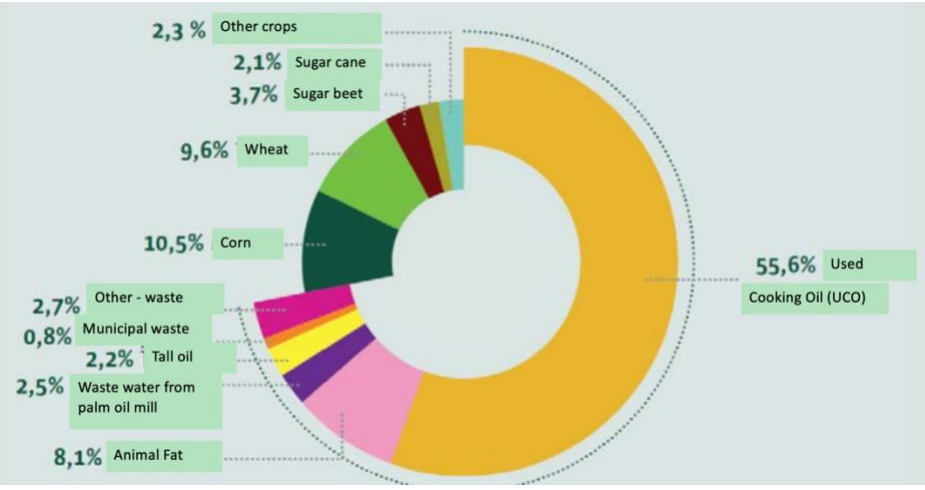

Figure 7: Distribution of raw materials biofuels (based on physical energy content), (NEA, 2018)

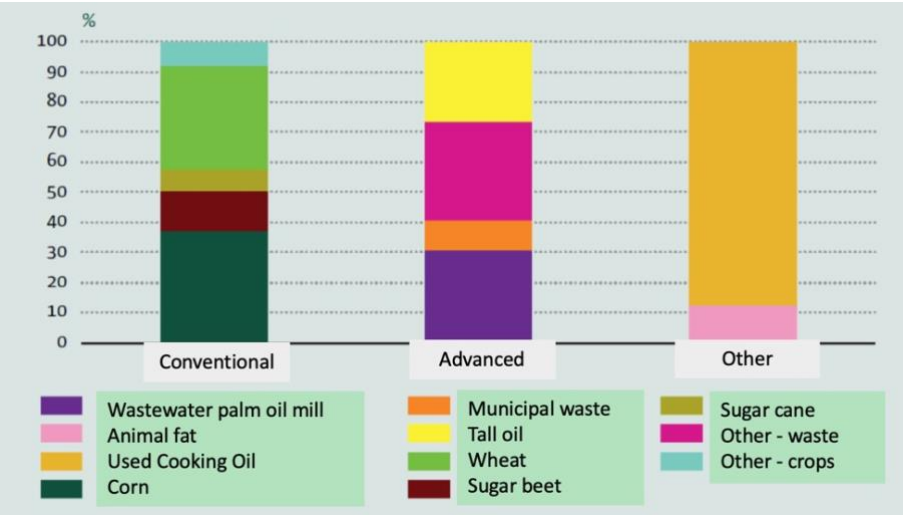

Figure 8: Raw materials used for conventional, advanced and other biofuels in 2018 (based on physical energy content), (NEA, 2018).

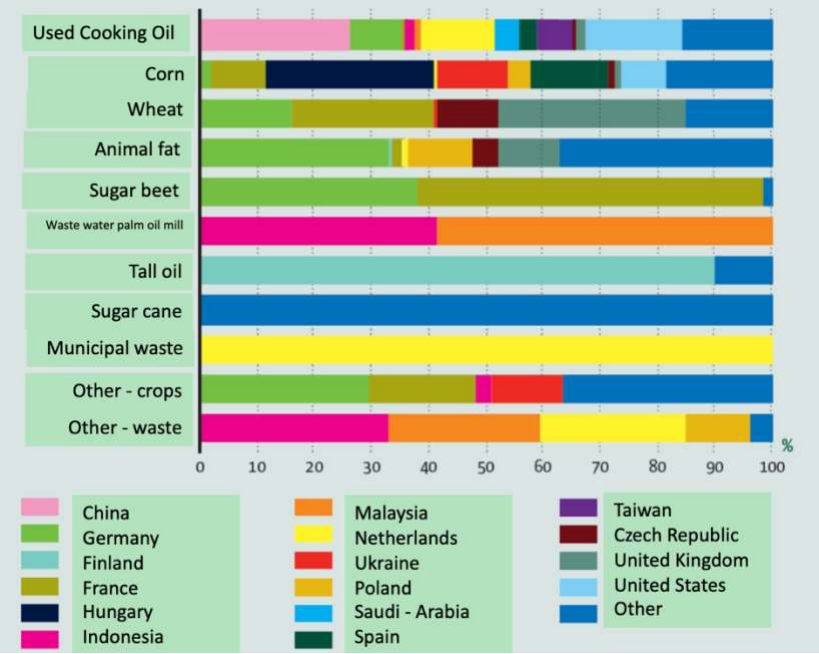

Figure 9: Countries of origin for raw materials in 2018 (based on physical energy content), (NEA, 2018).

Annex 2: Standard Business Reporting (SBR)

Business reporting chains consist of inter-organisational information flows that have been set up to generate and process business information. Business reports in this sense comprise information meant for a third party, regarding the performance of an organisation or the situation within an organisation. The most important requirements for reporting chains are often laid down within legislation and regulations, and prescribe, for instance, the expected contents, structure, format and when they have to be submitted (Bharosa, 2015).

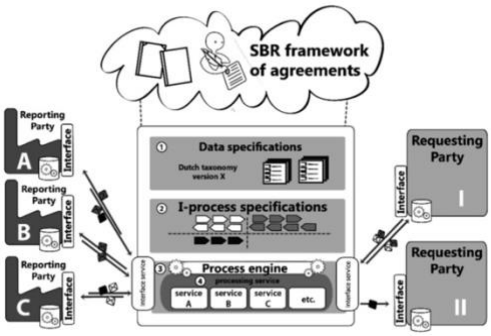

Figure 10: Outline of the SBR solution used by public requesting parties *(Bharosa, 2015)*

The SBR Programme created the Netherlands Taxonomy (NT), in collaboration with a number of requesting parties, for information exchange processing in the financial reporting chain. SBR is, however, not only useful for processing financial data. All sorts of data can be exchanged and processed using SBR. In the food industry for example, actors use an XBRL taxonomy for microbiological criteria (Bharosa, 2015).

Around 100 companies and organisations have entered into a contract to continue developing SBR (SBR, 2019), for example:

- Affiliated parties: Tax Authorities, Chamber of Commerce, OCW / DUO, housing associations (SBR Wonen), banks (Rabobank, ING, ABN AMRO and Volksbank via SBR Nexus) and CBS.
- Since 2018, medium-sized companies have been depositing their annual financial statements for the 2017 financial year and further exclusively digitally via SBR at the Chamber of Commerce.
- The Ministry of Education, Culture and Science has started a pilot report by which educational institutions can provide their annual report fully digitally via SBR (and XBRL).
- In 2018, the Netherlands will be the first country in the world where annual financial statements with an auditor's report will be filed digitally via SBR.

Annex 3: EWABA's Standard of Transparency

Final revision of the EWABA Standard of Transparency, agreed by EWABA members in September 2019

Preliminary remarks

1. EWABA members support the immediate adoption of a series of additional measures to further increase transparency and assurance along the whole biofuels value chain, with specific requirements for the wastes and residues feedstock supply chains. These agreed measures, concerning Collecting Points, Points of Origin, Traders, Biofuel Producers and Processing units, are listed herewith.
2. These measures constitute the "EWABA Standard of Transparency" and preliminary drafts have already been presented to certification schemes for their consideration and adoption. The proposed measures are to be further considered and defined by auditors into objective criteria that can be implemented and audited as soon as administratively feasible within EWABA Members' own operations. Compliance with the criteria should be verified by accredited certification bodies. EWABA will work with certification bodies to provide appropriate technical guidance and training to auditors.
3. EWABA calls certification schemes to prepare for the adoption of downstream physical tests on the composition of UCO and potentially of other waste feedstock streams. The adoption of reliable physical tests depends on the evolution of technical progress. In absence of reliable physical tests, comparisons against sets of characteristic profiles of oils are to be favoured. EWABA consulted its members on the reliability of physical characteristics to distinguish between consignments of used cooking oil and other non-waste vegetable fats or oils. It was agreed that there is currently no reliable indicator to differentiate oil that has been used to cook compared to non-waste oil that has been adulterated to look like used cooking oil. There are very characteristic profiles of unadulterated non-waste vegetable oils and fats. Certification schemes need to ensure that auditors are trained in identifying these non-waste products so that they can identify co-mingling of waste with non-waste or false declarations.
4. EWABA members found the training and diligence of auditors together with certification schemes' responsiveness to allegations of fraud in need of manifest improvement. EWABA requests certification schemes to allocate greater resources to policing, complaint-handling and follow-up in response to whistleblowing procedures. In addition, in order to mitigate possible auditor bias, certifications bodies should limit auditors to maximum consecutive audits of two years.
5. EWABA calls once more on certification schemes to reach an understanding to prevent that companies whose certificate is withdrawn are allowed to apply for new certificates under other schemes or under different company names. The withdrawal of any certificate should result in an 11-month quarantine period during which no certificate should be granted to the relevant company notwithstanding name changes (unless valid reasons for a reissuance or revocation of the suspension are proved).
6. EWABA requests certification schemes to prioritise immediate action on high-risk hotspots. Highest risk of fraud occurs where volumes are greatest and where there is coexistence of sustainable and non-sustainable feedstocks and fuels. Certification schemes should address the points of highest

risk with greatest priority. Extra transparency should not result in increased administrative burden on restaurant owners. Certification schemes should work with industry to map the supply chain points/geographies/product categories of highest risk. Auditors should be trained in identifying indicators of high risk (i.e. single product points are low risk). If an auditor sees physical/commercial deliveries of palm into a UCO first collector it should be identified as high risk. If a trader sells multiple products, waste/non-waste, high GHG/low GHG, certified/non-certified they should be considered high risk.

List of measures to be adopted

I. Applicable to Collecting Points (CP) and Points of Origin (PoO)

1. Reduction of the threshold for PoO from 10mt per month. If a PoO generates more than the revised threshold of a specific waste/residue, the PoO could be subject to an on-site audit (based on a sample) if the auditor has suspicions or other reasons justifying an audit. On site audits may not be necessary at auditors' discretion if they can gain assurance by other means. Certification schemes should elaborate guidelines for PoO audits to ensure that they are effective, reasonable and fit for purpose. During the sampling the auditor must verify the correspondence of the documents and the quantities exhibited by the CP with those in possession of the PoO.
2. Amount of waste generated per month (or year) at the PoO must be stated explicitly on the certification scheme self-declaration. Certification schemes should consult with industry on the format for reporting, i.e website interface, data security etc.
3. Auditors must select a sample of all points of origin that have signed a self-declaration (above and below the threshold) and verify their existence, e.g. through a telephone call, research of websites, etc. Feedback from system users (especially from PRC and Indonesia) will be required how this could be done practically.
4. Auditors shall be explicitly obliged to assess PoO on-site if there is doubt about the existence of the PoO or in case there is indication of non-compliance with certification schemes' requirements. In the case of "regular risk" the number of samples to be verified must be predetermined, specified and based proportionally on the amount of UCO collected. Points of origin generating more than 5mt of a waste per month must be reported to the CB and to certification schemes.
5. Evidence or documents for all individual deliveries must be available at the CP and provided to the auditor (e.g. waste disposal agreement, delivery slips, self-declarations, etc.).
6. Amounts of sustainable material (incoming and outgoing) must be reported to certification schemes on a quarterly basis (reporting via website, certification schemes to share the reported amounts with the respective CB). Certification schemes should create a database for automatic insertion of indicators.
7. Auditors and certification schemes shall be entitled to double-check and verify deliveries to (downstream) recipients of sustainable material, i.e. recipients shall be obliged to provide copies of the sustainability declaration issued by the collecting point for an individual delivery (based on a random and risk-based sample). If not available on the day of the audit, suppliers and customers will have 30 days to comply with the auditor's expectations for a response.
8. Mandatory surveillance audit by the CB six months after the first (initial) certification.
9. Individual GHG calculations shall generally be submitted to the certification scheme by the CB together with the certification documents.

10. If a collection point has multiple storage sites, the auditor should audit the mass balance of every storage site.
11. Certification schemes should create risk indicators based on the scale and complexity of each operation.
12. Collectors should aim to use the best available technology to improve traceability including tracking containers by bar codes and/or labels (specifying name of collector, waste disposal code once the empty container is provided), or using digital collection receipts, GPS tracking, blockchain, etc.
13. The mass balance must contain both the input and the output of sustainable material with unsustainable material.

II. Applicable to Traders

1. Auditors and certification schemes shall be entitled to double-check and verify deliveries received from (upstream) suppliers and deliveries made to (downstream) recipients of sustainable material, i.e. suppliers and recipients shall be obliged to provide copies of the sustainability declaration issued for individual deliveries (based on a random and risk-based sample). If not available on the day of the audit, suppliers and customers will have 30 days to comply with the auditors expectations for a response.
2. Amounts of sustainable material bought and sold must be reported to certification schemes on a quarterly basis (reporting via website, certification schemes to share the reported amounts with the respective CB).
3. Mandatory surveillance audit by the CB six months after the first (initial) certification.
4. Individual GHG calculations shall generally be submitted to certification schemes by the CB together with the certification documents.
5. If a trader has multiple storage sites, the auditor should audit the mass balance of every storage site.

III. Applicable to Biofuel Producers / Processing Units

1. Auditors and certification schemes shall be entitled to double-check and verify deliveries received from (upstream) suppliers and deliveries made to (downstream) recipients of sustainable material, i.e. suppliers and recipients shall be obliged to provide copies of the sustainability declaration issued for individual deliveries (based on a random and risk-based sample). If not available on the day of the audit, suppliers and customers will have 30 days to comply with the auditor's expectations for a response.
2. Amounts of sustainable material (incoming and outgoing) must be reported to certification schemes on a quarterly basis (reporting via certification schemes website, certification schemes to share the reported amounts with the respective CB).
3. Mandatory surveillance audit by the CB six months after the first (initial) certification.
4. Individual GHG calculations shall generally be submitted to certification schemes by the CB together with the certification documents.
5. If the producer/processor has multiple storage sites, the auditor should audit the mass balance of every storage site.

Annex 4: information about Laws and Regulations on competition and information exchange

The issue of Competition (Law)

European competition law today derives mostly from articles 101 to 109 of the Treaty on the Functioning of the European Union, as well as a series of regulations and directives, and is enforced mainly by DG Competition in the European Commission, in cases with an EU-wide impact, and by Member State competition authorities for national cases. It aims to prevent or sanction anti-competitive conduct on the part of business, such as agreements between companies to fix prices or restrict choice, which negatively affect consumers (Brack, 2019).

The implementation of sustainability objectives often benefits from or requires collaboration, such as industry-wide initiatives aimed at improving environmental outcomes. Such arrangements are for example likely to result in higher prices, since responsibly sourced products usually come at a cost. However, they are not aimed at increasing companies' revenues or shares of the market; rather, they seek to internalise environmental or social externalities, and deliver public goods (Brack, 2019).

Laws and EU Regulations on information exchange between companies

Laws and EU Regulations exist on information exchange between companies. There are for example situations where the exchange of information can be harmful for competition, e.g. when strategic information about markets, prices or feedstock sourcing is used. This means that some information is or may not be disclosed (e.g. the anonymous character of the seller), (Brack, 2019).

Online Administrative Business Act: Rules reliability and confidentiality of the information

Electronic reporting to governmental parties (as relevant for SBR) in the Netherlands is subject to the *Online Administrative Business Act.* This act imposes requirements regarding the reliability and confidentiality of the information exchange and also provides the grounds upon which the government is allowed to reject a report. The law also states how the government should act in such cases (Bharosa, 2015).