
WASTE-to-WHEELS (W2W)

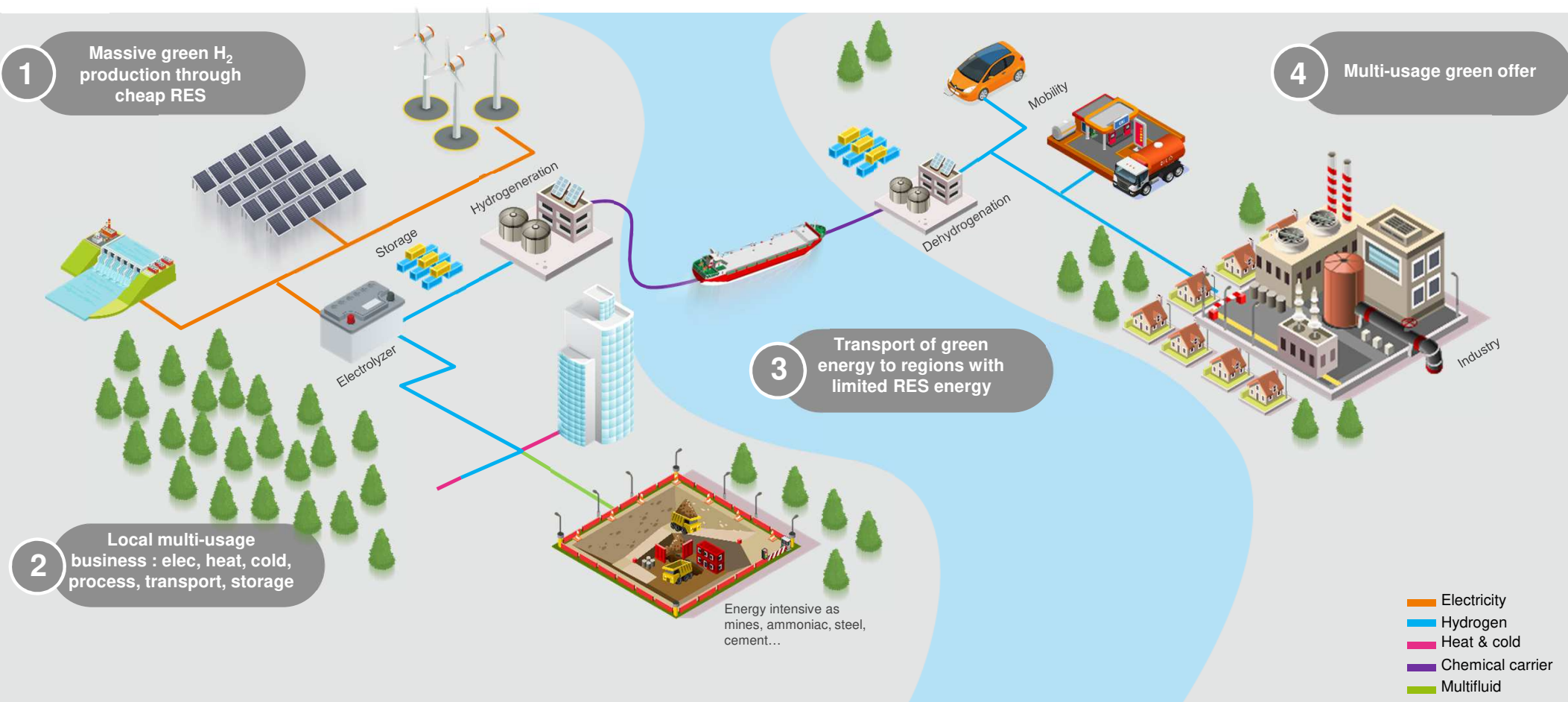
E-trucks meeting – 6th of December 2019

Koen Vlaeminck

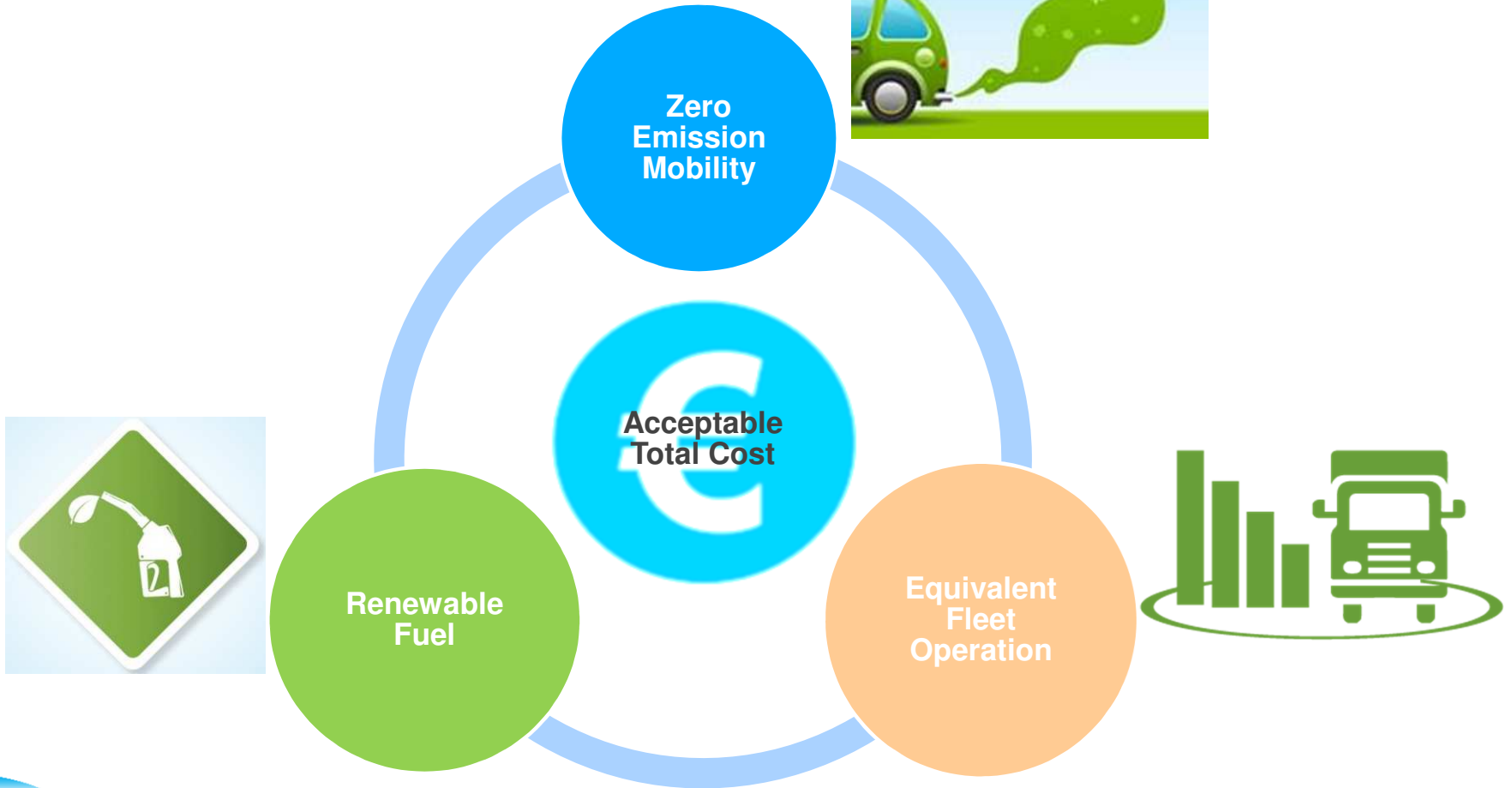
H₂ business development, ENGIE



Engie vision on Hydrogen – the big picture

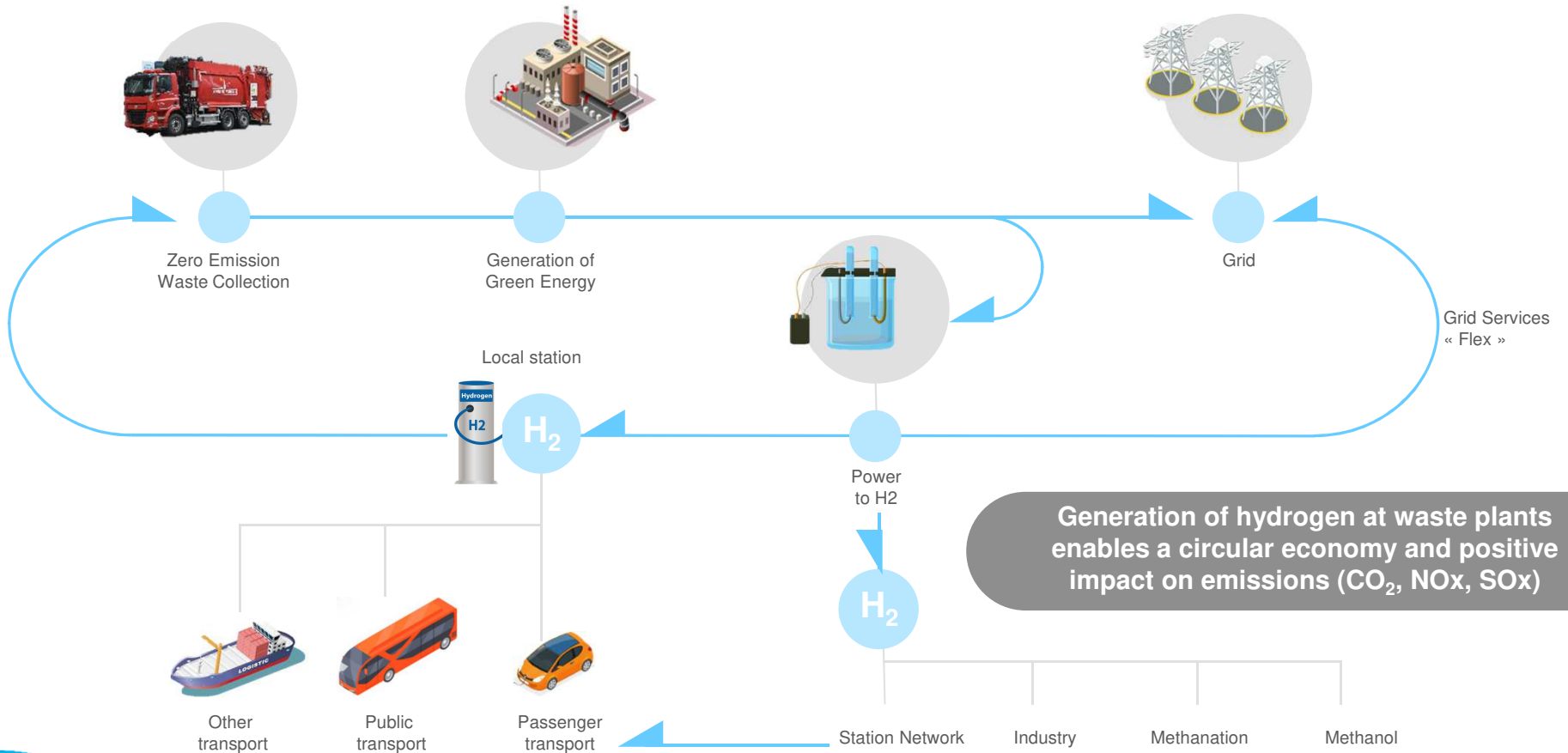


The Ambition of Waste to Wheels

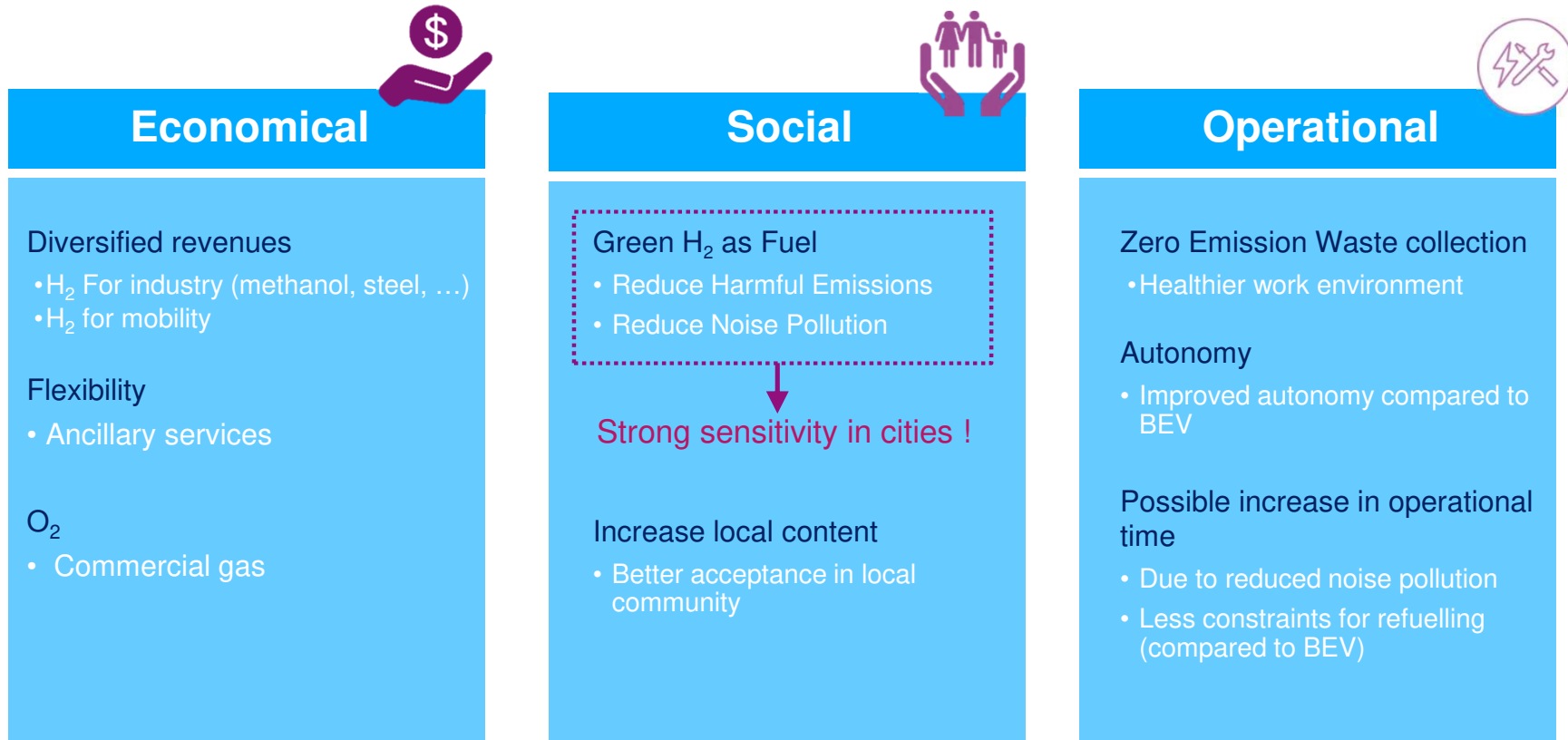


The Waste to Wheels model

Combination of Valorisations



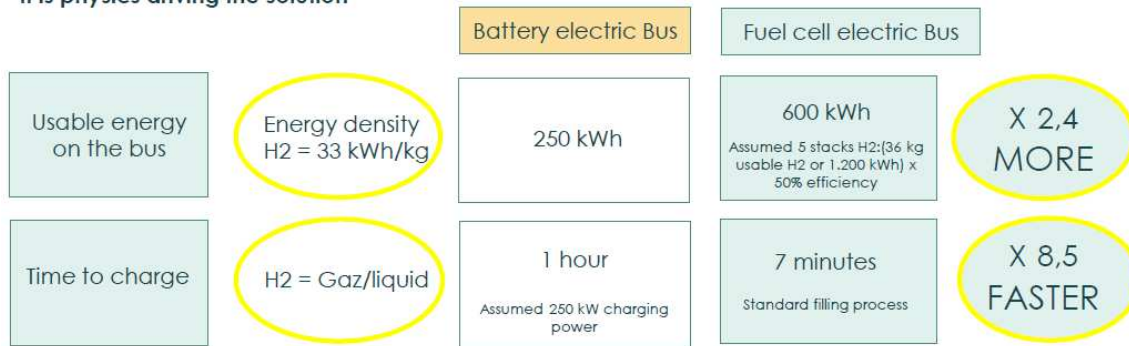
The benefits



FCEV versus BEV vehicles

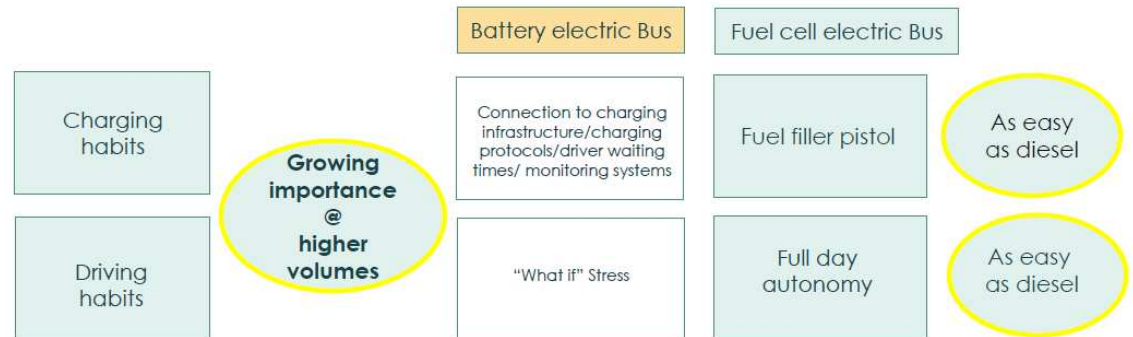
Hydrogen has most potential to become the disruptive technology driving large scale zero emission deployment.

It is physics driving the solution



Hydrogen has most potential to become the disruptive technology being accepted by society.

It is habits driving the acceptance (of the solution)



Source: Van Hool presented at congres WaterstofNet 14 november 2019, 's Hertogenbosch

Input based on FCEV buses, representing a mature market



Some elements for business cases

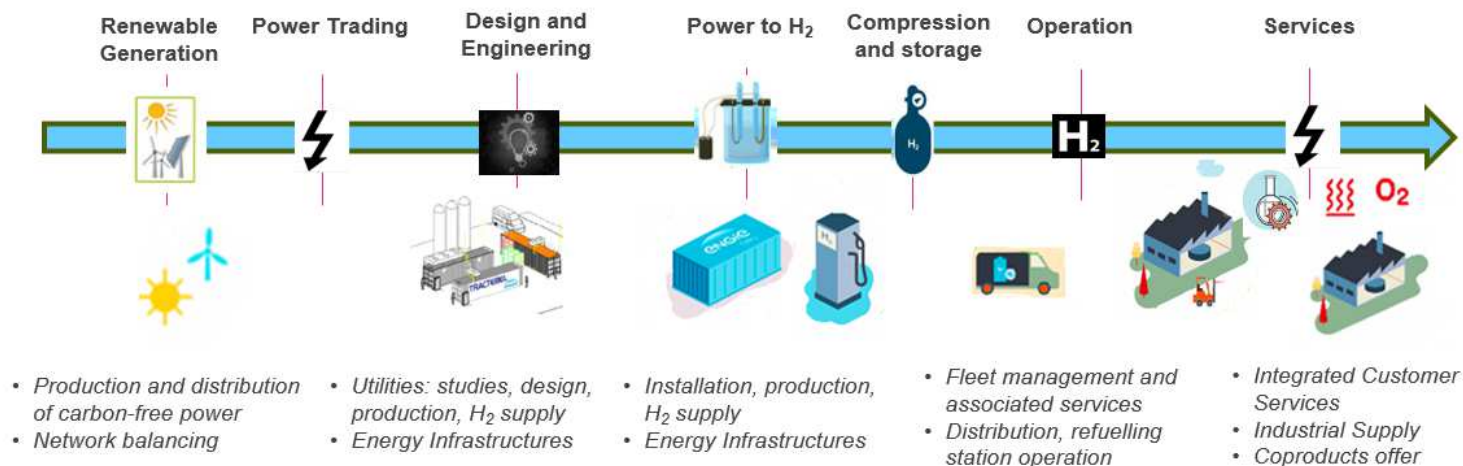
- Zero-emission zones require to target TCO equivalence between applicable technologies for new acquisitions : BEV versus FCEV
- Cost elements:
 - On site production of H₂ leads to avoidance of transport and distribution costs for electricity. Electricity prices represent roughly 60% of production cost of H₂.
 - Production and refueling on separated locations lead to increase of Capex and transportation costs.
 - Electricity prices can be optimized to lower the cost of H₂ : grid services, flexible production.
- Sizing of the project should be defined by the offtake and will have an impact on the cost of H₂ : 20 FCEV buses or 50 FCEV refuse trucks represent a ~1,5 MW electrolyzer.
- Differentiation of the consumption applications can lead to sizing upscale:
 - FCEV refuse truck: ~ 12- 13 kg H₂ / 100 km, average yearly mileage 20.000 – 30.000 km
 - FCEV bus (12m): ~ 9 kg H₂ / 100 km, average mileage 50.000 – 80.000 km
 - FCEV taxi: ~ 1,2 kg H₂ / 100 km, average mileage 90.000 – 140.000 km

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Engie's positioning on the H₂ value chain

- Engie has the key competencies to develop the H₂ market and to develop turn key solutions covering the entire H₂ value chain: from R&D, through feasibility studies, until project realization and O&M.



- Engie has partnerships in place with various universities (UCL, UMon, Ugent, ULB, VUB,...), is an active player in Power-to-Gas Cluster & Cluster Tweed and participates to the H₂ import coalition with Port of Antwerp.
- In Belgium, Engie has answered to the public tender for H₂ mobility in Wallonia, decision expected Dec. 2019.

Contact information



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