

Guarantees of Origin (GOs)

Supporting Businesses to Meet Renewable Energy Targets Across Europe

What is a GO?

A GO is a type of Energy Attribute Certificate (EAC), which represents the environmental attributes of the generation of one megawatt hour (MWh) of electricity produced by renewable sources. GOs are issued in Europe and offer companies flexibility to source renewable electricity in the locations most important to them.

How can purchasing GOs benefit my business?

Like all EACs, GOs enable companies to credibly claim renewable electricity consumption and report lower Scope 2 emissions according to the Greenhouse Gas (GHG) Protocol Scope 2 Guidance.

Where are GOs available?

GOs are available in 28 countries in the European Union (EU), plus Norway, Switzerland and Iceland. Natural Capital Partners specialises in working with clients to select the best EAC options for their business. We often customise EAC portfolios including GOs in Europe, Renewable Energy Certificates (RECs) in North America and International RECs (I-RECs) across the rest of the world, to optimise selection criteria such as technology type, location, electricity vintage and more.

The demand for renewable electricity in Europe documented by GOs is growing rapidly - by ~10% each year (CAGR). GOs representing 1,183 TWh were generated in 2017, approximately 70% of which were issued by Austria, Finland, Norway, Spain, Sweden and Switzerland.

The GO system

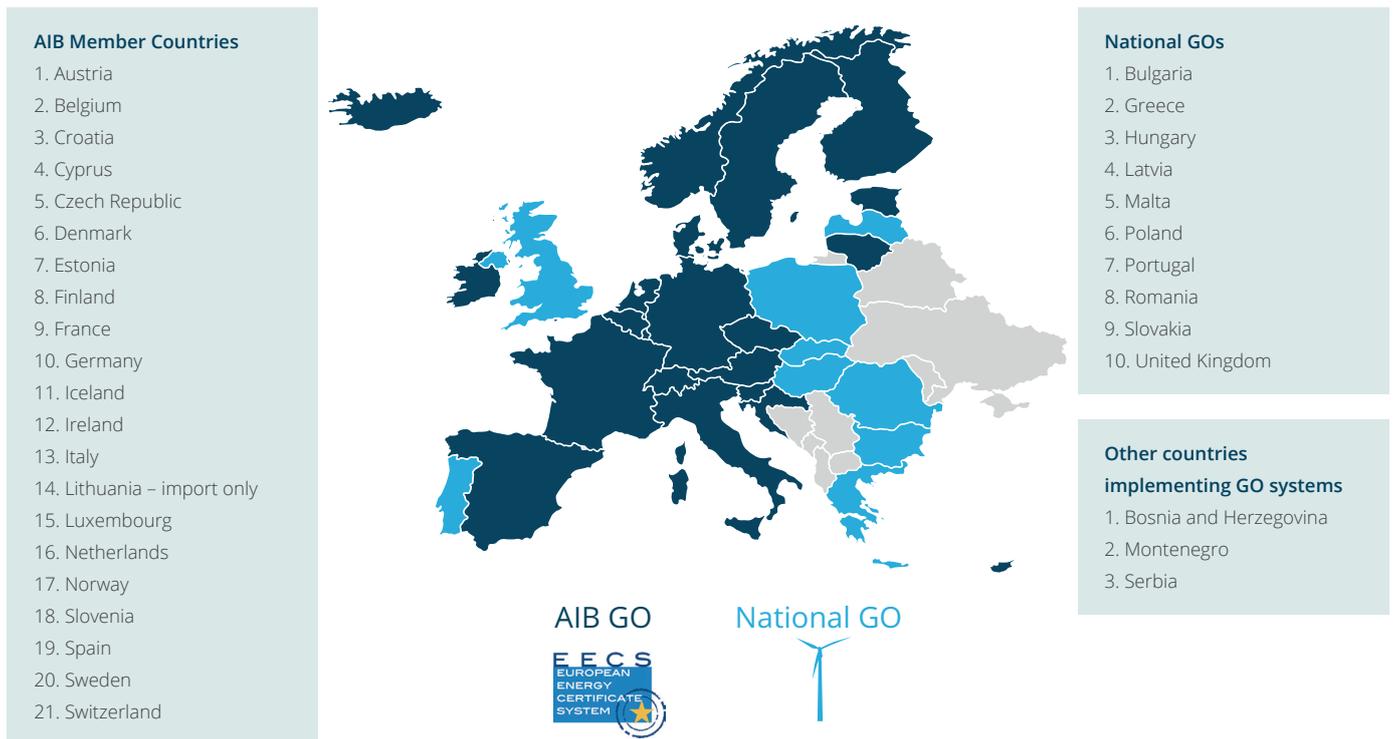
Each EU member state is mandated by European law to have a GO certificate system to track proof of electricity origin, and has a GO issuing body which is responsible for designing and implementing it. When stakeholders refer to the GO market, they are usually referring to the standardised European Energy Certificate System (EECS) GO market, which currently consists of 21 countries in the European Economic Area (EEA). The EECS GO system was established by the Association of Issuing Bodies (AIB) in 2002, and has evolved into a large, valuable and credible market. All international transfers of EECS-GOs go through the electronic hub operated by the AIB. GOs can be transferred between EECS countries with no risk of double counting, claiming or attributing.

Each GO is issued with a serial number unique to that MWh, which traces the GO from creation, to issuance, transfer, then redemption, ensuring a robust system which meets the criteria of unique claims. The validity of a GO expires 12 months after issuance. Certificates that have not been cancelled by this deadline are expired automatically, at which point their attributes flow into the grid and are reflected in the residual mix.

A number of individual EU countries have national GO schemes but have not joined EECS; the largest of these is the Renewable Energy Guarantees of Origin (REGO) system in the UK, administered by Ofgem. There are 31 countries with GO schemes in total – both in EECS (21) and with national schemes (10).

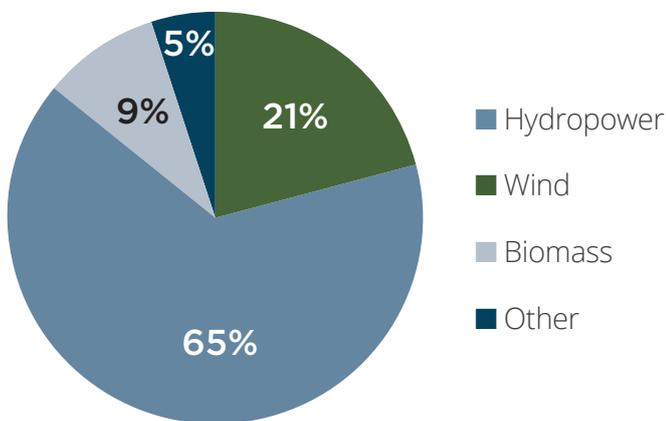
[Contact us for more information on how to get the best value for the business through your GO purchases.](#)

Figure 1: The Availability of Guarantees of Origin Across Europe



Technology mix

Figure 2: The Technology Mix of GOs Issued by AIB - Year to Date (October 2018)



Wind and hydropower are the most significant contributors to the European GO market. Due to the natural climates and topographic variations of the continent, hydropower is most common in the North and the Alps while wind is common in the Nordics and Spain and solar is most common in the South. Following is an overview of the technologies available through Natural Capital Partners.

Hydropower

Rivers are re-directed through hydro generators to produce electricity. Hydropower categories include “reservoir production,” whereby water stored in reservoirs is released when demand increases; “run-of-river,” which uses natural river flows; and “small scale origin,” which have less than 20MW capacity.

Older installations are regularly upgraded to improve efficiency, while newer operations are designed to account for environmental impact and improve biodiversity.

Most hydropower in Europe comes from Norway, where it represents ~95% of the country’s electricity production, as well as from Sweden and Finland. Natural Capital Partners can additionally provide hydropower-generated GOs from Croatia, France, Slovenia, Switzerland and other countries.

Wind

Europe installed 16.8 GW of additional wind power capacity in 2017, marking a record year. The International Energy Agency (IEA) expects wind to become the largest source of power in Europe soon after 2030. It currently meets 11% of the EU’s power demand.

Wind power production is typically divided into two main categories according to whether it is based onshore or offshore. Onshore wind is the cheapest form of new power generation and brings direct economic benefits to surrounding locations including jobs and investments in local communities. More and more offshore wind farms are being developed and now include a floating wind farm off the coast of Scotland, a world first.

With excellent wind conditions and government support, Denmark became a world leader in wind power technology. Belgian, Irish and Italian wind-generated GOs are also available.

Biomass

Biomass is a type of energy which comprises any organic decomposable matter from plants or animals available on a renewable basis, such as wood, plants, waste, landfill gases and alcohol fuels.

When biomass fuels are used, steam turbines or gasifiers generate electricity. The quantity of carbon dioxide released is the same as the amount the plants or animals consumed during their lifetime. Biomass-generated GOs are available across most of Europe.

Solar

Photovoltaics (PV) convert light directly into electricity. As the technology has developed, the cost of solar power generation has decreased and has achieved grid parity in many markets, meaning the cost is the same as standard electricity. While there are a growing number of large solar power installations, many hundreds of thousands of small-scale systems on private and commercial rooftops comprise the majority of solar power generated.

Solar-generated GOs are available from across the continent and particularly from southern Europe.

Geothermal

Geothermal energy captures heat from two to three kilometres under the earth's surface and turns it into steam. The steam powers turbines, transforming thermal energy into electricity.

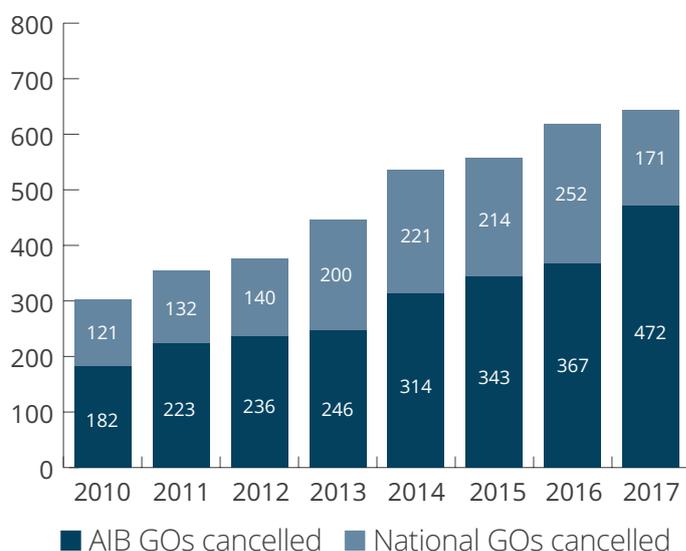
While the installation cost of thermal power plants is high, the maintenance cost is low and production is not dependent on weather conditions.

Geothermal energy is only found naturally in a few locations, mostly in Iceland where it generates ~30% of the country's electricity.

On behalf of clients, Natural Capital Partners sources renewable energy from 13 different geothermal and hydropower stations in Iceland, each with annual production above 12 TWh.

The Development of the Guarantee of Origin Market

Figure 3: Number of AIB (EECS) and National GO Cancellations Since 2010



Recently issued AIB statistics show that both the supply and demand of GOs is increasing, while the gap between the two is closing. Comparing year-to-date (YTD) supply and demand of GOs for 2017 and 2018 show that supply is up by 45 TWh, while demand is up by 34 TWh, and wind and solar are the highest growth areas.

The number of EECS GOs transacted and cancelled increased by 28% between 2016 and 2017, while a similar increase was seen for national GOs.

“This growth signifies that the market is strengthening, which will give businesses further confidence as increasing numbers of them are using Guarantees of Origin to document their renewable energy purchases in Europe,” commented Oliver Crouch, Chief Product Officer, Natural Capital Partners.

In addition, Norway's share of issued GOs has fallen significantly, as has the share of those issued from hydropower, both of which were previously dominant in the market.

EKOenergy ecolabel



“Ecolabels are a way for companies to do more with their purchases. EKOenergy, recognised in the GHG Protocol Scope 2 Guidance, is one such option: It is a mark of quality which sits on top of tracking instruments.” CDP

Natural Capital Partners’ clients have the option of purchasing EKOenergy-labelled GOs from across Europe. EKOenergy is an international ecolabel for energy sold to and used by end-consumers. Founded in 2013, it is a non-profit supported by more than 45 environmental organisations from over 30 countries.

EKOenergy-labelled electricity fulfils additional sustainability criteria of the produced electricity with the aim of lowering the impact of renewable power plants on biodiversity. For example, EKOenergy considers how solar farms and wind turbines impact the habitats of birds and other species and looks at fish migration and river connectivity issues around hydropower plants. EKOenergy-certified bioenergy originates from efficiently-used residues and waste or select forestry products (roots, stumps and large logs are excluded).

At least €0.10/MWh of each EKOenergy certified GO purchase goes towards [EKOenergy’s Climate Fund](#), which is used to finance new renewable energy projects in developing countries that are managed by experienced non-profit organisations.

References: Development of the Guarantees of Origin Market (2009-2017), RECS International (September 2018). [Available here](#).

About Natural Capital Partners

[Natural Capital Partners](#) manages EAC portfolios on behalf of clients. We are a world-leading provider of innovative solutions for positive impact on the world’s natural capital. With more than 300 clients in 34 countries, Natural Capital Partners delivers high-quality solutions for [renewable energy](#), carbon emissions measurement and reductions, water stewardship, building supply chain resilience and protecting biodiversity.

[Contact us](#) to find out how to optimise your GO purchases and achieve renewable energy targets around the world:

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