



Compliance Check against EU RED II RFNBO Requirements of a Moroccan RFNBO Project

Implementation of the Hydrogen Ramp-Up Programme (H2Uppp)

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für Internationale
Zusammenarbeit (GIZ) GmbH

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1.

Background and Objective

H2Uppp – Overview of certification workflow

Background

- H2Uppp programme commissioned by the German Federal Ministry for Economic Affairs and Energy (BMWE)

- Implemented by GIZ

- 4 Workshops in 4 countries bringing together 100+ project developers and regulators



- 3 Case studies with project developers



Objectives

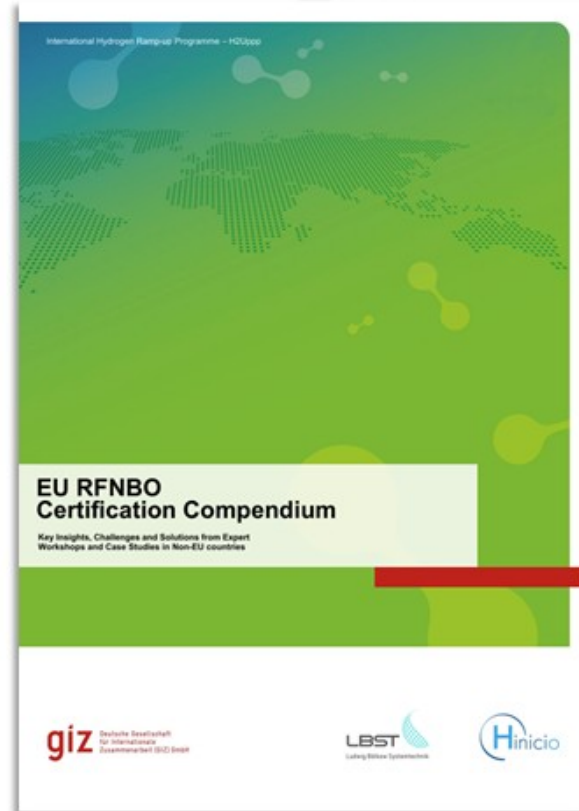
- ✓ Support PtX¹ developers in Non-EU export countries to understand and comply with EU RFNBO² certification requirements.
- ✓ Identify and address practical challenges, pitfalls, and misunderstandings in applying RED II rules.
- ✓ Engage local authorities to facilitate regulatory alignment and enable project implementation.
- ✓ Provide feedback to EU regulators to improve frameworks and enable reliable imports of renewable hydrogen and PtX products.

¹ PtX: Power-to-X

² RFNBO: Renewable Fuels of Non-Biological Origin

³ 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



https://ptx-hub.org/wp-content/uploads/2026/03/H2Uppp_EU-RFNBO-Compendium_2026.pdf

The Moroccan Case Study provides key findings on the compliance with RFNBO requirements

This slide set complements the RFNBO Compendium, summarising the findings of the compliance check for a Moroccan RFNBO project. To maintain confidentiality, the data and figures have been anonymised. The following sections provide the following:

- 2 **Project Details**
Detailed information on the project setup is provided.
- 3 **Compliance Check against RFNBO requirements**
An overview of the applicable RFNBO requirements is given and the project-specific results regarding compliance with the requirements are summarised
 - 3.1 **Sustainability Requirements**
The results regarding the applicable sustainability requirements are summarised.
 - 3.2 **GHG Emissions Savings**
In the course of the compliance check, the GHG emissions of the RFNBO product have been calculated. The main results and recommendations to ensure compliance are summarised.
- 4 **Compatibility of Moroccan PPA framework with RFNBO requirements**
The regulatory framework for PPAs in Morocco has been assessed with regard to RFNBO compliance. The requirements and results are summarised.

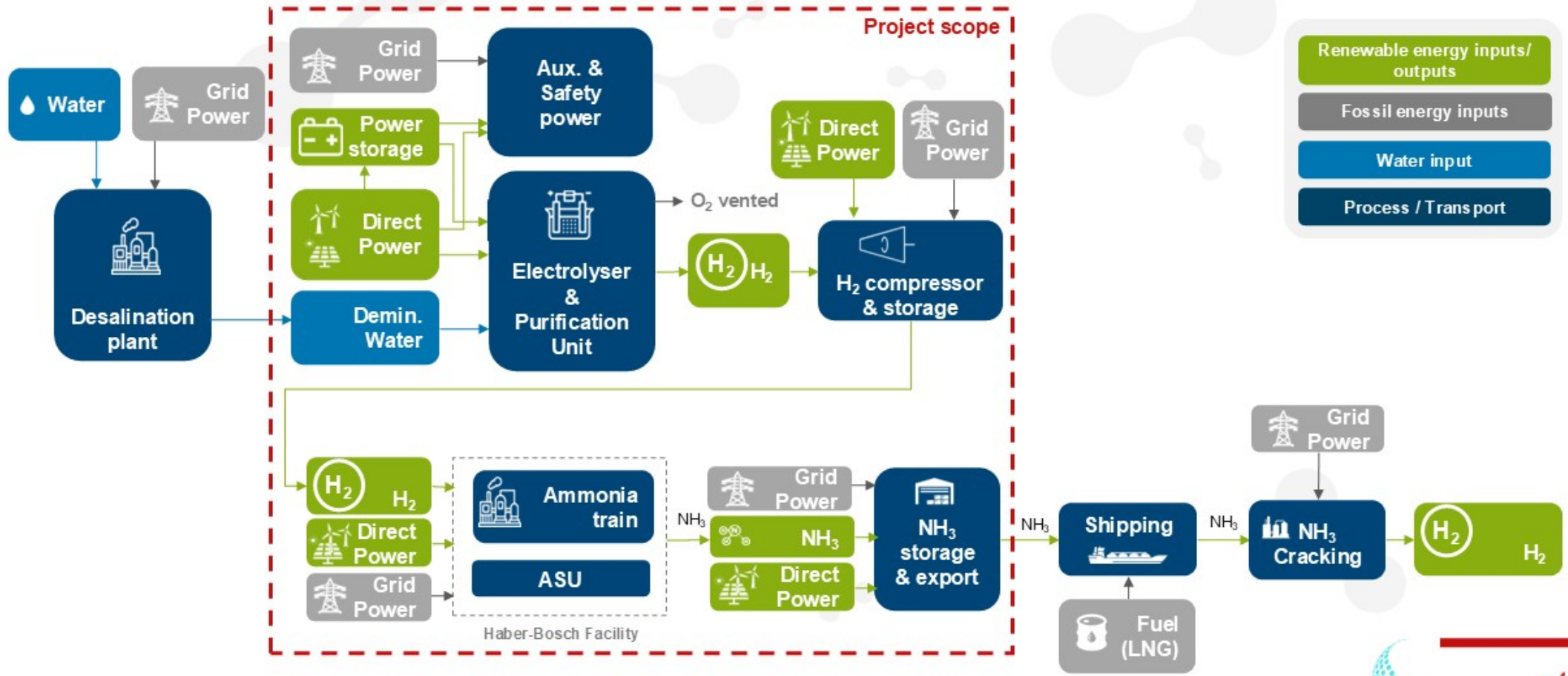
2.

Project Details

The compliance check against RFNBO requirements is conducted for a renewable ammonia project in Morocco

Project location	Morocco
Project phase	Conceptual phase; Estimated COD: 2031
Electricity procurement strategy (for relevant energy input)	Direct line (100% renewable)
Electricity sources	Renewables for relevant energy input: Wind + Solar; Estimated COD: 2031
	Additional import of grid electricity considered
	BESS charged by RE & located at main production facilities
	Option investigated: Green PPA for additional grid electricity incl. BESS
Electrolyser	Pressurised Alkaline Water Electrolysis
RFNBO product	Ammonia (Haber-Bosch synthesis, Nitrogen from Air Separation Unit (ASU))
Water supply	Desalination plant (outside of project scope), close to PtX site
Storage	H2 storage, NH3 storage inside project
Transport	NH3 pipeline to port
	Transport from port to EU via Ship (LNG)
Intended down-stream activities	NH3 cracking (outside of project scope)

Ammonia will be produced using renewable electricity supplied via a direct line for hydrogen production and grid electricity



3.

Compliance Check against RFNBO Requirements




3.1. Sustainability Requirements


Given the project's setup featuring a direct line connection, the sustainability requirements below must be adhered to

Overview of sustainability requirements for electricity used to produce hydrogen (relevant energy)

Category	Requirement	Details	CertifHy VS Document
Electricity procurement	Relevant electricity must come from renewable sources	Renewable electricity from wind, solar, geothermal, ambient energy, tide, wave and other ocean energy, hydropower	RED II
	Physical existence of a direct line	Physical existence of direct line must be verified, additionally supported by construction plans and/or permitting documentation	GHG Emissions & Sustainability 7.2 (a)
	No grid connection or appropriate smart metering system is installed	RE installation is not connected to the grid or is connected to grid, but a smart metering system that measures all electricity flows from the grid shows that no electricity has been taken from the grid to produce RFNBO	GHG Emissions & Sustainability 7.2 (c)
Renewable Energy Certificates (RECs)	Double counting of renewables attributes of electricity must be avoided	RECs must be cancelled for RFNBO production before expiry; no transfer or sale to any other parties than ELY operator	GHG Emissions & Sustainability 7.3.5
	RE generation must be directly linked to RE consumption for RFNBO production	RECs must be issued for renewables installation and must include relevant information	
Additionality	RE installation must come into operation not earlier than 36 months before RFNBO production installation	To be evidenced and verified, e.g. from plants' operational plans, commercial contracts	GHG Emissions & Sustainability 7.2 (b)
	No support for RE installations	Not applicable in case of a direct line connection	GHG Emissions & Sustainability 7.4
Temporal correlation	RE production and RFNBO production happen in the same calendar month until 2029 and within the same hour from 2030	Not applicable in case of a direct line connection	GHG Emissions & Sustainability 7.4
Geographical correlation	The RE installation and the RFNBO production facility are located in the same bidding zone	Not applicable in case of a direct line connection	GHG Emissions & Sustainability 7.4
CO ₂ source	The CO ₂ is captured from eligible sources	Not applicable for ammonia production	GHG Emissions & Sustainability 7.4

The project set-up concept is compliant with RFNBO requirements concerning power procurement and additionality, provided an appropriate smart metering system is installed

Electricity procurement		Compliance	Project details	Required documentation for certification
Relevant electricity must come from renewable sources	Renewable electricity from wind, solar, geothermal, ambient energy, tide, wave and other ocean energy, hydropower		RE from wind and solar	Construction plans, permitting documentation
Physical existence of a direct line	Physical existence of direct line must be verified, additionally supported by construction plans and/or permitting documentation		Direct line connection	
No grid connection or appropriate smart metering system is installed	RE installation is not connected to the grid or is connected to grid, but a smart metering system that measures all electricity flows from the grid shows that no electricity has been taken from the grid to produce RFNBO		Connection to grid; No details available yet on smart metering set-up. Notice that RFNBO are only produced where relevant energy inputs* come from renewable sources!	

Additionality		Compliance	Project details	Required documentation for certification
RE installation must come into operation not earlier than 36 months before RFNBO production installation	To be evidenced and verified, e.g., from plants' operational plans, commercial contracts		RE Installation and RFNBO production will be commissioned in parallel: planned ~2031	Operational plans and commercial contracts

*Relevant energy inputs: energy inputs that increase the heating value of a product. Here, relevant energy inputs are electricity for H₂ production (excl. auxiliaries) and H₂ for ammonia synthesis.

As the I-REC system applies in Morocco the project will be compliant concerning the issuance and cancellation of RECs provided it is registered

Renewable Energy Certificates	Compliance	Project details	Required documentation for certification
Double counting of renewables attributes of electricity must be avoided	RECs must be cancelled for RFNBO production before expiry; no transfer or sale to any other parties than ELY operator		I-REC system is applicable in Morocco, with the Green Certificate Company (GCC) as the issuing body. ¹
RE generation must be directly linked to RE consumption for RFNBO production	RECs must be issued for renewables installation and must include relevant information ³		Compliance provided I-RECs are issued for RE production and retired for RFNBO production. To that end, the economic operator must register with Production Devices. ² Relevant information is requested in the registration process and during Issuance requests. ⁴
			Metering data for re-certification

¹ See <https://www.trackingstandard.org/world-map/>

² See [Standard Terms and Conditions for Registration and Issuing](#) and [I-REC Code for Electricity](#)

³ Relevant information includes:

- The installation unique identifier
- the location of the installation, either postal address, where unique, or geographical coordinates
- electrical production capacity of the installation
- the production technology and energy source of the installation
- the date when the installation came into operation
- the production period or date and time of the production (start and end); and
- financial support information (investment support, operational support, etc.)







⁴ See [Production Facility Registration Form](#) and [Issue Request Form](#)

3.2. GHG Emissions Savings

GHG emissions on a well-to-grave basis must be calculated according to CDR 2023/1185 and must be below 28.2 g_{CO2eq}/MJ

Category	Requirement	Details	CertifHy VS Document
Scope of GHG calculation	Well-to-grave	Incl. Emissions from onsite water treatment, compression, loading/unloading, purification, onsite production of chemicals or products used in processing etc. Incl. Direct atmospheric emissions from processing itself, from waste treatment & from leakages Incl. Transport (loaded + empty return), upstream transport emissions of inputs, storage & distribution of final fuels Excl. Manufacture of machinery and equipment	
Methodology of GHG calculation	$E = e_i + e_p + e_{td} + e_u - e_{ccs}$	E = total emissions from the use of the fuel (gCO _{2eq} /MJ _{fuel}) e _i = e _i elastic + e _i rigid - e _{ex-use} : emissions from supply of inputs (gCO _{2eq} /MJ _{fuel}) e _i elastic = emissions from elastic inputs (gCO _{2eq} /MJ _{fuel}) e _i rigid = emissions from rigid inputs (gCO _{2eq} /MJ _{fuel}) e _{ex-use} = emissions from inputs' existing use or fate (gCO _{2eq} /MJ _{fuel}) e _p = emissions from processing (gCO _{2eq} /MJ _{fuel}) e _{td} = emissions from transport and distribution (gCO _{2eq} /MJ _{fuel}) e _u = emissions from combusting the fuel in its end-use (gCO _{2eq} /MJ _{fuel}) e _{ccs} = emission savings from carbon capture and geological storage (gCO _{2eq} /MJ _{fuel})	
Emission values	GHG emission values	Standard values (chapter 5) or latest version of JEC-WTW report , the ECOINVENT database , official sources such as the IPCC , IEA or government, other reviewed sources such as the E3 and GEMIS database and peer reviewed publications.	GHG Emissions & Sustainability 4.3.1
	Renewable electricity	Shall be accounted as zero emissions if compliant with sustainability requirements	
	Grid electricity emission factor	Must be calculated according to CDR (EU) 2023/1185, taking into account all primary energy sources for electricity generation, type of installation, conversion efficiencies and clean electricity self-consumption as well as fuel supply incl. upstream emissions and combustion of fuels.	GHG Emissions & Sustainability 6
GHG savings	GHG emissions savings from the use of RFNBO shall be at least 70%	70% GHG emissions savings compared to the fossil fuel comparator result in a threshold of 28.2 gCO _{2eq} /MJ	Revised Directive (EU) 2018/2001 Art. 29a (1), GHG Emissions & Sustainability 4.1

The RFNBO project will generally be compliant regarding the GHG calculation but must consider measures for pessimistic months

GHG calculation		Compliance	Project details	Required documentation for certification
Scope of GHG calculation	Well-to-grave		<p>GHG calculation tool is implemented according to requirements of CDR 2023/1185 and the CertifHy Scheme Documents. The GHG emissions are calculated on a well-to-grave basis including upstream emissions, transport emission and emissions from ammonia cracking.</p> <p>All GHG emission values used are Standard Values according to the CertifHy Scheme Documents or stem from publicly available and reliable sources. All sources and assumptions, as well as the calculation methodology applied and all calculation steps are made transparent.</p>	GHG calculation
Methodology of GHG calculation	$E = e_i + e_p + e_{td} + e_u - e_{ccs}$			GHG calculation
Emission values	GHG emission values			GHG calculation
	Renewable electricity			The renewable electricity supply via direct line is compliant with the sustainability requirements (see slides 13 & 14) and is thus counted as zero emission.
	Grid electricity emission factor		The project uses grid electricity for non-relevant energy inputs for which the grid emission factor must be applied. There is no official or publicly available source yet providing a reliable GHG emission value for grid electricity in Morocco derived according to the RED II requirements. The sources used for the GHG calculation in agreement with the economic operator is made transparent in the GHG calculation tool (confidential).	GHG calculation, underlying official sources
GHG savings	GHG emissions savings from the use of RFNBO shall be at least 70%		<p>The GHG emissions of the planned project amount to 25.2 g_{CO2eq}/MJ, corresponding to GHG savings of 73.16% compared to the fossil fuel comparator on an annual average. GHG emissions must be calculated for a period of at most one calendar month.</p> <p>For the most pessimistic month of October, there is a risk that the GHG emissions threshold will be exceeded, leading to non-compliant RFNBO product. Here, measures must be taken, such as designing consignments of shorter than 1 month.</p>	GHG calculation

The RFNBO project will most likely reach the required GHG intensity threshold

On annual average, the RFNBO project will be compliant regarding the GHG intensity on the **well-to-grave basis**:

Total results (annual average)		H ₂	NH ₃	H ₂ (after cracking)	FFC	
e _i	Emissions from inputs (e _i elastic + e _i rigid – e _i ex-use)	g _{CO2eq} /MJ	6.8	17.9	25.2	
e _p	Emissions from processing	g _{CO2eq} /MJ	0.0	0.0	0.0	
e _{td}	Emissions from transport and distribution	g _{CO2eq} /MJ	0.0	3.1	0.0	
e _u	Emissions from fuel in use	g _{CO2eq} /MJ	0.0	0.0	0.0	
e _{ccs}	Emission savings from CO ₂ capture and geological storage	g _{CO2eq} /MJ	0.0	0.0	0.0	
E	Total emissions in gCO₂eq/MJ	g _{CO2eq} /MJ	6.8	21.0	25.2	94.0
	GHG savings	%	92.7%	77.7%	73.2%	
	Eligible?		Yes	Yes	Yes	

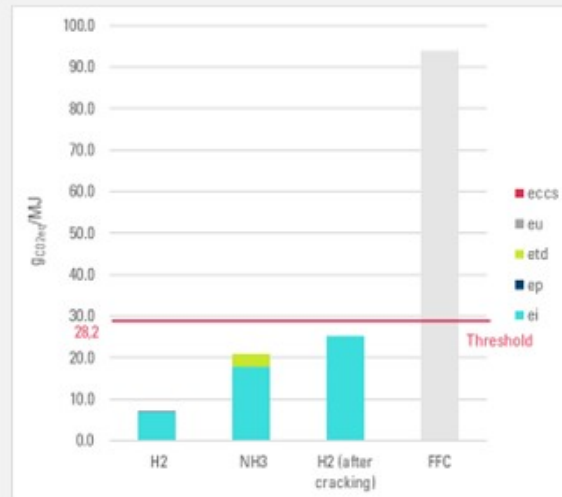
At the H₂-gate, the main input emissions cover electricity

At the NH₃-gate, the main input emissions cover H₂ incl. upstream emissions

At the cracking-gate, the main input emissions cover the NH₃ emissions incl. upstream emissions from H₂ transport

FFC: Fossil fuel comparator

- Notice, that GHG emission must be calculated on the basis of **maximum one calendar month** (in line with temporal correlation requirements where applicable)
- Thus, the auditor may want to check the GHG calculation for separate months

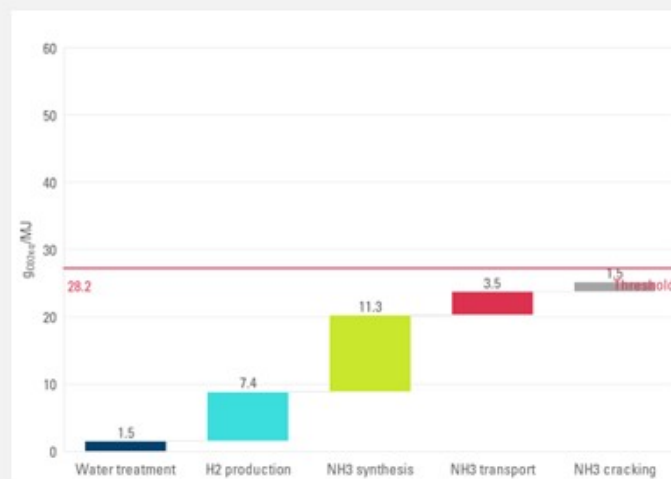


Results of the GHG calculation based on an annual average (incl. 100% self-consumption for NH₃ cracking)

Main parameters and assumptions:

- CI value for grid electricity in Morocco: 577 g_{CO2eq}/kWh¹
- LNG-powered vessel for ammonia transport to EU
- 100% self-consumption of ammonia cracker

¹ <https://ember-energy.org/data/yearly-electricity-data/#methodology>



Results of the GHG calculation per process step based on an annual average

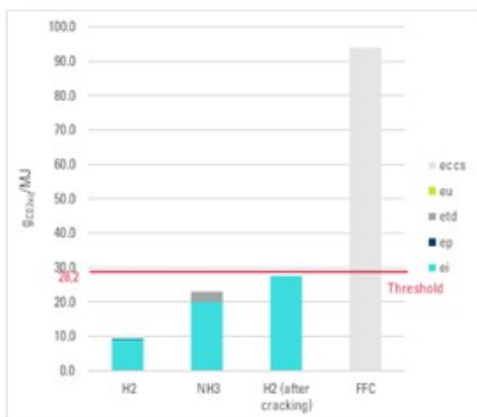
The GHG calculation for the month of October is at risk of exceeding the GHG threshold – batches can be split into compliant consignments

Total results (October)		H ₂	NH ₃	H ₂ (after cracking)	FFC
e _i	Emissions from inputs (e _i elastic + e _i rigid – e ex-use)	g _{CO2eq} /MJ	9.1	20.0	27.6
e _p	Emissions from processing	g _{CO2eq} /MJ	0.0	0.0	0.0
e _{td}	Emissions from transport and distribution	g _{CO2eq} /MJ	0.0	3.1	0.0
e _u	Emissions from fuel in use	g _{CO2eq} /MJ	0.0	0.0	0.0
e _{ccs}	Emission savings from CO ₂ capture and geological storage	g _{CO2eq} /MJ	0.0	0.0	0.0
E	Total emissions in gCO₂eq/MJ	g _{CO2eq} /MJ	9.2	23.1	27.6
	GHG savings	%	90.3%	75.4%	70.6%
	Eligible?		Yes	Yes	Yes

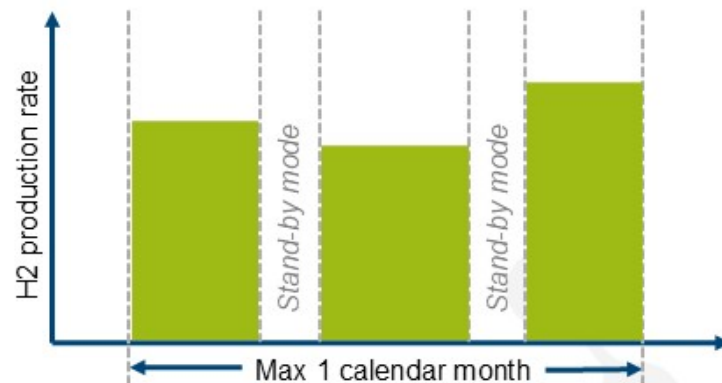
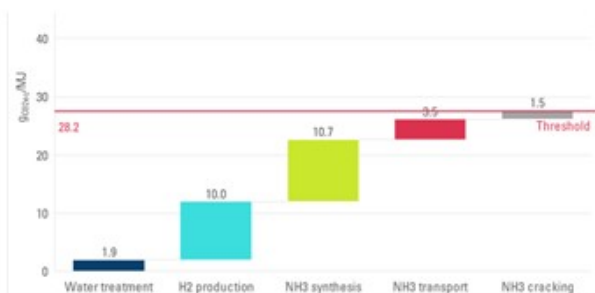
FFC: Fossil fuel comparator

How to handle RFNBO production in months of reduced RE availability:

- The **GHG intensity** may be calculated for the production of fuels occurring during a **period of at most one calendar month** (in line with temporal correlation requirement where applicable).
- Batches can further be split using shorter timeframes; Moreover, emissions during stand-by mode of the whole production plant can be “cut out”.
- RED II-compliant production batches within one calendar month may be aggregated to form a single consignment**, an exception to mass balance rules. The average GHG threshold of 28.2 g_{CO2eq}/MJ must be preserved.



At the H₂-gate, the main input emissions cover electricity
 At the NH₃-gate, the main input emissions cover H₂ in d. upstream emissions
 At the cracking-gate, the main input emissions cover the NH₃ emissions incl. upstream emissions from H₂ transport



RED-compliant RFNBO (i.e. from RE & GHG intensity ≤ 28.2 g_{CO2eq}/MJ)

Splitting of hydrogen batch into RFNBO-compliant consignments

Results of the GHG calculation for the most pessimistic month of October

Different options can be followed to ensure enough buffer for compliance with the GHG emissions threshold

CONSIDERATIONS FOR GHG CALCULATION

The GHG emissions are calculated:

- ✓ for max. one calendar month
- ✓ on a well-to-grave basis and
- ✓ must not exceed $28.2 \text{ g}_{\text{CO}_2\text{eq}}/\text{MJ}$ (GHG threshold).

RE generation can vary across calendar months. To not risk non-compliance, a **sufficient buffer** should be considered in the project planning by applying measures which lead to further GHG savings.

The following assumptions have been agreed and applied to the GHG calculation:

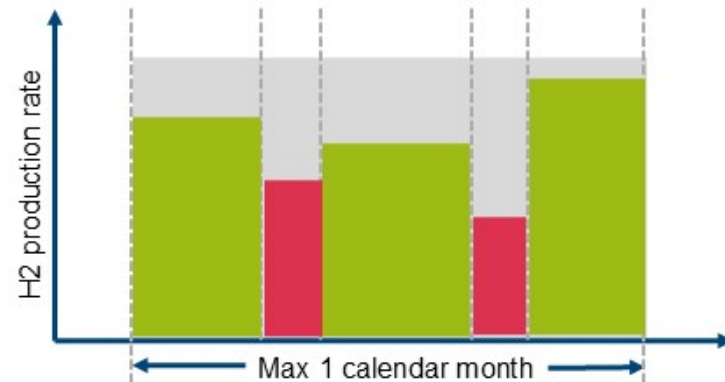
- LNG vessel instead of MDO, arguing that by COD of RFNBO plant, ship fuel transition will have advanced
- 100% self-consumption for NH_3 cracker instead of natural gas

Notice that the **delivery to the end consumer** must also be taken into account. Thus, further emissions contributions from e.g., H2 pipeline transport with NG powered boosting stations, compression for storage in underground hydrogen storage or electricity use at refuelling stations, may need to be added.

OTHER MEASURES FOR REDUCTION OF GHG EMISSIONS

Other measures to reduce GHG emissions include:

- **Green PPA**, while adhering to sustainability requirements for RFNBO certification, for non-relevant energy inputs (currently from grid electricity)
- Appropriate design of RFNBO consignments



- **RED-compliant RFNBO** (i.e. from RE & GHG intensity $\leq 28.2 \text{ g}_{\text{CO}_2\text{eq}}/\text{MJ}$)
- **Non-compliant RFNBO** (i.e. GHG intensity $> 28.2 \text{ g}_{\text{CO}_2\text{eq}}/\text{MJ}$)
- **Non-RFNBO** (i.e. electricity supply not compliant with sustainability requirements)

Splitting of hydrogen batch into RFNBO-compliant consignments

Project developers in Morocco would benefit if certain data was provided from official sources

KEY LEARNING FROM MOROCCAN CASE STUDY

For the GHG calculation of RFNBO products to demonstrate compliance with GHG saving requirement, the **grid emission factor is a key data input**.

It must be calculated according to the methodology defined in CDR (EU) 2023/1185, taking into account, e.g.,

- All primary energy sources for electricity generation, type of installation, conversion efficiencies and clean electricity self-consumption
- Fuel supply incl. upstream emissions and combustion of fuels

The Delegated Acts and the Scheme Documents provide that all required data must come from official sources.

During the compliance check, difficulties were encountered to calculate the correct grid emission factor for Morocco due to limited data from official sources. Instead, the grid emission factor was approximated using publicly available sources.

To support Moroccan Economic Operators aiming to export RFNBOs to the EU, it is **strongly recommended to Moroccan regulators to provide the correctly calculated emission factor and underlying data**.

4.

Compatibility of Moroccan PPA Framework with RFNBO Requirements

Law 13-09 provides the legal basis for direct corporate PPAs between IPPs and industrial consumers in Morocco

PLAYERS OF THE MOROCCAN ELECTRICITY MARKET:

- **Energy Regulation Authority (ANRE):**
Independent regulatory body regulating activities of electricity producers, distributors, and suppliers; Determines transmission grid tariffs and maximum grid capacity
- **Ministry of Energy and Sustainable Development (MEM):**
Formulates and implements regulatory frameworks and strategies for the energy system in Morocco
- **Moroccan Electricity and Water Authority (ONEE):** State-owned utility company managing and operating electricity generation, transmission and distribution
- **Moroccan Agency for Sustainable Energy (MA SEN):**
Government agency promoting renewable energy project in Morocco
- **Moroccan Agency for Energy Efficiency (AMEE):**
Government agency promoting energy efficiency and conservation measures

ELECTRICITY MARKET STRUCTURE AND REGULATORY FRAMEWORK FOR PPAs IN MOROCCO

- Morocco has a **vertically integrated electricity market** with ONEE managing and operating electricity generation, transmission and distribution.
- Independent power producers (IPPs) represent around 80% of the total power generation
- Historically, PPAs in Morocco involved the ONEE (conventional) and MASEN (renewable) as the sole electricity buyer from large IPPs via a tendering process; PPAs determine power purchase tariffs
- With **Law 13-09** introduced in 2010, the legal basis was provided for IPPs to conclude **PPAs directly with industrial consumers** (corporate PPAs)

Article 26 of Law 13-09 (amended by Law 40-19):

L'exploitant peut fournir de l'électricité à un consommateur ou un groupement de consommateurs raccordé(s) au réseau électrique national ou à un gestionnaire de réseau de distribution d'électricité ou les deux à la fois dans le cadre d'un contrat qui prévoit, en particulier, les conditions commerciales de fourniture de l'énergie électrique, ainsi que l'engagement desdits consommateurs d'enlever et de consommer l'électricité qui leur est fournie, exclusivement pour leur propre usage.

The **operator may supply electricity to a consumer or a group of consumers connected to the national power grid**, or to an electricity distribution system operator, or to both, under a **contract that specifies**, in particular, the **commercial terms** for the supply of electricity, as well as the **commitment** by said consumers to purchase and consume the electricity supplied to them exclusively for their own use.

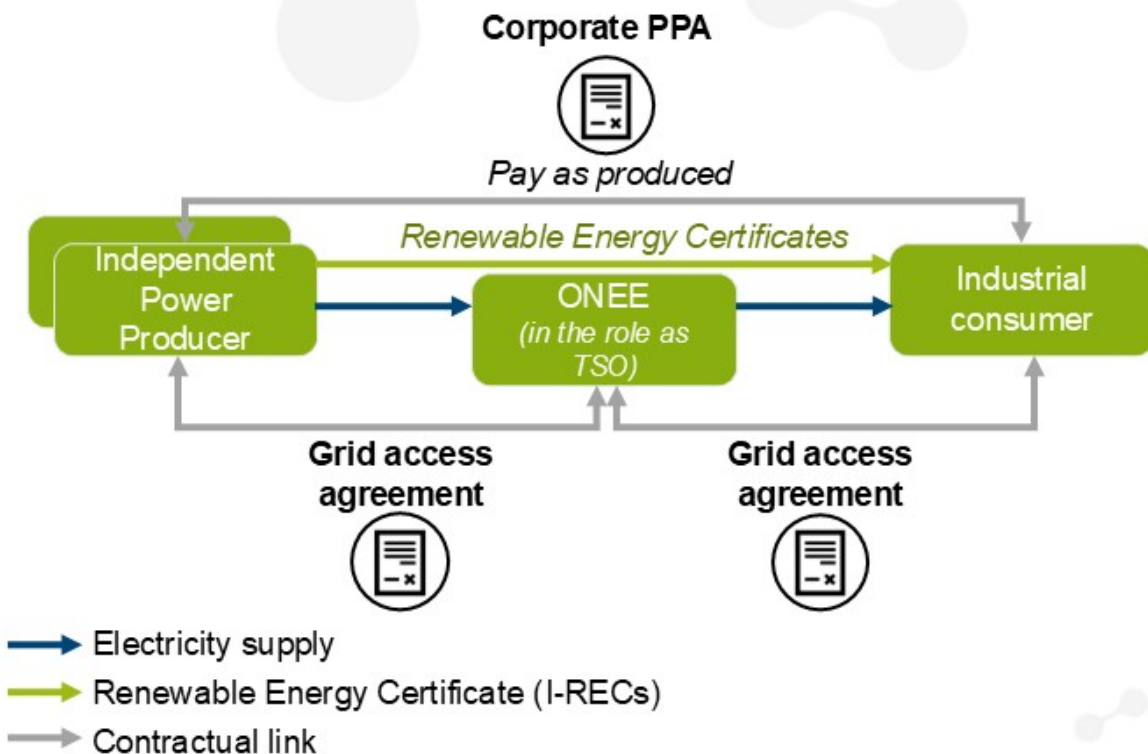
<https://www.enerdata.net/estore/country-profiles/morocco.html>

<https://res4africa.org/wp-content/uploads/2023/04/RegulatoryReviewofElectricityMarketinMorocco.pdf>

<https://aln.africa/wp-content/uploads/2024/06/Morocco-Power-Guide-2024.pdf>

While law 13-09 fosters direct PPAs between IPPs and industrial consumers, grid access agreements must be concluded with ONEE as the TSO

CORPORATE/MERCHANT PPA STRUCTURE IN MOROCCO:



- For RFNBO certification in the Moroccan context, **direct PPAs between the RE producer and RFNBO producer** are relevant for renewable electricity supply via the grid.
- According to Law 13-09, **Corporate/merchant PPAs** can be concluded between IPPs and industrial consumers with electricity **supply via the grid**
- The PPA must include **commercial terms** and contractually define the **commitment** of electricity supply and offtake according to Art. 26
- Transmission via the grid is subject to limits of the maximum capacity set by ONEE and ANRE; a **grid access agreement must be concluded with ONEE as the TSO.**

The regulatory framework of RED II provides direct and indirect requirements for PPAs for RFNBO certification

Policy source	Requirement
Renewable Energy Directive (EU) 2018/2001	<p>PPA definition according to Art. 2(17):</p> <p>“renewable power purchase agreement’ means a contract under which a natural or legal person agrees to purchase renewable electricity directly from an electricity producer.”</p>
Commission Delegated Regulation (EU) 2023/1184	<p>According to Art. 4(2)(a) (i.e. $<18 \text{ g}_{\text{CO}_2\text{e}}/\text{MJ}$ case) and Art. 4(4) together with Art. 5, 6 and 7 (PPA case), to count electricity taken from the grid as fully renewable, fuel producers are required to “[conclude] directly, or via intermediaries, one or more renewables power purchase agreements with economic operators producing renewable electricity in one or more installation for an amount of renewable electricity that is at least equivalent to the amount of electricity that s claimed as fully renewable and the electricity claimed is effectively produced in this or these installations”.</p>
Q&A document of the European Commission version 15/03/2024	<p>The reply to question 19 provides the following guidelines:</p> <ul style="list-style-type: none"> • “The PPA needs to clearly identify the RE energy installations that produce the electricity being used to produce RFNBOs.” • “It is important that a direct relationship between the electricity producer and the hydrogen producer is maintained.”

Direct requirements for PPAs:

- ✓ Purchase from electricity producer
- ✓ **Direct** PPA or via **intermediaries maintaining a direct relationship** between electricity producer and RFNBO producer
- ✓ Clearly **identifiable RE assets**
- ✓ Ensure matching of claimed RE production and consumption for RFNBO production

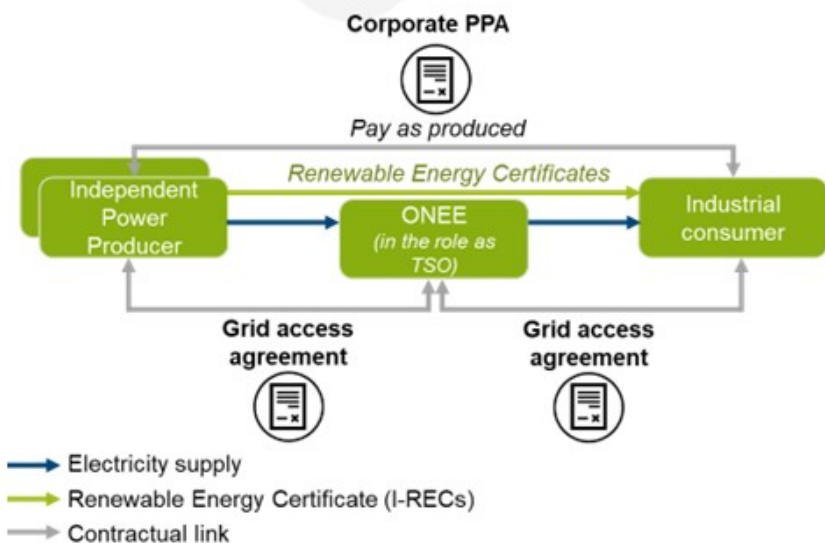
Indirect requirements arise from RFNBO requirements on sustainability for documentation and ultimately evidence of claims made!

PPAs must in their structure enable a direct relationship between RE & RFNBO producer and provide access to sustainability information

Category	Requirement	Details	
1 PPA structure	Purchase from electricity producer	Purchase by the hydrogen producer of renewable electricity from the electricity producer, directly or indirectly	
	Direct relationship	Direct relationship between the renewable producer and the hydrogen producer maintained e.g. via the supply of information allowing to check temporal correlation between electricity consumption and the production of the assigned generation capacities.	
	GOs transfer	GOs for the electricity produced by the producer and covered by the PPA must be cancelled for the actual consumption of the consumer (hydrogen producer)	
Required featured information	Renewability	Identification The assets covered by the PPA is clearly identified	
	Additionality	Renewable asset	The assets covered by the contract are producing power from wind, solar (solar thermal and solar photovoltaic) and geothermal energy, ambient energy, tide, wave and other ocean energy, hydropower
		Date of entry into operation	Asset(s) covered by the PPA did/will not come into operation or have not been repowered more than 36 months before start of RFNBO production.
	Temporal correlation	Documentation of no support	Asset(s) covered by the PPA will not receive public support, or, if they did, such support was received only prior to repowering and is not linked to RFNBO production.
		Production data availability	Production data for the assets covered by the PPA will be made available via a clear process at least at a calendar month granularity until 2030 and hourly granularity after 2030.
2 Geographical correlation	Location	The assets covered by the PPA are located in the same bidding zone as that where the hydrogen production unit is located. Note : If bidding zones change, geographical correlation is assessed using the zone boundaries at the time the plant started operation (per DA).	

Provided that transfer and cancellation duties for I-RECs are established in the PPA contract, the regulatory framework in Morocco enables compliant PPA structures for RFNBO certification

MOROCCAN PPA FRAMEWORK: ELIGIBILITY OF PPA STRUCTURE FOR RFNBO PRODUCTION



	Requirement	Regulatory framework	How can these requirements be fulfilled?
PPA structure	Direct or indirect purchase from RE producer	🚩	Direct contract between RE producer and H2 producer enabled through Art 26 of Law 13-09
	Direct relationship between RE producer and H2 producer	🚩	Established by PPA contract; Grid access contract should ideally reflect that electricity sourced from RE producer is supplied to H2 producer for the ultimate goal of RFNBO production
	GOs/RECs transfer and cancellation	🚩	No issue as long as the transfer and cancellation duties for I-RECs are established in the PPA contract (and in the grid access contract if required)

Corporate renewables PPAs in Morocco between IPPs and RFNBO producers must contain key information relevant to RFNBO certification

MOROCCAN PPA FRAMEWORK: Required content of corporate PPAs

- There is no regulation or guideline established in the Moroccan PPA framework for corporate PPAs detailing the required content of PPAs.
- For RFNBO certification, RFNBO producers should make sure that relevant information is included to
 1. **Clearly identify the RE assets**
 2. Provide **evidence of compliance** with sustainability requirement
 3. Establish **access to time-resolved production data**

Information, the PPA contract must provide		How can these requirements be fulfilled?
Renewability	Clear identification of RE asset	Asset name, size, location, technology (e.g. wind, solar, hydro)
	Technology specification of RE asset	
Additionality	Date of entry into operation	Statement of RE asset COD date
	Documentation of no support	Declaration that the asset(s) covered by the PPA do not receive public support, or that any support received occurred only prior to repowering and is not linked to RFNBO production Note: Auditor may verify via registries, generator declarations, or proof of repayment/withdrawal.
Temporal correlation	Production data availability	<ul style="list-style-type: none"> • Clause requiring delivery of time-resolved production data to the H2 Producer • specifies of the format, frequency, and responsibility for data reporting
Geographical correlation	Location of RE asset and electrolyser	Specification of both the RE asset and electrolyser location

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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.