



Does the EU renewable energy sector still need a guarantees of origin market?

Jaap Jansen

Summary

The Renewable Energy Directive of 2001 mandated EU member states to develop a system for the guarantees of origin (GOs) of renewable electricity. In 2016, this market had an estimated value of €120 million per year across the EU, of which €100 million was income for generators of renewable electricity. Yet the GO system has received criticism for lacking environmental credibility and having little impact. There is specific criticism of the double-counting and negligible impact on new renewable generation; an oversupplied market means that there is a very low average GO price level. Well-designed reforms could address these weaknesses and provide additional, consumer-driven future income streams to help realise new renewable energy projects.

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The European Commission launched the *Clean Energy for All Europeans* package in November 2016, which contains a proposal for a revised Renewable Energy Directive and suggested amendments to guarantees of origin (GOs) under Article 19.¹ GOs serve as proof that the sources (fuels) used to produce the electricity they delivered correspond to the fuel mix under the electricity information label that suppliers must disclose to consumers along with the electricity bill.²

This Policy Insight focuses on the fundamentals of the market for GOs representing renewables-sourced electricity.³ It raises key questions for the ongoing legislative process leading up to the revised Renewable Energy Directive for the 2020s, and concludes that under certain regulatory conditions, the GO system can become a useful instrument to empower consumers to render the national and EU energy mix more renewable.

A brief introduction

A GO is an electronic document that certifies that 1 MWh of energy, mainly electricity, has been generated from sources with origin features specified by European Union GO rules legislation.⁴ This requires GOs to be issued at the request of producers of electricity from renewable sources. Generators sell these GOs directly, or through traders, to suppliers who use them to prove the source (fuel) of the renewable electricity they deliver in accordance with the electricity information label sent to customers with the electricity bill.⁵ Suppliers have the legal obligation to disclose to consumers the fuel mix of the electricity supplied to them in the previous year. For renewable sources, suppliers must prove the renewable origin of the

¹ See COM(2016) 767 final/2. Existing legislation on EU GO rules is enshrined in Directive 2009/28/EC repealing Directives 2001/77/EC (Renewable Electricity) and 2003/30/EC (Biofuels) and Directive 2012/27/EU.

² EU rules for electricity disclosure are stipulated in Directive 2009/72/CE, Article 3 (9).

³ GOs of electricity from high-efficiency cogeneration plants and of heating and cooling are not considered.

⁴ For a renewable electricity GO these features include, *inter alia*, the renewable energy source used, the identity, location, type and capacity of the power plant and a unique identification number.

⁵ For more details and further references see: Jaap Jansen, Eleanor Drabik and Christian Egenhofer, "The Disclosure of Guarantees of Origin: Interactions with the 2030 Climate and Energy Framework", CEPS-ECH special report No. 149, November 2016, at: <https://www.ceps.eu/system/files/Guarantees%20of%20Origin%20CEPS%20Special%20Report.pdf>

deliveries of 'green tariff' products by using GOs. Typically, generators are the actors on the supply side and electricity suppliers on the demand side of the GO market. In some member states large companies are allowed to act on the demand side, procuring GOs for their own use (to reduce their carbon footprint).

The market for GOs of renewables-sourced electricity for use in the EU during 2016 was estimated to be about 300 million MWh.⁶ This means that it covers almost one-third of total renewable electricity consumption in the EU. Hydropower still makes up the lion's share of GOs used in the EU, with 77% in 2016.⁷ But the corresponding contribution of other renewables, i.e. 23%, is rising fast. This also holds true for the overall use of GOs in Europe: AIB statistics indicate an annual growth rate of 12.5% during the period 2011-2016.⁸

To date, GO prices are low. We estimate that the average GO price in 2016 can be put at approximately €0.30 per GO (0.03 €cent per kWh) and €0.75 per GO (0.075 €cent per kWh) for hydro GOs and other-renewables GOs respectively.⁹ The total market value of GOs used in the EU in 2016 may therefore have had an order of magnitude of roughly €120 million. Out of the total, some €100 million can be seen as an additional income source for renewable generators.¹⁰ The remaining €20 million are fees and charges, for example, for issuing bodies and traders.

Two main drivers have the potential to substantially increase the average market value of GOs and, consequently, the cash flow they deliver to renewable generators. First, especially following the Paris Climate Agreement, the appetite of consumers to reduce their carbon footprint is increasing. This is particularly the case for business corporations, but also for environmentally aware households and local energy communities. Second, several renewable technologies achieve rapid cost reductions, e.g. new utility-scale photovoltaic (PV), onshore and especially offshore wind projects. GOs could play a major role in closing the narrowing cost gap per kWh between power from these sources and power from non-renewable sources.

⁶ This estimate only refers to renewable electricity GOs cancelled in the EU28, based on the European Energy Certificate System (EECS) standard, developed and used by the Association of Issuing Bodies (AIB). This is the most available standard in the EU, with oversight of national regulatory agencies in member states where this standard has been adopted. In 2016, 10 member states, including the UK and Poland, had not yet designated an issuing body adopting the EECS standard for issuing GOs, affecting cross-border GO trade.

⁷ Close to 100% of the hydropower GOs represent production from large hydropower stations. Many of these stations were commissioned before 1990.

⁸ Cancellations in the EU, Switzerland, Norway and Iceland of all EECS-based GOs, including a tiny share for other GOs than renewable electricity GOs (such as GOs of nuclear, fossil fuels and green gas energy).

⁹ GOs are traded bilaterally and therefore GO price information is largely confidential. These are average figures. GOs constitute non-homogeneous environmental products, the market value of which is determined by user-specific preferences. In some small niche markets prices are as high as 3-5 €/GO to meet demand for locally produced wind power or local PV-based electricity.

¹⁰ Assuming transaction costs total on average €0.07 per GO used (€ct 0.007 per kWh of renewable electricity consumed).

A closer look at some market fundamentals proposals

Current EU legislation leaves the design of renewable energy and electricity support schemes to member states, albeit within an EU framework. Legislation in most member states allows the issuance of so-called 'support GOs' to generators in their jurisdictions; support GOs are GOs of electricity that benefited from a support scheme. This means, in practice, that GOs do not incentivise additional renewable generation, even if the GO prices were much higher. The situation in Germany is different, however, where no GOs can be issued to generators benefiting from the German support scheme. The downside is that there is no EU-wide framework, which risks 'unlevelling' the playing field for project developers.

Under the new proposal, the European Commission plans to oblige member states to forbid the issuance of support GOs to generators and instead have them issued to a designated national authority. This would effectively solve the 'playing-field' problem under a number of conditions:

First, there must be clarity on whether the support for renewable generation applies to production-related benefits (e.g. feed-in support, green certificates, production-variable tax benefits) or to investment subsidies. If the recast Renewables Directive is to stipulate that investment subsidies must be included in GOs that cannot be issued to generators, then a clear definition of investment subsidies is warranted. Also, whether such an obligation can be implemented from an administrative perspective should be considered.¹¹ Investment subsidies are much less distortive for both electricity and GO markets. Also with a view to administrative implementation, forbidding issuance of GOs to generators only when the generated electricity represented by those GOs is supported by a production-related support scheme is a possibility.

Second, the European Commission proposal to mandate member states to auction support GOs, and then to use the auction proceeds as a funding source of their national support scheme is questionable. Auctioning raises several issues. A credibility issue arises because of double counting the renewable feature of the electricity represented by a support GO. Double uses are: i) use by generators of their (justified) claim to the renewable feature to obtain support benefits and ii) use of electricity suppliers and business companies who bought support GOs on a state auction to make a second (contestable) claim on the renewable feature of the same renewable electricity. The environmental integrity of the second claim on the renewable electricity feature is supposed to be compromised by the fact that it has already been claimed before. That is, the second claim to the renewable feature tends to have no positive environmental impact, i.e. more renewable electricity production. Furthermore, auctioning of support GOs exacerbates the prevailing oversupply of GOs. A new flow of GOs will be entering the GO market, i.e. those on supported electricity that cannot be issued under German national legislation. The benefits of auctioning support GOs, i.e. where the auction proceeds can be used

¹¹ Investment support can be difficult to establish/trace. For example, should participation of public financing agencies in project finance be considered? And what about subsidies from sub-national authorities, including subsidised acquisition or use of public land?

as a new and additional funding source for national support schemes, are set to be meagre as the prevailing low GO prices will be further reduced by the negative price effect of the proposed auctioning measure.

A better way would be to have the support GOs cancelled by the designated authorities. Mandating member states to oblige their competent authorities to cancel the GOs on supported energy¹² will lead to a separation of GOs as an instrument for consumer disclosure purposes and support schemes, thereby potentially avoiding the risk or perception of double counting. As a result of having support GOs cancelled – as distinct from bringing them to the market through auctioning – the supply of GOs to the market would diminish strongly, rendering the GO market less oversupplied. This would increase GO prices, meaning that the purchase of a renewable electricity product (for example as a tool to reduce the carbon footprint) would come at a non-negligible price premium. The prices for GOs – to demonstrate the nature of renewable electricity products – would have to be high enough to entice renewable generators to request issuance of GOs instead of applying for the benefits of the national support scheme. As project developers (generators) are looking for a relatively stable cash flow profile, they may seek to enter into long-term contracts with buyers of electricity plus the corresponding GOs. The upshot is that cancelling ‘support GOs’ is likely to have a notable upward effect on the production of renewable energy.

When the costs of consuming premium renewable energy products go up, demand for such products will shrink initially. This market volume effect would be mitigated by the narrowing cost competitiveness gap between renewable electricity and non-renewable electricity, because of technological progress. Furthermore, corporate consumers face surging market pressure to render the carbon intensity of their products ever lower. Besides, the overall retail market for premium green products is expanding and the number of citizens active in local energy communities is rising as well.

Success will also require that the second reason accounting for the oversupplied market GO market be addressed; namely GOs issued to ‘old’ renewable power plants that have already been fully depreciated on the balance sheet of the generators concerned, notably large hydro. This could be solved by obliging member states to issue to a designated authority those GOs of renewable electricity generated by power plants that, at the GO issuing date, were commissioned more than a specified number of years, e.g. 25 years, ago.

Should the GO instrument be discarded?

The current legislation of the GO instrument leads to an oversupplied GO market and a double-counting problem. This enables suppliers who want to launch renewable electricity products, and corporations seeking to make their electricity demand more renewable, to do so in a legally

¹² This can be done in an administratively simple way by ordering the designated authority to immediately cancel the support GOs issued to them. Some member states may wish instead to opt for a relatively complex procedure to allow for differential contributions made by different consumer categories.

correct and cheap but environmentally questionable way that results in little or no extra generation of renewable electricity.

To redress this situation, the following steps should be taken:

1. EU-wide adoption of the best available harmonised GO standard enabling renewable generators to benefit from unhampered cross-border GO trade, such as the EECS (European Energy Certificate System) standard.¹³
2. 'Support GOs' will need to be issued to a designated national authority instead of generators, who receive support benefits. The authority has to cancel these GOs. The type of support schemes to be associated with support GOs need to be clearly defined. Restricting such schemes to production-related support schemes might be considered because inclusion of investment subsidies poses significant administrative challenges.¹⁴
3. Mandate member states to introduce a limit on the period during which the generator running a renewable electricity installation can request issuing GOs to him, for example 25 operating years only. GOs of the electricity generated after this period has ended have to be issued to the aforementioned designated authority for immediate cancellation.

In considering these steps, the EU legislative institutions might conclude that GOs have the potential to become a welcome consumer-driven financing complement to render renewable energy projects viable, notably after 2020.

Table 1 below summarises and provides further explanation of the pros and cons of possible regulatory changes discussed in this Policy Insight.

¹³ See also footnote 6. The European Commission proposes that "Member States and designated competent bodies shall ensure that the requirements they impose are compliant with the standard CEN - EN 16325". See COM(2016) 767 final/2, Article 19(6).

¹⁴ To preclude retroactive changes *existing* long-term corporate power (plus GOs) purchase agreements would need to be honoured by way of a derogation to the proposed obligation. *New* long-term corporate Power Purchasing Agreements would need to fall under the obligation.

Table 1. Major effects of three fundamental amendments regarding GOs of supported renewable energy and GOs from old installations generating renewable electricity

Impact on ...	Auctioning support GOs by designated national authority	Cancelling support GOs by the designated national authority	Cancelling old plant GOs by the designated national authority
Average GO price	Downward	Upward	Upward
Consumer costs of signalling a preference for renewable power	Costs remain negligible	Green tariffs to include a non-negligible premium to render additional project finance with GOs competitive with the national production support scheme	Potentially upward
Renewable power generation ('additionality')	The negligible impact to date will be reduced further by more GO oversupply	Significantly positive	Significantly positive
Consumer transparency	Reduced: no transparent disclosure of renewable electricity (RES-E) supported by consumer surcharge / tax payer, nor of additional RES-E financed by green tariff subscriber (when applicable)	Improved: transparent disclosure of both RES-E financed by consumer surcharge / tax payer and additional RES-E financed by a green tariff subscriber	In countries with old hydropower stations the share of hydropower disclosed to consumers will resemble closer the share of hydro in the national electricity production mix
Economic significance of GO market	Will diminish	Likely to increase: GO price effect poised to dominate market volume reduction	Likely to increase: GO price effect poised to dominate market volume reduction
Support funding requirements to achieve 2030 RES target	Slightly downward: auction proceeds to be negatively affected by downward GO price effect	Significant downward potential: accelerated phase-out of support, notably to technologies with currently a low cost gap	Significant downward potential: accelerated phase-out of support, notably to technologies with currently a low cost gap

Credibility of GO system	Contested: alleged double counting of the renewable feature of supported energy + absence of 'additionality'	Strongly raised: no double counting issue and significant additionality	Raised by higher potential for additionality
Compatibility with sound regulatory principles	Cross-subsidisation of grey by green tariff consumers. Allegedly, the state dispossesses title to the renewable feature of electricity supported by the national support scheme from the consumers who funded this scheme	Compatible	Freedom of consumers to choose energy from old plants constrained to address – apart from zero-additionality concerns – a second market failure, i.e. supra-normal profits to generators concerned

Note: RES-E stands for electricity from renewable sources of energy.