HILT CRC

Australian Government
Department of Industry, Science and Resources

AusIndustry
Cooperative Research Centres Program

PROJECT SUMMARY

RP2.006: HYDROGEN SUPPLY WITHIN HILT REGIONAL HUBS – H_2 COST AND SYNERGISTIC OPPORTUNITIES

OVERVIEW

Hydrogen is an important component of the low-carbon pathway for heavy industries, but there are a lot of uncertainties around the future cost of hydrogen. There are different potential routes to net-zero hydrogen but there is no common framework that can estimate the cost of delivering hydrogen to the heavy industries in an industrial hub. Hydrogen hub concepts are emerging from initiatives around the country. The hydrogen hubs announced are diverse and initiated by different companies and government organisations and their suitability has been assessed based on general supply/demand data in the area. These studies are generic and high level and they do not provide information related to the preferred hydrogen production pathway, type and scale of renewable energies available and the cost of delivered hydrogen in a specific region. There are also some independent studies on the potential of utilising hydrogen in some heavy industries in different regions and some of them have provided a qualitative estimation of hydrogen cost. These cost estimation frameworks are generic and sometimes have a different basis and do not account for regional issues and opportunities.

PROJECT DETAILS

Based on the identified gap in research, this project aims to establish a detailed cost estimation framework for regional industrial hydrogen hubs. This framework will be established on a basis of aggregating various hydrogen users into one area to minimise the cost of providing infrastructure and supporting economies of scale in the production and delivering hydrogen to end-users. It will be used for case studies of different industrial clusters across Australia using a matrix of scales based on the hydrogen demands of each regional hub.

Potential opportunities to develop cost-effective industrial hydrogen hubs for medium to large-scale industrial hydrogen hubs will be investigated. This includes centralised and distributed hydrogen production facilities in the selected regions. Further evaluation will be conducted to assess the co-location of green or blue hydrogen production facilities with the major heavy industries in the selected regions. A combination of scales, capacity factors and hydrogen production technologies will be evaluated.

IDENTIFIED PATHWAYS

Assessment and evaluation of low-carbon fuels.

OUTCOMES

The outcome of this project will be a cost estimation tool for comparing the relative cost to achieve a continuous supply of hydrogen (100% capacity) as well as lower capacity factors (e.g. 80-90%) at various scales at the regional hubs of interest to HILT CRC partners.

PROJECT LEADER

- Tara Hosseini, CSIRO

INDUSTRIES

- Alumina
- Cement & Lime
- Iron & Steel

TOTAL PROJECT VALUE

- $ 617,682 (cash and in kind)

COMMENCED

01 June 2023