



## FACT SHEET

# Hydrogen Energy Supply Chain

## What is HESC?

Countries all over the world face real challenges to address energy security while also reducing their emissions in a global push to tackle climate change.

The Victorian, Australian and Japanese Governments are jointly working with reputable and highly-experienced Japanese industry partners to create a world-first Hydrogen Energy Supply Chain, known as the HESC Project.

The project will produce liquefied hydrogen from brown coal in the Latrobe Valley for export to Japan.

## Benefits for Australia

Hydrogen is the clean energy and commodity of the future. Through HESC, Australia could be the first to create a thriving hydrogen export industry with huge global environmental and local economic benefits.



### Trade and investment

- The pilot phase will see around half a billion dollars invested in Australia and Japan. Half this investment will be in Victoria where the pilot phase is expected to create a number of jobs during its planning, construction and one year of operation.
- A multi-billion dollar commercial phase, most of which will be spent in Australia, and a new export industry which will bring huge local and economic benefits.



### Jobs for Australians

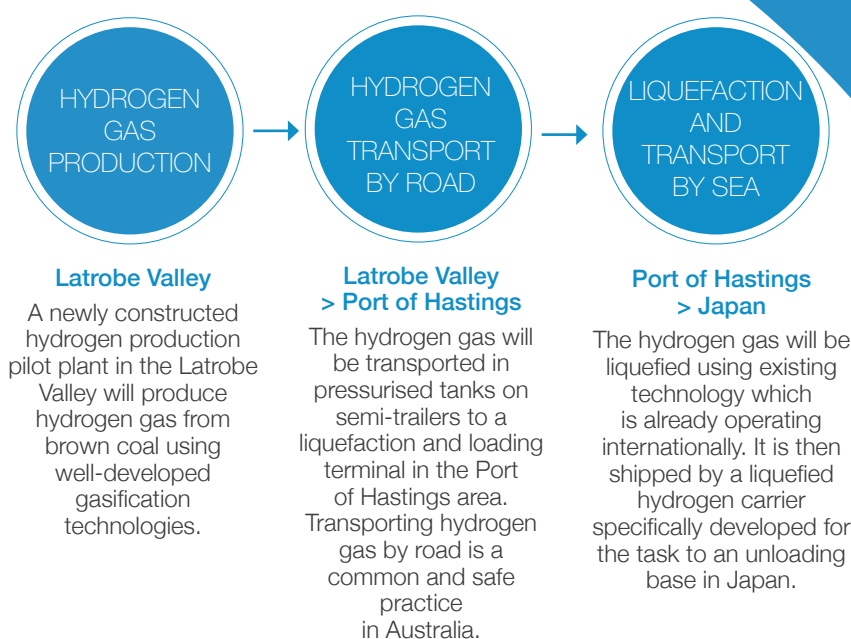
- HESC will create immediate jobs in the Latrobe Valley and the Port of Hastings during construction and operation of the pilot phase.
- If the pilot phase is successful, the project's commercial phase will create huge local economic benefits, including employment.



### Industry development, innovation and skills

- The global hydrogen market is well-established and booming. By 2050 it is expected to reach US \$2.5 trillion due to hydrogen's versatility in power generation, storage and low emission mobility.
- HESC gives Australia a unique opportunity to learn from innovative hydrogen technologies while developing a new export industry and a potential future domestic market.

## What will the pilot involve?



## When is it happening?

The HESC project has a number of phases. The phase being proposed and discussed now is a small pilot to demonstrate a fully integrated supply chain before starting commercial scale operations.



# Key facts and figures

A new Australian hydrogen export industry has the potential to create significant employment opportunities, boost Australia's economy, and provide access to a future clean energy source for Australian domestic energy use.

The HESC Project will create a sustainable solution for the use of brown coal deposits (and other renewable sources moving forward) that does not contribute to carbon emissions. Through this project, Australia could be the first to create a commercially viable global supply chain for hydrogen, which is in growing demand globally.



## Latrobe Valley

### Hydrogen gas production

Hydrogen gas will be produced at a newly constructed pilot plant. The plant is expected to be built at the Loy Yang Complex. It will use well-developed technologies already demonstrated in Japan.

The pilot phase plant will:

- Have an overall footprint of approximately half a hectare (5,000 square metres)
- Process up to 160 tonnes of brown coal
- Produce up to three tonnes of gaseous hydrogen over one year of operations
- Involve one truck delivery of gaseous hydrogen to the Port of Hastings per month.

### Creating a long-term sustainable solution for the use of brown coal that does not contribute to carbon emissions

Mitigating the carbon emissions from the gasification process is critical to ensuring HESC's long-term capacity to deliver sustainable energy.

During commercial operations, HESC will require a CCS solution, such as CarbonNet, a joint initiative between the Australian and Victorian Governments to establish a commercial-scale carbon capture and storage (CCS) network. CCS is a process where CO<sub>2</sub> is captured and stored securely deep underground or under the bed of the sea.

CCS will not be a feature of the pilot phase, due to the low volumes of CO<sub>2</sub> involved, equivalent to the annual emissions of about 20 cars. Carbon offsets will be used to mitigate emissions for the pilot phase.

If the pilot is successful, CCS will be an essential component of the commercial phase.

## Port of Hastings

### Hydrogen gas liquefaction, storage and loading

A newly constructed liquefaction, storage and loading facility will convert hydrogen gas (H<sub>2</sub>) to liquefied hydrogen (LH<sub>2</sub>) using existing commercial technology already in use overseas. The liquefaction process will cool the gas to -253°C and reduce it to 1/800th volume.

The pilot phase facility will have:

- An overall footprint of 1 hectare
- A 0.25 tonne per day liquefaction capacity
- A 67m<sup>3</sup> (40 foot) storage container.

The pilot phase liquefied hydrogen carrier is expected to make one trip every 3 months, between Australia and Japan, over the one-year pilot.

## Who is involved?

Given the potential for this project to introduce a new industry to Victoria's Latrobe Valley, the Victorian and Australian Governments, with the Japanese Government and industry Project Partners, are investing in the pilot phase.

The Australian funded portion is coordinated by a consortium comprised of highly reputable Project Partners, including Kawasaki Heavy Industries (KHI), J-POWER, Iwatani Corporation, Marubeni Corporation and AGL.

## Our commitment to social license

We are committed to working with local communities and integrating environmental, safety and social considerations from the outset and for the long-term.

HESC is subject to Australian federal, state and local planning and approvals processes. We expected to submit planning and permit applications in the first half of 2018 and to begin construction for the pilot from 2019.

## Where is more information available?

**T:** 1800 875 251

**E:** [info@hydrogenenergysupplychain.com](mailto:info@hydrogenenergysupplychain.com)

**W:** [hydrogenenergysupplychain.com](http://hydrogenenergysupplychain.com)

 **Kawasaki**  
Powering your potential

 **J-POWER**

**Iwatani**

**Marubeni**

 **agl**

  
Australian Government  
Department of Industry,  
Innovation and Science

  
**VICTORIA**  
State  
Government

  
**METI**

  
New Energy and Industrial Technology  
Development Organization  
**JAPAN**