Hydrogen and Net Zero

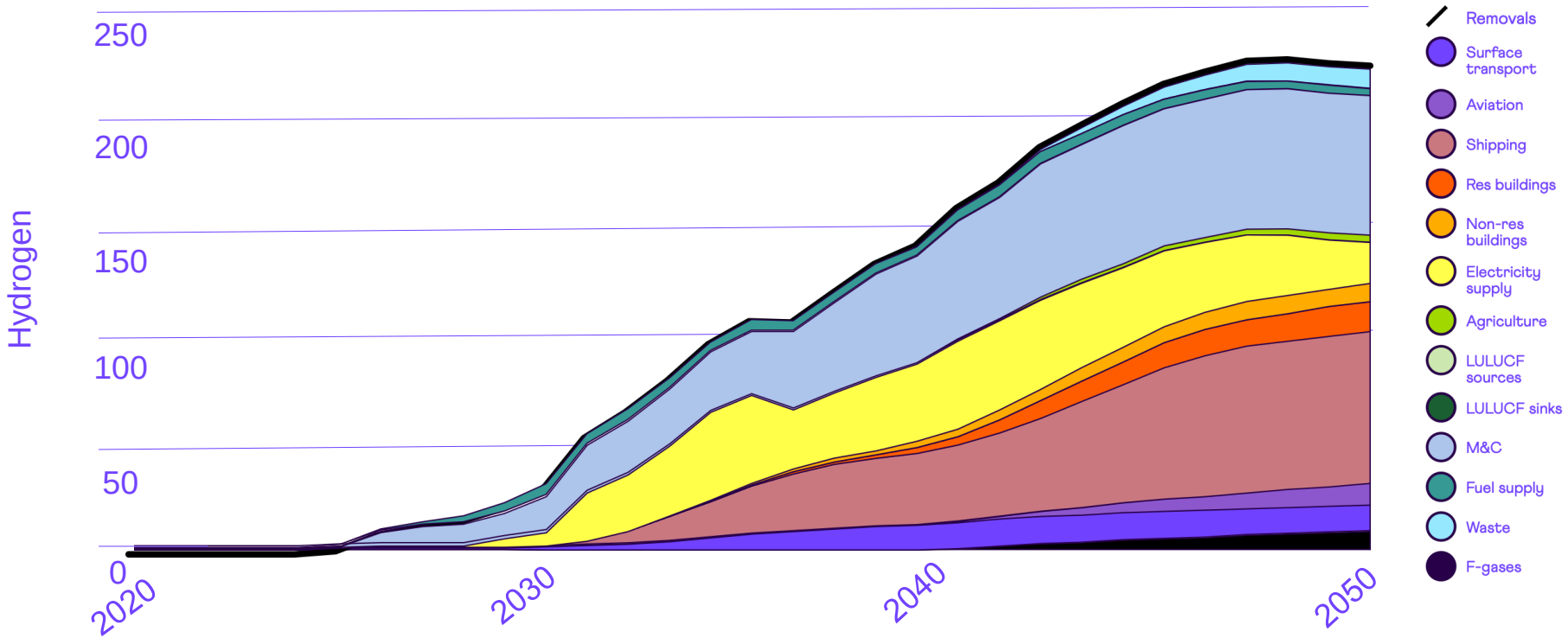
The 6th Carbon Budget 'Balanced Pathway'

Baroness Brown of Cambridge DBE FREng FRS, Julia King

Growth in hydrogen demand on the path to Net Zero

Hydrogen (TWh) (excludes current use)

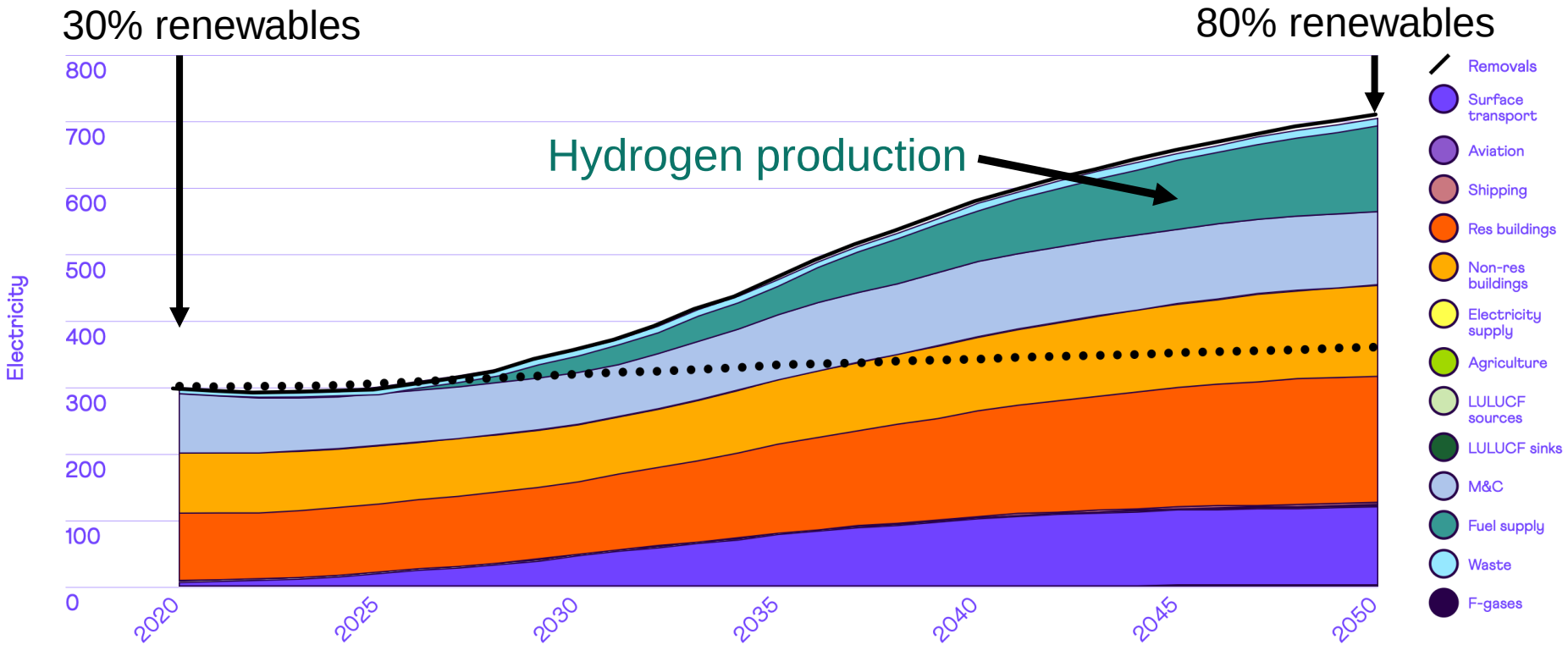
Source:
CCC Analysis



Changes in energy demand

Electricity (TWh)

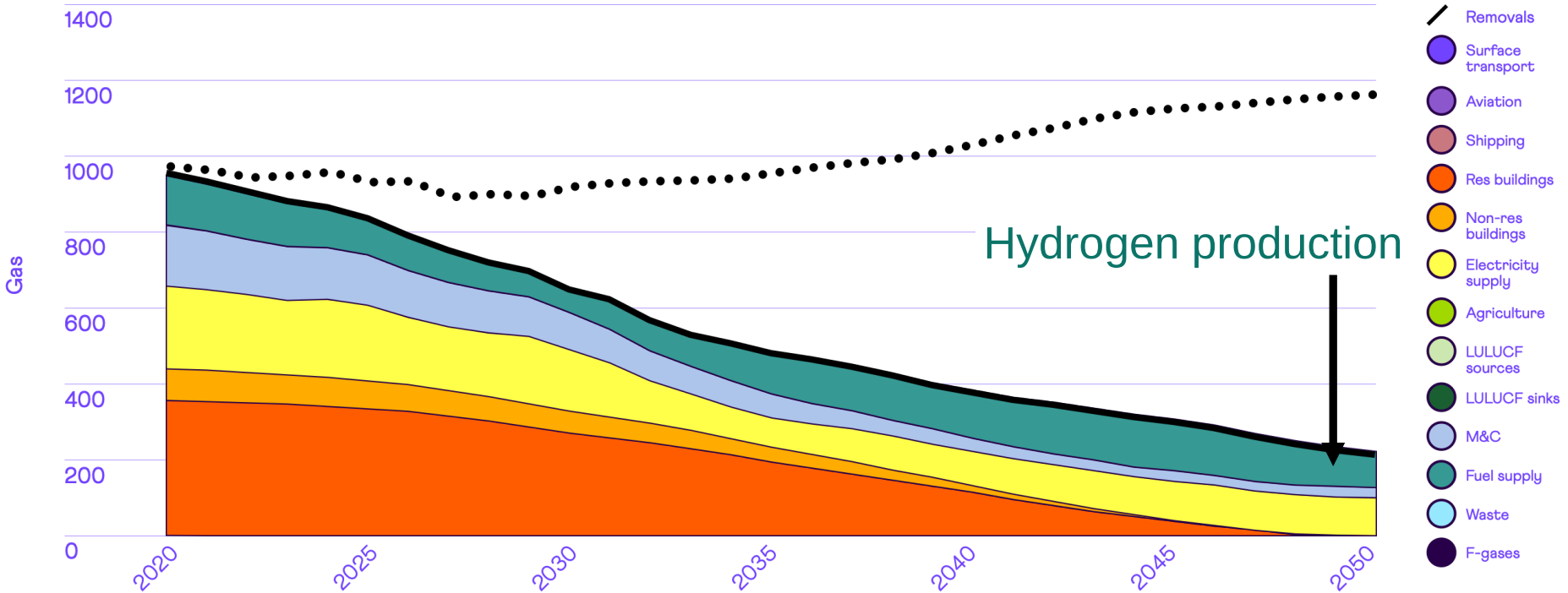
Source:
CCC Analysis



Changes in energy demand

Natural gas (TWh)

Source:
CCC Analysis



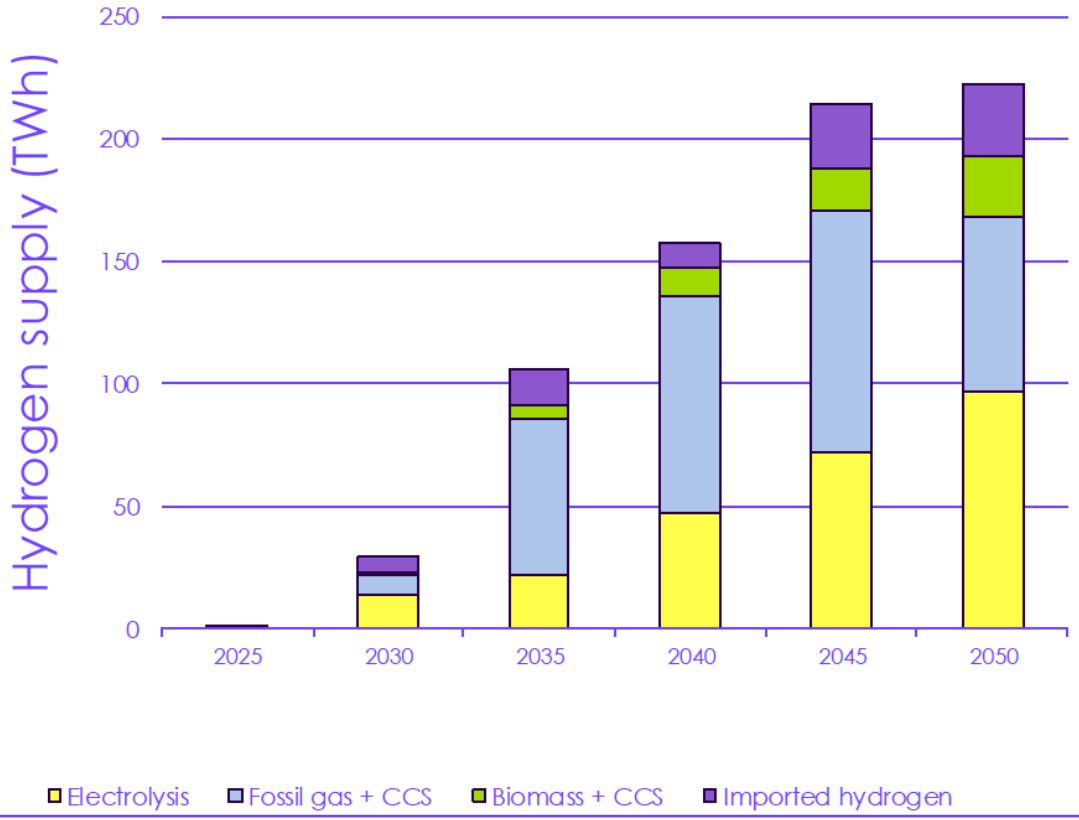
Net Zero Balanced Pathway

Hydrogen Demand

Excludes current use:
~27TWh of grey hydrogen

Net Zero Balanced Pathway

Hydrogen production



Hydrogen: need, opportunities, challenges

Need, opportunities, challenges

- Need
  - Hydrogen will be needed to decarbonize in key areas: shipping, industry
  - Hydrogen may be needed to support decarbonization of other areas: heavy transport, heat in buildings, electricity generation, aviation fuel…
- Opportunities
  - Low-cost offshore wind and ‘balancing’ an 80% renewables grid
  - Exploiting UK carbon storage around our coasts
  - UK supply chain includes key players: ITM Power, Johnson Matthey, Shell, BP, Ceres Power, Intelligent Energy…
  - UK academic expertise
  - UK jobs and exports
- Challenges
  - Cost: use only where there is no alternative
  - A tiny molecule: leakage and embrittlement
  - Energy density: storage and transport
  - Developing supply, demand and the system concurrently

Policies to deliver hydrogen on the path to Net Zero

Recent Policy announcements/developments

- 10 Point Plan for a Green Industrial Revolution 18.11.2020
  - 40GW OSW by 2030 (at least 1GW floating)
  - 5GW low carbon hydrogen production capacity by 2030
- Energy White Paper 14.12.2020
  - 42TWh low carbon hydrogen production by 2030 (Green and Blue)
  - £240m Net Zero Hydrogen Fund
  - 2021 Hydrogen Strategy
  - 2022 Hydrogen business models and revenue generation mechanism
  - 2023 20% blend in gas grid
- Hydrogen Advisory Council July 2020
  - Business models
  - 2020 deployment
  - Standards and Regulation
  - Sector development
  - R and D and Innovation

Point 1
Advancing Offshore Wind

Point 2
Driving the Growth of Low Carbon Hydrogen