
Waste-to-Wheels, a circular solution to convert waste into renewable fuel

22nd October 2019



PUBLIC



INTERNAL



RESTRICTED



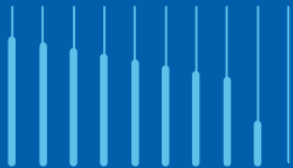
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Shaping our world

Together with our clients it's our mission to shape the world of tomorrow. Backed by 150 years of experience in **energy, water and urban**, we can provide you **engineering, advisory and project management services** and be your partner in innovative solutions, the energy transition & digital transformation.



Key figures



5,000

EMPLOYEES



+70

PRESENCE IN MORE THAN 70 COUNTRIES



< 1,5

HIGH SAFETY STANDARD: FREQUENCY RATE < 1,5



+190

+ 190 TECHNICAL PUBLICATIONS/YEAR



+150

PROJECTS DEVELOPED IN OVER 150 COUNTRIES



662

€662 MILLION TURNOVER

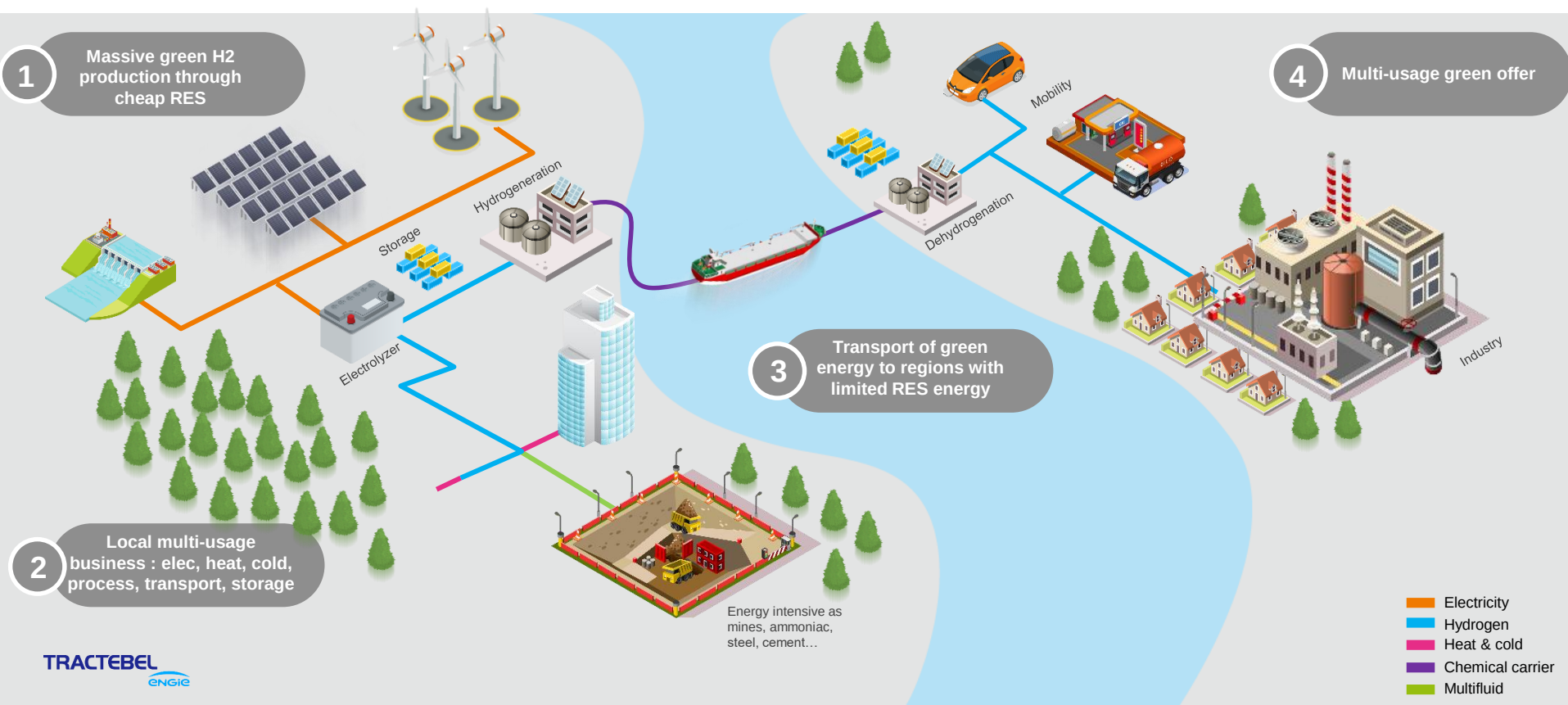
01

Hydrogen vision

TRACTEBEL



Engie vision on Hydrogen



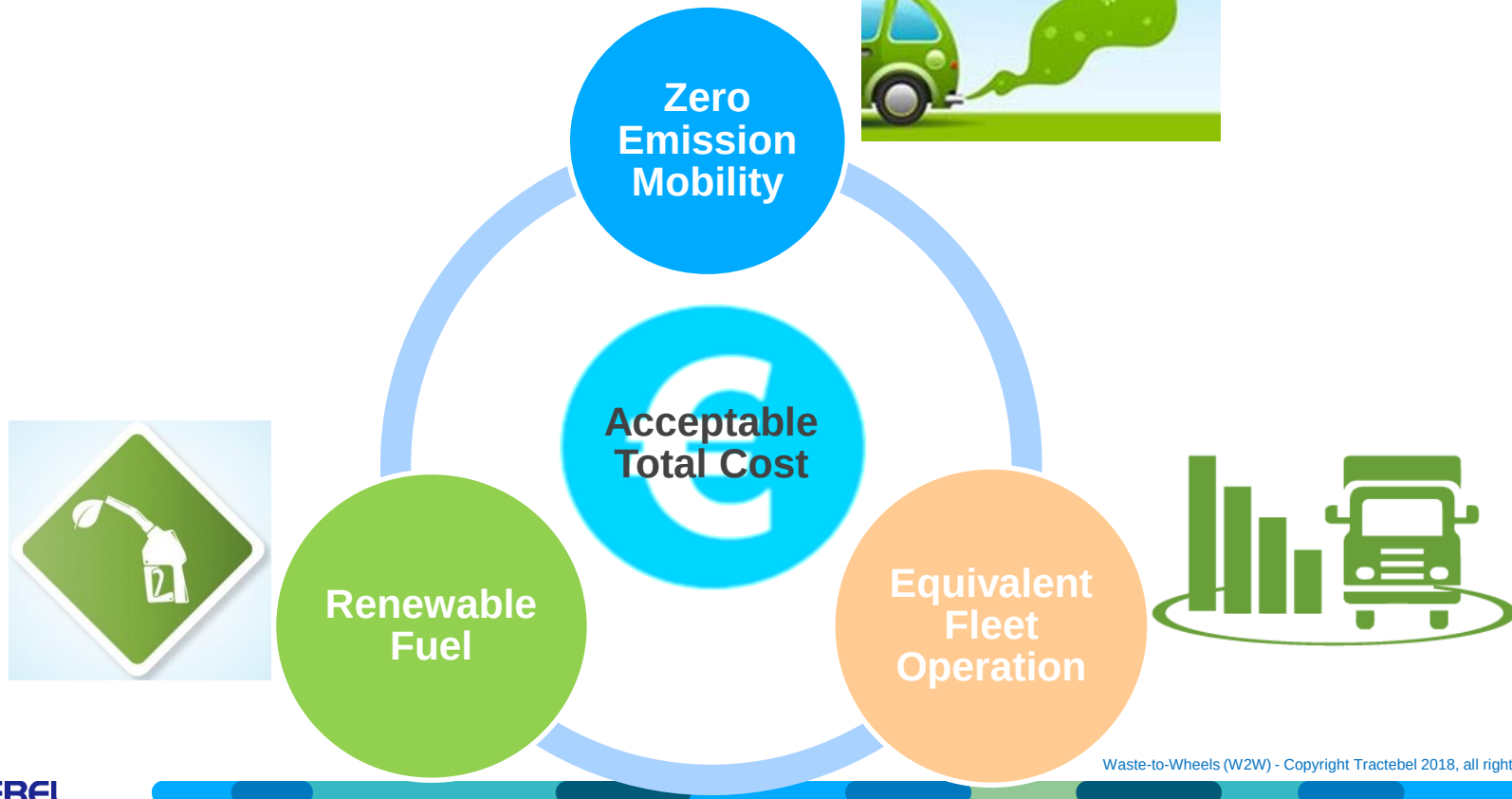
02

Waste-to-wheels

TRACTEBEL

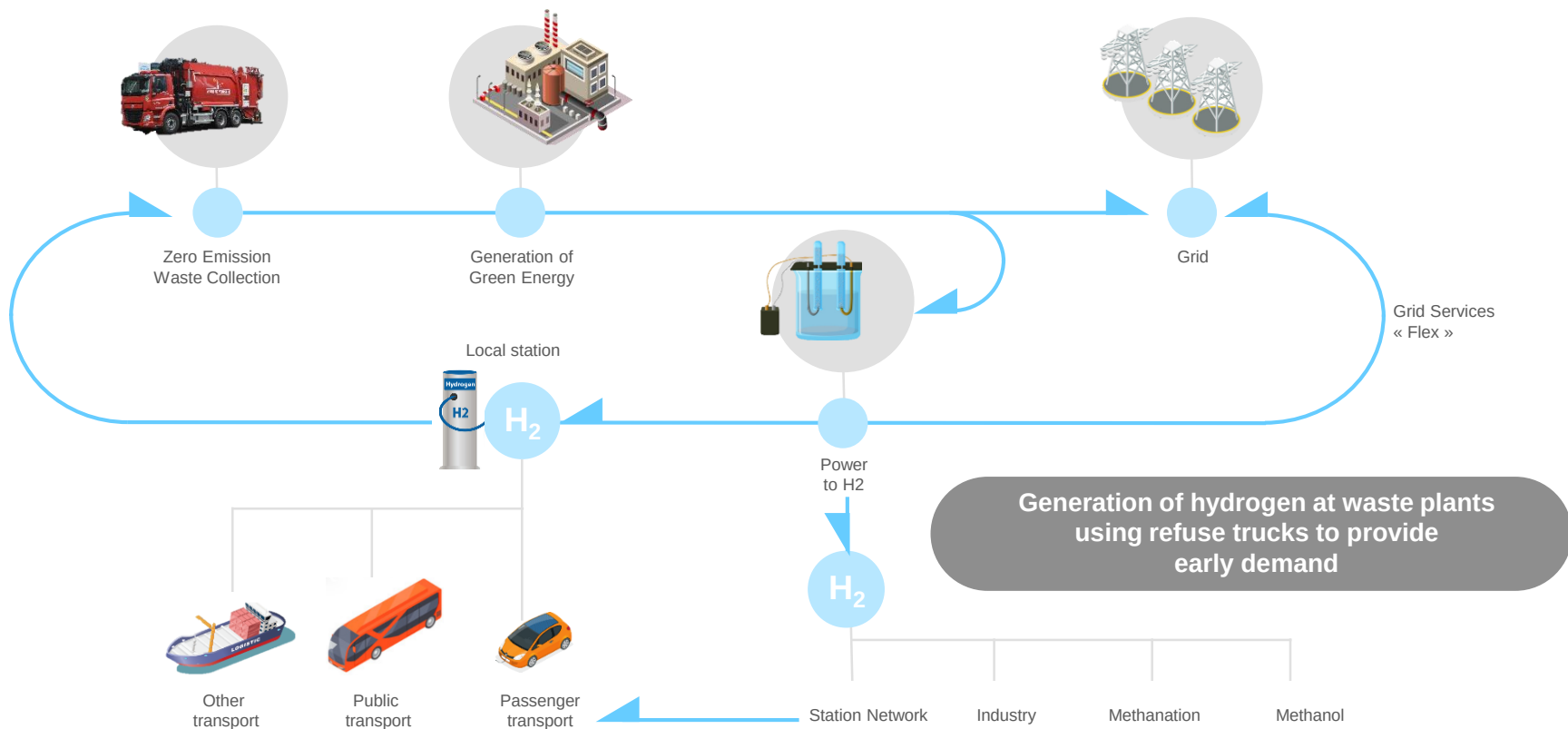


The Ambition of Waste to Wheels

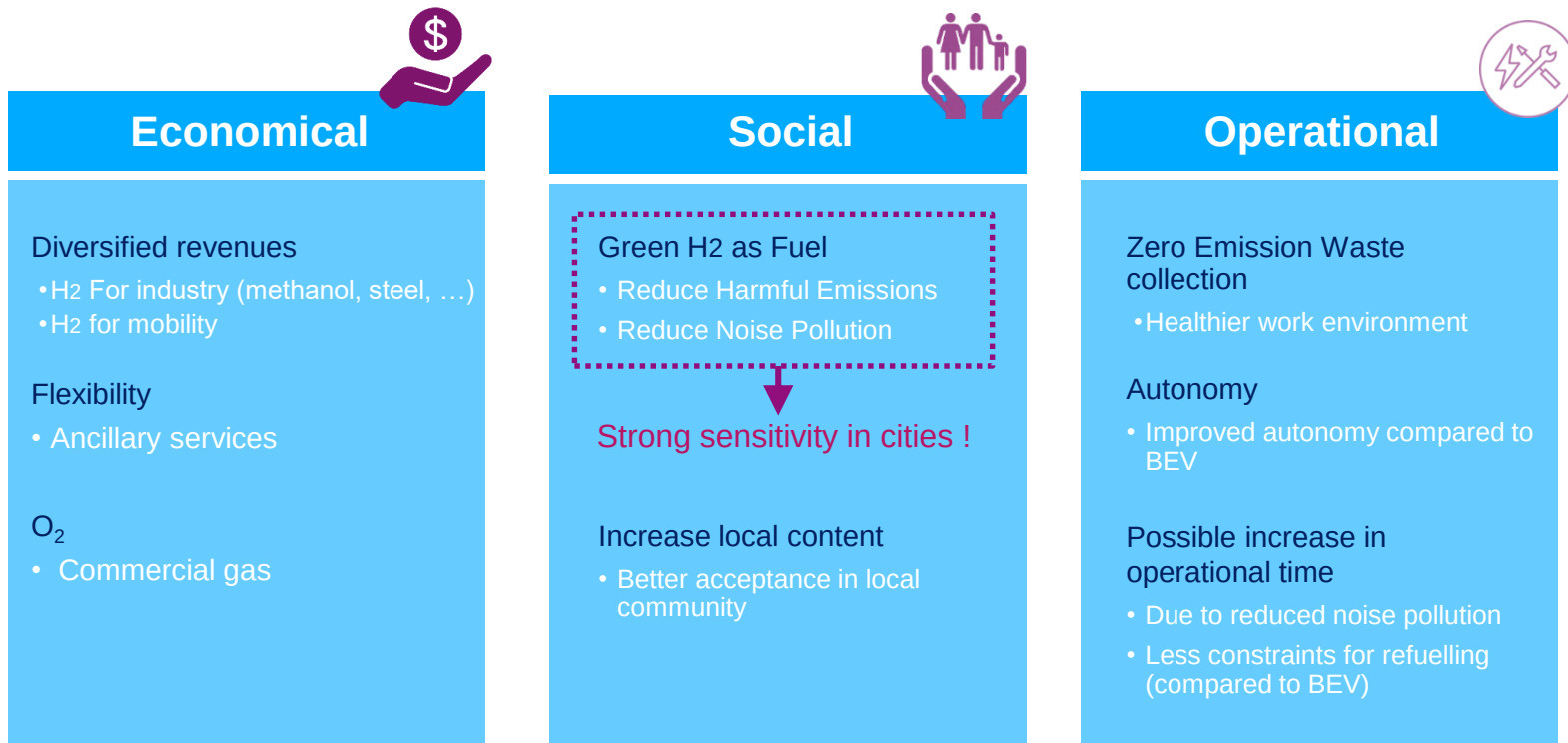


The Waste to Wheels model

Combination of Valorisations



The benefits



03

W2W Project references

TRACTEBEL
ENGIE



REVIVE

Refuse Vehicle Innovation and Validation in Europe

CLIENT	FCH-JU (European Commission)
LOCATION	8 deployment sites in Europe
PERIOD	2018-2021
SERVICES PROVIDED	-Creation and Coordination of the Consortium -Waste-to-wheel business model validation
Goal of the project • Bridge the gap in maturity for trucks vs cars/buses by developing a high-performance fuel cell refuse truck • Trial the trucks in their operating environment • Compile the evidence base for continued rollout of the technology	



FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING



Revive: Status today

- Delayed ordering of the trucks:
 - Refueling Infrastructure is outside scope of REVIVE
- European Fuel Cell supply chain catching up
 - Still development efforts needed to reach same level as more mature non-EU suppliers.
- First trucks in construction
 - First deployment expected January 2020 (Breda)
- Negotiating with new partners for remaining trucks
 - Renova (Sweden)
 - Hürth (Germany)
 - Dijon (France)



Waste to wheels Wallonia

Waste to wheels project

CLIENT

ENGIE BENELUX

LOCATION

Walloon region - Belgium

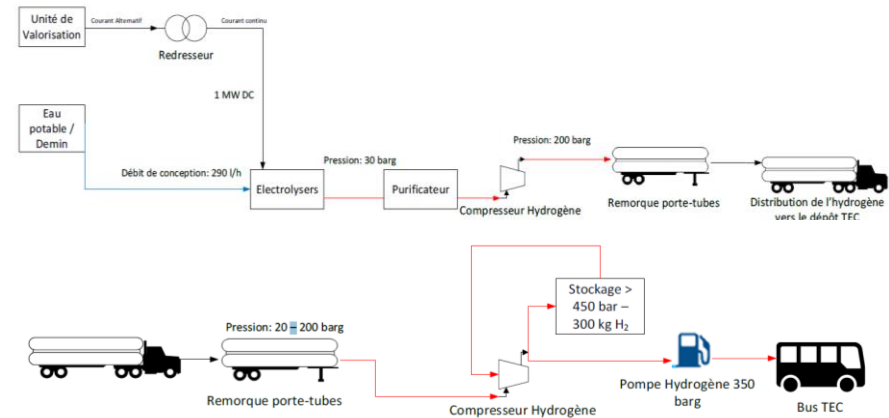
PERIOD

2018 - 2019

SERVICES PROVIDED

Pre-Feasibility for a Waste-to-wheels project

- 1MW electrolyzer installed at incinerator site to supply hydrogen for a bus fleet
- Preliminary Layout in Brown Field and design of the facilities: electrolyzer, balance of plant, hydrogen supply (cylinders) and hydrogen refueling station.
- Supplier market analysis, CAPEX estimates
- Capex/ Opex estimation
- Optimization of the LCOH & LCOE using multiple parameters. Financial model



Brussels Energy

Waste to wheels project

CLIENT

Engie –Brussels Energy

LOCATION

Brussels – Belgium

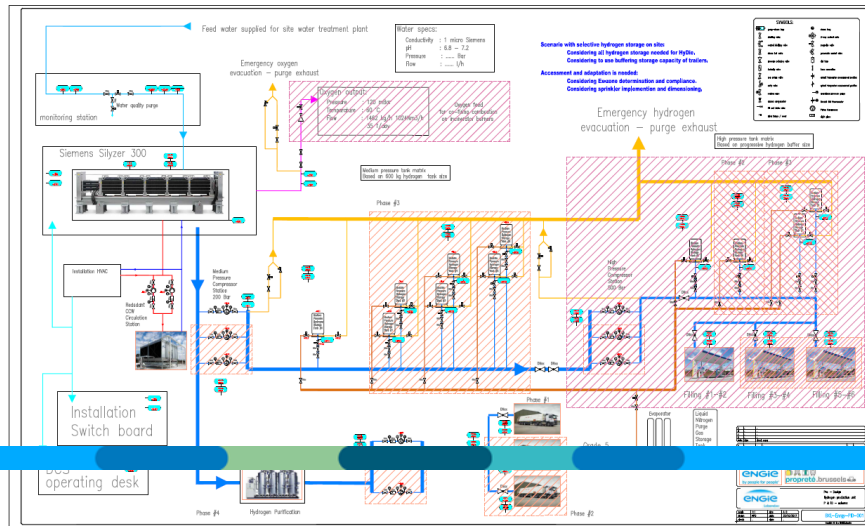
PERIOD

2019-2020

SERVICES PROVIDED

Feasibility study

- Design basis of hydrogen production and transportation
- Safety studies
- CAPEX/ OPEX estimation



CONTACT

Lorena IGLESIAS



Business Development & Product Manager Hydrogen

tel. + 32 2 773 86 38 - mob. +32 473 69 64 91

lorena.iglesiasalbacete@tractebel.engie.com



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