REGATRACE

Renewable Gas Trade Centre in Europe

Online workshop

for issuing bodies and registry operators of energy attribute tracking systems

–

"Mapping Challenges for certificate handling in relation with energy carrier conversion"

11 March 2021

Liesbeth Switten (Secretary General, Association of Issuing Bodies) &

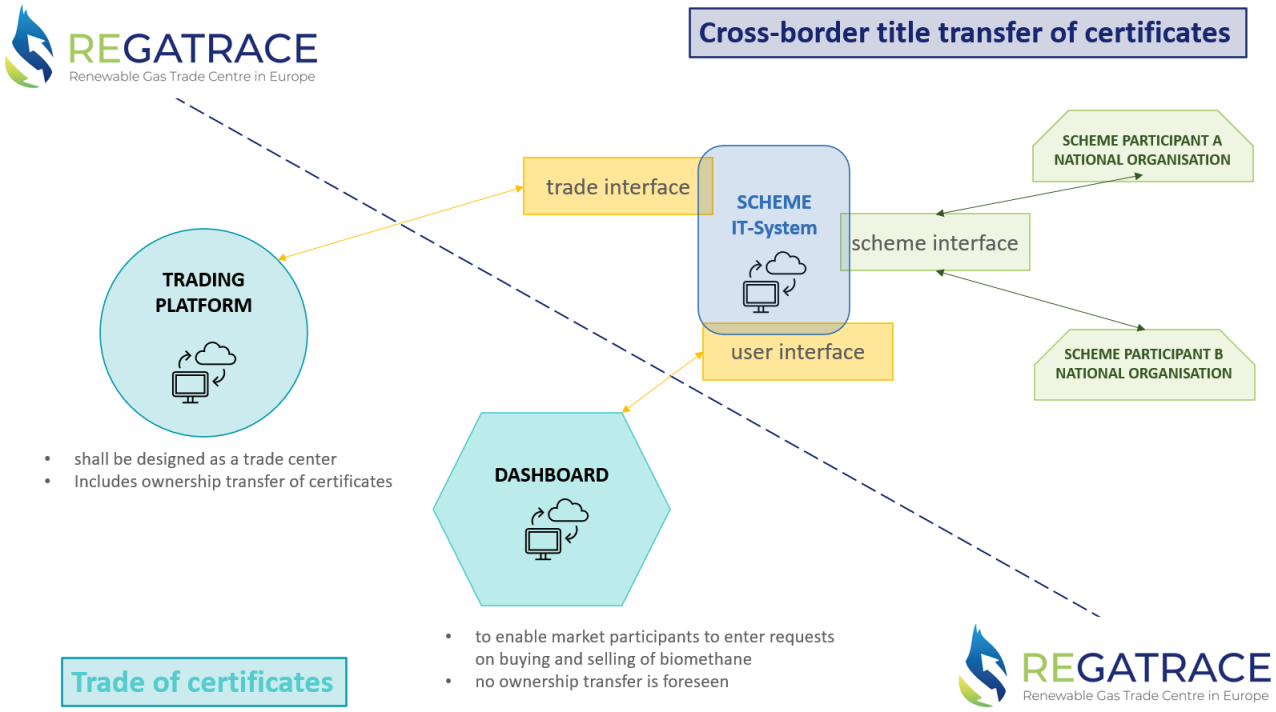
Katrien Verwimp (Coordinator Sector Integration Program, Association of Issuing Bodies)

This project receives funding from the European Union's Horizon 2020 Framework Programme for Research and Innovation under Grant Agreement no. 857796

Objectives

REGATRACE (REnewable GAs TRAde Centre in Europe) aims to create an efficient trade system based on issuing and trading biomethane/renewable gases certificates, including **Guarantees of Origin** (GoO) and **Proofs of Sustainability** (PoS) with exclusion of double sale. This will strongly contribute to the uptake of the European common biomethane market. A significant help to the latter will be also provided by the comprehensive set of project's actions at country level (including the **guidance for feasibility analysis** and the **guidebook on securing investments for biomethane**).

The trade system will be designed for **biomethane**. Nevertheless, the system will be also capable of handling certificates issued for all other renewable gases (for example hydrogen produced via the **Power-to-Gas** process from renewable electricity)



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Work Packages

REGATRACE
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WP1 - Project management &coordination

WP2 - European biomethane/renewable gas GO system

WP3 - Set-up of national GO issuing bodies

WP4 - Integration of GO from gas technologies with electric and hydrogen GO systems

WP5 - Integrated assessment and sustainable feedstock mobilisation strategies and technology synergies

WP6 - Support for biomethane market uptake

WP7 - Evaluation analysis and policy recommendations

WP8 - Dissemination, communication & exploitation

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WP 4 Deliverables

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WP4 Integration of GOs from different renewable gas technologies with electric and hydrogen GO systems

Task 4.1 Analysis of GO from different renewable gas technologies and development of verification standards

- D4.1 Guidelines for the verification of cross-sectoral concepts (dena, Jan 2021)

Task 4.2 Comparison of the ERGaR system or biomethane/renewable gas certificates and the AIB system for electricity and gas certificates

- D4.2 Technical and operational comparison of the biomethane/renewable gas GoO system and the electricity GoO system (ERGaR, Feb 2021)

Task 4.3 Coordination between the electricity and the biomethane /renewable gas and hydrogen certification (GO) systems

- D4.3 Harmonised set of rules for the conversion of electricity to biomethane/renewable gas and hydrogen GoO (AIB, Oct 2021)
- D4.4 Design study on the technical requirements of a coordinated conversion process (AIB, April 2022)

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Mapping Challenges for certificate handling in relation with energy carrier conversion

Time	Topic	Speaker
13:00	Welcome & Introduction to Workshop	Liesbeth Switten, AIB
13:10	Energy carrier conversion – existing framework	Katrien Verwimp, AIB
13:25	Comparison between AIB & ERGaR & CertifHy schemes.	Matthias Edel, ERGaR
13:40	Challenges for implementation of energy carrier conversion in energy tracking certificate management	Katrien Verwimp, AIB
14:10	Practical challenges for conversion - Case study 1 - Germany	Jakob Jegal, dena
14:25	**Break**	
14:40	Practical challenges for conversion - Case study 2 – the Netherlands	Remco van Stein Callenfels, CertiQ
14:55	Practical challenges for conversion - Case study 3 - Austria	Harald Proidl, E-Control
15:10	Poll and Q&A	
15:35	Brainstorm – status in various countries, views on challenges and solutions	
15:55	Wrap up and way forward in REGATRACE task 4.3	Katrien Verwimp
16:00	Close	

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Energy carrier conversion rules for certificate handling – existing framework

Katrien Verwimp (Coordinator Sector Integration Program - AIB)

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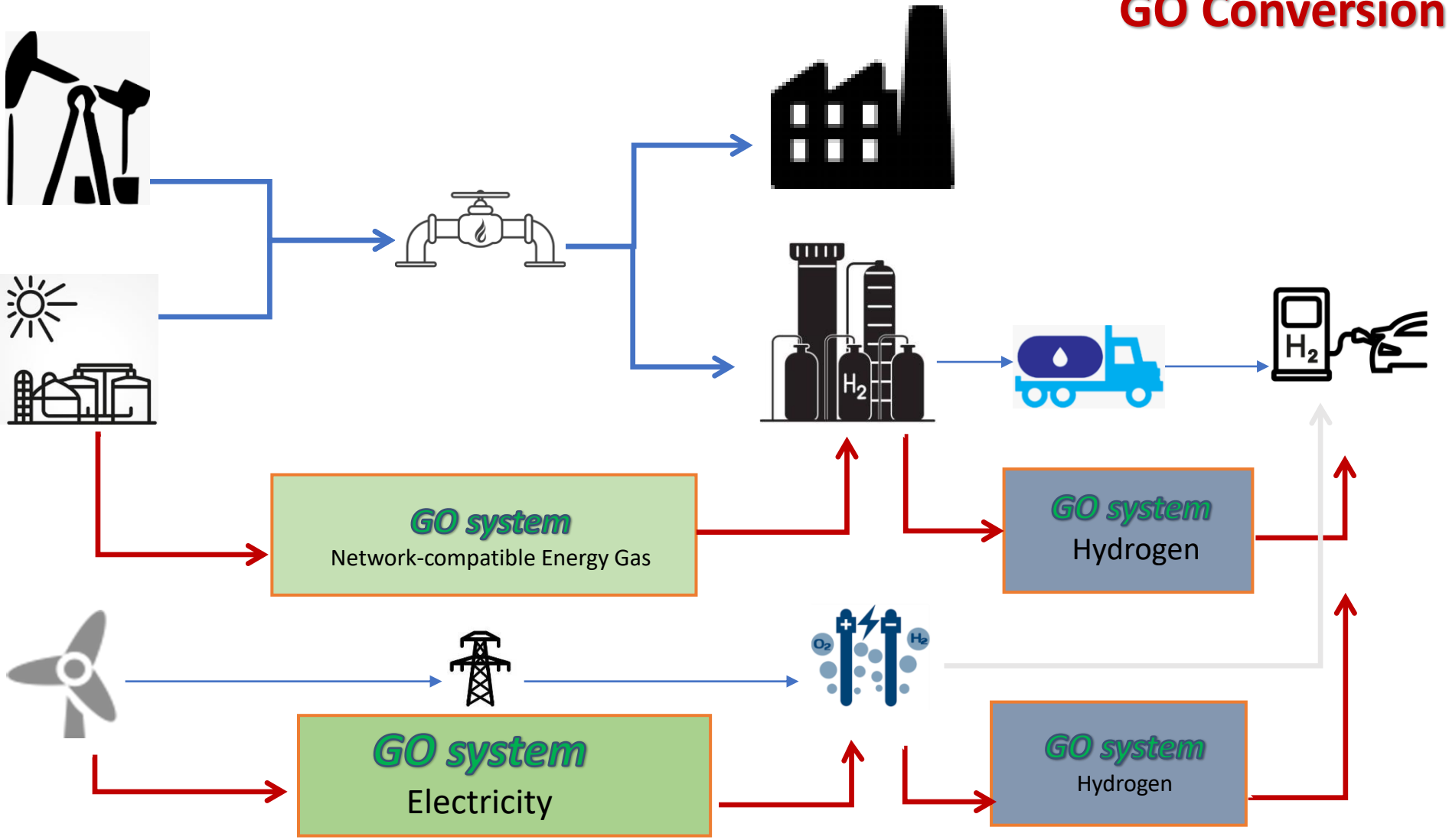
Energy Carrier conversion: Why Bother?
Why need for a generic GO system for all energy carriers?

GO Conversion Issuance



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Energy Carrier Conversion in the EECS Rules and draft EN16325

Definitions in the EECS Rules

- **Energy Carrier Conversion:**

= the transfer of energy carried by one type of energy carrier to another type of energy carrier;

- **EECS Certificate Conversion:**

= the issuance of an EECS Certificate corresponding to Energy Carrier Conversion, and for which EECS Certificates representing Input to that Production Device have been Cancelled;

Definitions in draft EN16325 :

- **Energy Carrier Conversion**

= production of an Energy Carrier in a Production Device from one or more Inputs including at least one other Energy Carrier

- **Conversion Issuance**

= Issuance of a GO for Output resulted from Energy Carrier Conversion, and for which GOs representing the Attributes of the Input to that Production Device have been cancelled

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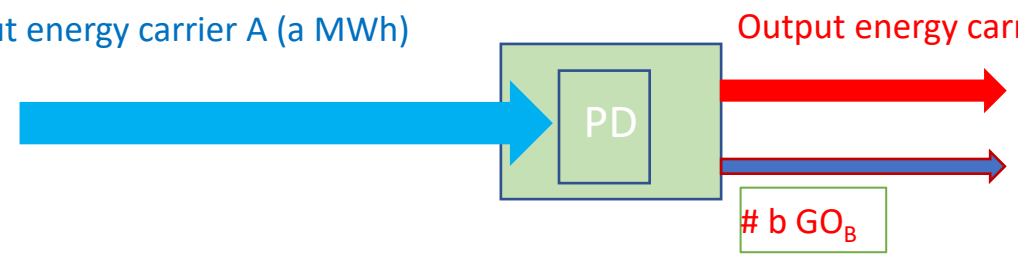
Scope of GO issuing (in EECS Rules and in draft EN16325)

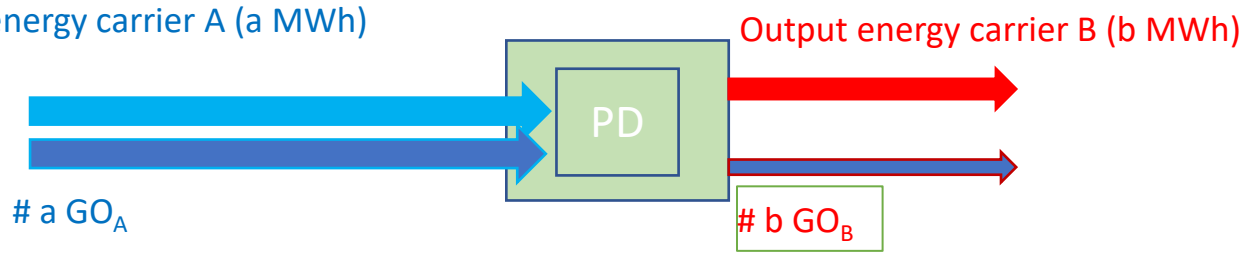
GOs can be issued for an energy source, where:

(a) The Input consists of this energy source, (and no other proof certifying the same Output for the same Purpose has been issued for this input), or



GO issuing as usual

(b) **GOs** of the energy carrier **are cancelled corresponding to the energy carrier and quantity of Input**.



New: GO conversion issuance

4.5.5 Energy Carrier Conversion and Conversion Issuance

4.5.5.1 Principles –

4.5.5.1.1 General

The principles set out in the previous and following sections equally apply for Conversion Issuance, and are explained in this section for clarification, for the specific case of Conversion Issuance.

In case of Energy Carrier Conversion, similar to direct production of Output from primary energy, the amount of Energy Input to and Output from the production Device shall be measured.

The Attributes of an amount of Input shall be determined by Cancellation by the Registrant of a corresponding amount of GOs,

The Registrant shall cancel for this purpose only GOs of which the Energy Carrier mentioned on these cancelled GOs is the same as the Energy Carrier of the relevant Input. Where applicable, any additional Attributes to identify the details related to the Energy Carrier for which such cancelled GOs had been Issued, in accordance with any such requirements of section 5, shall be the same as those of the relevant Input to the Production Device for the Energy Conversion.

An amount of GOs may be Issued for the Output Energy Carrier(s) which correspond to the amount of measured Output of the corresponding Energy Carrier(s), determined as in section 4.5.4.

4.5.5.1.2 Cancelling GOs for energy carrier conversion

Where GOs are cancelled for Energy Carrier conversion, the Issuing Body shall verify that the amount of GOs cancelled corresponds to the quantity of Input fed into the Production Device during the period to which the Consumption Declaration (as in section 4.5.5.1) relates.

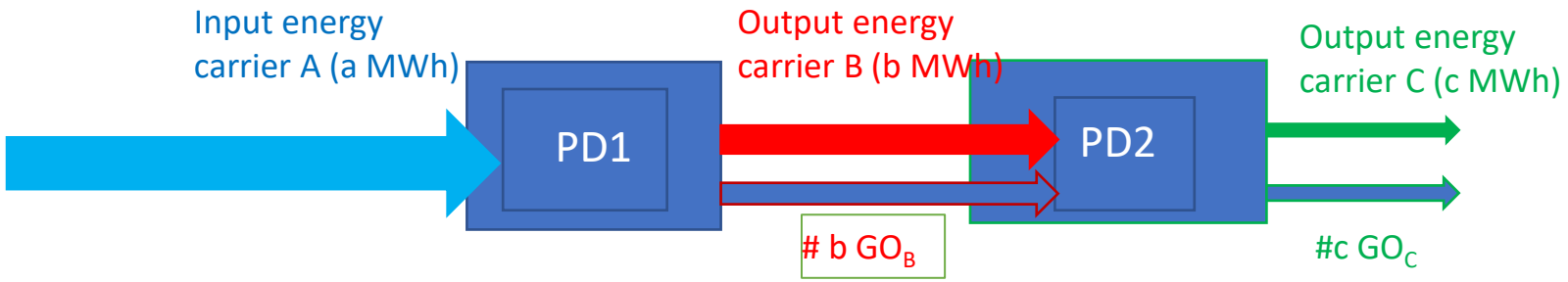
The Issuing Body shall record which GOs are cancelled for Energy Carrier Conversion and shall ensure that mechanisms are in place to identify to which Consumption Declaration each such Cancellation for Energy Carrier Conversion relates.

4.5.5.2 Energy Carrier Conversion Rules

4.5.5.2.1 Conversion Issuance

The amount of GOs to be Issued following Conversion Issuance shall be based on cancelled GOs per specific Source Type recorded on them, in correspondence to the Input Energy Carrier, and equal the measured Net Energy Production multiplied by the Energy Input Factor for each of the Inputs. The same principle as in section 4.5.5.2 is maintained.

GO data handling in conversion chain: original data retention



1. Original energy source gets carried forward with GO

Energy Source GO$_C$ = Energy Source GO$_B$ = Energy Source A

2. Only a Disclosure certificate can create a Disclosure certificate. A Support or Target certificate cannot create a Disclosure GO

Purpose GO$_C$ = Purpose GO$_B$

3. An label (ICS) gets carried forward if the label (ICS) operator supports the conversion

ProductStatus GO$_C$ = ProductStatus GO$_B$

4.5.5.2.2 Data to be mentioned on GO after Conversion Issuance

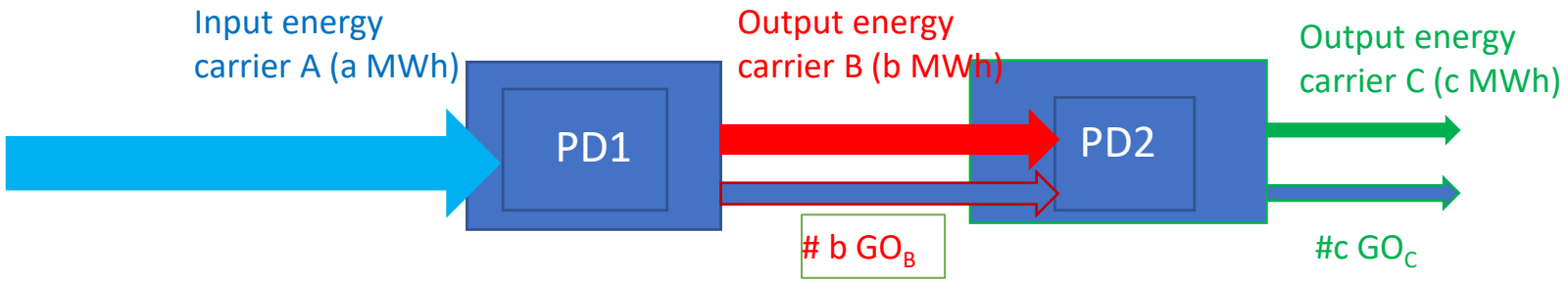
Those Attributes recorded on the GO after Energy Carrier Conversion are those which relate to the Production Device of the Energy Carrier Conversion, except for the following Attributes:

1. Attributes corresponding to the Source Type (as in 4.5.1.1 g) are inherited from the cancelled GOs related to the consumption of each Input Energy Carrier. The amount of GOs to be Issued with a specific Source Type is determined as its respective Energy Input Factor (as in 4.5.5.1.3) multiplied by the amount of GOs mentioning that specific Source Type;
2. Meta data for system management:
   - The Purpose (as in 4.5.1.1 o)) following Conversion Issuance shall remain the Purpose recorded on the cancelled GOs for the Input Energy Carrier;
   - Attributes related to the type and description of any support scheme (as in 4.5.1.1n)), shall be cumulated from the Input and the Production Device; and
   - A Label (as in 4.5.1.2 c) may be carried forward to the GOs issued for the Output Energy Carrier if the Label Scheme Operator supports this, following a quantitative allocation method agreed between the Label Scheme Operator and the respective Issuing Body.
3. Attributes related to any carbon footprint (as in 4.5.1.2 d)) are calculated, following the methodology in Annex E.

The Issuing Body shall take the necessary steps to ensure that where GOs are cancelled for the Input to a Production Device for Conversion, the details of the cancelled GOs are correctly transposed in the GOs issued for the Conversion.

The Issuing Body shall ensure qualitative verification takes place on the cancelled GOs for the Input to the Conversion Issuance.

GO data handling in conversion chain: cumulated data



Support data is cumulated along the conversion chain

Support GO_C = Support GO_B + Support PD2

$\Rightarrow$ This cumulation is to be done in the same datafield.

Optional: Carbon footprinting data is carried forward.

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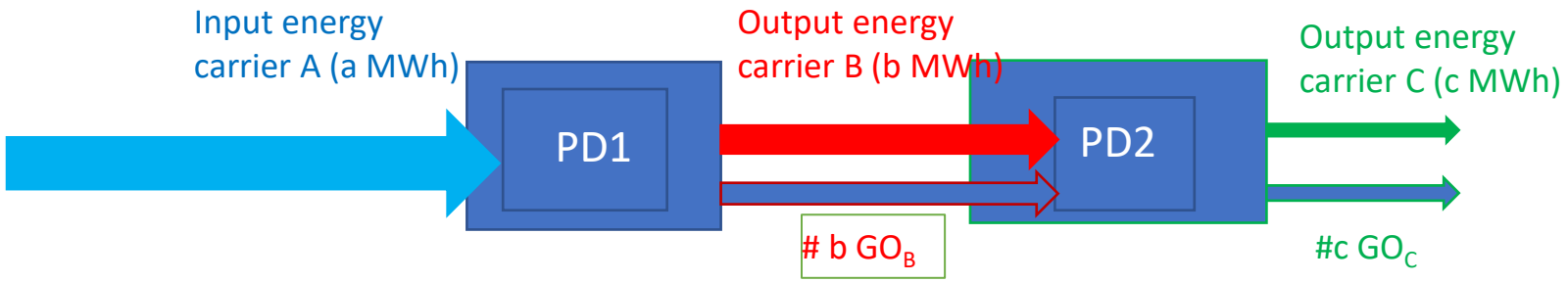
GO data handling in conversion chain: data from latest PD



Data fields on newly issued GO_C relating to latest production device:

Data on GO_C :

1. production period of c MWh in PD2
2. Technology Type PD2
3. country of issue: PD2
4. energy Carrier: C of PD2
5. Date operational: PD2
6. Location, capacity, identity of production device: PD2
7. Date of issue = date of issuing GO_C in PD2

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GO issuing with energy carrier conversion - generic

Input

Energy carrier A

Attributes: See GO_A

GO_A => Cancelled

Attributes on the GO:
Unique Identification number A
Energy source: Fxxxxxxxx A
Technology: Txxxxxx /Mxxxxxx /Hxxxxxx/Gxxxxxx/Qxxxxxx A
Production Device details A
Production period A
Energy Carrier A
Purpose A
Support: A
Label: A
(optional: Carbon Footprint: A)
(…)

Production Device

Technology, described in one of the following codes:

Txxxxxx (electricity)
Mxxxxxx (network compatible gas)
Hxxxxxx (hydrogen)
Gxxxxxx (other gas)
Qxxxxxx (heating and cooling

Output (1 MWh of energy carrier B) eligible for issuing GO_B

GO_B => issued

Attributes on the GO:
Unique Identification number B
Energy source: Fxxxxxxxx A
Technology: Txxxxxx /Mxxxxxx /Hxxxxxx/Gxxxxxx/Qxxxxxx B
Production Device details B
Production period B
Energy Carrier B
Purpose A
Support: A+B
Label: A+B if supported by label operator
(optional: Carbon Footprint: A +B, full GHG input quantity to be maintained)
(optional: retain more data from the cancelled GO)

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Biomethane converted into electricity

Input:

Energy carrier: Energy gas, type Network Compatible Gas,

Attributes: see GO

Production Device

Output
(1 MWh of Electricity)
eligible for issuing GO

GO_A

Attributes on the GO:
Unique Identification number A
Energy Carrier: Energy gas, Type: Network Compatible Gas
Energy source: F01010502 Agricultural products
Technology: M010100 Anaerobic Digestion
Production Device details A
Production period A
Purpose : Disclosure
Support: A
Label: A
(optional: Carbon Footprint: A)
(…)

GO_B

Attributes on the GO:
Unique Identification number B
Energy Carrier: Electricity
Energy source: F01040100 Agricultural products
Technology: T050502 Combustion engine CHP
Production Device details B
Production period B
Purpose: Disclosure
Support: A+B
Label: A+B if supported by label operator
(optional: Carbon Footprint: A +B, full GHG input quantity to be accounted)
(…)

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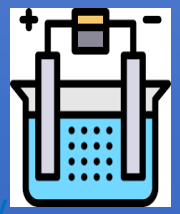
Electricity converted to Hydrogen

Output (1 MWh of hydrogen) eligible for issuing GO

Consumer receives
1 MWh of pure Hydrogen

Input: Electricity
Attributes: see GO

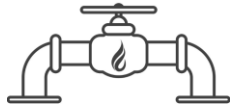
Production Device



Technology:

H010100
Electrolyser

Consumer receives
1 MWh of Energy Gas



GO_A

Attributes on the GO:
Unique Identification number A
Energy Carrier: Electricity
Energy source: F01040100 Solar
Technology: T010101 Photovoltaic
Production Device details A
Production period A
Purpose: Disclosure
Support: A
Label: A
(optional: Carbon Footprint: A)
(…)

GO_B

Attributes on the GO:
Unique Identification number B
Energy Carrier: Hydrogen? Energy gas?// (under discussion in CEN)
Energy source: F01040100 Solar
Technology: H010100 Electrolyser
Production Device details B
Production period B
Purpose : Disclosure
Support: A+B
Label: A +B if supported by label operator
(optional: Carbon Footprint: A +B, full GHG input quantity to be maintained) (…)

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CEN – status energy carrier conversion

Discussions ongoing in JTC14 WG5 for a revised EN16325 GO standard

- Fact: hydrogen and methane are separate products, and can be chemically converted into each other.
- Discussion topic in CEN: blending of hydrogen in gas grid:
  - CEN: debate whether to omit the GO conversion administration, and whether to disclose separate types of gases
  - EECS: blending is not yet addressed, awaiting CEN outcome

EN16325 committee draft = based on EECS rules on energy carrier conversion

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Facilitating sector integration

Building blocks:

4.5.5.1.2 Cancelling GOs for energy carrier conversion

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The Issuing Body shall record which GOs are cancelled for Energy Carrier Conversion and shall ensure that mechanisms are in place to identify to which Consumption Declaration each such Cancellation for Energy Carrier Conversion relates.

- Issuing body shall verify cancelled GOs of input energy carrier
  ⇒ Link cancelled GOs to measurements of new production
  ⇒ Allocation of Issuing Body roles / communication between issuing bodies

- Generic GO system for all energy carriers

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Mapping Challenges for certificate handling in relation with energy carrier conversion

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REGATRACE task 4.2 comparison between AIB & ERGaR & CertifHy schemes

11 March 2021

Matthias Edel, ERGaR

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Overview of European Schemes

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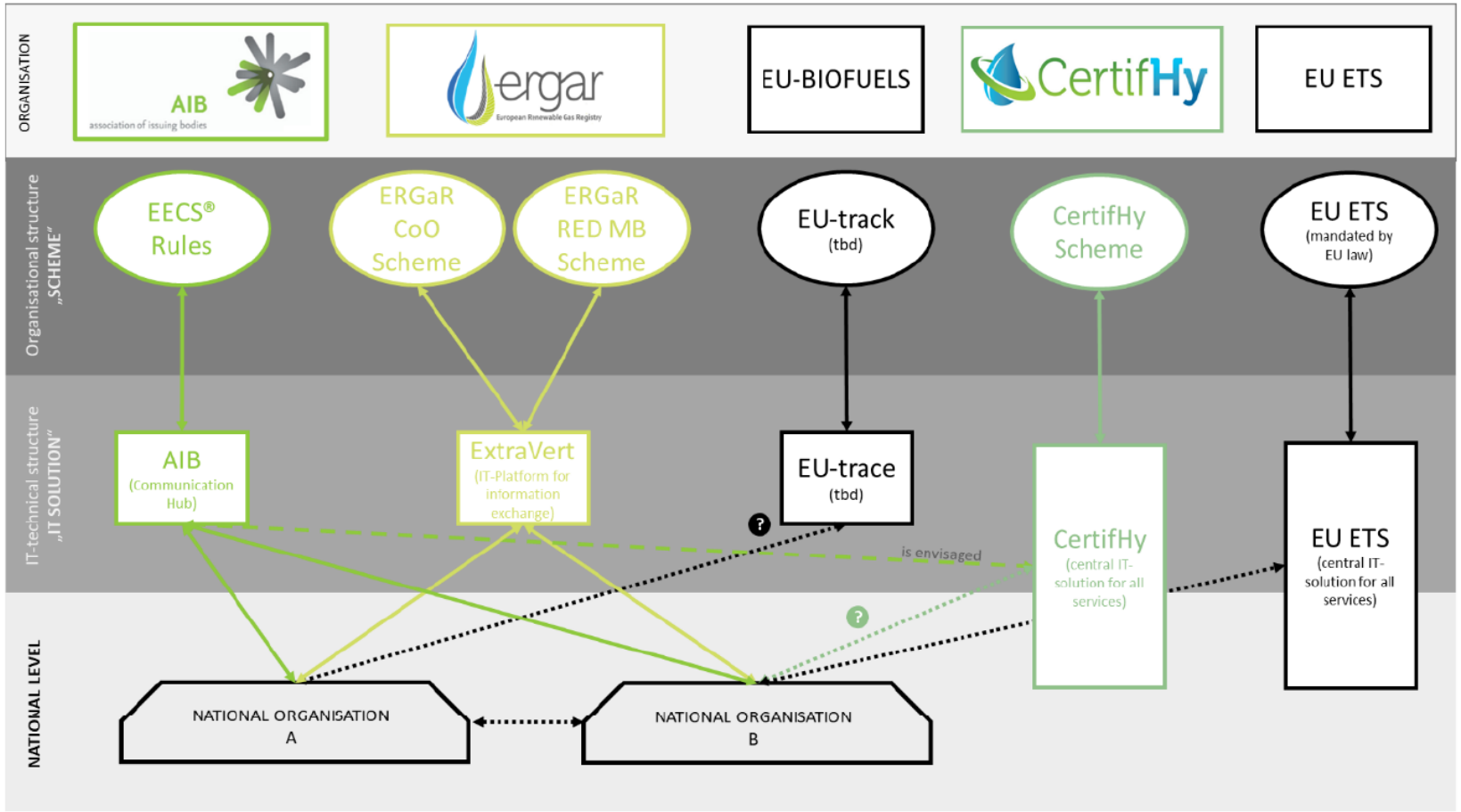
- Different national systems and databases are in operation for the verification and documentation of the origin and characteristics of renewable energy carriers.
- European Schemes are complementing national systems facilitating the harmonized, efficient, and transparent title-transfer of different energy carriers across borders and between national systems.
- Within REGATRACE task 4.2, the schemes of AIB, ERGaR and CertifHy were compared. Amongst others, the comparison aimed at providing information on the schemes´ procedures and rules to verify, process and exchange information that is recorded on the certificates.

European schemes for cross-border certificate transfer under development and in operation (adapted from REGATRACE D2.4)



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European framework

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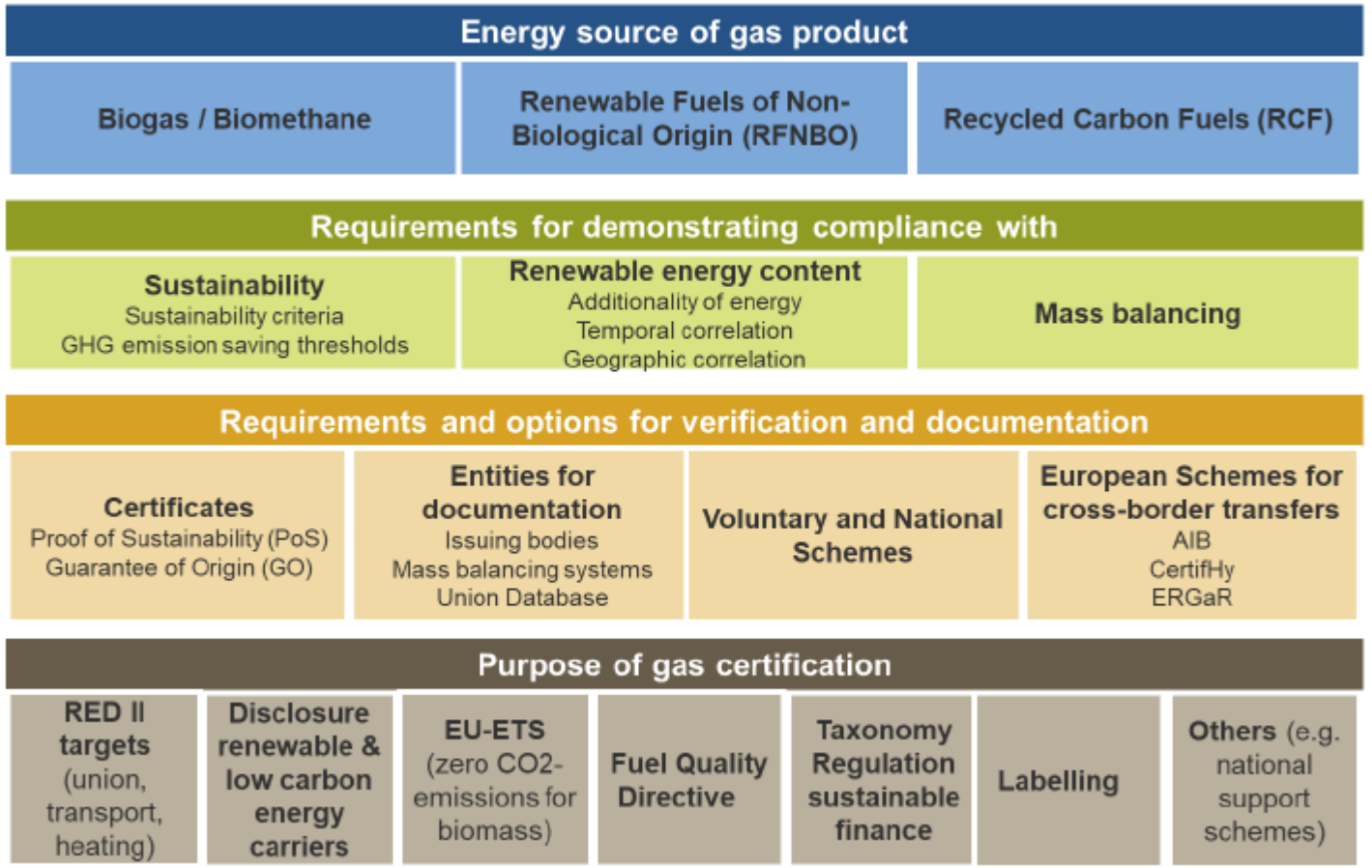
- Directive EC 2018/2001 is the core regulation of the European regulatory framework defining requirements for the sustainability, documentation and disclosure of renewable and low carbon energy carriers.
- Depending on the purpose and the energy source of the gaseous energy carriers, different elements must or can be considered.
- For some elements such as the Union Database or the Delegated Act on renewable energy content of RFNBOs, details have not been decided, yet.

Major purposes and elements for demonstrating compliance with European Regulatory Framework for different renewable and recycled gas categories



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European framework

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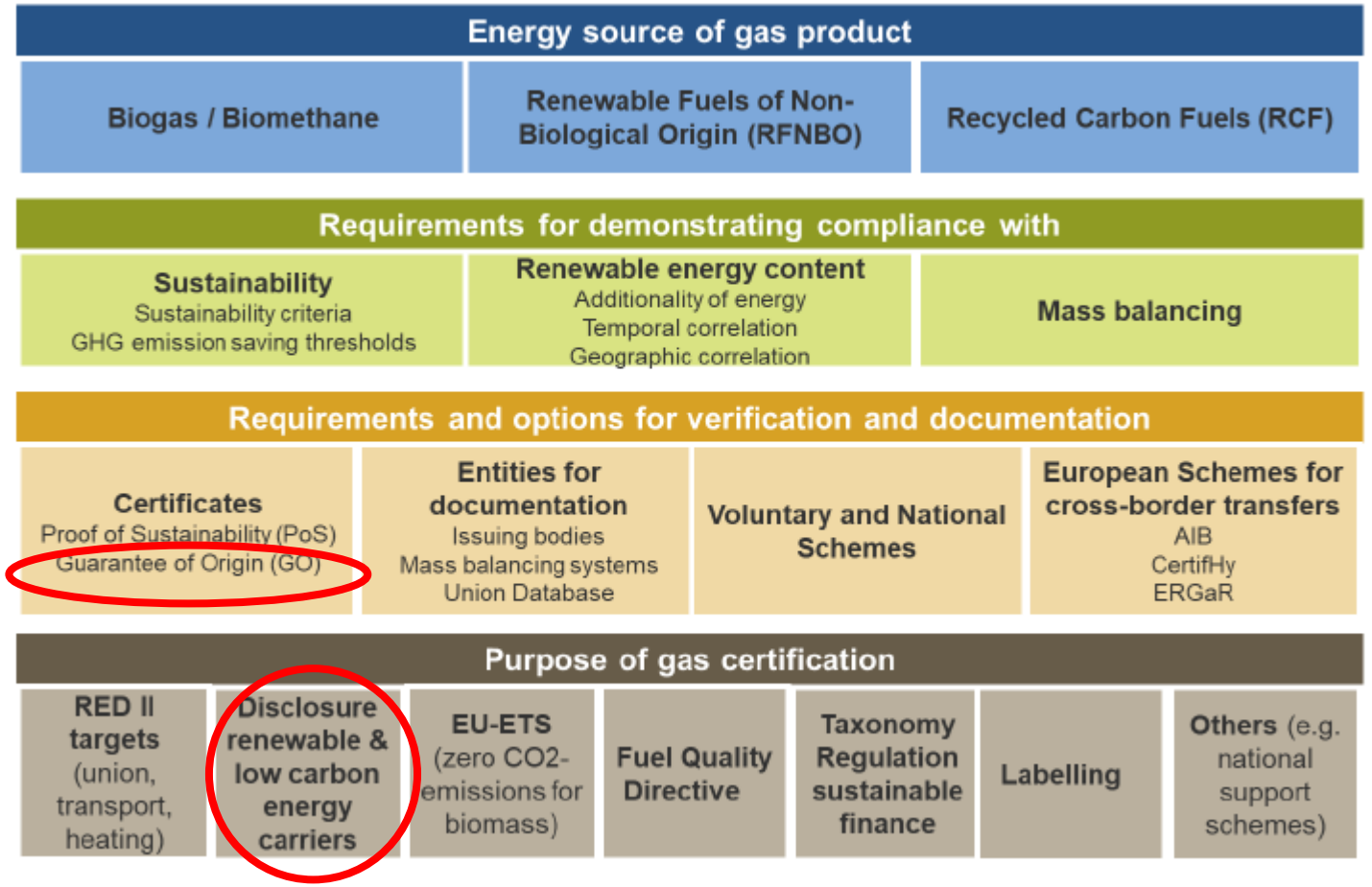
Three categories of certificates were formed:

1. Guarantees of Origin (GOs)

Major purposes and elements for demonstrating compliance with European Regulatory Framework for different renewable and recycled gas categories



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European framework

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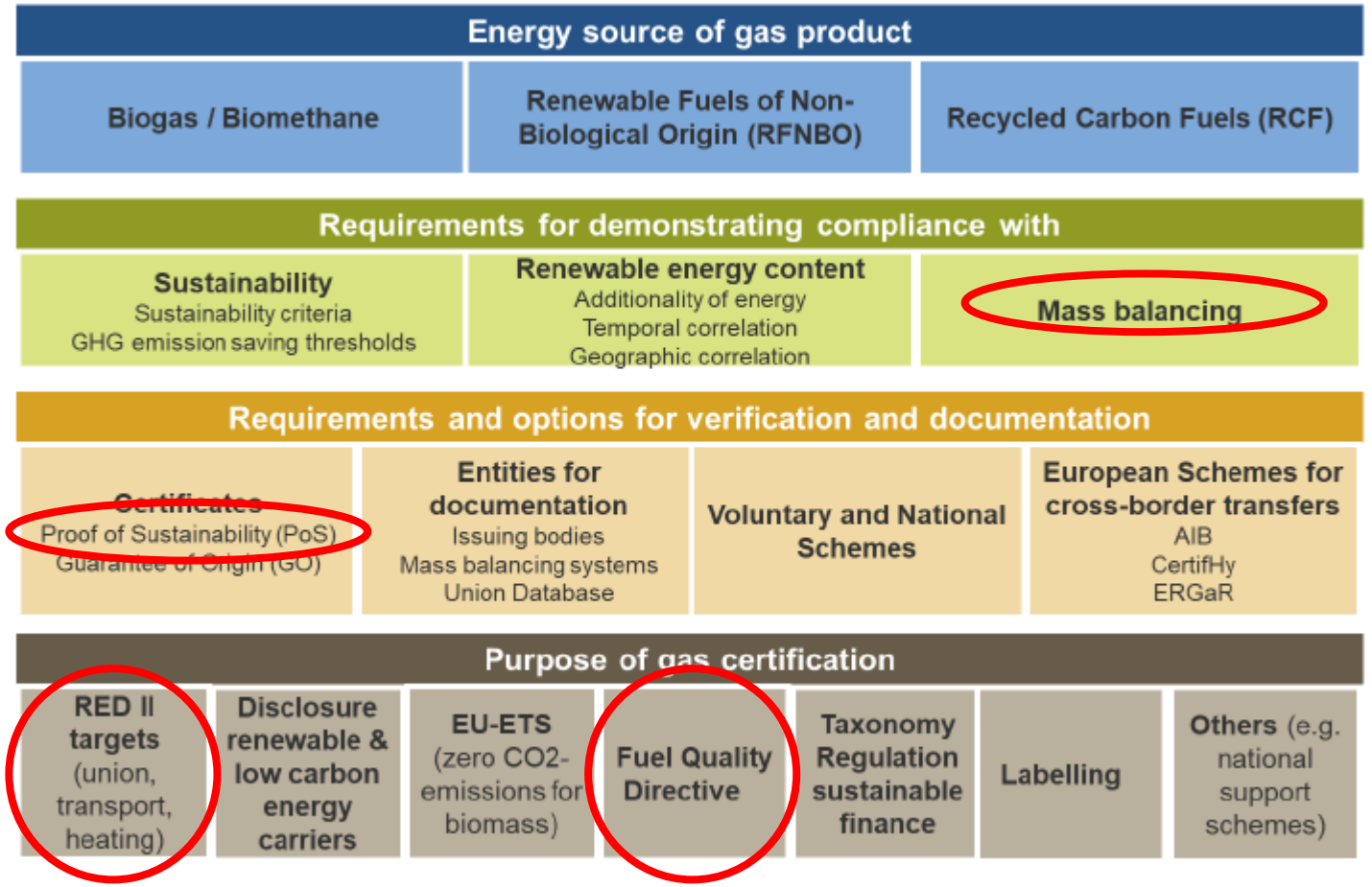
Three categories of certificates were formed:

1. Guarantee of Origin (GO)
2. Proof of Sustainability (PoS) in combination with mass balancing systems

Major purposes and elements for demonstrating compliance with European Regulatory Framework for different renewable and recycled gas categories



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European framework

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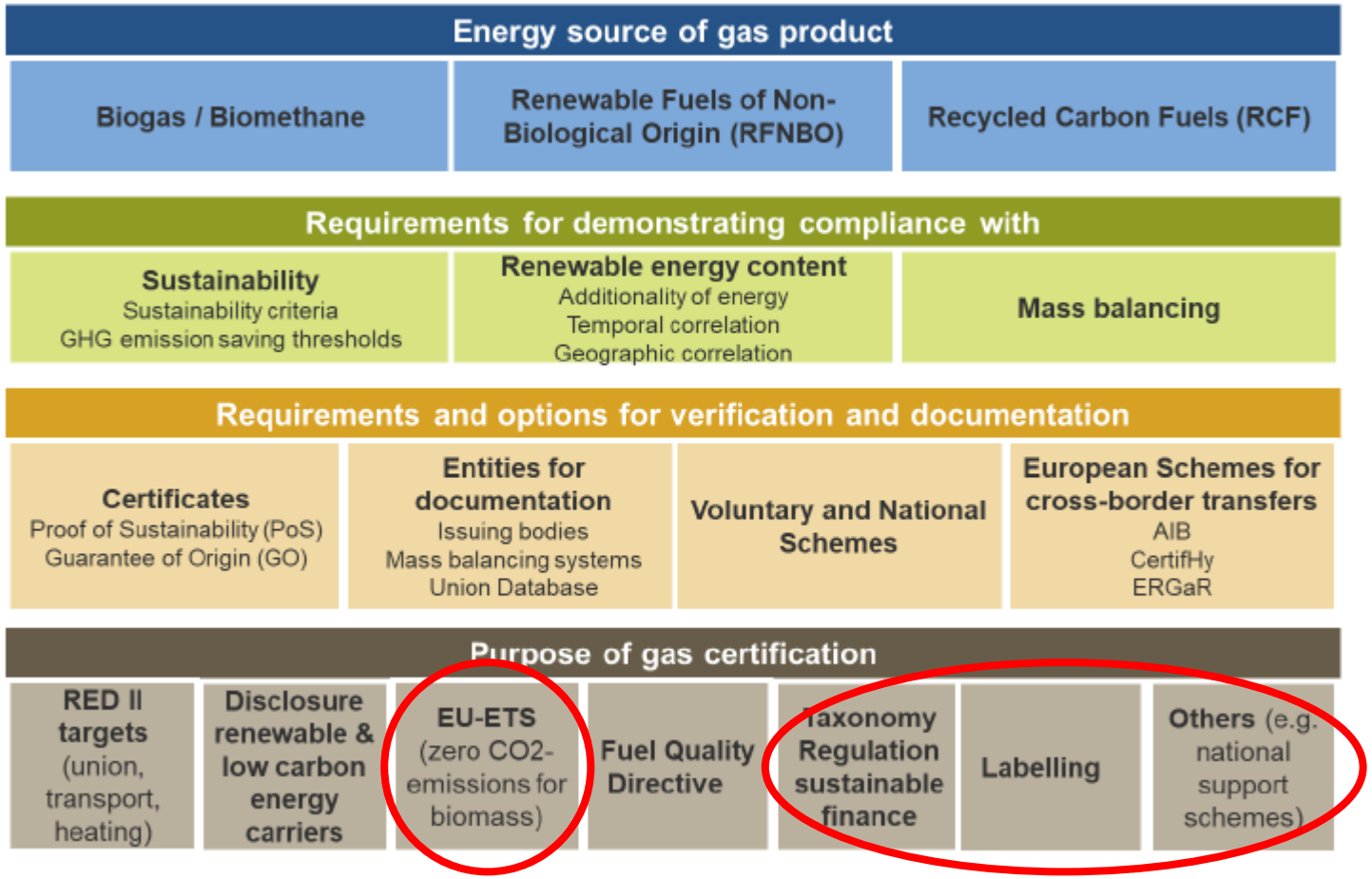
Three categories of certificates were formed:

1. Guarantee of Origin (GO)
2. Proof of Sustainability (PoS) in combination with mass balancing systems
3. Other types of certificates for other purposes

Major purposes and elements for demonstrating compliance with European Regulatory Framework for different renewable and recycled gas categories



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Guarantees of Origin

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- All schemes cover GOs:
  - AIB gas and electricity all types of energy carriers,
  - CertifHy hydrogen,
  - ERGaR all types renewable gases.
- All gas (hydrocarbon gas and hydrogen) related directions of energy conversion can be covered:
  - electricity to gas and vice versa
  - hydrogen to hydrocarbon gas and vice versa
- Energy conversion can be assessed within schemes and in between schemes.

Type of certificate	Energy carrier	AIB (EECS® gas and electricity)	CertifHy	ERGaR (CoO)	ERGaR (MB)
GO	hydro-carbon gas	Yes	No	Yes, if scheme participant is an appointed issuing body	No
	hydrogen	Yes	Yes	Yes, if scheme participant is an appointed issuing body	No
	Others	bio-LNG: neither explicitly included nor excluded in gas scheme (definition to be aligned with EN16325).	No	No	No
	electricity	Yes	No	No	No

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Proof of Sustainability

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- The generic set-up of the schemes allows to extend them to cover Renewable Fuels of Non-Biological Origin RFNBO) and Recycled Carbon Fuels (RCF). Before scheme rules can be adapted to cover these types of certificates, definitions and verification requirements must be developed by the European Commission.
- ERGaR RED MB scheme provides a mass balancing concept. The other schemes are not dedicated to provide mass balancing. A further assessment would be necessary, whether certain mass balancing requirements are met.
- Conversion of one or more energy carriers into sustainable gaseous fuels in accordance with REDII requirements needs further development of the framework conditions.

Type of certificate	Energy carrier	AIB (EECS® gas and electricity)	CertifHy	ERGaR (CoO)	ERGaR (MB)
PoS (combined with mass balancing)	Biogas	The concept mass balancing is not defined in the EECS® Rules. The certificate contains data which could be used for mass balancing depending on the definition of the concept 'mass balancing'. As an alternative, it can be linked with a mass balancing system.	No	PoS can be forwarded with a CoO. It is the scheme participant´s decision if documentation via ERGaR CoO complies with their national requirements.	Yes (for transport)
	RFNBO		No (envisaged)	No	No
	RCF		No	No	No

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Verification of data

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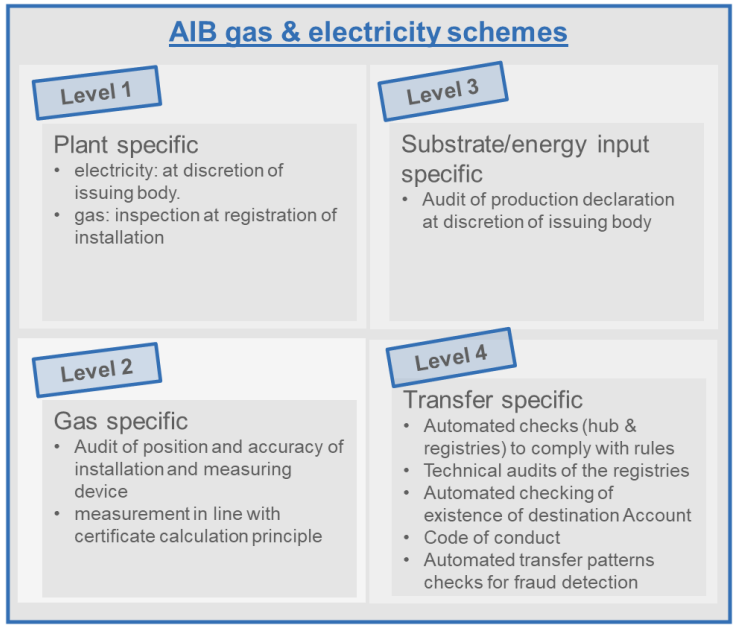

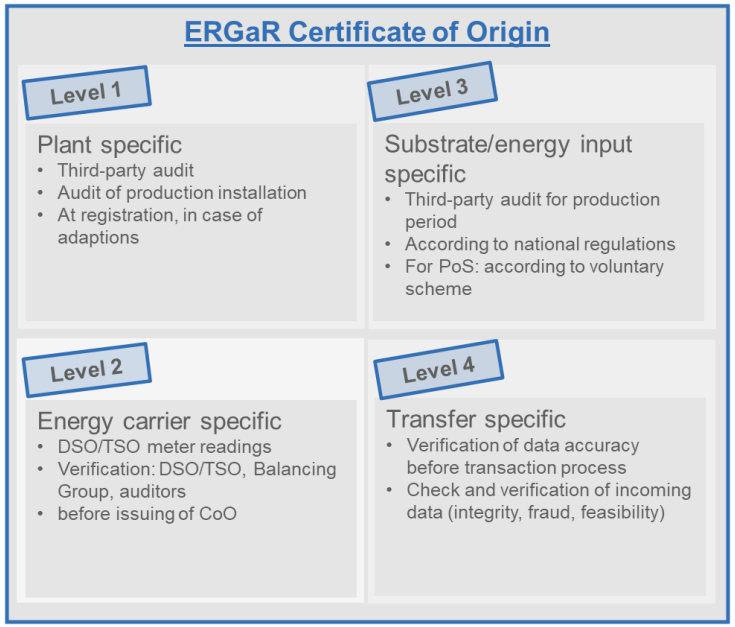

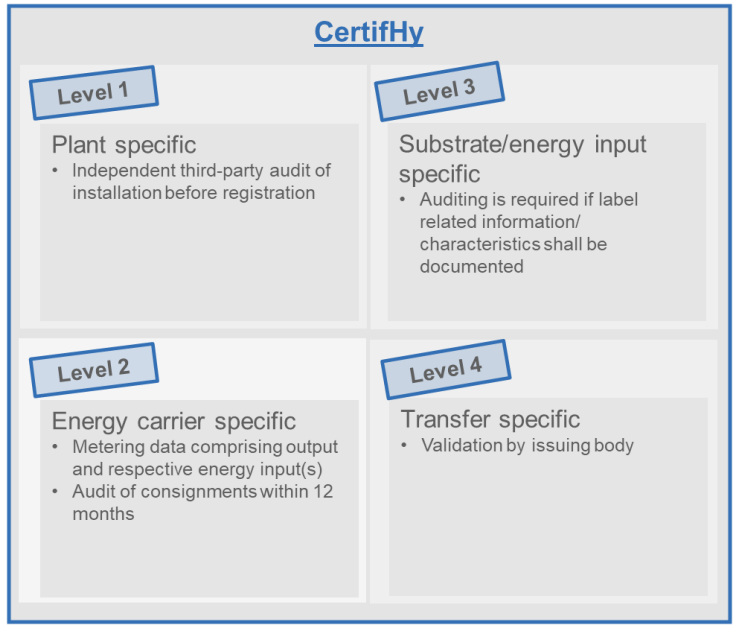

- **Level 1**: Usually a third-party audit is required to verify plant specific data.
- **Level 2**: Meter readings are state of the art to demonstrate the produced volume of gas. Independent verification of meter readings is not always required. Differences can emerge, whether the verification has to take place before GOs are issued or not.
- **Level 3**: Different approaches for the verification of substrate / energy input related information are applied. ERGaR and CertifHy require third-party audit, AIB leaves this to the discretion of the issuing body.
- **Level 4**: Transfer specific data is verified and checked, however, means of verification are different.

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Thank you for your attention!

Matthias Edel
European Renewable Gas Registry (ERGaR)
edel@ergar.org

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Mapping Challenges for certificate handling in relation with energy carrier conversion

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Challenges for implementation of energy carrier conversion in energy tracking certificate management

Katrien Verwimp (Coordinator Sector Integration Program - AIB)

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Scope choices for this study

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- Focus on conversion of Guarantees of Origin
  - Legal framework for proofs of sustainability is still evolving
  - Basic rules for GO conversion may be basis later for PoS conversion
- Conversion between electricity, hydrogen, renewable gases in all directions

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Challenges for conversion in practice – identification

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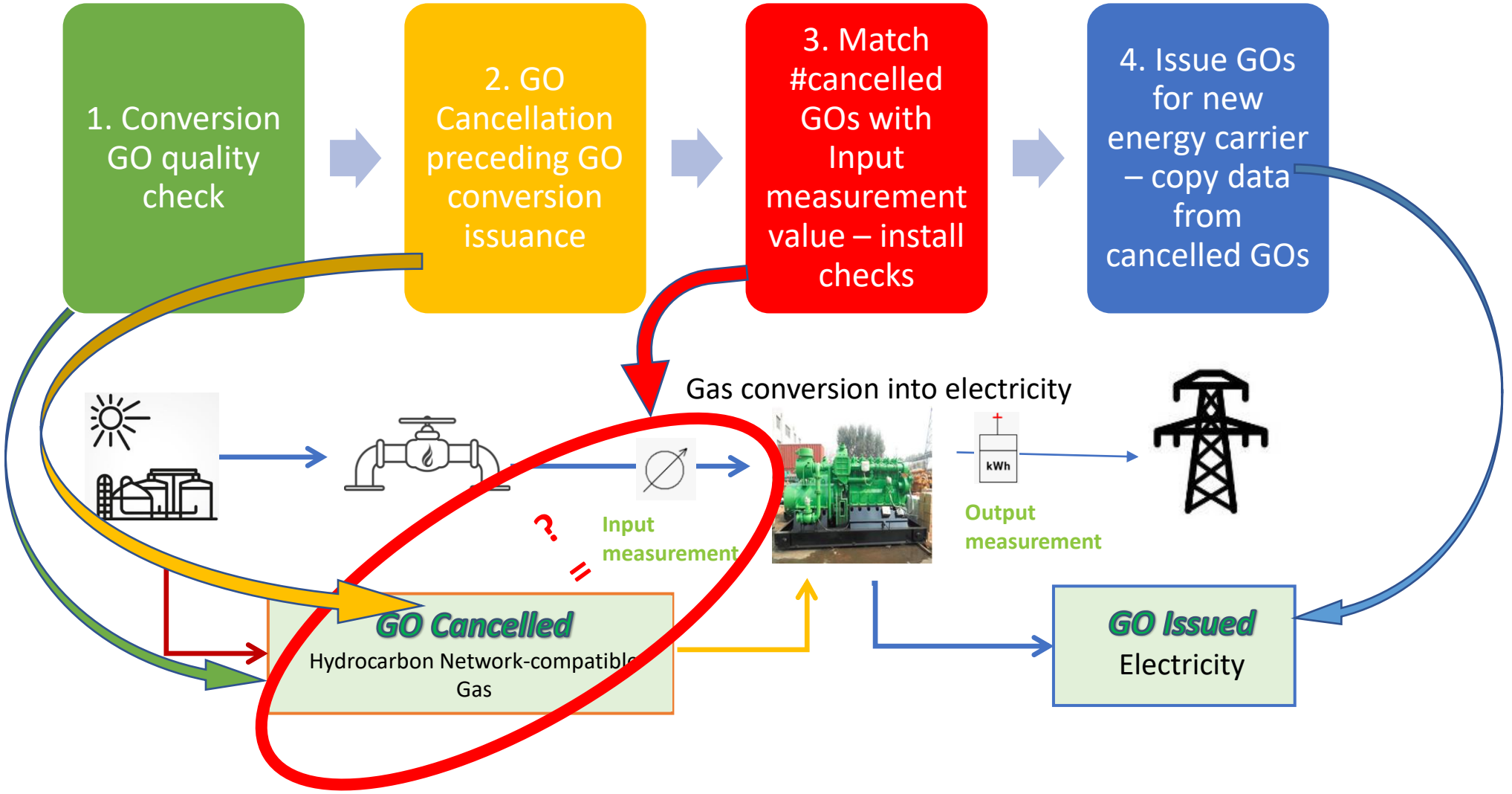
4 Processes to establish for issuing bodies



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Process 1: Conversion GO quality check

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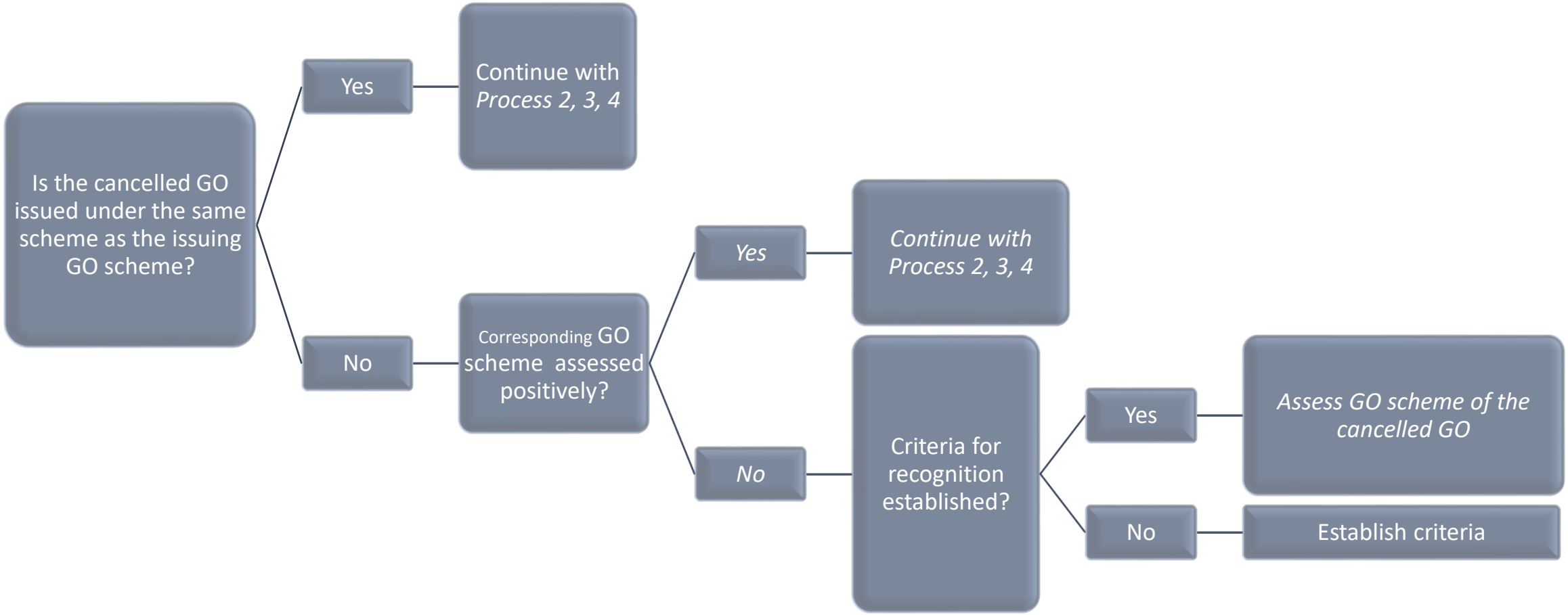
Quality check on the GO which is cancelled for conversion issuance



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Process 2: GO Cancellation preceding conversion issuance

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Implementation options

Ex Domain Cancellation - PDF

- Pro: low cost when low volume
- Con:
  - High manual workload is unsustainable when volume increases
  - Double counting risk ➔ install additional measures

OR

Ex Domain Cancellation statement – electronic transfer protocol between registries

- Pro: more reliable than EDC on PDF
  Flexibility for different registry types
- Con: investment for additional transfer protocol and implementation of protocol for incoming message

OR

Cancellation in issuing registry

- Pro: allow automated processing of conversion
- Con: investment for setting up the automation
  - Facilitate import of the GO of other energy carrier in the issuing registry = Implementing the data fields in issuing registry

OR

Central Cancellation

- Pro: no need to adopt GO data registration structure in electricity-only registries
- Con: investment
  - in central cancellation database
  - in interface with central cancellation database

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Process 3: Match cancelled GOs with Input measurement value

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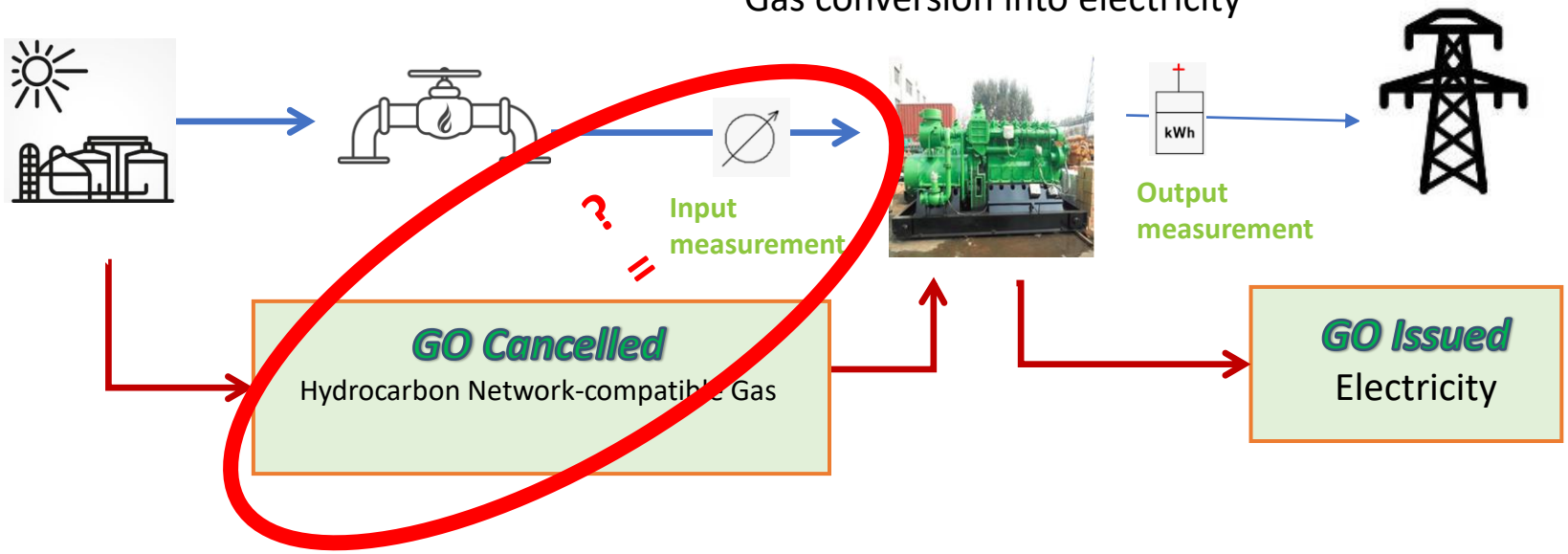
Is correct amount of GOs cancelled compared to the issuance request?

Options for checks:

- Ex ante: issue only after the Input measurement value has been checked against amount of cancelled GOs, OR
  - Less risky if all happens
  - With a single issuing body
- Ex post: audit once per year checks the amount of cancelled GOs against meter reading
  - Tricky where several issuing bodies/(registrars) involved. Develop liability matrix?

Gas conversion into electricity



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Process 4: Issue GOs for new energy carrier

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What?

- Transmit data fields of cancelled GOs to new to be issued GOs
  - Energy source, purpose, ICS, support info

Harmonised by EECS Rules today/ high level rules in draft EN16325

How?

- Integration of data from cancelled GOs in the issuance process
  - Manually, or
  - Automated

Possible with Ex Domain Cancellations

Issuing body to implement either:
a) import from GOs of other energy carriers
b) Import of electronic Ex Domain Cancellation statement

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Set-up for Overcoming the identified challenges

Goal: Reliability for consumers| Efficiency for issuing bodies |Smooth process for traders and producers

1. Conversion GO quality check	2. GO Cancellation preceding GO conversion issuance	3. Match #cancelled GOs with Input measurement value – install checks	4. Issue GOs for new energy carrier – copy data from cancelled GOs
Develop quality criteria and verification process	Describe and evaluate options for communication between registries	Describe and evaluate practical options for verification	Automated data input by connected registry/scheme operator?

Various schemes to assess what they would need as quality criteria

Collect views from issuing bodies/registrars on generic quality check needs for conversion (is 3rd party audit required – which type of data is (not) trusted - How is information combined).

Develop questionnaire with t4.3 team

1) Ex Domain Cancellation statement
   a. PDF
   b. electronic cancellation statement message transfer between registries
2) Cancel in issuing registry of new carrier
3) in central cancellation database

- Define verification process
- Ex ante or ex post: harmonize national practice?
- Plausibility of input compared to output – list of conversion efficiencies

Convey data from cancelled GOs, from either:
1) Ex Domain Cancellation
   a. PDF
   b. electronic cancellation statement message transfer between registries
2) Cancel in issuing registry of new carrier
3) in central cancellation database

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Work areas

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1. Evaluation of existing conversion rules for GOs
2. Reliable and Efficient Practical implementation of conversion of GOs
    1. Conversion GO quality check
    2. GO Cancellation preceding GO conversion issuance
    3. Match #cancelled GOs with Input measurement value – install checks
    4. Issue GOs for new energy carrier
3. Conversion of certificates serving different purposes?
    1. Dealing with Moving legal framework?
    2. Other challenges

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Approach D4.3

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Harmonised rules for conversion of GOs between electricity, renewable gas and hydrogen

1) Overview and assessment of existing conversion rules
   - CEN (draft), EECS, Individual countries
   - Are there reasons for update and complementing of conversion rules?
2) Mapping of challenges related to conversion in practice
3) Recommendation: Harmonised conversion rules
   a. High-level rule
   b. Data on a GO look after conversion
      i. Information relevant to end consumer
      ii. Information of initial energy carrier to be retained after energy carrier conversion
   c. Quality criteria for GOs used for conversion issuance (challenge 1)
   d. Match #cancelled GOs with Input measurement value – what/how to check (challenge 3)
   e. Illustration of these rules in specific conversion routes

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Approach D4.4

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Design Study of technical requirements of a coordinated conversion process

1) Further mapping of the practical challenges related to energy carrier conversion
2) Application of the rules in D4.3
    1) Under the same certification system
    2) On conversion between the schemes monitored under D4.2
3) Elaboration of criteria, processes and options to overcome each of the challenges, including at least:
    1) Process for GO Cancellation preceding GO conversion issuance
    2) Process for retrieving data on the GO issuing following conversion
4) Evaluation of each option

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Next steps

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- Indicative polls today
- Questionnaire in the weeks to come
- D4.3 Harmonised conversion rules - October 2021
- D4.4 Design study for integrated conversion process – April 2022

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Renewable Gas Trade Centre in Europe

Case study: Challenges for implementation of energy carrier conversion in Austria

E-Control

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E-CONTROL
Unsere Energie gehört der Zukunft.

Practical Challenges for conversion – Case Study Austria

Online workshop REGATRACE

Thursday, 11 March 2021

Harald Proidl – Director for Renewables and Energy Efficiency

E-Control, Austria

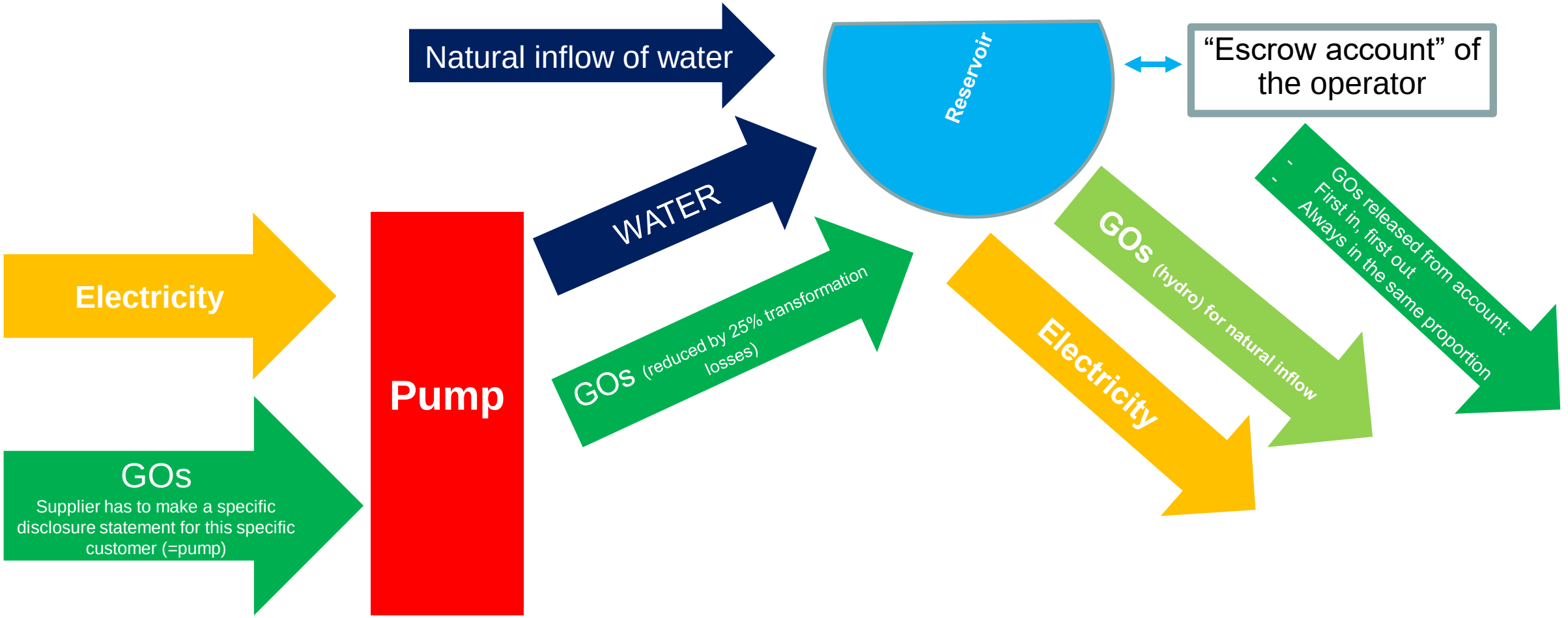
Introducing E-Control and the GO/disclosure-role

- Austrian NRA for Electricity and Gas
- Issuing Body for GOs → Electricity and Gas (possibly Heat and Cooling in future as well)
- Competent Body for Disclosure → Electricity and Gas
- 15+ years experience in GOs and disclosure
- In case of Electricity:
  - 150.000+ Power Plants in our registry (small PV up to large Hydro)
  - Since 2014/2015: 100% disclosure of all electricity suppliers active on the Austrian market
  - Upcoming adaptions: simplification of the disclosure statement for the consumers, obligation to indicate the share of combined trading of electricity and GOs
- In case of Gas:
  - Activities launched in 2017/2018
  - Implementing the legal, technical and organisational set-up for generation of GOs and disclosure
  - Issuing GOs and disclosure still on a voluntary base
  - Waiting for a new RES-act in order to switch to an obligatory system
- In case of Heating and Cooling:
  - Based on the draft of the RES-act operators of heating-systems have to register in our registry and to report production quantities and primary energy sources
  - But so far no GOs (like for Electricity and Gas) and no disclosure

The first approach of energy conversion in the Austrian GO-System

- The first approach for energy conversion was not a “real” conversion from one energy source to another
- The first conversion (or transformation) of GOs in our system was designed for pump-storage-power-plants
- The background/motivation:
  - Austria has a high installed capacity of pump-storage (~ 4 TW)
  - Criticism: pump-storage is used to transform “dirty” electricity from coal and nuclear into “clean” hydro-power
  - As a result: implementation of a system in our registry that pump-storage can not be used as a “green-washing-machine”

GO-System for pump-storage



GO-System for transformation

Legal Base:
- Gas act
- Secondary legislation
- Future: Green Energy Act

Problems to solve

- Industrial sites: input/transformation/use of electricity and/or gas only/partly with off-grid processes (e.g. off-grid PV powers a off-grid-P2G-site but the gas is at least partly fed into the public grid)
- Gas in storage – potentially the storage-cycle exceeds the validity of GOs
- Calculation of the transformation losses
- Transformation of the environmental impact from the electricity-GOs to the Gas-GOs

Unsere Energie *gehört der Zukunft.*

Dr. Harald Proidl, Leiter Ökoenergie und Energieeffizienz
E-Control
Rudolfsplatz 13a, 1010 Wien
Tel.: +43 1 24 7 24-0
Fax: +43 1 247 24-900
E-Mail: office@e-control.at
www.e-control.at
Twitter: www.twitter.com/energiecontrol
Facebook: www.facebook.com/energie.control

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Renewable Gas Trade Centre in Europe

Case study: Challenges for implementation of energy carrier conversion in Germany

dena

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Jakob Jegal, 11 March 2021

REGATRACE ONLINE WORKSHOP
MAPPING CHALLENGES FOR CERTIFICATE HANDLING
IN RELATION WITH ENERGY CARRIER CONVERSION

PRACTICAL CHALLENGES FOR CONVERSION
DENA BIOGASREGISTER, GERMANY

OVERVIEW DENA BIOGASREGISTER

- **Platform for standardized and simple documentation** of proof of biomethane and renewable gas quantities and qualities in the natural gas network
- Auxiliary **instrument for legal documentation requirements** in the electricity, heat and emissions trading sectors
- more than **200 plants** have booked quantities in 2020

- **3 PtG plants** with an annual production of 3 GWh are registered
- Test and pilot plants only

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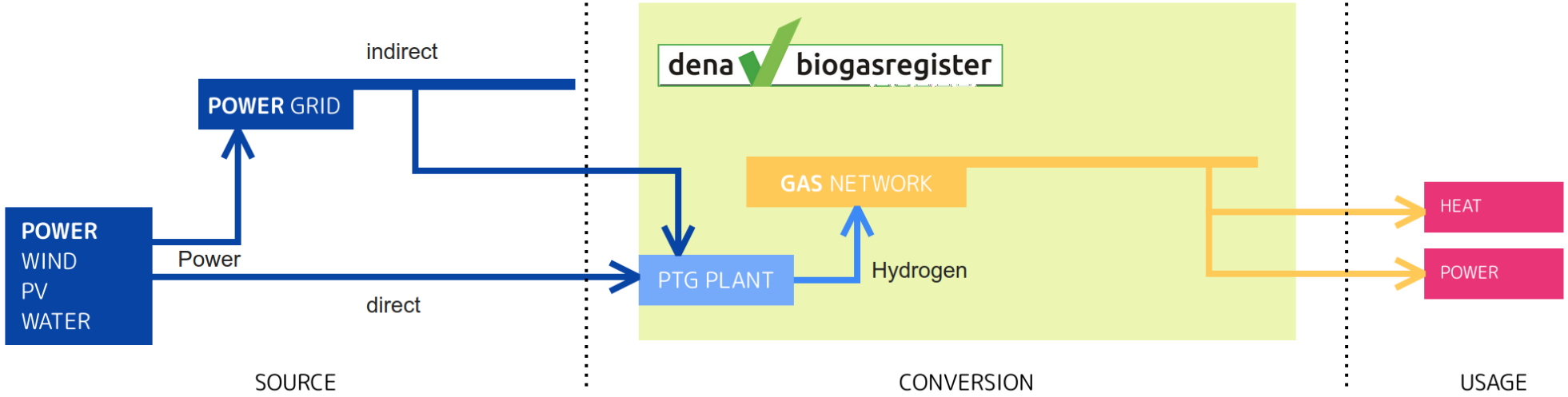
MASS BALANCING OF PTG



PRODUCTION OF RENEWABLE ELECTRICITY → FEEDING INTO THE POWER GRID OR DIRECT TRANSFER TO THE PTG PLANT → CONVERSION TO HYDROGEN → INJECTION INTO THE GAS NETWORK → APPLICATION, STATE AID IF SUITABLE

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LEGAL FRAMEWORK OF PTG

- **German Renewable Energy Sources Act (EEG)**
  - Compensation for reconverted **storage gas** in CHP according to original electricity source
- **Energy Industry Act (EnWG)**
  - If PtG is mainly produced from renewable energy sources (at least 80%), it is classified as biogas in the sense of **GasNZV** and **GasNEV**
    - Among other things, plant receives payment of avoided grid costs
    - Possibility of extended balance compensation
- **37. Federal Immission Control Ordinance (37. BImSchV)**
  - Crediting of renewable hydrogen and synthetic methane towards the GHG quota (BImSchG) in certain cases

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CRITERIA FOR PTG ACCORDING TO DENA CRITERIA CATALOG

- Evidence that the electricity used to produce the storage gas from exclusively renewable sources was sufficient for the amount of storage gas produced (**criterion 4**).
- Proof of actual injection into the natural gas grid (**criterion 6**)
- Mass balancing until injection into the natural gas grid (**criterion 27**)
- The gas was produced exclusively from RE electricity (**criterion 44**)
- The RE electricity was temporarily stored **before** being fed into the electricity grid (**criterion 45**)
- The carbon dioxide/monoxide used was not deliberately produced for methanation (**criterion 46**)
- Standard for gas quality from RES Directive 2009/28/EC: H2/CH4 gas largely (>80%) from RES (**criterion 47**)
- Facility for the production of the RES gas is consistently operated exclusively with renewable energies (**criterion 48**)

The criteria used so far are primarily based on the legal requirements of the Renewable Energy Sources Act (EEG)

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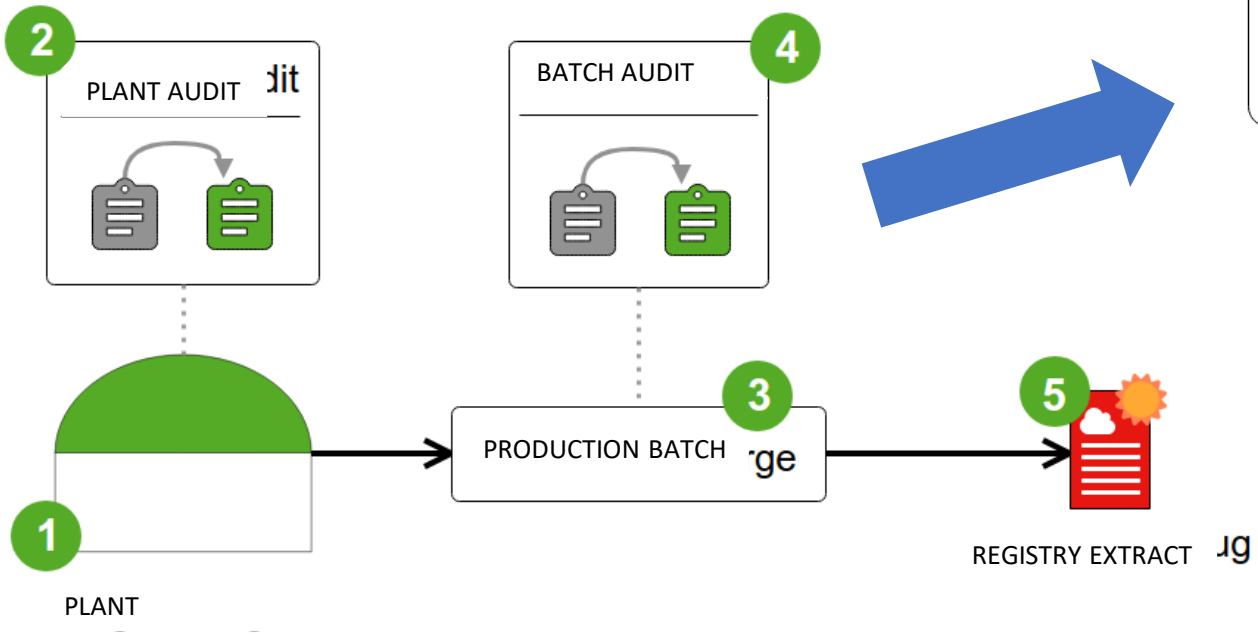
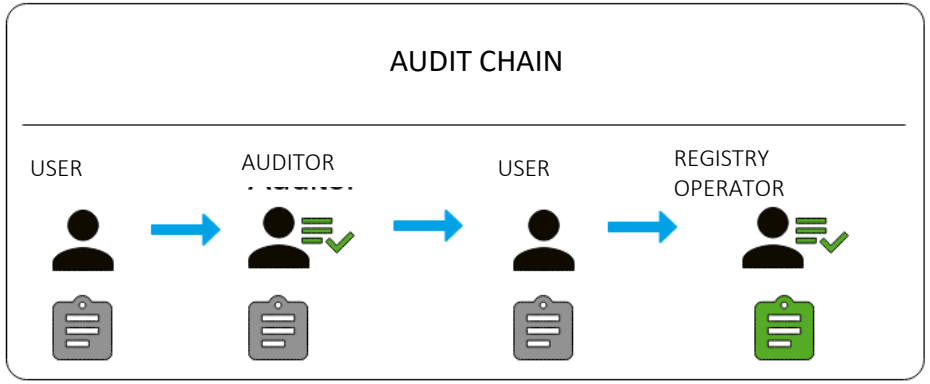
STEPS OF VERIFICATION





An independent auditor is always required for the entire verification process.

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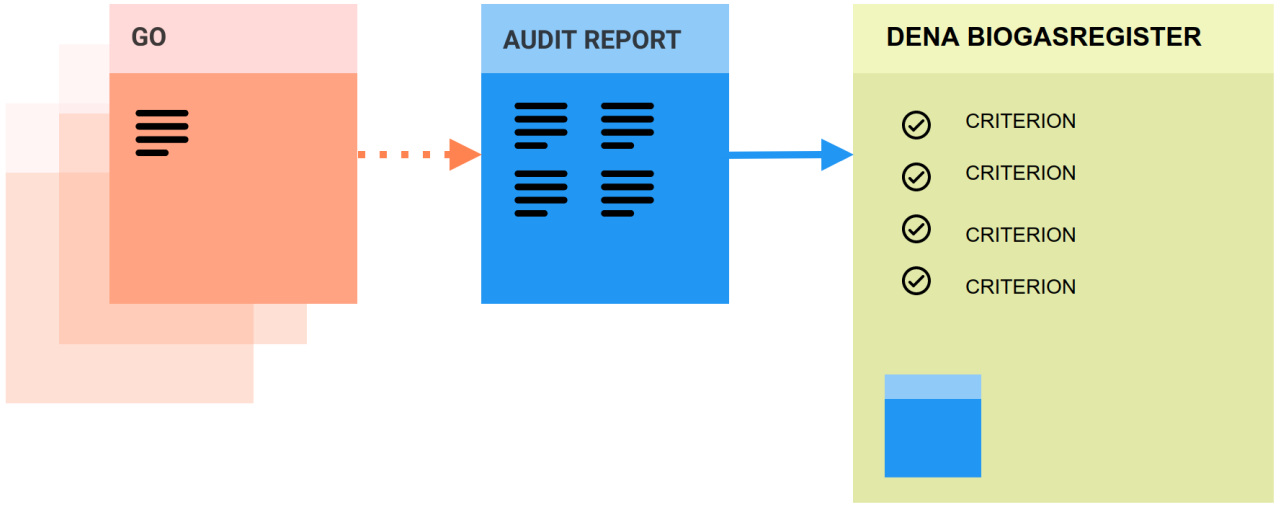
ENERGY CARRIER CONVERSION

- GO, along with other documents, is the basis for an auditor to verify the criteria to be met. The corresponding attributes themselves do not have to be included in the audit report
- The audit report in turn is the basis for the verification of the criteria in the Biogasregister and can be accessed there



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CHALLENGES OF GO ISSUANCE FOR PTG PLANTS

- **No information** from the original GO is transferred to the Biogasregister on conversion
  - At least upload of the original GO
  - Database extension
- Double counting risk
- The cancelled GO should still be able to be provided to the interposed auditor

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THANK YOU FOR YOUR ATTENTION

Jakob Jegal

Expert, Renewable Gases and Verification

jegal@dena.de

www.dena.de

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Renewable Gas Trade Centre in Europe

Case study: Challenges for implementation of energy carrier conversion in the Netherlands

CertiQ

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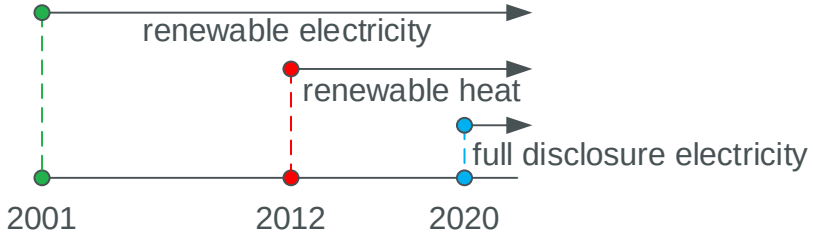
GOs for energy conversion

February 24 2021

certiQ

Introduction

- 100% subsidiary of TenneT
- Dutch issuing body

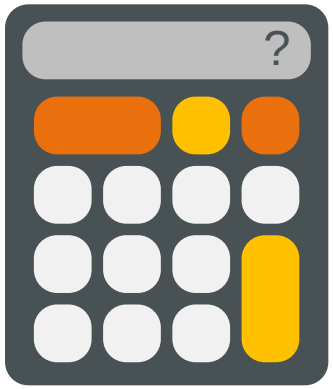


GOs issued in 2020 (TWh)	
Renewable electricity	28
Renewable heat	8
Fossil/nuclear	73

- Founder member of Association of Issuing Bodies
- Contributing to EN16325

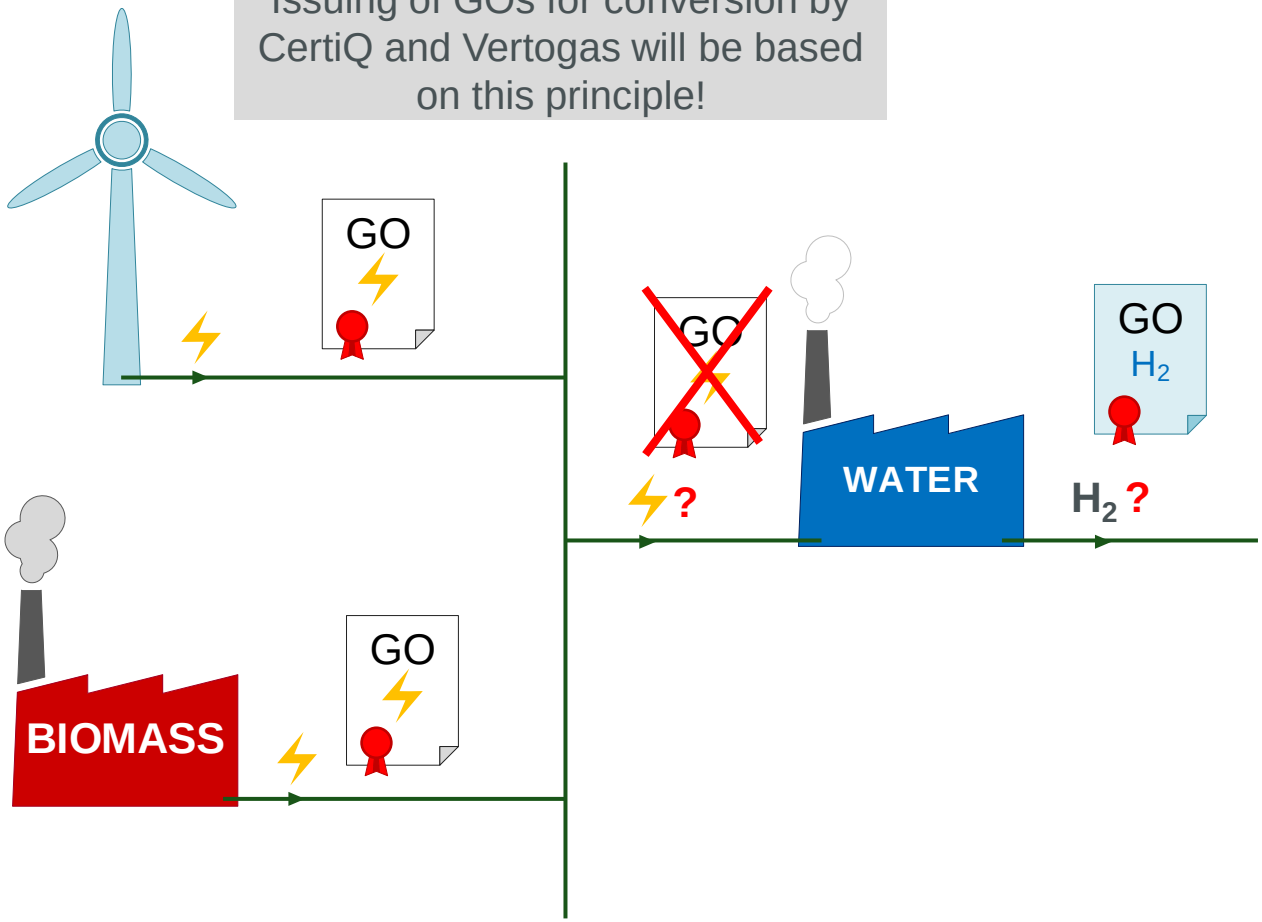
Background

- Introduction in RED II of GOs for gas and heat
- Introduces need for GO conversion → EN16325 draft contains provisions
- CertiQ developed calculation model for conversion
- Issues identified during development
- Understandable: abstraction level of EN16325

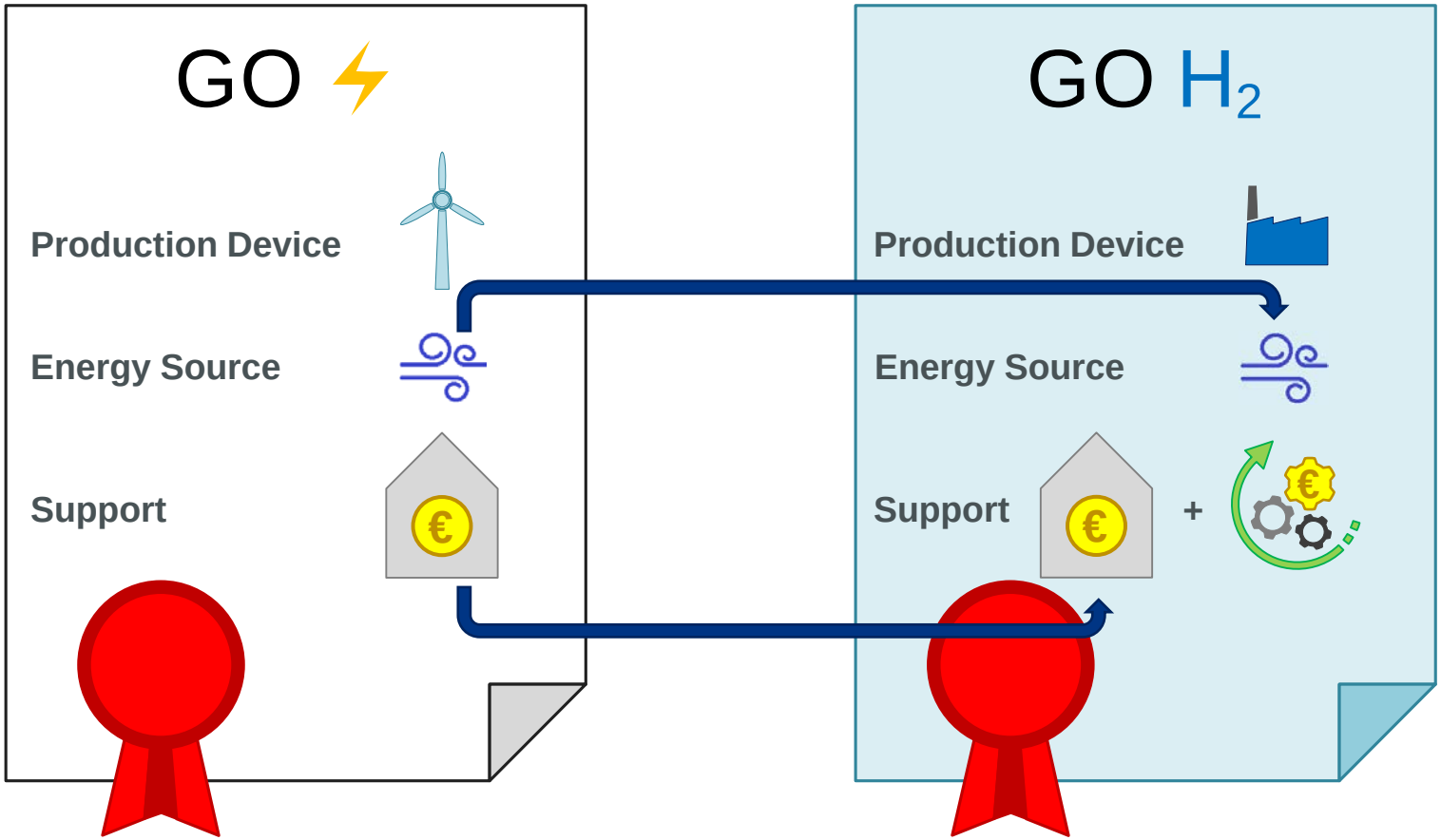


EN16325 principles for conversion

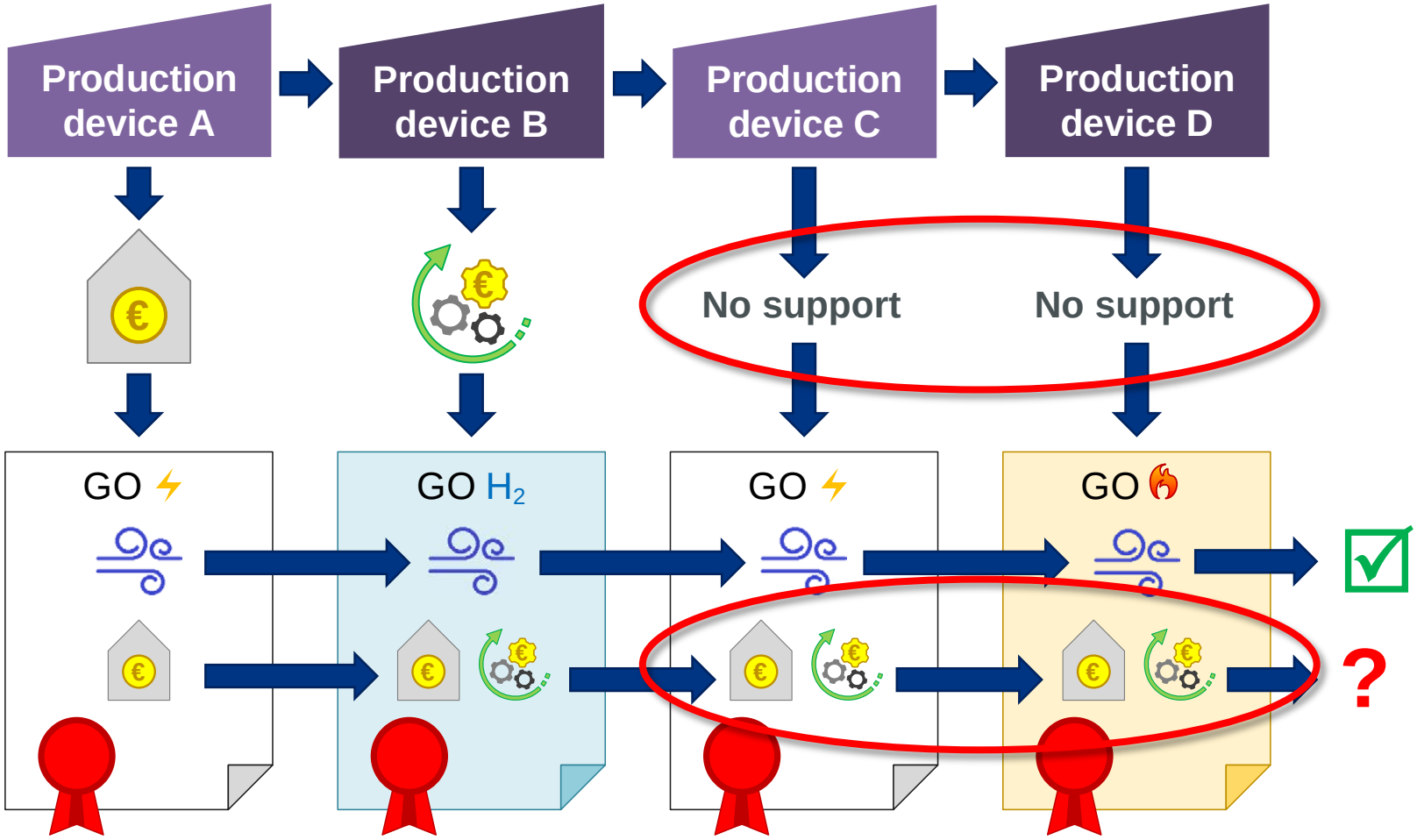
Issuing of GOs for conversion by CertiQ and Vertogas will be based on this principle!



Carrying forward support information



Chain of conversion – legacy of data



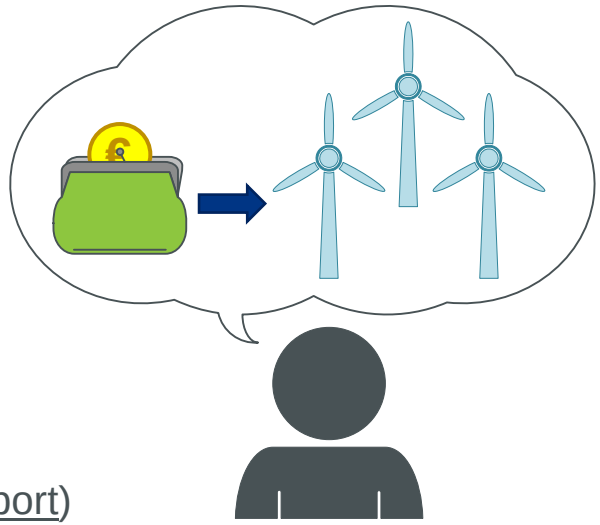
certiQ

Support – rules and sensibility

RED II Art. 19.7 *A GO shall specify:*

- *whether the installation has benefited from investment support;*
- *whether the unit of energy has benefited from a national support scheme;*
- *and the type of support scheme (…)*

Carrying forward information on support is contradictory to the Directive.



Consumer interest

Choice to purchase renewable energy leads to additionality (without any support)

Impracticalities – coding and residual kWh

- Coding leads to a lot of different combinations

Support received	Code
No support	0
Investment support (as listed in 1 below)	1
Production support being received now (as listed in 2 below)	2
Combination of Investment and Production support	3
Unknown whether support is received	4

Cancelled GO		PD receives		Resulting GO includes
Investment support	+	No support	=	Investment support
Unknown		Production support		Production support
Production support		Investment support		Both

Impracticalities – coding and residual kWh

- Coding leads to a lot of different combinations

Cancelled GO	PD receives	Resulting GO includes
No support	No support	No support
	Investment support	Investment support
	Production support	Production support
	Both	Both
	Unknown	Unknown
Investment support	No support	Investment support
	Investment support	Investment support
	Production support	Both
	Both	Both
	Unknown	Investment support
Production support	No support	Production support
	Investment support	Both
	Production support	Production support
	Both	Both
	Unknown	Production support
Both	No support	Both
	Investment support	Both
	Production support	Both
	Both	Both
	Unknown	Both
Unknown	No support	Unknown
	Investment support	Investment support
	Production support	Production support
	Both	Both
	Unknown	Unknown

The same outcome can mean different things!

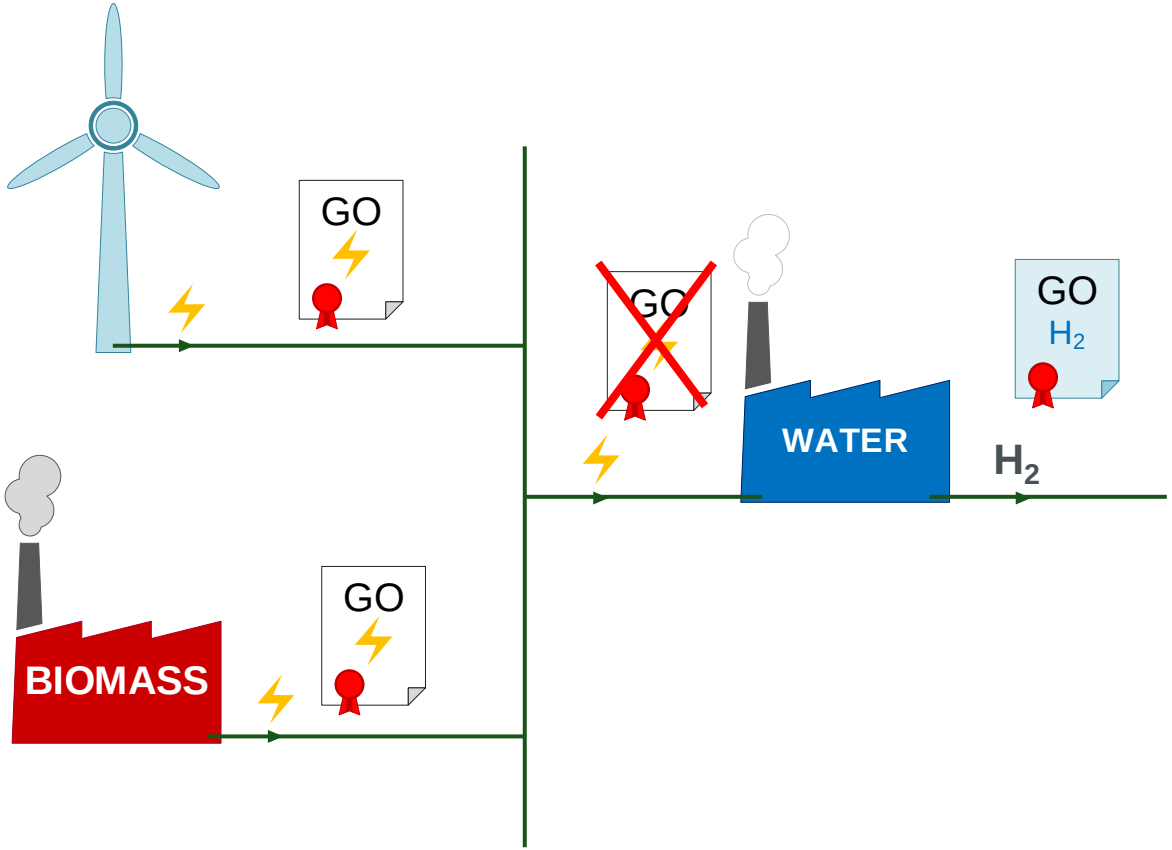
certiQ

Impracticalities – coding and residual kWh

- Coding leads to a lot of different combinations

The same outcome can mean different things!

- Carrying forward residual kWh becomes complex

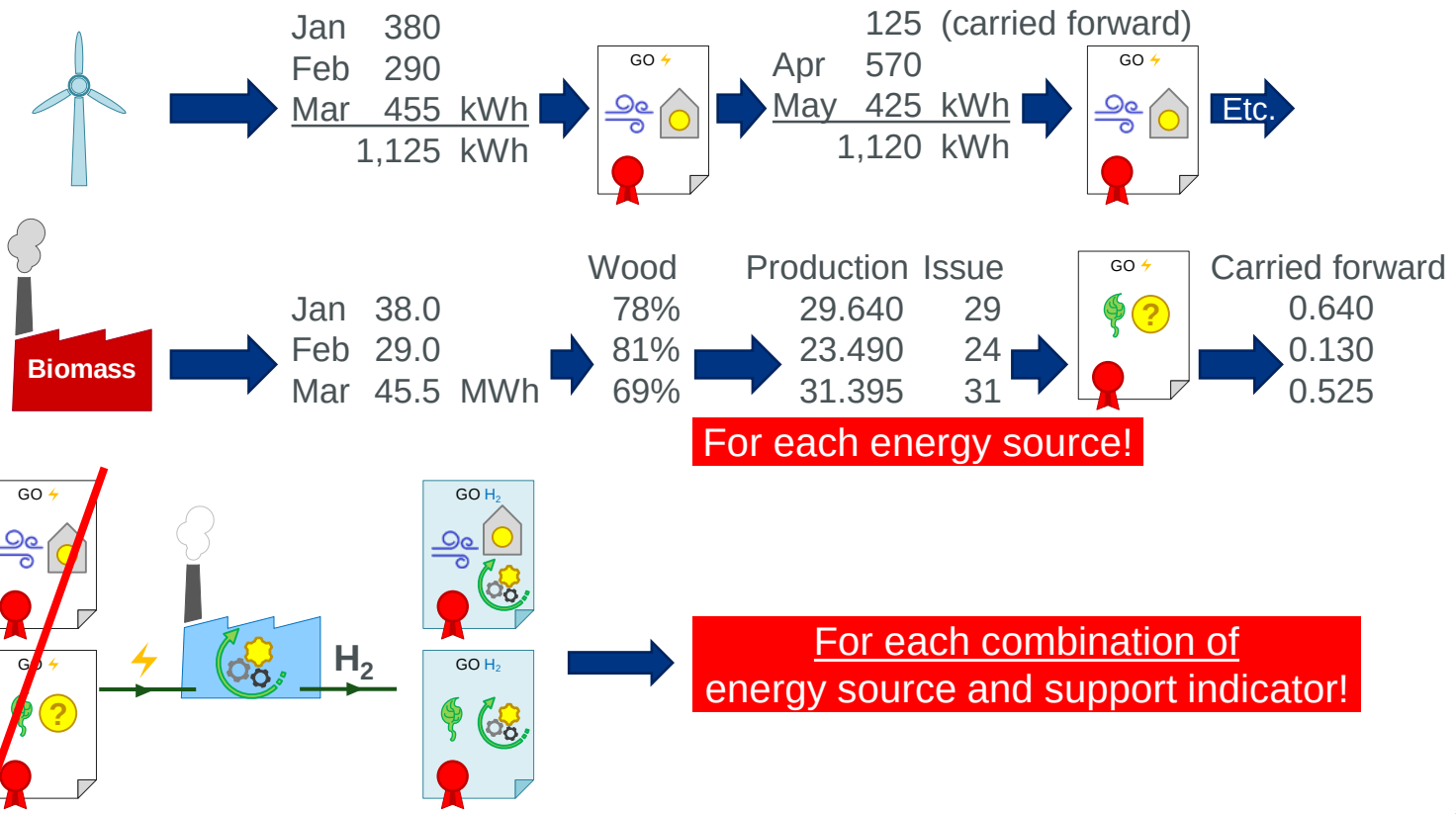


Impracticalities – coding and residual kWh

- Coding leads to a lot of different combinations

The same outcome can mean different things!

- Carrying forward residual kWh becomes complex



certiQ

Impracticalities – coding and residual kWh

- Coding leads to a lot of different combinations

The same outcome can mean different things!

- Carrying forward residual kWh becomes complex
  - The more combinations, the more energy is waiting to be issued GOs
  - Causes a bigger difference between production and actual GOs issued
  - Difficult to explain to producers

Proposal for solving the problem:

1. Include on each GO only investment support / production support granted to that production device and the energy it produces.
2. Disregard support information on a GO cancelled for conversion.

Reasoning:

- When a GO is cancelled to determine the source of an energy flow fed into a converting production device, the attributes of that GO are consumed.
- Carrying forward support information misrepresents the amount of support that was granted.

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Agenda

REGATRACE
Renewable Gas Trade Centre in Europe

Mapping Challenges for certificate handling in relation with energy carrier conversion

Time	Topic	Speaker
13:00	Welcome & Introduction to Workshop	Liesbeth Switten, AIB
13:10	Energy carrier conversion – existing framework	Katrien Verwimp, AIB
13:25	Comparison between AIB & ERGaR & CertifHy schemes.	Matthias Edel, ERGaR
13:40	Challenges for implementation of energy carrier conversion in energy tracking certificate management	Katrien Verwimp, AIB
14:10	Practical challenges for conversion - Case study 1 - Austria	Harald Proidl, E-Control
14:25	**Break**	
14:40	Practical challenges for conversion - Case study 2 – Germany	Jakob Jegal, dena
14:55	Practical challenges for conversion - Case study 3 - the Netherlands	Remco van Stein Callenfels, CertiQ
15:10	Poll and Q&A	
15:35	Brainstorm – status in various countries, views on challenges and solutions	
15:55	Wrap up and way forward in REGATRACE task 4.3	Katrien Verwimp
16:00	Close	

REGATRACE

Renewable Gas Trade Centre in Europe

Your views: Challenges for implementation of energy carrier conversion

Poll questions

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Discussion forum - Brainstorm

REGATRACE
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- Where is your country today, with regards to conversion process for GOs?
- What are the main challenges for conversion for your organisation ?
- What solutions do you see ?

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Join: **vevox.app** ID: **126-059-238**

Enter Text and Press Send

What do you hope this project helps you with, in the field of conversion? Or what did we miss today?

(free text, max 5 words)

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Join: **vevox.app** ID: **126-059-238**

Enter Text and Press Send

What did you learn most about today?

(free text, max 5 words)

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Next steps

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- Indicative polls today
- Questionnaire in the weeks to come
- D4.3 Harmonised conversion rules - October 2021
- D4.4 Design study for integrated conversion process – April 2022

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Renewable Gas Trade Centre in Europe

Let's together
lay solid foundations for the future of energy certification

Thank you for your attendance!

Katrien Verwimp
Association of Issuing Bodies
Katrien@aib-net.org
Mobile: +32 468 566944

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