



15 November 2022 /

Guarantees of Origin – customer event

Sokos Hotel Tripla / Teams

FINGRID
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Agenda

- 10:00 am–10:05 am: Welcome (Marina Louhija, Fingrid Oyj/Finextra Oy)
- 10:05 am–10:25 am: News about Guarantees of Origin of electricity (Kirsi Salmivaara, Fingrid Oyj)
- 10:25 am–10:45 am: Review of the revisions to the Guarantee of Origin standard, EN16325 (Kaija Niskala, Fingrid Oyj)
- 10:45 am–11:00 am: Conversions in the registers of Guarantees of Origin (Kaija Niskala, Kirsi Salmivaara)
- 11:00 am–11:10 am: Break
- 11:10 am–11:40 am: The market for Guarantees of Origin of electricity. How to operate in the market and what is happening in the market now (Mervi Leskinen, Gasum Portfolio Services Oy)
- 11:40 am–midday: Presentation of a final project: Possibilities of introducing granular Guarantees of Origin of electricity in Finland (Kaija Niskala)
- Midday: Lunch

15 November 2022

News about Guarantees of Origin of electricity

Kirsi Salmivaara

15 November 2022

Kirsi Salmivaara



News about Guarantees of Origin of electricity

15 November 2022

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Account holders (60 account holders, 10/2022)



Vindin Svaskulla Ab/Oy
Ajos Wind Oy
Tuike Finland Oy
Saunamaa Wind Farm Oy

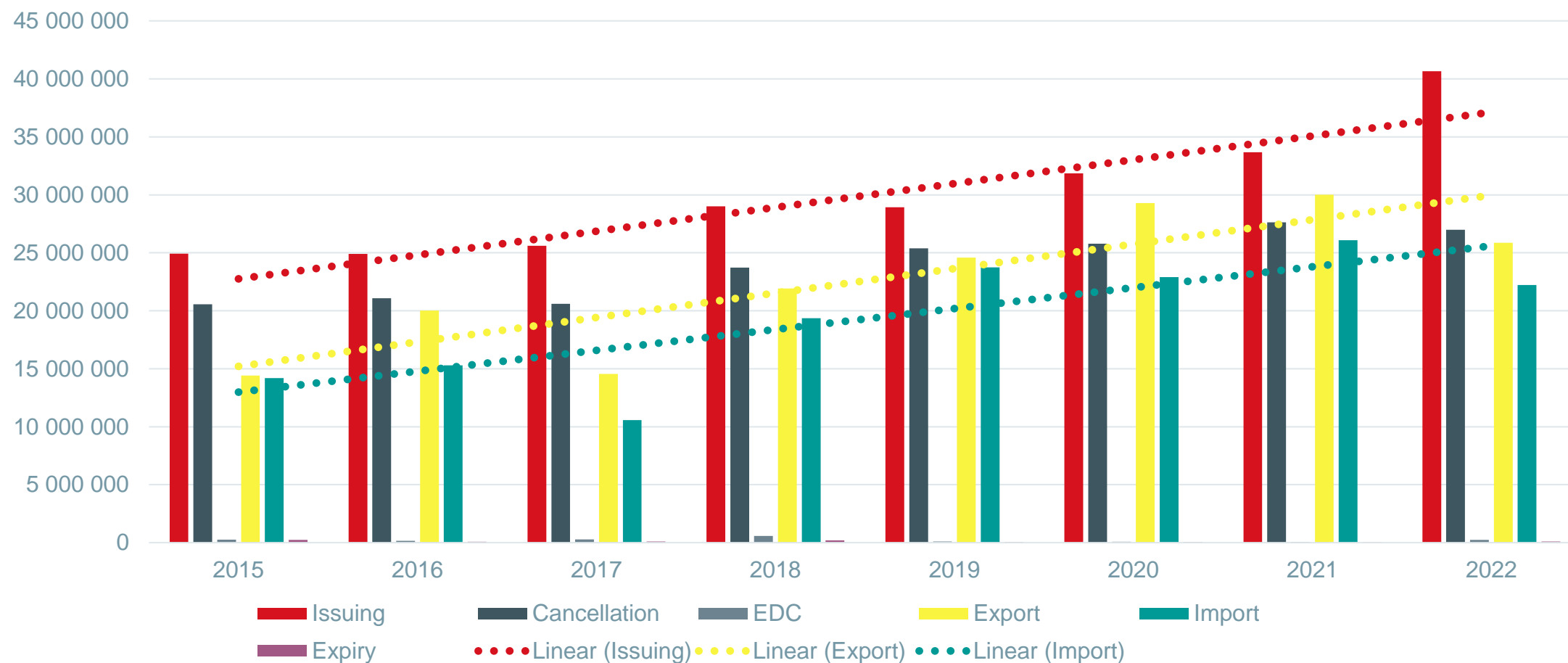
Spectron Services Limited
Tuulipuisto Lakiakangas 1 Oy
Haapajärven Välikankaan Tuulivoima Oy

FP Lux Wind GmbH & Co. Primus KG
wpd Karhunnevanakaan Tuulipuisto Oy
Wpd Kannuksen tuulipuisto Oy
Vöyrinkangas Wind Farm Oy

wpd Nuolivaaran Tuulipuisto Oy
Wind Farm Lappfjärd Oy



Transactions in the register (MWh), transaction time (status 11/2022)



News 1(2)

Authentications

- ❑ The authentication of power plants within the scope of the feed-in tariff is valid throughout the payment period
- ❑ Changes made mainly to the register

Guarantees of Origin for nuclear power

- ❑ The certification obligation began on 1 July 2022 (cancellations for earlier periods are also possible)
- ❑ First certificates issued in September
- ❑ Mandatory information for nuclear power (EECS): amount of nuclear waste (may become voluntary in 2023)

Pricing in 2023 and changes

- ❑ The issue price will decrease to EUR 0.004/MWh (price in 2022: EUR 0.0052/MWh)
- ❑ The import and export price will decrease to EUR 0.0025/MWh (price in 2022: EUR 0.003/MWh)

News 2(2)

API

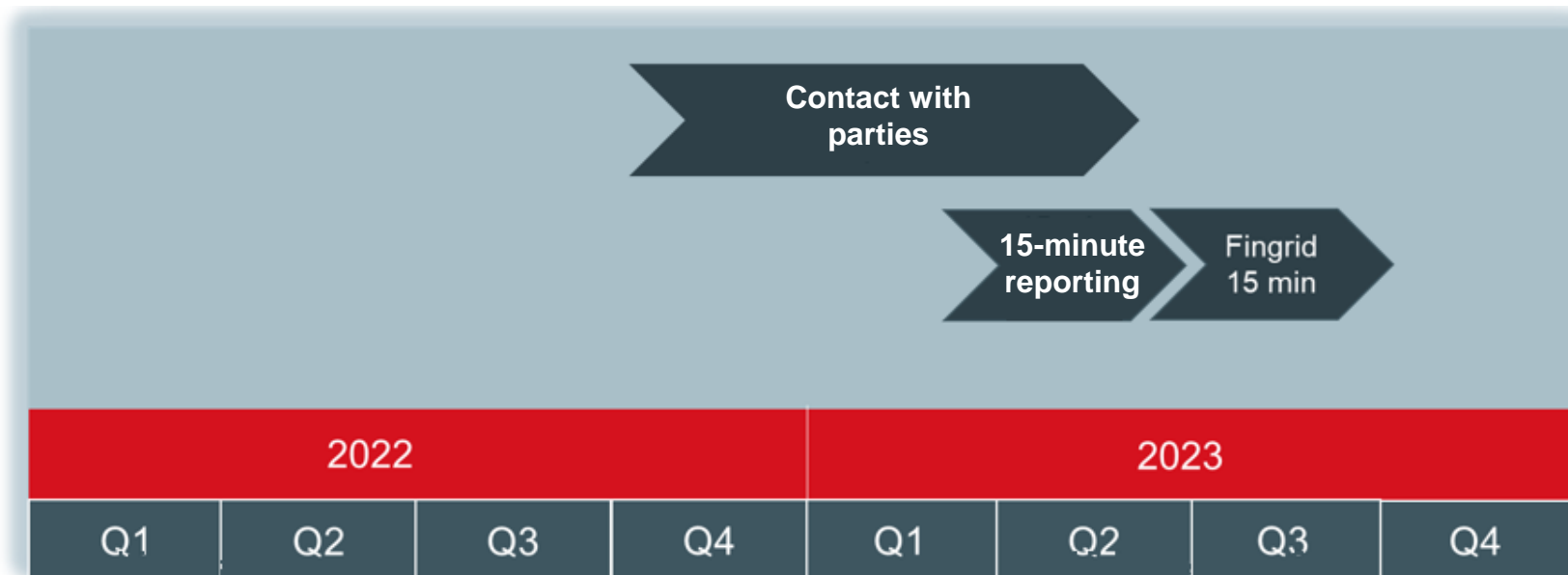
- ❑ Published in autumn 2022: one-way (read-only) access to the Guarantees of Origin register
- ❑ Three separate reports
 1. List of all accounts (+ the number of Guarantees of Origin in the accounts)
 2. Detailed information about individual accounts
 3. List of transactions in a given period (all accounts)
- ❑ Contact go@finextra.fi if you would like API access and instructions

Guarantees of Origin and power plants in Åland

- ❑ Separate GSRN code for power plants, and the issued Guarantees of Origin are separated from their counterparts in mainland Finland

Introduction of the 15-minute imbalance settlement period on 22 May 2023 and changes related to the Guarantees of Origin service

- Guarantees of Origin of electricity are issued for the quantity of electricity production reported for imbalance settlement
- Finextra will be able to accept power plant production data for 15-minute periods at the end of March 2023
- We will contact all customers well in advance of the transition to 15-minute sending
- Certificates will continue to be issued for monthly energies



15-MINUTE IMBALANCE SETTLEMENT PERIOD

<https://www.fingrid.fi/sahko/markkinat/markkinoiden-yhtenaisyys/pohjoismaisen-tasehallinta/varttitase/>

Updated guidance on cancellations

Energy Authority instructions for certifying and disclosing the origin of electricity

- ❑ The instructions include guidance on issuing Guarantees of Origin for electricity produced from waste (2200/002/2016)
- ❑ Noteworthy change: To ensure the reliability of the Guarantees of Origin system and effective oversight, the Energy Authority **requires** a procedure whereby the electricity supplier cancels Guarantees of Origin in the same amount as the volume of electricity sold to the end user in its own name (the beneficiary of the cancellation is the electricity supplier).
 - The following page presents some examples

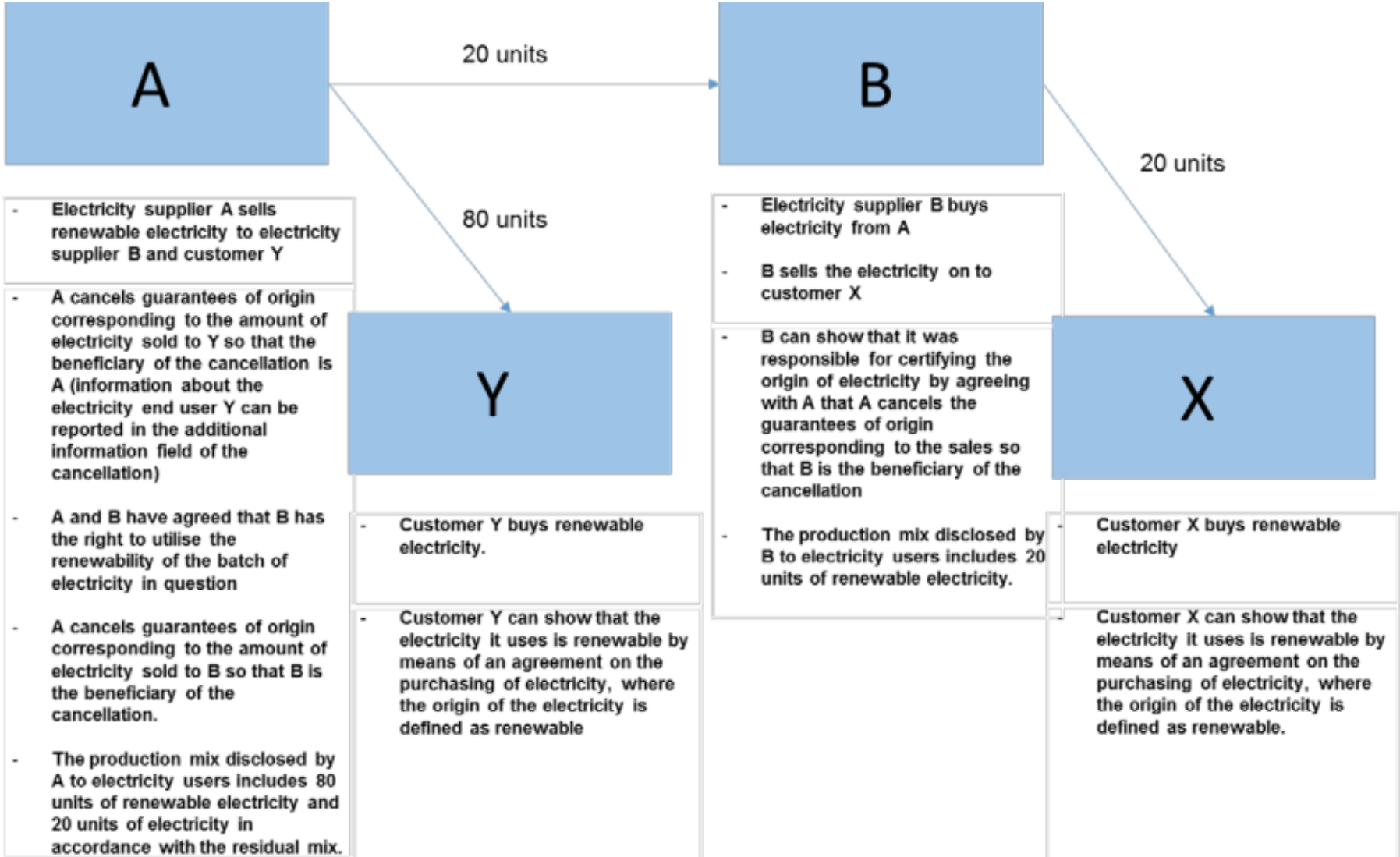
Electricity supplier A sells to its customer X (electricity end user) electricity defined as having been produced from renewable energy sources.



- Electricity supplier A sells renewable electricity to customer B
- Electricity supplier A cancels an amount of guarantees of origin corresponding to the sales so that the beneficiary of the cancellation is electricity supplier A (information about the electricity end user X can be reported in the additional information field of the cancellation)

- Customer X buys renewable electricity
- Customer X can verify that the electricity it uses is renewable by means of an agreement on the purchasing of electricity, where the origin of the electricity is defined as renewable.

Electricity supplier A sells electricity that is renewable in origin to both electricity supplier B and its own customer Y (electricity end user). A sells a total of 100 units of electricity. A sells 80 units of renewable electricity to Y and 20 units of electricity to B. Electricity supplier B sells on the electricity as renewable in origin to its customer X (electricity end user).



Review of the revisions to the Guarantee of Origin standard, EN16325

Kaija Niskala



15 November 2022

Kaija Niskala

Review of the revisions to the Guarantee of Origin standard, EN16325

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EN16325 Guarantees of origin related to energy reform

- CEN/CENELEC is currently reforming the EN16325 standard:
 - Joint Technical Committee 14 (JTC14) “Energy management and energy efficiency in the framework of energy transition”
 - Working Group 5 (WG5) “Guarantees of Origin”
 - METSTA is responsible for the standard in Finland
- The enquiry phase may begin in 11/2022
- National committees will have three months to comment => ending 2/2023 or 3/2023
- WG5 will process any comments it receives for up to 8 months => 10/2023
- Final vote – the proposal is either accepted or rejected. Voting takes two months
- If approved, the process takes 2.5 months to finalisation => ready 3/2024 or 4/2024?

Actions of Finland's national working group

- Finland's national working group: Fingrid Oyj (chair), Fortum Corporation, Gasgrid Finland Oy, The Ministry of Economic Affairs and Employment, Energy Authority, Finnish Energy
- The group prepares and compiles comments in the enquiry phase
 - If the enquiry phase begins in November, the enquiry will last until February/March
- The Finnish Standards Association (SFS) will also publish the standard on its website for public consultation. This commenting period is slightly shorter because the national working group will process these comments before sending all the comments to CEN/CENELEC.
- Finland's representatives in WG5 will continue processing comments in the working group.
 - Kaija Niskala (Fingrid Oyj), Joni Vuorela (Fortum Oyj) and Heli Haapea (Gasgrid Finland Oy)

Table of contents of the standard – presentation

European foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 Generic rules for Guarantees of Origin

5 Rules specific to individual energy carriers

5.1 Electricity

5.2 Gas

5.2.10 Hydrogen

5.3 Heating and Cooling

Appendixes

- Annex A (normative) Energy Source Type codes
- Annex B (normative) Technology codes
- Annex C (normative) Coding structures
- Annex D (normative) Cogeneration GO codes — Uses of Heat
- Annex E (normative) Dissemination level of the physical energy for which the GO is issued
- Bibliography

Matters under discussion

Annex E Dissemination level of the physical energy for which the GO is issued

The parameter value for the Attribute on the GO that indicates the dissemination level of the produced physical energy for which the GO is issued, as in 4.5.2.2.q, is one of the following:

1. Consumed by the operator of the production device [this applies for Electricity, Gas and Heating and Cooling]
2. Transferred over a Distribution or Transmission System [this applies for Electricity and Gas]
3. Transferred over a Closed Distribution System [this applies for Electricity and Gas]
4. Transferred over any other network than a Distribution or Transmission System or Closed Distribution System [This applies for Electricity and Gas]
5. Transferred over a heating or cooling Grid [this applies for Heating and Cooling]
6. Transported by vehicle [this applies for Gas and Heating and Cooling]
7. Transport unspecified – not consumed by the operator of the Production Device [this applies for Gas]

Examples of matters under discussion relevant to electricity

- Unit for Guarantees of Origin: MWh, kWh or Wh (data field: Face Value)
- 4.5.6 Energy Carrier Conversion and Conversion Issuance
- Export/import restrictions with non-EU countries
 - 4.7.3.3 Restrictions of exports
 - 4.7.3.4 Restriction of imports

Guarantees of Origin when converting between types of energy

Kaija Niskala and Kirsi Salmivaara



15 November 2022

Kaija Niskala, Kirsi Salmivaara

Guarantees of Origin when converting energy from one form to another

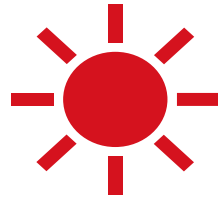
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Conversion of renewable energy



Converting energy from one renewable energy form to another

For example, producing heat in a boiler using renewable electricity



Possible forms of energy that can be used in conversion in the Guarantee of Origin system:

Renewable electricity
Renewable gas
Renewable hydrogen
Renewable heat or cooling energy



The Guarantee of Origin system certifies that the consumed energy is renewable

→ **Guarantees of Origin can also be issued for the energy output by the conversion process (the conversion end product)**

Parties maintaining Guarantees of Origin registers in Finland

Finland has three separate Guarantee of Origin registers maintained by different parties:

- Register of Guarantees of Origin of electricity – Fingrid Oyj/Finextra Oy
- Register of Guarantees of Origin of gas – Gasum Finland Oy
- Register of Guarantees of Origin of heat and cooling energy – Energy Authority

Cooperation between the registrars when Guarantees of Origin are used in conversions

- Avoiding double accounting
- Joint meetings at least quarterly
- Reporting on cancellations and targets of cancellations for conversions
 - Oversight by the Energy Authority and for issuing from other registers

Options for conversion cancellations

1. An electricity supplier sells renewable electricity to a verified conversion plant
2. When the conversion takes place, the Guarantees of Origin in the input energy register are cancelled for the plant in the output energy register
3. An on-site audit confirms the conversion in the same process

(This is described in more detail in the Energy Authority's conversion guidelines [Konversio-ohje+2.3.2022.pdf \(energiavirasto.fi\)](#), chapter 2)

Example

- A heat pump plant uses renewable electricity to produce heat:
 - The plant must be registered on the heating and cooling register (Energy Authority) to obtain Guarantees of Origin
 - The electricity consumed by the plant is verified as renewable, for example, by checking Finextra's register
→ The share of the heat produced with the electricity consumed by the heat pump is also renewable
 - To enable the conversion, the Guarantees of Origin corresponding to the electricity consumed are cancelled in Finextra's register, or the electricity supplier to the heat pump plant sells the electricity as renewable energy
 - Guarantees of Origin may be issued for the output heat in the Energy Authority's Guarantees of Origin register



Cancellation for conversion

- Cancelling Guarantees of Origin for consumed electricity in Finextra's register
 - Converting electricity into gas, hydrogen, heat or cooling energy
- Target of cancellation: Conversion
- Target register
 - Select a register according to the end product of the conversion:
 - Gas or hydrogen: Gasgrid Finland Oy
 - Heat or cooling: Energy Authority
- Power plant concerned:
 - The power plant must be on the correct output energy register before the cancellation
- The cancellation must take place before Guarantees of Origin can be issued for the end product in the relevant register

CANCELLATION TARGET

Electricity sales/marketing | **Electricity sales/marketing, my organization** | **Conversion**

ⓘ All fields must be entered unless they are marked optional.

Conversion target registry

Energy Authority Gasgrid Finland Oy

GSRN of the conversion target power plant

Name of the conversion target power plant

Details of the consumption

Consumption Year

Specify the consumption period (optional)

Additional Information

Characters left 1000

Break

The market for Guarantees of Origin of electricity. How to participate in the market, and what is happening in the market now

Mervi Leskinen, Gasum Portfolio Services



How to participate in the market for Guarantees of Origin, and what is happening in the market now

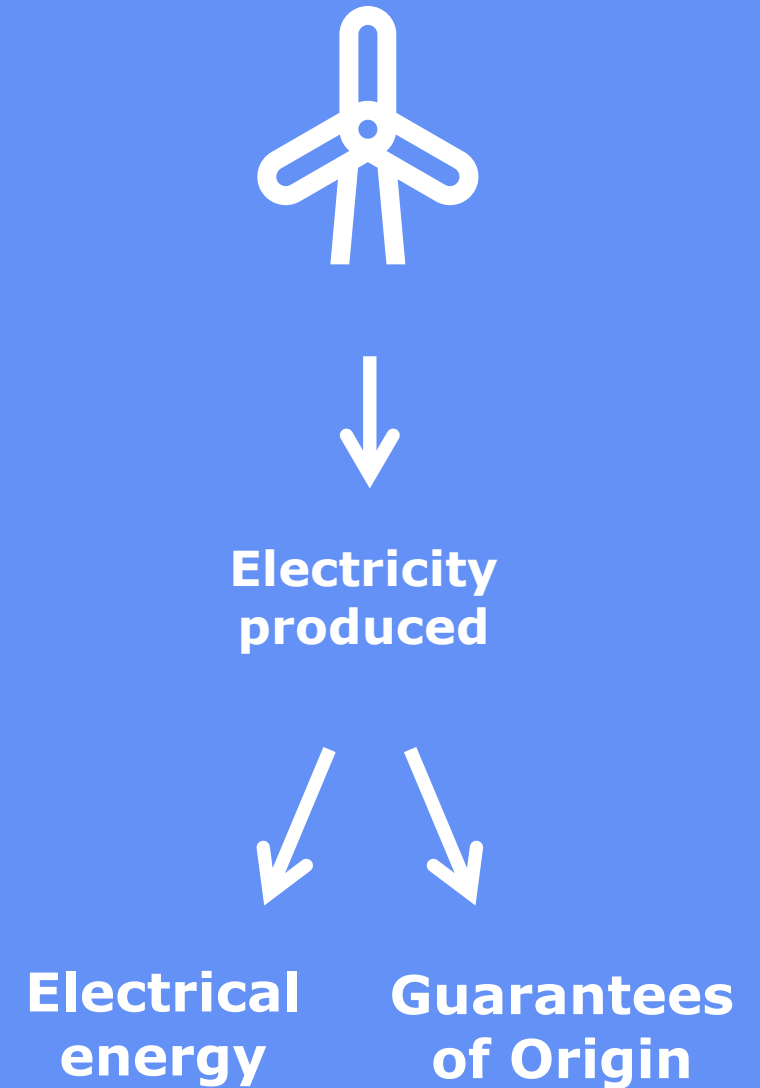
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How the system works

After production, electricity is split into:

- a) Electrical energy fed into the grid
- b) Guarantees of Origin issued in the Guarantees of Origin system

Guarantee of Origin certificates are not directly linked to physical electricity, and it is not necessary to make a new electricity contract to obtain them.



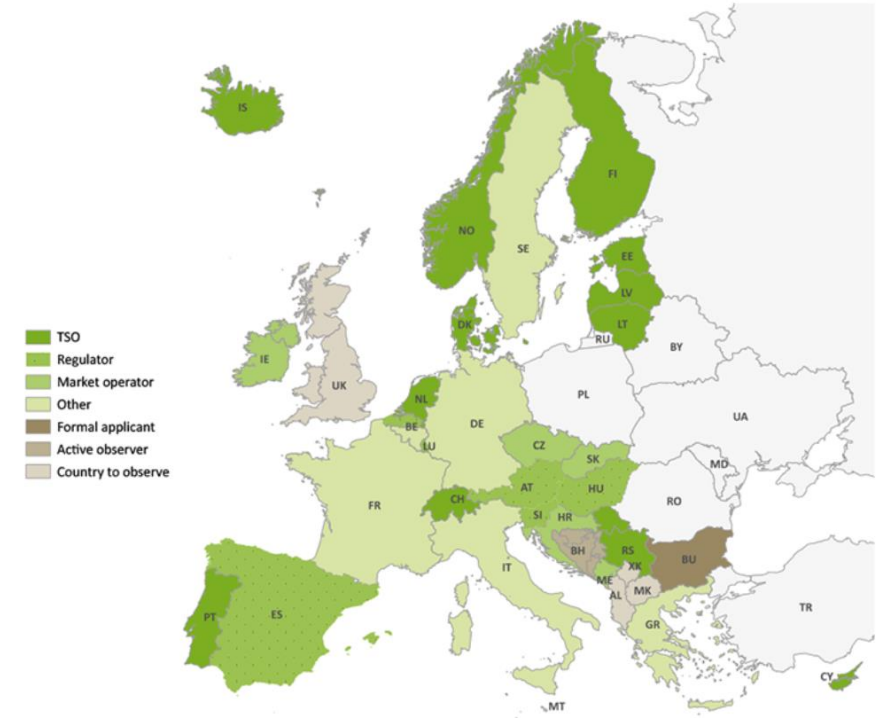
How does the market work?

The market is based on the EU Renewable Energy Directive II and country-specific national legislation.
⇒ Countries have different approaches

The market does not have an exchange – trades are bilateral

Market participants

- Electricity producers
- Electricity suppliers
- Final buyers
- Service providers
- Brokers



Source: www.aib-net.org

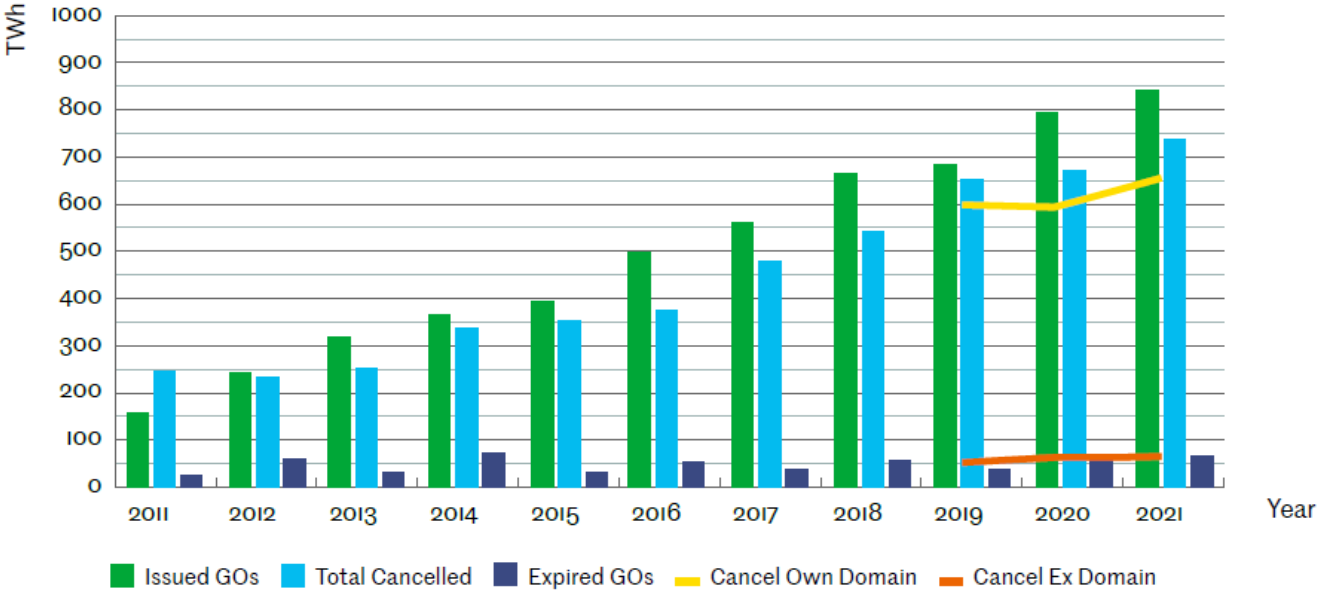
The European Guarantees of Origin market

Every year, more Guarantees of Origin are issued →

Renewable energy production has increased

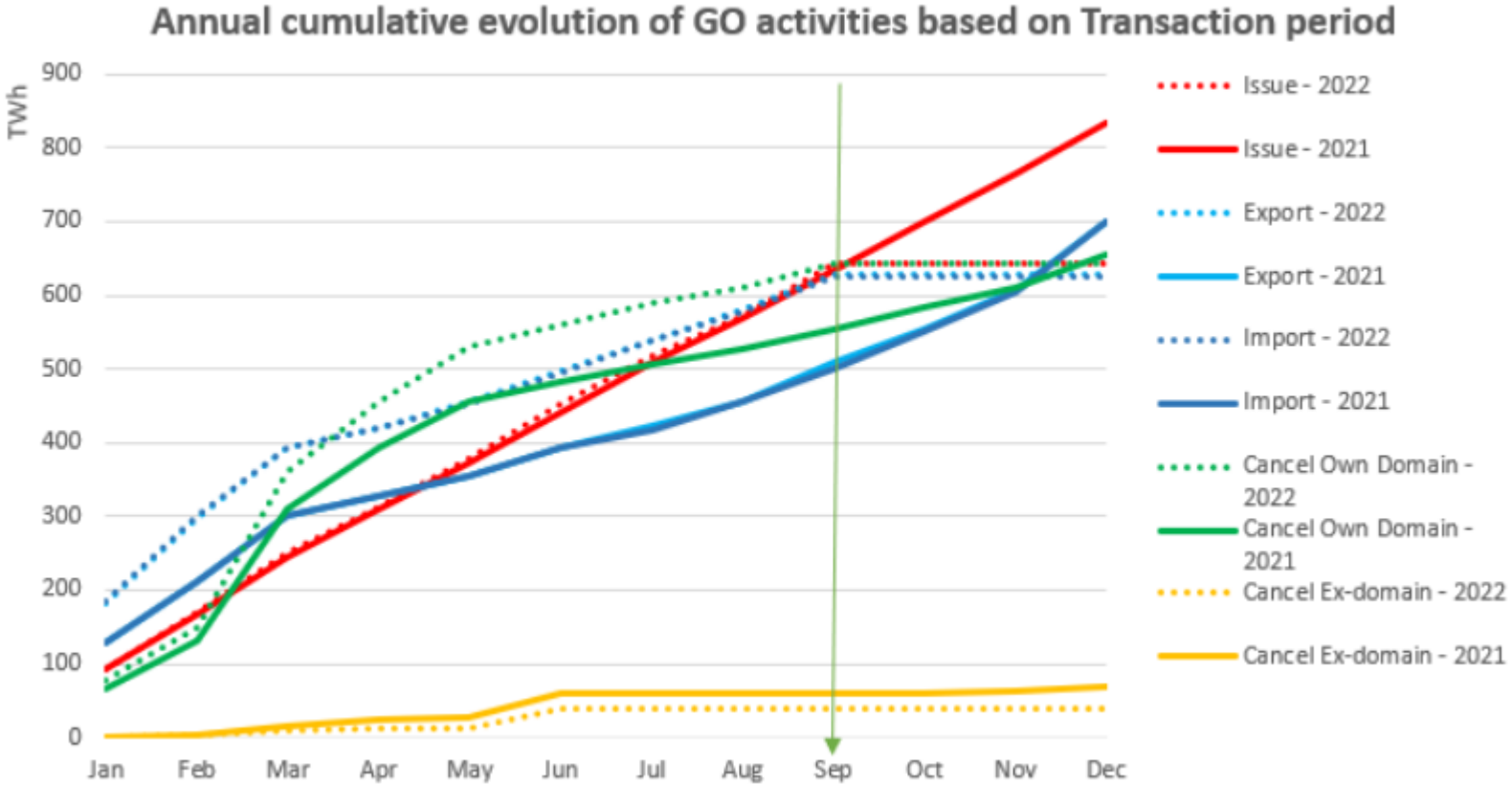
Every year, more Guarantees of Origin are cancelled (i.e., removed from the market permanently) →

Renewable energy demand has increased



Source: RECS International annual report 2021

Statistics on Guarantees of Origin, 2022



Source: www.aib-net.org

How does trading work?

- A deal is made for a trade
 - Year of production (or more specific time of production)
 - Mode of production
 - Country of production
 - Information on subsidised production, if applicable
 - Information on eco-labels, if applicable
 - Time of supply
 - Any other terms and conditions
- Agreements are made between the buyer and the seller. The market provides widely used agreement templates, but parties are free to make any agreements they desire
- Guarantees of Origin are typically supplied first and invoiced in arrears. If any other delivery method is used, it should be agreed upon separately.



Factors affecting the pricing of Guarantees of Origin

Size of the trade
Mode of production
Country of production
Eco-label
Age of the production plant
Time of production
Fuel

Reservoir status
Amount of wind
Temperature – need for
electricity consumption
Outcomes of auctions

New production plants to be constructed
National legislation/community operating methods

Factors affecting the pricing of Guarantees of Origin

- Trading is typically brisk in Q4 and Q1 because the deadline for cancelling Guarantees of Origin is the end of March in most of the countries involved
- The UK will stop recognising EU Guarantees of Origin on 1 April 2023
- State-subsidised renewable energy production in Germany is ineligible for Guarantees of Origin. What about the future (RED III)?
- Norway is debating whether to remain in the Guarantee of Origin market
- In the future, the RE100 community will require its members to use renewable energy that is less than 15 years old
- 24/7 Guarantees of Origin – Will the legislation require/enable them? Is there a demand for them?

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Gasum

Presentation of a final project: Possibilities of introducing granular Guarantees of Origin of electricity in Finland

Kaija Niskala



Veea Pulkkinen

ENGINEERING THESIS, METROPOLIA UNIVERSITY OF APPLIED
SCIENCES, ENERGY AND ENVIRONMENTAL ENGINEERING,
30 AUGUST 2022

Possibilities of introducing granular Guarantees of Origin of electricity in Finland

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Current system

- Certificates are not connected to the physical electricity fed into the grid.
 - Enables energy marketed as renewable to be consumed when no renewable energy is actually available.
- The system successfully verifies that enough energy is actually produced from renewable sources annually to cover all the electricity sold as renewable and consumed.

Once electricity is fed into the grid, it becomes impossible to differentiate between renewable and non-renewable energy when the electricity is consumed.

However, the total share of renewable energy is known.

Parties with a certification obligation can allocate their consumption to the renewable share by cancelling Guarantees of Origin.

Consumption is allocated to production to an accuracy of one calendar year.

- At the beginning of the 2020s, consumer demand for emission-free energy was higher than ever before.
 - In 2020, the number of companies aiming for full carbon neutrality and zero emissions was three times higher than in the previous year.
- Renewable energy production volumes have also risen.
- As the energy production structure changes, energy consumers and producers have begun discussing the need to reform the existing certification system with the aim of achieving continuous positive development in curbing emissions from energy production.



Certificates for specific periods



Interest in verifying the use of renewable energy in a more specific time range

Increased demand for and production of renewable energy
Among large energy producers and consumers



A few large companies have publicly set the target of purchasing carbon-free energy for every hour of the year

Efforts are made to reconcile the consumed energy with renewable energy or nuclear power produced at the time in question, accurate to one hour.



Several projects are underway on this theme in Europe.



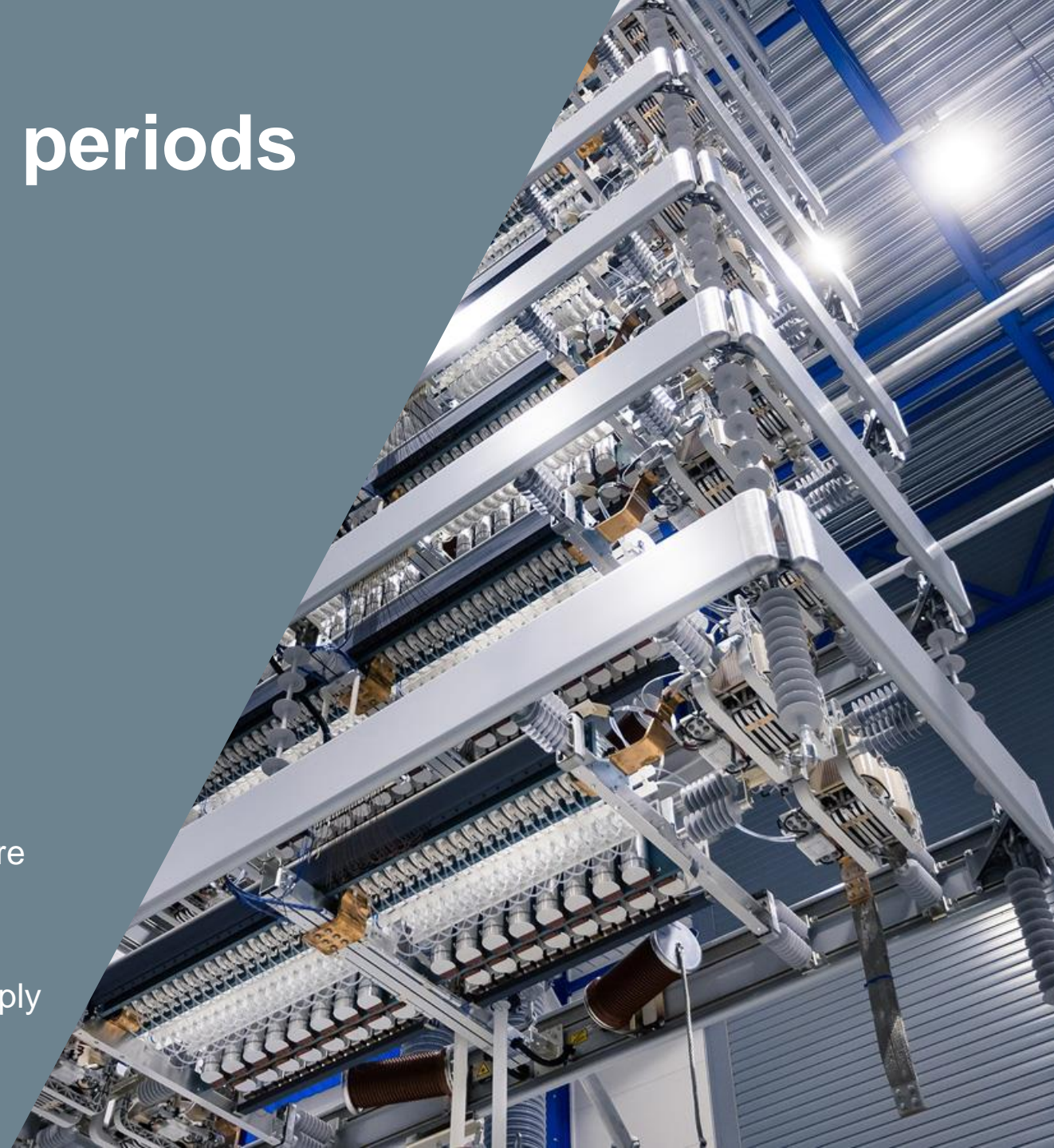
Discussion of the revision of the Renewable Energy Directive

For example, adjusting the production period on which certificates are based for an accuracy of at least one hour.

Certificates for specific periods

Proposed benefits

- Increased transparency
- For consumers:
 - A more realistic picture of the energy origin and emissions
 - Increased confidence in the renewable energy market
 - A better picture of the functioning of the power system
- Better timing of production and consumption from a climate standpoint
- Steering energy production investments towards more environmentally friendly options
 - New investments in technologies to produce renewable energy at times when it is in short supply



Projects launched in Europe

The EnergyTag Initiative Ltd

- Non-profit cooperation project launched in 2020
 - Involving more than 400 companies, organisations, and academic institutions
- Aiming to create a market for more granular Guarantees of Origin.
 - A standard for certificates for specific hours or shorter periods
 - Guidelines for issuing processes and trading.

Supporting Organisations

Organisations that support EnergyTag include the world's largest renewable producers and consumers, grid operators, start-ups and key organisations in the energy certificates market:



Funders



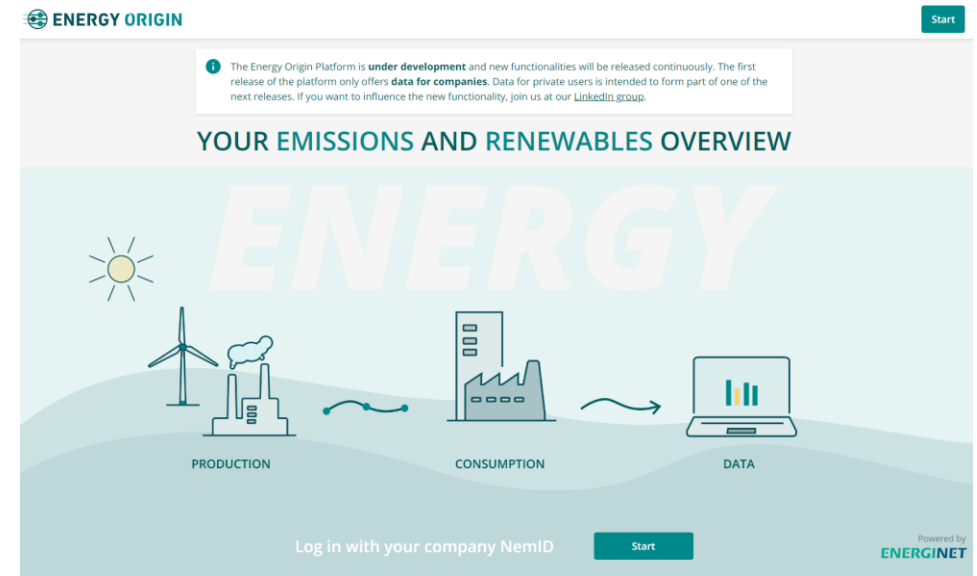
<https://energytag.org/>

Projects launched in Europe

ENERGINET

The EIOprindelse project and its successor, EnergiOprindelse

- 2020: IT platform prototype for monitoring the origin and carbon footprint of electricity with a granularity of one hour
- 2022: As an additional goal, a platform will be developed for the Danish market, and efforts will be made to integrate it with other forms of energy besides electricity
- Consumption and production data from the Danish DataHub
- In the testing phase, the platform is aimed at large electricity producers and consumers and other participants in the Guarantee of Origin market. The final platform is also intended for private consumers to use.
- www.energioprindelse.dk



“Consumers who pay for renewable energy for all the electricity they consume year-round are physically consuming electricity from fossil fuels more than half the time.”

“This margin of error could be brought down to 2.5% if the production and consumption times of Guarantees of Origin could be coordinated to an accuracy of one hour.”

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Potential for implementation in Finland?

Within the scope of current legislation

Finextra

- Issuing Guarantees of Origin according to current legislation
 - Certified hourly production time series corresponding to the issued Guarantees of Origin
 - Hourly data is the basis for the monthly sum corresponding to Guarantees of Origin
 - Implementation via an API, for example
 - Additional service for those interested

Operators

- More detailed reporting voluntary
 - Option of using production time series certified by Finextra
 - Reconciling production and consumption time series outside Finextra's register
- Cancelling Guarantees of Origin according to current legislation

Production time series for specific hours and the corresponding cancellation certificates of Guarantees of Origin would be uniform and verified by Finextra, boosting the credibility of voluntary reporting.

Further reflection

Could Finextra offer an additional service providing electricity production time series accurate to one hour or 15 minutes via an API?

Could commercial operators provide platforms for reconciling consumption and production data?

What options are available for service providers to certify the electricity consumed at accounting points in distribution networks, as measured in Fingrid's Datahub, and electricity production?

Engineer's thesis:

<https://urn.fi/URN:NBN:fi:amk-2022090519859>

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Thank you!