Visualising the Opportunity for Pipeline Hydrogen for Mobility Applications

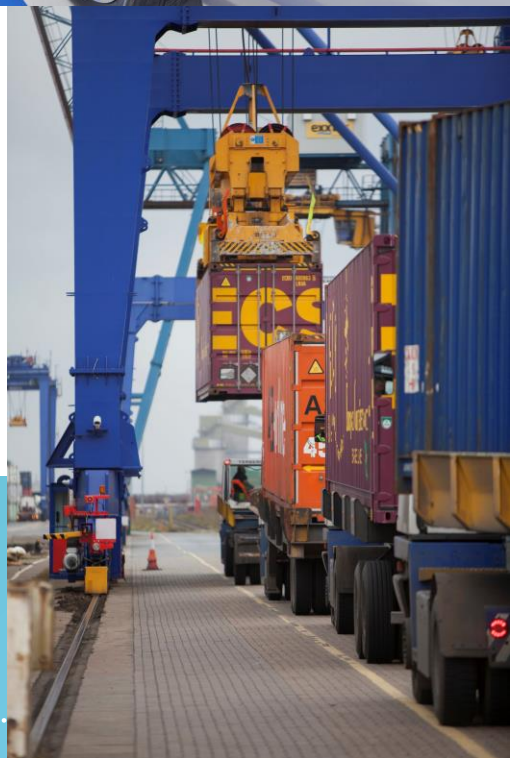
Energy Innovation Summit

31st October 2023

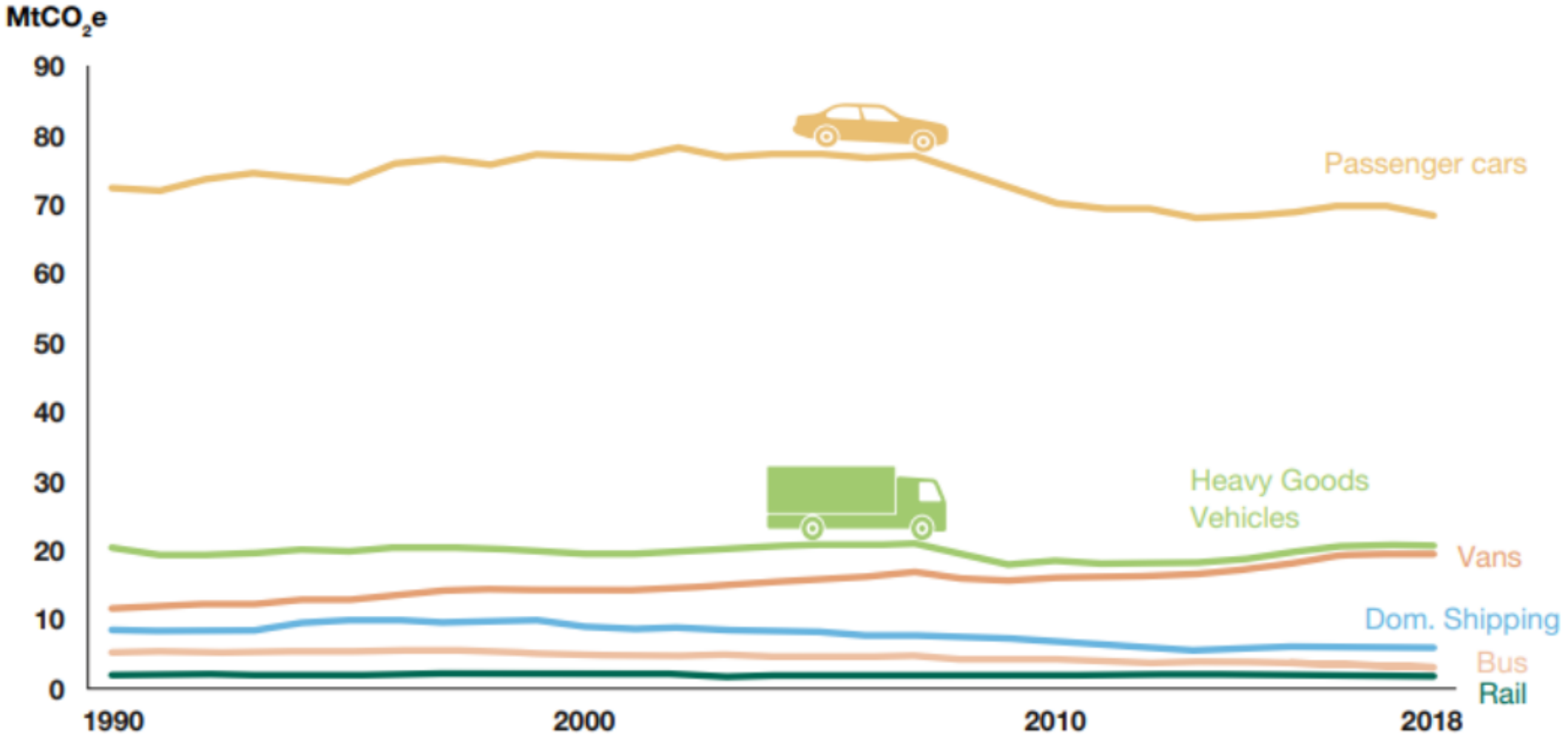
Hydrogen Horizons: Harnessing the Power of an Alternative Gas

Current Transport landscape

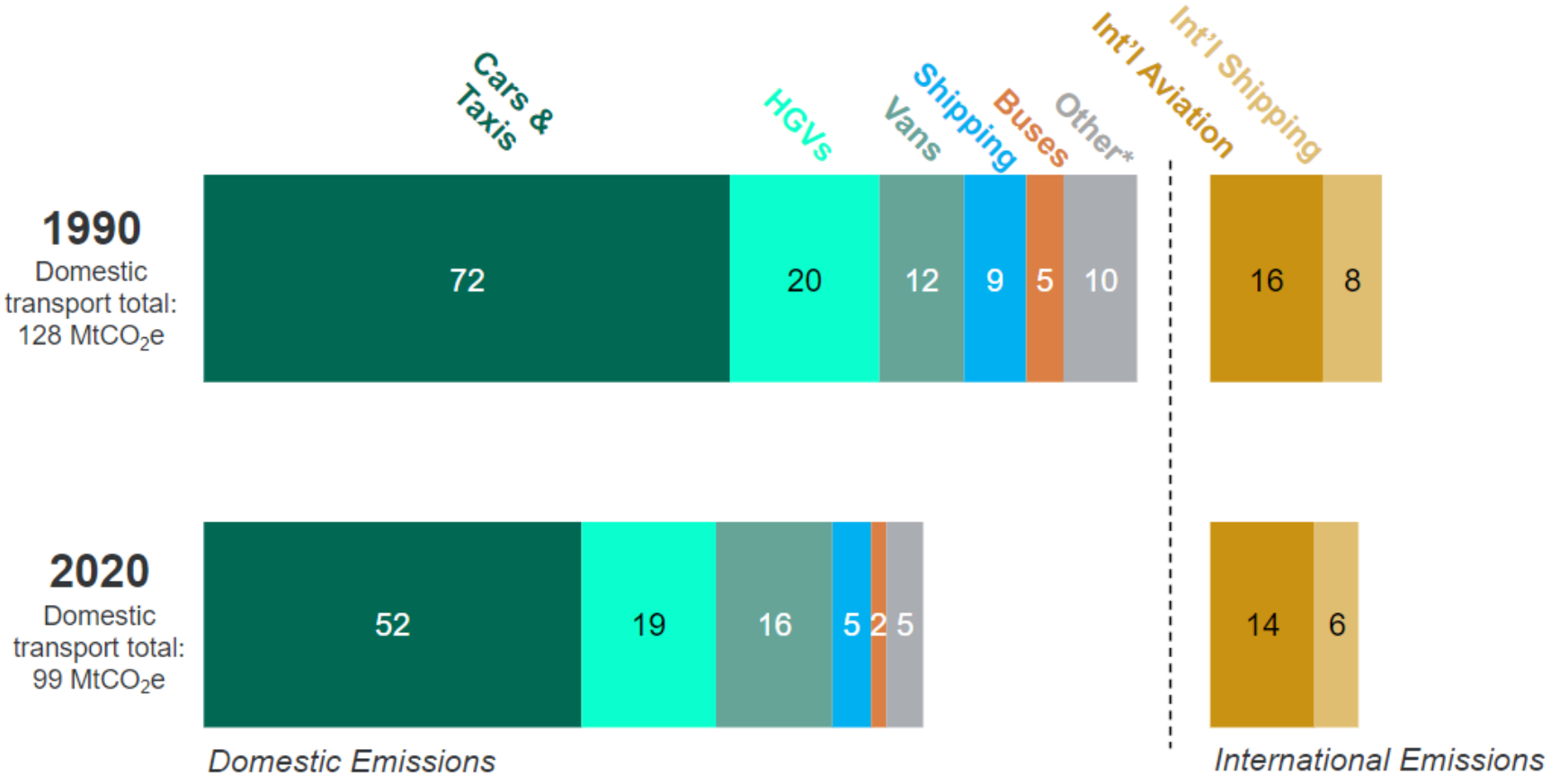
- Zero emission cars, vans, motorcycles and scooters
- Zero emission buses and coaches
- Decarbonising railways
- Accelerating aviation decarbonisation
- Increasing cycling and walking provisions
- Accelerating maritime decarbonisation



UK domestic transport GHG emissions from selected sources, 1990 to 2018



Greenhouse gas emissions by transport mode, 1990 to 2018 (ENV0201)



*Comprises, in 2020: Rail, 1.4; Domestic Aviation, 0.5; Motorcycles and mopeds, 0.4; other transport, 1.9; other road transport, 0.6

Features

- Interactive map
- 5 year incremental slider
- Geospatial data

Model Images to be incorporated later!

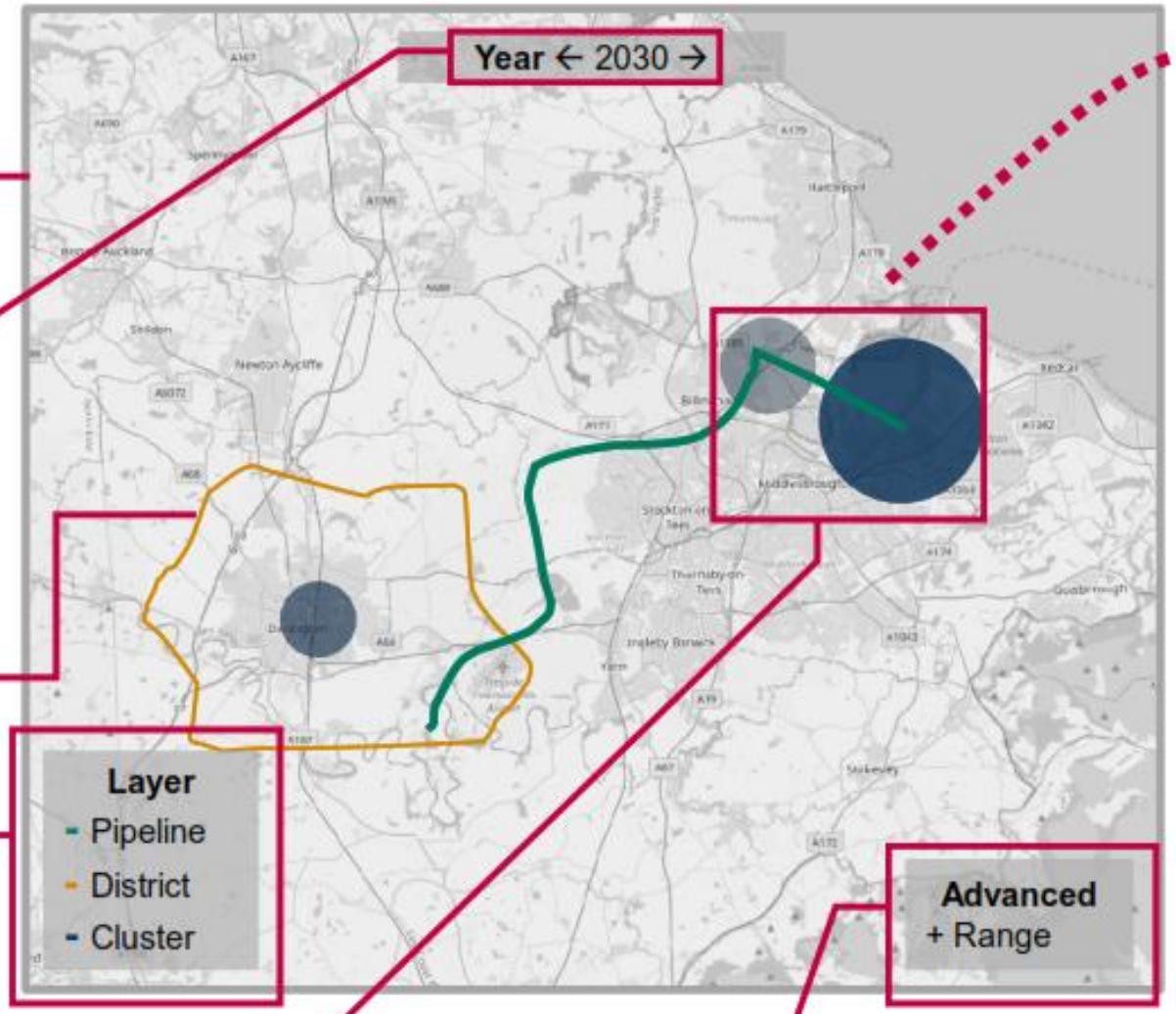
The figure below illustrates the core product design from a user perspective.

Browser interactive map
Public only.
Usable in any modern browser.
No explicit accessibility features.
Azure (Cloud) hosted.

Year slider
User-selected year, from 5-year pre-defined ranges.
Only Clusters vary by year.

Geospatial data
Single background map.
Support for line, point and boundary geography.
Cluster, pipelines and key ONS administrative geography.
Only Clusters can vary by year and certainty.

Layer control
Combined layer selection and colour legend.
User can toggle each layer on or off.
Initial state is Clusters only.



Demand clusters
Demand as scale, certainty as transparency.

Range slider
User-selected buffer distance around selected line/point, used to filter cluster results shown in the Detail view.
Full control visible on expansion.

On user click
Only one map item (Cluster, pipeline segment, boundary) can be selected at once.

- If boundary, all clusters within summarised.
- If line or non-Cluster point, clusters within (user-defined) range summarised.

Detail view popup
Potential hydrogen demand split by mode and certainty.
Core reasoning for uncertainty explained in short text or key variables.
Distance to nearest of each visible Layer (minimum and average where multiple Clusters included).
Total number of Cluster points included.

Features pt 2

- Layer control for pipeline, district, cluster etc
- Transport mode filters
- Data download selection
- Transport modes- bus, coach, HGV, train, ports and airports

Model Images to be incorporated later!

Benefits

Financial

- Gas Distribution Networks commercial evolution
- As a gaseous fuel, pipelines are the most cost-effective solution for bulk distribution

Knowledge

- Develops learning on future demand
- Informs strategic planning

UK consumer

- Utilise existing infrastructure and reduce the risk of stranding assets

East Coast Hydrogen

- Transport demand points
- Recommissioning existing assets for 100% Hydrogen
- Supports production plans in Industrial Clusters
- Acts as a blueprint for Project Union, the UK's hydrogen backbone
- Connects key hydrogen supply and demand points

Next steps

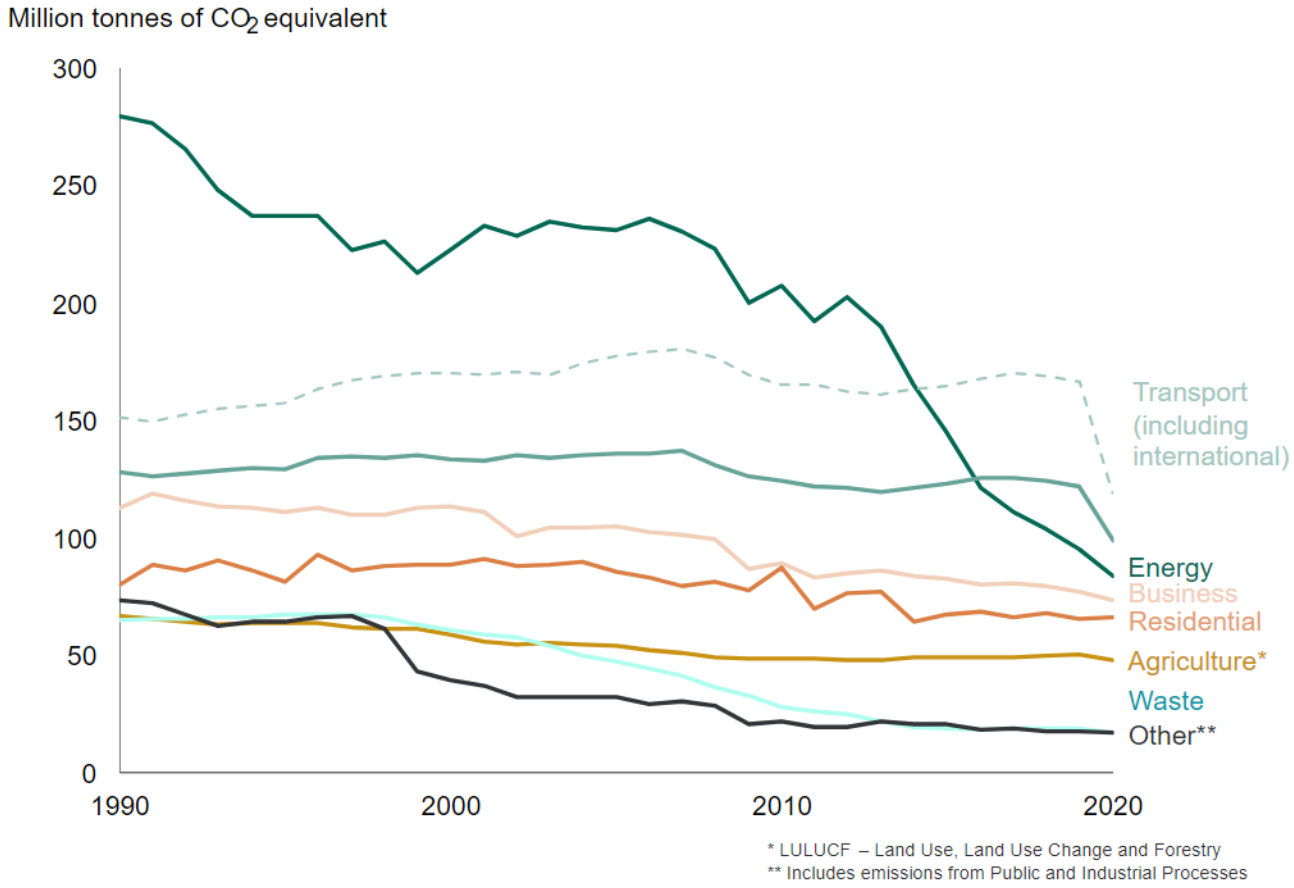
Dissemination

- GDN's
- Future Hydrogen projects
- Existing Hydrogen projects
- Developing future business case

Accessibility

- Local authority planners
- Refuelling station builders and planners
- Transport planners

Greenhouse gas emissions by sector (BEIS 2022)



Thank you

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