HILTCRC

Australian Government Department of Industry, Science and Resources | AusIndustry Cooperative Research Centres Program

PROJECT SUMMARY

RP2.012: OPPORTUNITIES FOR BIOENERGY IN AUSTRALIAN HEAVY INDUSTRY

OVERVIEW

There have been several studies which investigate the use of biomass as an alternative, sustainable energy source. Most of these studies have assumed biomass will be used as a general solution applied across an industry but this approach is not well suited to biomass as its composition, availability, and cost, vary significantly due to location, competition, scale etc.

When biomass is used to produce energy for industry, it is important to consider and understand the many different forms of biomass feedstock, and the many pathways in which biomass can be converted. The simplest method of biomass conversion is via direct combustion of the biomass into process heat however several other approaches such as torrefaction, pyrolysis or gasification or combination of those processes are also applied. These can be used to produce biomass-based fuels that are quite similar to the fossil fuels currently in use and hence, in principle, biomass can meet most industrial process heat needs. However, many of these technologies are not commercially mature and the cost of biomass can vary greatly between locations making it difficult to generalise about the cost competitiveness of biomass as a source of industrial process heat.

PROJECT DETAILS

This project will look at opportunities to identify specific applications/instances where biomass will be the preferred feedstock for the transition to a low-carbon industry/process. Understanding the opportunities for biomass to provide energy to industrial processes requires thorough understanding of the process, local feedstock availability, biomass chemical and physical properties and how appropriate logistics systems can be set up. Close collaboration between different supply chain actors and long-fuel supply contracts can often be key to providing the certainty needed to reduce investor risk. The scope of this project also includes a potential role for biomass as a chemical reductant, not just as a source of heat.

IDENTIFIED PATHWAYS

Blending of alternative low-carbon fuels for current high temperature processes.

OUTCOMES

The expected outcomes include:

- A critical review of biomass literature relevant to Australian heavy industry, including clearly defined next steps and questions for industry partners.
- A report detailing planned and potential Australian heavy industry biomass decarbonisation projects, including data on scale, location, timeline, and other relevant information.
- High-level calculations estimating the CO_2 reduction potential for identified opportunities, along with initial cost estimations.
- An executive summary based on the findings from literature, industry engagement, and potential CO_2 reduction, providing a concise overview of the project's progress and recommendations for future steps.

PROJECT LEADER

- Dr San Shwe Hla, CSIRO

INDUSTRIES

- Alumina
- Cement & Lime
- Iron & Steel

TOTAL PROJECT VALUE

- $ 340,584 (cash and in kind)

COMMENCED

01 January 2024

END DATE

31 August 2024