Valuing consumer action RMM 2024

Basics of the Guarantee of Origin market

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ACT Commodities

ACT

Understanding The Basics

Guarantee of Origin (GO)

Julius Kaden

Creating *EACs*

Electricity from
Renewable sources

- Wind
- Solar
- Hydroelectric
- Biogas / Biomass
- Geothermal

Subsidy (AO & CRE)
French National Auctions

Out of subsidy
Open market

Energy Attribute Certificates

1 MwH = 1 EAC

EAC Registry

Electricity Network

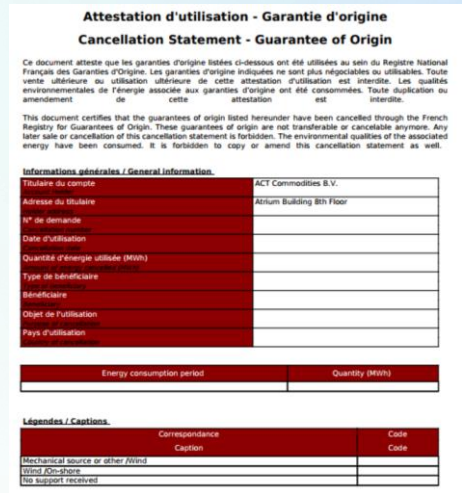
Electricity from
Fossil fuel sources

Consumer
Renewable / low carbon electricity

Consumer
Carbon based electricity

Reported information:

- Unique identification number
- Emissions country
- Delivery date
- COD
- Plant name & location
- Capacity
- Technology
- Production period
- Subsidiary scheme


Attestation d'utilisation - Garantie d'origine
Cancellation Statement - Guarantee of Origin

Ce document atteste que les garanties d'origine listées ci-dessous ont été utilisées au sein du Registre National Français des Garanties d'Origine. Les garanties d'origine indiquées ne sont plus négociables ou utilisables. Toute vente ultérieure ou utilisation ultérieure de cette attestation d'utilisation est interdite. Les qualités environnementales de l'énergie associée aux garanties d'origine ont été consommées. Toute duplication ou amendement de cette attestation est interdite.

This document certifies that the guarantees of origin listed hereunder have been cancelled through the French Registry for Guarantees of Origin. These guarantees of origin are not transferable or cancelable anymore. Any later sale or cancellation of this cancellation statement is forbidden. The environmental qualities of the associated energy have been consumed. It is forbidden to copy or amend this cancellation statement as well.

Informations générales / General information

Titulaire du compte	ACT Commodities B.V.
Adresse du titulaire	Atrium Building 8th Floor
N° de demande	
Date d'utilisation	
Quantité d'énergie utilisée (MWh)	
Type de bénéficiaire	
Bénéficiaire	
Objet de l'utilisation	
Pays d'utilisation	

Energy consumption period	Quantity (MWh)

Légendes / Captions

Correspondance Caption	Code Code
Mechanical source or other /Wind	
Wind /On-shore	
No support received	

Legend
Validity (12 months)
Certification period (up to 5 months post-production)

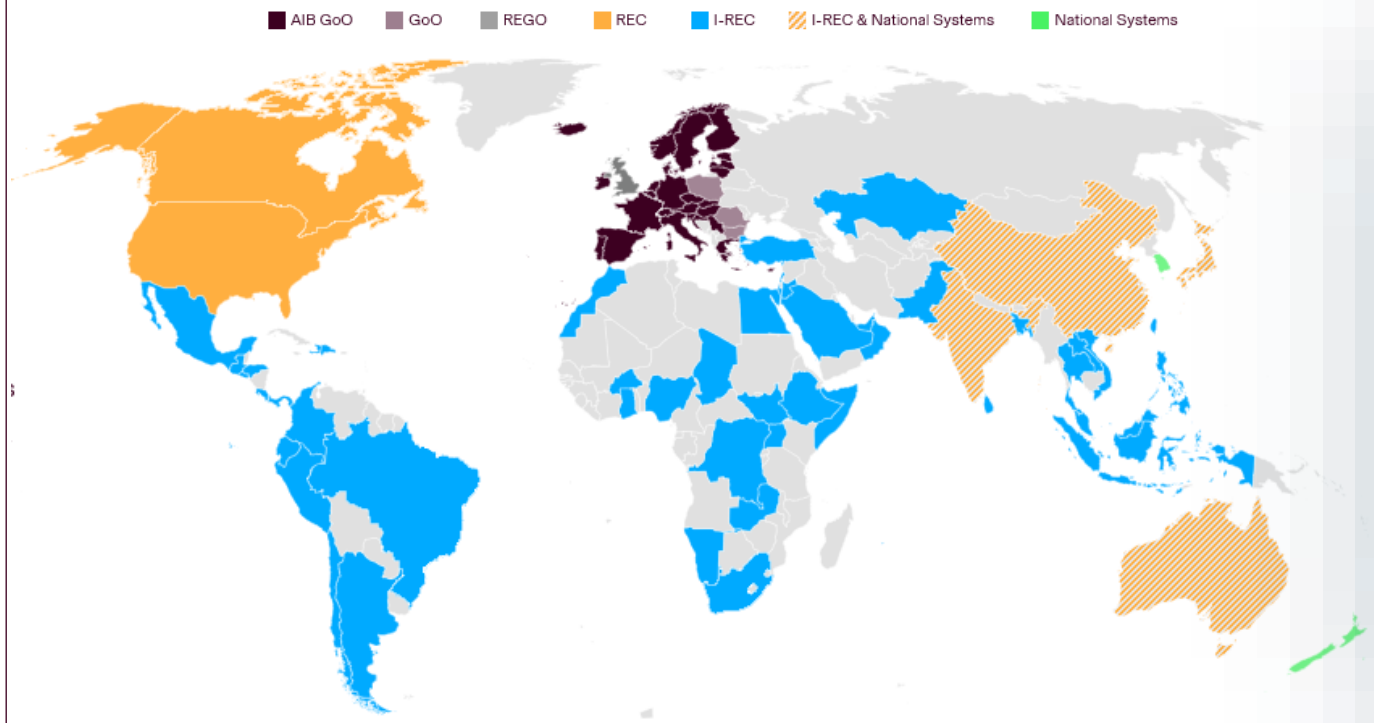
Why Source *Gos*

01. Reduce Scope 2 Emissions

- **Hit sustainability targets:** Mitigate emissions within the global supply chain of customers
- **Meet regulatory commitments:** Cost effective approach when switching from conventional fossil fuel energy sources

02. Claim 100% Renewable Energy

- **Stay competitive:** Increase claims over products and services
- **Electricity source transparency:** GOs guarantee the traceability of the origins of the energy they represent and prove it is renewable.



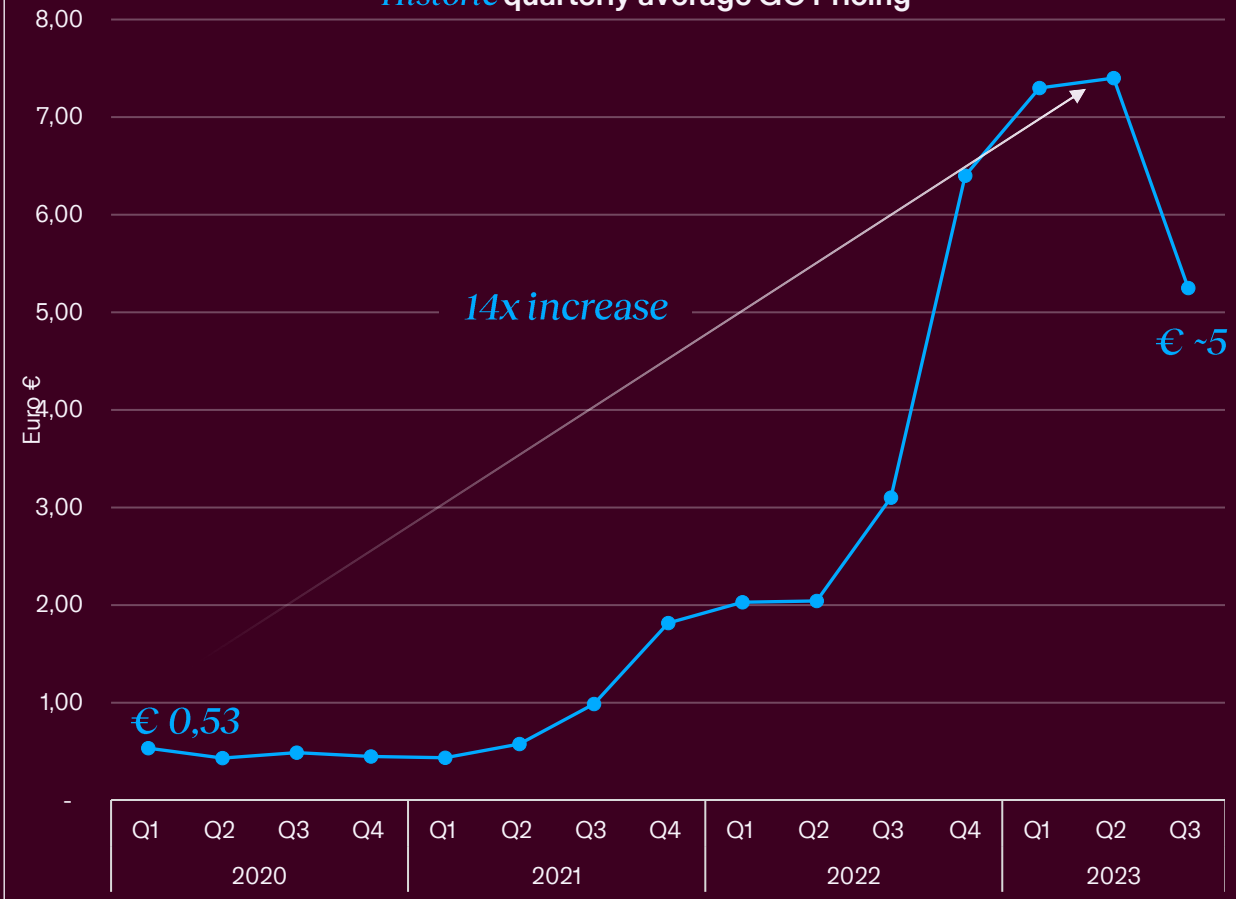
		Solution
Fuel Type	Fossil Fuel-Derived Energy EU Grid	EAC Renewable Source
Grid Factor Carbon Intensity	0.39 tCO_2e/MWh	0.0 tCO_2e/MWh
	x	x
Annual Consumption	2.500.000 MWh	2.500.000 MWh
	=	=
Direct Emissions	**975.000 tCO_2e**	**0 tCO_2e**

volatile and bullish market since 2022

>10%
The average weekly variation of the spot prices since 2022

+1500 M€
The over-cost to the non-hedge clients that were exposed to strikes prices over 2022

Historic **quarterly average GO Pricing**



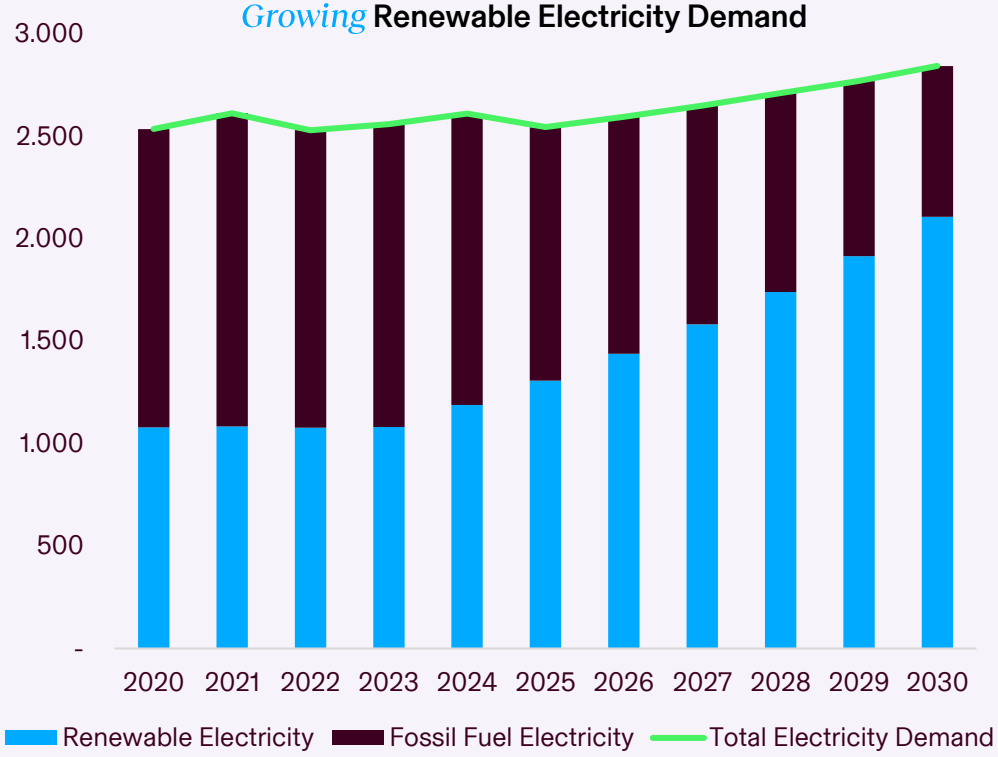
Fueled by a growing demand for renewable electricity

GoO volume is projected to **grow** into 2030 as the EU approaches its renewable energy targets. During this time, there might will be a gap between the certificates available and the market volume of renewable energy which indicates that prices will remain high.

Undoubtedly, a combination of regulatory and voluntary factors have been key to this growth, and will keep playing a central role to reach the EU's goal of climate neutrality by 2050:

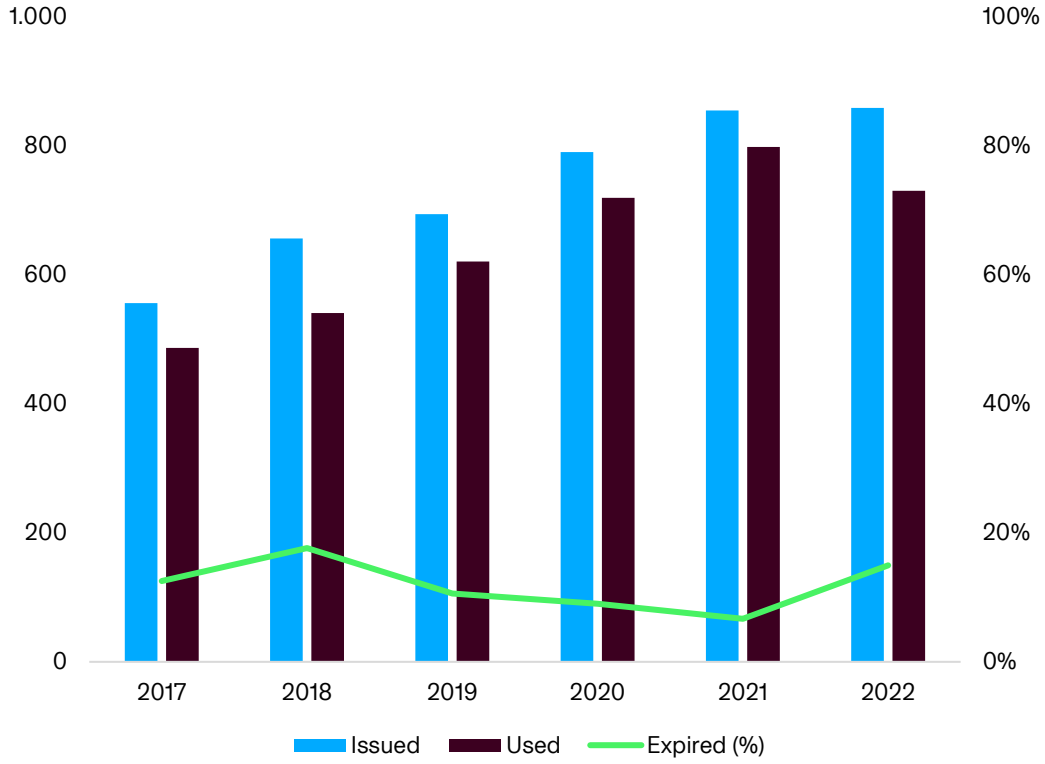
- Fit for 55 package: certificate volumes must increase 20-25% annually until 2030.
- RED III: EU's final energy consumption should reach around 43% by 2030.
- RE100's changes in sourcing criteria regarding country of origin and sourcing vintage.

Growing **Renewable Electricity Demand**



European GO market

Evolution of the EU GO Market



The Europe (AIB registry) certified 858 TWh of GOs in 2022. This represents an average increase of +54% compared to 2017.

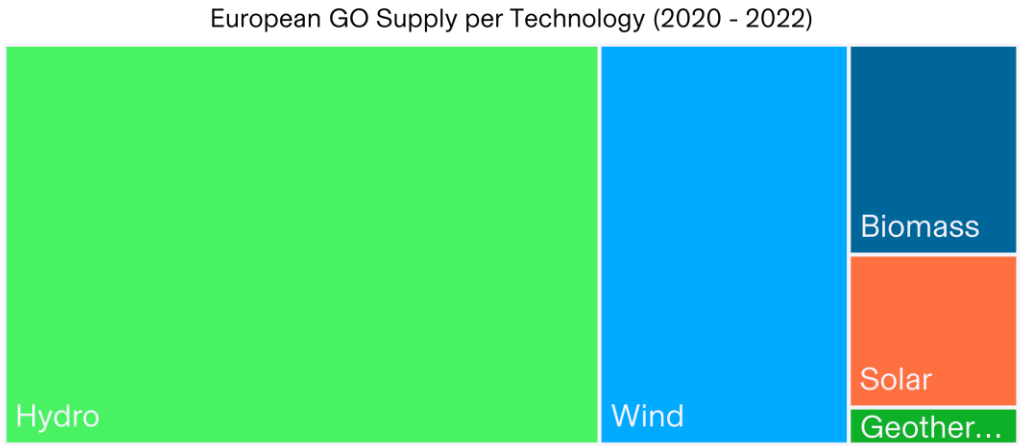
In 2021, 798TWh of GOs were redeemed, representing an overall utilization rate of 93%.

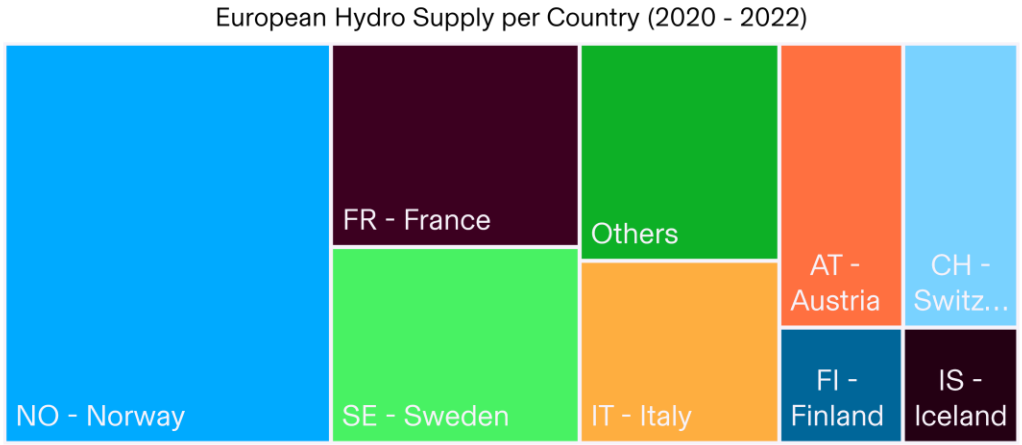
Evolution of the Issuance per Country

As of end of 2022, the AIB (Association of Issuing Bodies) gathers 35 members from 28 European countries.

In 2022, Germany (18%), Italy (17%), the Netherlands (11%) and France (10%) were the top four consumers of GOs, cancelling 56% of the total cancelled GOs.

European GO supply

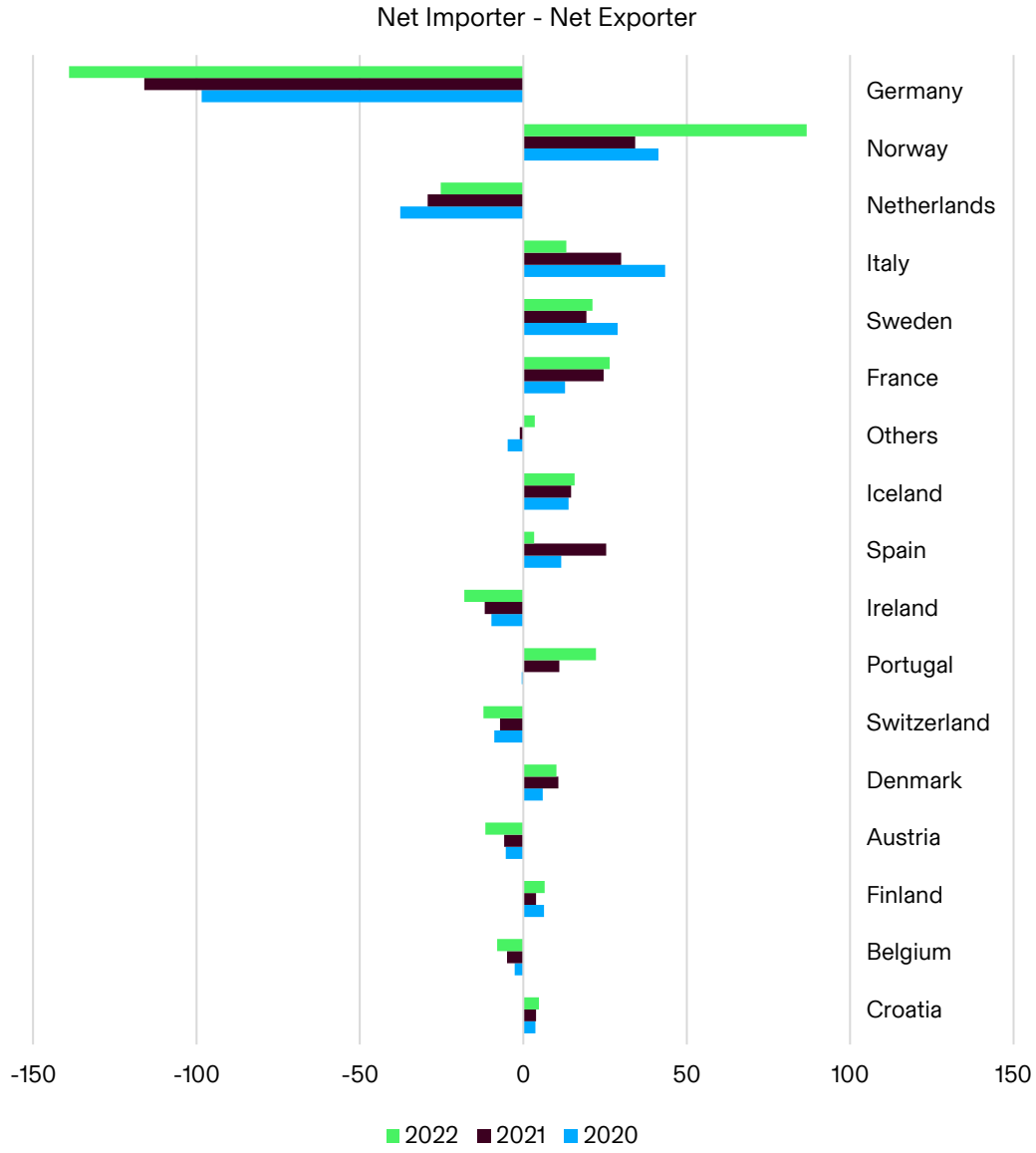




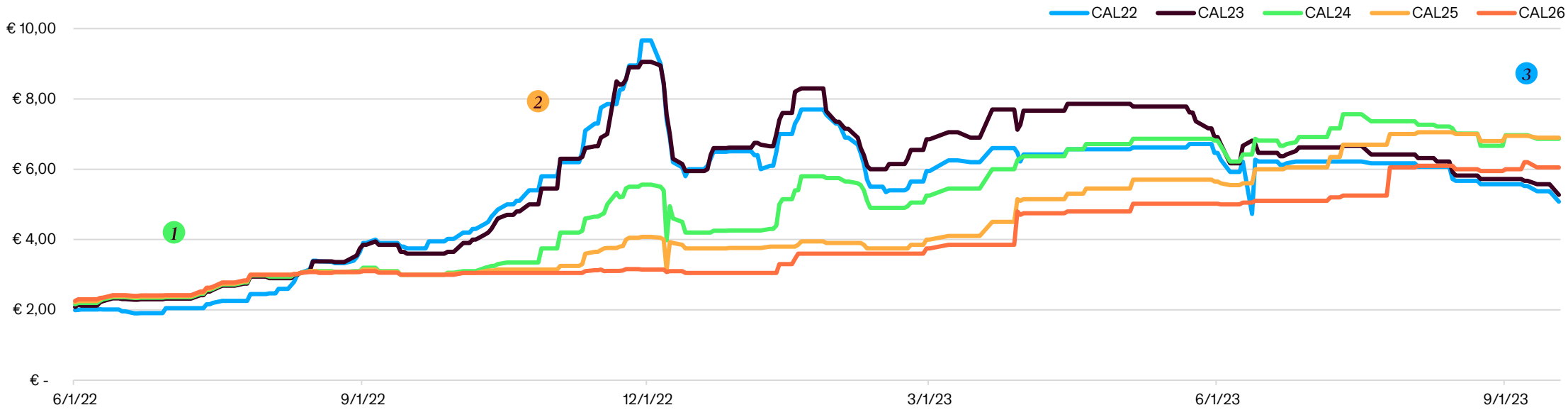
In 2022, thanks to its large hydro facilities; Norway represented 18% of the total supply of GOs, followed by Sweden with 12%.

Therefore, the market is highly impacted by potential hydro shortages.

Due to some national subsidiary schemes, some countries like Germany are not major net importers of GOs.

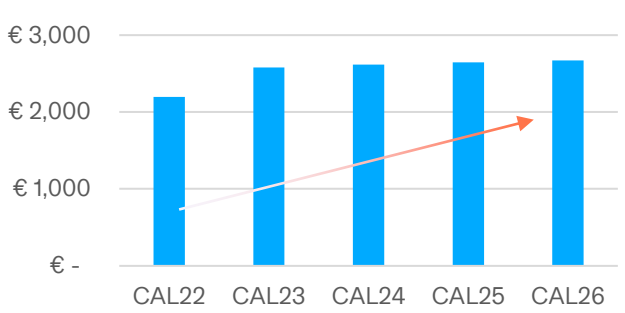


GO Price trend

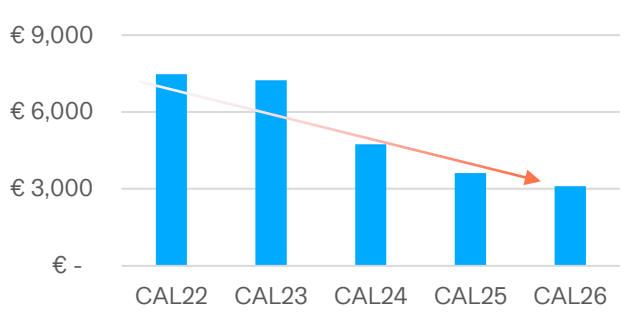


After a long period of low volatility and stable price rises, the drought in the Nordic countries in the summer of 2022 caused major stress on GO market liquidity, leading to soaring prices until the end of the period. At the start of the new period (2023), many players adopted a more hesitant supply strategy, leading to high market instability. Since summer 2023, a consensus has begun to emerge on the future price of GOs, leading to a correction of CAL24/25/26.

Configuration in Contango 1



Configuration in Backwardation 2



Configuration semi-contango 3