

# Case Study



## Paths to a sustainable hydrogen supply chain

### The Challenge

The growing hydrogen industry incorporates an extensive supply chain across multiple stages, including: production, storage, transport and utilisation. A wide range of technologies exist across the hydrogen supply chain, each with varying costs, process emissions and technical maturity. The suitability of technologies depends on project-specific factors such as location, scale and resource availability. The complex supply chain coupled with a rapidly evolving industry means it can be challenging for industrial stakeholders to understand and evaluate which technologies are suitable for given projects.

### The Solution

The CRC has developed a new tool: [the Hydrogen Pathways App](#). The primary objectives of this app are twofold: firstly to collect and analyse data on specific technologies, and secondly to enable users to design and analyse specific supply chain scenarios.

Critical data, such as capital and operating costs, emissions intensities and feedstock usage rates, are captured from reputable sources including industry reports and peer-reviewed research papers. This information is analysed and collated in a purpose-built database used in conjunction with the interactive tool. This database then enables the technology-specific data (e.g. the capital cost of electrolyser) from a variety of sources to be compared to understand the average and range of values for given parameters.

The main feature of the app is the hydrogen supply chain modelling tool. This enables users to create a supply chain

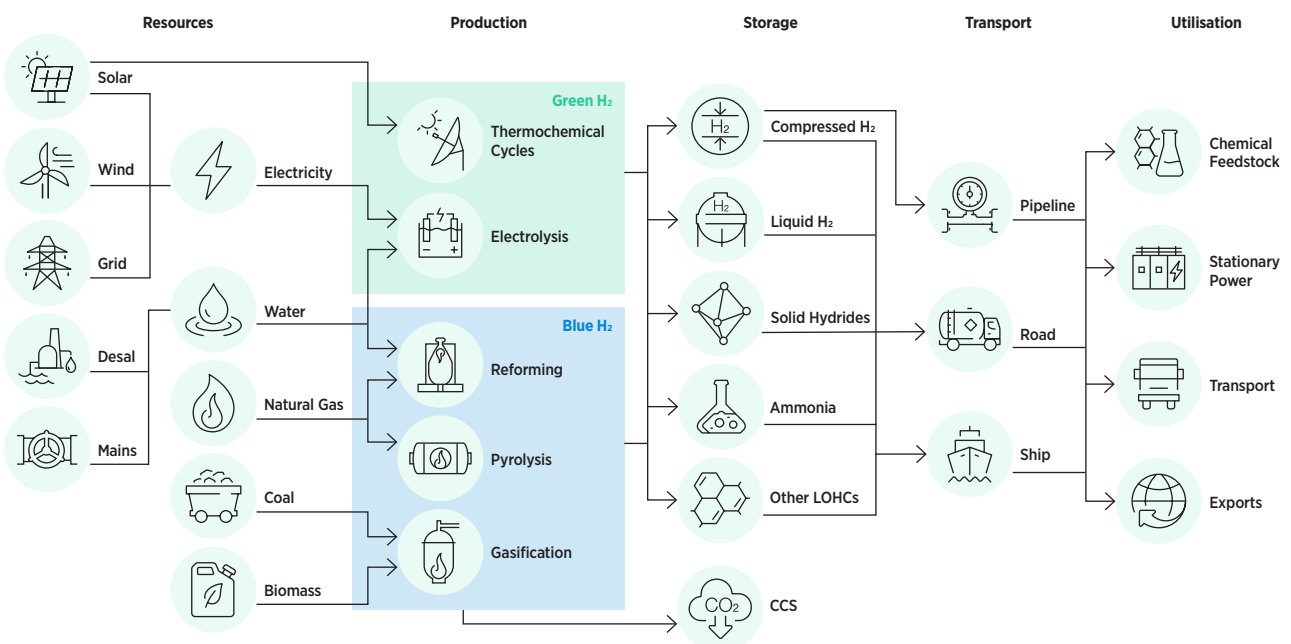
scenario by selecting and characterising the technologies which are relevant to their project (e.g. a solar farm and an alkalkine electrolyser). The tool defines the technologies according to project-specific information (e.g. scale and location) as well as incorporating relevant data captured in the database. The overall supply chain scenario is then analysed to determine key project characteristics, such as costs (e.g. the levelised cost of hydrogen), emissions intensities and the scale of each stage in the supply chain.

### Impact

The tool provides a direct platform for hydrogen industry stakeholders to be able to evaluate supply chain options. The tool was only recently released, and has already been used by over 25 organisations. The tool provides direct technoeconomic and environmental analysis results, so directly enables organisations to evaluate hydrogen pathways according to their objectives, including costs, emissions and technical feasibility.

### Next steps

The tool is currently undergoing development of advanced features to provide improved functionality and more extensive analysis. A version of the tool will be transferred to the industry commercialisation partner in the coming year which will enable it's application in an energy consulting environment. The tool will maintain two tiers of user access: basic functionality which is freely available to the public, and premium access which will be managed by the commercialisation partner.



A network diagram illustrating the range of stages, technologies and pathways in the hydrogen supply chain