



Department
for Transport

The Role of Hydrogen in Transport





This presentation has been constructed to inform and stimulate debate at the Energy Research Partnership plenary meeting on 8 May 2019, themed about hydrogen.

This presentation aims to highlight the challenges and stimulate debate.

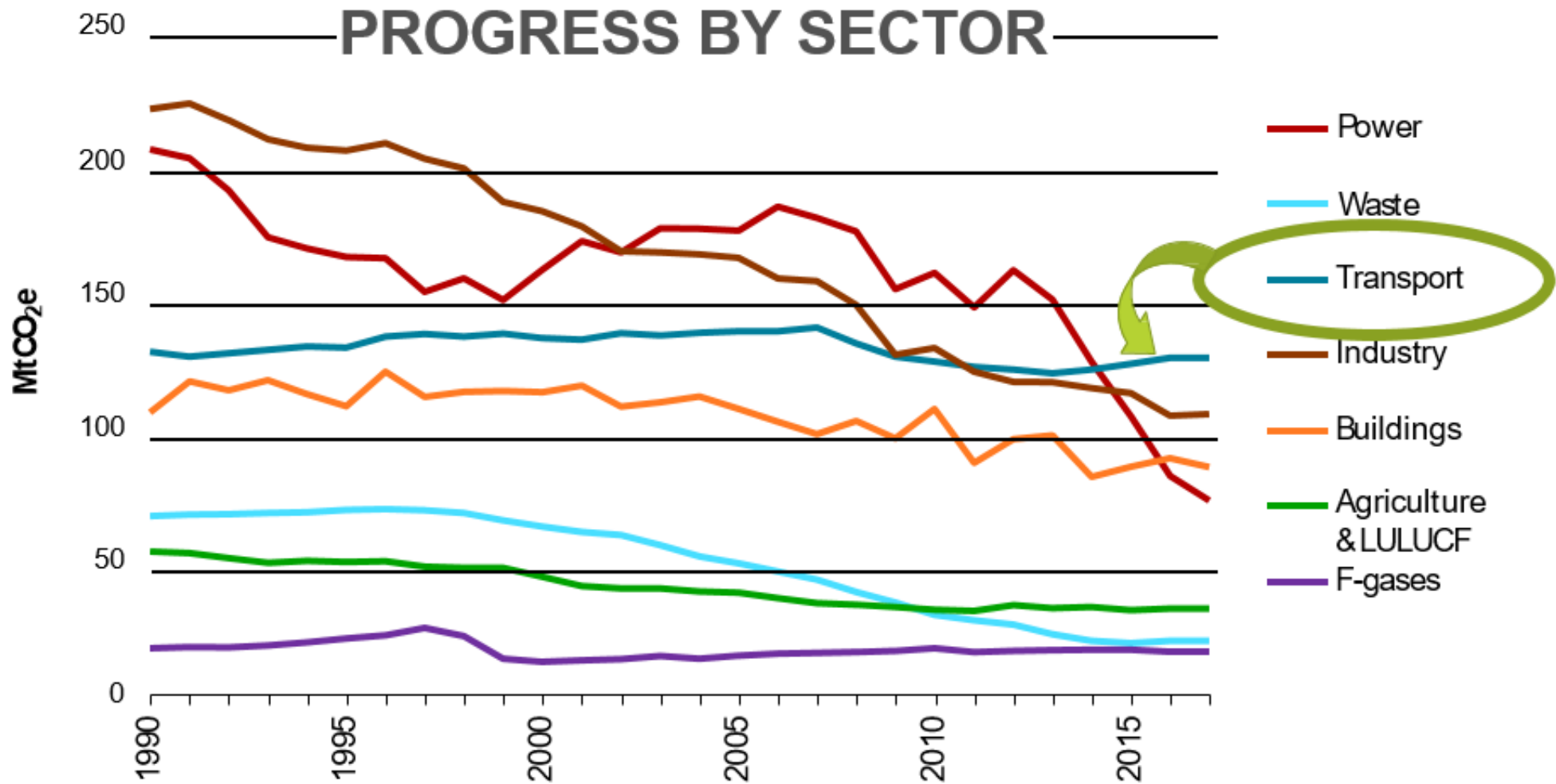
Hydrogen at the centre of UK Transport?

- ▶ Opportunities for Hydrogen in Transport?
- ▶ Economics of Hydrogen in Transport





Hydrogen at the centre of UK Transport?





Strategic questions and future trends

- Which technologies should we focus on to both improve transport in the UK and generate growth?
- Where should we be going early and where should we be following and looking to buy the innovations of others?
- What Geographic opportunities should we exploit: existing scale production; opportunities for storage of H₂ or CO₂; energy abundance.
- What trends do we see impacting on this space?
- What will the energy system look like in the future?
- What are the most impactful use cases for hydrogen in transport?





Opportunities for Hydrogen in Transport

Key energy challenges:

- Understanding the scale of envisaged electrification and the supply required to meet this demand.
- Understanding assumptions being made elsewhere and how they impact on the UK
E.G Battery production:



2018 – 220GWh



2028 – 1TWh?

If we are going to electrify everything we will need a lot of batteries.





Opportunities for Hydrogen in Transport

Energy Flow Chart 2017
(million tonnes of oil equivalent)





Opportunities for Hydrogen in Transport



Rail presents opportunities where electrification is not possible and for some commuter services, but heavy rail is seems less likely because of the power requirements.



Road freight is a relatively small proportion of transport emissions, but is difficult to decarbonise by other means.



Maritime is big opportunity, but can be a difficult place to innovate due to its fragmented nature and long life cycles. Hydrogen and ammonia could be very beneficial here.

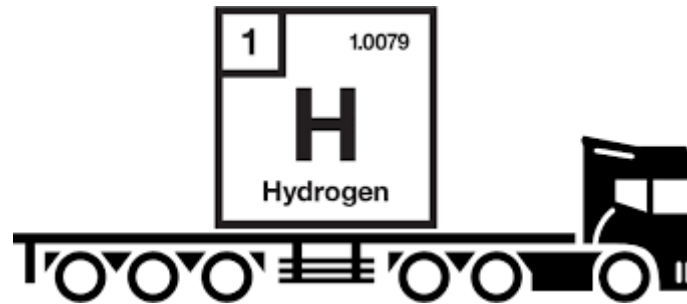




Production



Distribution

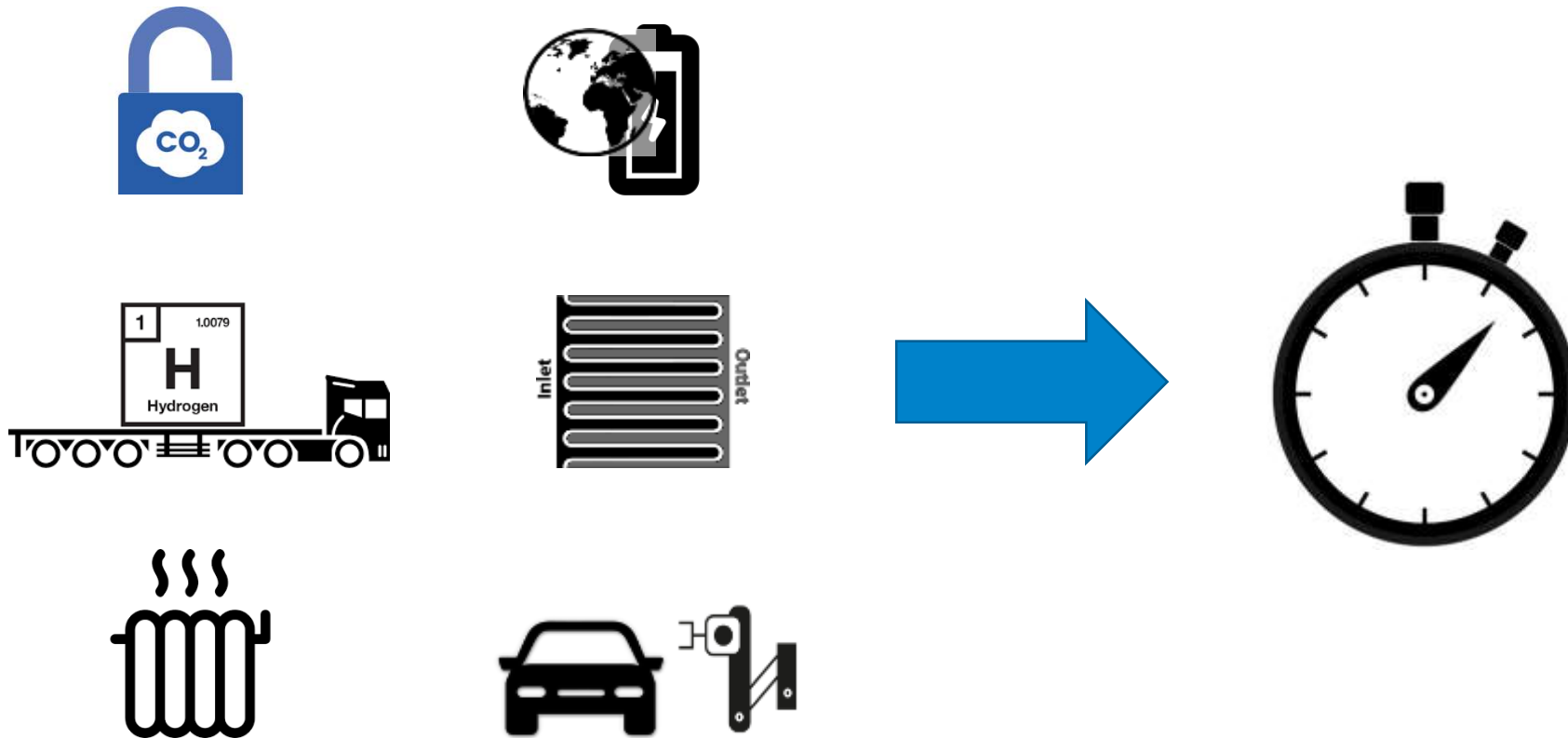


Wider Demand





What does the technology roadmap look like?





What interventions could be made?

DfT's current work on hydrogen:

- OLEV Hydrogen for Transport programme
 - Stage one - £8.8m investment in 5 (4 new) Hydrogen Refuelling Stations + 190 FCEVs
 - Stage two - £14m invested in 5 new HRSs and 106 FCEVs (including buses and some UK FCEV production)
- DfT sponsored project at the Connected Places Catapult
 - Economics of decarbonisation of various vehicle categories by hydrogen
 - Analysis of the existing hydrogen clusters and hydrogen transport initiatives in the UK

What more could be done?

- Spending Review
- UKRI





Questions for discussion

- What are the key hydrogen-transport opportunities the UK should exploit for growth?
- What are the key hydrogen-transport opportunities for decarbonising our transport system?
- How quickly should we be moving?
- What should Government's role be?

