

UK – Central Europe Hydrogen Energy Collaboration in Policy and Technology

The role for hydrogen in the low-carbon economy

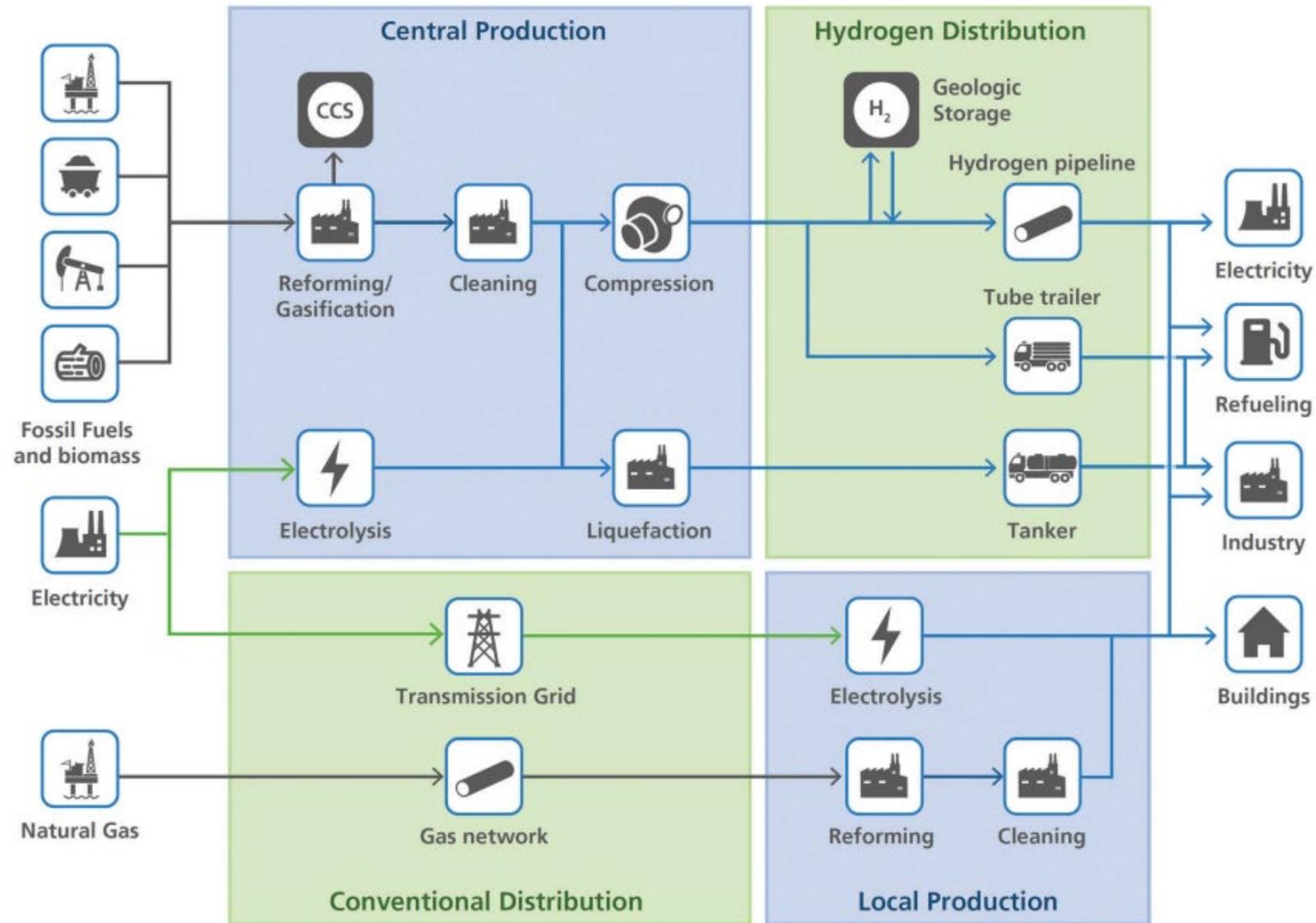
Clean Mobility 2019

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The potential role of hydrogen in the global energy system



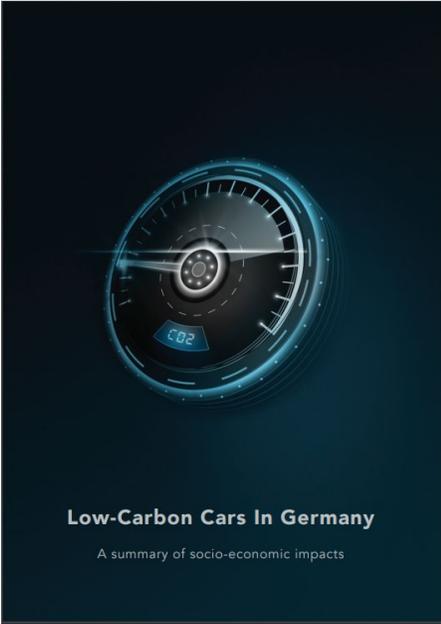
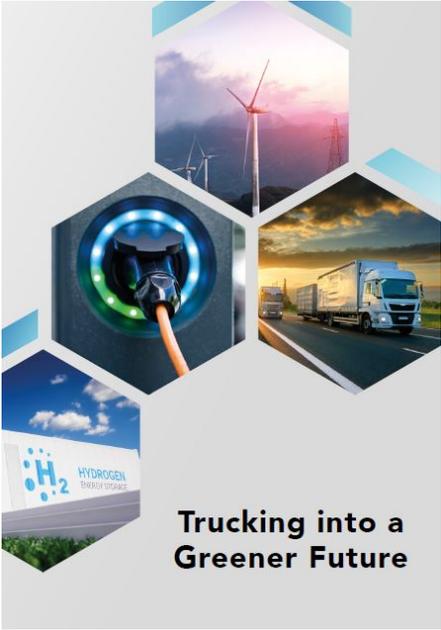
- Provision of electricity, heat, industry, transport and seasonal energy storage in a low-carbon energy system
- Different regions will have different strengths in the hydrogen economy

Cambridge Econometrics studies focus on how the transition to low-carbon mobility strengthens the economy

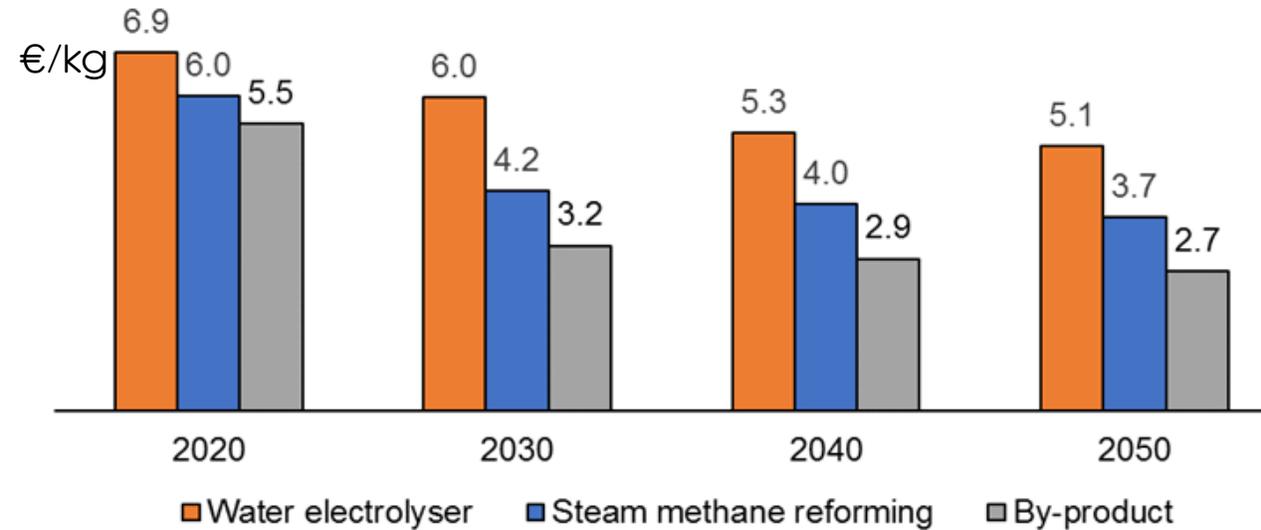
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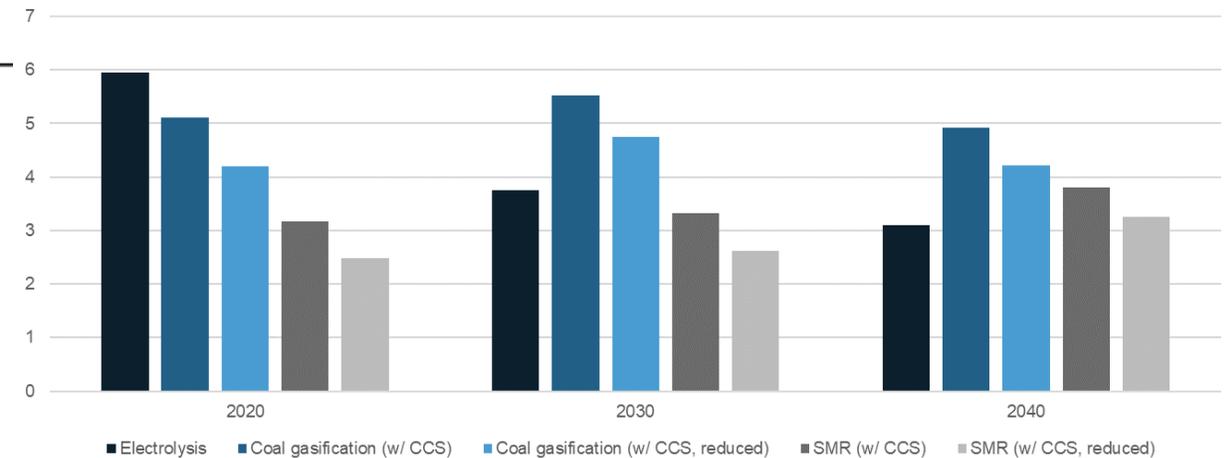


Challenges around cost and performance remain - it will be difficult to produce cheap green hydrogen in Europe



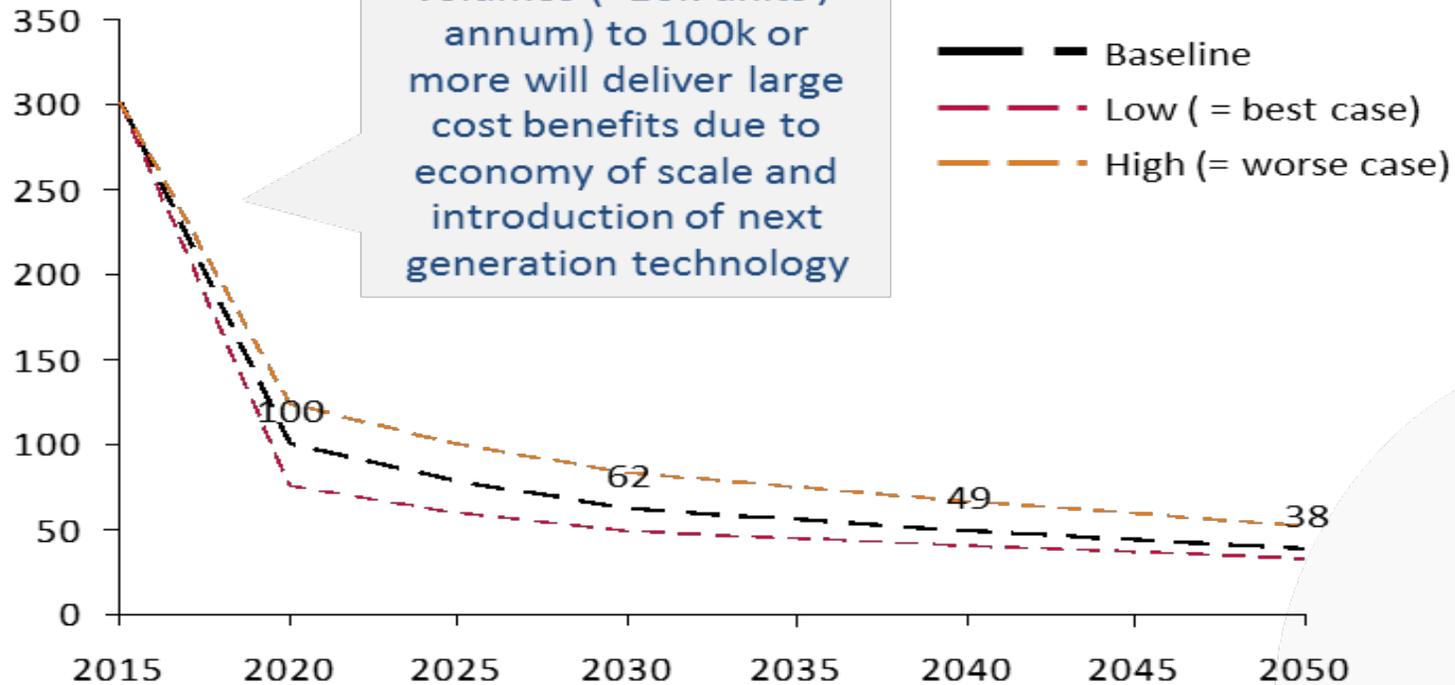
Sources: Data for fuel price predictions is from FTT/E3ME. Technology details and predictions are from various sources (CSIRO, E4tech, Element Energy, Staffell et al., DNV GL).

Source: Cambridge Econometrics & Element Energy, Low carbon cars in Europe: A socio-economic assessment, 2018



Trucks and logistics are the most promising applications within e-mobility

Fuel cell system cost (2016 €/kW-net)



Moving from current volumes (<10k units / annum) to 100k or more will deliver large cost benefits due to economy of scale and introduction of next generation technology

- Despite high costs, there is greater potential for use in freight vehicles
 - depending upon fuel prices...
 - ...and the viability of long-distance electric trucks
- But what works in one country may not be easily transferable to another from a technical and/or strategic perspective:
 - train tracks and heights
 - right hand vs left hand drive for road vehicles.

Conclusions

■ Applications

- E-mobility is not a choice between EVs **or** hydrogen
- It is not just mobility but other applications - different areas / different strengths; main advantage in providing low carbon flexibility and storage

■ Production

- **Green gas** is not easier than electrification. It requires super-sizing the electricity system, and there is a need for robust regulation to ensure it is really green i.e. from RES generation

■ Policy challenges remain

- coordination to create predictable and consistent energy policy and an enabling environment
- to scale up the hydrogen economy, to de-risk investment
- to create opportunities for collaboration versus competition and lesson sharing

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