CertifHy – Developing the 1ˢᵗ EU-wide Guarantee of Origin scheme for Premium Hydrogen

Project co-finance by the FCH JU under FP7:

Objective:

– Developing <u>consensus</u> on a definition for Premium Hydrogen, including a definition for Green Hydrogen and (non-renewable) Low-carbon Hydrogen.

– Detailed proposal for the 1st EU-wide Guarantee of Origin (GO) scheme

– Roadmap for implementation of the first GO scheme for Premium Hydrogen

Project coordinator
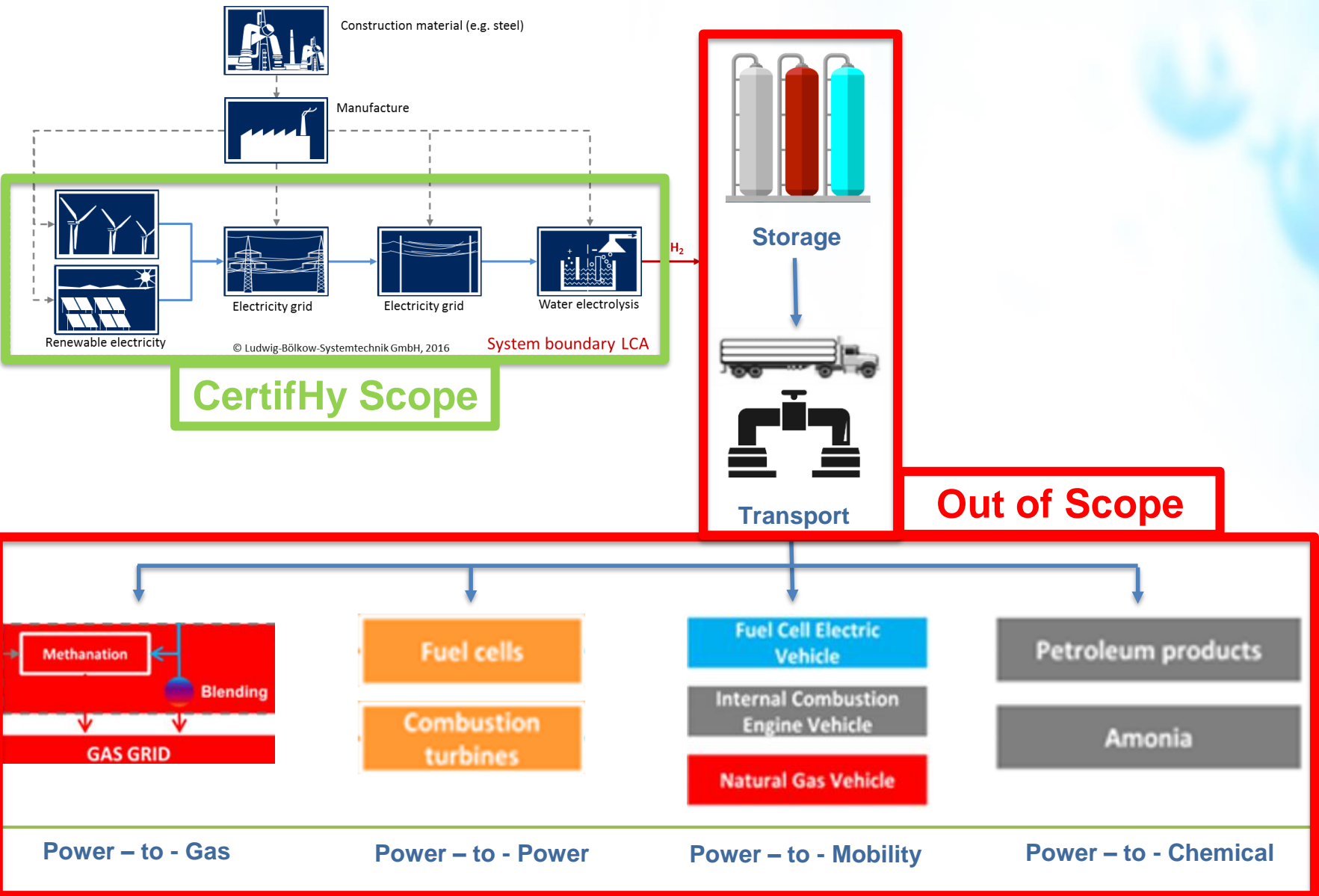
Consortium Partners

Affiliated Partners

And many other stakeholders…

Step-by-step consulting process

Construction material (e.g. steel)

Manufacture

Renewable electricity

Electricity grid

Electricity grid

Water electrolysis

H₂

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System boundary LCA

CertifHy Scope

Storage

Transport

Out of Scope

Methanation

Blending

GAS GRID

Fuel cells

Combustion turbines

Fuel Cell Electric Vehicle

Internal Combustion Engine Vehicle

Natural Gas Vehicle

Petroleum products

Amonia

Power – to - Gas

Power – to - Power

Power – to - Mobility

Power – to - Chemical

WP7: Project Management and Administration
Project leader: Hinicio

Robust + Transparent system

Rationale of green H2

WP1: Generic market outlook for green hydrogen
Project leader: Hinicio

WP2: Definition of "Green Hydrogen"
Project leader: TÜV SÜD

WP4: Definition of a new framework of guarantees of origin for "green" hydrogen
Project leader: TÜV SÜD

Common definition with all stakeholders

WP3: Review of existing platforms for GO
Project leader: ECN

WP5: Roadmap for the implementation of an EU-wide GO scheme for green hydrogen
Project leader: ECN

Lessons learnt from other initiatives

Enabling implementation
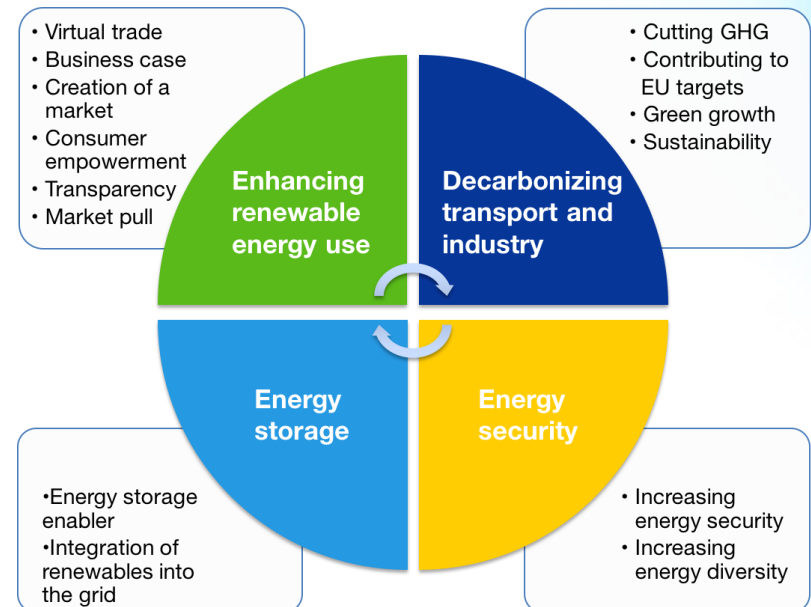
Buy – in

WP6: Stakeholder Engagement & Communication
Project leader: Hinicio

- CertifHy **will boost demand and supply of Premium Hydrogen** throughout Europe by the **creation of a market for Premium Hydrogen**

- Premium Hydrogen can help Europe become the **number one in renewables** and reach **EU targets of cutting 80- 95% of greenhouse gas emissions by 2050.**

- Global demand for hydrogen = 50 Million tons by 2025

- 3,5% hydrogen market growth per year

- **50 – 60%** of all hydrogen for the growing market of transportation will originate from **renewable or low-carbon sources by 2030.**

**Benefits of an EU-wide GO scheme for Premium Hydrogen**

- Virtual trade
- Business case
- Creation of a market
- Consumer empowerment
- Transparency
- Market pull

Enhancing renewable energy use

Decarbonizing transport and industry

- Cutting GHG
- Contributing to EU targets
- Green growth
- Sustainability

Energy storage

Energy security

- Energy storage enabler
- Integration of renewables into the grid

- Increasing energy security
- Increasing energy diversity

- A **Guarantee of Origin (GO)** guarantees the **origin of a product** and provides **information** to customers on the **source of their products**.

- **Examples**: Fair trade (coffee, oranges), Palm oil, green electricity etc.

Example: Palm Oil – Identity preserved   vs.   Book & Claim Supply Chain Model
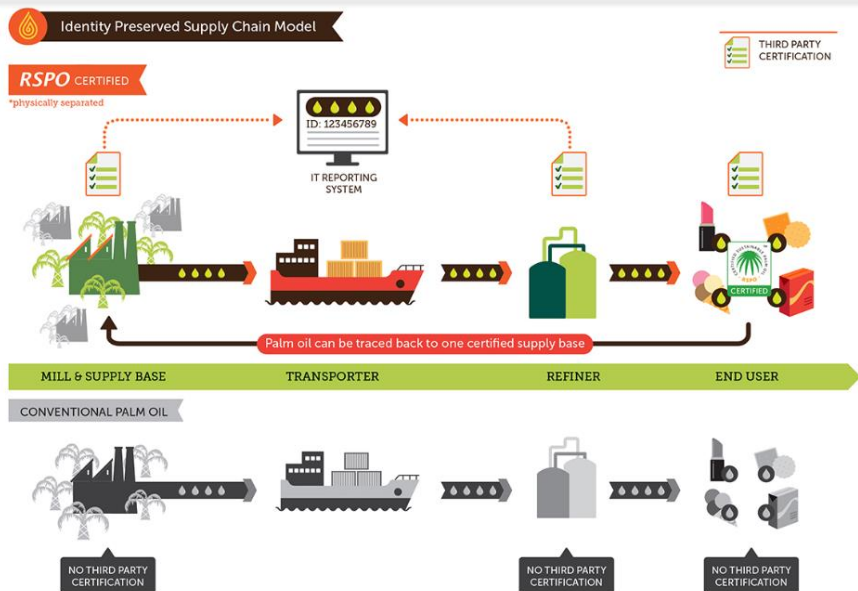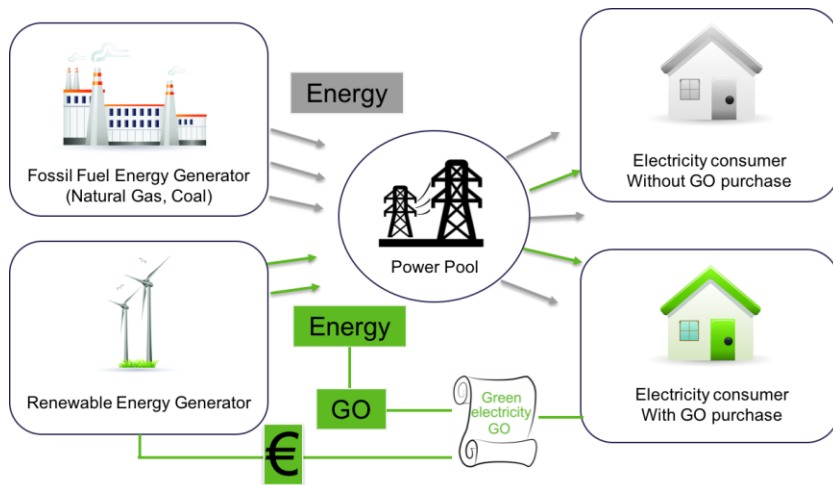

Sustainable palm oil from a single identifiable certified source is kept separately from ordinary palm oil throughout supply chain.
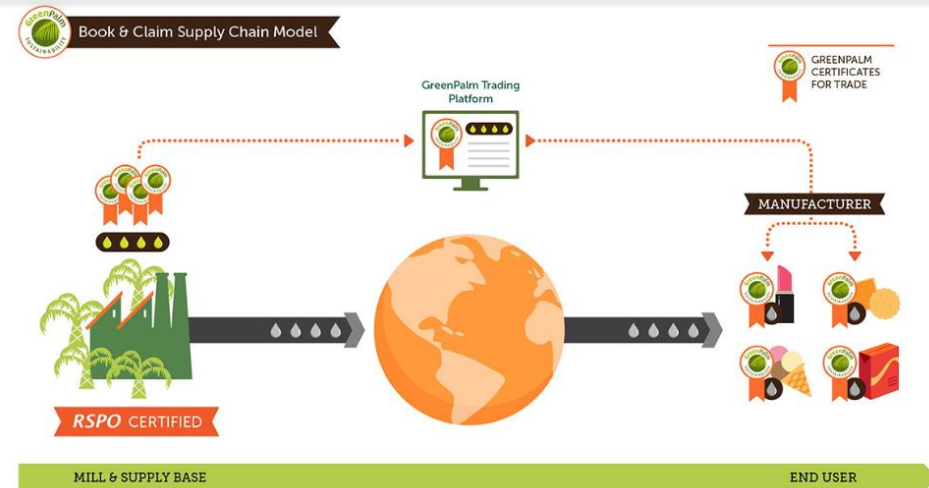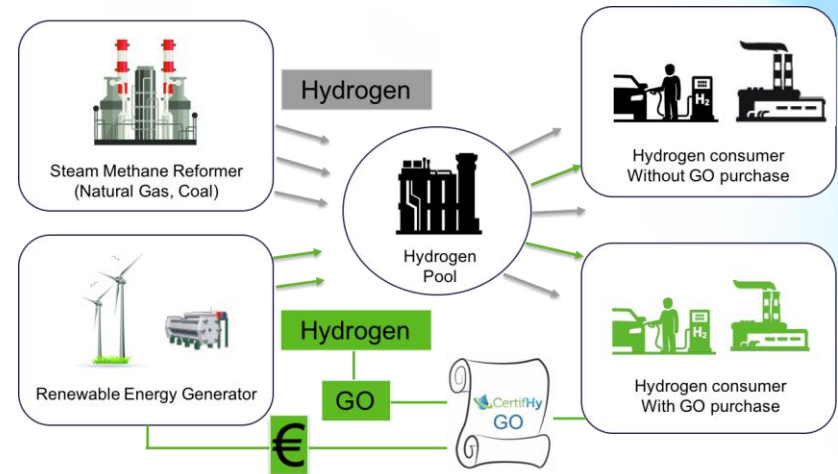

The chain is not monitored for the presence of sustainable palm oil. Manufacturers and retailers can buy a GreenPalm certificate from a RSPO-certified grower
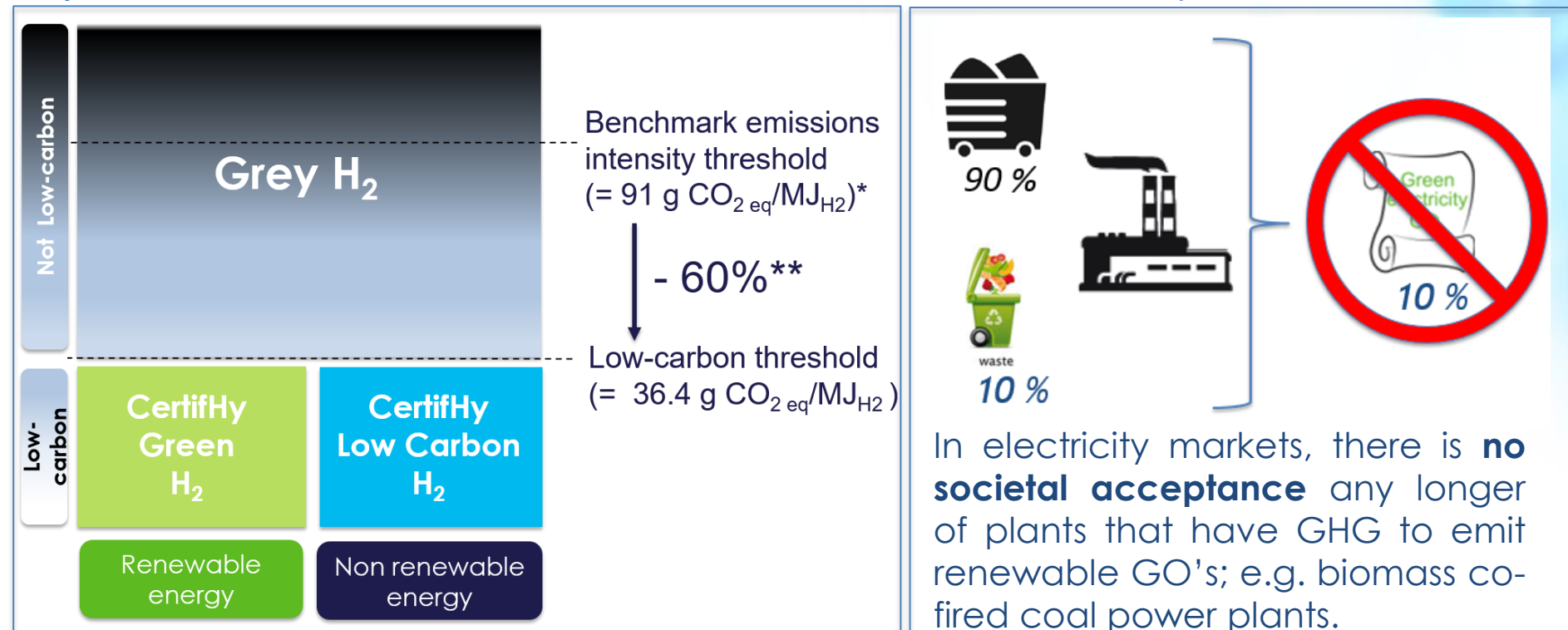
Renewable electricity GO scheme
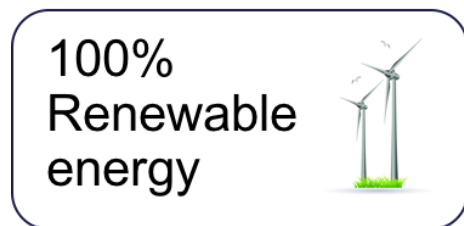

Green hydrogen GO scheme

- Premium Hydrogen is hydrogen produced with low carbon emissions and includes CertifHy Green Hydrogen and CertifHy Low Carbon Hydrogen.

- For **Green Hydrogen**, renewable Feedstock <u>and</u> GHG Emissions of hydrogen producers are addressed: similar trend in renewable electricity GOs.

Not Low-carbon

Low-carbon

Grey H_2

Benchmark emissions intensity threshold (= 91 g $CO_{2\,eq}$/MJ_{H2})*

- 60%**

Low-carbon threshold (= 36.4 g $CO_{2\,eq}$/MJ_{H2})

CertifHy Green H_2

CertifHy Low Carbon H_2

Renewable energy

Non renewable energy

90 %

waste
10 %

Green electricity GO

10 %

In electricity markets, there is **no societal acceptance** any longer of plants that have GHG to emit renewable GO's; e.g. biomass co-fired coal power plants.
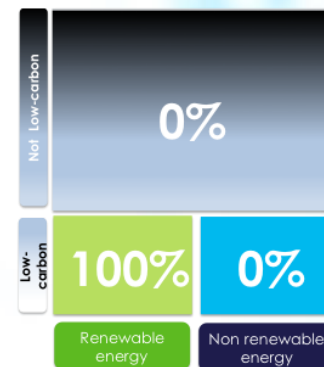
* Best Available Technology = Natural gas steam methane reforming >95% of H2 merchant market
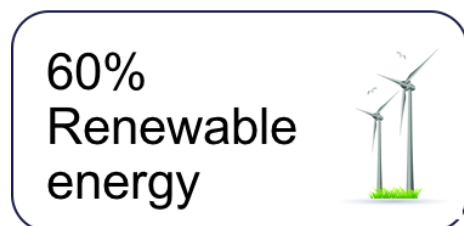** cfr RED reduction requirement for biofuels in 2018

Example 1: 100% CertifHy Green Hydrogen

100% Renewable energy → Electrolyser =

	Not Low-carbon	
	0%	
Low-carbon	100%	0%
	Renewable energy	Non renewable energy

Example 2: 60% CertifHy Green Hydrogen

60% Renewable energy

40% EU electricity

→ Electrolyser =

	Not Low-carbon	
	40%	
Low-carbon	60%	0%
	Renewable energy	Non renewable energy

Electricity from wind is both renewable and low on GHG intensity.
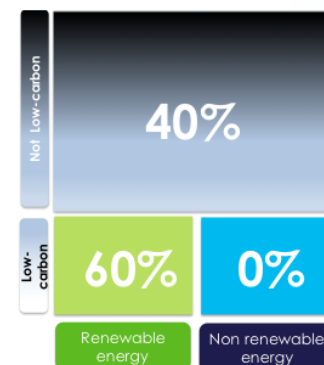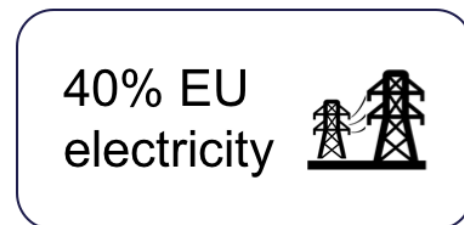
The proposed Premium Hydrogen GO scheme **decouples the premium attribute from the physical flow of the product** and makes **Premium Hydrogen available EU-wide**, independently from its production sites, just like renewable electricity or sustainable palm oil GO's.
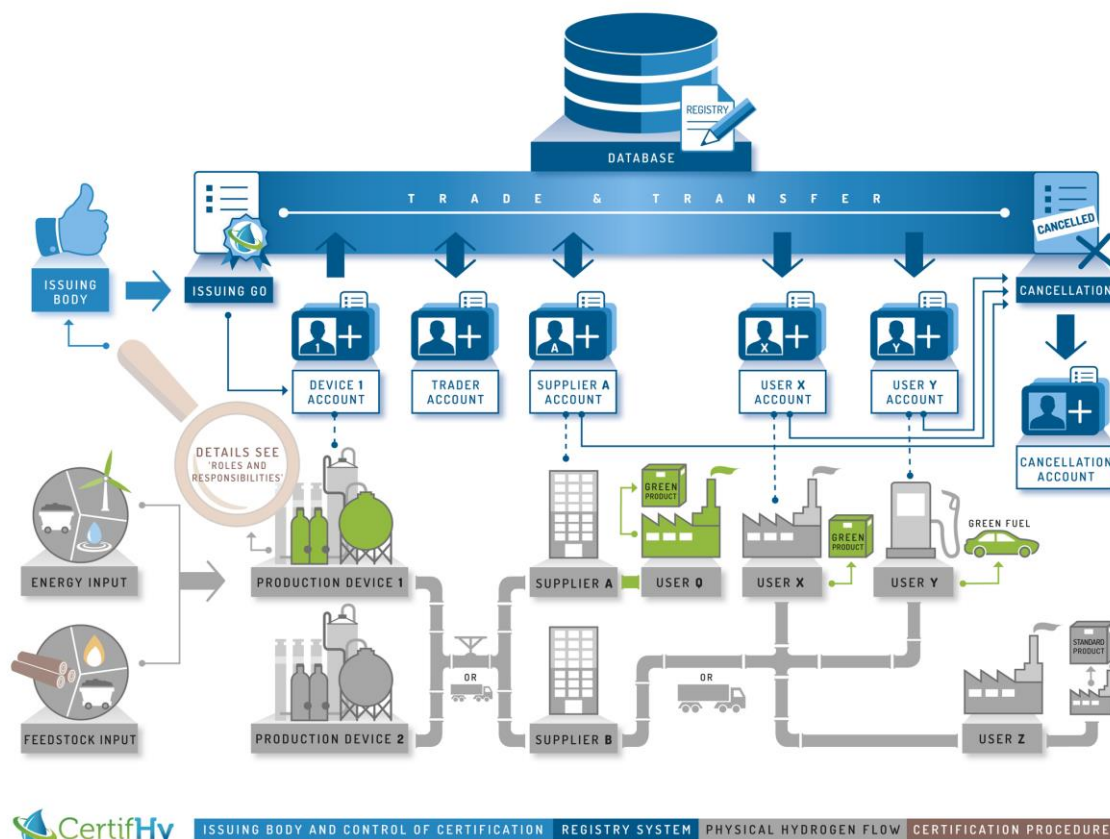
Organization of the GO scheme

GO structure

CertifHy roadmap for implementation

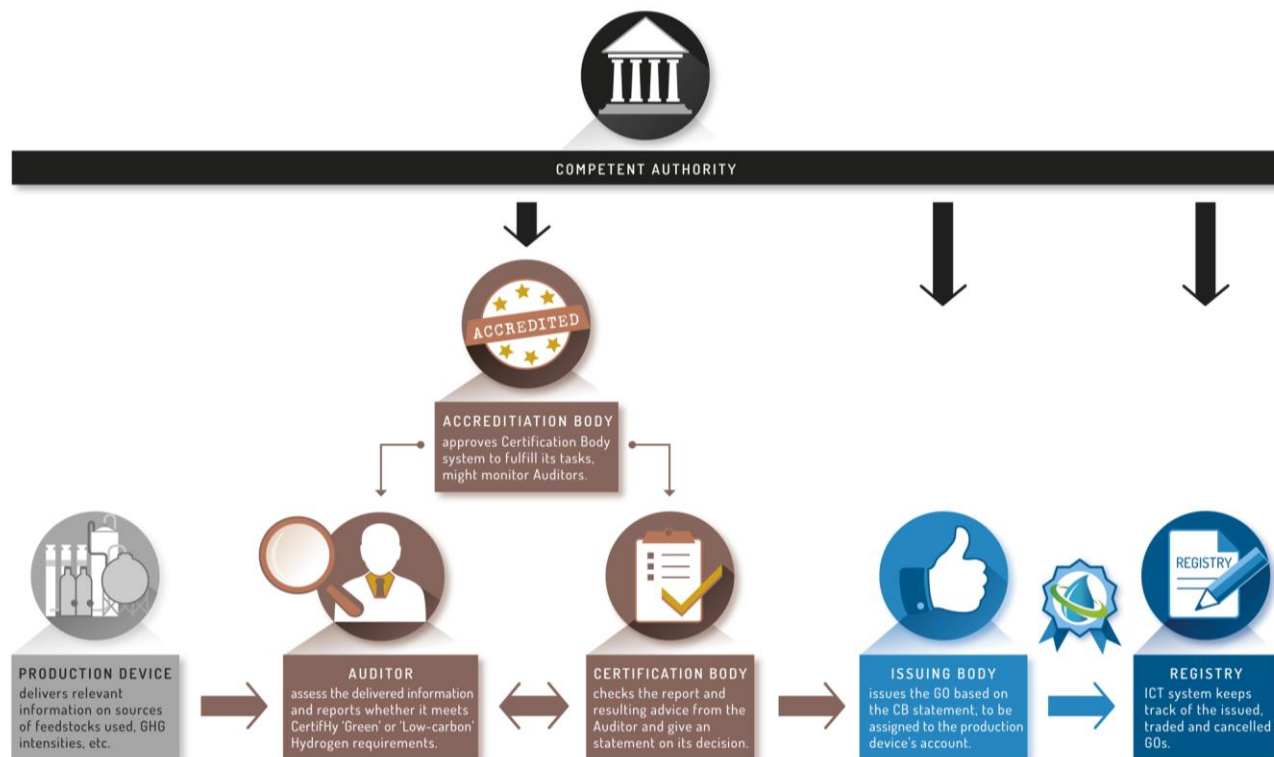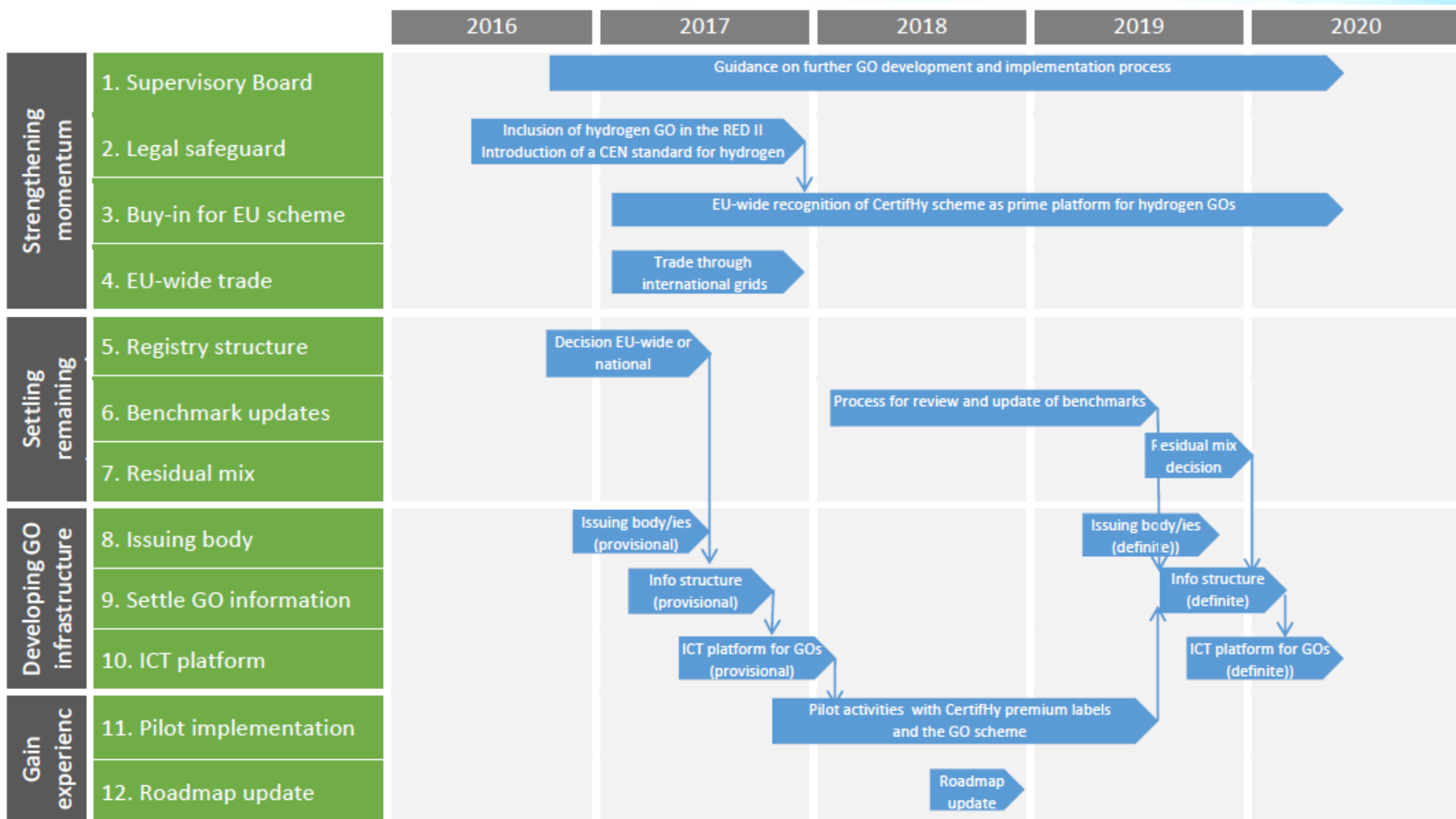|	2016	2017	2018	2019	2020
Strengthening momentum	1. Supervisory Board				
	2. Legal safeguard				
	3. Buy-in for EU scheme				
	4. EU-wide trade				
Settling remaining	5. Registry structure				
	6. Benchmark updates				
	7. Residual mix				
Developing GO infrastructure	8. Issuing body				
	9. Settle GO information				
	10. ICT platform				
Gain experienc	11. Pilot implementation				
	12. Roadmap update				

Guidance on further GO development and implementation process

Inclusion of hydrogen GO in the RED II
Introduction of a CEN standard for hydrogen

EU-wide recognition of CertifHy scheme as prime platform for hydrogen GOs

Trade through international grids

Decision EU-wide or national

Process for review and update of benchmarks

Residual mix decision

Issuing body/ies (provisional)

Issuing body/ies (definite))

Info structure (provisional)

Info structure (definite)

ICT platform for GOs (provisional)

ICT platform for GOs (definite))

Pilot activities with CertifHy premium labels and the GO scheme

Roadmap update

CertifHy roadmap: Time planning and task allocation

Action		Start	Completion	Involved parties	Key results to be delivered
First challenge: Strengthening momentum					
1	Supervisory Board	Late 2016	2020, at scheme implementation	Policy makers (EU and MS), industry (full-chain), NGOs, GO&label experts	Guidance on the further GO development and implementation process
2	Legal safeguard	Mid- 2016	End 2017	CertifHy consortium, EC DG ENER and other relvant DGs	Inclusion of a hydrogen GO in the RED II
3	Buy-in for EU scheme	Early 2017	2020, and beyond	Supervisory Board, active role for all board members	EU-wide recognition of CertifHy scheme as the prime platform for hydrogen GOs
4	International trade	Early 2017	End 2017	EC DG ENER, Supervisory Board	Possibility to trade hydrogen GOs through international grids
Second challenge: Settling remaining issues and open points					
5	Registry structure	End 2016	Mid-2017	Supervisory Board	Decision on EU versus national registries
6	Benchmark updates	Early 2018	Mid-2019	Supervisory Board, issuing body	Process for review and update of benchmarks
7	Residual mix	Mid-2019	End-2019	Supervisory Board	Final decision on the approach on this matter, on the basis of pilot outcomes.
Third challenge: Developing required GO infrastructure					
8	Issuing body	End 2016 (p) Earl. 2019 (d)	Mid-2017 (p) End 2019 (d)	Supervisory Board, AIB	Appointment of a hydrogen GO issuing body
9	Settle GO information	Early 2017(p) Mid-2019 (d)	End 2017 (p) Early 2020 (d)	Issuing body, Supervisory Board	Final GO information structure
10	ICT platform	Mid-2017 (p) Late 2019 (d)	End 2017 (p) Mid-2020 (d)	Issuing body, Supervisory Board	An operating ICT platform for GOs
Fourth challenge: Gaining practical experience					
11	Pilots	End 2017	Mid-2019	Supervisory Board, participants	Lessons on label value, GO scheme, res. mix
12	Roadmap update	Mid-2018	End 2018	Supervisory Board	Actualisation of the roadmap

The implementation of CertifHy is supported by international leading stakeholders of a wide range of industries

	ArevaH2Gen	Air Liquide	BMW	Colruyt	EBA	Hydrogenics	Hygear	Hychico	Linde	NG	Polito	Teesing	Toyota	WaterstofNet
Definitions of the two types of premium hydrogen	x	x	x	x	x	(x)	x	x	x	x	x	x	x	x
Guidelines for the setup of the GO scheme	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Roadmap for the implementation	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Participation of Stakeholder Platform	x	x	x	x	x	x	x		x		x	x		x
Set up pilots in which the GOs scheme can be tested	x	x		x		x	x	x			x			x
Manage / Build ICT system and registry platform														
Act as Issuing body														
Creation of EU-wide buy-in for the GO scheme and the CertifHy labels			x			x	x			x			x	x

THANK YOU FOR YOUR ATTENTION !

Contact us:

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