



**Australian Government**  
**Clean Energy Regulator**

# Guarantee of Origin – certification of Hydrogen and Ammonia

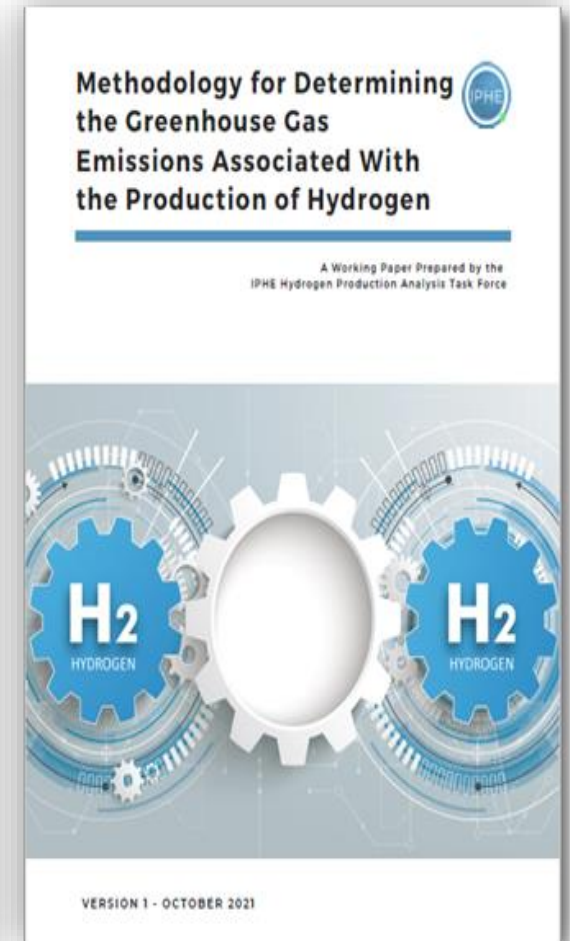
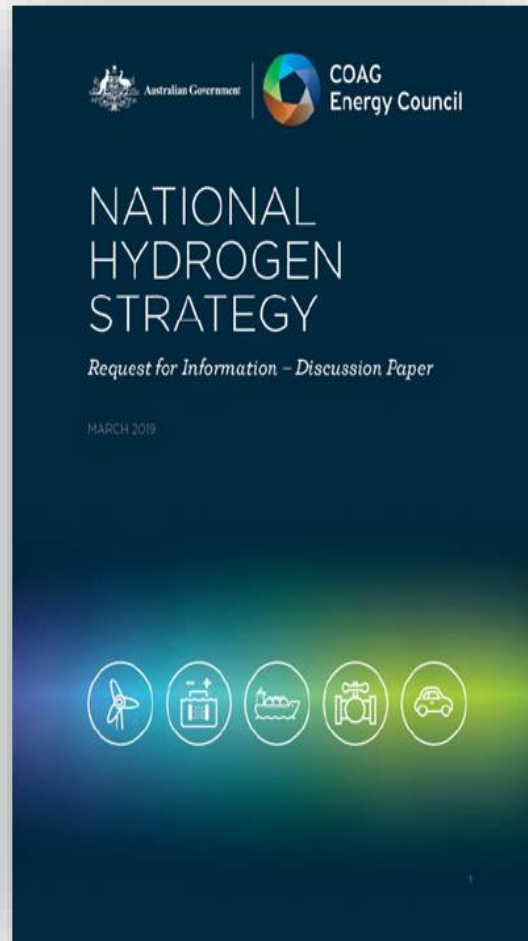
Cameron Mathie, Manager - Future Carbon Markets

Clean Energy Regulator

25 August 2022



# The hydrogen journey so far

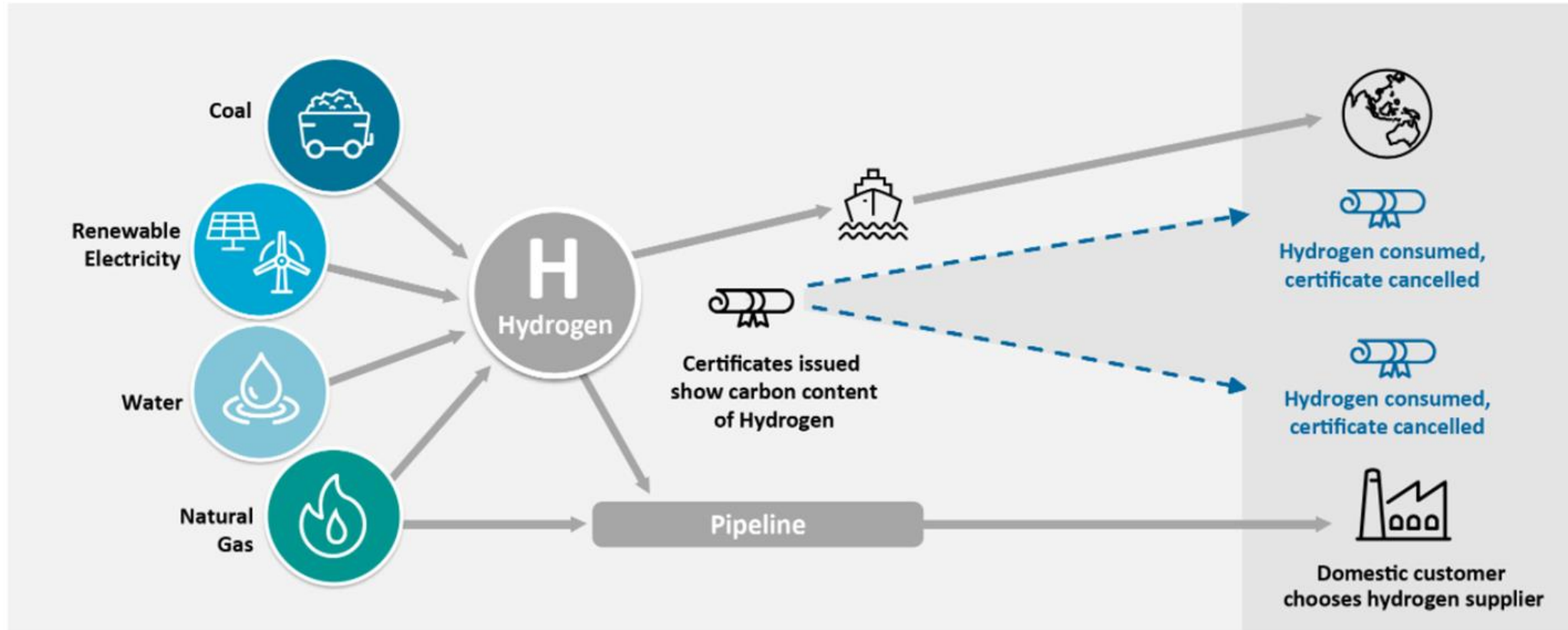


# Facilitating Markets

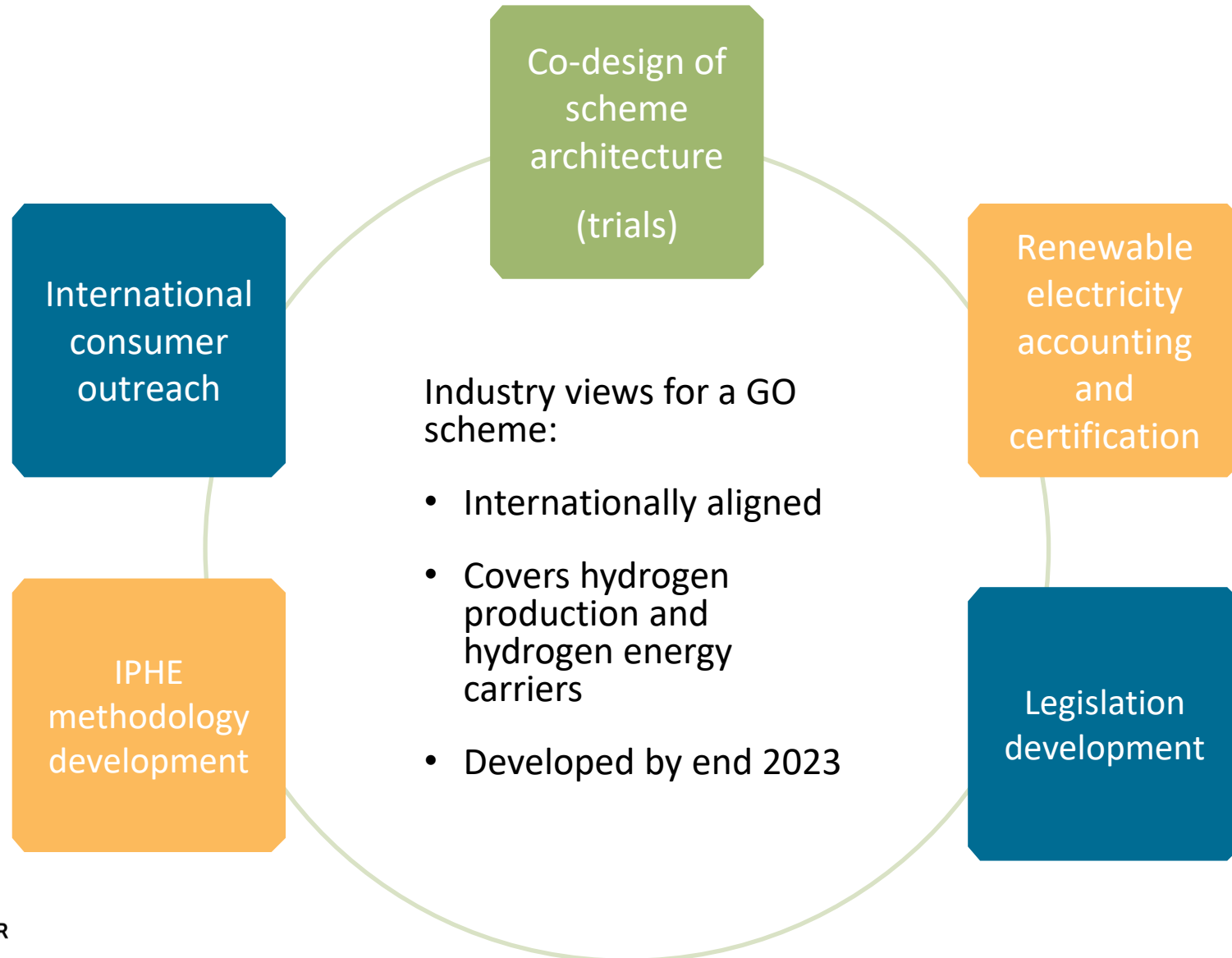


# Guarantee of Origin

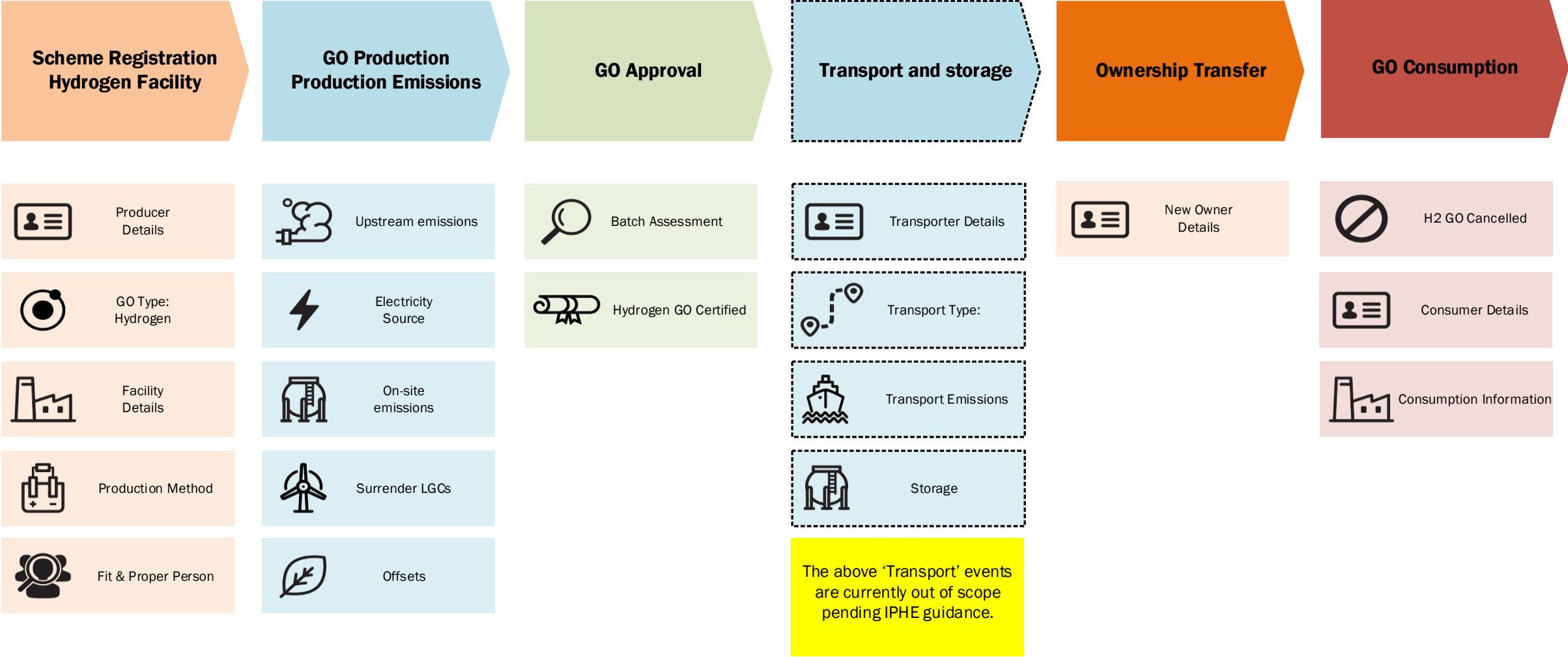
Purpose: to build confidence in the world marketplace for low emissions Australian products.



# GO scheme development – policy design underway



# Supply chain emissions trackability





# Guarantee of Origin - Certificate illustration

Core attributes to track:

- Production inputs – energy, upstream materials
- Associated (scope 1 and 2) carbon emissions within boundary
- Production technology
- Production location

Other attributes?

- Water use, raw materials, upstream emissions, LGCs, transport.

GO certificate for hydrogen produced through  
**steam methane reformation:**

# H2-GO

1 tonne of H<sub>2</sub> from:  
SMR with CCS

<b>Production facility:</b> Gladstone 1	<b>Emissions attributes (t CO<sub>2</sub>-e)</b>		
<b>Energy source:</b> Natural Gas with CCS		<b>Well to Gate</b>	<b>Expanded</b>
	<b>Gross</b>	0.71	0.81
	<b>Net</b>	0.20	0.30

GO certificate for hydrogen produced through  
**renewable electricity electrolysis:**

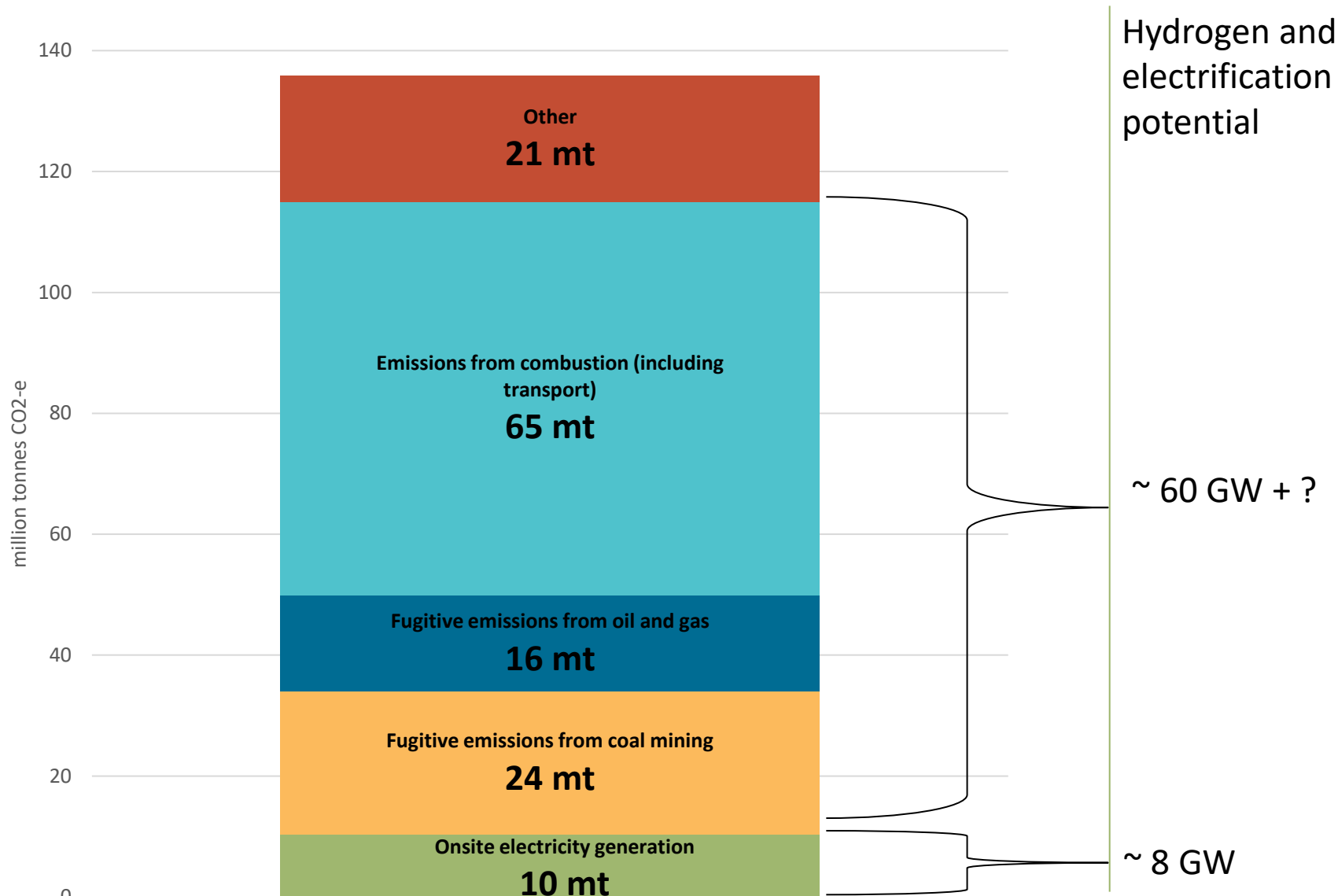
<h1>H2-GO</h1>		1 tonne of H <sub>2</sub> from: Electrolysis	
<b>Production facility:</b> Kwinana 1			
<b>Energy source:</b> 100% off-grid renewables			
<b>Inputs:</b> Water (Recycled)			
		<b>Emissions attributes (t CO<sub>2</sub>-e)</b>	
		<b>Well to Gate</b>	<b>Expanded</b>
<b>Gross</b>	0.00	0.04	
<b>Net</b>	0.00	0.04	

# Demand Side support





# Safeguard Mechanism – baselines to descend



# Hydrogen Use method – Australian Carbon Credits

- The method will credit the abatement from displacing high emissions fuels with clean hydrogen
- Proposed to require the use of clean hydrogen, either on-site or by injection into a gas distribution network in Australia
- To be delivered in 2023

ACCU spot price  
(22 August 2020)

**\$28.00**

1 ACCU = 1 tonne CO<sub>2</sub>-e

# Guarantee of Origin Trails - expansion to ammonia



# Guarantee of Origin Trials- Commenced December 2021

*Goal: Test the IPHE carbon accounting framework and calculate emissions for real-world projects*

- 20 companies participating with hydrogen projects across SMR, electrolysis and coal gasification
- Phase 1 complete for hydrogen
- Phase 2 commencing examining:
  - storage and transport of hydrogen emissions
  - hydrogen carriers, ammonia, liquid hydrogen and LOHCs



Susio Frontier, the world's first liquefied hydrogen carrier, moored at the Port of Hastings, Victoria in January 2022. Image courtesy of HySTRA



# Thankyou

- Guarantee of Origin:
  - [Guarantee of Origin  
\(cleanenergyregulator.gov.au\)](https://www.cleanenergyregulator.gov.au)
- [Australia's Hydrogen Strategy:](https://www.industry.gov.au/data-and-publications/australias-national-hydrogen-strategy)
  - <https://www.industry.gov.au/data-and-publications/australias-national-hydrogen-strategy>

