

Opportunities for cooperation in H2 with Wallonia

SmartEnergy H2 Session
24/03



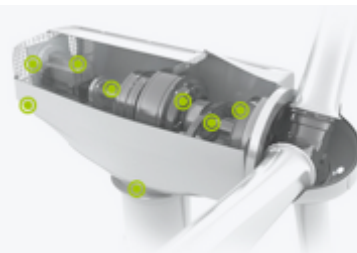


TWEED, Energy Cluster in Belgium, Wallonia/Brussels

- ❑ Created in 2008
- ❑ TWEED = 140 premium members (88% are companies) developing technologies in the Energy sectors to ensure a global Sustainable Development. + More than 350 players/technologies in our ecosystem
- ❑ #Networking #Support #Projects #Studies #ValueChain #Roadmap #Promotion #Information #International #Energy Marketplace,...
- ❑ Discover all the players - and hopefully your future partners - thanks to a structured navigation and a search engine, very easy to identify and contact an organization, : www.rewallonia.be !



Low-carbon mobility
 Energy efficiency in buildings
 Energy conversion and storage **Smart grids**
 Energy efficiency in industry
 Renewable energies mix
Microgrids



Search for partners in Wallonia or Brussels ? Visit **ReWallonia**



ReWallonia

EN - FR

- WHO WE ARE
- MAPPINGS
- MEMBERS
- CONTACT US
- COOKIES POLICY

Search

MAPPINGS

BIOMASS-ENERGY

GREEN HEAT

WIND ENERGY

SOLAR PHOTOVOLTAÏC

SMART GRIDS

STORAGE

Become a member of ReWallonia and benefit from our services [SUBSCRIBE](#)

Search in our **LIST OF MEMBERS**

MEMBER NAME <input type="text"/>	MAPPINGS <input type="text"/>
TAGS <input type="text"/>	LOCALITY <input type="text"/>

[SEARCH](#)

REWALLONIA

ABOUT TWEED

Technology of Wallonia Energy, Environment and sustainable Development

TWEED (Technology of Wallonia Energy, Environment and sustainable Development) aims to play a major role in the business development of «sustainable energy» sectors.

[ABOUT TWEED](#)

Follow us **ON TWITTER**

Tweets de @ClusterTWEED

ReWallonia – Players (> 350)

COMET TRAITEMENTS



Comet Traitements SA is active in the treatment and recycling of residue from metallic waste shredding: End-of-Life vehicles (ELVs), Waste Electrical and Electronic Equipment (WEEE), scrap metal, etc. We have several facilities that allow us to treat more than 150,000 tons of shredding res

We have several facilities that allow us to treat more than 150,000 tons of shredding residue per year, in order to reuse the ferrous and non-ferrous metals, plastic materials, and mineral components. In addition to our production activities, Comet Traitements also has an R&D unit that allows us to industrialize processes adapted to new types of waste in our industry and which include end-of-life photovoltaic panels. What's more, Comet Traitements has a partnership with the Solarcycle project that was approved as part of the Walloon Marshall Plan, and seeks to reuse end-of-life PV in the silicon sector.

Chemical storage

- From the pyrolysis of residues of grinding synthetic fuels

Tags

Solar industry Silicon Horizontal chain Recycling Vertical chain Raw material supply Steel Aluminium

Polymers

Storage Horizontal chain Dismantling & Recycling R&D Vertical chain Electrochemical - conventional batteries

Lead-Acid Battery (LAB) Lithium-Ion (Li-ion) Domestic / Industrial Industrial Storage Stationary / Embedded

Stationary storage Not connected to the network



ENTERPRISE

Comet Traitements Psc.
Enterprise number : 0477841596

ADRESSE



Comet Traitements Châtelet
Rivage de Bouhier 25
6200 Châtelet
Belgique

CONTACTS



Pierre-François Bareel
Téléphone : +32 71 24 00 82

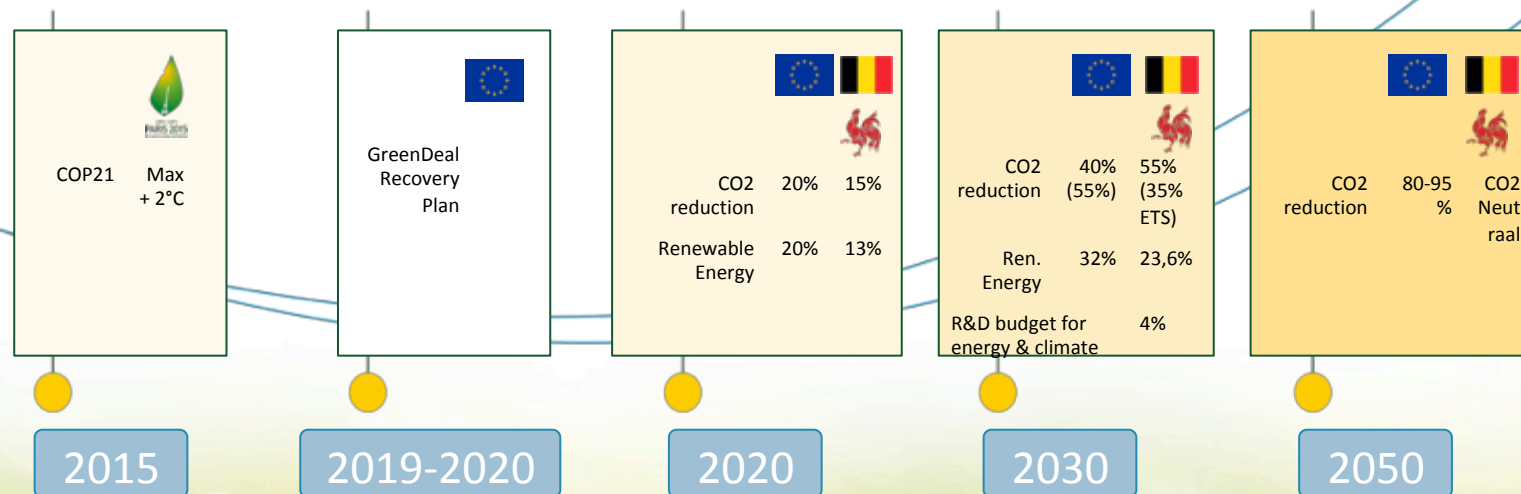
[Email](#)

Energy Transition in Wallonia

What's going on ?

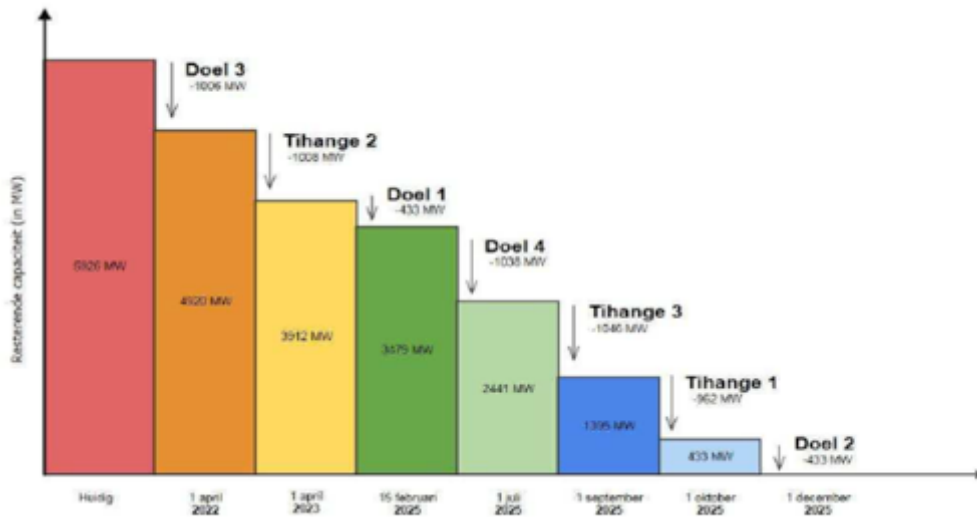
EU & Wallonia Climate & Energy framework

- At the Paris climate conference (COP21) in December 2015, 195 countries adopted the first ever legally binding universal climate agreement.
- At European level, the climate and energy framework sets major objectives for 2030 and 2050.
- At Federal Belgium level: Exit nuclear in 2025. Greening of gas, Power-to-X, H2, CCS, Framework allowing the development of an H2 and CO2 backbone
- At Regional level, Wallonia Climate & Energy framework :
 - 23,6% of Renewable Energy in 2030 through green certificate scheme, (collective) sel-consumption & energy communities,...
 - Transport (Fast) Plan : - 24% CO2 in transport compared to 2005 through reduction of mobility by cars (trains,...), green buses,...
 - Energy renovation strategy for buildings : reduce average energy consumption in the residential and tertiary sectors by 29.1% by 2030 through renovation investment plan
 - ETS Industry measures through “Accords de branche” (sectors targets agreement) & Non ETS Industry (fuel switch,...), H2,...



Renewable Electricity in Belgium/Wallonia, where are we ?

Challenge : phasing out of nuclear and strong increase of renewables in the same time



Target 2030 : around 10 TWh of renewable electricity & 14,2 TWh of renewable heat through green certificate scheme, (collective) self-consumption & energy communities, Capacity Reserve Mechanism (gas, storage, demand side management,...), H2 & CO2 networks

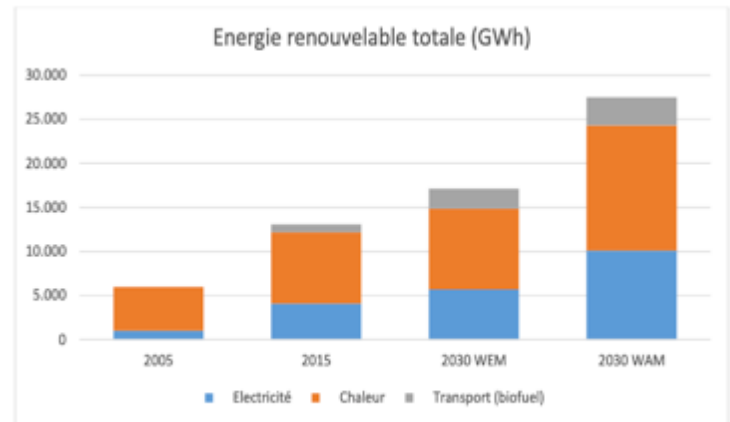
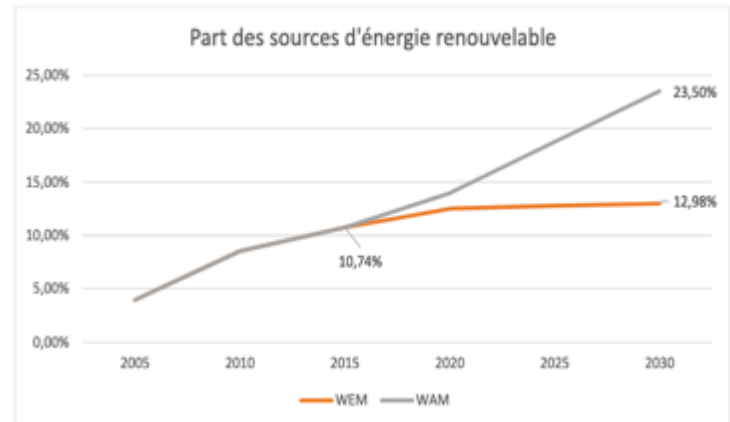


Figure 2 : Evolution de la consommation finale de renouvelable en Wallonie (GWh)

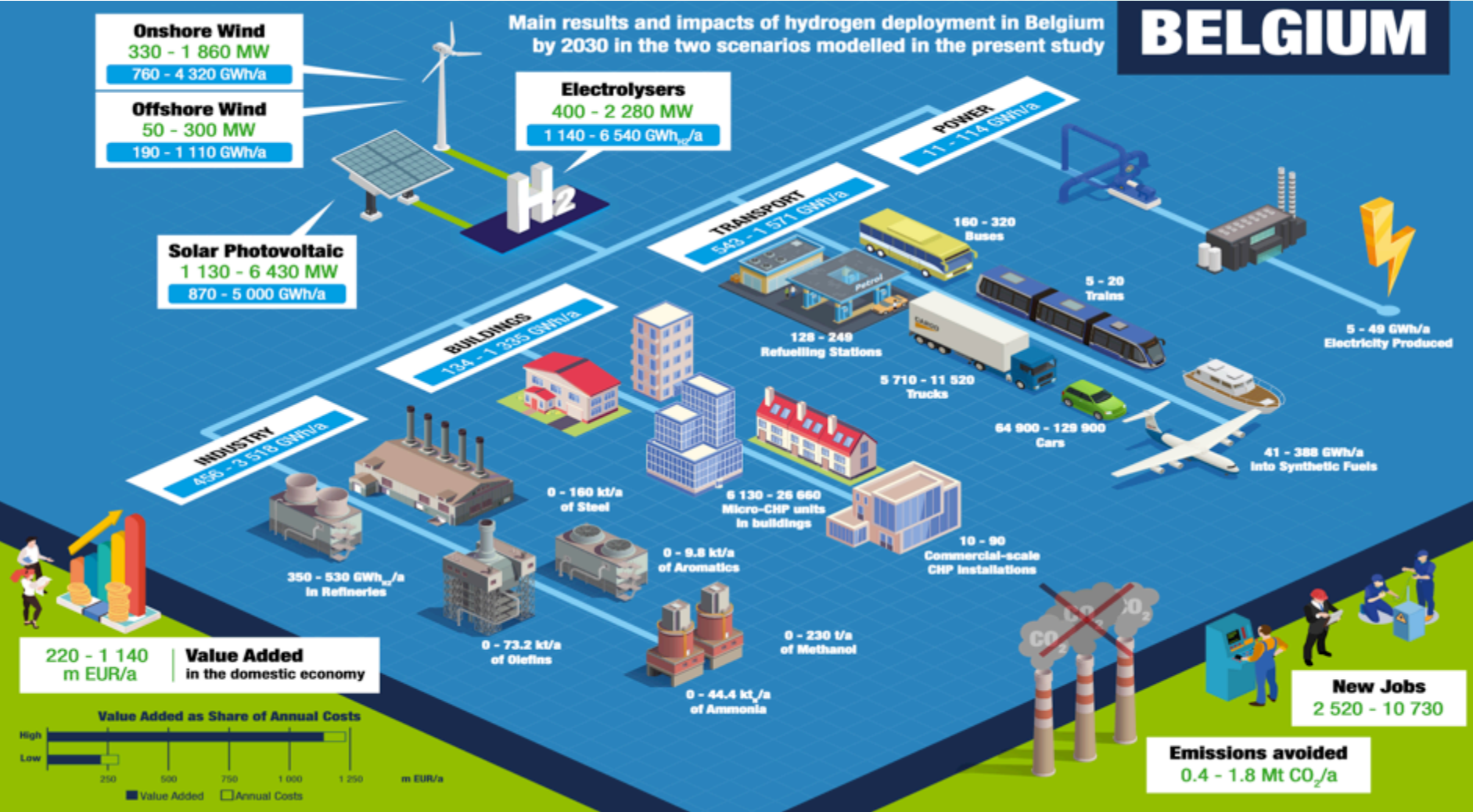


Hydrogen ecosystem in Wallonia : H2 value chain & industry roadmap

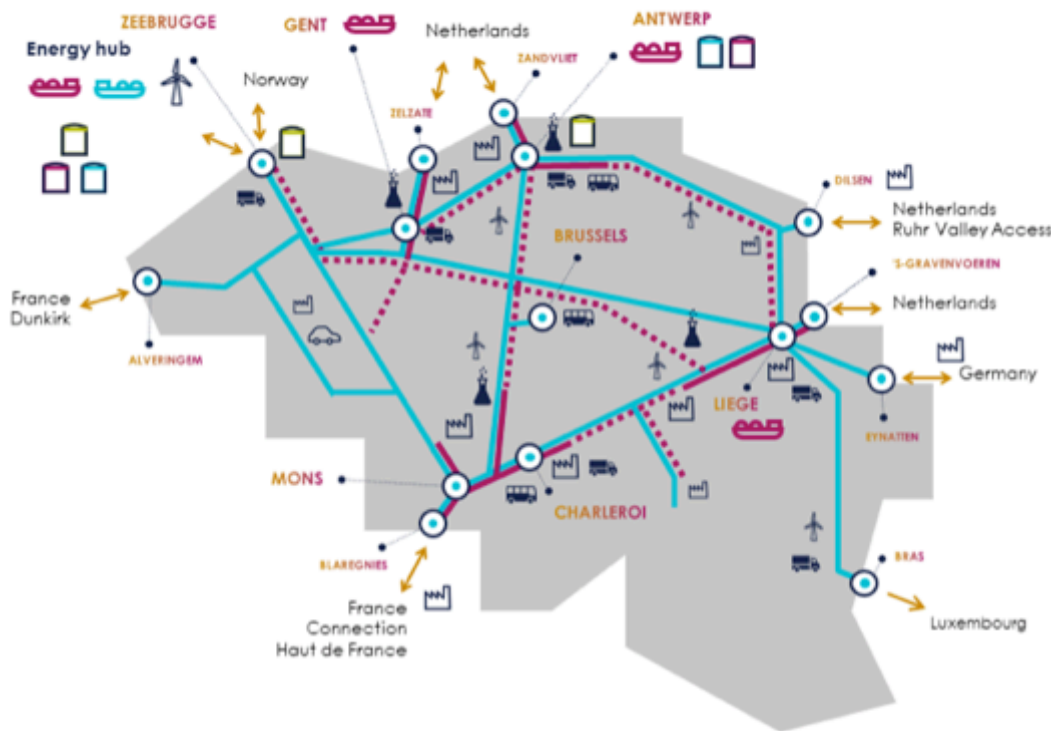
Opportunities for Hydrogen Energy Technologies Considering the National Energy & Climate Plans – Belgium Level

Main results and impacts of hydrogen deployment in Belgium by 2030 in the two scenarios modelled in the present study

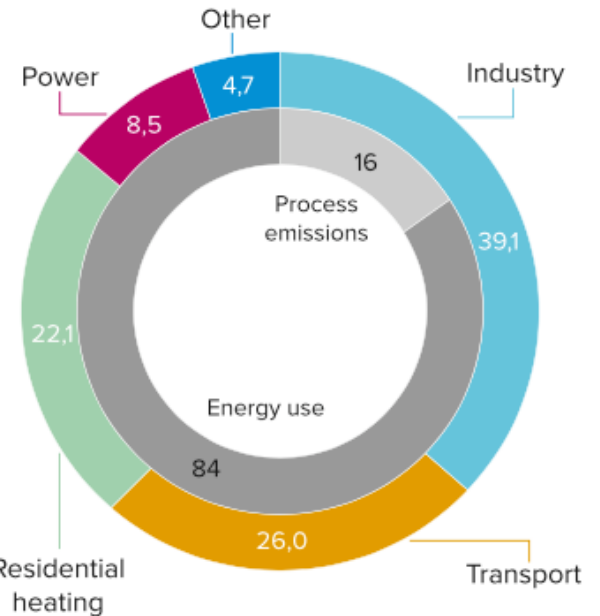
BELGIUM



Opportunities for Hydrogen Energy Technologies Considering the National Energy & Climate Plans – Belgium Level, vision of grid operator, H2/CO2 Network



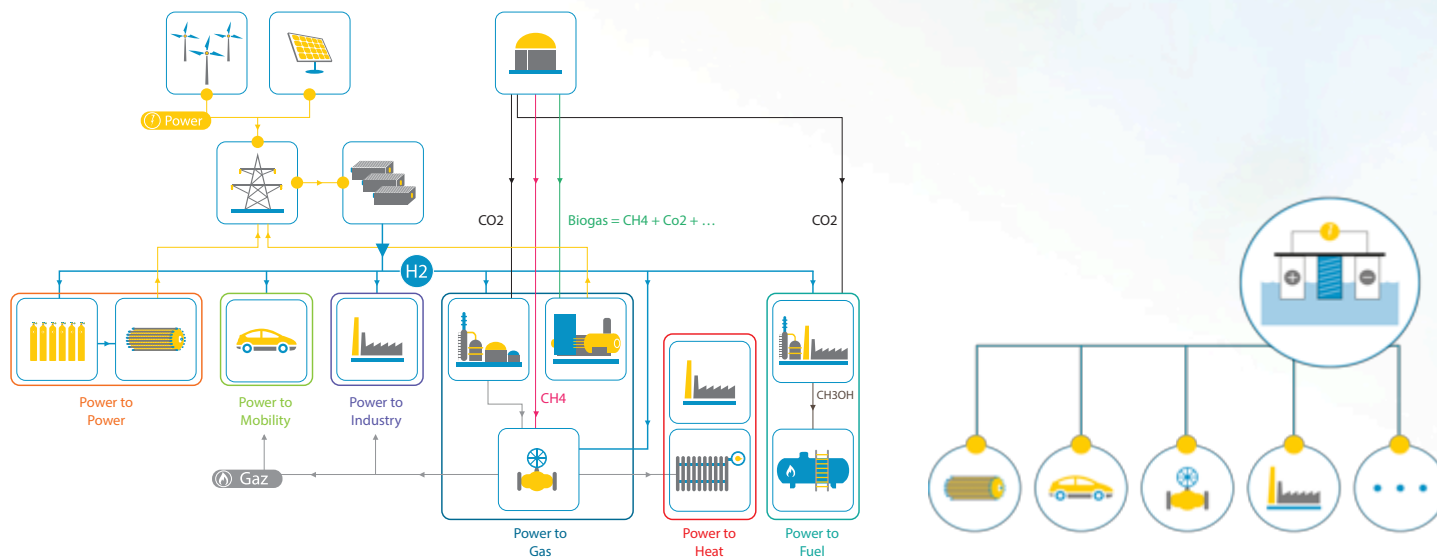
- CH₄ storage (liquid / gas)
- CO₂ terminalling Buffer storage (liquid)
- Buffer storage blue hydrogen production
- CO₂ export
- H₂ import (different carriers)
- H₂ pipeline
- CO₂ pipeline
- Options
- Power-to-Gas
- Local carbon usage



Belgium: breakdown of carbon emissions in 2018 in million tonnes

(Source: [climat.be](https://www.climat.be) / [klimaat.be](https://www.klimaat.be))

Opportunities for Hydrogen Energy Technologies Considering the National Energy & Climate Plans – Wallonia Level



Scénarios	2030				2050			
	kt H2	GWh	MW*	# eol 3 MW	kt H2	GWh	MW*	# eol 3 MW
Mobility (H2)	10	555	222	74	109	6197	2479	826
Energy (CH4)	15	880	352	117	75	4265	1706	569
Industry (CH4)	7	421	169	56	178	10122	4049	1350
Domestic (CH4)	5	273	109	36	152	8645	3458	1153
Tertiary (CH4)	2	140	56	19	77	4374	1749	583
Industry (NH3)	24	1389	556	185	49	2779	1112	371
TOTAL	64	3658	1463	488	638	36382	14553	4851

Opportunities for Hydrogen Energy Technologies Considering the National Energy & Climate Plans – Wallonia Level

	Now	2020	2025	2030	2035	2040	2045	2050
Mobility		-----> 2023: 5 car stations		2%				35%
		-----> 2020: 1 station + 20 busses		10%				40%
		-----> 2025: 100 trucks		2%				50%
Storage		-----> 2025: balancing / strategic reserve		NC				NC
H2 Injection		-----> 2023: H2 injection (Wind)		2%	2035: 1 neighbourhood 100% H2 + cogénération			100%
H2 for industry		-----> 2023: Industrial production of H2		50%				100%
Methanation		-----> 2025: Combined with biogaz		NC				NC
Synthetic Fuel			-----	NC	2035: 1 pilot project			NC



Industry & Value chain analysis - H2



Value Chain - Project



Industry & Value chain analysis - H2



Value Chain - technology

--	--	--	--	--	--	--	--

H2 Wallonia Expertise - R&D projects & topics

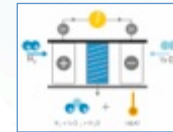
- WALLONHY project focuses more specifically on the electrolyser, a central element of the energy storage sector



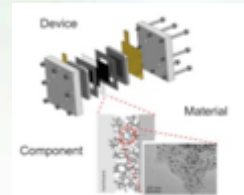
- HYLIFE intends to develop new low cost fuel cell cells.



- INOXYPEM is working on one key component of the fuel cell, the bipolar plates



- HYSTACK intends to develop Expertise in fuel cell testing via a high-performance cogeneration test bench



- LOOP-FC focuses on residential fuel cells by optimizing their thermal management and evaluating their cogeneration potential.



- SWARM aims to deploy small hydrogen vehicles.



- H2GREEN develops the enzymolysis of water and the enzymatic fuel cell where valuable catalysts are advantageously replaced by enzymes



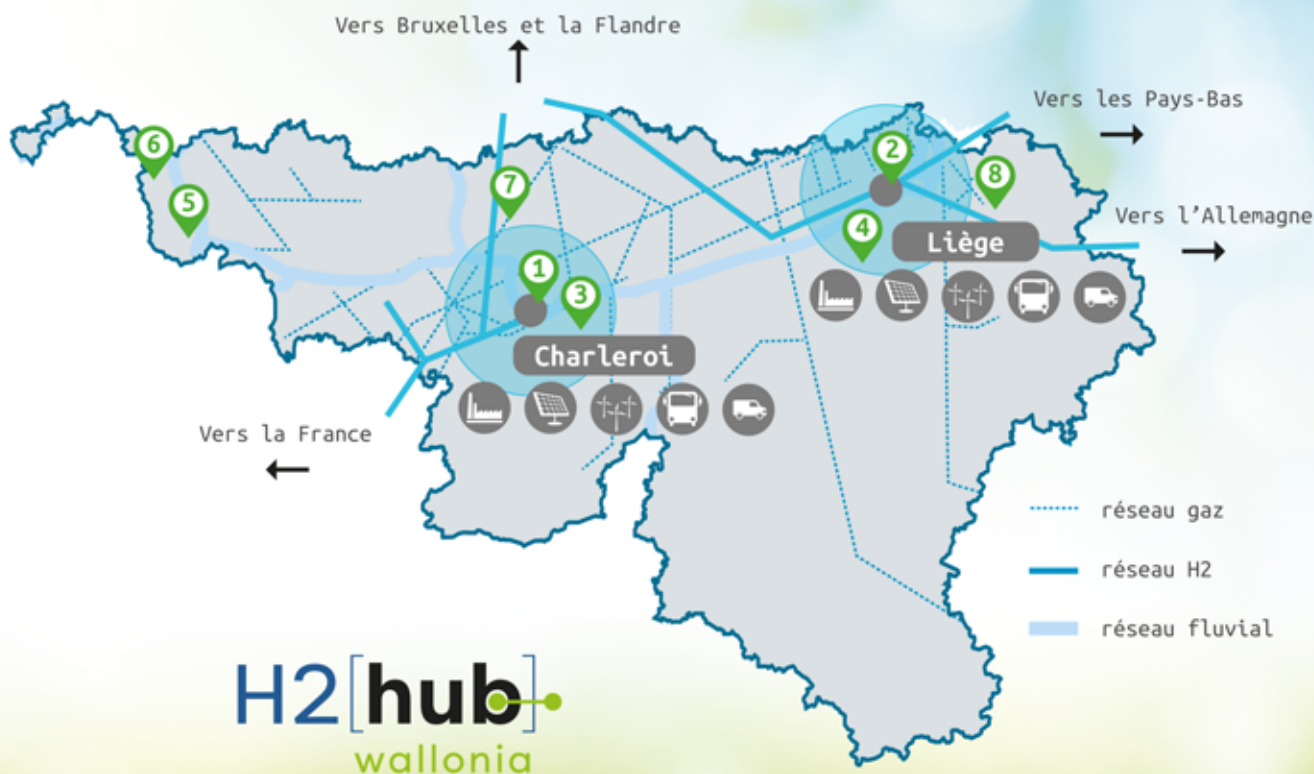
➤ 8 Millions euros of H2 R&D project financed in last 3 years

H2 Wallonia Expertise - Industrial projects & Pilots



160 Millions euros
will be invested within recovery plan

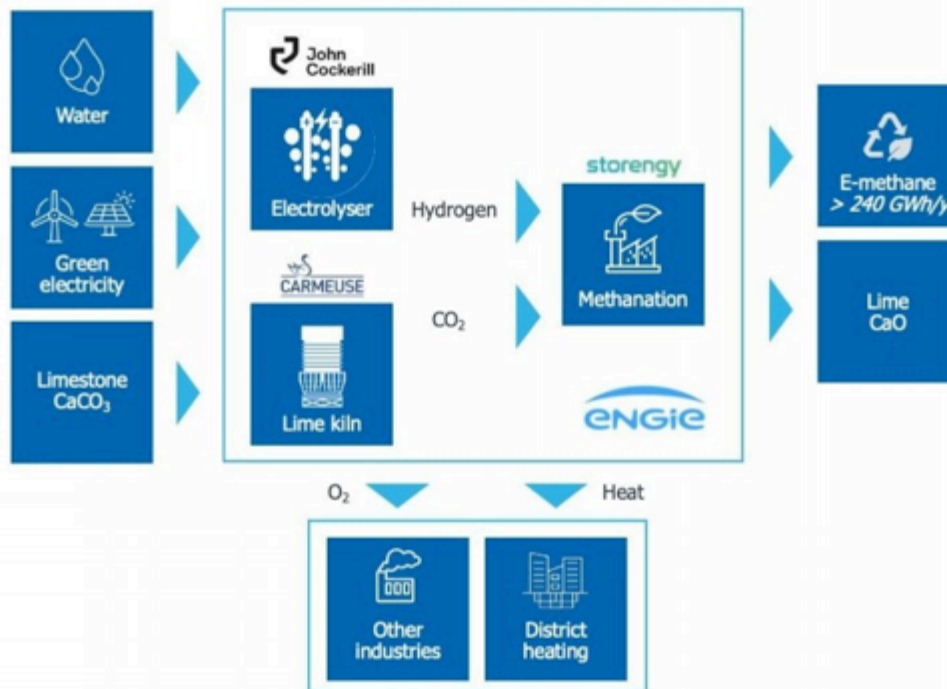
- 1 CCU & E-methane with green hydrogen (75 MW electrolyzer stack)
Charleroi
- 2 Green hydrogen (electrolysis) for clean mobility on the airport
Liège
- 3 Green hydrogen (electrolysis) at waste plants for refuse trucks and public buses
Charleroi
- 4 Methane pyrolysis on CCGT power station
Seraing
- 5 Public H2 filling station with electrolysis - passenger cars-HGV
Tournai
- 6 Biogaz from Agro-Food industry waste & H2 production with electrolysis for Industrial and mobility users
Mouscron
- 7 Hybrid H2 storage solution (reverse fuel cell) within a citizen energy community
Nivelle
- 8 Public H2 filling station - passenger cars
Herve



Colombus Project

Electrolyser power plant to produce e-methane with CO2 CCU

Carmeuse is developing an innovative process which concentrates the CO2 stream, while ENGIE will use renewable energy to feed a 75 MW electrolyzer stack, built by John Cockerill, to produce green hydrogen. This is then combined with the CO2 from the lime kiln to produce e-methane.



Global | December 10, 2020

CARMEUSE, ENGIE AND JOHN COCKERILL JOIN FORCES TO REDUCE INDUSTRIAL CO2 EMISSIONS IN WALLONIA



Hayrport

Pilot Plant H2 to power airports fleet

On the airport site, it can be used in different ways, particularly through hydrogen distribution stations which can be used to power both the airport's own vehicle fleet and also vehicles from the exterior.



H2 Coop Storage

Energy Community with hybrid storage (H2)

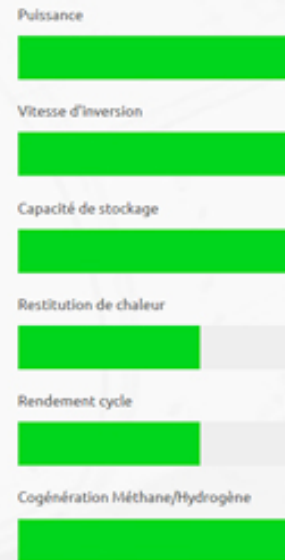
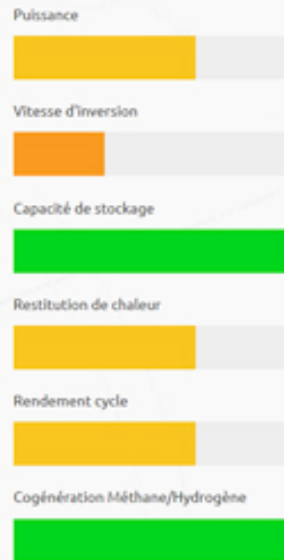
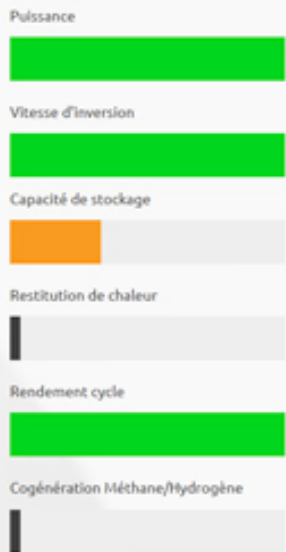
Development of tools enabling the deployment and management of a multi-energy Renewable Energy Community with hybrid storage community



BATTERIE

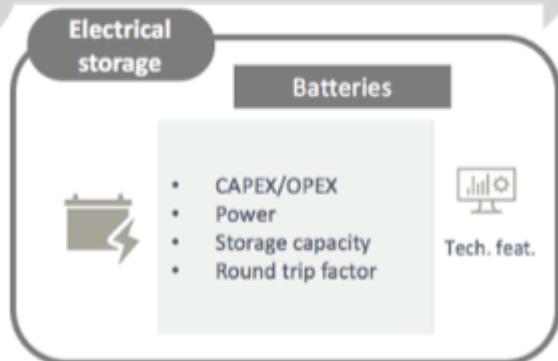
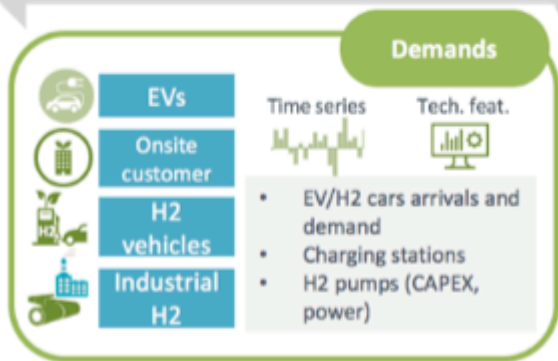
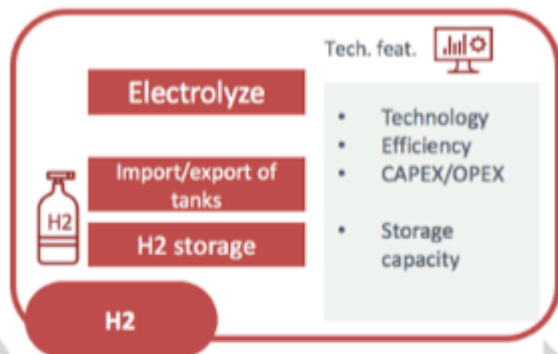
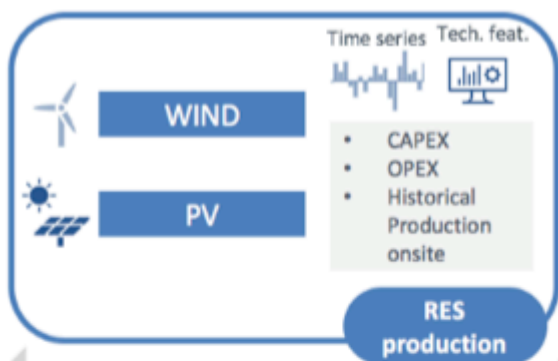
PILES À HYDROGÈNE

SMART ENERGY HUB



Integrated refuelling stations with EV & H2

INTERESTS aims the creation of an optimization tool allowing the definition, the sizing and the management of "integrated stations" of production, storage and consumption (refuelling) of renewable energy (electricity / hydrogen)





www.clustertweed.be

Cluster TWEED

Rue Natalis 2 • 4020 Liège • Belgique

Contact : Cédric Brüll • Director • cbrull@clustertweed.be