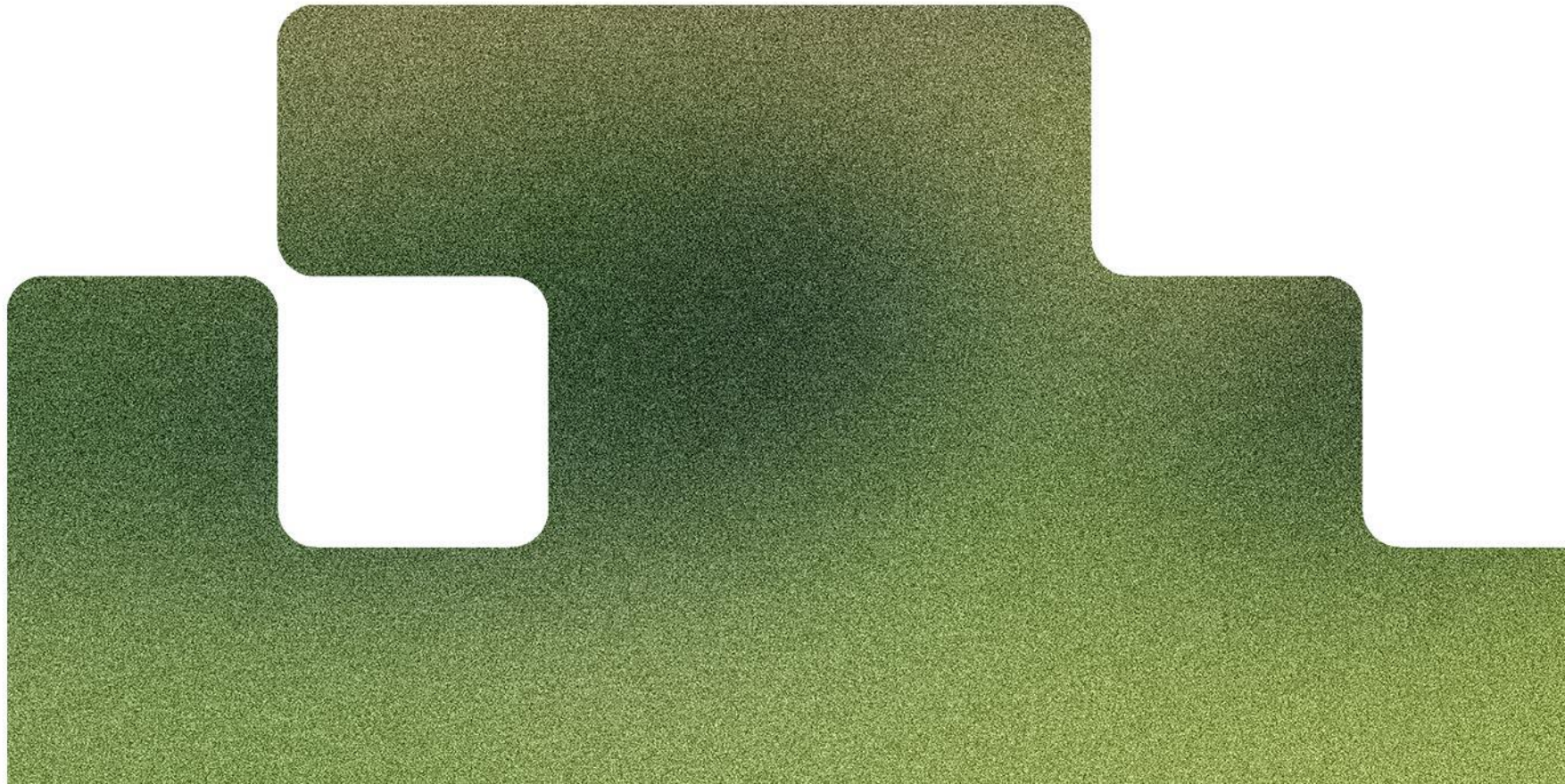
Montel French Energy Day

French nuclear guarantees of origin – market update



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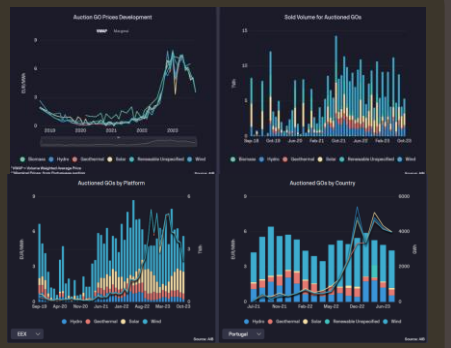
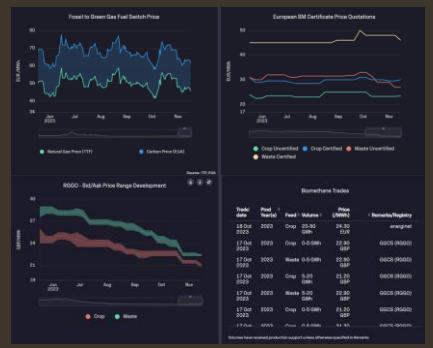
Veyt net zero market solutions

Veyt provides advanced analytical services and insights for informed decision-making in the dynamic low-carbon markets, empowering customers to stay ahead.

Our solutions



Renewable Power



Renewable Gases

Compliance Carbon

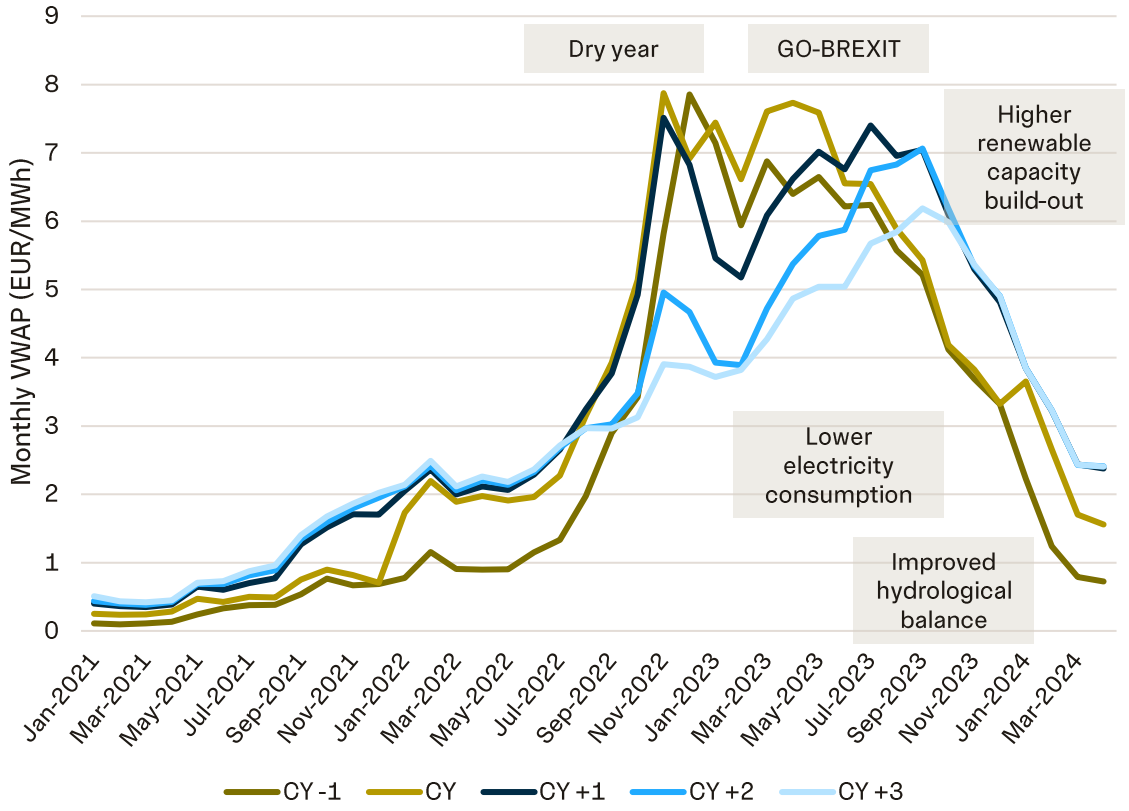
Voluntary Carbon

Agenda

1. Historical price and policy developments
2. Legislative context - France
3. Demand – what are nuclear GOs currently used for?
4. Policy – additional potential uses of nuclear GOs
5. Concluding remarks

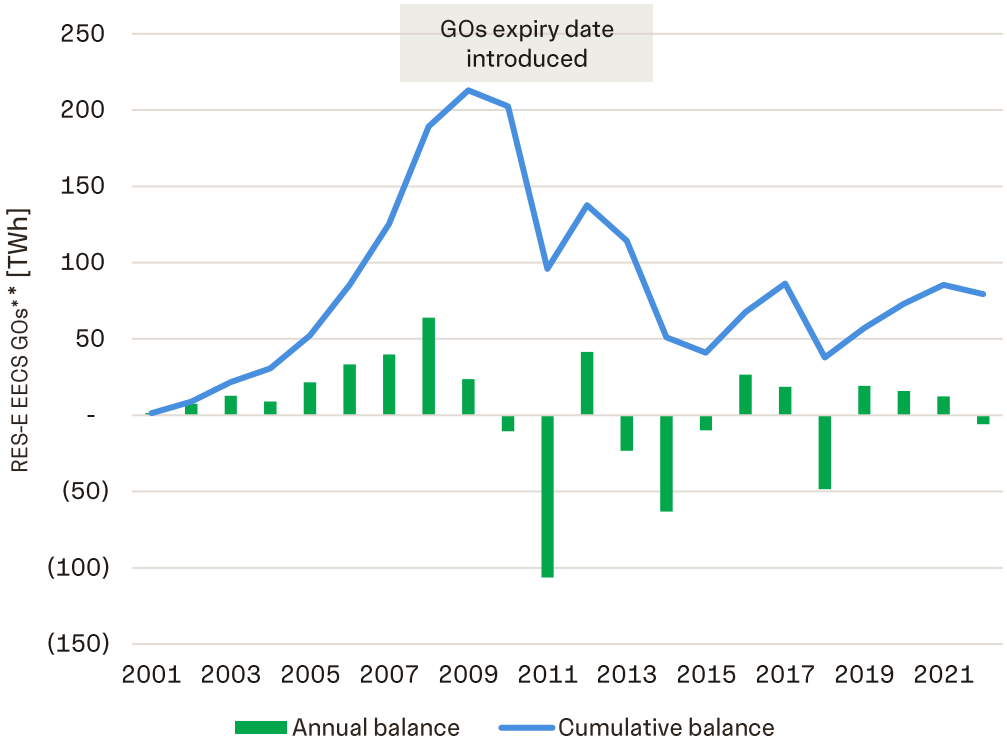
Historical price and policy developments

The effect of fundamental drivers on the market



Source: Veyt for Nordic hydro GOs

GO market dynamics and balance



Source: Veyt (Based on calculation of AIB statistics between 2001-2022

French decree extends GOs to non-renewable sources; nuclear GO fallout expected?

Décret n° 2023-1048 du 16 novembre 2023 relatif aux garanties d'origine de l'électricité

- Section 5 extends the right to issue GOs from the current selection of solar, wind, hydro, geothermal and biomass (mostly biogas) to all other primary energy sources, including nuclear.

- Non-renewable GOs will need to specify:

  1) energy source from which the electricity was produced,

  2) the overall efficiency of the installation,

  3) the quantity of GHG directly emitted by the electricity produced, and for nuclear GOs

  4) the quantity of radioactive waste emitted.

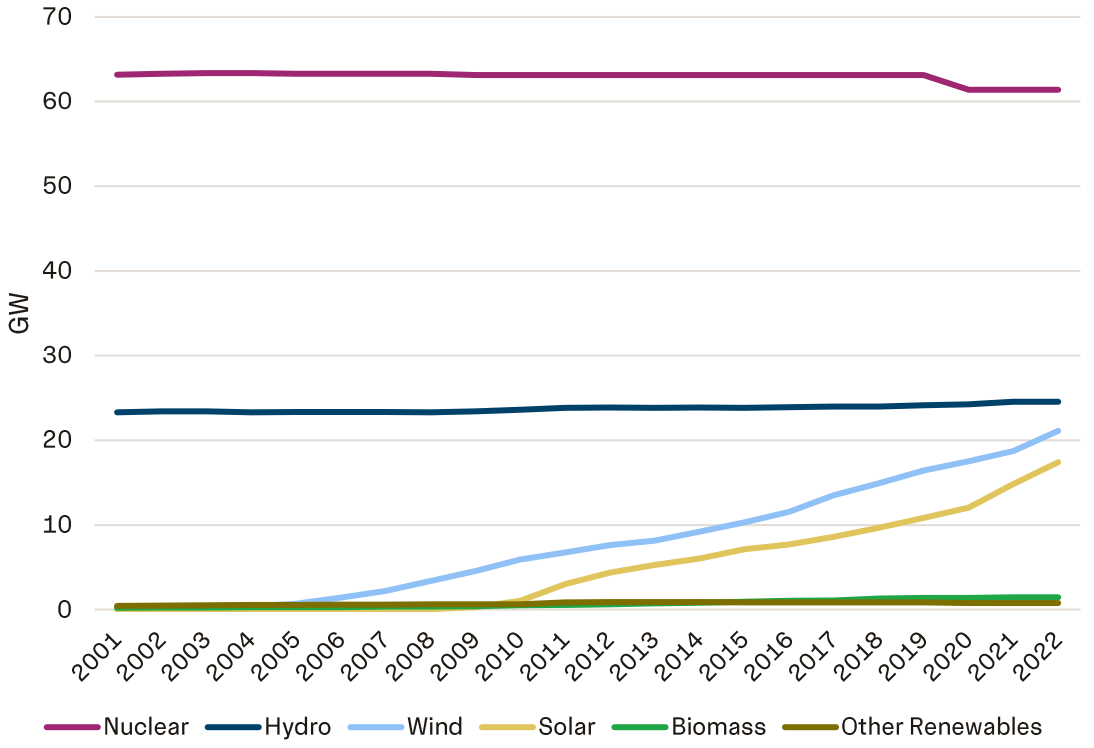
- EEX, as a member of the AIB, will henceforth allow the import and export of non-renewable GOs through the AIB hub.

Nuclear GO fallout to be expected?

Title

- The French lawmakers paved the way for further proliferation of nuclear energy by dropping the 50% legal limit on nuclear in the country's total energy mix on 4 May 2023 during the vote on the Nuclear Energy Bill.
- Multiannual energy plan foresees decarbonising the electricity mix by more than 90% and increasing the share of nuclear energy in the country's electricity mix by >60%.
- Plans for construction of at least 27 GW of nuclear energy capacity by 2050, with 14 EPR2 and 15 SMR.
- Nuclear capacity should reach 63 GW by 2035.

Renewable and low-carbon electricity generation – installed capacity

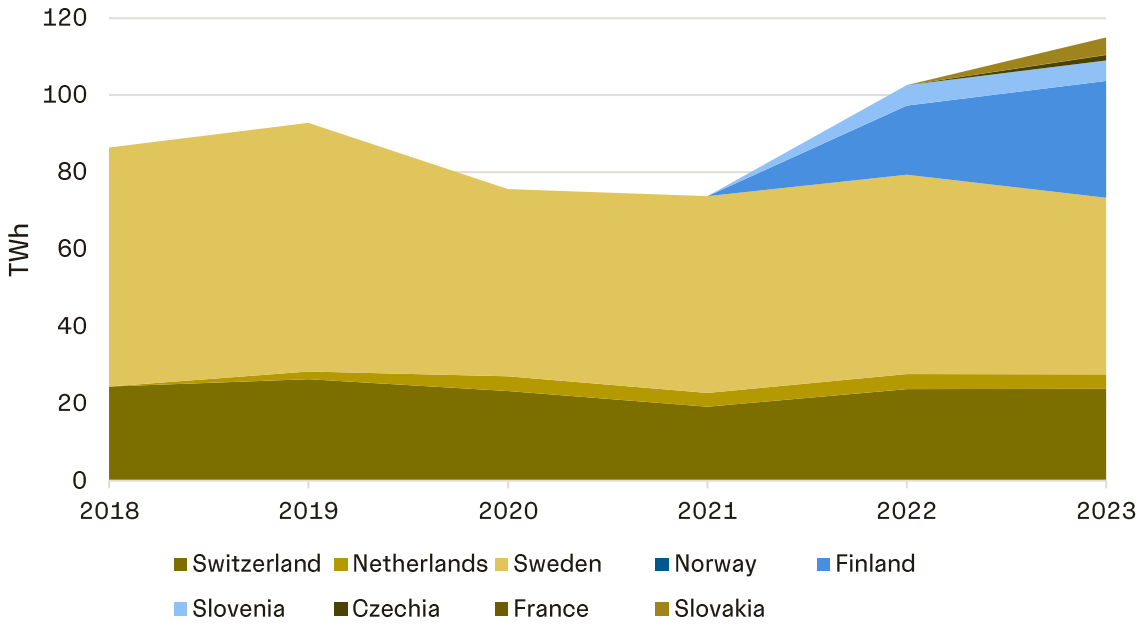


Source: Ember, Veyt

Nuclear GO fallout

Issuance and cancellation of nuclear GOs

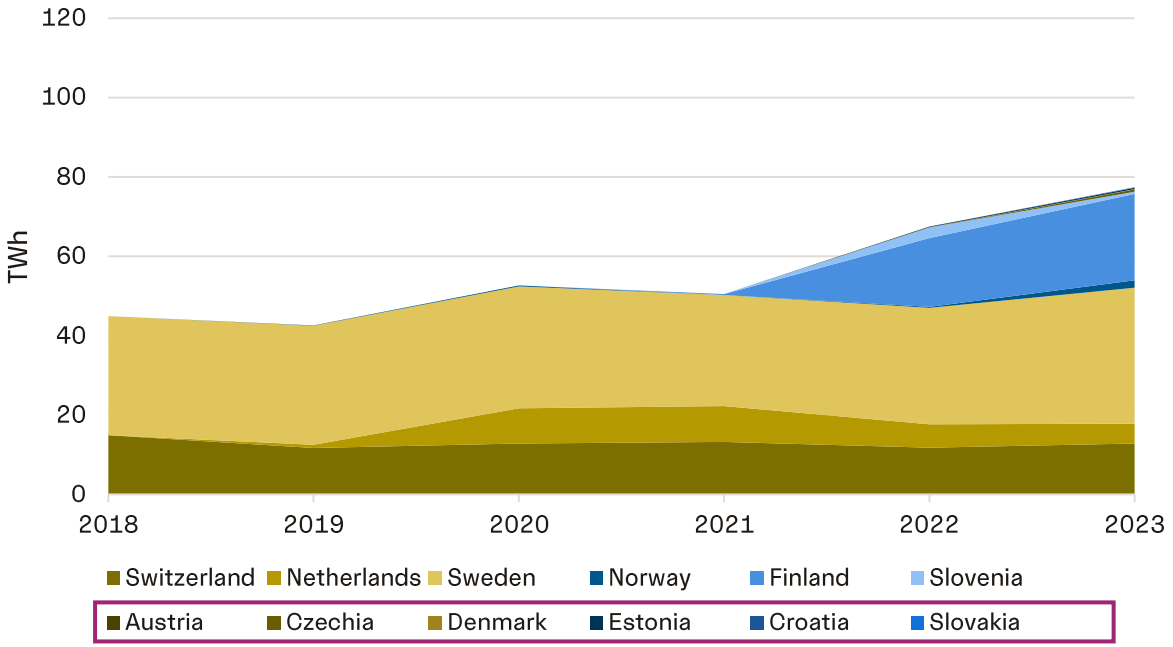
Issuance of nuclear GOs in Europe



Source: AIB, Cesar

- French decree N 2023 – 1048 extending GOs to non-renewable sources entered into force in November 2023; the French tested the waters by releasing 0.15 TWh of nuclear GOs onto the market in February 2024 (production in Q3/4 2023)

Cancellation of nuclear GOs in Europe



Source: AIB, Cesar

- Following the recognition of nuclear energy investments as “sustainable” in 2020, increased demand followed on the GO market.

How are nuclear GOs currently being used?

Nuclear GOs use-cases: existing practices

- Full disclosure (Switzerland; Netherlands, Austria)
- By suppliers: nuclear GOs are mostly used by power retailers for disclosure in accordance with their obligation to do so under the Internal Electricity Market Directive
- 2022-2023: arbitrage and rebranding
- Some suppliers switched from renewable to nuclear GOs; rebranding of portfolios from “renewable” to “carbon-neutral” according to the EU Taxonomy.
- 2021 – 2030: State aid for indirect emission costs

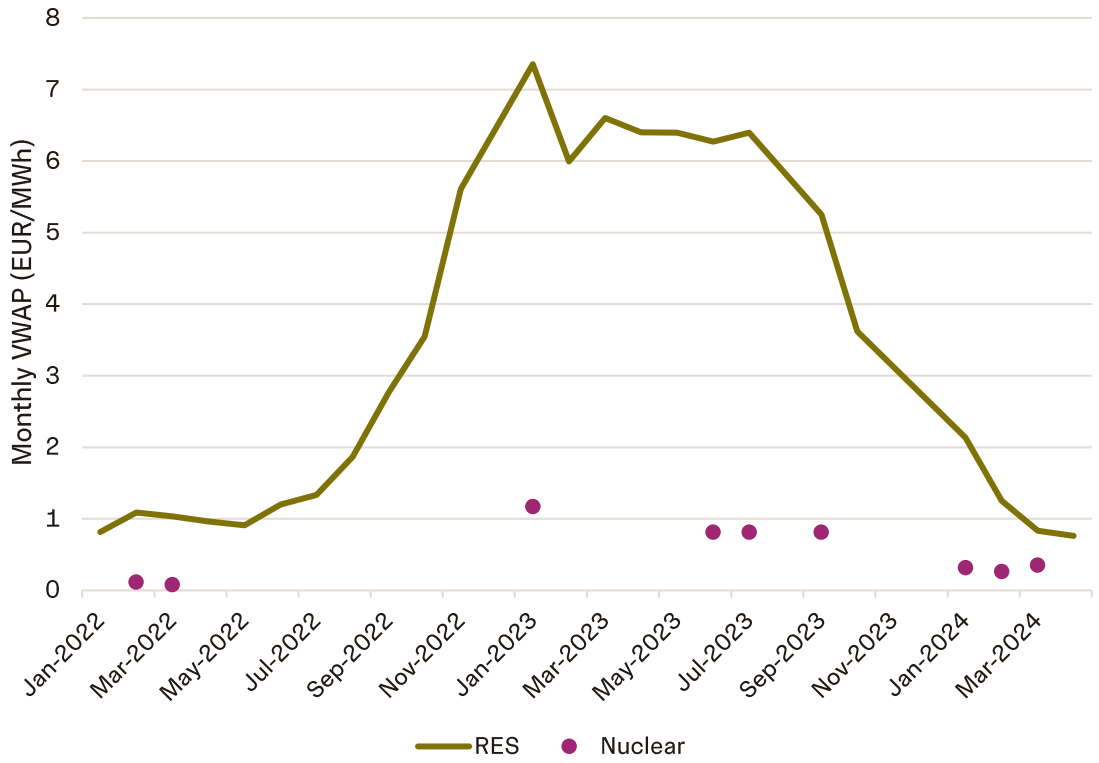
Nuclear GO holdbacks

- Radioactive waste
- Fuel stock concerns (geopolitics)
- General anti-nuclear sentiment on the market
- Sustainability reporting: CDP, RE100, etc.
- AIB membership and current import and disclosure regulations

Potential use-cases for nuclear GOs

EU laws and policies that could steer the market towards nuclear GOs

RES vs nuclear GO price development



Source: Veyt

GO market legislative drivers

Law and policy	Market impact	Period
Green Claims Directive (EF methods)	Bull	From now onwards
Battery regulation (EF methods)	Bull	From 2025 onwards
Corporate Sustainability Reporting Directive / European Sustainability Reporting Standards	Bull	From 2024 onwards
State aid schemes for indirect ETS costs	Bull	From 2021 to 2030
EU Taxonomy	Bull	From 2020 onwards

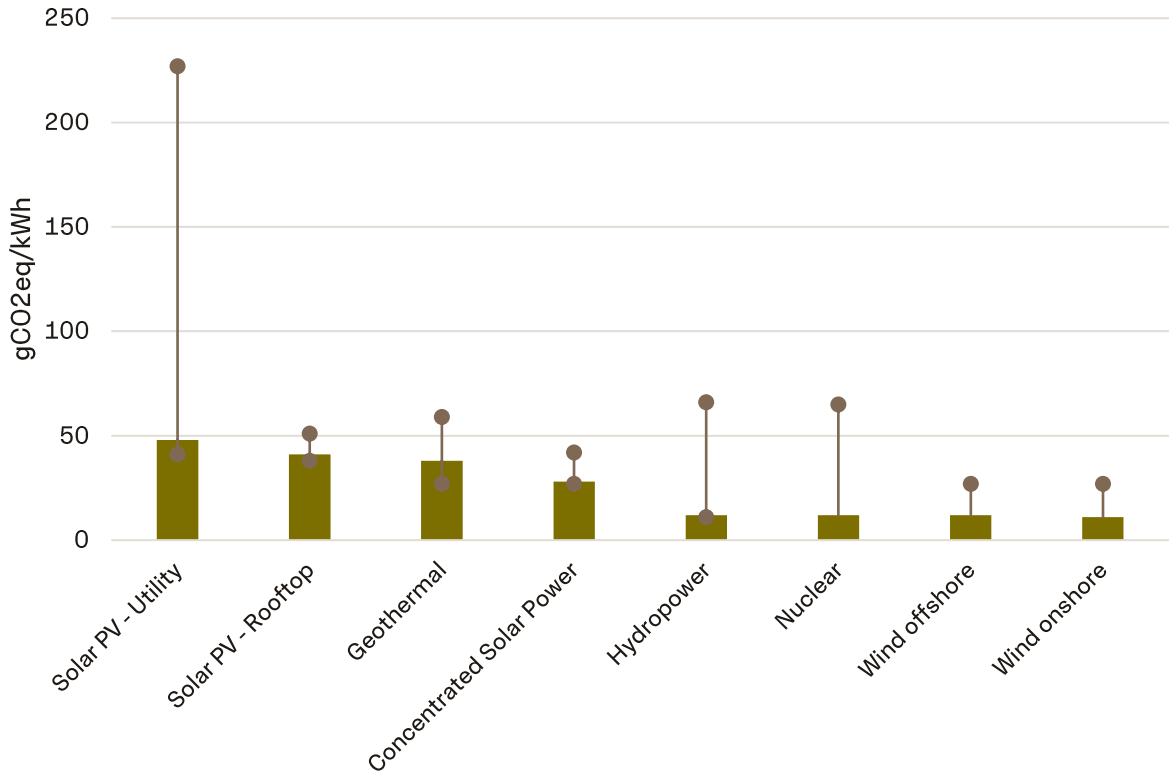
Source: Veyt

Nuclear GOs are favourably positioned in the life-cycle approach

Environmental Footprint method

- Electricity use: preference is given to supplier-specific data, with reference to carbon footprint quantification of ISO 14067:2018, where there is a 100 % tracking system in place or where a tracking system is available with a set of minimum criteria to ensure the contractual instruments are reliable.
- EECS GOs meet these minimum criteria, making them an integrated part of the EF method.
- This opens the door to using GOs with low-cycle emission to reduce the carbon footprint of products and services.

Life-cycle emissions of electricity supply technologies



Source: Veyt

Potential use-cases for nuclear GOs

EU laws can incentivise GOs, opening the door to nuclear certificates

European Sustainability Reporting Standards

Energy intensity based on net revenue	
Gross scopes 1,2,3 and Total GHG emissions (ktCO2eq)	Location-based and market-based
Metrics and targets	
Targets related to climate change mitigation (-%)	Location-based or market-based
Energy Consumption mix (MWh)	Market-based (GOs, PPAs)

Source: Veyt, European Commission

Taxonomy Climate Delegated Act

Sector	Carbon emission intensity threshold	GHG accounting method
Aluminum	≤1,484 tCO2e per tonne	Unspecified
Electricity generation from nuclear energy	≤ 100 g CO2e/kWh	Environmental Footprint
Low – carbon technologies	N/A	Environmental Footprint

Source: Veyt, European Commission

Is the age of nuclear GOs upon us?

Concluding remarks

- The market for nuclear GOs is growing and sees increasing liquidity, although it is constrained by general market sentiment and preference for renewable energy.
- Potential use-cases for nuclear GOs are expanding driven by legislative incentives; the proliferation of nuclear GOs cancellation on the market also depends on the market participants' awareness of the application cases.
- Nuclear GO fallout from EDF is unlikely, the upcoming EEX auctions might reveal the full picture.

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OPEN ARTICLE

Will cheap nuclear GOs flood the market?

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