

# FaStGO – Facilitating Standards for Guarantees of Origin

## Residual mix for non-electrical energy carriers

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# The two high-level tasks of work package 4.2

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1. Updated residual mix methodology for electricity
    - Presented in March 2020 by Grexel
    - Move to Issuance-Based Methodolgy
  2. Initial concept for residual mixes of non-electrical energy carriers
    - First known attempt to find an approach and to **lay ground for future work.**
- **This presentation focuses on 2.**



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# What is the residual mix?

- Pool of attributes left from "explicit" tracking
- Needed as long as not all energy is tracked.
- Ensures correct balance of (RES) attributes.
- Triggers scarcity of RES
- "Price" of having GOs

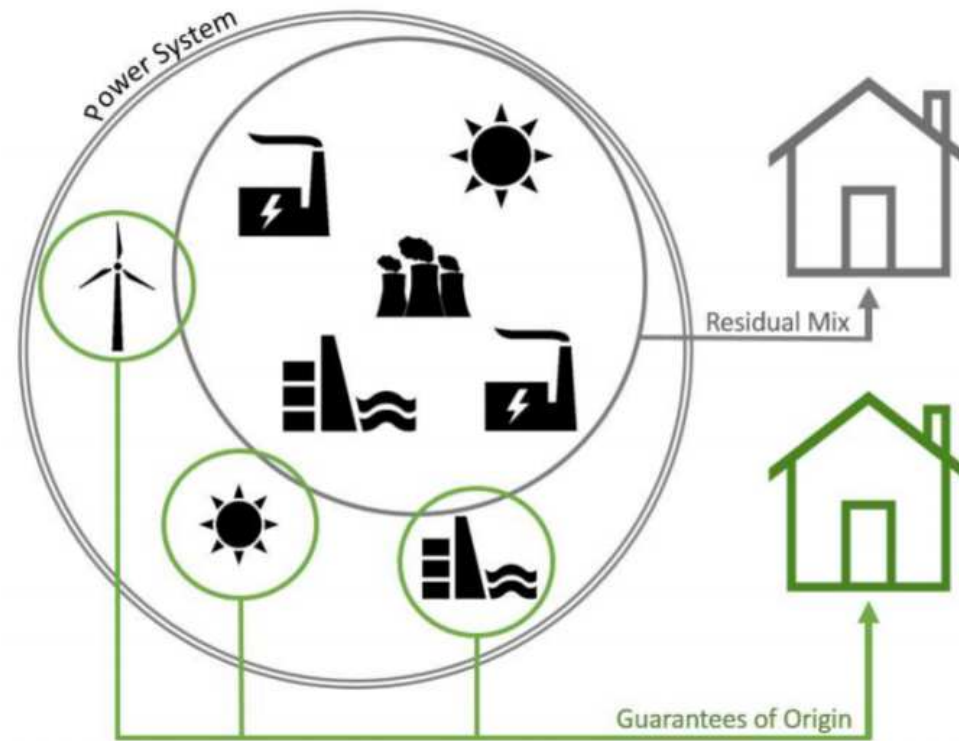


Image: Grexel

Reliable disclosure enables consumers participation in steering the energy transition with their choices.

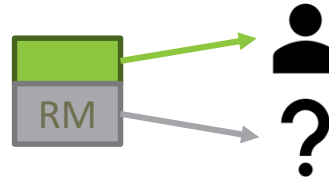
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European Commission

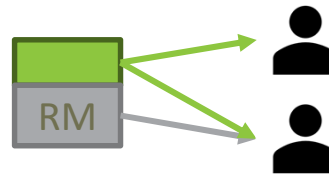
# General principles for a residual mix calculation

1. Disclosure system should be implemented



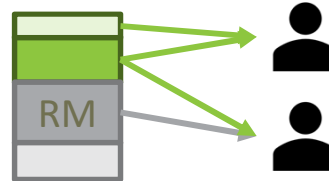
“Don’t calculate a residual mix just for the sake of having one.” If disclosure is not required, there will be little or no use for a residual mix.

2. All (renewable) attribute tracking should be monitored



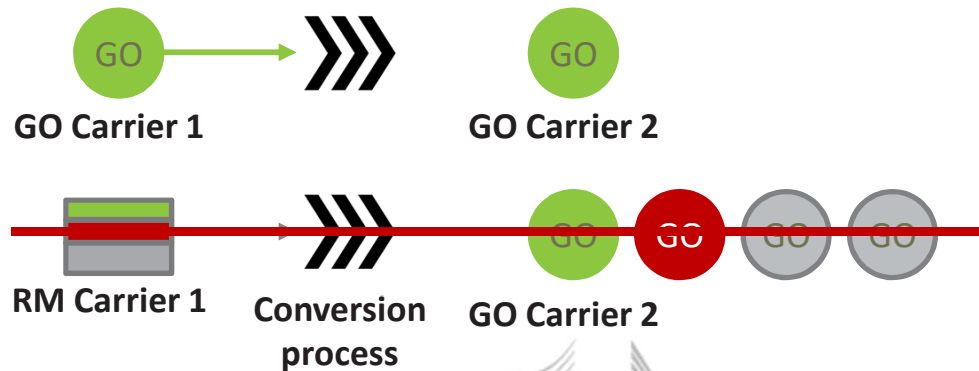
If not all (renewable) attribute tracking is monitored, RM will include attributes which are also explicitly tracked.

3. Same perimeter of consumption and production for GOs and RM calculation\*



If GOs may be issued for production, which is out of the RM’s scope, green attributes will leak into the system → use same attribute pool for RM & GOs

4. In energy carrier conversions GO issuing only based on GO cancellation\*\* for input energy.



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\* e.g. onsite consumption or inconsistent handling of offgrid gas.

\*\* or where relevant other reliable tracking



# Interim solution needed for other energy carriers

- **Situation of the disclosure framework not sufficient**
  - No requirement for origin disclosure of gas nor hydrogen.
  - For district heating and cooling disclosure of share of RES is required by RED II.
  - Exclusivity of GOs for green claims and attribute tracking not clear.
- **Principle of no double counting**
  - Primary aim of RM is to avoid double counting of GO attributes regardless of the surrounding disclosure framework.
- **Need for Interim solution**
  - Since it can't be guaranteed that all tracked RES would be removed from the residual mix before:
    - 1) *a sufficient disclosure framework; and*
    - 2) *reliable and transparent tracking of RES*
  - a fossil-only residual mix is recommended as an interim solution.



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# Idea of fossil-only RM implementation



- **Hydrocarbon gas → residual mix is natural gas**
  - Natural gas dominates the grid so focus on avoidance of double counting of biogas GOs.
  - Most gas is physically imported to Europe → pool of available attributes similar across countries.



- **Hydrogen → residual mix is hydrogen from natural gas**
  - Almost all production in Europe is from natural gas.
  - Most of renewable hydrogen will likely be tracked in the future → same result.



- **District Heating → residual mix is the fossil generation mix of the grid**
  - Without renewable GOs, only fossil energy origin may be disclosed.
  - The transferability of GOs across heating grids determines future approach for residual mix.



- **District Cooling → Residual mix reverts to a “safe” default value of the grid**
  - Assumed interest for district cooling RM even lower than for gas and heating.
- Separate heating and cooling systems are assumed out of the GO system perimeter as energy is produced and consumed only locally.



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# *What to consider when disclosure is up to speed?*

- 1) Disclosure system implemented, and*
- 2) Tracking is reliable and monitored*



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# Options for Hydrocarbon gas RM



**OPTION 1:**  
RM = Natural Gas

Untracked gas is natural gas to avoid double counting of RES

**Simplest and most robust start in divergent disclosure regimes**

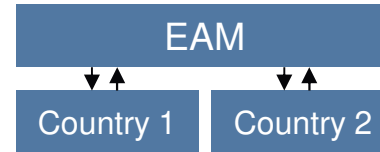
RM = NG + Expired GOs

**OPTION 2:**  
RM = Natural Gas + Expired GOs

Untracked gas is natural gas added with the proportional renewable share from expired GOs.

**If inclusion of expired GOs in RM seen to add value for REDII compliance**

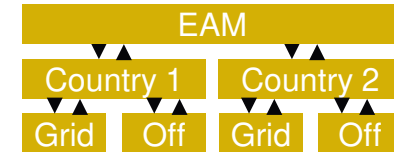
**With disclosure implemented and reliable tracking of RES**



**OPTION 3:**  
Electricity model

Proper country-level RM is calculated and balanced through an EAM as in electricity

Choice follows the perimeter of the GO system → option 3 is preferred since the GO system is assumed common for grid and offgrid.  
Proving of certain geographic origin (e.g. natural gas) done through GO and not mixed with the RM.



**OPTION 4:**  
Separation of grid / offgrid

RM calculated for **grid / offgrid gas** separately. Balanced either through single or separate EAM

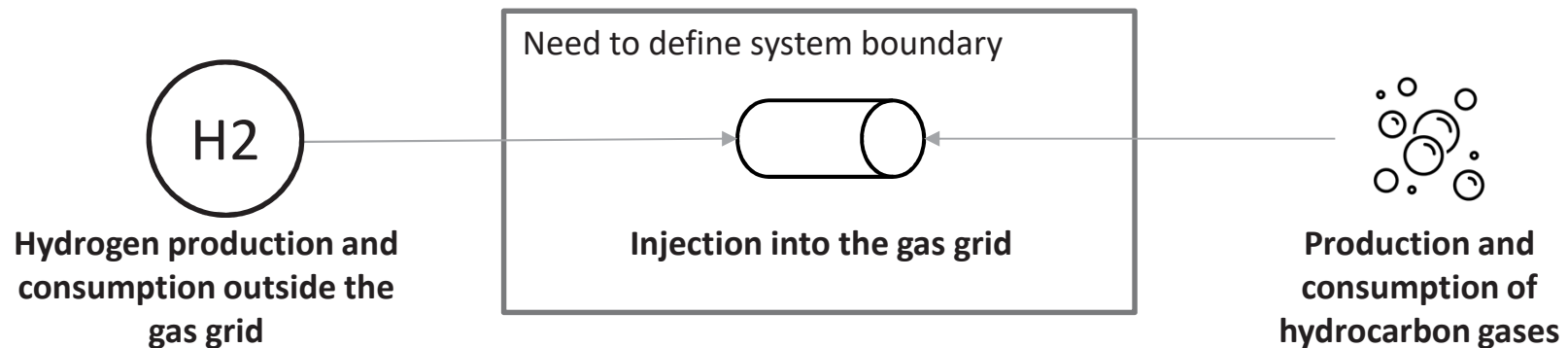




# The interplay of hydrocarbon and hydrogen disclosure

Hydrogen is expected to be injected in the natural gas network in increasing quantities, which causes interplay between the residual mix for both energy carriers.

Level of separation of hydrogen and hydrocarbon gas disclosure system defines RM approach.



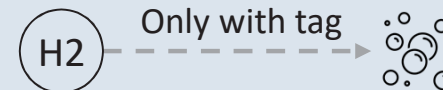
## Option 1: Common disclosure system for hydrocarbon gas and hydrogen



*Hydrogen and hydrocarbon GOs completely cross-usable in disclosure.*

- + Least barriers
- Decarbonize gas grid only "on paper"
- Hard to explain as not physically possible.
- Credibility

## Option 2: Separate disclosure systems for hydrocarbon gas and hydrogen.



*Hydrogen injected into the gas grid is "tagged" after which may be used for gas disclosure.*

- + Physically most logical
- + Acknowledges the difference of the energy carriers and their usage restrictions.
- Requires separate GO systems with conversion and blending rules

# Options for Heating and Cooling RM



RES

## OPTION 1: RES share only

Only RES share of the grid is disclosed following the RED II requirement, with large part of disclosure unknown.



RES FOS

## OPTION 2: Residual mix is fossil

Each grid determines its residual mix as the fossil generation mix of the grid (can also include attributes of expired GOs).

Grid 1 Grid 2 Grid 3 Grid 4

## OPTION 3: Grid internal RM

Each grid operator is determining its own residual mix. GOs are **not transferrable across grids** to avoid double counting from attribute imbalance.

→ With disclosure implemented and reliable tracking of RES



## OPTION 4: Electricity Model

Balancing of attributes with the EAM is done at a country level as in the electricity RM model.

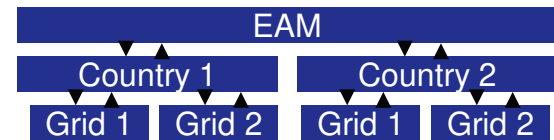
No grid-specific RM. A country-level RM for all grids in the country.



## OPTION 5: Grid to EAM

Each grid is balanced directly with the EAM regardless of the country.

No country-level residual mix exists, each grid is its own domain.



## OPTION 6: Grid to country balance

Balancing of attributes is done in three layers: grid, country, EAM.

Adds an extra level, but provides a country and grid-specific RM.



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Separate calculation for heating and cooling



# Additional work is needed in order for disclosure to properly kick-off

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- Design of disclosure systems for H&C, Gas, Hydrogen
- Interplay of gas and hydrogen disclosure
- Specifics of the RM calculation dependent on the implementation disclosure framework
- Best practice recommendations for disclosure need to be drafted for other energy carriers.
  - How to implement lifetime, uniqueness of tracking instruments, mutual recognition, timing of disclosure, further recommendations, supplier-level disclosure.



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Thank you for your attention

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