Djewels

THE EU DELEGATED ACTS ON RENEWABLE HYDROGEN

And developing Power-to-X projects in the Netherlands

12 April 2023 **13:30 – 18:00**

The Hague, Conference Centre New Babylon

Project supported by

Clean Hydrogen Partnership

waddenfonds

PROJECT PARTNERS

HyCC

McPhy Driving clean energy forward

gasunie crossing borders in energy

OCI Methanol Europe

DE NORA

Hinicio

Project supported by

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Purpose of joining this event.

More Details

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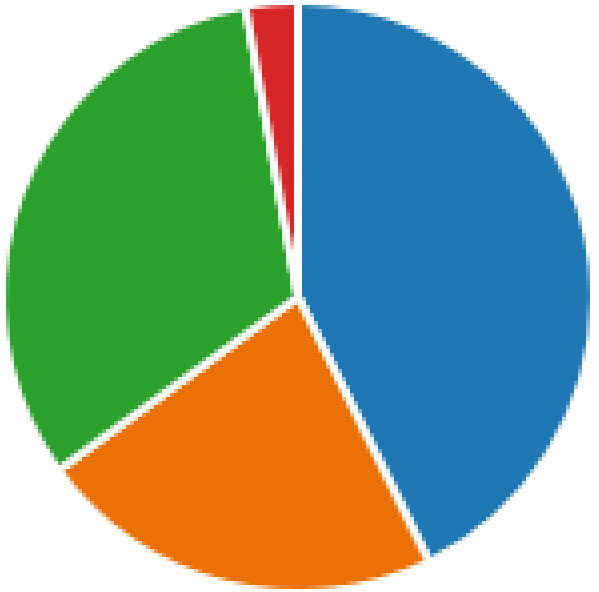
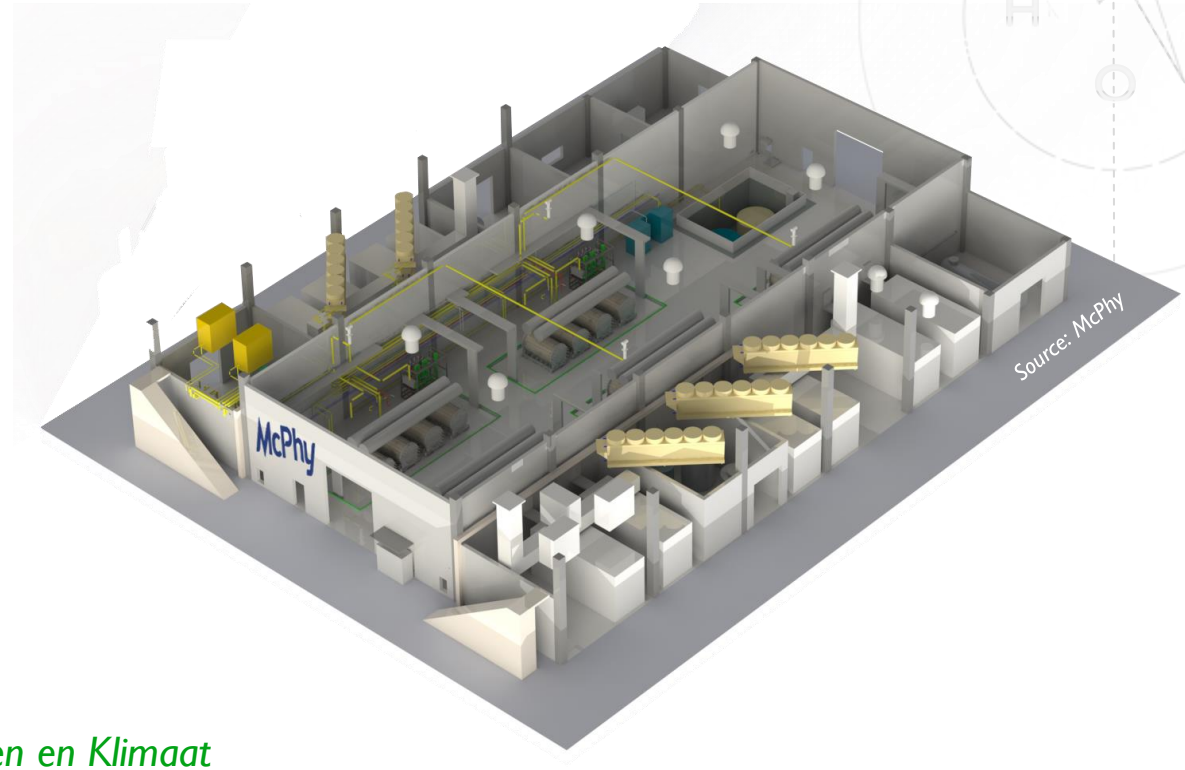


AGENDA

14:00	The Delegated Acts and developing PtX projects	***Joost Sandberg*** *Commercial Director* *HyCC*
14:30	RFNBO compliant methanol production	***Karlijn Arts*** *Global Head of Sustainability and Regulatory Affairs* *OCI Methanol Europe*
15:00	Certification	***Remco van Stein Callenfels*** *Policy Officer* *VertiCer*
15:30	Break	
15:45	Panel Discussion	***Thomas Winkel*** *(moderator)* *Hinicio* ***Joost Sandberg*** *HyCC* ***Karlijn Arts*** *OCI Methanol Europe* ***Bert den Ouden*** *HyXchange* ***Jarno Dakhorst*** *Ministerie van Economische Zaken en Klimaat* ***Remco van Stein Callenfels*** *VertiCer*
16:45	Closing remarks	***Thomas Winkel*** *Hinicio*
17:00	Networking	



THE DELEGATED ACTS AND DEVELOPING POWER-TO-X PROJECTS

Joost Sandberg *Commercial Director* *HyCC*

Djewels

The Delegated Acts and impact on PtX projects such as Djewels

Joost Sandberg, Project Leader Djewels

Commercial Director HyCC

joost.sandberg@hycc.com

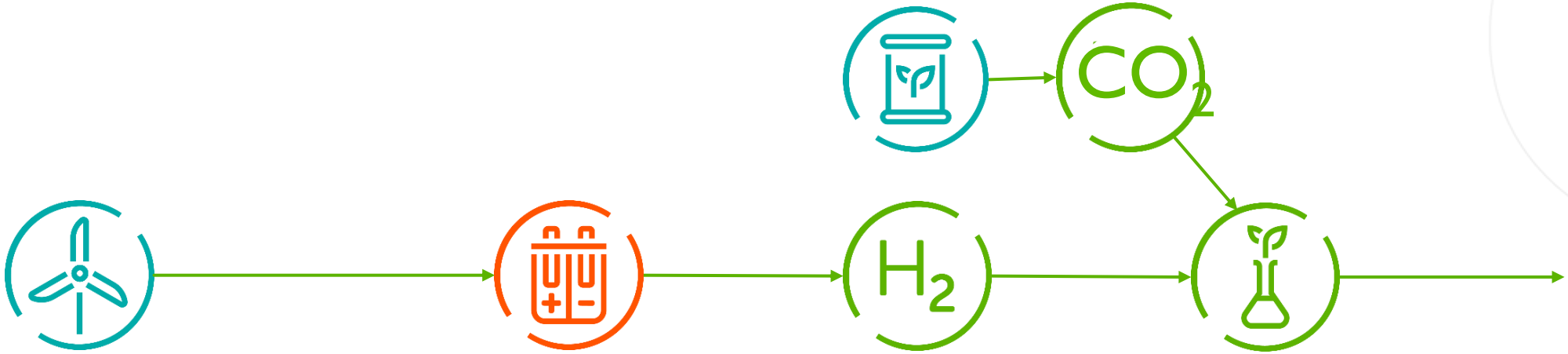
Project supported by

Clean Hydrogen Partnership

waddenfonds

Netherlands Enterprise Agency

PARTNERING ALONG THE VALUE CHAIN TO ESTABLISH THIS FIRST-OF-A-KIND PROJECT



gasunie crossing borders in energy

HyCC

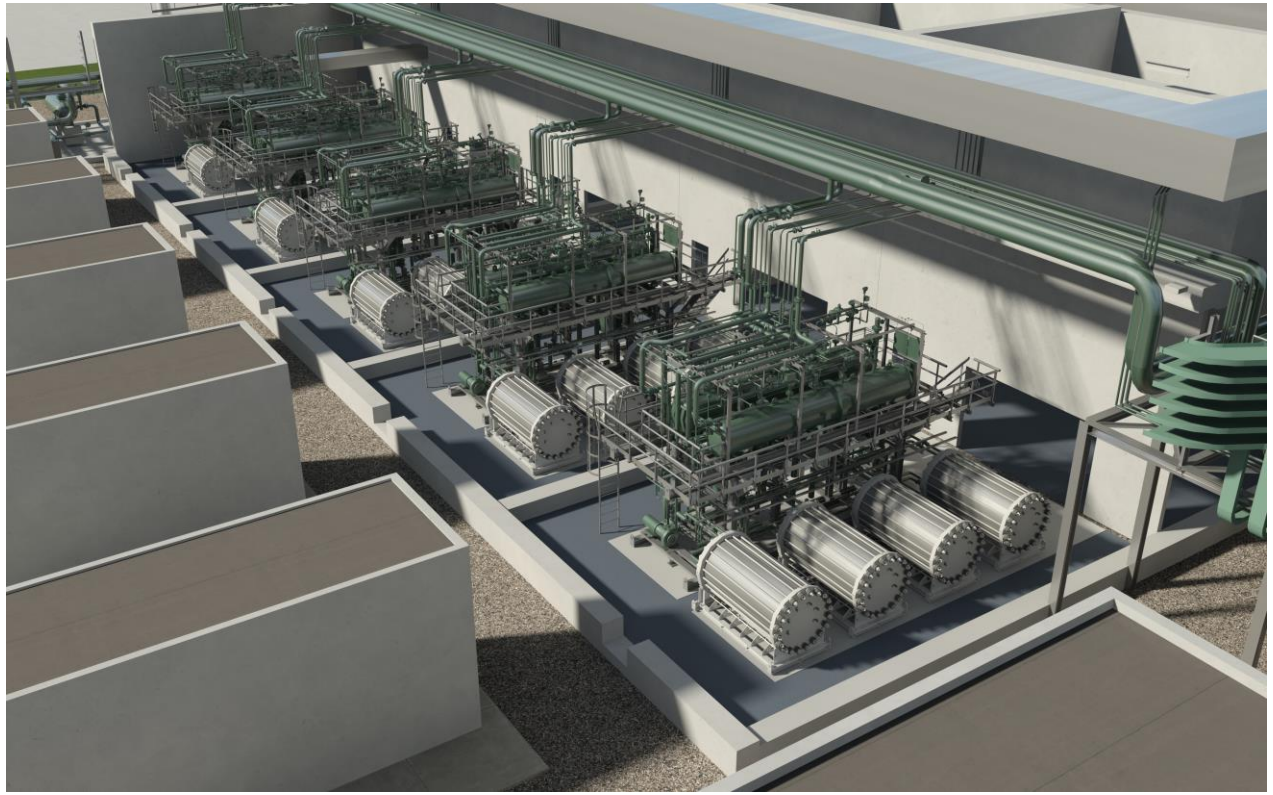
Hinicio

BioMCN

McPhy Driving clean energy forward

DE NORA

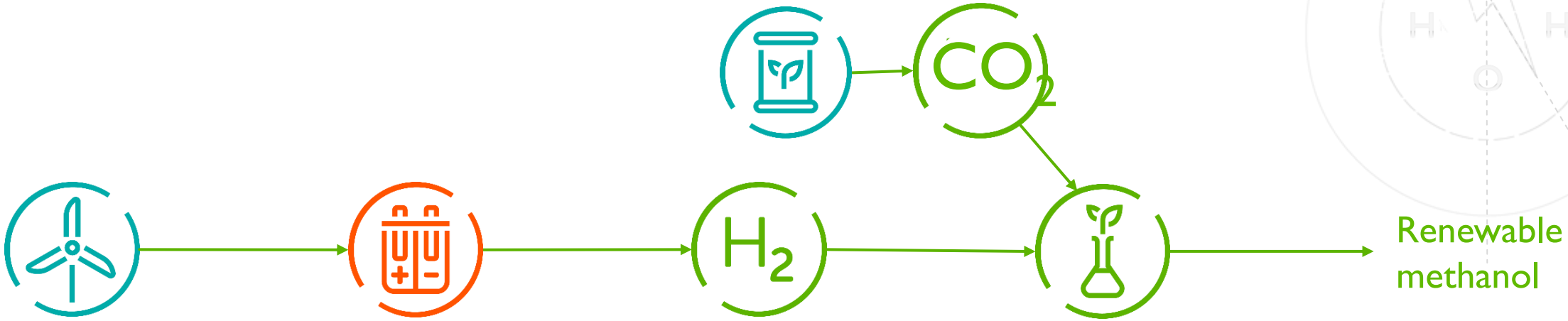
WITH DJEWELS, WE SET AN IMPORTANT STEP IN SCALING UP GREEN HYDROGEN…



Djewels:

- 20 megawatt waterelektrolyse-unit, comprising of 5 modules x 4 MW
- State-of-the-art, European, high current density, pressurized, Alkaline technology
- Gasunie and HyCC working closely with OCI BioMCN, Groningen Seaport, McPhy, DeNora and Hinicio
- Location: Chemical Park Delfzijl
- Supported by the regional Waddenfonds, Dutch Ministry of Economic Affairs & Climate and European FCH-JU

..AND WE WILL BE ABLE TO WILL SHOWCASE THE COMPLETE VALUE CHAIN FROM RENEWABLE POWER TO RENEWABLE METHANOL



GoO Electricity

GoO Hydrogen

HBE

vertiCer

vertiCer

nea
Nederlandse Emissieautoriteit
Dutch Emissions Authority

THE DELEGATED ACTS ARE KEY IN ESTABLISHING THE FRAMEWORK

We are now getting ready for the next step: implementation

- There are 2 delegated acts that govern this P2X value chain:
  - Rules for determining when electricity used for the production of renewable liquid and gaseous transport fuels of non-biological origin can be considered fully renewable
  - Methodology for determining greenhouse gas emissions savings from renewable liquid and gaseous transport fuels of non-biological origin and from recycled carbon fuels
- These delegated acts still need to be accepted by European Parliament and the Council
- These acts will need to be implemented in the Member States
- Processes, systems need to be set up / adopted to implement these new laws and regulations

Implementation of these acts should take into account that this is a nascent market

DIVING DEEPER INTO REQUIREMENTS FOR H2 AS AN RFNBO

Requirements on Additionality and Temporal & Geographical correlation

- **Additionality:**
- 36 months between the RES plant and the RFNBO plant
- Derogation until Dec 2038 if electrolyser commissioned before 2028

- **Temporal correlation:**
- Monthly until 2030, then hourly
- Temporal correlation has automatically been complied if the spot market day-ahead price is lower than 20 €/MWh or 0.36 times of the ETS price
- Member States might make it hourly after 2027

Geographical correlation:

- Same bidding zone (onshore at time of commissioning, offshore anytime)
- Plus interconnected bidding zone when no congestion (based on hourly prices)
- Member states may introduce additional criteria

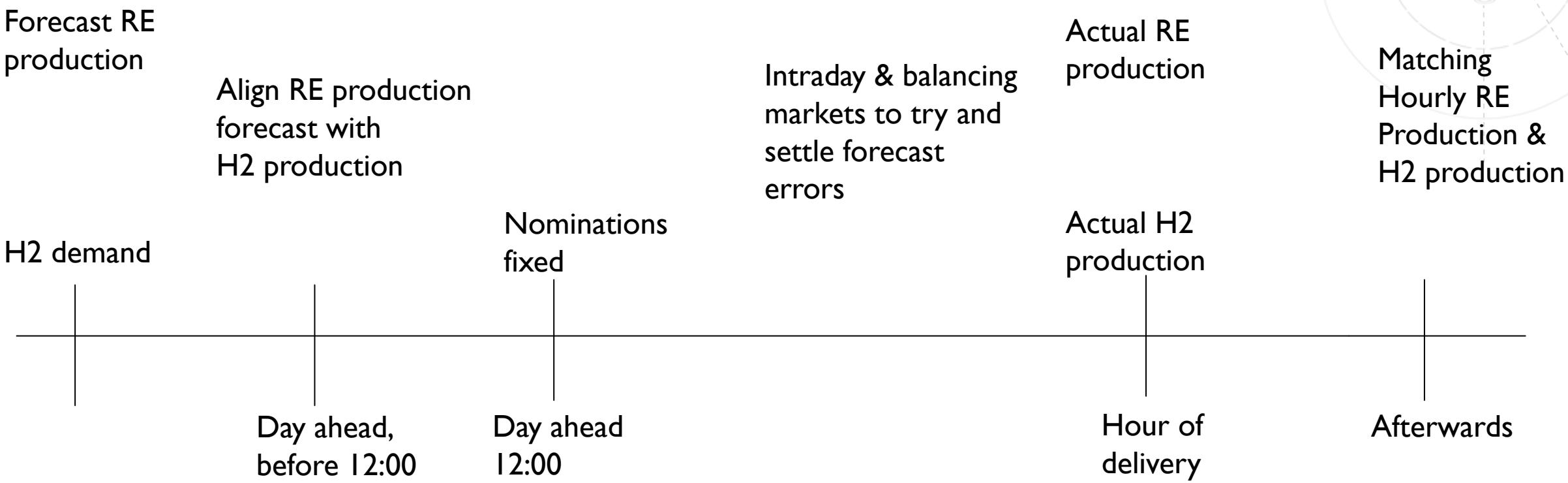
Exemptions to additionality

- Bidding zone with more than 90% renewable energy generation
- Bidding zones with less than 18 gCO2eq/MJ

Delegated act is effective if not rejected by the European Parliament or the European Council coming months

TEMPORAL CORRELATION ON HOURLY BASIS CAUSES SEVERAL ISSUES

Going through the day-to-day operations raises key questions



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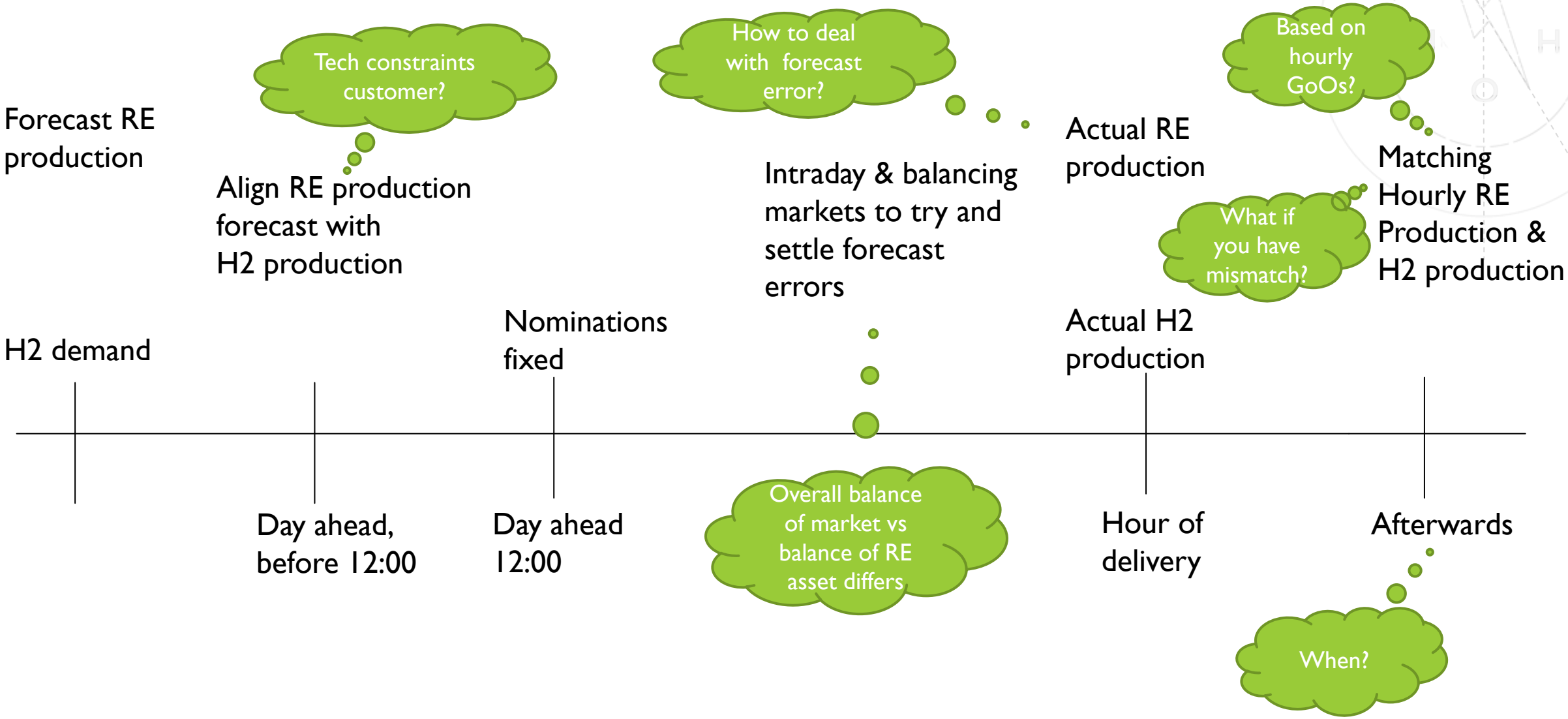


TEMPORAL CORRELATION: WHY ON HOURLY BASIS?

Hourly temporal correlation required other elements are in place, hourly GoO's new:

- Hydrogen pipes & storage to provide reliable REDII complient hydrogen to industries
- Fully aligned GoO_electricity and GoO_hydrogen certification & audit systems
- Hourly GoO_electricity that can be traded

The transaction costs of hourly correlation will be high:

- Admin & transaction costs to balance demand & supply of RE on hourly basis
- The costs of imbalance increases significantly

While the added value of this measure can be achieved via other means:

- Enable integration of RE: existing power markets provide the price signals to incentivize elektrolysers
- Avoid use of carbon intensive power: can also be secured on monthly basis

We see no added value in hourly temporal correlation

Questions?

RFNBO COMPLIANT METHANOL PRODUCTION

Karlijn Arts *Global Head of Sustainability and Regulatory Affairs OCI Methanol Europe*

RFNBO requirements for e-MeOH production

March 2023

A Global Leader in Both Nitrogen and Methanol, Well Positioned for the Next Hydrogen Growth Stage

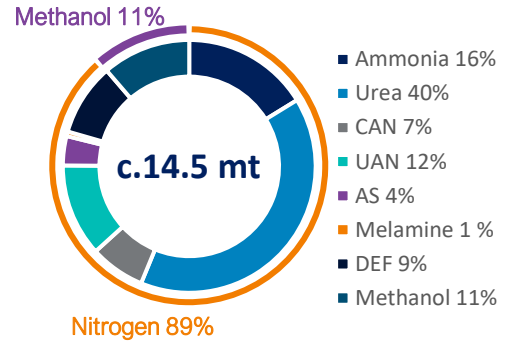
OCI NV Listed on Euronext (Market Cap of $6.8bn[1]), Fertiglobe (50% owned by OCI) Listed on ADX (Market Cap of $9.5bn[1])

A Global leader in hydrogen products

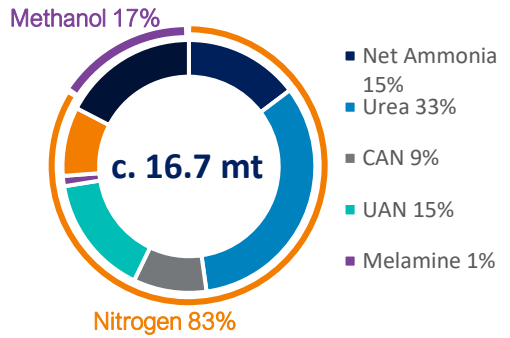
- **#3** *Nitrogen Fertilizer Producer*
- **#5** *Methanol Producer*
- **#1** *Green Methanol Producer*
- **#1** *Seaborne Nitrogen Export Platform*
- **#2** *Methanol Producer in the US*

Supported by A Well Diversified Portfolio

2022 volumes sold by product



2022 production capacity by product



With Significant Scale

$9.7Bn Revenue 2022	**$3.9Bn** Adjusted EBITDA 2022	**$1.3Bn** Adjusted net income 2022
$1.9Bn 2022 FCF[4]	**0.3x** Consolidated net leverage	**16.7M** tons Production capacity[2]

And Hydrogen Accretive Growth Opportunities Leveraging Existing Infra

1.1 Mt Texas Blue Ammonia
Back-end only

1 Mt[1] Fertiglobe / Ta'ziz Partnership
Back-end only

Egypt: up to 90ktpa green ammonia[3]

Gasification project: BioMCN[3] under evaluation

RNG

BlueAm®

Green Ammonia[3]

Bio-Fuels

Green Methanol[3]

AdBlue®

Source: Company Information (1) Market prices as of 09-Feb-23; (2) Including OCI's 50% share of Natgasoline volumes (3) Green ammonia and methanol are made from renewable feedstocks including biogas and hydrogen from renewable electricity. (4) Consolidated FCF after realised leakage to minorities

OCI – Long Standing History of Project Development

OCI has 25+ years experience creating leading industrial platforms through in-house development/construction, from the development of a global cement group, development and rollout of ports business, to the last 15+ years of focus on petrochemical projects development

** 90% of 35 million tons cement capacity was self-developed greenfield projects*

2005-2010

Egypt Basic Industries Corporation EPC: Greenfield construction of 730ktpa ammonia plant led by OCI (60% stake)

Egypt Fertilizer Company: Acquired 1,648 ktpa Urea plant (built by OCI)

2011

OCI Beaumont: Purchase of an 8 year mothballed methanol/ammonia facility; restart of ammonia synloop after 9 month refurbishment

2012

OCI Beaumont: Restart of the methanol plant after 12 months refurbishment (and feeding the ammonia synloop with H2 from the methanol plant)

2013

Sorfert EPC: 2 TKIS ammonia plants (803 ktpa) and 1 urea plant (1,259 ktpa)

2015

OCI Beaumont: Expansion / debottlenecking of ammonia & methanol plants by 25%

2017

IFCo EPC: 2,200 mtpd Ammonia, 2,200 mtpd Urea synthesis, Nitric Acid, 4,300 mtpd UAN, and 3,000 mtpd DEF plant (KBR/TKIS/Stamicarbon). Including all Utilities and Storage and Loading facilities

2018

Natgasoline EPC (lead developer): 5,000 mtpd Air Liquide methanol facility. 50/50 JV with Proman

2019

OCI Delfzijl: restart and refurbishment of methanol-2 plant (0.5 mtpa)

OCI Beaumont: 12% methanol capacity expansion (executed in 6 months)

2023+

Next growth stage
Evaluation and execution of future hydrogen-based projects

OCI Beaumont

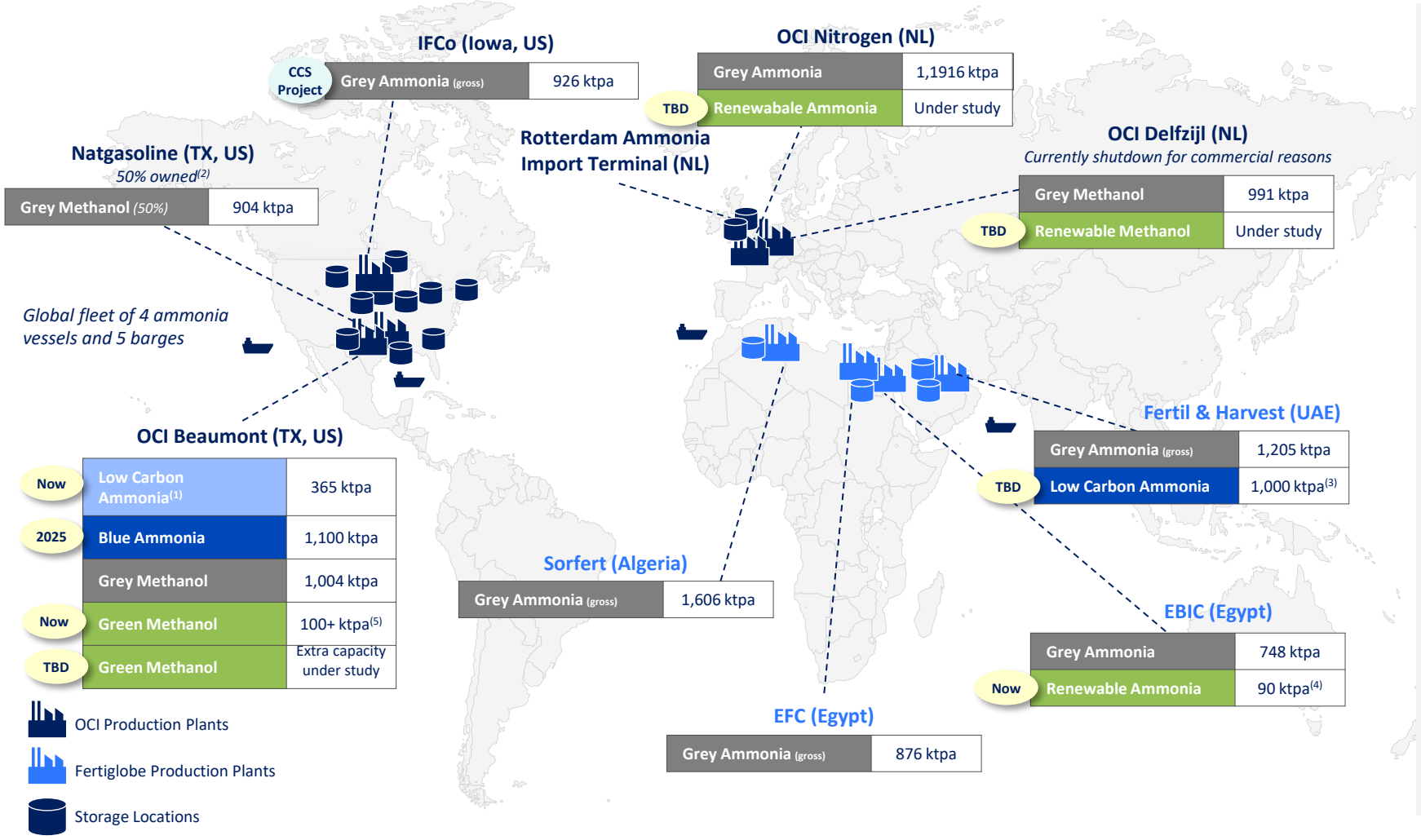
Iowa Fertilizer

Natgasoline

OCI Delfzijl

Global Asset Overview – Methanol & Ammonia

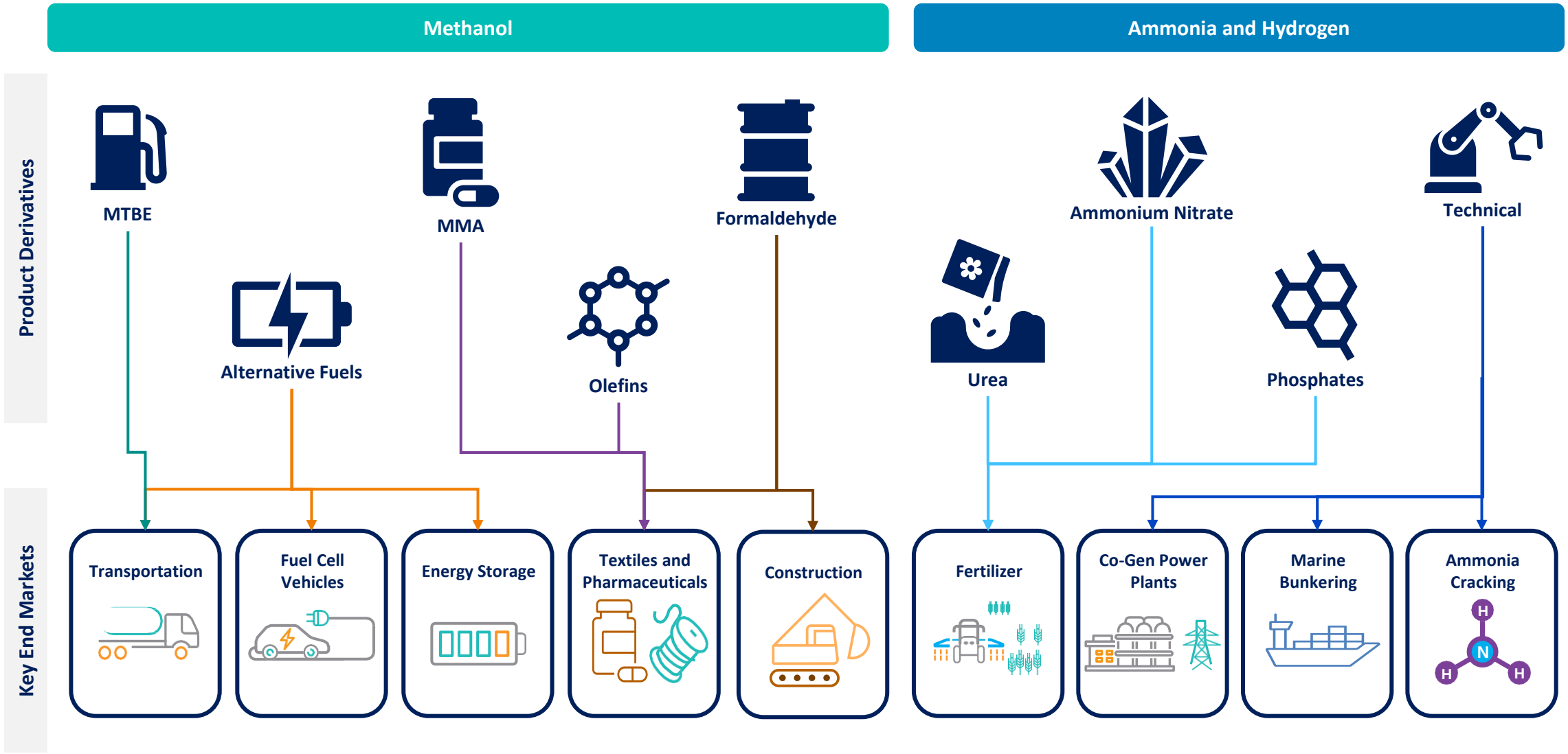
OCI is the first mover with scalable low carbon ammonia and green methanol availability



- Uniquely positioned in global bunkering with ammonia and methanol tanking presence in 3 out of 4 global hubs (Fujairah, Houston, Rotterdam) and in Suez Canal
- OCI distributes ~2.3mt ammonia and ~2.3mt methanol annually to existing investor base
- Green / blue products, and some grey ammonia / methanol, sold into industrial and energy markets
- MENA assets held in Fertiglobe, a 50% owned partnership with ADNOC

Notes: (1) Certification of ammonia ongoing. (2) JV with Consolidated Energy Ltd (Proman). (3) 1mtpa capacity on 100% basis, not adjusted for Fertiglobe ownership in Abu Dhabi Low Carbon Ammonia project; EPC contract signed. (4) Egypt Green project launched in November during COP27 – 50% owned by Fertiglobe. (5) Green capacity depends on how much of RNG used for Green Methanol production instead of selling in the market for RINs.

OCI is Uniquely Positioned to Deliver Decarbonized Solutions Globally



OCI Methanol Group – A Global Leader With Significant Growth Ambitions

A Global Leader with Top Market Positions In US and Europe

~3.3Mt[1]

Of total current owned capacity

- **#2 in US**
- **#1 in Europe**
- **#5 Globally**
- **#1 Leader in Clean Methanol**

Global Production

Sole producer with facilities in both the USA & EU leading to enhanced netbacks

Global Distribution

Extensive import and export infra with network to reach the EU, US and Asia

Centralised Commercial

Senior traders with >20yrs of individual experience in Methanol & Petchem

Clean Fuels Leader

Leader in green methanol transportation fuels applications

Hydrogen Advantage

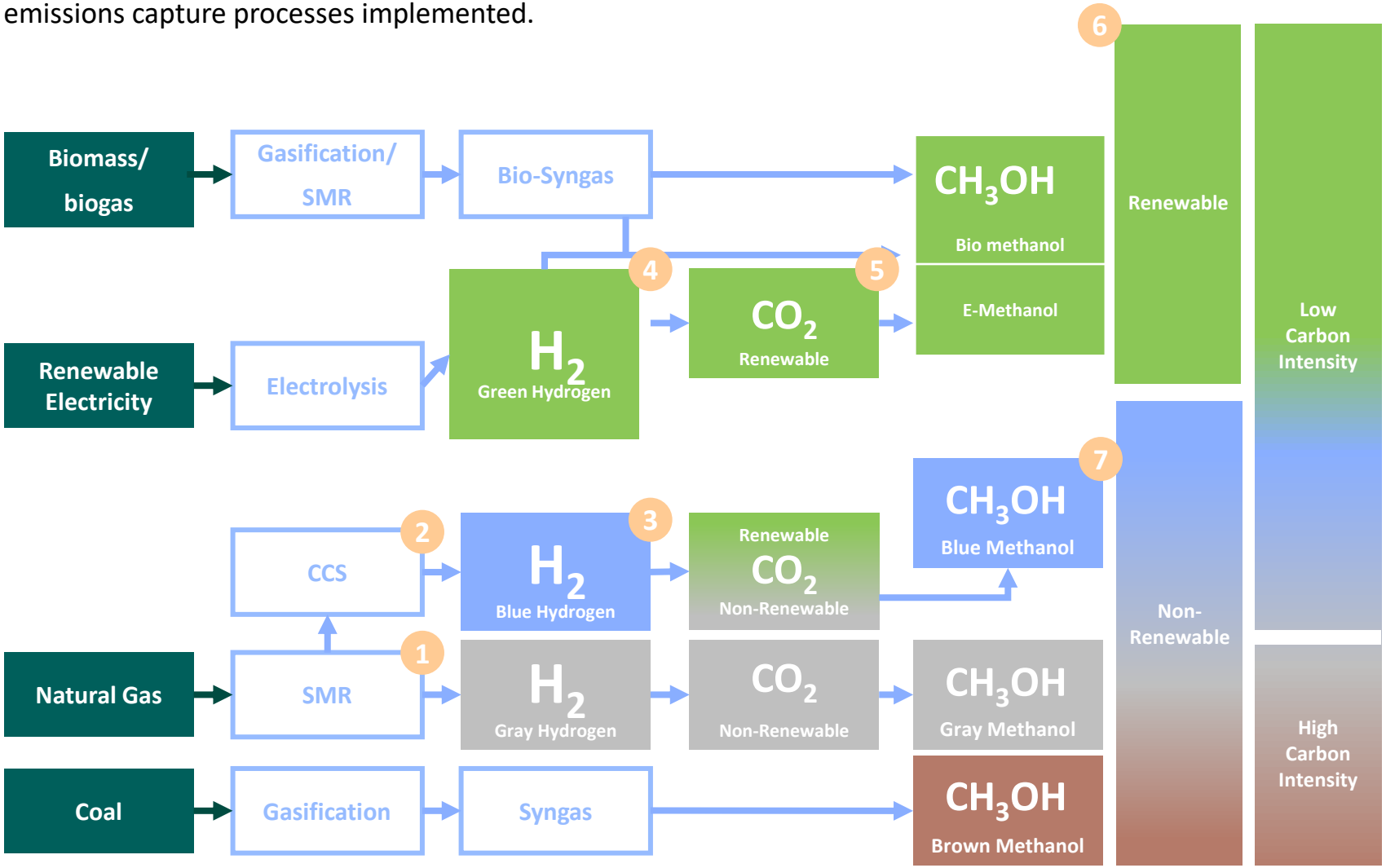
With methanol ideally positioned to capitalise on the H2 economy as a H2 liquid carrier

Transportation | Marine | Chemicals | Power

[1] Includes 50% of Natgasoline capacity and 365ktpa of ammonia capacity at OCIB.

Different methanol production pathways

Methanol synthesis can be categorized into various sustainability definitions based on the feedstocks and emissions capture processes implemented.



1. **Steam Methane Reforming (SMR)** reacts natural gas (methane) with water to produce carbon oxides and hydrogen gas

   $CH_4 + 2\ H_2O \longrightarrow CO_2 + 4\ H_2$

2. **Carbon Capture and Sequestration (CCS)** is the process of capturing carbon oxides (CO and CO2) that would otherwise be released into the atmosphere and storing them underground
3. **Blue Hydrogen** is produced from **SMR** (or other gasification process) where carbon is captured and stored
4. **Green Hydrogen** is produced from **electrolysis** (the use of renewable electricity to split H_2O into O_2 and H_2)
5. **Renewable CO2** is not captured from fossil fuels, but rather sourced from biomass or direct air capture
6. **Green Methanol** describes methanol produced from renewable resources (biomass, renewable electricity)
7. **Blue Methanol** is a low carbon alternative produced from either 1) blue H2 and CO2 or 2) green H2 and non-renewable CO2

Project Overview- Under study

Project will allow one of the 2 existing BioMCN methanol trains to drastically reduce the natural gas uptake of BioMCN by sustainable alternatives.

Feedstock

To be mothballed

Natural Gas *Feedstock* → Steam Methane Reformer

Project Scope

Over-the-Fence Hydrogen

BioMCN Offtake for ~600MW hydrogen p.a.

- Green hydrogen is made through electrolysis, using renewable electricity (wind, solar, etc.) upstream
- Collaboration needed with several green hydrogen providers to supply the facility with this enormous amount of green H2

Electrolyzer

Capex Scope

Organic Feedstock *(biogenic)*

- **Wood Waste** (pellets / chips)
- **Organic Municipal** Solid Waste (MSW)

Inorganic Feedstock *(non-biogenic)*

- **Inorganic Municipal** Solid Waste (MSW)

Gasifier

Methanol Synthesis

E-Hydrogen

Biogenic CO

Syngas (H2 + CO)

Existing BioMCN Methanol Synthesis Loop

- To run only on one of BioMCN trains
- Will be debottlenecked to reach 590ktpa capacity

Final Product

Green Hydrogen + Biogenic CO2 → **E-Methanol**
Road Transport & Marine Fuels

Organic Feedstock → **Bio-Methanol**
Road Transport & Marine Fuels

Inorganic Feedstock → **Low Carbon Methanol**
Voluntary Chemical Markets

Average GHG Savings vs. Grey methanol of 70%+ across product portfolio

Regulaton decides upon BioMCN's renewable future

DA stipulating the GHG methodology for RFNBO's and RCF's

Key elements

- **Scope.** The fossil fuel comparator for both fuels is set at **94 gCO2eq/MJ** and the minimal greenhouse gas emissions savings from the use of (both RFNBOs and) RCFs shall be **at least 70 %.** The greenhouse gas emissions intensity may be calculated as an average for the entire production of fuels occurring during a period of at most one calendar month but may also be calculated for shorter time intervals.
- **CO_2 source.** CO_2 captured from ambient air and biogenic carbon is accepted. Emissions from industrial processes (emissions from activities listed in Annex I to Directive 2003/87/EC) or from the combustion of non-sustainable fuels, should be prevented and will only be considered as avoided emissions up to 2035. These emissions must be taken into account upstream through an **effective carbon pricing mechanism**. Emissions from other uses of non-sustainable fuels should be considered **avoided emissions up to 2041**, as these emissions will remain longer.
- **Several outputs**. RFNBOs and RCFs can be produced in various processes, which may yield a mixture of different types of fuels. In case of co-processing RNFBO and/or RCFs with conventional inputs and/or biomass, the calculation of the greenhouse gas emissions intensity shall be conducted on a **proportional basis of the energetic value of inputs** between a) the part of the process that is based on the conventional input and b) the part of the process that is based on renewable liquid and gaseous transport fuels of non-biological origin and recycled carbon fuels assuming that the process parts are otherwise identical

Key hurdles

- **GHG emission calculation.** Even with this DA, how to calculate the emission reduction achieved by the several outputs is unclear. Should the 'averaging approach' described in this DA only allow for averaging the emissions of the RFNBO and RCF output? But what if the RCF doesn't meet the 70% threshold, do we then have a 'low carbon' output and need to adhere to co-processing rules?
- **CO_2 source.** Europe needs imports to meet its RFNBO targets. Furthermore, there are other RE abundant regions where it makes more sense to produce RFNBO's. Europe is missing the chance to promote decarbonization in regions with less ambitious climate targets (such as north Africa), by only allowing for waste fossil carbon sources from regions managed by an 'effective carbon mechanism'.

Other regulatory concerns

RFNBO for industry

A 42% green hydrogen consumption is needed by 'industry', including the chemical sector, in 2030 and a 60% consumption in 2035. Action is needed to prevent grey chemical imports in Europe and chemical industry leaving Europe. To prevent this, it is advised that EU and NL will:

- Create a **user mandate** so the green premium can be distributed throughout the value chain. Chemical market needs costumers for their green product.
- Methanol used in the transport sector is exempted by this rule. Only by the end of the year, a chemical company would know how much of its methanol went to transport and to other sectors. **The obligated RFNBO volumes can therefore only be consumed the year following a finalized reporting year.**
- By only allowing green, 'electrolyser' hydrogen to count towards this obligation, Europe has created a major challenge.1 **The RFNBO for industry obligation will only work if own large scale RE and hydrogen production is enabled within the MS or when other forms of renewable hydrogen are also accepted under this rule.**

General hurdles

- Renewable electricity availability in the Netherlands
- Cost price (and availability) of green hydrogen in the Netherlands
- Potential grid congestion issues
- The hype on RFNBO lead NL to the wrong direction. We must look per country what works best from a feedstock availability point of view.2 We need all solutions, but let's build systems which make sense per region, instead as Europe as a whole.

CERTIFICATION

Remco van Stein Callenfels *Policy Officer* *VertiCer*

Delegated act and GOs

15 April 2023

Remco van Stein Callenfels
Policy advisor

remco.vansteincallenfels@verticer.eu

VertiCer – introduction

- Issuing body for guarantees of origin for
  - electricity
  - heating and cooling
  - gas incl. hydrogen
- Subsidiary of Gasunie and TenneT

Delegated act

Actually, there are 2 delegated acts

- renewable transport fuels of non-biological origin (RFNBO)
- methodology for calculating GHG emissions savings

Caveats

- to be accepted by the European Parliament and the Council (10 June)
- subsequent implementation in NL legislation → ministries I&W and EZK
- actual implementation **may differ:**
  - interpretation by *VertiCer*
  - provisional agreement RED III

Framework – RED II

Directive (EU) 2018/2001 on renewable energy (RED II)

- art. 25: obligation fuel suppliers: at least 14% RES in 2030
- art. 27:

  main rule: count electricity for average biannual RES share in production

  exception: count RES electricity for 100% where:

  – supplied to road vehicle through direct connection
  – supplied through direct connection to produce RFNBOs, provided that electricity production device is 'new'
  – supplied through grid to produce RFNBOs, provided demonstrably renewable

  HBEs

  delegated act to elaborate the requirements

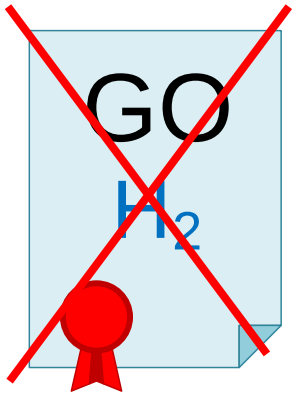
vertiCer

HBE – renewable energy units

Purpose: to increase the share of RES in transport

Instrument: quota obligation

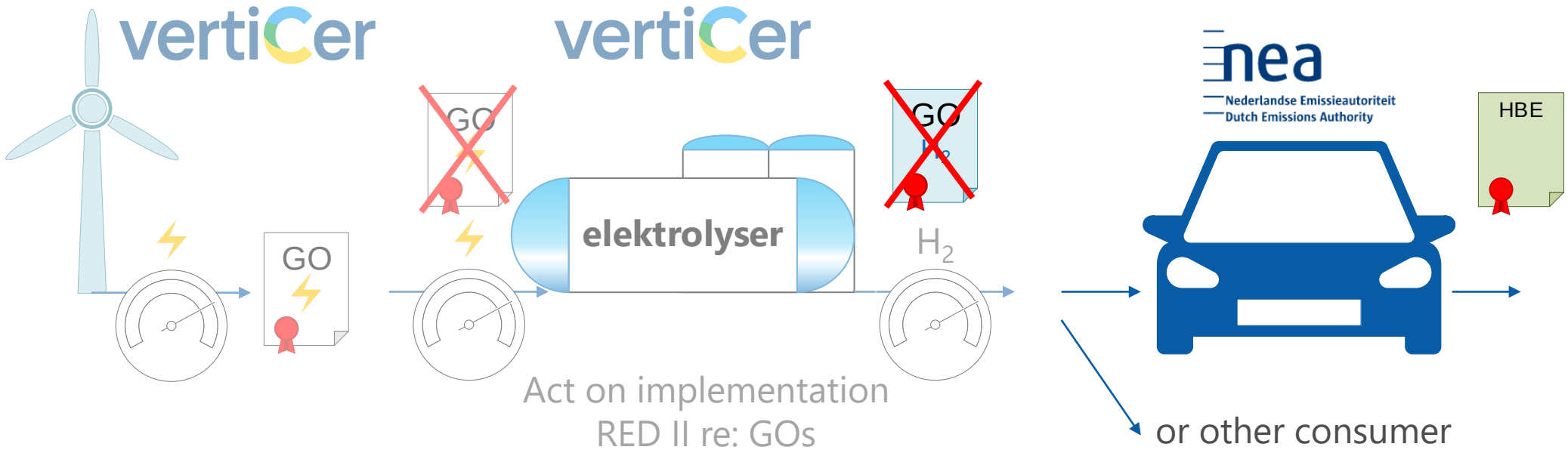
- increasing share RES, minimum 14% in 2030
- Requirement to prove with renewable energy units (HBEs)
- obtain HBEs by proving RES supply to transport by cancelling GOs



vertiCer

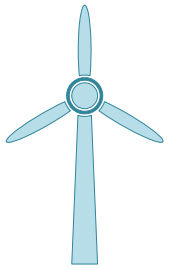
Overall process

Prove the origin of hydrogen supply

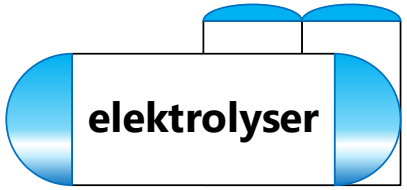


Process – production device registration

- Register with VertiCer online



Needs approval by TSO/DSO

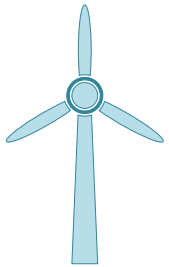


Measurement protocol:

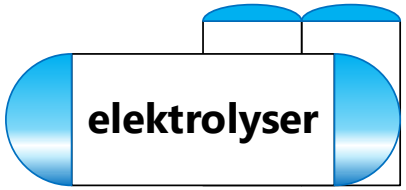
- Components, diagram, measuring arrangements
- All flows of energy (electricity, H_2)

Needs approval by measurement body

Process – issuance



1. TSO/DSO provides monthly production volumes to VertiCer
2. VertiCer issues GOs



1. Producer submits monthly report to VertiCer:
   - verified by measurement body
   - measured input and output volumes
2. Submit sustainability info (only required for HBEs)
3. Cancel GOs for electricity consumption
4. VertiCer issues GOs after verification

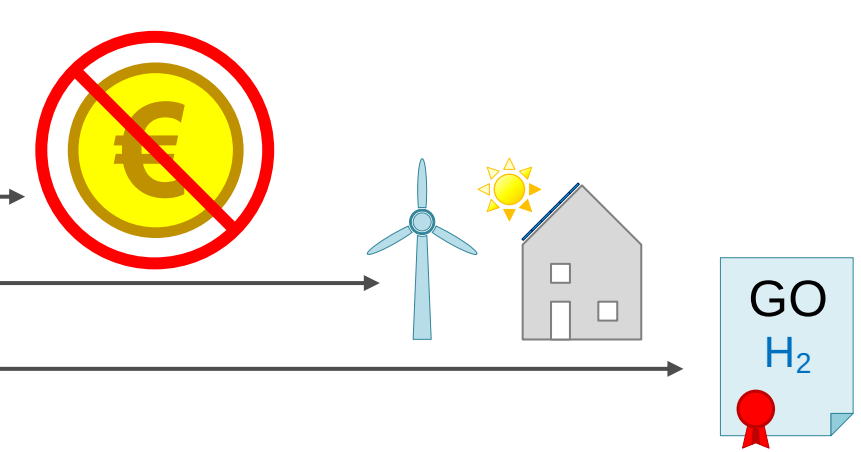
Process – HBEs

1. Supplier to register physical H_2 supply at NEa
2. Submit GOs to NEa
3. NEa to verify compliance with requirements
4. NEa issues HBEs

Nederlandse Emissieautoriteit
Dutch Emissions Authority

Current requirements to receive HBE for H_2

- produced from RES electricity:
  - generated in NL
  - without production support
  - from sources other than biomass
  - prove with valid GOs



- GHG emissions savings at least 70%

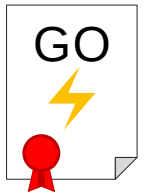
New rules – cancellation of GOs

Recital 15 reinforces current Dutch legislation

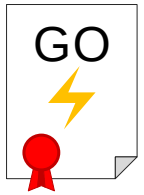
"Article 19 of [RED II] *should avoid that both the producer of the renewable electricity and the producer of the renewable liquid and gaseous transport fuels of non-biological origin produced from that electricity can receive guarantees of origin by ensuring that the guarantees of origin issued to the producer of renewable electricity* ***are cancelled****."*

New rules – direct connection (art. 3)

- electricity to be obtained through direct connection or produced in the same production device as the RFNBO



- additionality: electricity production device at most 3 years in operation before the electrolyser



- electricity production device not connected to the grid or smart metering proves no grid-derived electricity was used

nea
Nederlandse Emissieautoriteit
Dutch Emissions Authority

vertiCer

New rules – grid-derived (art. 4 & 5)

1. RES share in national electricity production > 90%; *or*
2. production of RFNBO reduced/prevented redispatch of RES electricity; *or*
3. RES electricity procured through power purchase agreement (PPA), provided:
   - and
     - location electricity production device: in same bidding zone as electrolyser, or in interconnected bidding zone and electricity price is equal or higher, or in interconnected offshore bidding zone
     - temporal correlation: till 2029: same month; from 2030: same hour
   - and
     - or
       - additionality: electricity production device at most 3 years in operation before electrolyser, free of support (production **and investment**)
       - emission intensity in bidding zone electrolyser < 18 gCO2eq/MJ

GO

nea
Nederlandse Emissieautoriteit
Dutch Emissions Authority

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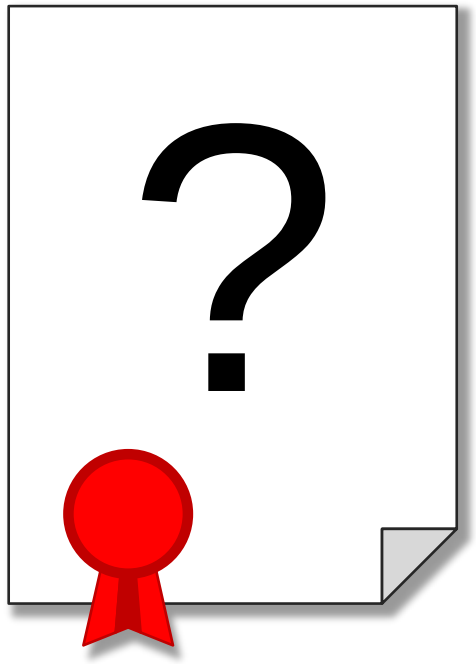
RED III

- Late March provisional agreement European Parliament and the Council
- Hydrogen used in **industry** should come from RFNBO:
  - 42% in 2030
  - 60% in 2035
- Exact text RED III unknown; delegated act will presumably apply

Questions?

remco.vansteincallenfels@verticer.eu



Thank you for your attention

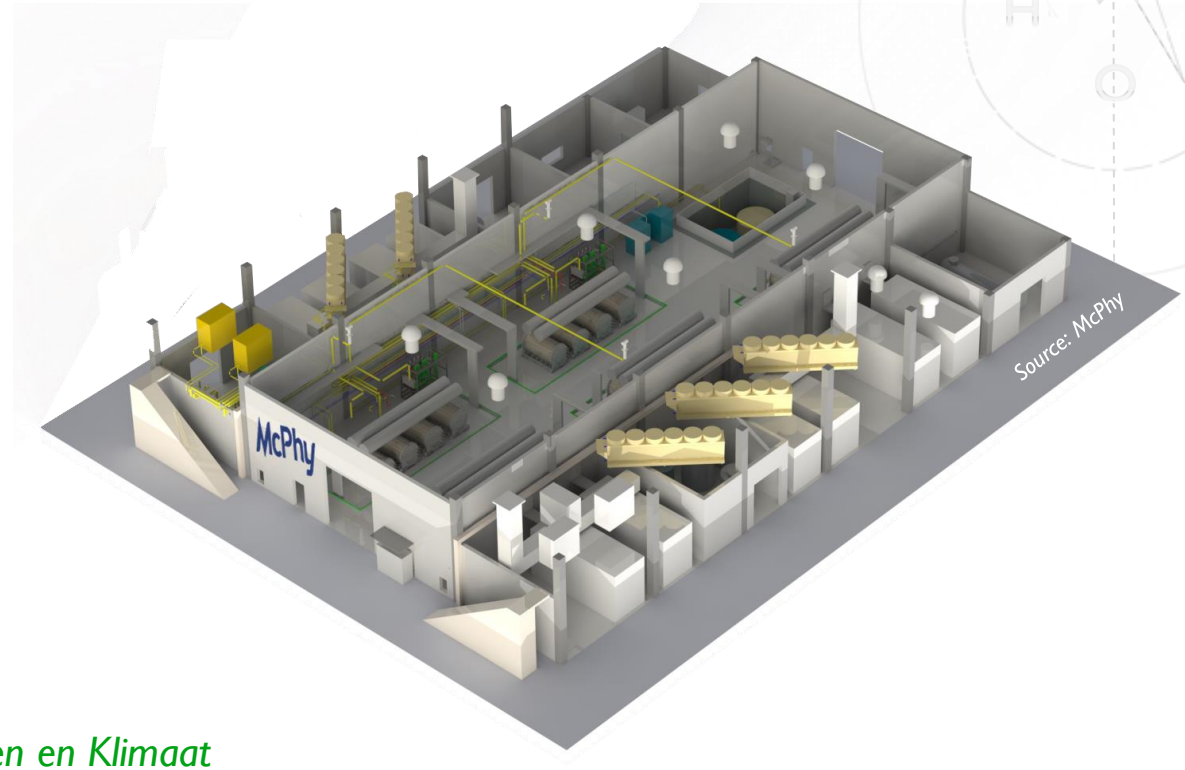
Remco van Stein Callenfels
Policy advisor

remco.vansteincallenfels@verticer.nl

BREAK

AGENDA

14:00	The Delegated Acts and developing PtX projects	***Joost Sandberg*** *Commercial Director* *HyCC*
14:30	RFNBO compliant methanol production	***Karlijn Arts*** *Global Head of Sustainability and Regulatory Affairs* *OCI Methanol Europe*
15:00	Certification	***Remco van Stein Callenfels*** *Policy Officer* *Verticer*
15:30	Break	
15:45	Panel Discussion	***Thomas Winkel*** *(moderator)* *Hinicio* ***Joost Sandberg*** *HyCC* ***Karlijn Arts*** *OCI Methanol Europe* ***Bert den Ouden*** *HyXchange* ***Jarno Dakhorst*** *Ministerie van Economische Zaken en Klimaat* ***Remco van Stein Callenfels*** *Verticer*
16:45	Closing remarks	***Thomas Winkel*** *Hinicio*
17:00	Networking	



PANEL DISCUSSION

THE PANEL

Joost Sandberg
Commercial Director
HyCC

Karlijn Arts
Global Head of Sustainability and Regulatory Affairs
OCI Methanol Europe

Bert den Ouden
Project Director
HyXchange

Jarno Dakhorst
Senior beleidsmedewerker
Verduurzaming industrie
Ministerie van Economische Zaken en Klimaat

Remco van Stein Callenfels
Policy Officer
VertiCer

Thomas Winkel (moderator)
Manager
Hinicio

THANK FOR YOUR ATTENTION

For more information about Djewels, visit our website

https://djewels.eu

Djewels

HyCC OCI Methanol Europe gasunie crossing borders in energy McPhy Driving clean energy forward Hinicio DE NORA

Project supported by

Clean Hydrogen Partnership waddenfonds

ABOUT HINICIO

STRATEGY CONSULTING BOUTIQUE SPECIALISED IN HYDROGEN & DERIVATIVES

Founded in 2006, **we are recognized as a European Leader in the hydrogen and fuel cells industry. In our vision,** at Hinicio we see **hydrogen as playing a central role in the future energy system** to achieve climate objectives.

It is **our mission** to advise our clients and support the **building of successful strategies, projects, and public policies**, leading and accelerating the transformation of the energy system globally. By doing so, we strive to be their preferred partner and attract best-in-class human capital.

We have offices in **Brussels, Paris, Rotterdam, Washington DC, Bogota, & Santiago**, and commercial representation in **Mexico and China.**

Part of the Vulcain group since December 2022

Business & Strategy

Investment Support

Public Policies

Project Development Assistance

THE ENERGY TO COLLABORATE

We maximize value creation over the entire project life cycle through our engineering and management consulting services and our design offices.

STRATEGY
- Business & strategy consulting
- M&A and investment advisory, technical due diligences
- New business case analysis & financial modelling
- Value chain analysis
- Policy and Regulatory Support

ENGINEERING
- Concept Studies, Business Model & HPA
- Energy systems modelling & optimization
- Site selection, permitting, certification & regulatory compliance
- Subsidies & funding
- Pre-FEED/FEED
- Detail engineering
- Owner's engineering
- Field engineering
- Decommissioning & Dismantling

PROJECT MANAGEMENT
- Project control
- Planification
- Cost control
- Risk management

SUPPLY CHAIN
- Procurement
- Contract Management
- Expediting
- QA/QC management

CONSTRUCTION & COMMISSIONING
- Construction management
- Construction services
- Inspection services
- EHS management
- Systems completion
- Pre-commissioning
- Commissioning & Start-up

OPERATION & MAINTENANCE
- Turnaround and shutdowns
- Brownfield modifications
- Asset management strategy
- Process & production optimisation

DIGITAL SOLUTIONS & SOFTWARES
- BIM Management
- Digital Twin
- Simulatio ©
- Maxim ©
- Solve ©
- Andrea ©

+600 studies and projects in more than 30 countries

Hinicio's offices

Hinicio's Commercial agreements

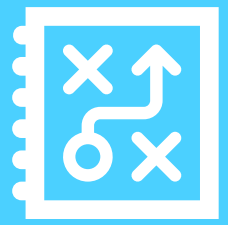
Projects and Studies

Vulcain's offices

OUR CUSTOMERS | GLOBAL LEADERS

Hinicio

OUR TAILOR-MADE CONSULTING SERVICES



BUSINESS & STRATEGY CONSULTING

- Market Intelligence & Research Studies
- Corporate & Competitive Strategy
- New Business Case Analysis & Financial Modeling
- Market Entry & Go-to-Market Strategy
- Tactical Plans & Roadmaps
- Value Chain Analysis

M&A AND INVESTMENT SUPPORT

- Investment strategy
- Deal origination
- Strategic Due Diligence (Vendor)
- Technical Due Diligence (Vendor)
- Commercial Due Diligence (Vendor)

POLICY AND REGULATORY SUPPORT

- Economic studies
- Impact analysis ex-ante & ex-post
- Analysis of regulatory frameworks
- Certification & Regulatory compliance
- Workshops & Trainings

PROJECT DEVELOPMENT ASSISTANCE

- Prefeasibility and feasibility studies
- Energy systems modeling & optimization
- Business Model and HPA
- Public funding
- Site selection & permitting
- Subsidies & funding application
- PMO / consortium management

Into hydrogen industry since its inception

SOME OF OUR ASSIGNMENTS

Early-Stage Research

- HyUnder: H2 underground storage
- Green Hydrogen Pathways (non-electrolyser)

Policy Roadmaps

- **FCH JU:** Early Business Cases for Hydrogen
- **IRENA:** Hydrogen from renewable power: Technology Outlook for the Energy Transition"
- **ADEME (2011) & update France Hydrogène (2021):** French H2 roadmap

Upstream Strategy

- **Michelin** development of fuel cell product portfolio
- **Tier I Automotive Supplier H2** onboard storage product strategy
- **McPhy** H_2 storage technical strategy
- **EU Gas Utility -** H_2 Strategic partnership

Go-to-market Strategy

- **EU Electricity Utility** Global Go to market for new BU H2 to be created
- **EU Electricity Utility** National Go to market for new BU H2 to be created
- **EU Gas Utility-** H_2 projects acquisition support
- **Port Environments**

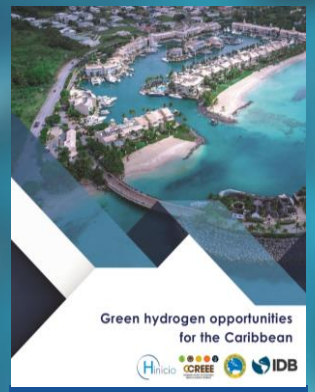
Project development

- **Djewels:** 20MW power-to-methanol in Netherlands
- **Port of Antwerp** power-to-methanol
- **Project development assistance(PDA)** methodology
- **Technical prefeasibility**
- **Energy Procurement services** (PPAs)
- **H2 import / export**

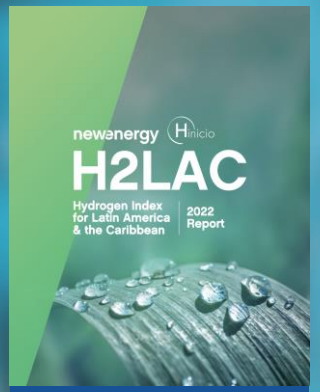
Market Enablers

- **CertifHy:** implementation of a guarantee of origin scheme for hydrogen
- **Ammonia Certification Scheme development**
- **Hydrogen marketplace**
- **Regulatory barriers**

SOME OF OUR **PUBLICATIONS**



2023



2023

2022

2022

2022

2021

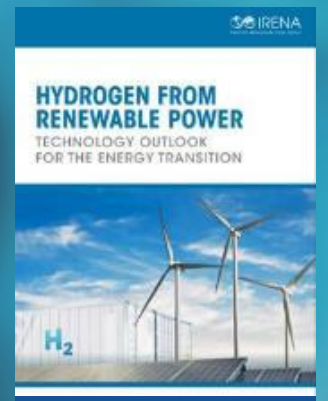
2021

2020

2020

2019

2018



2018

2017

2017