

EFET Insight into the EU Guarantees of Origin System



What are guarantees of origin?

Guarantees of Origin (GoOs) are electronic certificates that attest to the origin of the energy that has been produced (e.g. renewable). In Europe, the size of a GoO is set in legislation and corresponds to 1MWh of produced energy. GoOs are fungible (interchangeable) instruments that **can be traded separately from the associated energy**.

GoOs should be distinguished from green certificates used in public financial support schemes. Their sole function is to serve as proof to final consumers of the origin of the produced energy.

GoOs are issued as proof of origin for renewable electricity, but they could also be used for non-renewable electricity, highly efficient cogeneration, and renewable and low-carbon gases. Countries like Austria, the Netherlands, and Switzerland require producers of all types of electricity, not only those producing renewable electricity, to certify the origin of their production, while France has recently introduced full disclosure on a voluntary basis. GoOs schemes for renewable and low-carbon gases are also being contemplated. This Insight, however, focuses on GoOs for renewable electricity.



Why do we use GoOs?

Once the produced electricity enters the grid, it becomes subject to Kirchhoff's law and the exact path of the electrons cannot be determined. This means that consumers using electricity from the grid can never be sure of the exact origin of the electrons that light up the bulbs in their homes or power their coffee machines.

GoOs offer transparency. They are certificates informing consumers that 1 MWh of renewable electricity has been produced by a certain installation on a certain date. The purchase of a GoO allows consumers to differentiate between renewable and other types of electricity and express a preference for the former, thereby supporting the growth of renewable energy sources.

- **Producers** use GoOs to certify the renewable origin of the electricity that they have produced.
- **Consumers** use GoOs to prove the renewable origin of the electricity that they have consumed.

Some parties may be required to demonstrate the renewable origin of the electricity that they sell or consume to meet compliance obligations. For instance, suppliers may be required to procure part of the electricity that they sell to final customers from renewable sources and GoOs presented to the respective authorities serve as proof that they have met their obligations.

Others may wish to make sustainability claims on a voluntary basis. In recent years, a growing number of corporates have made environmental pledges. They use GoOs to attest to the progress they have made in meeting part or all of their electricity consumption needs through renewable sources.



How do GoOs work?

Legal framework: Every EU Member State is required by legislation (recast EU Renewable Energy Directive - Directive (EU) 2018/2001) to issue GoOs to renewable electricity producers upon request. Member States may choose (and some have done so) not to issue GoOs to renewable energy producers receiving financial support.

GoOs serve the sole purpose of demonstrating to a final customer that a given share or quantity of energy was produced from renewable energy sources. They are valid for 12 months after the production of the relevant energy unit.

EU legislation requires all GoOs issued in the EU to follow the CEN-EN 16325 standard. The standard has now been updated to cover not only electricity, but also gas, hydrogen, and heating and cooling GoOs.

In the EU, Norway and Switzerland, GoOs are the only tools available to consumers to trace the origin of their electricity.

Issuing body: GoOs are issued by a designated issuing body. There cannot be an overlap in the geographical coverage of each issuing body. GoOs can be issued by national (e.g., CNMC in Spain) or regional (e.g., in Belgium) regulatory authorities, market operators (e.g., OTE in the Czech Republic), transmission system operators (e.g., Energinet in Denmark), or other parties authorised to perform the task (e.g., the EEX exchange in France).

EECS: Most EU Member States and a number of neighbouring countries (see map) are members of the Association of Issuing Bodies (AIB). This means that the GoOs issued on their territory and related infrastructure (registries) and processes are compliant with the [European Energy Certificate System \(EECS\)](#), developed by the AIB, and compatible with each other. GoOs issued under the EECS Rules are uniquely identifiable, transferable and tradable electronic certificates. They contain standard information on the source of the energy and the way it has been produced.

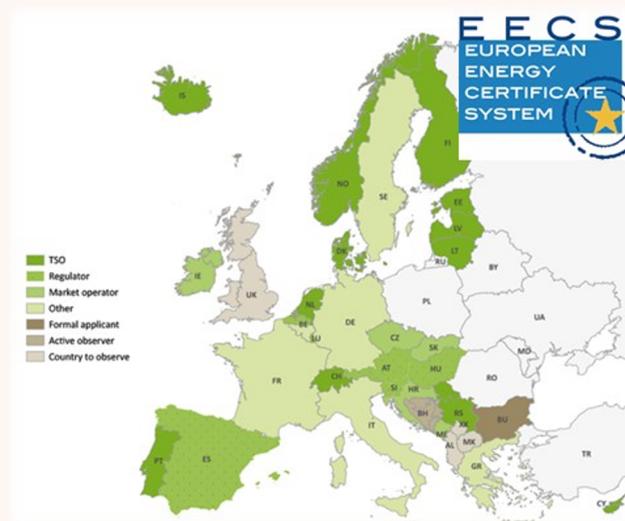


Figure 1. European Energy Certificate System – Source: AIB

Verification and monitoring: To ensure that the information contained in a GoO is accurate and can be trusted, the issuing bodies have in place procedures to verify production devices applying for registration and their measuring equipment. Audits of the quantity and quality of their output are also carried out.

Transfer, trading and cancellation: Once the electricity has been produced, the producer may request that the issuing body issues a corresponding number of GoOs and places them in the account of the producer. The GoOs can then be transferred from one owner to another. The final owner (or a party acting on behalf of the final owner) can then 'cancel' the GoOs and claim the environmental benefit (e.g., count the respective volume of renewable energy produced towards their consumption). The following illustrations present some common uses of GoOs.

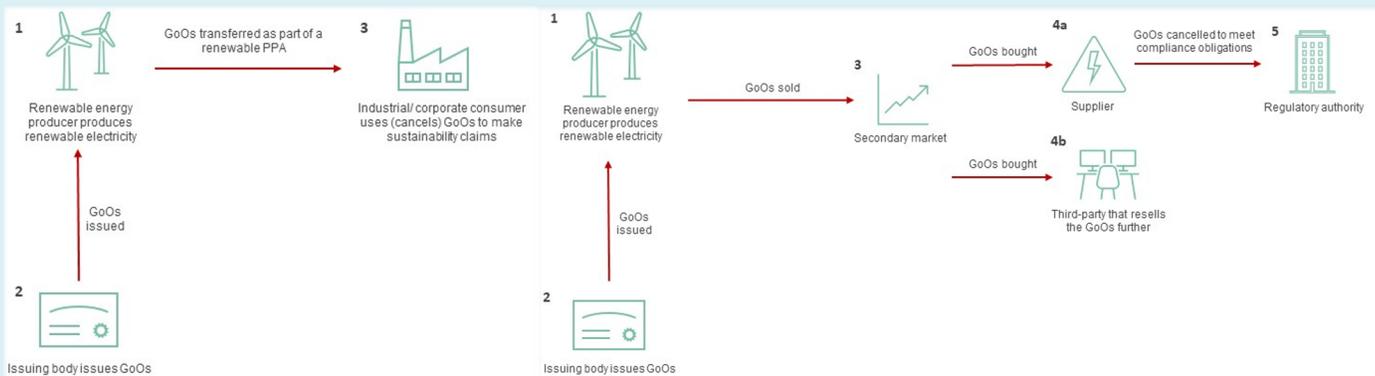


Figure 2. Illustrative examples of common GoO use

- GoOs can be transferred from one owner to another as **part of renewable Power Purchase Agreements (PPAs)** (read more in the following section).
- GoOs can also be **traded in the secondary market on spot and forward over-the-counter (OTC) contracts**.

The process when a GoO is **cancelled** from the respective national registry is the way for a GoO to be removed from the market and for its benefits to be redeemed.

The value of GoOs: GoOs have a value separate from the value of the electricity that they pertain to (the environmental benefit) and can be traded separately from it. The value of the GoOs corresponds to the premium that consumers are willing to pay compared to electricity produced from other (in case GoOs certifying other types of production are available) or undisclosed (the energy mix, which usually includes fossil fuels, nuclear and renewable) sources.

GoOs prices are often volatile and have been on the rise in recent months, driven by strong demand. The graphs below illustrate the price evolution of European GoOs in 2021 and the beginning of 2022. Over the past few years, GoOs prices have varied considerably, ranging from around EUR 0.30/MWh to around EUR 2.5/MWh (S&P Global Platts).



Figure 3. European GoOs prices – Source: S&P Global Platts, 2021

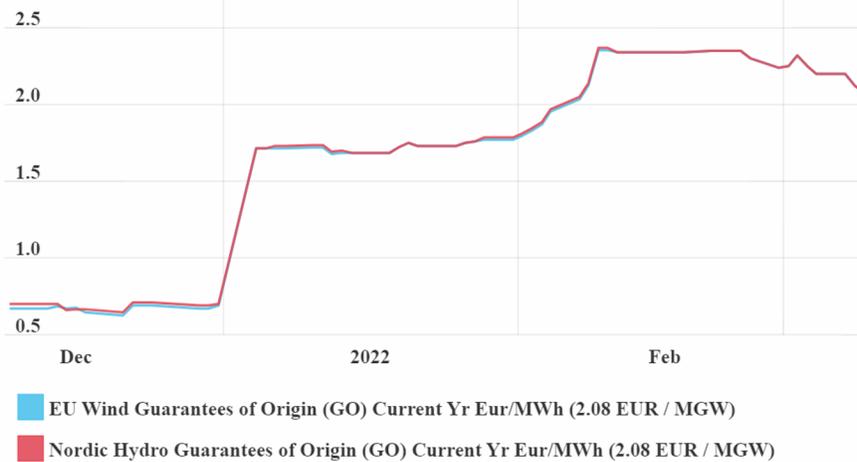


Figure 4. EU wind and Nordic Hydro GoO prices, December 2021-February 2022
Source: S&P Global Platts, 2021

Different GoO products can be traded in GoOs markets. Some offer benchmark products such as Nordic hydro, EU wind, or EU solar, others offer products with a greater granularity that can meet the specific requirements of buyers (e.g., buyers may wish to prioritise local renewable energy production and/ or a specific type of technology). The latter usually trade at a premium and could reach more than EUR 10/MWh.



How do GoOs contribute to decarbonisation?

Creating demand for renewable electricity: GoOs contribute to decarbonisation by giving consumers information about the source of their electricity supply. This makes it possible to differentiate between renewable and other types of electricity. In itself, the distinction is a strong driver for renewable electricity demand.

Providing an additional source of revenue for renewable energy producers: GoOs have a value separate from the value of the related electricity – i.e., the premium that consumers are willing to pay for the environmental benefit. This means that by selling GoOs, renewable energy producers can benefit from an additional source of revenue.

Supporting renewable PPAs: GoOs are an indispensable part of renewable PPAs, which have gained popularity in recent years (for more information, see our [EFET Insight on Renewable PPAs](#) and read more about our [EFET standard renewable PPA](#)). Renewable PPAs are commercial contracts between a renewable energy producer and a buyer (offtaker). They are an important alternative to public financial support for renewable energy, as they offer comparable safeguards for investors. This helps not only to secure investment but also to decrease the cost of capital for renewable energy projects. Renewable PPAs have proved to be essential for the sustained growth of renewable energy in the conditions of declining subsidies and are contributing to the delivery of cost-efficient decarbonisation, and their popularity is only bound to grow on the path to carbon neutrality.



How do GoOs help consumers?

By offering consumers information about the origin of the electricity that they consume, GoOs allow consumers to make informed choices about their energy consumption and give them the opportunity to contribute to the growth of renewable electricity. As RECS International – the association of market participants trading in renewable energy certificates – puts it, this also “puts a level of responsibility on to electricity consumers for the choices they make.”

Consumers can express a preference for renewable electricity in several ways:

- **Industrial and corporate consumers** can sign renewable PPAs with renewable energy producers. GoOs will also be transferred from the producer to the consumer as part of the agreement. On the basis of these GoOs, the consumer can make claims that part or all of their electricity consumption needs have been met by renewable energy sources (sustainability claims).
- **Household consumers** can express a preference for renewable energy supply by picking a green electricity tariff. Suppliers would usually be required to back green tariffs with GoOs as proof of the renewable origin of the concerned electricity.



How can we improve the efficiency of GoOs?

1. Improving trust in the system

In the early years of their development, GoOs schemes suffered considerable reputational damage due to incidents of fraud, such as double-counting and double disclosure. This is when several GoOs are issued for the same unit of energy, or when the same GoO is used to attest to the renewable origin of more than one unit of energy. An example of such fraudulent behaviour would be a producer selling the GoOs separately from the associated renewable electricity, but then also presenting the produced electricity as renewable to final consumers, who would subsequently make sustainability claims on that basis.

Fraud is a major concern that undermines trust in the system. Therefore, any incident has to be carefully examined and safeguards to prevent future occurrences need to be reinforced and updated on a continuous basis. Two such safeguards are **robust IT infrastructure and regular audits**.

In recent years, considerable improvements have been made following the revision of the Renewable Energy Directive (RED II) and thanks to the efforts of the AIB team. These efforts have significantly reduced the risk of fraud and have transformed the EECS into one of the most reliable GoOs systems in the world. Vigilance, however, should remain high, as any misuse would undermine confidence in the certificate system, a system that makes an important contribution to the decarbonisation effort.

2. Issuing GoOs to every eligible producer of renewable electricity

Ensuring that every eligible producer of renewable electricity, regardless whether they receive financial support or not, is issued a GoO upon request. GoOs are an indispensable part of renewable PPAs as they attest to the renewable origin of the contracted volumes. Without them, the offtaker cannot make a legitimate claim to have consumed renewable electricity, which is a major obstacle to the growth of PPAs.

3. Introducing greater choice through granular certificates

GoOs usually indicate the start and end date of production. However, recent initiatives have introduced a more granular approach where a timestamp indicating the month or hour of production is included in a certificate.

One such example is the [EnergyTag standard for granular \(hourly\) certificates](#). Granular certificates can be used on a voluntary basis. In addition to what a standard GoO would offer, they allow for hourly matching of renewable electricity production and consumption. Consumers wishing to step up their sustainability ambition may want to make sure that their renewable electricity consumption needs are met by renewable electricity sources not only on an annual (or sometimes monthly) basis but also in every hour of energy day. This is a considerably more ambitious target, which ensures more accurate carbon accounting, enhances the legitimacy of sustainability claims, and most importantly, supports the growth of renewable electricity and flexible assets, such as energy storage, that could help deal with the intermittency of renewable energy sources.

4. Facilitating cross-border trading in GoOs

Recognition of foreign GoOs is a helpful step in facilitating cross-border exchanges of GoOs and cross-border renewable PPAs. Foreign GoOs can be recognised in another jurisdiction, but that may entail an application for recognition and a case-by-case assessment by the local authorities. EU Member States generally recognise GoOs issued by other Member States and members of the EECS. In principle, there are no technical or accounting reasons why GoOs issued by one AIB member would not be recognised by another, as the GoOs and issuing processes of AIB members are of comparable quality.

In practice, however, the question of recognition is often complicated by the political reality. From July 2021, Swiss GoOs are no longer accepted in the EU as a result of political tensions. Brexit ended the recognition of UK GoOs (UK REGOs were never part of the EECS) in the EU. The UK Government is now considering ending the recognition of EU GoOs, while the Norwegian Government is assessing whether to stop the use of GoOs altogether.

Driven by increasing demand for renewable energy, the GoOs market has been growing steadily in strength in recent years. Cross-border trading in GoOs, which requires recognition of foreign GoOs, has benefits for decarbonisation, including allowing consumers to support renewable energy development where the weather, geographical and economic conditions are most favourable, and enabling cross-border renewable PPAs. Removing obstacles to the cross-border exchange of GoOs would therefore be a helpful step on the path to carbon neutrality.

5. Facilitating a market for guarantees of origin and sustainability certificates for carbon-free and low-carbon gases

The unprecedented decarbonisation requirements and the speed with which the decarbonisation challenge needs to be met require the accelerated deployment of a wide variety of technologies. Among others, this includes carbon-free and low-carbon gases. They can be particularly useful in hard-to-abate sectors or as energy storage in the case of hydrogen, but can also be used in more traditional applications to displace carbon-intensive fossil fuels.

Certificates attesting to the origin and carbon intensity (sustainability attributes) of carbon-free or low-carbon energy carriers – the so-called GoOs Plus, can serve as an important instrument to generate demand for such technologies. They can help to verify national energy mixes, stimulate investment, support national and international markets and provide the redemption channel for the fulfilment of any renewable or low-carbon quotas, which governments may decide to set in specific energy end-use sectors.

Much like electricity GoOs, standardised GoOs Plus should be freely transferable. Their value should be separated from the value of the underlying energy commodities and they should be tradable across borders. GoOs Plus should also be carefully harmonised with arrangements for cross-border Proof of Sustainability (PoS) certificates, which will be issued and regulated under the Fit for 55 legislative package to producers or importers of biofuels and low-carbon fuels, including gases, for registration in a Union Database.



In summary

GoOs are electronic certificates attesting to the origin of the produced energy. GoOs issued for renewable electricity production serve as proof provided from producers to final consumers that a certain volume of renewable electricity has been generated to match their consumption. The certificates can be used as part of renewable PPAs, to meet compliance obligations, or to make sustainability claims.

The benefits of GoOs include:

- Creating demand for renewable electricity;
- Providing an additional source of revenue for renewable energy producers;
- Supporting the growth of renewable PPAs.

To improve the efficiency of the system, we recommend:

- Improving trust in GoOs and GoOs markets through robust IT infrastructure, careful monitoring and regular audits;
- Issuing GoOs to every eligible producer, regardless whether they receive financial support or not;
- Introducing greater choice for consumers through voluntary granular certificates;
- Facilitating cross-border trading of GoOs through the recognition of foreign GoOs that have been issued on the basis of comparably robust standards and procedures;
- Enable the use of GoOs Plus to help stimulate demand for carbon-free and low-carbon gases and related markets.

GoOs markets have been growing in strength over the past few years. They can be a strong driver for consumer-led demand for renewable energy with important contributions to the decarbonisation effort. Therefore, obstacles to their development should be removed.

For more information, feel free to contact us at secretariat@efet.org