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Coordinating Energy Track and Trace with the EU Guarantees of Origin scheme

Proposed method for ensuring compliance with the European Guarantees of Origin (GO) scheme

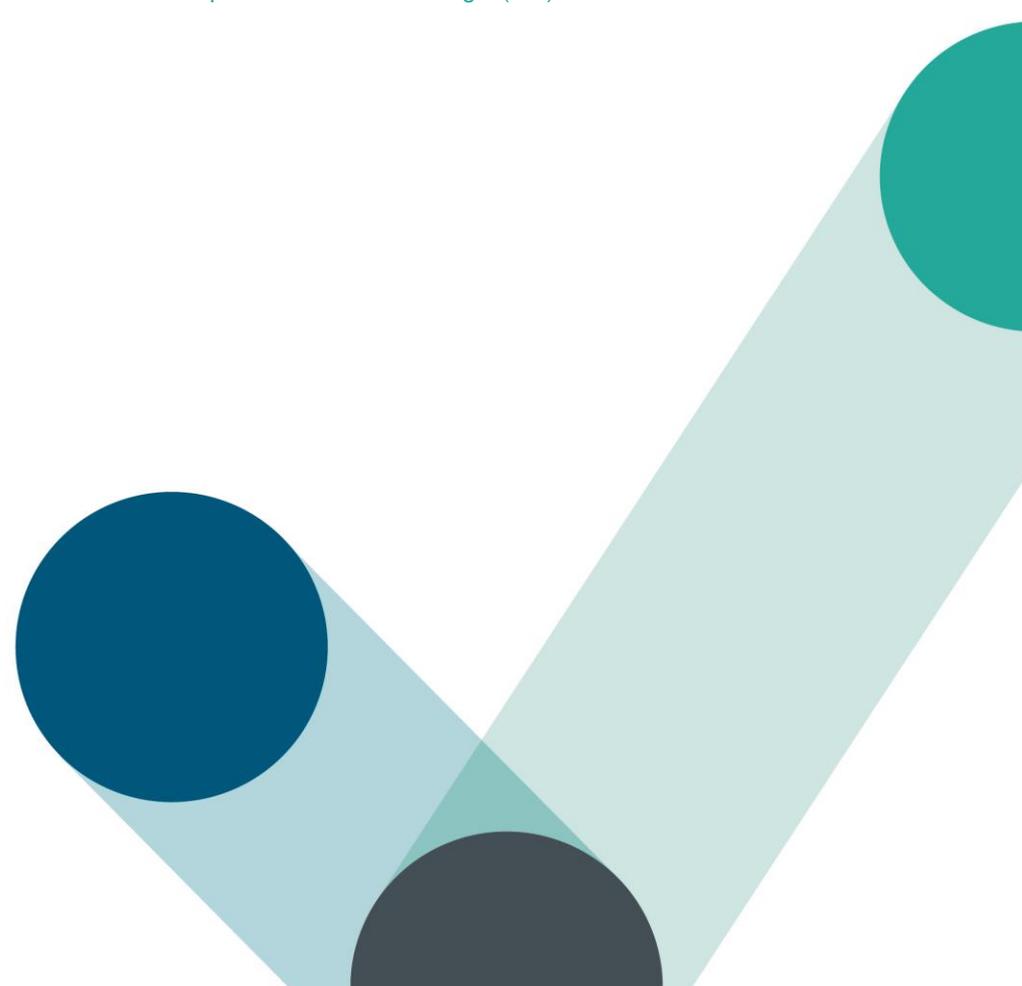


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Introduction

Energy Track and Trace (ETT) is an initiative that aims to demonstrate the feasibility of a granular energy certification scheme that provides enhanced traceability, transparency and trust, so paving the way for a wider variety of choice in energy products and accelerating the green energy transition. ETT is currently being developed by Energinet, Elia Group, Elering and CertiQ.

The ETT team is convinced that granular certification will become the default method for tracing energy in the future, so playing a major role in accelerating the energy transition. Whilst large corporate consumers are already revising their energy procurement strategies to increase the temporal match between load and generation, the European GO scheme is not yet capable of delivering higher levels of temporal and locational granularity. In order to provide value to our customers in the short and medium term, ETT has been designed as a voluntary certification product that coexists with the European GO scheme. Whilst this approach brings several advantages, effective coordination between the two systems is necessary in order to avoid any form of double counting and ensure compliance with legal requirements.

This paper outlines a proposed coordination method that will serve as a basis for forthcoming audits of ETT which will be carried out by EnergyTag, an international certification standard.

Background

The European GO scheme

In Europe, Guarantees of Origin (GOs) are the established tracking scheme for renewable energy, as outlined in Article 19 of EU Directive 2018/2001 (RED II). REDII has been incorporated into national law by Member States (MS) (see, for example, §42 of the German Energy Industry Act, or EnWG) and, as outlined in the directive, the latter must ensure their schemes are compliant with the EU technical standard CEN - EN 16325, published in February 2013¹.

The main purpose of GOs is to provide end consumers with information about the energy they have been supplied with. Given the EU taxonomy for sustainable activities, the relevance of environmental, social and governance (ESG) reporting and GOs as market-based instruments to reduce carbon emissions has increased significantly. GOs are intended to be a value component that generates (additional) revenue for renewable energy (RE) producers in order to accelerate the further expansion of RE.

In Europe, each MS has their own issuing bodies and registries². While each MS can take some independent decisions about some aspects related to the issuance of GOs (such as technologies involved and eligible parties), the different registries must be aligned with each other in order for GOs to be exchanged between different MS (see Article 19.9 of REDII). To enable this, the Association of Issuing Bodies (AIB) created a “hub”, or central data space, via which exchanges can take place. The AIB also created its own standard for issuing, transferring and

¹A new version of the standard is expected to be published soon in order to cover energy carriers other than electricity carriers. Moreover, GO schemes have changed over the past few years, beyond requirements outlined in the standard.

² e.g. DE: Umweltbundesamt (UBA); BE: Brugel, VREG, CWaPE and CREG; DK: Energinet; EE: Elering; NL: CertiQ

cancelling GOs: the European Energy Certificate System (EECS). Today, 28 countries are connected to this EECS system.

GOs are mostly traded Over The Counter (OTC) by authorised brokers that act on behalf of energy suppliers and other companies. Each transfer takes place either between two account holders via the platform operated by the same issuing body, or between two account holders registered to different platforms of the EECS system.

In some countries, auction systems are popular³. For example, the European Energy Exchange (EEX) began holding auctions of GOs in September 2019, following a request of the then French Minister for an Ecological and Solidarity Transition. These GOs cover electricity produced from production units that receive financial support in France. More recently, in 2022, the European Power Exchange (EPEX SPOT) SE launched the first pan-European Guarantees of Origin market⁴.

Weaknesses of the EU GO scheme

The EU GO scheme provides trustworthy information for disclosures related to energy (including for ESG reporting) and is a valuable addition to a market-based energy transition. However, the GO scheme can and should be further improved. From the perspective of the ETT initiative, the two key opportunities for improvement lie in the following areas.

- The GO scheme doesn't provide information about the **temporal match** between production and consumption. Therefore, corporate consumers willing to rethink their energy procurement strategies are not sufficiently supported and, from a systemic perspective, there are limited incentives for developing and using flexibility (such as through battery storage and long-duration energy storage, or LDES).
- The GO mechanism ignores the **transportation capacity** of the electrical grid, meaning that suppliers can even buy GOs from countries that are not (or are poorly) electrically connected to the consumers of energy.

The ETT team believes that these opportunities have to be addressed in the short term (either through regulation or market solutions) in order to make use of the existing momentum: one that involves a large number of corporate consumers and people who are willing to decarbonise their energy consumption.

Expected changes to the GO scheme

The ongoing negotiations concerning revisions to RED II demonstrate that EU legislators have understood the need to reform the GO scheme. The European Parliament (EP) recently approved the following wording in the plenary vote (held on 14 September 2022):

- **Recital:** *“The system of guarantees of origin provided for by Member States should be a harmonised system applicable throughout the Union. A more flexible energy system and growing consumer demands call for a more innovative, digital, technologically advanced and reliable tool to support and document the increasing production of renewable energy. In particular, **innovative technologies can ensure a higher spatial and temporal granularity of guarantees of origin.** To facilitate digital innovation in this field,*

³ <https://www.aib-net.org/facts/market-information/auctioning-gos-aib-members>

⁴ <https://www.epexspot.com/en/news/successful-start-pan-european-spot-market-guarantees-origin>

Member States should introduce additional size granularity in their schemes for guarantees of origin.”

- **Article 19:** *“The Commission shall introduce **supplemental information for guarantees of origin**, while avoiding double counting.”*

The ETT team is closely following the EU trilogue negotiations and is looking forward their outcome. We generally welcome EP proposals with regard to providing more granular information about GOs, since this improves their accuracy. However, the market demands quicker solutions and has further requirements, meaning that the following areas still need to be addressed.

- The proposed changes to the GO scheme (that fall within the scope of REDIII) will only come into effect in 2025 at the earliest.
- In order to provide a trustworthy proof of the temporal matching between production and consumption, the GO scheme would need to be extended to cover the consumption of electricity (load data from consumers). This extension is currently not foreseen in REDIII.
- The IT systems need to be fundamentally redesigned from being volume-based (1MWh, with a fairly low number of transfers) to time-based (i.e. 15 minute certificates with a very high number of automated transfers).

The time-consuming changes that the established GO scheme is undergoing means it is not (currently) able to respond to short-term demands from corporate consumers relating to effectively demonstrating their environmental efforts through the procurement of 24/7 Carbon-Free Energy (24/7 CFE). A more accurate and trustworthy tracking solution is therefore needed in the short term.

ETT is ready and willing to provide this solution to the market.

Energy Track & Trace

ETT is a granular certification scheme that was built by a partnership of European GO Issuing Bodies (IBs) and transmission system operators (TSOs). ETT is a voluntary scheme that is designed to be used by corporate energy buyers and energy suppliers that are already seeking more transparency regarding their energy consumption in order to demonstrate their decarbonisation efforts. ETT’s IT infrastructure is centred on trust and transparency and uses cutting-edge digital technology. As GO IBs and TSOs, we have ensured that ETT (and associated 24/7 CFE procurement) has a positive impact on the energy system as a whole. Energy suppliers can use ETT to provide better information to their customers and corporate buyers can use ETT to effectively decarbonise their processes and improve their ESG reporting.

In theory, ETT could be a stand-alone tracking scheme that could function independently of the established EU GO scheme. However, such an uncoordinated approach would create the risk of duplicate claims (emerging in parallel schemes) and would decrease trust and acceptance. Thus, **an effective interface between the EU GO scheme and ETT is required**. In order to enable our customers to make trustworthy claims with ETT, we need to ensure that these claims are fully compliant with the existing legal framework. Furthermore, the establishment of “effective coordination” is a requirement of the EnergyTag industry standard for Granular Certificates (GCs).

Effective coordination

EnergyTag configurations for effective coordination

ETT is based on the concept of Granular Certificates (GCs). Granular Certificates that are aligned with EnergyTag standards carry time intervals of one hour or less and can be used for temporal matching and locational matching. In order to avoid double counting, EnergyTag requires “effective coordination” to occur between existing Energy Attribute Certificate (EAC) schemes (such as the European GO scheme) and emerging GC schemes. It suggests two possible configurations for this:

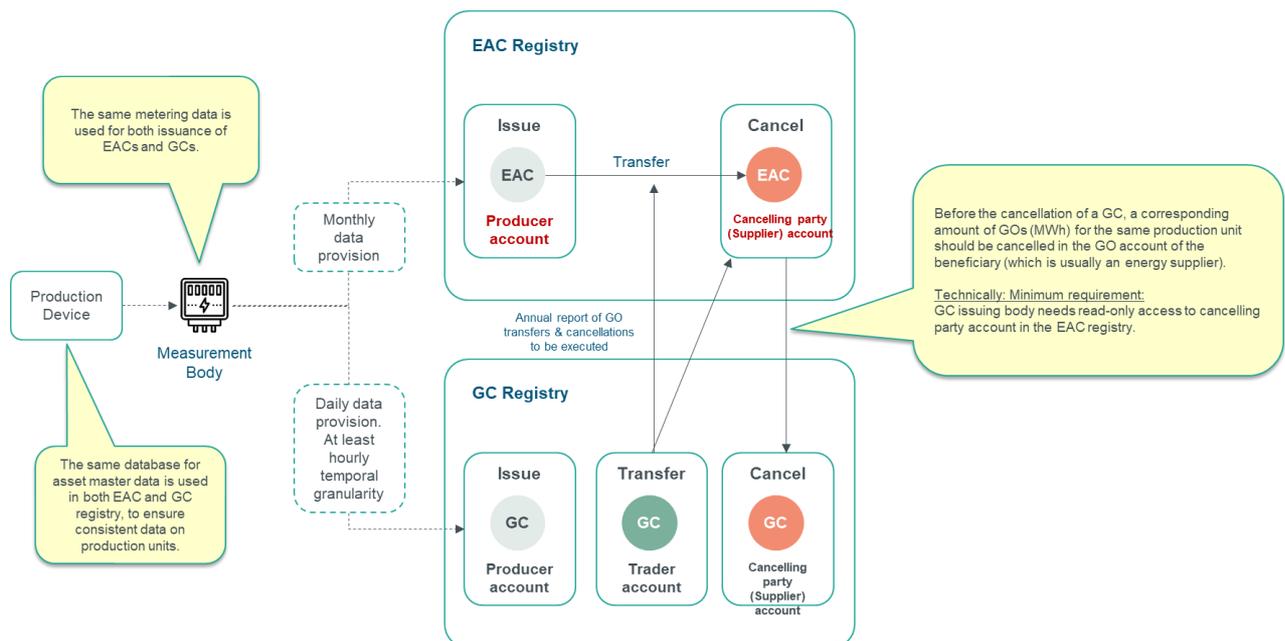
- **Configuration #1: The emerging GC Scheme evolves out of the EAC Scheme;**
- **Configuration #2: The emerging GC Scheme supplements the EAC Scheme.**

In Europe, configuration #1 would be enabled by a revision of RED. This could allow MS to issue more granular, time-stamped GOs instead of more ‘conventional’ GOs that have a standard size of 1 MWh. This configuration would avoid the risk of double counting and would maintain consistency in the market. However, as stated above, revisions to the RED and its implementation take a long time and don’t respond to immediate demands from the market.

Therefore, in the short term, the ETT team has been focused on configuration #2. In a European context, configuration #2 means that the GO scheme in itself would remain unchanged and the cancellation of GOs would continue to be the only legal basis from which official claims could be made.

ETT’s proposal for effective coordination

The EnergyTag standard describes the high-level business processes that are required for “effective coordination”. However, this standard leaves room for interpretation, allowing GC providers (such as ETT) to develop individual approaches which are tailored to their requirements. This section outlines our proposed method for effective coordination (an overview can be found in figure 1).



1: GO/GC compliance process overview

The biggest challenge to effective coordination is the fact that ETT and the GO scheme use different operating principles: **ETT is a time-based scheme**, where production and consumption are matched on an hourly basis in small quantities. By contrast, the **GO scheme is volume-based**, with 1 MWh quantities that can be cancelled within a period of 12-18 months, independently of the exact moment (date and time) of production. Due to its lack of accuracy, the GO scheme cannot represent specific transfers made with ETT. In order to ensure the two schemes can be effectively coordinated, ETT has developed a simple method: **at the end of each year, ETT provides an annual report to each user with all their accumulated GC transfers. This result is further translated into GO transfers that are needed for compliance purposes.** These GO transfers (and subsequent cancellations) need to be executed by the users of ETT, without additional payments being made for GOs between the parties involved. This also means that all GO transfers need to be retained by all production units that are registered with ETT, before the accumulated result is available.

This process and the requirements for “effective coordination” are described in detail in the following sections.

Requirements for the Issuance of GCs

- As a general rule, **we only allow production units to register with ETT if they are also registered with the GO scheme and receive GOs.** This approach avoids the double counting of production units that are not covered by the official GO scheme and ensures consistency with national statistics. Exceptions to this rule can only be made in cases where compliance with national law is guaranteed.
- The issuance of GCs and the issuance of GOs happens independently: GCs are issued via the ETT registry and GOs are issued via the official GO registry. However, the **same source of metering data (time-series) must be used** for both the issuance of GCs and the issuance of GOs for the same production unit. Thus, the ETT provider has to retrieve the same metering data from the Metering Point Operator (MPO) or a central data hub as the GO IB. This requirement avoids inconsistencies from arising between the issued volumes of GOs and GCs for each production unit. This should be verified on a regular basis to avoid accounting errors.
- The ETT registry and GO registry must use **the same database for asset master data** in order to ensure that the information relating to production units is consistent. This may carry the following different practical implications, depending on the national GO scheme:
 - in cases where GO IBs are the same entities that also provide ETT, these entities can access the same internal asset database (e.g. Elering, CertiQ, Energinet);
 - in cases where ETT is provided by an independent TSO (e.g. 50Hertz, Elia), the same public databases must be used, or bilateral arrangements between IBs and ETT providers need to be established.
- The ETT network is synchronised with one-hour time intervals⁵. This requires production units to have **metering data with at least hourly temporal granularity** in order to participate in ETT. Production units with less granular metering data (i.e. yearly data) are not allowed to participate in ETT.
- GCs are issued by the ETT registries as soon as the validated metering data is made available (or shortly thereafter) to the registries and the issuance of GCs happens as **close to real time** as possible. This

⁵ This counts for an early phase of ETT. As soon as all European systems have established a 15 minute settlement period, ETT may introduce 15 minute synchronisation.

means that GCs are issued at a much earlier point in time than their associated GOs (which cover the same volume of energy).

Requirements for GC transfers and cancellations

- All registries in the ETT network **enable GC transfer (covering the partial or complete transfer of ownership⁶) after a defined time interval** which is related to the actual time of production. This interval gives all ETT registries time to collect metering data (or receive it from MPOs) and issue GCs before all ETT registries enable transfers for a specific timestamp. The time interval has tentatively been set **one week** (168 hours), but may be changed when we gain more experience⁷. A non-coordinated approach (without a defined time interval) would lead to unfair advantages for some users that are connected to a more effective registry.
- In order to enable ETT to derive the annual report and translate it into the necessary GO transfers for compliance purposes, the **transfer period closes at the end of the first month of the following year**. Thus, all ETT transfers have to be finalised in January for the previous year. After that period, no more GC transfers can be performed (for the previous year). In the long term, as the market matures, we intend to shorten the GC transfer period in order to provide final results more quickly.
- After the transfer period has ended, **ETT calculates the annual report and translates the accumulated GC transfers into yearly GO transfers** that are necessary for compliance purposes.
 - Due to the fact that ETT and GOs use different operating principles (see above), the translation from GC to GO transfers creates discrepancies. For example, an accumulated GC transfer of 3.456 MWh (from one production unit to one consumption point) cannot be accurately represented by a whole number of GOs (which have fixed volumes of 1 MWh). If 3 GOs were to be cancelled for this consumer, the error would be 0.456 MWh, since the remainder would not covered by GOs. If 4 GOs were to be cancelled, then the error would be 0.544 MWh, since the volume of GOs would exceed the volume of GCs.
 - For this reason, **ETT optimises this translation in such a way that the total error (across the whole system) is minimised**. This ensures that GO transfers and cancellations represent the GC transfers as accurately as possible; however, it should be noted that **a certain level of discrepancy cannot be avoided**.

As described above, ETT creates an annual report that accumulates all GC transfers and calculates the optimal translation into the GO scheme. **These GO transfers then need to be executed and the GOs need to be cancelled in order to be compliant with configuration #2**. The ETT claim is only legally valid after the appropriate number of GOs has been cancelled.

In order to facilitate compliance with the GO scheme, **ETT provides the translated results to each user and mandates each user to execute the calculated transfers and cancellations accordingly**. In order to avoid a duplication of effort and cost for consumers and energy suppliers in ETT, each producer is obliged to execute the resulting GO transfers without receiving additional payments from consumers and/or energy suppliers. This ensures that energy suppliers and consumers are not burdened by parallel systems (ETT and the GO scheme), but

⁶ Further information on the matching mechanism can be found in our Paper "Architectural concepts and insights" on energytrackandtrace.com

⁷ An exception to this rule may be made for production units that use a mix of renewable fuel (such as renewable biomass) and non-renewable fuel in the same power unit. In this case, the necessary data for issuance cannot be retrieved within the given time interval of 168 hours.

can fully focus on ETT. They will subsequently receive GOs without having to carry out additional payments and thus the GO scheme will become a tool for compliance. Furthermore, a time-period will be defined, within which the report must be executed.

The final step in the process is the cancellation of GCs. As a general rule, **GCs can only be cancelled after the yearly report has been fully executed by the users**. In order to guarantee this, ETT needs to perform additional checks, depending on the national implementation of the GO scheme and the role of the ETT registry:

- If the **ETT provider also operates the GO registry** or has permission to read the latter, the ETT registry can automatically check if all necessary GO transfers and cancellations have been executed correctly and enable GC cancellation accordingly.
- If the **ETT provider has no access to the GO registry**, users have to prove the cancellations directly to the ETT provider.

In the upcoming ETT testing period (2023), we will further develop a penalty mechanism in order to drive compliance with the GO scheme, which is a key requirement for us.

Conclusions and call to action

Compliance with the EU GO scheme is the legal basis for all claims made with ETT. ETT involves a process that ensures this compliance and provides a European granular certification solution without the need for the GO scheme to be fundamentally revised. Our aim was to design a process that was as simple as possible. However, **the need to comply with two parallel schemes automatically increases the complexity involved**. Furthermore, the discrepancy between the two operating principles (time-based vs. volume-based) opens us trust- and acceptance-related risks in granular certification. For this reason, we emphasise that this ETT only offers users a transitional solution which could be used until the GO system is revised and granular certification is included by design.

Call to action

The described solution is cumbersome for both users and ETT registry providers (especially those who don't operate the GO registries). A first step that would facilitate coordination between ETT and the GO scheme is better access to GO registry data. This includes master data related to production assets (which ensure consistent information about the origin of energy) as well as GO issuance and cancellation statements. Automated access to GO registries via APIs is an important step for enabling ETT.

While this data access would simplify compliance checks, it's still only a transitional solution. **In the mid to long term, we urge policymakers to revise the EU GO system and include granular certification** (including temporal and locational matching) in its new design.



For further information, please contact:

Belgium and Germany

Elia Group

Michaël Piron | P +32 2 546 76 68 | Michael.Piron@elia.be

Denmark

Energinet

Morten Houborg Andersen | P +45 20 36 53 34 | MHU@energinet.dk

Estonia

Elering

Kadri-Liis Rehtla | P +372 5348 2948 | Kadri-Liis.Rehtla@elering.ee

Netherlands

CertiQ

Remco van Stein Callenfels | P +31 26 373 16 71 | Remco.van.Stein.Callenfels@certiq.nl