

Hydrogen and certification

Position paper in relation to the certification of hydrogen in Belgium

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GLOSSARY

GO	Guarantee of Origin
RED	Renewable Energy Directive
RFNBO's	Renewable Fuels of Non-Biological Origin (i.e. hydrogen derivatives such as synthetic methane, ammonia etc.)

1 INTRODUCTION

As a Hydrogen Industry Cluster, we (the “Waterstof Industrie Cluster”) unite 140 companies, based mainly in Belgium but also partly based in the Netherlands, which are already actively investing in hydrogen technology or are investigating how they can develop activities in this sector in the future.

It is widely recognised that hydrogen and hydrogen-derived energy carriers will play an important role in the energy transition, both as feedstock and as an energy vector. European legislation, which is currently being developed, is also increasingly providing the necessary impulses for this.

However, adequate and pragmatic **renewable and low-carbon hydrogen certification** must be provided to develop a liquid market and utilisation of these gasses. Currently, the lack of a clear and well-organized hydrogen certification framework is hindering the development of the hydrogen market in Belgium -as in most other EU countries-, despite a growing demand and more interest from producers. The certification process is a complex matter to understand and follow, for both producers and suppliers. Thus, to foster the integration of renewable hydrogen in Belgium, it is crucial to set up a well-working certification framework, understandable for all participants and stakeholders. Building a solid framework right now will also help to foster the development of the hydrogen market.

In this position paper we will first explain the difference between Guarantees of Origin (GOs) and RFNBO certificates and some basic concepts like the difference between mass balance and book and claim systems (the two main operation systems used in certification). We will then give an overview of the existing European legislative framework, indicating what types of applications require certification. After this, we drop to the level of Belgium as a very complex member state, due to the different levels of competence for GOs and RFNBO certificates. Here, we will identify the roles that are needed in the certification process of renewable hydrogen, indicating what roles are still missing for Belgium and how and by whom these roles could be filled in. Once we have zoomed in on Belgium, it is time to look what best practices there are to learn from The Netherlands, since they are already relatively advanced in developing a certification system for renewable hydrogen. Lastly; this paper will try to, in an objective and neutral way, describe the different certification scenarios Belgium could take with all its benefits and downsides. It is then up to the policy makers to decide what pathway to choose. We end our paper with some [recommendations](#) to help our governments to make a well-informed choice.

WaterstofNet, as coordinator of the Benelux Hydrogen Industry Cluster (WIC), calls on Belgium and all its legislative levels to urgently adopt a clear and uniform framework for the certification of green gas and in particular the certification of renewable and low carbon hydrogen.

2 CONCEPTS

Before going into the (limited) current hydrogen certification system in Belgium, it is necessary to explain some basic principles and concepts that are inherent to certification process. We will briefly touch upon the difference between GOs and RFNBO certificates and the difference between the book & claim and mass balance operation systems.

2.1 Types of certificates

In this paper, we will focus on two main certificate types that are used to enable the trade and development of green and low-carbon hydrogen, namely Guarantees of Origin (GO's) and RFNBO certificates. For clarity, it is very important to make (and keep!) a strict distinction between the two.

- **H2 Guarantees of Origin (GOs).** Concerns green and low carbon hydrogen used for industrial and heating purposes by both companies or organizations not subject to the European Union Emission Trading System as ETS companies, however it will have no relevance to their ETS reporting.¹ GOs are legislated mainly through Article 19 of the [Renewable Energy Directive \(EU\) 2018/2001 \(RED II\)](#)². This type of certificates are used in a **completely voluntary market**. The hydrogen consumers need a solution to make informed decisions with regards to their hydrogen procurement, for CSR and GHG corporate reporting purposes. Hydrogen producers need a certification system to disclose environmental information to their customers.

RFNBO Certificates. Have as scope the renewable hydrogen and derivatives used as fuel for the transport sector. RFNBO certificates concern renewable fuels of non-biological origin (RFNBOs)³ that comply with the stringent rules to be defined in the Delegated Act on additionality (still to be finalized). Criteria for RFNBO certificates are both legislated through the [Fuel Quality Directive \(FQD\)](#) and [RED II \(Art 25-30 RED II\)](#). Fuel suppliers and industrial players need a certification system to **show compliance** with the EU target and criteria. The RFNBO certificates are hence used in a **regulatory market**. Most probably, RFNBO certificates will also be required in the future to show compliance with the targets on the use of renewable hydrogen in industry (REDIII proposal).

- Other certificate exist, e.g. value chain certification (provided by ISCC, RSB, etc.), but for the purposes of this paper we will focus on GOs for hydrogen and RFNBO certificates.

2.2 Book & Claim vs Mass Balance

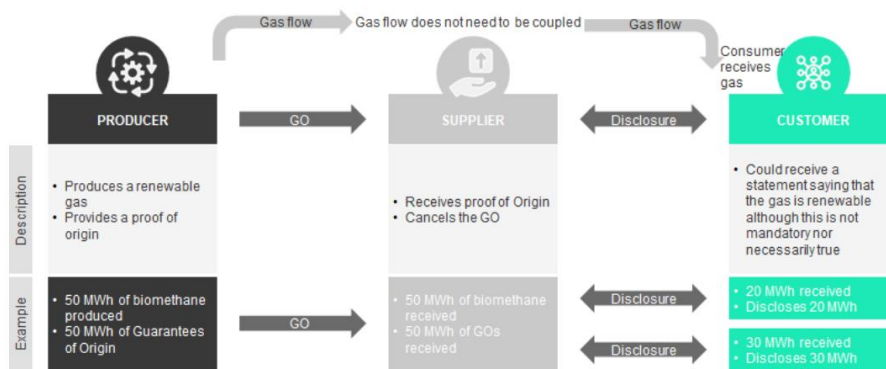
¹ To be more accurate: organizations subject to ETS can use H2 GOs too, but it will have no relevance to their ETS reporting.

² Infra for more information

³ Liquid or gaseous fuel used in the transport sector of which the energy content is derived from renewable sources other than biomass. RFNBOs can be produced from renewable hydrogen. More information infra.

The trading of certificates can be done through **two main operation systems**, book and claim or mass balance systems, depending on the type of certificate.

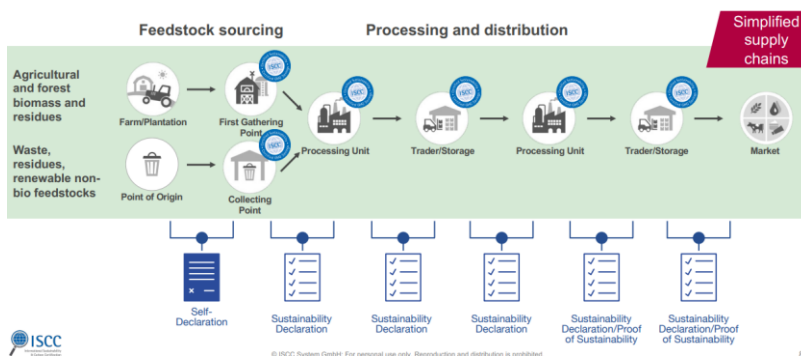
- The **book and claim** system can be used for the trading of Guarantees of Origin, since Art. 19 of RED II allows the transfer of GOs separately from the physical flow of energy. The book & claim precisely enables this **decoupled trade** of the certificate and the physical flow, therefore not guaranteeing full tracing. Typically, GO systems/voluntary markets would be organized following the book and claim principle.



Source: gas.be

- The **mass balance system** is mainly used for other certificates that include sustainability criteria. Contrarily to the book and claim system, the mass balance system is a **coupled form of trading** of the certificate and the physical flow. The product traded on such a system is composed of the energy itself, its reported greenhouse gas emissions and sustainability criteria. Typically, RFNBO use in transport (and as of RED III also in industry) would be organized following the mass balance principle.

Certification of supply chain elements required. Information on sustainable material is forwarded and traced in supply chains via Sustainability Declarations



Source: ISCC. this is how it works it currently for biofuels. Specifics of the RFNBO value chain still needs to be taken into account

3 EU FRAMEWORK

In an ideal world, the certification of renewable hydrogen would be laid down in an EU legislative act, creating an EU-wide uniform system that allows for trading across borders. Unfortunately, this does not exist yet today. However, there is an EU legislative act that is important regarding hydrogen certification: the Renewable Energy Directive (RED) 2018/2001⁴ or RED II, which covers two main certification mechanisms for green gas (including hydrogen), namely **Guarantees of Origin (GOs)** and criteria for **RFNBO Certificates**.⁵

3.1 Article 19 RED II: Guarantees of Origin

Article 19 is an important stipulation when it comes to GOs for the use of electricity, gas, heating, and cooling from renewable energy sources. The article explicitly specifies hydrogen is included in its scope. The article indicates that;

- Guarantees of Origin can run on a **book and claim** system, since Art. 19 of RED II allows the transfer of GOs separately from the physical flow of energy
- Guarantees of Origin must specify a list of details, such as the **source** of energy, the **location** of the installation, and the installation **capacity**, as well as respect various standards regarding its size, validity period, etc. This list of details provides a proof of origin.
- Guarantees of Origin **typically are not required to document the CO₂ content** of a given molecule. In the meantime, the CertifHy project (<https://www.certifhy.eu>) has designed a scheme which makes mandatory the documentation of CO₂ content from well to gate (excluding CAPEX emissions).
- Regular **audits** are mandatory.
- Guarantees of Origin have as purpose to be **the disclosure instrument for the environmental attributes of the energy supplied**. This disclosure can and should be only done once to **avoid double counting**.
- EU Member States or designated competent bodies must **supervise** the market of Guarantees of Origin independently and must guarantee that the market and GOs meet the European requirements.
- EU Member States must provide a **system (register) for Guarantees of Origin for renewable gas** (including hydrogen) as from the **1st July 2021**.

Guarantees of Origin cannot be used for compliance with renewable energy (RE) targets, nor as a supporting mechanism. Also in the electricity market in Belgium the two systems coexist, with the GO's

⁴ 2018, European Commission, 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 (https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0082.01.ENG)

⁵ RFNBO Certificates is the name given to the certificates issued for the certification of renewable transport fuel by a competent authority in a EU Member State. This is not the official name given by RED II.

for disclosure and Green certificates to incentivize the integration of renewables in the offer from electricity suppliers.

3.2 Articles 25 to 33 RED II: RFNBO certificates for transport applications

These articles, and their related delegated acts, lay down specific rules in relation to biomass fuels, biofuels and bioliquids and **RFNBOs used for transport**. The articles define the following rules:

- This type of certificates must run on a **mass balance** system (art. 30 RED II).
- Apart from providing a proof of the origin of the energy, these certificates also require a **Proof of Sustainability (PoS)**, which attests the compliance with the sustainability criteria (in the case of hydrogen this will most likely be proofs of additionality, geographical and temporal correlation) and greenhouse gas emission savings. The calculation method of those sustainability criteria and savings is explained in the articles.⁶
- As a result of this requirement and as opposed to GOs, these certificates can be used to prove complying to the **14% renewable energy in transport** target by 2030.
- Verification requirements are imposed, like **independent auditing** of the production units.
- To comply with these sustainability criteria, a MS can either implement a **national scheme or choose to rely on certificates issued by EU Voluntary Scheme** (greenlighted by the EC). National voluntary schemes are very rare though.
- **Additionality** principle is imposed for RFNBOs (details are pending the final edition of the Delegated Act and its approval).⁷
- Eventually, RED II suggests, with regards to fuels for transport, that the European Commission set up a **Union Database by 2023** to improve data availability on the EU level regarding the tracing of liquid and gaseous transport fuels eligible to count towards the transport target. The Union Database would minimize the risk of fraud and double counting of fuels. This Union Database could facilitate trading thanks to the transparency it provides.

3.3 RED III: ongoing revision of the Renewable Energy Directive

The final draft of the revised RED II (also known as “**RED III**”) directive was expected in the beginning of 2022 and was deemed to lead to further improvements and requirements in the certification frameworks. Due to tough negotiations, the RED III still has not been agreed upon. Overall, RED III is expected to raise the overall renewable targets and to **define the principles of a Union Database**. **REPowerEU**, that was launched in response to the war in Ukraine to make the EU more independent from Russia, strengthens these targets even further. Concerning the **strengthened targets**, we only focus on those related to hydrogen:

- A sub-target of at least **2.6% RFNBOs in transport** by 2030 (4.2% in REPowerEU)

⁶ Origin of feedstock, GHG emissions savings related to RFNBOs and RCFs must be at least 70% compared to a reference value for a certain use as published in the RED II. Today this reference for fuels in transport is 94 g/MJ in the RED II. However, it is still unclear which reference will be used in the RED III for RFNBO's.

⁷ For more information, we refer to our position paper on “Hydrogen and additionality”: [Waterstof-in-de-Deltaregio.pdf \(waterstofnet.eu\)](#).

- 14% target is shifted to 13% GHG reduction target in transport (roughly doubling the target)
- An increase of 1.1 percentage points per year of renewable energy in the **industry** sector and a target of **50% of RFNBOs by 2030** (75% in REPowerEU). This means half of all hydrogen used in industry in 2030 will have to be renewable. Also here certification will play a major role.

4 BELGIAN FRAMEWORK

As indicated before, it is very important to make a stringent distinction between the GO system and the RFNBO certification system. In section 4.1 we will first highlight the crucial roles in the guarantees of origin process. We will see how these roles are filled in Belgium and which gaps we identify in the current Belgium system. Under section 4.2 we will go into the RFNBO certification system.

4.1 Hydrogen Guarantees of Origin in Belgium

If we take a look at the national governance of the GO system, a few key roles can be deducted. The table below shows the EU-wide accepted terminology for the stakeholders involved in the GO system, their roles and responsibilities:

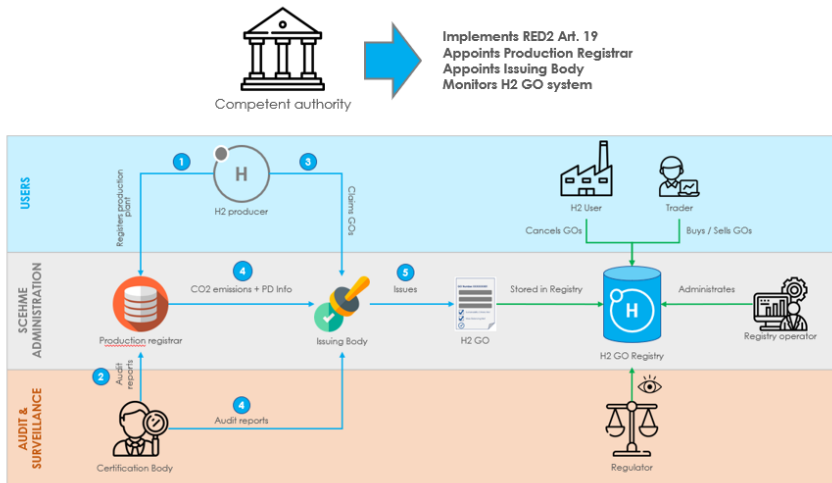
Stakeholder	Definition	Roles & responsibilities	Appointed by
Competent Authority	In relation to the exercise or discharge of any legislative, governmental, regulatory or administrative function, the body duly authorised under the laws and regulations of the EU to exercise or discharge that function	Managing entity, Governance	n/a
Production registrar	Entity responsible for a Production Devices, the registration is based on an auditor assessment.	Registration of Production Devices, CO2 emissions allocation	Competent Authority
Issuing Body	Entity responsible for registering entities and for issuing GOs	GO issuance	Competent Authority
Certification Body	Entity entitled to act as an environmental verifier or environmental verification organization	Certification of Production Devices & GO compliance	Competent Authority and / or Issuing Body
Registry operator	Entity appointed by the Competent Authority and/or Issuing Body to operate and maintain the registry	Registration transactions	Issuing Body

Source: Hiniçio

The figure below in his turn shows how the process of issuing and registration of GOs looks like in practice:

- **Competent Authority:** usually the ministry which has been mandated or appointed by the government in a EU Member State to handle certification. It has been mandated for a specific energy vector and/or for a specific certificate type or to handle the national framework.
- **H2 Producer:** produces a certain amount of green/low carbon hydrogen.
- **Certification Body:** verifies the installation, meters data and determines the renewable character 'up front' (also mentioned as "Auditor").

- **Production Registrar:** responsible for managing the database of production devices within its jurisdiction, including general information, metering data and determining renewability (and CO2 content if relevant). This information is then transferred to the Issuing Body.
- **Issuing Body:** sets the stamp to validate the GO based on data from the Production Registrar and Certification Body, issues it and makes it available for trading. All the GOs are managed in a Registry.
- **Registry operator:** responsible for managing and maintaining the registry. Enables the cancellation and trade of GOs and monitors that the database is consistent at all times.
- **H2 user:** cancels the GO when the hydrogen is consumed. This can also be done by traders or utilities on behalf of the customer.



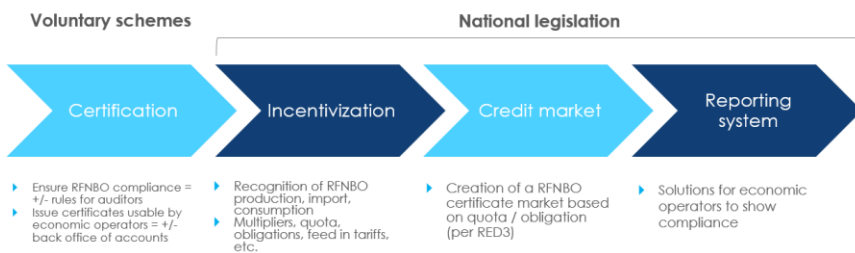
Source: Hincio

Taking a look at Belgium, **only Flanders has already legislation in place** to issue and cancel GOs for hydrogen and to attribute the different roles in the process. In the Vlaams Energiebesluit, Fluxys has been appointed as the production registrar, while VREG is the issuing body and registry operator. Although this Flemish decree already provides a basis for hydrogen GOs, there is in practice still a lot of discussion and unclarity in Belgium on the competency for hydrogen GOs. This is why **in practice the VREG has postponed any issuing of hydrogen GOs**. Cross-border trade of GOs will be done via the issuing body (“hub”) that connects all databases of the different countries. This hub is not finalized yet, but the Association of Issuing Bodies (AIB) is working on it. Other regions in Belgium still have to appoint these crucial roles to the relevant stakeholders. This gives us following picture in Belgium for guarantees of origin for green hydrogen at this point:

Stakeholder	Flanders	Wallonia	Brussels region	Federal
Competent Authority	VREG	SPW	Brugel	(FOD?)
Production registrar	Fluxys			
Issuing Body	VREG	SPW	Brugel	
Certification Body	Fluxys			
Registry operator	VREG			

4.2 RFNBO certification in Belgium

Before we enter into details, it is important to stress that the actual certification on the RFNBOs is done at EU-level by an EU voluntary scheme. The national authorities have no role to play in this. The figure below shows the separation of tasks between the EU level and the national authorities:



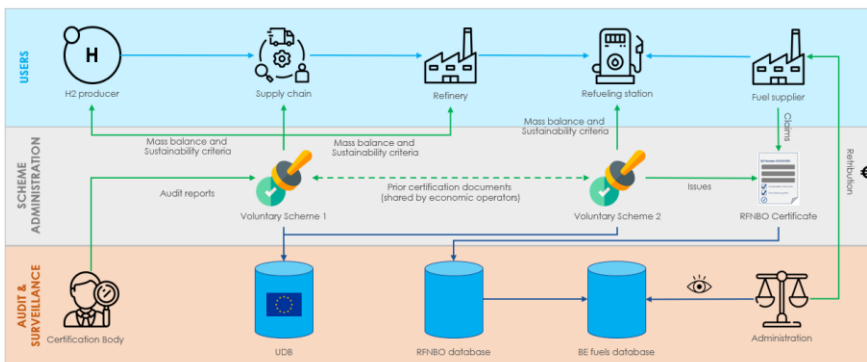
Source: Hincio

In the certification of RFNBOs, Belgium has three roles to play:

- **Incentivization:** Belgium has to create a market for RFNBOs, incentivizing the production, import and consumption of renewable hydrogen. Multipliers, quota and feed in tariffs can be useful instruments to achieve this objective.

- **Creation of a credit market:** the RFNBO certificates need to be part of a credit market. If company A has a surplus of RFNBO certificates, it needs to be able to sell these to company B who has not enough RFNBO certificates (inspiration can be drawn from the current ETS credit market).
- **Set up a reporting system:** so economic actors can show their compliance with the RFNBO targets set out in RED II and future RED III.

Comparing with the GO system, the full RFNBO certification process looks a bit different:



Source: Hincio

What we see in the top part of the figure is that a **few extra steps are added** in the RFNBO certification scheme. The mass balance operation system requires **verification of the sustainability criteria along the entire value chain**. As mentioned before, it is important is that national authorities don't need to worry about the actual issuing of the certificates. This is done by voluntary schemes at EU-level. The national authorities create and operate **RFNBO database and a fuel database** that will (probably) operate in complementarity to the Union Database.

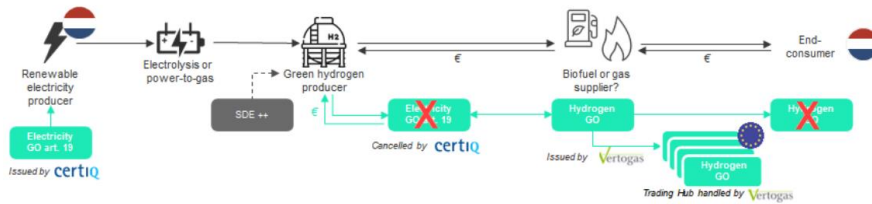
5 BEST PRACTICES: THE NETHERLANDS

Why re-invent the wheel when we can learn from hydrogen GO and certification schemes in other regions to see how they address the various difficult questions, and identify best practices that could be used in Belgium. **The Netherlands** is the guiding country we will analyse in the next section, since it has by far the most developed and centralized green hydrogen GO scheme in place.

5.1 Hydrogen Guarantees of Origin in The Netherlands

In The Netherlands, Vertogas is responsible for the registration, issuing and trading of GOs for hydrogen. All Dutch production units are registered in this system and initially receive a GO independent of the final use. In case the hydrogen is consumed as an RFNBO ("**HBES**"), the GO is cancelled (for use as a renewable fuel) and the information (together with additional proves) are transferred to the NEA (Nederlandse Emissie Autoriteit) for compliance with the transport obligation (**from RED II**) applicable. This makes the Dutch system very centralized and clear. These GOs will be

tradeable in the Netherlands and in the European Union through the trading platform “HyXchange”.
The certification system in The Netherlands can be illustrated by the figure below:



Source: Gas.be

These GOs will be tradeable in the Netherlands and in the European Union through “HyXchange”, an initiative that aims to realize a trading platform for hydrogen on the main Dutch hydrogen infrastructure, including the global imports there and the European countries associated with it. HyXchange also initiated an operational pilot in January 2022 in which 18 companies along the H2 supply chain explored how GOs can be issued and traded for both low carbon and renewable hydrogen. The pilot was setup to be a system test and operational market preparation for implementation. In August 2022 the result of the pilot were published⁸. Overall the pilot has been successful and no issues have been encountered in GO issuance or the processes. From the pilot learnings, two points of attention have been identified:



Successful registrations, GO issuance, manipulations and cancellations

- ▶ H2 production plants, including various production technologies have been registered
- ▶ GOs issued for renewable, low carbon and unclassified H2
- ▶ All feedstocks required to produce the H2 are implemented in the system
- ▶ Platform supports manipulations of the GO and cancellation when the H2 is consumed

Successful trading and GO manipulations

- ▶ Companies have been successful in over-the-counter (OTC) trading of GOs based on a list of account holders. The Vertogas platform would also be able to support the implementation of more advanced trading systems (e.g. bulletin board trading or name passing GO brokerage), which was out of scope for this pilot.

Interfaces with electricity GOs and H₂ HBEs successfully tested

- ▶ CertIQ GOs can be transferred to Vertogas and cancelled to match electricity consumption for a H2 production GO
- ▶ NEA indicates that the GO data fields are aligned with what is needed to issue HBEs
- ▶ Currently, interfaces are managed manually, but will be automated as GO and HBE volumes increase

First operational improvements implemented

- ▶ Users can request another registration email should their registration link be expired
- ▶ English version of the registration manual



Clarification of GO definitions (Point of attention 1)

- ▶ The definition of some data fields on GOs needs to be clarified to facilitate conversion into HBEs

Working towards a real asset pilot (Point of attention 2)

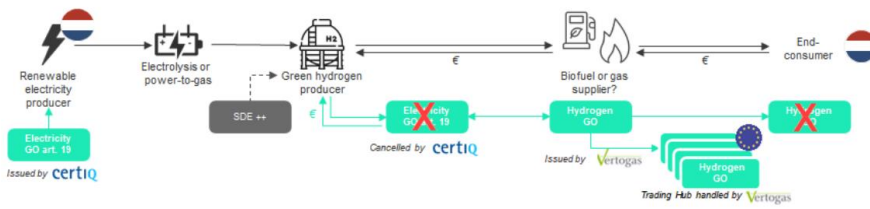
- ▶ A process to capture real H2 metering data should still be implemented via certified metering companies/grid operator
- ▶ Currently it is not possible to receive electricity GOs for non-grid connected assets. This will hinder issuance of H₂ GOs for electrolyzers with a direct connection.

Some operational points of improvement identified:

- ▶ A platform manual in both Dutch and English will support interfacing with the platform
- ▶ Some platform references are still linked to biogas instead of H2

⁸ Projects | Hyxchange.

The Dutch hydrogen certification that was launched early 2022, makes use of the CertifHy voluntary scheme in attendance of a final EU approved voluntary scheme. These GOs will be tradeable in the Netherlands and in the European Union through the trading platform "HyXchange". The certification system in The Netherlands can be illustrated by the figure below:



Source: Gas.be

Met opmaak: Regelafstand: Meerdere 1,15 rg

5.2 RFNBO certification in The Netherlands

As said before, the role of individual member state in developing RFNBO certification schemes is less important since this will be left over to EU Voluntary scheme developers. However, in May 2022 the Netherlands has taken an initiative to also conduct an RFNBO certification pilot to facilitate the process of RFNBO certification scheme development and implementation. The goal was to assess if compliance with draft RED-II RFNBO criteria (additionality, temporal/geographical correlation + GHG calculation methodology) can be demonstrated with audits against draft RFNBO certification schemes (RedCert, ISCC and CertifHy). Sub-objectives were:

Met opmaak: Regelafstand: Meerdere 1,15 rg

1. to facilitate scheme owners in developing (draft) RFNBO certification schemes
2. to assess if requirements in draft RFNBO certification scheme are workable for companies and auditable for certification bodies
3. to give insight in how RFNBO certification is performed so that European as well as non-European companies can prepare for future RFNBO certification

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A final report is expected by the end of 2022, but some preliminary results were shared already during an ISCC event⁹ on RFNBO certification:

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Met opmaak: Regelafstand: Meerdere 1,15 rg

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Gewijzigde veldcode

⁹ Event Recap: ISCC Event "Renewable Fuels of Non-Biological Origin" > ISCC System (iscc-system.org).

Overall results of the pilot audits:

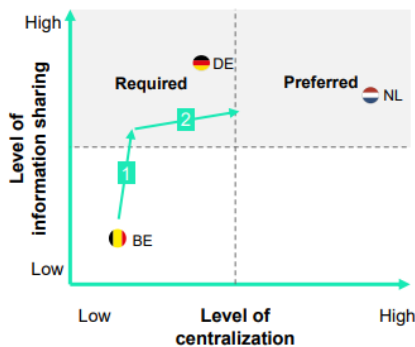
- > In principle it is possible to demonstrate compliance to all DA 27.3 and DA 28.5 requirements, both for directly connected and for grid-connected electrolysers
- > None of the companies fully complied, due to:
 - The companies being unfamiliar with all requirements
 - Installations still being under development / simulations being performed
 - Not (yet) being able to meet 70% GHG emission savings
 - It makes sense to wait for the final delegated acts
- > Demonstrating compliance is not possible when the amount of additional renewable electricity is too low
- > Risk of double counting (GoO's and PoS) needs further attention

Source: RVO & EZK

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6 FRAMEWORK SCENARIOS AND RECOMMENDATIONS FOR BELGIUM

The sixth and final stage of this paper is devoted to proposing potential hydrogen certification frameworks for Belgium. We have identified three options with **different levels of fragmentation and information sharing** that can serve as potential green hydrogen certification frameworks for Belgium. The table below gives a brief summary. The three options are described in the sections below. We finalize this section, and thus the paper, with short and medium to long term actions the Belgian authorities should take.



- **Information sharing:** Needed between each of the systems in Belgium to be able to assure single use and proper target reporting. A certain degree is required to allow proper functioning of a coordinated hydrogen market.
- **Centralization:** Refers to the integration and streamlining of information for the different types of certificates and competences (regional/federal) in a centralized system where possible.

Source: Gas.be

6.1 Three potential framework scenarios for Belgium

6.1.1 Option 1: one hub per certificate type and per region

If Belgium follows this path, the hydrogen certification framework will end **up fragmented and decentralized**. It will result in a framework characterized by numerous systems or hubs, or one system for each type of certificate and per region.

More specifically, following this path will result in having one system per region for GOs, which amounts to three systems, plus, one national system for RFNBO certificates, which amounts to four systems in total. A duplication of this framework could be encountered if low carbon hydrogen was also handled by different production coordinators on a regional or federal level. If so, the framework would be composed of **at least 8 systems**. Treating imports of hydrogen in a different system than locally produced hydrogen could even worsen this fragmentation.

A necessary condition to have a well-functioning framework is to have **interconnected or intercommunicating systems** at least. For instance, when there is a certificate (GO or RFNBO), the communication must ensure that the certificate is cancelled in one system and created in the other.

In such a system each issuing body can choose to designate a production registrar or fulfil that task itself. In general, the former is preferred as it helps ensuring the credibility and independence of the certification framework, as well as bringing the right capabilities to the table for the task at hand, registering production. The **centralization of the different production registrars is possible** if all the production coordinators agree on the same body, or at least on common bodies. The split of competences in Belgium stays as such, meaning that the issuing bodies that have been mandated are not expected to change.

Regarding the **issuing of the certificate** in the certification process, the issuing body must decide whether it fulfils the task itself or delegate it to another body.

Concerning the **trading of certificates**, it is important to make a distinction between the trading of GOs and the trading of RFNBO certificates:

- **GOs.** The GO registries are **not responsible for organizing the trade market** and they are not central counterparties. They have “only” bookkeeping responsibilities, meaning that users report the trade in the system after it happened outside of the registry (which happens “over the counter” (OTC) 99% of the time). Registry operators and Issuing Bodies are not informed on the price, as **they only transfer the GOs from the seller account to the buyer**. To facilitate cross border transfers of GOs, the registries are connected between each other via the communication hub provided by the AIB. We see some instances of **GO trading platforms** popping for electricity in Europe like the EEX (France) and GSE (Italy). When a trade occurs on those platforms, the exchange reports the trade to the concerned Issuing Body so that they can transfer the GOs from the seller account to the buyer account (as described above).
- **RFNBO certificates.** Trading of these certificates is different since the molecule is traded along with the certificates (**mass balance**). For now, the entire process happens entirely over the counter (OTC) without the participation of any registry for the accounting nor any exchange for the trading. However, the Fit for 55 proposal of the European Commission introduces the possibility for Member States to facilitate the trading of “Transport Fuel Certificates” (like RFNBO certificates) but it is still very unclear how this will work in practice. One option is that certificates will only be tradable when the renewable fuel has been incorporated (therefore not subject to mass balance tracking anymore) and the system will be comparable to a quota system such as Green Electricity Certificates in Belgium where obligated parties need to show

compliance with a certain target and can buy certificates in case they are not fulfilling their quota.

6.1.2 Scenario 2: one national hub for RFNBO certificates and regional hubs for GOs

If Belgium decides to adopt a hybrid solution, the hydrogen certification framework could result in at least 4 systems hubs, that is to say one national hub for mass balance-based certificates (RFNBO certificates), and three regional hubs for GOs-type certificates.

Hence, this hybrid solution will result in having one system per region for GOs regardless of type of hydrogen (low carbon vs renewable), which amounts to three systems, plus, one national system for mass balance-based certificates (RFNBO certificates), which amounts to 4 systems. Also imported hydrogen would be certified by the same system in this scenario.

A common **production registrar** is mandated by the different regional and federal production coordinators to fulfil the task. As previously, the split of competences in Belgium stays as such, meaning that the issuing bodies that have been mandated are not expected to change.

Regarding the **issuing step** of the certification process, the issuing bodies overseeing Guarantee of Origins in each region must decide whether it fulfils the task itself or delegate it to another body. On the other hand, to centralize and make efficiency gains, a common system operator could be mandated by the competent authorities in charge of mass balance-based certificates. This common system operator could be described as a body executing more than one task throughout the certification process and operating on behalf of the issuing bodies.

What is written under section 6.1.1 concerning the **trading** of GOs and RFNBO certificates is also valid here.

6.1.3 Scenario 3: one common system operator handling a common hub

If Belgium decided to adopt the most centralized solution, the hydrogen certification framework could result in at least 1 system or hub covering the different certificates (GOs and RFNBO certificates).

As in the previous frameworks, it is assumed that low carbon and renewable hydrogen will be processed in the same systems, as well as imported hydrogen.

A **common production registrar** will be mandated by the different regional and federal competent authorities to fulfil the task. The split of competences in Belgium stays as such, meaning that the bodies that have been mandated are not expected to change.

Considering the **issuing of certificates**, the issuing bodies must decide to delegate the task to a **common system operator** regardless of the type and origin (import/locally produced) of hydrogen, the location of the production in Belgium, or the type of certificate (GO or certificate in mass balance as RFNBO's). A system operator can be described as a body **executing more than one task** throughout the certification process and operating on behalf of the production coordinators. This is similar to the set-up in the Netherlands where Vertogas is the system operator. Given fact that the Netherlands are not regionalized, Vertogas has also been appointed as the issuing body by the Dutch government. The

latter would not necessarily be the case in Belgium where the regions and federal authorities could keep their competency. The certification system operator would act on behalf of the competent authorities.

What is written under section 6.1.1 concerning the **trading** of GOs and RFNBO certificates is also valid here.

6.2 Action points for all Belgian governments

6.2.1: Short term

- Regional and federal administrations should update legislation to be compliant with EU Directives (which mandatory). In any case, **Belgium should not wait for the EU** to take action and should go ahead with (temporary) voluntary schemes like in The Netherlands. These temporary systems can later be conformed to the EU legislation, once it has been finalised. In the meantime, Belgium must continue to push for a solution at the European level.
- In general, **lessons can be learned from the Dutch hydrogen certification system**, more particularly in terms of centralization and information sharing.
- Regions have to ensure **GO interchangeability** by adopting the same GO standards and also make the disclosure/use of certificates independent of quality/purity issues, or infrastructure type to avoid further market fragmentation and an increase of transaction costs in certification, without adding any value for customers.
- Administrations should agree on a **common audit procedure** for the different certificate types, integrating the role of Voluntary Schemes
- Administrations should appoint a **common production registrar** responsible for production data monitoring, audit supervision, green amount calculation, single use checking, and facilitation of import and export of certificates.
- Administrations should **automate and digitalize** manual/email processes.

6.2.2: Medium to long term

- To avoid double counting, **GO and RFNBO systems should be coupled**. GOs Article 19 are issued upon the production of renewable or low-carbon hydrogen and are cancelled when the hydrogen is used by the hydrogen consumer. As explained, **GOs alone cannot be used for proving target compliance in the transport sector** (and in industry under RED III). GOs could however be combined with other certificate types by **adding the necessary information layers on top**, as, for example, a Proof of Sustainability for RFNBO Certificates. However, this is not specified by RED II (art 19) and it is still unclear how it would work in practice (i.e. who is responsible for issuing the GO + Proof of Sustainability, how to report in the UDB, etc. In the meantime, the CertifyHy project has worked on a hydrogen certification architecture where hydrogen GOs and RFNBO certificates interact to avoid double counting and ensure the correct reporting in the UDB

- Given the enormous current grey hydrogen production that already takes place in Belgium, it is not unlikely that we will have more local low carbon hydrogen production than renewable hydrogen production. Belgium should therefore work on GOs of **both low carbon as well as renewable hydrogen**. The same system should be used for both types of hydrogen for reasons of simplicity.
- Same goes for imported hydrogen. The reality is that Belgium has only very limited potential for local green hydrogen production, due to its limited surface area and the high demand for energy and materials. This means Belgium will have to count on a **large-scale import** of renewable molecules from other European countries and especially also third countries. This means that the imported hydrogen, often coming from far away countries like Oman, Chile and Namibia will have to be certified as well. This should be **covered by the same rules and certification system** to avoid complexity and administrative burden.
- Additionally, Belgium is ideally situated to supply Western Europe with renewable molecules and to position itself as an **import and transit hub**, as is currently the case for natural gas and electricity. In particular, Germany is largely dependent from our country for its hydrogen supply. This means that it is crucial that any Belgian hydrogen certification/GO system needs to be **compatible with the German certification system**, although this can also be said for any other neighbouring system (NL, FR, LUX).