Clean Fuel Contracts: Guidance to provide information about renewable fuels for end-users

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1 Introduction and study background

1.1 Emission accounting principles

Transport and logistics activities represent a significant source of greenhouse gas emissions related to the products that consumers buy. Renewable fuels play a fundamental role in reducing these emissions. To provide background context to the core subject matter which has been addressed in this report, we provide a description of the categorisation of emissions in several well-recognised international frameworks.

Following the guidance of the GHG Protocol[1], emissions reduction activities in this report are classified in their relevant accounting "Scope". Scope 1 emissions refer to direct sources of emissions from the assets owned or controlled by the reporting company, in the case of this report, the combustion of fuel in a vehicle engine. Scope 3 emissions refer to indirect sources of emissions from reporting companies along the supply chain. This relates to the emissions of companies who demand transport services but do not produce the emissions directly themselves. In the ISO standard guidelines ISO 14083[2] and GLEC framework[3], transport emissions are classified as either direct or indirect sources of emissions. This is different, but not inconsistent, with the emissions accounting and reporting principles developed by the GHG protocol. *See Figure 1.*

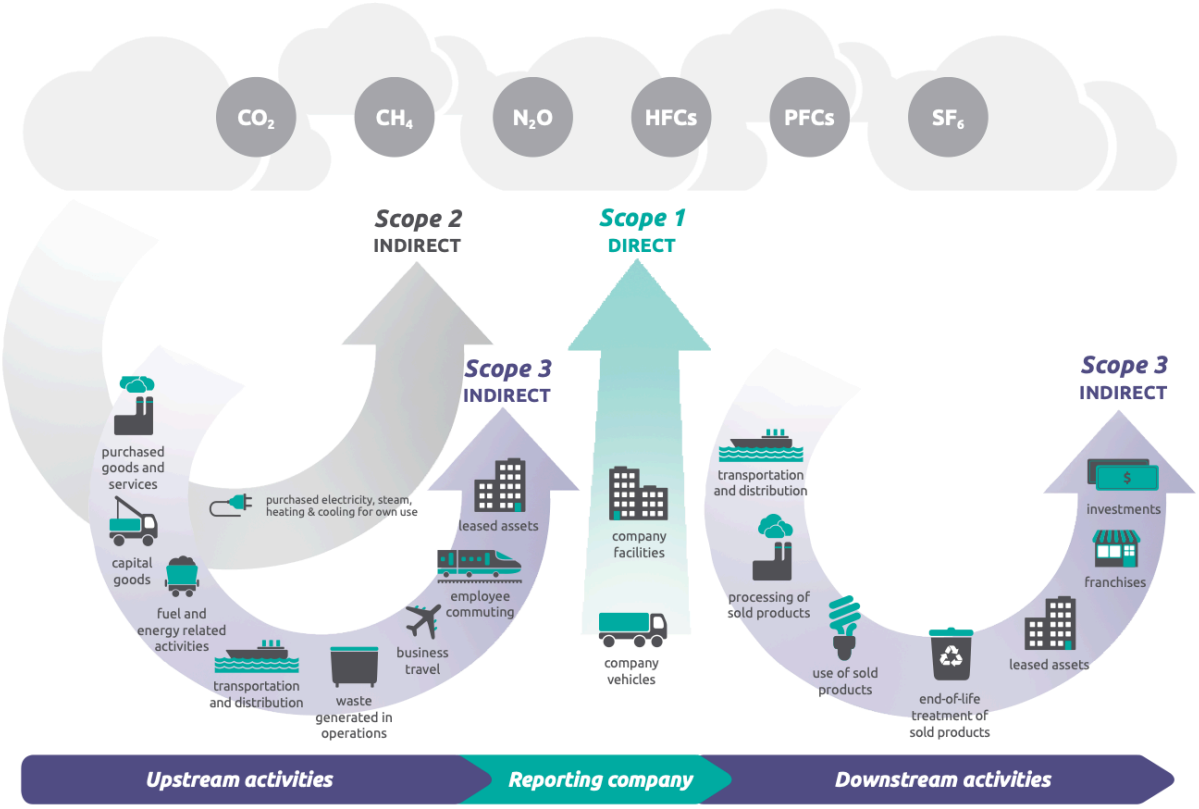

Figure 1. Overview of GHG Protocol scopes and emissions across the value chain[1]

[1] The GHG Protocol Corporate Accounting and Reporting Standard (2001)

[2] Global Logistics Emissions Council Framework (GLEC) V3.0, Smart Freight Centre 3.0.

[3] ISO 14083:2023 Greenhouse gases — Quantification and reporting of greenhouse gas emissions arising from transport chain operations.

1.2 The research assignment

This study concludes a project conducted on behalf of the Nederlandse Organisatie Voor de Energiebranche (NOVE) and working in close collaboration with a variety of independent fuel suppliers based in the Netherlands. The NOVE is an association representing the interests of independent fuel-suppliers. Working together with the Dutch Platform Renewable Fuels (PHB), NOVE members have taken the initiative to improve transparency in the renewable fuel supply chain, from source to end user: hence the initiative for a Clean Fuel Contract system.

The research assignment of NOVE is to provide guidance to actors who want to make reliable claims on the basis of environmental attributes related to renewable fuels that are applied in the Dutch transport markets. This guidance should be created in accordance with key international standards and frameworks. Furthermore, the guidance should not increase administrative burden. Based on the assignment presented by the NOVE, a report has been developed which outlines a set of guiding principles which are required to create Clean Fuel Contract system.

This research is increasingly significant for the actors at the end of the supply chain who would like to address their "Scope 3" emissions. Information on the sustainability characteristics of renewable fuels could become increasingly relevant in a voluntary market context and meeting requirements laid out in the Corporate Sustainability Reporting Directive (CSRD)[5]. The Clean Fuel Contract system serves to meet the demand for transparent information from actors at the end of the supply chain, by ensuring that sustainability claims on renewable fuels are traceable, unique, and relate to verified sources of information.

1.3 Previous work and innovation studies

The concepts explored in this report follow from the preparatory work of the Dutch Platform Renewable Fuels (PHB) together with the Dutch Blockchain Coalition (DBC) and the Netherlands Emission Authority (NEa). This provided input for the basic elements to facilitate information flows across the market[6].

This includes the suggestion for developing a digital twin created at the point of origin of the fuel (for instance: Docklab, 2023[7]). This digital replica of a physical volume of renewable fuel could transfer information related to the characteristics of the fuel as it moves throughout the supply chain. A set of recommendations are provided on how to integrate this into the existing system, which include making use of technology systems to transmit information across the supply chain without increasing the administrative burden. As well as a recommendation for the governance structure of the new system, which could be organised as a public-private partnership. However, the actual development of these new system features is beyond the scope of this assignment.

[5] The voluntary market context refers to, for example, the Science Based Targets initiative (SBTi). The Corporate Sustainability Reporting Directive (CSRD), refers to Directive (EU) 2022/2464, which entered into force 5 January 2023.

[6] Dutch Blockchain Coalition: Interim Report Renewable Fuels Traceability project

[7] Docklab (2023), Digital twin: a conceptual view

2 Clean Fuel Contract system in the Netherlands

In this report, a set of guiding principles are outlined, as well as a set of recommendations for the practical implementation of how a Clean Fuel Contract system could operate. 'Clean Fuel Contracts' is the collective term for improving transparency in the renewable fuel chains from the beginning of the chain to the end user, based on independently verified information, avoiding double claims. This concept will mainly work linked to Distributed Ledger Technologies (DLT).

The guideline described in this report for Clean Fuel Contracts sets requirements for how the information is passed on to end users in the Dutch market and also identifies the responsibilities and duties of parties involved. The focus is specifically on the part of the chain from depot and/or release to the market to end users. Furthermore, the guiding principles outlined in this report concern the transmission of the sustainability- related information or "environmental attributes" across the supply chain for the purpose of making Scope 3 claims. Specifically, ensuring reliable information flows related to moment that a renewable fuel exits an excise warehouse and travels further along the supply chain.

In this way, the guideline could support Scope 3 claims based on renewable fuels which are used in the Dutch transport and logistics markets. The guiding principles addressed in this report can be applied in a global context, but recommendations for the practical implementation of this system should be considered in the Dutch context.

2.1 The renewable fuel supply chain in the Netherlands

In the Netherlands the renewable fuel production chain is supervised up until the point of release of the fuel to the market. Renewable energy (the large majority being liquid biofuels) released to Dutch transport markets is monitored by the Netherlands Emissions Authority (NEa). All renewable fuels released to Dutch transport markets are tracked in The Energy for Transport Registry (REV: *Register Energie voor Vervoer*). Within this registry, characteristics related to the sustainability attributes of biofuels[8] can be demonstrated by delivering a Proof of Sustainability (PoS), which provides verified evidence that the energy carrier has a sustainable origin and is compliant with the European sustainability criteria[9]. However, beyond the point of leaving the excise warehouse, information on the sustainability attributes of renewable fuels is no longer supervised by a regulator. *See Figure 2.*

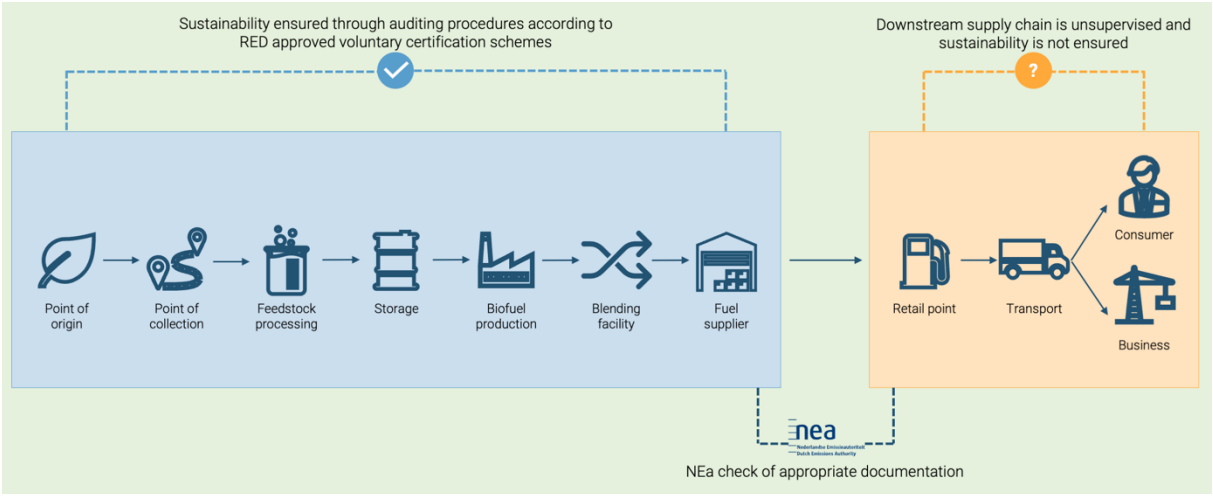

Figure 2. Renewable fuel supply chain is supervised up to the point of the end fuel supplier, in the Dutch context.

[8] The Proof of Sustainability certification is currently only in place for biofuels, the recommended features identified in this report should be able to obtain information on all renewable fuel types and link to certification schemes when these are in place, for example, Renewable Fuels of Non-Biological Origin (RFNBOs).

[9] Specifically, the fuel meets the sustainability and GHG emissions reduction criteria as stated in the Renewable Energy Directive (RED), Directive EU 2018/2001

2.2 A guideline to accommodate four downstream supply chain scenarios

This Clean Fuel Contract guideline must accommodate four possible reporting scenarios, including whether a renewable fuel has been mandated by regulation or can be claimed as an 'additional' contribution. The definition of 'additionality' depends on the context in which it is applied. It has been defined specifically for the purpose of application in the Dutch system, to indicate to end users whether a specific renewable fuel has been mandated by regulation and/or received a financial incentive. The specific criterion used to assess 'additionality', which is referred to again at various stages in this report, has been outlined below.

Additionality, in the context of this report, is assessed on whether a renewable fuel has been used for compliance purposes to meet obligations on renewable energy in transport (HBE system)[10] or if the renewable fuel was awarded a grant under a government financial incentive programme (SDE++ programme). If neither are the case, this volume of fuel is considered as additional.

Furthermore, the Clean Fuel Contract system should also be able to accommodate the chain of custody model of the fuel as it travels through the supply chain towards the end user: either physical separation or book and claim. In this context, physical separation refers to a situation in which segregated renewable fuel volumes and their characteristics are kept together as they move through the supply chain. In other words: a physical supply of renewable fuels takes place. In the book and claim scenario, characteristics associated with the renewable fuels are tracked separately from the physical flow of the renewable fuel as it moves throughout the supply chain.

In the physical flow of fuel between a fuel supplier (where the excise duty on the fuel is paid) and the transport operator there can be several intermediaries. Such as, larger fuel distributers who supply renewable fuels onwards to fuel retailers, where there is the final transaction at the retail point between the final fuel seller and the transport operator.

Also, in many cases businesses that rely on transportation services for the delivery of certain products have onwards supply chain arrangements. These products could initially be delivered to a central distribution centre (such as a warehouse owned by the company) and then travel onwards to different shops, ready for retail.

Regardless of different supply chain arrangements, the same core principles regarding Scope 3 claims on renewable fuels must be adhered. The core principles which must be followed for the purpose of Scope 3 claims on renewable fuels have been outlined in the next section of this report. Attributing GHG-emission reduction can take place on a book and claim basis, but these claims must always be linked to a unique volume of renewable fuels, to avoid double-claiming.

Guiding principles which must be ensured to allow for this increased flexibility in emissions reporting have been outlined in the next section of this report. The four options which must be accommodated by the new system are displayed in the graph below. *See Figure 3*.

[10] While "additionality" has been defined in the context of the Hernieuwbare-Brandstofeenheden (HBE) system it can also be applied to the Emissie Reductie-Eenheden (ERE) scheme which will replace the HBE system in 2026.

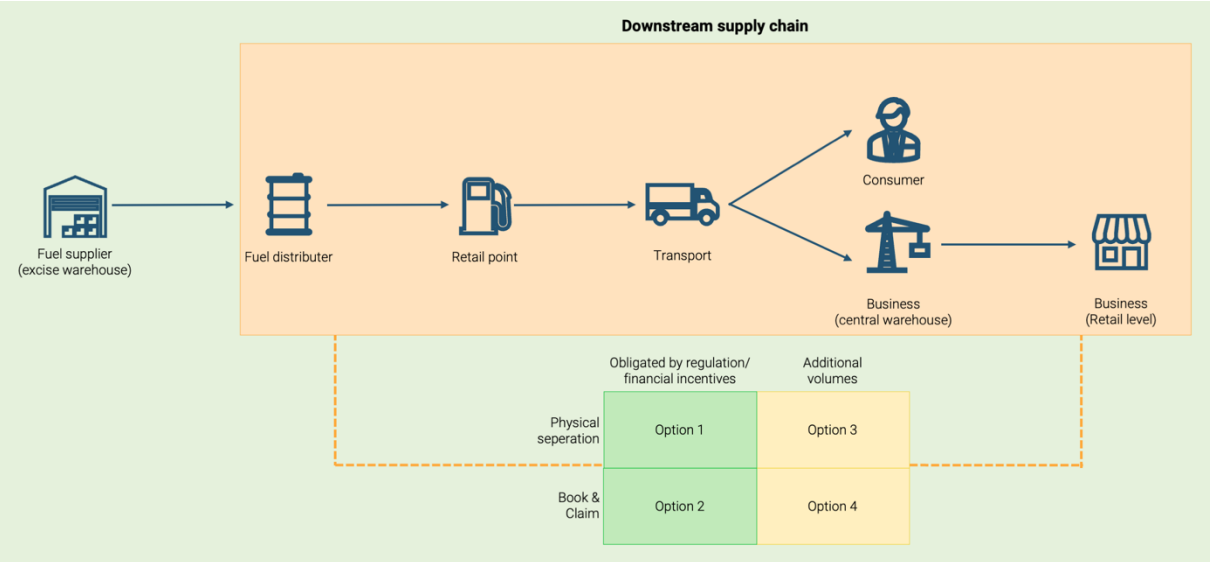

Figure 3. Four options for emissions reporting on renewable fuels which must be accommodated by the Clean Fuel Contract system.

3 Principles for how end-users get information to create a Scope 3 claim on renewable fuels

In this section, a set of principle conditions have been outlined to inform end users who want to make a Scope 3 claim on renewable fuels which are used in transport systems. Firstly, the relevant actors and the claims that they are eligible to make should be defined.

3.1 Defining relevant actors in transport and logistics systems

Incorporating definitions provided by the Smart Freight Centre[11], relevant actors in transport and logistics systems can be defined. Scope 1 activities relate to the activities of transport operators, such as "carriers", who are responsible for the direct combustion of the fuel in the vehicle engine. The Scope 3 activities relate to indirect sources of emissions of users of transport services, such as "shippers", further along the supply chain. A description of these actors and the emission reduction claim that they are eligible to make has been illustrated in the visual below. *See Figure 4.*

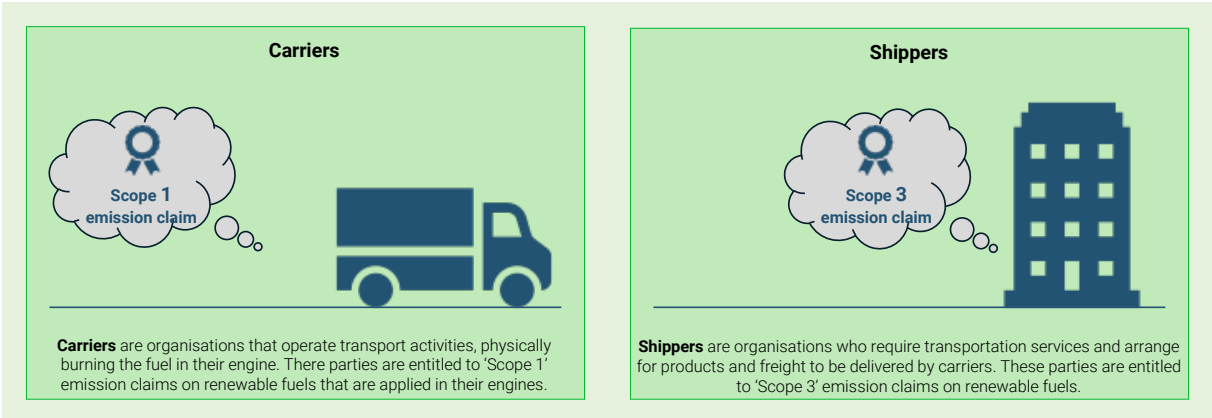

Figure 4. Defining the actors in transport supply chains and their rights in reporting emissions

[11] Smart Freight Centre, Voluntary Market Based Measures Framework for Logistics Emissions Accounting and Reporting (2023)

3.2 Core principles for the Clean Fuel Contract Guidelines

Scope 3 claims must be linked to their Scope 1 origin

There is one leading principle for the Clean Fuel Contract system: Scope 3 emission reduction claims must always be linked to their Scope 1 origin. This ensures that emission reduction claims related to the use of renewable fuels can be linked to their direct application of the fuel in Dutch transport systems. This will ensure that emission reduction claims by end users are reliable and ensure a transparent system of reporting.

No double claims

It is essential to ensure that claims are unique, in the sense that multiple actors do not have the right to make a Scope 3 emission reduction claim on the same volume of fuel. There should be a unique Scope 3 claim which can be attributed to the Scope 1 origin. Therefore, a system must be established to ensure that Scope 3 claims relate to a unique volume of fuel and are therefore void of wrongful double claims.

Based on verified information

To make a Scope 3 claim, there must be a transmission of verified information to end users. This will ensure that the claims which are made are related to renewable fuels and are based on verified and certified sources of information, as well as providing other important information which is relevant for making a reliable emission reduction claim.

4 Increased flexibility for Scope 3 emissions reduction claims

4.1 Constraints set by the Smart Freight Centre

Increased flexibility in the process of making Scope 3 claims emissions reduction claims, would increase options available to end users of transport and logistics systems. This would directly benefit actors who would like to contribute towards emissions reduction in transport markets, even if a solution is not physically available directly within their own supply chain. Therefore, it should be possible to attribute sustainability characteristics associated with renewable fuels to actors outside of the supply chain where that fuel was applied.

The envisaged Clean Fuel Contract system could allow actors to make Scope 3 emissions reduction claims on renewable fuels that are not applied within that company's own supply chain, through following the 'Book and Claim' system. This would allow increased flexibility in the options available to actors towards the end of the supply chain, who would like to contribute to emissions reduction in Dutch transport markets.

Following the principles laid out in the Smart Freight Centre's Voluntary Market Based Measures Framework, there are several constraints that should be considered when assigning environmental attributes through a Book and Claim chain of custody system.

Additionality constraint

The additionality constraint requires that there should be an indication on whether a specific emission reduction solution has been obligated by regulation. Applying this condition in the context of the Clean Fuel Contract system, requires an indication on whether a specific renewable fuel meets the criterion to classify as additional (as defined previously).

Modal constraint

The modal constraint enforces that the emission reduction profile associated with a specific mode of transportation can only be exchanged between users of that same mode of transport. Therefore, in the Clean Fuel Contract system emissions reduction claims on renewable fuels

should only be applied for users of a specific transport mode as the mode where the fuel was physically deployed.

However, there is room for discussion about whether this specific constraint should be required in the Dutch context. Especially if meeting the national renewable fuel obligation will allow the trade in emission reduction units between modalities[12]. An assessment of this specific constraint should be made before implementation of the Clean Fuel Contract system.

Vintage constraint

The vintage constraint applies a time restriction between when an emissions reduction activity takes place and when an emissions reduction claim can be made based on this activity. Specifically, the organisation wanting to report an emissions reduction activity must register this claim within 24 months of the year in which the emissions reduction activity took place.

To apply this in the context of the Clean Fuel Contract system, there should be a constraint on the time (24 months) between physical renewable fuel use in Dutch transportation systems and when an emissions reduction claim is reported. Therefore, this system must provide information to end users on when the fuel was applied in Dutch transport systems.

4.2 Practical arrangements to achieve increased flexibility in the Dutch context

Practical arrangements are required to allow this increased flexibility while ensuring the principles on emission reduction claims are applied. A system must be in operation to exchange information related to renewable fuels applied in transport systems, to guarantee that claims made on specific volumes of renewable fuel remain unique and relate to verified information. The later sections of this report provide details for an information record, which could serve this purpose. The recommendations in this report, build from the flexibility principles developed by the Smart Freight Centre. *See Figure 5.*

Smart Freight Centre (SFC): Market-based measures framework	**studio Gear Up (sGU):** Guidance on Scope 3 claims for end users of renewable fuels
• A system for accounting emissions in the book and claim scenario in transport and logistics supply chains • Intended to provide flexibility to accounting emissions with separate low emissions solutions • Address the barriers to transport decarbonisation • Constraints on the book and claim scenario	• Intended for the application of renewable fuel volumes deployed in the Dutch market • Recommendations for the practical arrangements required to allow flexibility in Scope 3 claims on renewable fuels in the Dutch system • The design of an information system "Clean Fuel Information Record' to transmit information to end users of transportation systems • Using a technology system to ensure verified information is automatically transferred to actors across the supply chain
Additionality constraint Requires that parties must identify whether a decarbonisation solution was required by regulation	
Modal constraint Enforces that decarbonisation solutions are bound by transportation mode	
Vintage constraint Provides a time constraint on when emissions reduction activities take place and when they are claimed	

Figure 5. Recommendations for a Clean Fuel Contract system (see right column), building on the flexibility principles in the framework developed by the Smart Freight Centre.

[12] https://www.hernieuwbarebrandstoffen.nl/post/kamerbrief-voortgang-red-3-implementatie-2024

The visual provided below demonstrates the transfer of information on renewable fuels between different actors in the market, assigning environmental attributes through a Book and Claim chain of custody system. This has been achieved through the digital transfer of an information record. The information on this record relates to sustainability characteristics of a renewable fuel, as well as information regarding the physical transfer of the fuel in Dutch transport markets. The specific design for such an information record (Clean Fuel Information Record) has been outlined in the next section of this report.

In this example, "Shipper 1" has physically received products from the carrier using a renewable fuel. However, "Shipper 2", would like to make the Scope 3 emissions reduction claim related to this volume of fuel. Therefore, the Scope 3 emissions reduction claim information is transferred to "Shipper 2" and subsequently the information obtained on the record expires. An emissions reduction claim on this unique volume of fuel can no longer be made by "Shipper 1". *See Figure 6.*

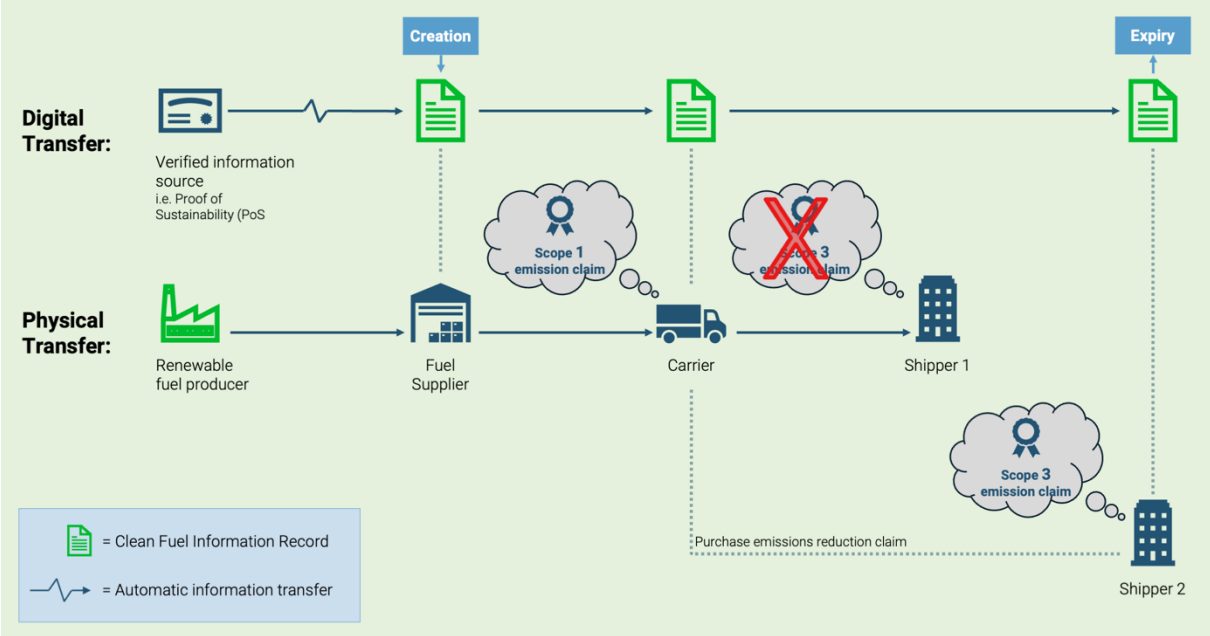

Figure 6, The diagram represents the physical movement and digital replica of a renewable fuel as it moves throughout the supply chain. This displays the increased flexibility which could be achieved by a Clean Fuel Information Record.

5 Practical arrangements to ensure independently verified information

5.1 Clean Fuel Information Record

This section outlines the design for an information record, a new system of information exchange on renewable fuels, which could be introduced in the Dutch system. The envisaged 'Clean Fuel Information Record' is a digital replica of physical volume of renewable fuel as it moves throughout the supply chain. The Clean Fuel Information Record would be created at the point of the fuel supplier and then digitally transferred to actors towards the end of transport supply chains. This digital record could be transferred to parties for the purpose of making emissions reduction claims.

5.2 Key attributes of the Clean Fuel Information Record

The Clean Fuel Information Record must obtain several key attributes:

Immutable

The record of information passed through the supply chain must be immutable, in the sense that information stored on the record cannot be adapted or changed manually. Rather, the information is changed automatically and there is a record of these changes over time.

Unique

The information obtained on the record should relate to a specific and unique volume of renewable fuel which must have has been physically used in transport markets.

Verifiable

The information obtained on the record must be validated by relating to existing sources of verified information, such as the Proof of Sustainability (PoS), and other relevant information sources. These information sources are elaborated in the next subsection of this report.

Retirable

The information should be 'retirable', in that, when an emissions reduction claim has been made based on the information obtained on the record, the corresponding emission reduction value on the record 'expires' and cannot be used again for further claims.

These attributes are summarised in the diagram below. *See Figure 7*

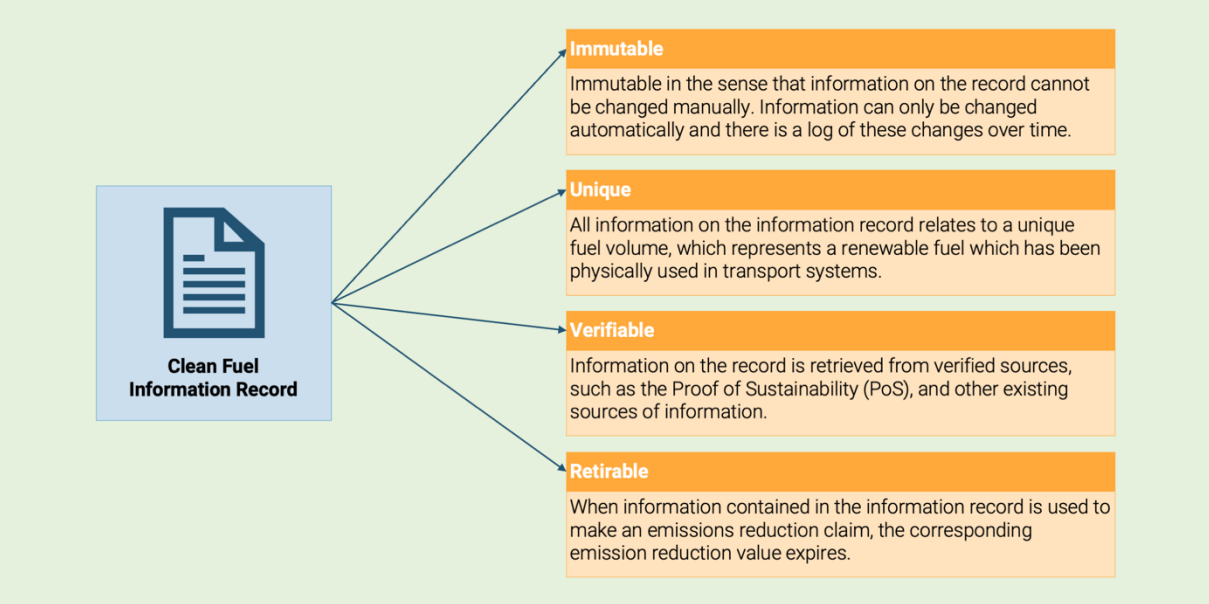

Figure 7. Outlining the key attributes of the Clean Fuel Information Record

5.3 Key information sources

The information obtained on the record must be validated by existing sources of verified information. Suggestions for relevant sources of information, have been outlined below.

Proof of Sustainability (PoS)

To qualify for a Clean Fuel Information Record, it must be demonstrated that the renewable fuel meets certain sustainability criteria, which can be demonstrated through a Proof of Sustainability. In the Clean Fuel Contract System, the Proof of Sustainability should be required to make an emission reduction claim on a specific volume of fuel.

A Proof of Sustainability guarantees that renewable fuels which are sold on the Dutch market meet a minimum set of sustainability requirements. These requirements are guaranteed by a

certificate from one of the Voluntary Schemes approved by the European Commission. Fuel suppliers are obliged to submit these certificates, a Proof of Sustainability, to the NEa for the purpose of meeting the targets set by the regulation.

On this Proof of Sustainability, information is provided that relates to the attributes of sustainable renewable fuels, the emission reduction associated with the fuel, the raw materials and the country of origin. Details of the information included on the Proof of Sustainability and how this document looks has been identified in the visual below (in this case, an example is provided for sustainable biofuels)[13]. *See Figure 8*

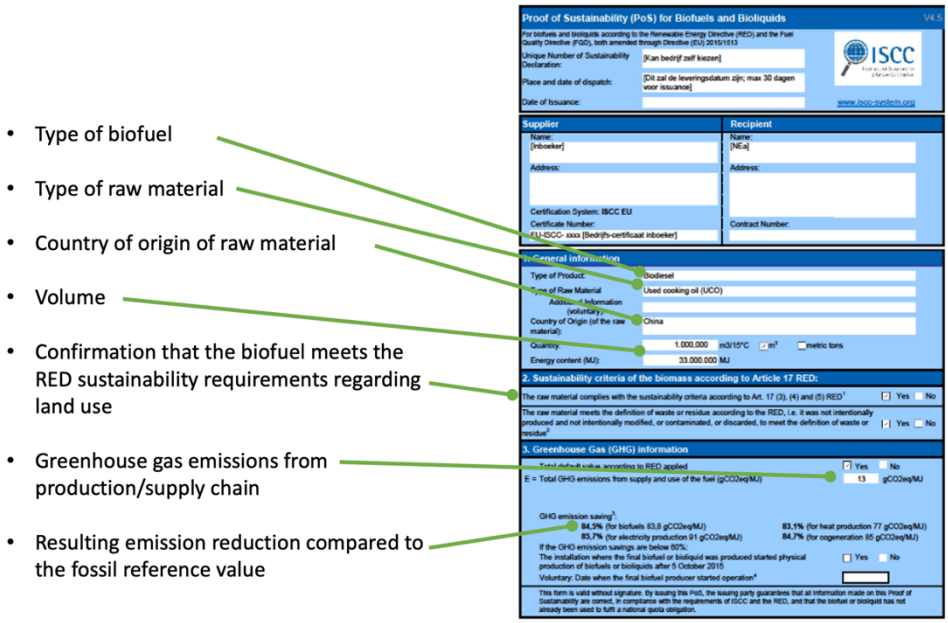

Figure 8. Details of the information obtained on a Proof of Sustainability

Transactional data: related to Scope 1 emission origin

Transitional data refers to transactional information which demonstrates the point of sale between a fuel seller and the user of this renewable fuel. This information should provide evidence that a renewable fuel has been sold from a fuel supplier to a transport carrier. This data could be used to demonstrate that the fuel has been released to a transport operator for use in Dutch transport systems, for the purpose of obtaining a data point related to the Scope 1 evidence of use in transport systems.

The Energy for Transport Registry (NEa)

All renewable fuels released to Dutch transport markets are tracked in The Energy for Transport Registry (REV: *Register Energie voor Vervoer*). In this registry, renewable energy units (HBEs: *hernieuwbare brandstofeenheden*) are created and traded between account holders. The HBE system[14], mandates that Dutch fuel suppliers deliver a certain share of renewable energy in the total supply of energy to transport markets. Companies use this registry to comply with these obligations and register fuel deliveries which contribute towards the renewable fuel mandates.

[13] Studio Gear Up, Haalbaarheid Clean Fuel Contracts (2020) https://www.hernieuwbarebrandstoffen.nl/post/pdb-haalbaarheid-clean-fuel-contracts

[14] In the Netherlands, fuel suppliers who supply above 500,000 liters of fuel to the Dutch transport markets are required to have a certain number of HBEs credited within their account in the Dutch Energy for Transport Registry (REV) at the end of the regulatory period. These HBEs represent 1 gigajoule (GJ) of renewable energy that has been delivered to the Dutch transport market.

Sustainable Energy Production and Climate Transition Incentive Scheme, SDE++ (RVO)

The Stimulation of Sustainable Energy Production and Climate Transition (SDE++) grants subsidies to companies that generate renewable energy or reduce CO2 emissions on a large scale. The Netherlands Enterprise Agency (RVO) manages a project database which could provide an indication of specific fuels which have received a financial contribution from Dutch ministries or the European Union[15].

Lab test data

Where relevant, information related to a lab test could be provided to indicate the share of biocomponents in a specific volume of renewable fuel. For example, a bio-based carbon contents can be measured through a Carbon-14 analysis. These results could be useful to provide evidence of the exact share of renewable components in a fuel blend, where the upstream supply chain has been arranged through as system of mass balancing. The relevant data should refer to verified test results which meet accepted standards.

6 Developing an automatic connection to verified sources of information

To bring verified information to actors across the supply chain, the Clean Fuel Information Records should be able to securely and confidentially transfer data to relevant actors. To ensure that the information stored on the Clean Fuel Information Record is immutable this should translate in the requirements for a technology system to arrange the automatic transfer of this information between parties that wish to participate in the Clean Fuel Contract system. Furthermore, this technology system must support the creation, merging, splitting, and expiry of information obtained in the Clean Fuel Information Record.

Detailing the specific features of the technology system which is required for the Clean Fuel Contract system is beyond the scope of this study. However, we follow the recommendation of the Dutch Blockchain Coalition[16] who provide a recommendation for the use of Blockchain technology to transfer end-to-end information on renewable fuels. Therefore, it is recommended to make use of technologies, such as a distributed ledger technology, to allow the Clean Fuel Information Record to automatically connect with verified third-party sources of information. This could be achieved by developing a hash function[17] to connect existing verified data from original sources.

6.1 Core information listed on the Clean Fuel Information Record

In this section, details are provided of the core information that should be provided by the Clean Fuel Information Record. As well as a description of how this information could be obtained through developing an automatic link (or developing a hash function) to existing sources of information.

Information on the renewable fuel

Specific information related the renewable fuel is to be provided by the Proof of Sustainability. Developing a hash function to the Proof of Sustainability it could be possible to provide specific details on the renewable fuel, such as: the type of fuel, volume, feedstock type and GHG emissions.

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[15] More information on the SDE++ programme as well as relevant data can be found here: https://www.rvo.nl/subsidies-financiering/sde/aanvragen/feiten-en-cijfers#bekijk-projecten-die-subsidie-kregen

[16] Dutch Blockchain Coalition, Interim Report Renewable Fuels Traceability (2023)

[17] A hash function is a mathematical function that takes characters from original data sources and maps this information into a new value of a certain length (called a hash value or a hash).

Emission reduction information

An automatic conversion of the emissions information provided on the Proof of Sustainability could provide the GHG savings information. This would be based on the volume of the fuel and total emissions compared to a fossil comparator[18]. A claim based on this emission reduction information should only be possible once there has been an 'Evidence of use' (see next section).

Status of the fuel in the market

To identify the status of the fuel in the market, the Clean Fuel Information Record should be hashed to transactional data. To demonstrate an "Evidence of use", this data could provide an indication on whether the fuel has been physically used in Dutch transport systems. Furthermore, the moment of transaction can be used to identify whether an emissions reduction claim is able to satisfy the vintage constraint. Providing an indication of the moment of sale between the fuel seller and the user of the fuel.

Providing an 'Evidence of claim'

The GHG savings which are reported on the Clean Fuel Information Record could be used to by end-users of transport for reporting purposes. We suggest that the GHG savings could establish a tradeable value for the purpose of making a Scope 3 claim. This could be made possible through the utilisation of certain technology systems, such as tokenization[19]. Through the tokenization of GHG emissions reduction information obtained on Clean Fuel Information Records; a value could be established. Tokens could represent a specific emissions savings value related to the use of renewable fuels in Dutch transport systems, which expire when redeemed.

Identification of the additionality status

Information on the additionality status could be provided by an automatic connection to the Dutch Energy in Transport Registry (REV) and project data obtained by Rijksdienst voor Ondernemend Nederland (RVO). Through indicating whether the fuel received an HBE or financing support under the SDE++ scheme. This would require ensuring that the relevant information for the purpose of demonstrating additionality can be exchanged between the relevant databases and is linked to a specific and unique volume of renewable fuel.

The upstream chain of custody model

The Clean Fuel Information Record should be able to indicate the model of traceability through which biocomponents travelled upstream through the supply chain. Specifically, whether this has been arranged according to a system of physical separation or mass balancing. This could be identified through a link to relevant lab test data (such as a C14 test to identify the share of biocomponents) which must be linked to a specific volume of fuel which is released to the market.

The core information which should be obtained on the Clean Fuel Information Record and underlying data sources, has been provided below. *See Figure 9.*

[18] To calculate the GHG savings on renewable fuels the emissions reduction should be compared against an emissions reference value of a fossil comparator. In the case that a renewable fuel meets the sustainability criteria laid out in the RED, emissions corresponding to the combustion of that fuel should equal to zero.

[19] Tokenization is the process of substituting sensitive pieces of data to an equivalent non-sensitive value which can be sold onwards.

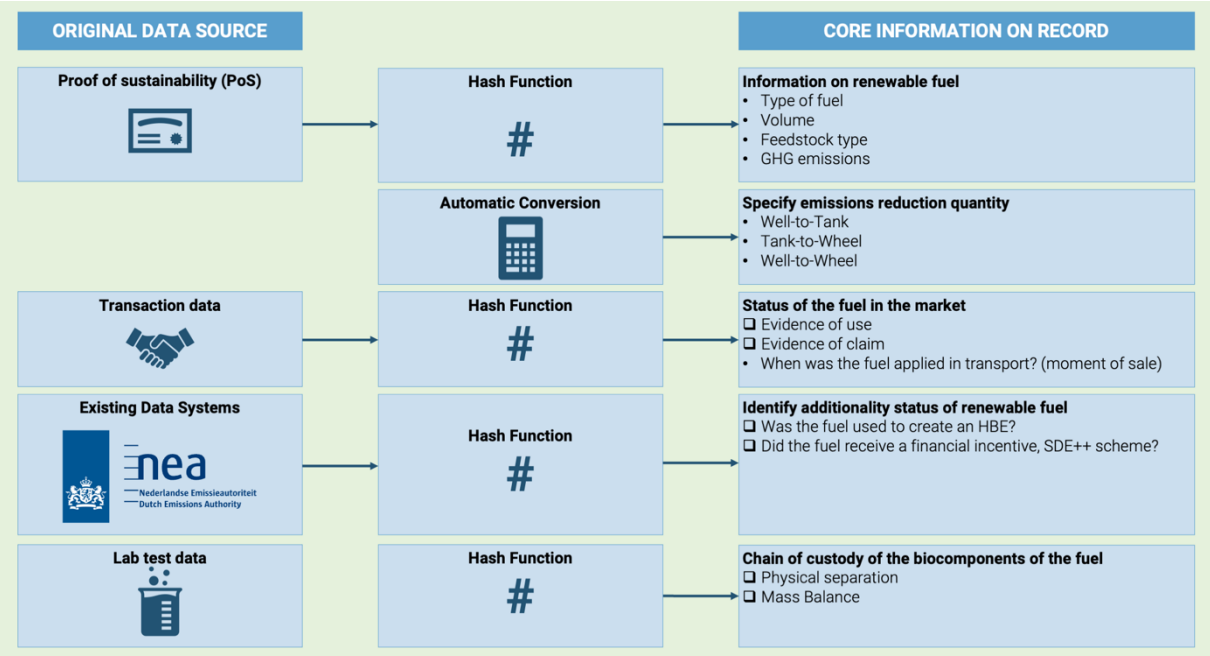

Figure 9. Foundation of a technology system to link original data sources with the core information obtained on a Clean Fuel Information Record

7 System of governance

7.1 The options for a governance structure

The Clean Fuel Contract system requires a dedicated governance structure to manage various aspects of its practical implementation. Through assigning responsibility to different actors, multiple parties could bring the new system features and guiding principles (laid out in this report) into a functioning and operable system. This requires the collaboration between key actors, who can lead the practical implementation of the system.

With the support from both public and private institutions, there is the possibility for a stronger system, connected to a variety of data points from existing verified information sources. Gaining the support from multiple institutions would allow the system to benefit from deriving automatic connections to these data sources, rather than relying on a system of manual input. Therefore, it is recommended that the Clean Fuel Contract system is organised as a public-private partnership.

7.2 Creating a unique number related to a specific volume of fuel

To obtain the core information listed in the previous section, it must be arranged that there is a unique identification number related to a specific volume of renewable fuel used in Dutch transport markets. This will enable the process of developing an automatic connection between the existing data sources (which have been mentioned above) and the Clean Fuel Information Record. This will ensure that information provided on the Clean Fuel Information Record relates to a unique volume of fuel.

Several of the existing data sources referred to in this report do obtain an identification number. However, for the purpose of developing a Clean Fuel Information record, this unique reference number would have to be harmonised across all these relevant data sources. Therefore, this requires the parties responsible for managing these existing sources to arrange a system for assigning an identification number that is unique and consistent.

Establishing a unique identification number on the Proof of Sustainability

To create a Proof of Sustainability (PoS), companies who would like to administer their fuel must create a unique identification number. For the purpose of creating a clean fuel contract a comprehensive system must be in place to create this reference number, which has a standardised and recognisable ruleset, so different parties can apply the same approach. This reference number on the Proof of Sustainability (PoS) could serve as the central unique reference number on the Clean Fuel Information record. Therefore, it is the responsibility of the company who registers the Proof of Sustainability in the Energy for Transport Registry to correctly identify this reference number.

Transaction information must obtain the unique reference number

The transaction information connected to the Clean Fuel Information Record should obtain the same unique identification number that was referenced on the Proof of Sustainability (PoS). Therefore, upon registering this transaction information it should be required to reference the unique reference number that is provided on the Proof of Sustainability (PoS).

In the case of more complex supply chain arrangements, this will require the obligation from the multiple actors across the supply chain to add transaction information. To ensure that transaction information across the supply chain refers to the same unique reference number.

Identification of additionality requires a unique reference to existing databases

The additionality status of the fuel could be confirmed by data provided by the NEa and RVO. These parties must ensure that in these databases the same unique reference number related to a specific volume of fuel can be identified. That is the same number obtained on the Proof of Sustainability (PoS). This would require cooperation from the NEa and RVO, to ensure that their internal administrative procedures are aligned with the Clean Fuel Contract system. If this is not possible, a system of demonstrating additionality by self-declaration of the company releasing the fuel to the market could be an alternative option.

The lab report must reference a unique identification number

Finally, the lab report which is linked to the Clean Fuel Information Record should also obtain the same unique identification number that was reference on the Proof of Sustainability (PoS). Therefore, upon registering the lab test data, there should be a reference to this unique identification number.

8 Summary and follow up actions

8.1 Summary of a vision for a Clean Fuel Contract system

There is the need for transparent information flows on the attributes of renewable fuels used in transport and logistics markets. Building from a core set of emissions reporting principles developed in well-recognised international frameworks, this report outlines a set of guiding principles related to Scope 3 claims on renewable fuels. As well, a set of recommendations have been provided for the practical implementation of a Clean Fuel Contract system in the Dutch context. Which if adopted, could overcome major obstacles to the transparent information exchange on renewable fuels in the Netherlands to end-users of transport and logistics services.

A set of requirements related to the development of a Clean Fuel Contract system have been summarised below. This includes providing the details of an information record that can digitally transfer information on renewable fuels to end users of transport systems who would like to make Scope 3 claims. The design and a recommendation for how this information record could link to existing sources of information has been provided in this report. However, the specific technology systems and system of governance to guide the new system require further elaboration before the Clean Fuel Contract system can become an operable and functioning system. *See Figure 10.*

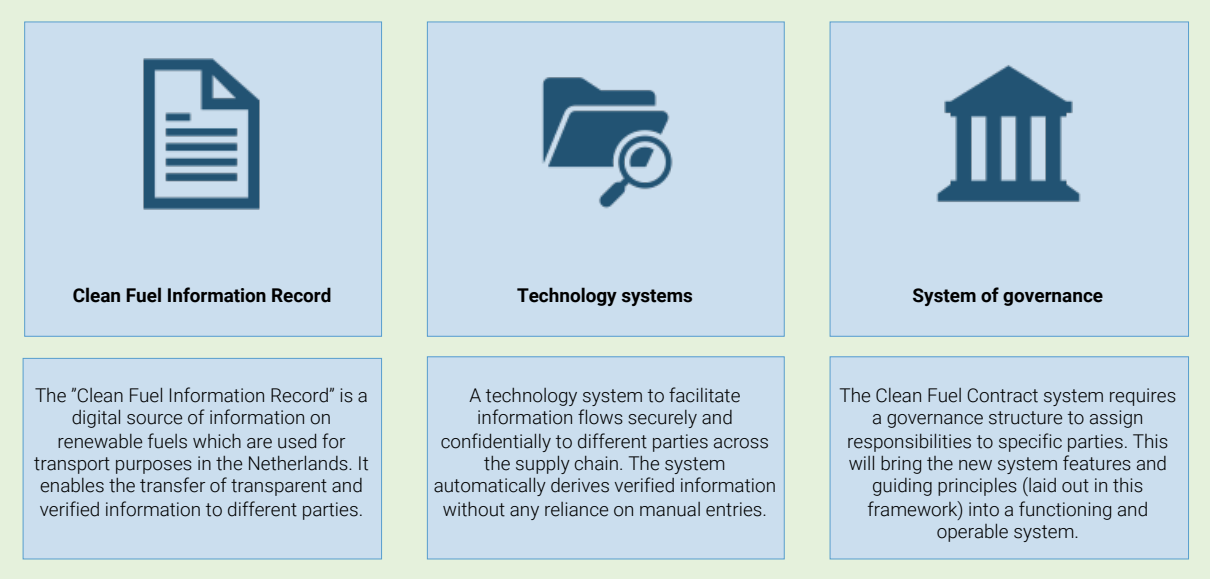

Figure 10. Requirements to develop a Clean Fuel Contract System

Through developing an automatic transfer of information between parties it would be possible to ensure verified information related to unique volumes of renewable fuels. This process would reduce administrative burden in the process of Scope 3 emission reduction claims. Therefore, it must be considered to adopt appropriate technology systems which could support this, such as, a distributed ledger technology.

If there are companies that manage technology systems, such as a technology provider who could be eligible for the creation of a Clean Fuel Information Record and the associated transfer of information, an independent audit should be required to determine whether this technology system meets the required features. This includes creating a secure and automatic link to selected pieces of information obtained in original information sources. As well as supporting the attributes of the Clean Fuel Information record which have been outlined in this report. Specifically, that the information obtained on the information record is "immutable", "unique", "verifiable' and "retireable".

Furthermore, the Clean Fuel Contract system requires a dedicated governance structure to manage various aspects of its operation. Through assigning responsibility to different actors,

these parties could bring the new system features and guiding principles (laid out in this report) into a functioning and operable system. Parties responsible for managing existing data system should ensure that the information required to develop a Clean Fuel Information Record can be obtained from these relevant databases and linked to a unique fuel volume.

8.2 Recommendations for follow-up

Follow up actions are required to bring the recommended system features outlined in this report into existing. To develop a new functioning system, it could be helpful to run a pilot project, such as the current plans proposed by RVO. Through first implementing a "dummy" trial period and then the execution of a pilot project, preferably over the accounting period in 2025, with an evaluation of the performance.

We provide the following recommendations as a set of follow-up actions:

1) Active participation of NOVE members in the RVO project to anchor the key elements outlined in this report into the proposed pilot.
2) Expansion of the monitoring of the physical volume and quality of the renewable fuels, which can make use of the Clean Fuel Contract system. For example, an indication of feedstock origin, demonstrated on the Clean Fuel Information Record.
3) Expansion in the scope of application of the Clean Fuel Contract system in other contexts. Specifically, targeting the needs of the aviation and maritime sectors.
4) Define the exact system of governance and actors that will play a role in the Clean Fuel Contract system.
5) Development of a communication strategy targeted towards the end users of transport systems.

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