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RFNBO certification and the 2022 RFNBO certification pilot

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Content

- Introduction
- Difference between voluntary schemes and guaranties of origin
- Results of pilot on RFNBO certification using draft voluntary schemes
- Conclusions

Introduction (1)
Requirements from DA 27.3

Delegated act 27.3 sets requirements on having a PPA and on:

a) Additionality *(for electrolysers starting operation after 31/12/2027)*:
   - The electrolyser must be **taken into operation within 3 years** after the installation generating renewable electricity has been taken into operation
   - The electricity has been produced **without subsidy**

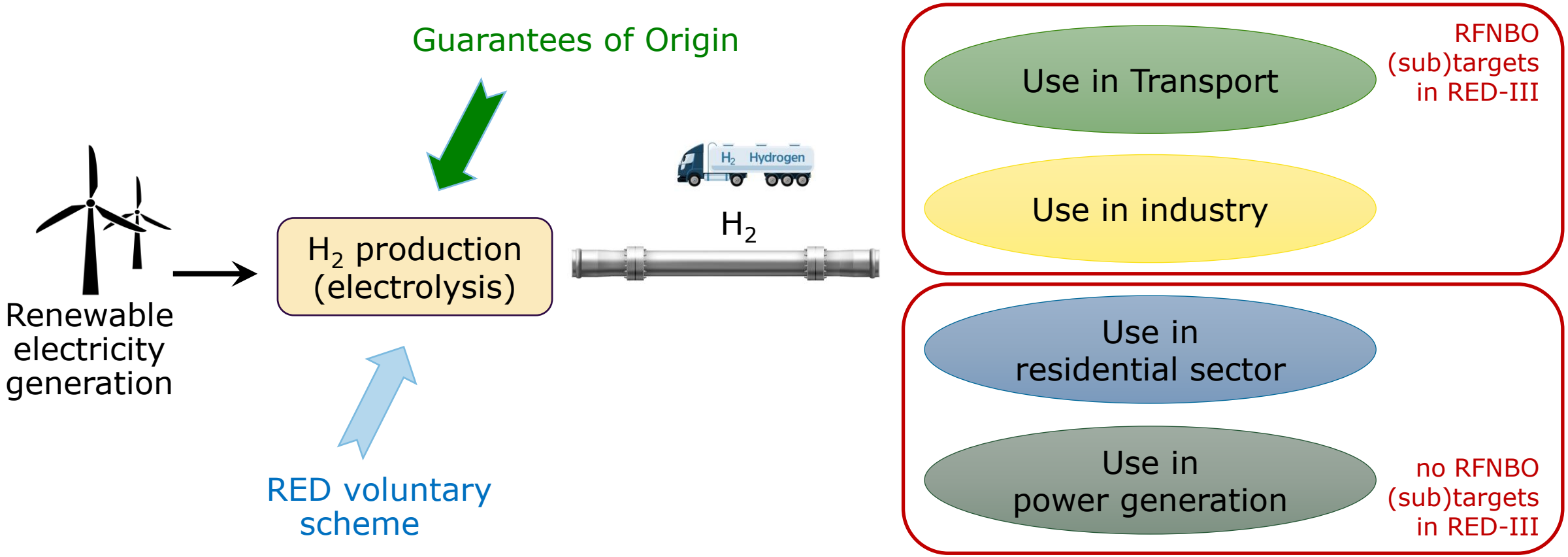
b) Temporal correlation: The electrolyser produces hydrogen **in the same month / hour** as the electricity required for this hydrogen was produced

c) Geographical correlation: The electrolyser and the installation generating renewable electricity are located in the **same bidding zone or in an interconnected bidding zone** (with conditions)

Introduction (2)

- This presentation is on certification to comply to European legislation
- In Europe, we distinguish between:
  - Renewable hydrogen which is produced from renewable electricity
  - Additional renewable hydrogen or RFNBO-hydrogen which is renewable hydrogen complying to RFNBO-requirements from the Renewable Energy Directive on:
    - Additionality, temporal correlation, geographical correlation (27.3 & DA 27.3)
    - 70% GHG emission saving (25.2 and 28.5 & DA 28.5)
    - Mass balance chain-of-custody (30.1)

Introduction (3)
GoOs and voluntary (certification) schemes



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Difference between voluntary schemes and guaranties of origin

GoOs and voluntary schemes: 4 differences

Guarantees of Origin

Book

Difference 1: RED voluntary schemes demonstrate compliance to mass balance requirement (RED-II article 30.1). GoOs do not.

Claim

Additional renewable electricity

Small fraction of non-additional renewable electricity

H_2 production (electrolysis)

H_2 lique-faction

L-H_2

Import terminal
(+ re-evaporation)
(+ compression)

H_2

Use in Transport

Use in industry

Use in residential sector

Use in power generation

RED voluntary scheme

Certification (incl. mass balance)

Certification (incl. mass balance)

Certification (incl. mass balance)

Certification (incl. mass balance)

GoOs and voluntary schemes: 4 differences

Guarantees of Origin

GoO's hydrogen for complete production (if equivalent amount of GoO's electricity are cancelled)

Difference 2: Electricity input that does not comply with DA 27.3 shall lead to part of hydrogen output not being classified as RFNBO. Voluntary schemes must follow this principle, GoOs (can) deviate from this principle.

Additional renewable electricity

Small fraction of non-additional renewable electricity

H_2 production (electrolysis)

H_2 lique-faction

L-H_2

Import terminal
(+ re-evaporation)
(+ compression)

H_2

Use in Transport

Use in industry

Use in residential sector

Use in power generation

RED voluntary scheme

Amount of RFNBO's calculated from fraction of renewable electricity input

RED-II DA 28.5 Annex A article 3:

If the output of a process does not fully qualify as renewable liquid and gaseous transport fuels of non-biological origin or recycled carbon fuel, their respective shares in the total output shall be determined as follows:

a) the fraction of renewable liquid and gaseous transport fuels of non-biological origin shall be determined by dividing the relevant renewable energy input into the process by the total relevant energy inputs into the process.

GoOs and voluntary schemes: 4 differences

Difference 3 (a): GoO's cannot (always) take into account GHG emissions from further processing, transport and use, whereas voluntary schemes take full life cycle emissions into account (following DA 28.5).
(b): GoO schemes do not require the use of the DA 28.5 GHG calculation methodology.

Guarantees of Origin

Additional renewable electricity

Small fraction of non-additional renewable electricity

RED voluntary scheme

17,2 g $CO_{2,eq}$ per MJ

H_2 production (electrolysis)

H_2 lique-faction

18,0 g $CO_{2,eq}$ per MJ

L-H_2

22,7 g $CO_{2,eq}$ per MJ

Import terminal
(+ re-evaporation)
(+ compression)

25,3 g $CO_{2,eq}$ per MJ

H_2

26,5 g $CO_{2,eq}$ per MJ

17,2 g $CO_{2,eq}$ per MJ

Use in Transport

Use in industry

Use in residential sector

Use in power generation

26,8 g $CO_{2,eq}$ per MJ

RED-II DA 28.5, considerations

(3) The greenhouse gas emissions accounting methodology should take into account the full life-cycle emissions from producing renewable liquid and gaseous transport fuels of non-biological origin ..[..]..

GoOs and voluntary schemes: 4 differences

Guarantees of Origin

Non-European GoOs are accepted only under the condition of a mutual agreement

Additional renewable electricity

Small fraction of non-additional renewable electricity

H_2 production (electrolysis)

H_2 lique-faction

L-H_2

Import terminal
(+ re-evaporation)
(+ compression)

H_2

Use in Transport

Use in industry

Use in residential sector

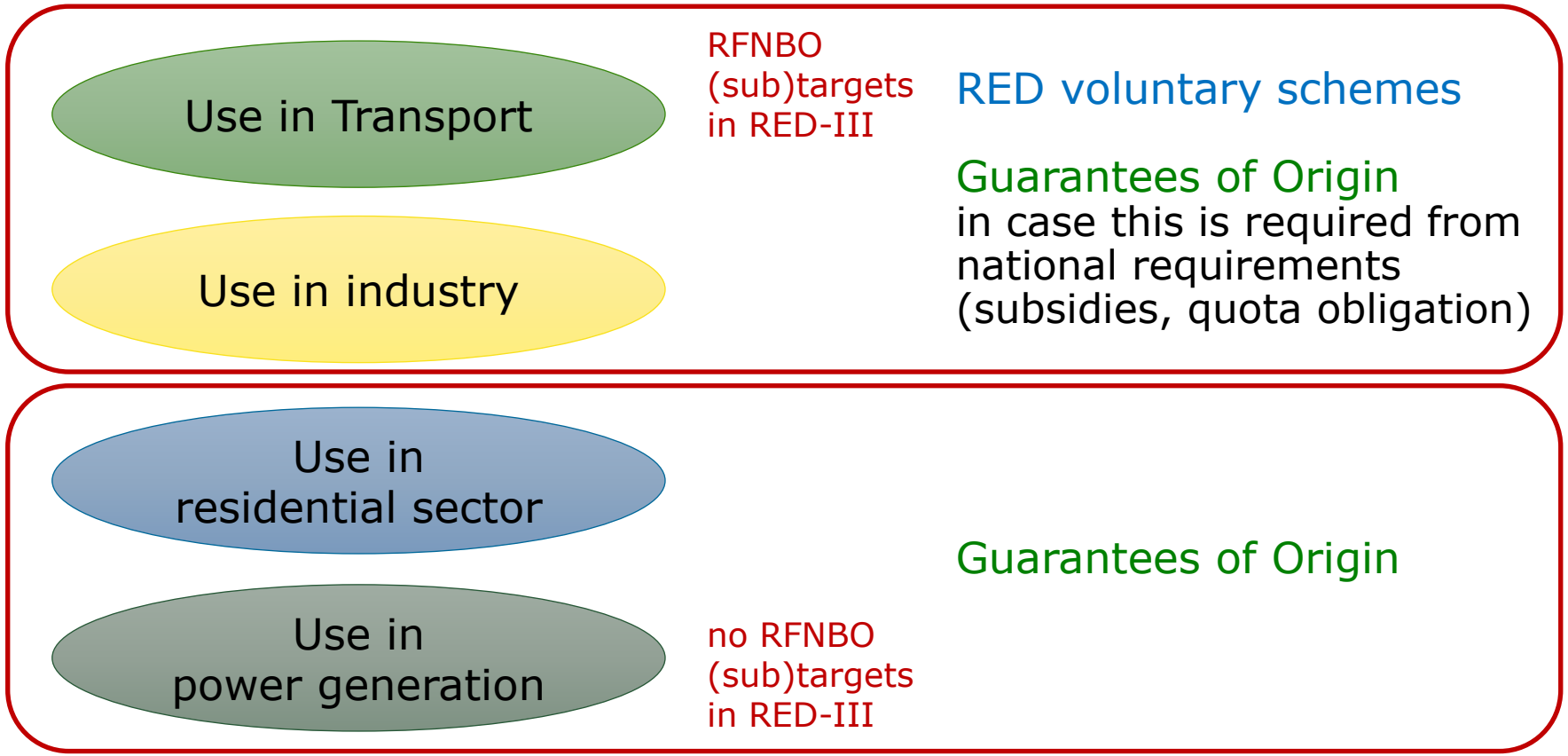
Use in power generation

RED voluntary scheme

Certification can occur worldwide (inside and outside Europe)

Difference 4: Certification against voluntary schemes can occur in third countries (countries outside Europe). Third country GoOs can only be used once an agreement on mutual recognition of GoOs has been concluded between the European Union and the third country. RED-II 19(11)

GoOs and voluntary schemes



Double counting

The risk of double counting needs to be further addressed

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2022 RFNBO certification pilot

Dutch RFNBO certification pilot

In fall 2022, in the Netherlands an RFNBO certification pilot was performed:

1. An auditor was contracted: Quality Services B.V.
2. Owners of certification schemes were contacted offering them to be part of the pilot
   - ISCC and REDcert (plus CertifHy) developed draft RFNBO certification schemes
3. Pilot companies were selected
4. Pilot audits were performed
5. A public report was issued

General objective of the pilot: To facilitate the process of RFNBO voluntary scheme development and implementation, by assessing if compliance with draft RED-II RFNBO criteria can be demonstrated with audits against draft RFNBO voluntary schemes.

Dutch RFNBO certification pilot: Pilot audits

Selected companies:

Company	MW, direct line or grid connection	Location	Scheme
Shell	0,05 MW, direct line and grid connection	Amsterdam (NL)	REDcert + ISCC
Air Liquide	200 MW, direct line and grid connection, simulation	Terneuzen (NL)	ISCC
Nobian	180 MW chlor-alkali electrolysis, grid connection	Rotterdam (NL)	ISCC + REDcert
Air Products	2000 MW, H_2 + NH_3 production, direct line, simulation	Neom, Saudi Arabia	REDcert + ISCC
GroenLeven	1,4 MW, direct line and grid connection	Oosterwolde (NL)	REDcert + ISCC
Gasunie	1 MW, direct line and grid connection	Zuidwending (NL)	ISCC + REDcert

Another company was audited by Tüv Süd, this audit was not part of the Dutch pilot, however, results have been taken into account writing the report:

Company	MW, direct line or grid connection	Location	Scheme
Engie-OCI-EEW	100 MW, H_2 + MeOH production, grid connection, simulation	Eemshaven (NL)	CertifHy

Please note: the pilot is based **on the drafts** of DA 27.3 and DA 28.5

Dutch RFNBO certification pilot: Results

- In principle it is possible to demonstrate compliance to all DA 27.3 and DA 28.5 requirements and to the 70% GHG emission saving requirement, both for directly connected and for grid-connected electrolysers
- None of the companies fully complied, due to:
  - The companies being unfamiliar with all requirements
  - Installations still being under development / simulations being performed
  - Not (yet) being able to meet 70% GHG emission savings
  - Some of the DA requirements not yet being specific enough - it therefore makes sense to wait for the final delegated acts
- Demonstrating compliance is not possible when the amount of additional renewable electricity is too low
- Risk of double counting (GoO's and sustainability information from voluntary schemes) needs further attention

Dutch RFNBO certification pilot

- Report is available via the following link:

  https://www.rvo.nl/sites/default/files/2022-12/Report-RFNBO-pilot-RVO.pdf

- Or send us a mail and we will send you the report

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Conclusions

Conclusions

1. Compliance to the RED-II RFNBO requirements will be demonstrated using voluntary (national and international) schemes that are recognised by the European Commission
2. Conclusion from the 2022 pilot: Compliance to the RED-II RFNBO criteria can be demonstrated by using voluntary RFNBO certification schemes
3. Guarantee-of-Origin certification will have a role:
   - In end-use-sectors for which there are no subtargets in RED-III
   - To bring information (additional to information from voluntary schemes) from the electrolyser to the end-user
4. The risk of double counting is a European point of attention not yet solved

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Thank you for your attention!

Organised by the Dutch Ministry of Economic Affairs and Climate Policy (EZK) and Netherlands Enterprise Agency (RVO)