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Categorisation of gases

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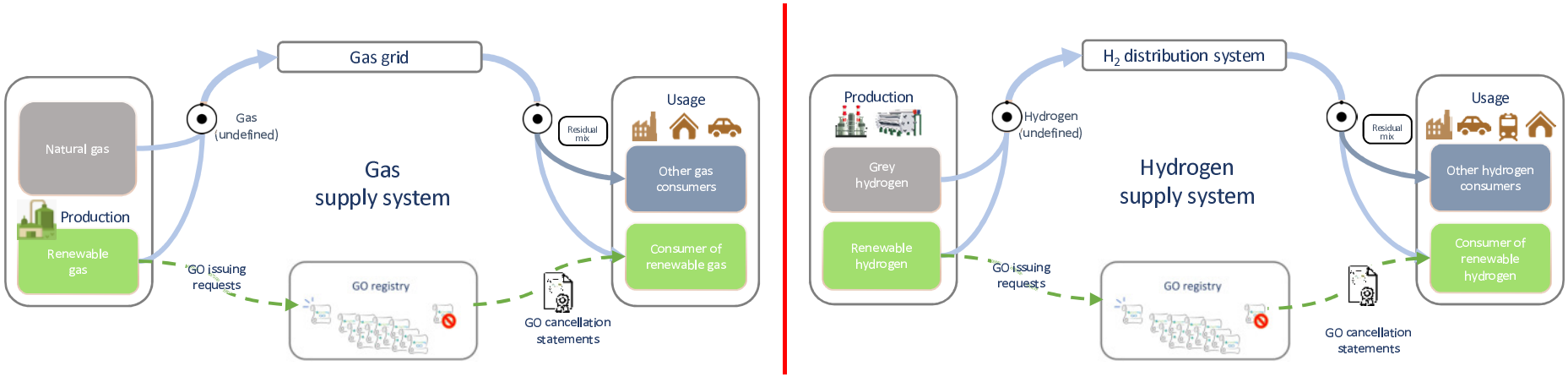
Gas and Hydrogen are distinct energy carriers - they are not interchangeable



For the consumer, what mainly distinguishes one type of GO from another is the *Energy Carrier*

- **Only *Gas GOs* prove production and consumption of *Gas* from a specified origin**
  e.g. gas produced from biomass (biomethane), gas produced from wind (wind-gas)…
- **Only *Hydrogen GOs* prove production and consumption of *Hydrogen* from a specified origin**,
  e.g. hydrogen produced from wind, hydrogen produced from biomass…

The Gas GO scheme and the Hydrogen GO scheme are distinct, with potentially different Domains and Competent bodies

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Definitions

Hydrocarbon Gas
An *Energy Carrier* consisting of chemical compounds composed mainly of the elements of carbon and hydrogen, which are in gaseous state when they are at 20°C and atmospheric pressure

Hydrogen
An *Energy Carrier* with a composition of at least 99.9% vol. hydrogen

Network-compatible gas
A gas which fulfils the technical criteria for injection in the natural gas Distribution or Transmission System of the respective Domain

Note:
Hydrocarbon Gas GOs may be issued upon injection into the natural gas grid of *Network-compatible gas* of renewable origin (such as hydrogen)

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Hydrocarbon gas specific requirements
In the FaStGO proposal for a revised EN16325

Katrien Verwimp, FaStGO Project Leader

June 11th, 2020

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Hydrocarbon gas GOs

Definition: Hydrocarbon gas =

- An Energy Carrier consisting of chemical compounds composed mainly of the elements of carbon and hydrogen, which are in gaseous state when they are at 20°C and atmospheric pressure.

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Data on Hydrocarbon gas GO – FaStGO proposal for EN16325

Generic GO – attributes

- Energy Carrier
  - Hydrocarbon Gas
- Unique certificate number
- Production period (start and end dates)
- Energy source type
  - Fxxxxxxxx code: Annex A
- Technology Type
  - Mxxxxxx or Gxxxxxx code: Annex B
- Production device info
- Identity and country of originating member
- Issue date
- Identity and country of relevant competent body
- Purpose
- Support received by type
- Labels *
- Carbon Footprint *

Hydrocarbon Gas GO additional attributes

- Type of Gas
  - Network-compatible gas **
  - Other gas
- Means of Supply - category
  - Injected in pipeline
  - Transported by vehicle
- Mixture of inputs *

*Yellow text: optional data field

** Network-compatible gas = A gas which fulfils the technical criteria for injection in the natural gas Distribution or Transmission System of the respective Domain.

Any gas that is injected into the Distribution or Transmission System for natural gas = Network Compatible Gas.

Conversion issuance – specific rules for hydrocarbon gas

- Cancel GOs of the same Type of Gas as actual gas type consumed

- Conversion issuance for Hydrogen in natural gas grid: Exception!

  ⇒ maintain all GO characteristics of production device of cancelled Hydrogen GOs,

  ⇒ change energy carrier to Hydrocarbon gas / type: network compatible gas

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Inspections

Inspection of production device

- Mandatory before first issuance of GOs

Inspection of production and consumption declaration:

- On annual basis
- Aiming to confirm the energy source (type of substrates) & quantities of inputs vs outputs

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Which gas production receives a GO?

Gas eligible for GO issuing:

- 1 GO /MWh
- GOs = I * Output – auxiliary consumption
  - Output = Upper calorific value x flow measurement
  - I = energy input factor= energy content proportion of energy source in total input

Tradeable GOs for gas that is injected into:

- a Distribution or Transmission system for gas (cfr (EU) 2009/73) or
- another type of transportation system for the case of liquefied and compressed gases.

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Thank you for your attention

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Energy source requirements: renewable hydrocarbon gases of biological origin

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Unit of energy

~~MJ~~ Btu - ~~Gcal~~ ~~Nm³~~ **MWh** ~~Cubic feet~~ toe ~~Kcal~~

„5.2.9. Calculation of Nett Energy Production eligible for GO

In addition to the requirements in 4.5.4.2, the Output of a Hydrocarbon Gas Production Device is determined based on a flow measurement that is multiplied with the calorific value of the produced gas.

For the purpose of calculation of Output as in 4.5.5, for determining the energy content of Hydrocarbon Gas, ***the upper calorific value shall be used****."*

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5.2.8.3. Renewable Hydrocarbon Gas of Biological Origin: Inspection of substrate specific data”

„In addition to 4.11.4, where the Output of a Production Device is Renewable Hydrocarbon Gas of Biological Origin, the Issuing Body (or Production Registrar) shall request ***an inspection of the substrate specific data of the Inputs*** *used by the Production Device to obtain the reported Output.*

The raw materials used for the production of Renewable Hydrocarbon Gas of Biological Origin shall be documented *in the record of substances used in a comprehensible and complete manner to enable the inspection that* ***the quantity of Biomass used for the generation was sufficient for the produced quantity*** *of Renewable Hydrocarbon Gas of Biological Origin.”*

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Biomass related definitions

- ✓ Biomass
- ✓ Agricultural biomass
- ✓ Food and feed crops
- ✓ Agricultural, aquaculture, fisheries and forestry residues
- ✓ Forest biomass
- ✓ Ligno-cellulosic material
- ✓ Waste
- ✓ Bio-waste
- ✓ By-product

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Conventions

’**Liquid sewage sludge**’ means sewage sludge with dry matter content below 10% (%weight).

‘**Solid sewage sludge**’ means sewage sludge with dry matter content 10% or higher (%weight);

‘**Manure**’ (also called dung) means any excrement and/or urine of farmed animals other than farmed fish, with or without litter (EC Regulation 1069/2009);

‘Slurry (or liquid manure)’ means manure with dry matter content below 10% (%weight);

‘**Solid manure**’ means manure with dry matter content 10% or higher (%weight);

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About methane emissions

„Note: The National GO Scheme may provide for conditions for issuing GOs to be related to maximum methane emissions, defined in the national legislation, from the:

a. biogas upgrading plant; or

b. gasification plant; or

c. liquefaction plant.”

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Please provide comments and suggestions in the public consultation to assist completing the work.

Thanks for your attention!

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Hydrogen specific requirements

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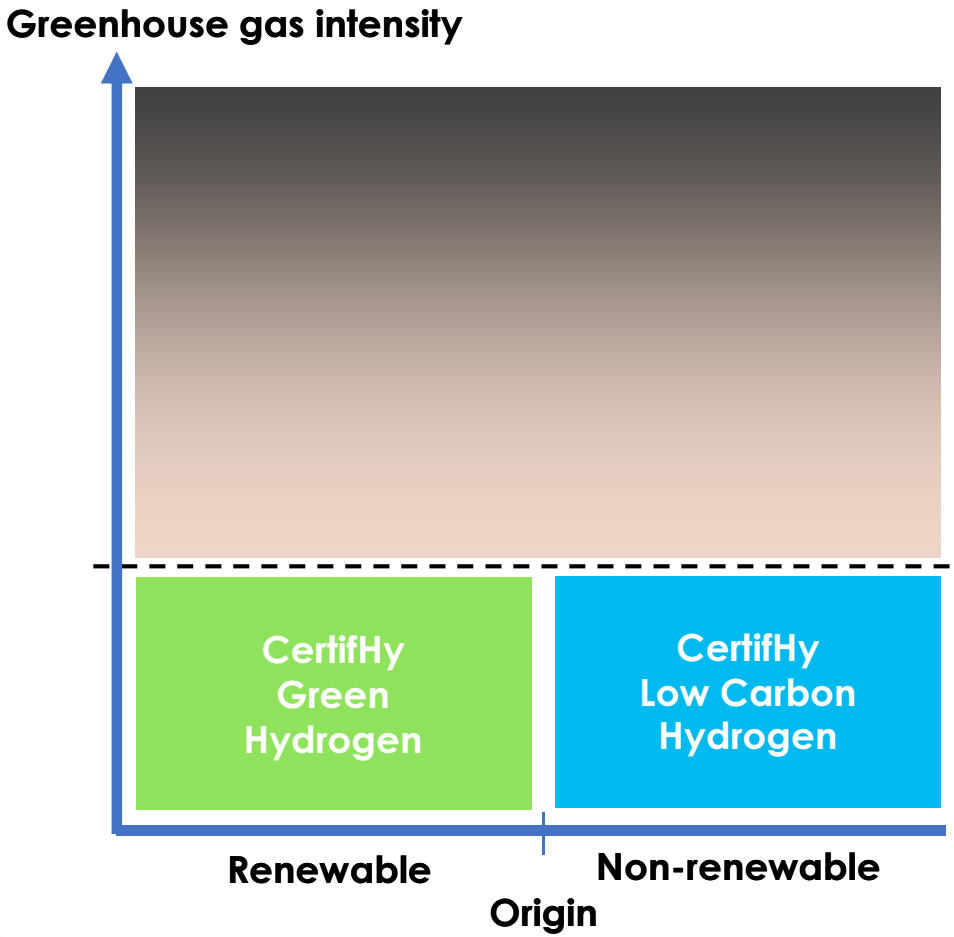
Hydrogen specific requirements
Background: CertifHy scheme labels and criteria



Greenhouse gas intensity threshold

Set at 60% below intensity of hydrogen produced from natural gas (benchmark)*

** evolutive, as for biofuels in RED*

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Hydrogen specific requirements
(Potential) additional information and criteria (1/4)

5.3.2 **Additional application information for the registration of a Production Device** ***[Boundary limits with distribution system]***

…

a) on a simplified energy flow diagram, the location of any compression system, purification system, liquefaction system, Auxiliaries, Import and Export Meters, Storage facility, consumption at the site of the Production Device, and indication of the points where the Energy Carrier becomes available for trade: gas packaging system, injection point into a Hydrogen distribution grid, injection point into a Hydrocarbon gas distribution grid.

Note: the GO Scheme may require additional information to be provided concerning the Production Device or other Production Devices operated by the registrant (for example: identification of the Production Devices producing hydrogen with a carbon footprint exceeding a specified benchmark value).

…

5.3.3 **Qualification criteria for Production Devices** ***[Product pressure at boundary limit]***

Note: the GO Scheme may specify criteria for registration of the Production Device

Note: In addition to the purity requirement for Hydrogen, the GO Scheme may specify the minimum pressure at which the Hydrogen must be brought at the Production Device boundary (e.g. 30 bar) for being treated as a Hydrogen Energy Carrier for which GOs may be issued.

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Hydrogen specific requirements
(Potential) additional information and criteria (2/4)

5.3.4 **Additional criteria for issuing GOs** ***[GHG intensity]***

Note: for issuing GOs, the GO Scheme may specify criteria on the GHG intensity of the Output for which issuing of GOs is requested, as well as on the GHG intensity of Output for which no GOs were issued (for example: requirement that the average emissions of all non certified Output in the preceding 12 months be below a benchmark).

5.3.5 **Data to be recorded on the GO** ***[Multiple energy sources]***

In addition to the information in 4.5.1.1, a GO for Hydrogen may contain the following:

If Output is produced from a mixture of Inputs, consisting of other than only the Input from the Source Type indicated in 4.5.1.1 g) : in addition to the Attribute recorded as the Source Type for which the corresponding GO was Issued, information on those Inputs, Source Type, and their share in total energy Input. This share shall be determined in accordance with the Energy Input Factor.

Note: the GO Scheme may require additional information to be recorded (for example: the average emissions of all non certified Output in the preceding 12 months).

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Hydrogen specific requirements
(Potential) additional information and criteria (3/4)

5.3.6 Inspections ***[Inspection prior to initial issuance + Reliable monitoring of purity]***

5.3.6.1 Verification of an application for registration of a Production Device

For the purposes of 4.3.5.2, an inspection of a Production Device of Hydrogen is mandatory before the first issuance of GOs for the Output produced by it.

In addition to meeting the requirements in section 4.11.3.2, the audit shall verify that there is continuous and reliable monitoring and recording that the Output has the purity required for being indentified as Hydrogen.

5.3.6.2 Verification of Consumption and Production Declarations ***[Inspection frequency]***

An inspection of the Consumption and Production Declarations as in 4.11.4 in relation to any issuing request for GOs for Hydrogen, shall take place at least on an annual basis. The results from the inspection are to be disposed to the Issuing Body.

[Verification of product purity]

In addition to meeting the requirements in section 4.11.4, the audit shall verify that the Output for which the Issuing of GOs is requested has the purity required for being identified as Hydrogen, as well as any other characteristic specified by the GO scheme.

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Hydrogen specific requirements
(Potential) additional information and criteria (4/4)

5.3.7 Calculation of Net Energy Production eligible for GO issuing ***[Use of lower calorific value]***

In addition to the requirements in 4.5.4.2, for the purpose of calculation of Output as in 4.5.5, for determining the energy content of Hydrogen, the lower calorific value shall be used.

5.3.8 GO Scheme perimeter ***[Potential additional definition criteria]***

Unless the GO scheme restricts its perimeter further, the GO Scheme is applicable to any Hydrogen produced and any Hydrogen consumed within its Domain.

Note: the GO Scheme may further restrict its perimeter to hydrogen produced and consumed from Production Devices meeting specified criteria.

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Thank you for your attention

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