

# RFNBO Certification Stakeholder Workshop in Cape Town, South Africa, 10-12<sup>th</sup> March 2026

Summary of the Q&A

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für Internationale  
Zusammenarbeit (GIZ) GmbH

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1.

## Background and Context

# Implementation of the International Hydrogen Ramp-Up Programme (H2UPPP – Phase II)

## Background

- H2Uppp programme commissioned by the German Federal Ministry for Economic Affairs and Energy (BMWE)
- Implemented by GIZ
- 4 Workshops bringing together 100+ project developers and regulators



- 3 Case studies



## Objectives

- ✓ Support PtX<sup>1</sup> developers in Non-EU export countries to understand and comply with EU RFNBO<sup>2</sup> certification requirements.
- ✓ Identify and address practical challenges, pitfalls, and misunderstandings in applying RED II rules.
- ✓ Engage local authorities to facilitate regulatory alignment and enable project implementation.
- ✓ Provide feedback to EU regulators to improve frameworks and enable reliable imports of renewable hydrogen and PtX products.

<sup>1</sup> PtX: Power-to-X

<sup>2</sup> RFNBO: Renewable Fuels of Non-Biological Origin

<sup>3</sup> RED II: Renewable Energy Directive (EU) 2018/2001

# RFNBO Compendium: Key Insights, Challenges and Solutions from Expert Workshops and Case Studies in Non-EU Countries



- Summary of discussion topics from workshops in Q&A-style
- Key learnings from case studies
- Recommendations for:
  - Project developers
  - National regulators
  - EU regulators

The main discussion points of the **Workshop in Cape Town, South Africa**, from 10th to 12th of March, 2026 are summarised in this slide set and complement the RFNBO Compendium.



[https://ptx-hub.org/wp-content/uploads/2026/03/H2Uppp\\_EU-RFNBO-Compendium\\_2026.pdf](https://ptx-hub.org/wp-content/uploads/2026/03/H2Uppp_EU-RFNBO-Compendium_2026.pdf)

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# 2.

## Summary of Q&A

## 2.1 Q&A: General aspects

# Is it common practice for project developers to consider RFNBO certification criteria like additionality from the beginning?

Yes! If a project developer is aiming at exporting renewable hydrogen and/ or derivatives to the EU and selling it at a premium price, it is crucial to plan a project set-up that is compliant with the RED II requirements for RFNBO certification. Strategic decisions, e.g. on the renewable electricity source and the procurement concept, will decide on the overall eligibility of the project for RFNBO certification and thus the eligibility for premium prices in EU markets. Considering the requirements for RFNBO certification from the beginning mitigates the risks of expensive design changes at later stages and ultimately the risk of non-compliance.

# How long is the validity of certificates? Will it be extended in the near future?

Once an economic operator has successfully completed the initial audit, they are awarded a certificate. This enables them to produce, process and/ or trade and claim RFNBO-compliant products for one year. After one year, re-certification is then required each year. Notice that for the German market, re-certification or a surveillance audit in the first year is already required after 6 months; it seems that the current revision of the Commission Implementing Regulation 2022/996 may take this up as a general requirement.

During the initial audit, auditors conduct a risk assessment of the RFNBO production facility. Depending on the outcome, unannounced audits might be conducted. Where major non-compliances or even fraudulent behaviour are identified, the certificate will be suspended or even revoked.

It is not foreseen to extend the validity of RFNBO certificates in the future. Regular annual audits shall serve as monitoring of the adherence to the RFNBO requirements by economic operators.

# How does CBAM and RFNBO certification interplay? Are two verifications required?

In the definitive period of CBAM having started on 1 January 2026, RFNBO-certified hydrogen is not automatically and explicitly zero-emission rated (as it was in the transitional period until the end of 2025). However, RFNBO certification of hydrogen evidences the electricity consumed for hydrogen production to be “fully renewable” according to Commission Delegated Regulation 2023/1184, and thus zero emission. This logic can also be applied to ammonia production from RFNBO-compliant hydrogen. However, further emissions must be taken into account for the calculation of the GHG intensity of ammonia under CBAM.

However, RRFNBO certification may not be sufficient as according to Commission Implementing Regulation 2025/2546 on CBAM verification, third-party verification is mandatory; this includes site-visits, at least initially.

Thus, separate verifications are required. This may, however, be carried out by the same auditor(s) at the same time as long as the audits and their administrative processes are kept separate.

## Case of India: India has their own certification scheme. Are there synergies with RFNBO certification according to the EU or are separate certification needed?

India's Green Hydrogen Certification scheme (GHCI) and EU RFNBO schemes offer meaningful operational synergies, but they are not fully interchangeable. A dual-certification approach can work if the project is designed from the outset to capture hourly data, preserve documentation, and keep the two certification tracks clearly separated. The main synergies are in the monitoring and data systems. Both schemes rely on robust metering, SCADA-based tracking, calibration records, and life-cycle emissions inputs, so one technical infrastructure can support both GHCI reporting and RFNBO evidence requirements. The same underlying dataset can often be reused, although the calculations themselves must be adapted to each framework.

The key differences concern temporal matching, additionality, and geographic correlation. GHCI is more permissive and can accommodate annual balancing and subsidized renewable supply, whereas EU RFNBO requires stricter matching rules, specific sourcing conditions, and more detailed proof of eligibility for the renewable electricity used. As a result, a project that qualifies under GHCI will not automatically qualify under RFNBO, especially for export volumes.

Separate audits are therefore still required. GHCI certification is verified by the relevant Indian-accredited auditors, while EU RFNBO certification must be carried out by a certification body recognized under the applicable EU voluntary scheme. The audits can be coordinated and supported by shared documentation, but the certification pathways, ledgers, and final attestations should remain distinct to avoid double counting and compliance risk.

# Are the e-HEFA pathways certified under the RFNBO certification scheme?

No. HEFA in general, is made by cleaning oil or fat feedstock, reacting it with hydrogen under high pressure and temperature, then upgrading and separating the hydrocarbons into SAF. For “e-HEFA” renewable hydrogen is used. However, the main feedstock of this pathway is not considered electricity for hydrogen production but the lipid feedstocks. Even if the European Commission is currently undergoing a “targeted review”, it is **not very likely that e-HEFA will be considered an RFNBO.**

# Which other industries are “certified” like RFNBOs?

The RFNBO certification framework builds on 15 years of experience with the biofuels certification framework, which are both defined by the Renewable Energy Directive. In other words, the general approach to certification is identical for biofuels and RFNBOs: voluntary (and national) schemes; certification bodies carrying out the audits and issuing the certificates; Proofs of Sustainability demonstrating compliance of product consignments; Mass Balancing; Quality Management System; etc.

However, RFNBO certification entails significant differences, most notably in the criteria. Most obviously, temporal and geographical correlation as well as additionality are criteria specifically defined for RFNBO certification, while for biofuels, sustainability requirements focus on other aspects such as biodiversity, indirect land-use change, etc.

## 2.2 Q&A: Sustainability & CO<sub>2</sub> sources

# Is CO<sub>2</sub> captured from biogas processes and from steam methane reforming eligible for RFNBO production?

Eligibility of CO<sub>2</sub> sources for RFNBO synthesis is related to the GHG calculation: “eligible” CO<sub>2</sub> sources carry of GHG credit with them through the  $e_{\text{ex-use}}$  element of the GHG calculation formula. This credit is compensated by the emissions resulting from RFNBO combustion. Where CO<sub>2</sub> sources are used that do not have the credit, the overall GHG intensity will not allow achieving the required 70% savings.

CO<sub>2</sub> sources with an  $e_{\text{ex-use}}$  credit are:

- a) Specific industrial sources in countries with an “effective carbon pricing system”
- b) Direct air capture
- c) Biogenic sources complying with the biofuels sustainability and GHG savings requirements of RED II
- d) RFNBO
- e) Geological CO<sub>2</sub> sources and certain conditions

# Why is the South African carbon pricing system not “effective” in the sense for industrial CO<sub>2</sub> to be eligible for RFNBO production?

CO<sub>2</sub> captured from an activity listed under Annex I of the EU Directive 2003/87/EC are eligible for the use of RFNBO production provided that the captured CO<sub>2</sub> has been taken into account upstream in an “effective carbon pricing system” and is incorporated in the chemical composition of the fuel before a certain date. The Q&A Document by the European Commission provides an exhaustive list of effective carbon pricing systems that can be considered to fulfil the requirements. As of today, the following carbon pricing systems are “effective”:

- EU ETS which applies in the 30 States of the European Economic Area: the EU-27 Member States and in three EFTA States Iceland, Liechtenstein and Norway
- Swiss ETS
- UK ETS

Other systems may request to be assessed by the European Commission to be added to the list of effective carbon pricing systems. The Annex of the Q&A Document provides the required criteria. The South African government can thus request this assessment for the South African carbon pricing system.

# Does the installation producing renewable electricity for the use in RFNBO production need to get certified?

No. The eligibility of the renewable electricity source is assessed in the RFNBO certification process related to hydrogen production and does not require a separate certification. Notice that depending on the procurement strategy, different sustainability criteria must be complied with.

# Do all inputs for the RFNBO production process need to be renewable?

To comply with the RFNBO requirements, the **relevant energy inputs** must come from renewable sources. According to the GHG methodology, *relevant* energy inputs are “electricity and heat that is adding to the heating value of the fuel”.

*Non-relevant* energy inputs do not need to come from renewable sources. It should be kept in mind, however, that the associated GHG emissions must be accounted for in the GHG calculation. For compliance with the RFNBO requirements, the RFNBO product must not exceed the threshold of 28.2 g<sub>CO2eq</sub>/MJ on a well-to-grave basis.

# Are legacy hydropower plants considered renewable and thus zero-emission for non-relevant energy inputs?

Legacy hydropower plants are **not automatically considered renewable** under RFNBO certification. Where additionality is required, the renewable plants must not have come into operation more than 36 months before the hydrogen production installation.

However, hydropower plants as part of the grid mix may play a crucial role in establishing the 90%-Renewable Share threshold according to Art. 4.1 of the Commission Delegated Regulation 2023/1184. The regulation states that, “*electricity taken from the grid [may be counted] as fully renewable if the installation producing the renewable fuel of non-biological origin is located in a bidding zone where the **average proportion of renewable electricity exceeded 90 %** in the previous calendar year and the production of renewable fuel of non-biological origin does not exceed a maximum number of hours set in relation to the proportion of renewable electricity in the bidding zone.* To calculate the renewable share, the methodology defined in CDR 2023/1184 Art. 4, must be followed. For European Member States, the RE share is calculated on country-level in [Eurostat's Shares Tool](#).

Where 90% RE share are not met, according Art. 4.2 of CDR 2023/1184 “*fuel producers may count electricity taken from the grid as fully renewable if the installation producing the renewable fuel of non-biological origin is located in a bidding zone where the **emission intensity of electricity is lower than 18 gCO<sub>2</sub>eq/MJ**”, provided the criteria in Art. 4.2 are met.*

# Is the energy input for ammonia cracking considered a relevant energy input given this is an endothermic process?

According to Question 57 of the Q&A Document, *“to establish whether electricity and heat that are used in a process are adding to the heating value of the fuel, the **heating value of the derivative that enters the process and qualifies as an RFNBO should be compared to the heating value of the hydrogen the process yields**”*. In the case of ammonia cracking, the external energy input is required to trigger the conversion to hydrogen. In cases where more hydrogen output is produced in energy terms than ammonia is entering the process, the difference between ammonia input and hydrogen output must come from renewable sources for all hydrogen output to be RFNBO compliant – provided the GHG savings requirement is also fulfilled.

# Is hydrogen produced from waste via technologies such as pyrolysis or plasma gasification certified under the RFNBO framework?

No. Renewable Fuels of Non-Biological Origin (RFNBO) must be produced from renewable electricity via electrolysis and analogously for less common production pathways.

Waste is considered to be of biological and/or fossil origin. Thus, hydrogen produced from waste is considered a biofuel and/or fossil hydrogen.

## 2.3 Q&A: GHG Calculation

# What is the unit the GHG calculation is based on?

The GHG emissions are calculated in grams of CO<sub>2</sub> equivalents per Megajoule of final fuel (g<sub>CO<sub>2</sub>eq</sub>/MJ). The threshold of 70% compared to the fossil fuel comparator, i.e. 94 g<sub>CO<sub>2</sub>eq</sub>/MJ, is set at 28.2 g<sub>CO<sub>2</sub>eq</sub>/MJ.

Notice that due to this fact, GHG emissions appear to increase in the case of self-consuming ammonia crackers given the GHG emissions are based on emissions per MJ of final fuel. Ammonia cracker require additional energy as they are exothermic. For the cracking process, either external energy can be used, or part of the RFNBO-ammonia can be consumed. Where the latter is the case, the Megajoules of hydrogen output are less than the Megajoules of ammonia input. Thus, after self-consumption, the total amount of GHG emissions (upstream and from cracking where applicable) are attributed to less product quantity – thus, the GHG emissions increase per Megajoule of hydrogen output.

## 2.4 Q&A: Mass Balancing

With a short or a longer subline

# Why do we need mass balance?

Mass balance is used in RFNBO certification under RED II because renewable fuels often pass through systems where they are mixed, stored, or processed together with non-renewable material. Instead of requiring every molecule to stay physically separate (“segregation” chain of custody), mass balance allows producers to **track inputs and outputs** so that the **renewable claim is assigned only to the compliant quantity of fuel** through bookkeeping (mass balancing).

This matters because it preserves **traceability** and **prevents double counting**. It gives regulators and certifiers a practical way to verify that the amount of RFNBO sold with a sustainability claim is actually backed by certified renewable production, even when the supply chain is operationally complex.

## 2.5 Q&A: Certification Process and Audit

With a short or a longer subline

# Is a blockchain required for certificates?

No. Blockchain is not required for RFNBO certification. The European Commission is the central operator of the relevant database, which is called the Union Database.

# When is it required to inform the auditor about changes in the system set-up?

Economic operators must inform the Certification Body without undue delay (i.e. as soon as reasonably possible) whenever there is a material change in system set-up, including:

- production process (e.g. electrolyser configuration, reactor changes)
- energy sourcing (e.g. switch to different electricity supply)
- feedstocks or inputs
- metering, data collection, or mass balance system
- ownership or operational control affecting traceability
- Etc.

The notification of the Certification Body needs to be early enough for the CB to decide whether a surveillance audit is needed, or the change can be reviewed at the next regular audit.

## What if there are unforeseeable incidents (force majeure) leading to non-compliant products after having already received RFNBO certification? Is the certificate going to be revoked?

No, the certificate remains valid. Certification entitles the economic operator to correctly issue Proofs of Sustainability (PoS) containing all sustainability claims. Where non-compliant product is produced, the economic operator is not allowed to issue a PoS for the relevant product quantity.

Re-certification is required every year, where past production/processing/trading and the respective PoS are verified ex-post. Where PoS have been handled correctly, the economic operator does not have to fear any consequences. However, major changes in the project must be communicated to the auditor.

## 2.6 Q&A: Other aspects

# When are certification frameworks for low-carbon hydrogen going to be adopted?

The European Commission has adopted Commission Delegated Regulation 2025/2359 on the greenhouse gas calculation methodology for low-carbon fuels, which has come into force in November 2025.

Currently, some voluntary schemes, including notably CertifHy, are integrating this methodology into their scheme documents. Voluntary schemes intending to cover low-carbon hydrogen and low-carbon fuels certification need to apply to the European Commission for recognition. It is anticipated that recognition will be granted in 2026.

Nuclear PPAs are anticipated to be integrated into the EU framework in summer 2026 and may then be used for low-carbon hydrogen/ fuel production.

3.

## South Africa-specific Recommendations

# Use of industrial CO<sub>2</sub> under an “effective carbon pricing system”

CO<sub>2</sub> captured from certain industrial activities such as cement and steel plants, can in general terms be used for the synthesis of carbon-containing RFNBOs such as methanol under certain conditions. These conditions include the requirement that an “effective carbon pricing system” is in place in the respective country. The European Commission has published a list of countries; the following systems can be considered to fulfil the requirement of upstream accounting in an effective carbon pricing system:

- EU ETS which applies in the 30 States of the European Economic Area: the EU-27 Member States, in three EFTA States Iceland, Liechtenstein, Norway,
- Swiss ETS,
- UKETS

This list is understood to be exhaustive, i.e. no other country has an “effective carbon pricing system” with respect to RFNBO certification. The Commission may extend this list based on requests from other countries. This means that currently, in countries outside the listed countries, CO<sub>2</sub> captured from these sources cannot be used for syntheses of carbon-containing RFNBOs, which leaves mainly biogenic sources as an option apart from Direct Air Capture. For carbon-containing RFNBO production in South Africa, **the project developers should encourage the national government to contact the European Commission and request the South African emission trading system or carbon tax to be included in the Commission’s list if it meets the outlined requirements.**

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*The International Hydrogen Ramp-up Programme (H2Uppp) of the German Federal Ministry for Economic Affairs and Climate Action (BMWK) promotes projects and market development for green hydrogen in selected developing and emerging countries as part of the National Hydrogen Strategy.*