UK – CEM update

CIEP webinar
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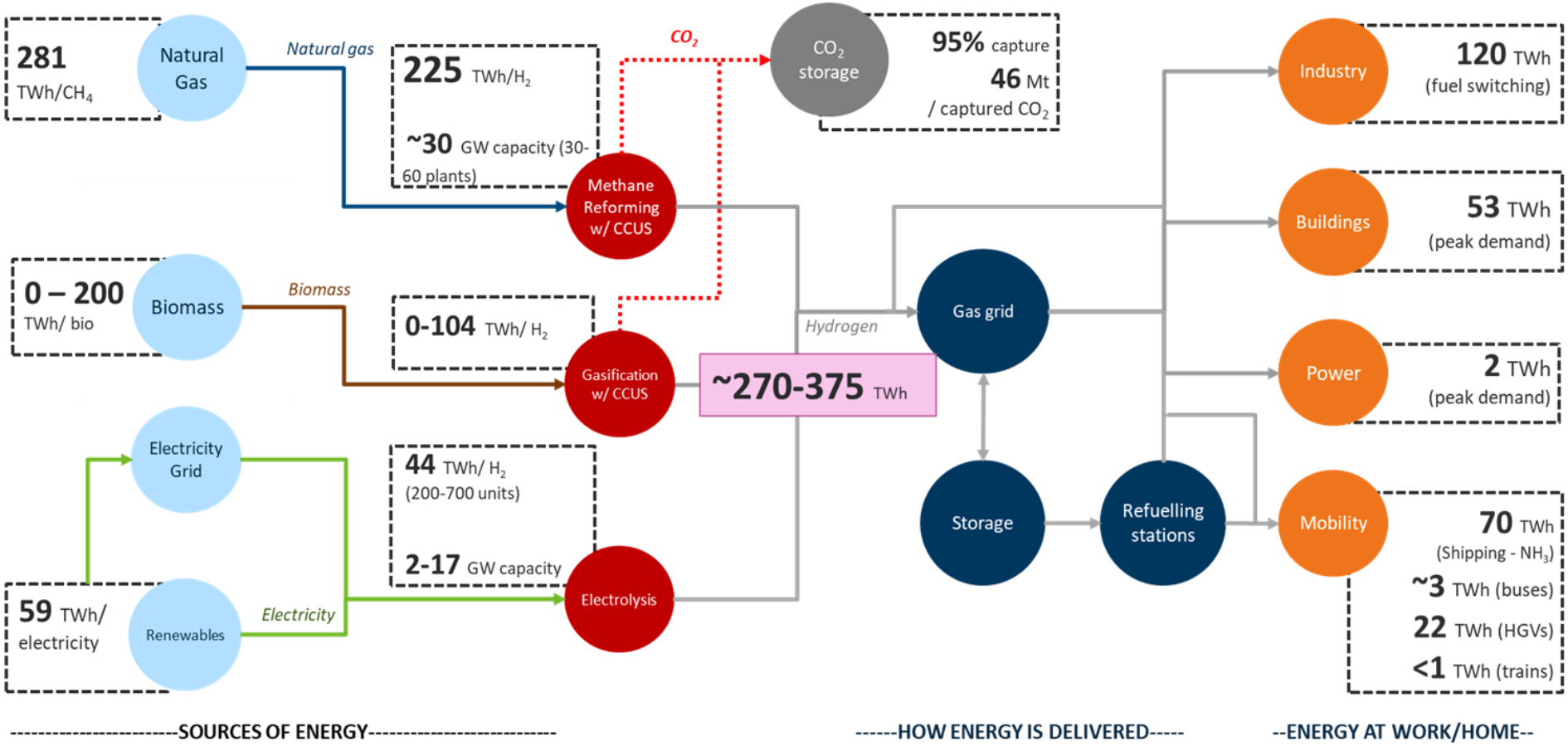
CCC vision of potential H2 economy in 2050: 10-fold increase on current production and use, and complete switch to low/zero carbon



Source: CCC's "Future Ambition" scenario – CCC (May 2019) Net Zero Technical Report (Chapter 2: Power and H2 production)

Challenges: wide ranging across the value chain

Emissions	• **Reduction potential** - demonstrate CCUS capture rates, quantify upstream and residual emissions, establish global warming potential, assess potential for negative emissions.
Production	• **Primary energy inputs** - cost projections, risk/issues, energy security, efficiency • **Costs** – innovation, build rates, commercialisation, sustainable business model(s) • **Dependencies:** CCUS infrastructure, availability of low cost renewable electricity
Distribution	• **Innovation and demonstration** to support cost effective, safe distribution • Decision on **role of gas grid,** but also dedicated (e.g. on cluster) and non-pipeline distribution
Storage	• **Innovation** in storage at scale over longer time periods, incl. H2 compounds • **Establish role of storage** – volumes required under different end use scenarios • **Develop cost-effective storage** – including pressure, contamination, centralised (caverns) vs decentralised (pressure vessels)
End use	• Full assessment of **near-term demand potential** in low regrets applications • **Development and demonstration** of equipment that uses H2 across end uses • **Assurance on safety case –** in novel, expanded end uses • **Understanding consumers -** readiness, impacts, awareness • **Creating incentives to switch** to low carbon H2
Cross cutting	• **Sequencing of support -** from innovation to commercialisation • **Coordination** – matching supply and demand, sequencing, industry engagement

Priority activity to support deployment through 2020s

Strategy	• Developing strategic approach - focus on action in the 2020s, scaling up low carbon hydrogen production and near term end use • Mainstreaming consideration of hydrogen across energy strategy, and Covid-19 response • Identifying opportunities for international collaboration
Policy frameworks	• Business models for low carbon H2 production – to drive investment and deployment • Low carbon hydrogen production standards – working with international partners • Reviewing wider market and regulatory framework
Funding	• £100m Low Carbon Hydrogen Production Fund, alongside enabling £800m CCS Infrastructure Fund (CCUS ambition at least 2 clusters by 2030; with one by the 2020s) • Share of UKRI Industrial Clusters Decarbonisation Challenge (£170m), Industrial Energy Transformation Fund (£350m), Clean Steel Fund (£250m) • Government investment up to £121m for hydrogen innovation in this spending period; hydrogen a priority for £1bn Energy Innovation Programme announced in March 2020 • Thinking ahead to future spending review …
Sector development	• Assessing potential to preserve and expand employment & skills (including evolution of the oil and gas sector); develop UK supply chain; potential for exports across value chain. In support of clean growth and Covid economic recovery