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ASX:HZR

# Hazer Group Ltd

*Clean hydrogen technology to  
decarbonise the world*

**ASX Small & Mid Cap Conference**  
Wednesday, 20 September 2023







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# Investment highlights

Low cost, low emissions H<sub>2</sub> production technology company positioned to play a leading role in global decarbonisation

1 

**Low-cost, Low-emissions, Proprietary Technology**

2 

**Compelling Economics & Returns**

3 

**Global Tier-1 Partnerships Across Strategic Markets**

4 

**Advanced Technology Readiness & Proven Scale-up**

5 

**Clear Commercial Pathway & Capex-lite**

6 

**Graphite Production Diversifies Earnings**

7 

**Rapidly Growing H<sub>2</sub> Demand**

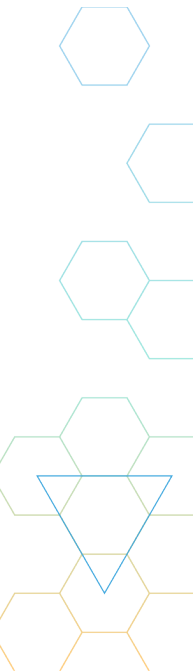
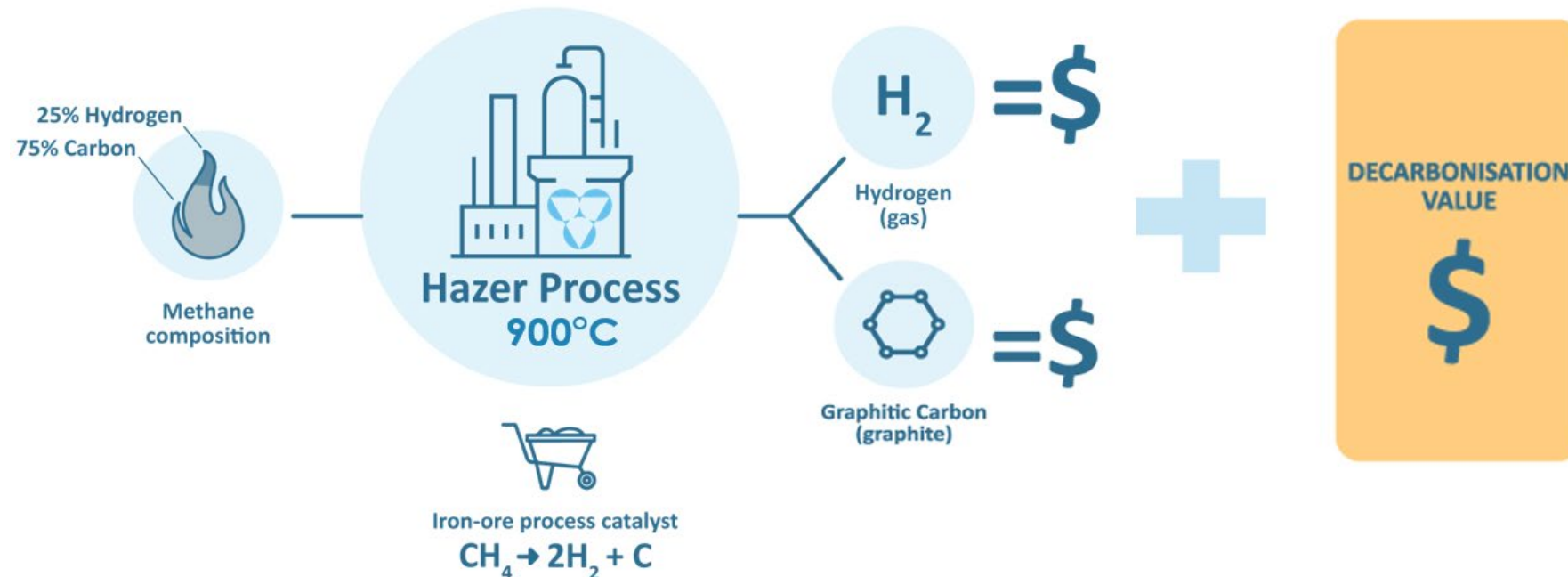
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**Government & Policy Support**

# Hazer's competitive technology advantage

## Innovative low emission, low-cost methane pyrolysis technology producing clean hydrogen and graphite

- Hazer Group Limited is a technology development company undertaking the commercialisation of the Hazer Process.
- The Hazer Process enables low temperature conversion of natural gas and similar methane feedstocks, into hydrogen and high-quality graphitic carbon, using iron ore as a process catalyst.



# 1 Low cost & low emissions hydrogen

Hazer well positioned as a low-cost, low-emissions hydrogen technology

## Existing Technologies

### Steam Methane Reforming (SMR)

#### Significant CO<sub>2</sub> emissions

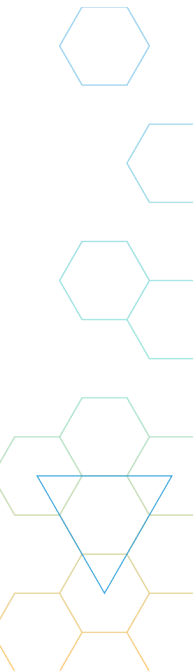
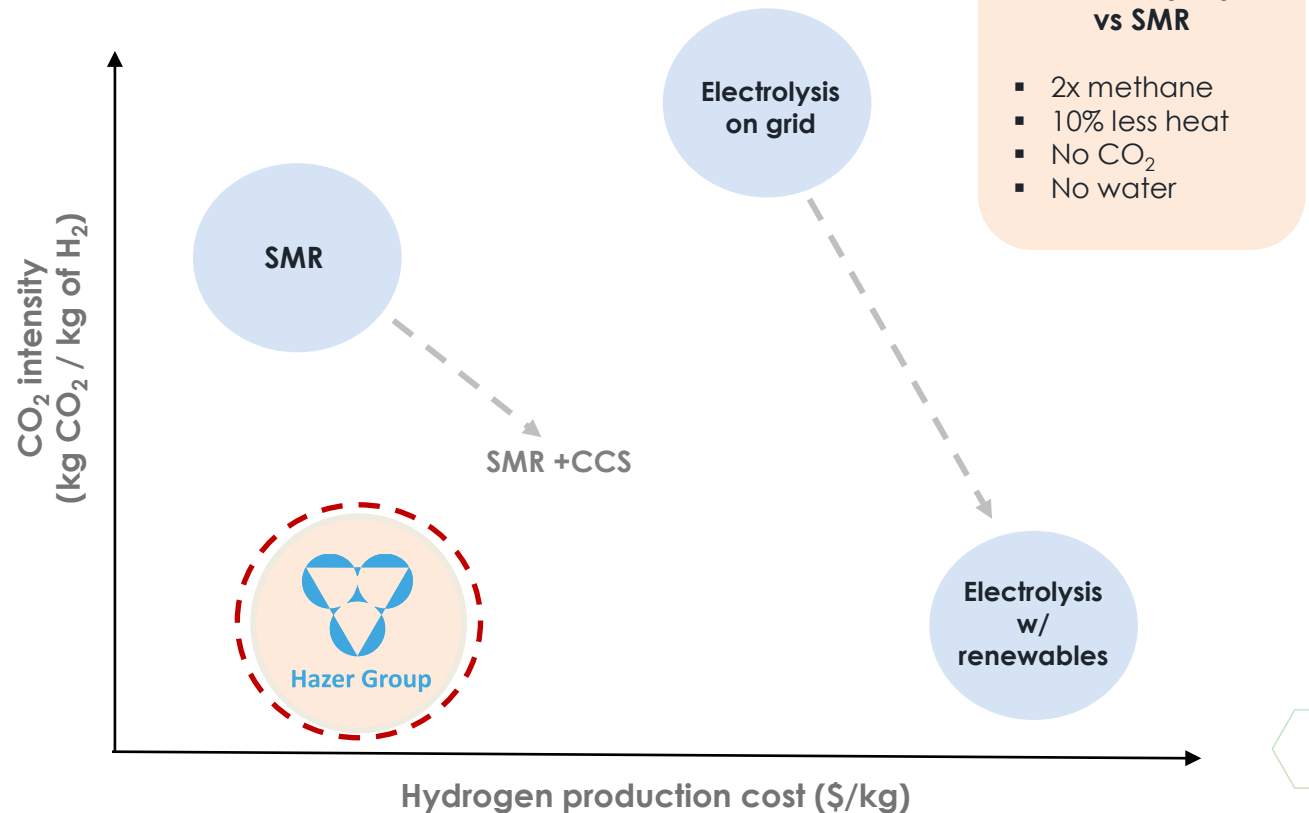
- Most widely used process for H<sub>2</sub> generation (~95%)
- High CO<sub>2</sub> emissions
- Requires CCS\* to address emissions



### Electrolysis

#### Energy intensive process

- 7x more energy intensive than SMR
- Only low emission if 100% renewable energy
- Requires significant water and renewable energy



\*CCS = Carbon Capture & Storage. Requires geological formations for CO<sub>2</sub> sequestration



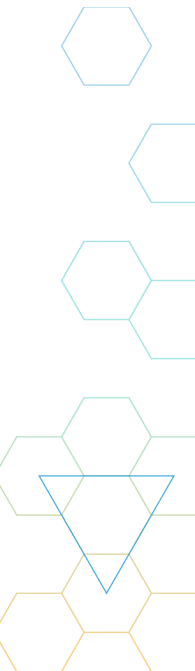
## 2 “Plug-in” technology using existing infrastructure

End-use deployment and application of the Hazer Technology eliminates H<sub>2</sub> transport risk and reduces cost



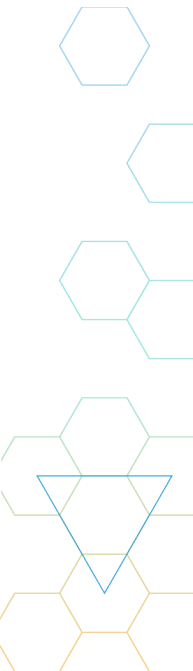
Conceptual design of Hazer facility co-located with 3<sup>rd</sup> party refinery  
(Source: stock image not Hazer infrastructure)

- Eliminates requirement for hydrogen transportation cost and risk
- Co-located with end-user infrastructure – such as LNG facilities, refineries etc.
- Ability for shared services and lower operating cost model



## 3 Global partners & projects

Tier-1 partners developing commercial projects in North America, Europe and Asia-Pacific





## 4 Advanced technology readiness

Rapid development since company founding and advancing Tech Readiness Level (TRL)

(<1g\* batch)



2007–2013

### Bench scale testing

- University of Western Australia
- Concept evaluation

(<100g\* batch)



2016–present

### Scaled up bench test

- University of Sydney
- Catalyst kinetics and process research

(~1Kg\* batch)



2017

### Bench scale fluid bed

- University of Sydney
- Conceptual testing of fluidised bed concept

(~<2 kg/hr\* semi-continuous)



2017–2021

### Pilot Plant

- Sydney and Perth
- Fluidised bed with optimized conditions and catalyst injection

(< 60kg/hr\* continuous\*\*)



2022–2023

### Commercial Demonstration Plant (CDP)

- Perth, Australia
- End-to-end continuous plant with biogas feed
- Start up planned 2023

2025+

### Key Projects

- Canada
- Chubu, Japan
- Montoir-de-Bretagne, France

Project Development Pipeline





## 4 CDP on track for start-up in 2023

### Key Milestones to Ready for Start-up (RFSU)

- ✓ Phase 1 plant construction
- ✓ Phase 1 commissioning, testing & debugging
- ✓ Heat exchanger materials delivery
- ✓ Mark-1 reactor forging & heat treatment
- ✓ Hot construction planning and contracts
- ✓ Start-up approvals and permits

On-track

- ✓ Hot equipment fabrication and installation
- ✓ Commissioning, RFSU and production

✓ Completed    ✓ On-track

### Latest Updates

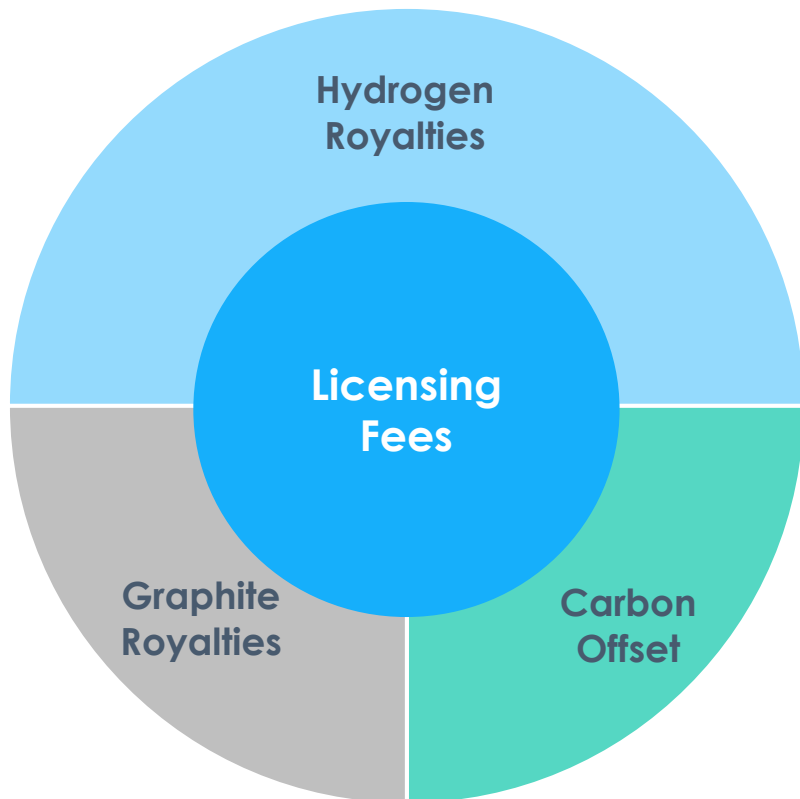
- ✓ Heat exchanger successfully installed
- ✓ Reactor fabrication nearing completion
- ✓ CDP start-up on-schedule



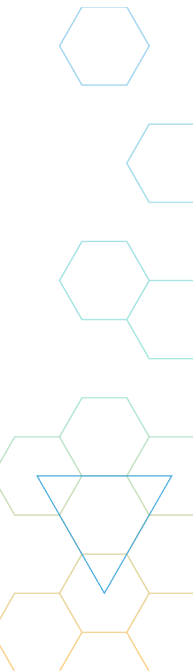
Reactor successfully heat-treated and preparing for final assembly and machining

## 5 “Capex-lite” business model enables early free-cashflow

Hazer business plan premised on licensing and royalty revenues avoiding large-scale capex exposure



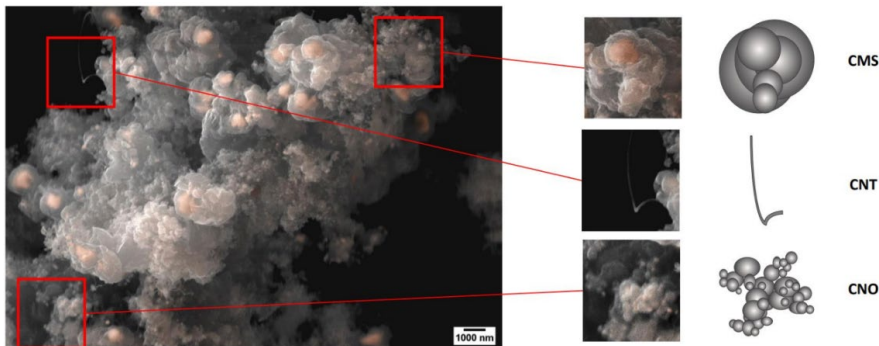
- One technology, two valuable markets
- Flexible combination of license fees and royalties
  - Fixed annual license fees commensurate with plant size
  - Royalties a percentage of H<sub>2</sub> and graphitic carbon revenues
- “Capex-lite” approach



## 6 Graphite production diversifies earnings

A synthetic, low emissions product with differentiated morphology and properties

- Highly structured vs amorphous carbon black
- Iron inclusions produce magnetic graphite
- Low production emissions
- Up to 95% graphite purity
- High thermal & electrical conductivity
- Low sulphur & low ash content



### Mitsui MOU

- A leading international trading and investment group based in Japan
- MOU signed to jointly investigate the market for Hazer graphite
- Exploring possible customers & applications in Asia-Pac, Northern America, Europe and Middle East





## 7 Building leading position in a rapidly growing market

Hydrogen will play a key role in the decarbonisation of hard-to-abate sectors

Current  
market  
~95<sub>MTPA</sub>

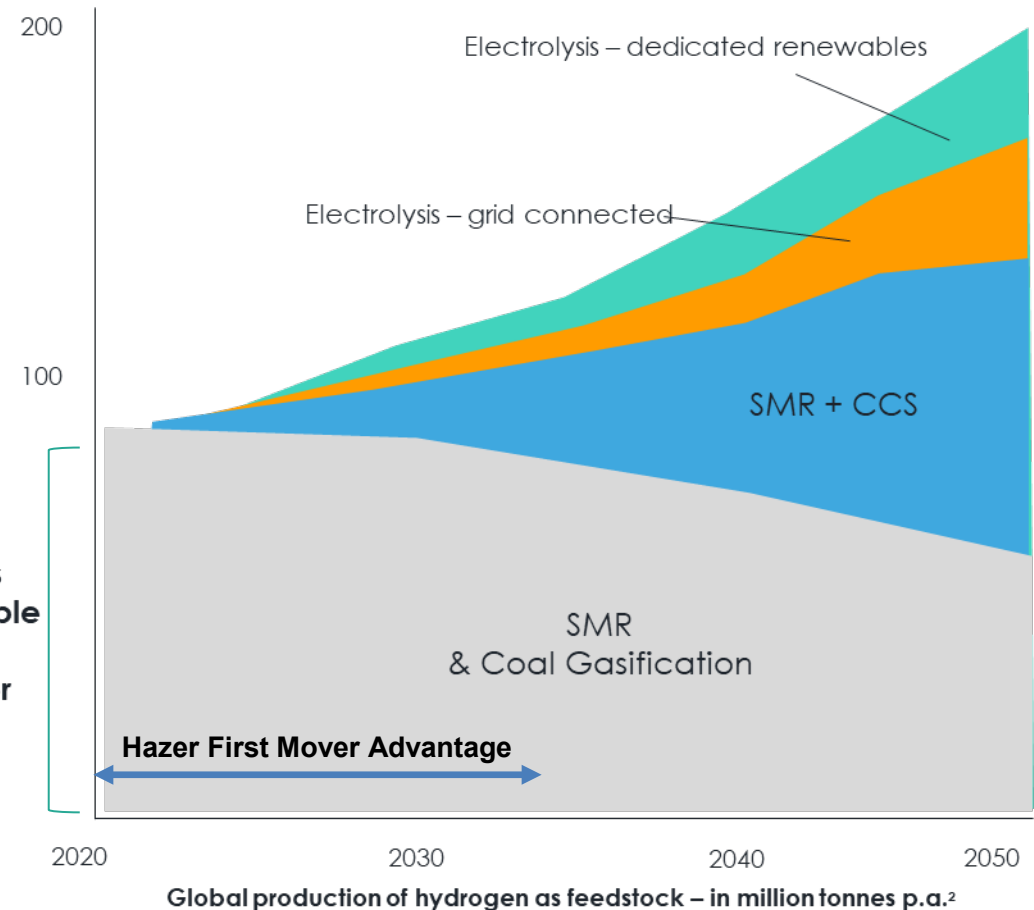


500<sub>MTPA</sub>  
in 2050<sup>1</sup>



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Today's  
Addressable  
Market  
for Hazer



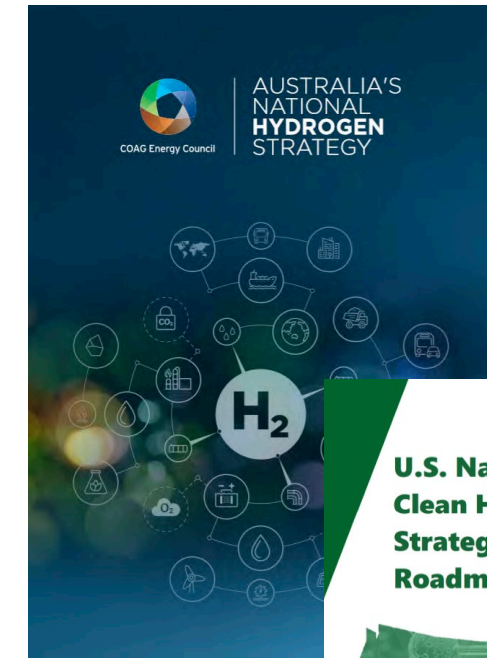
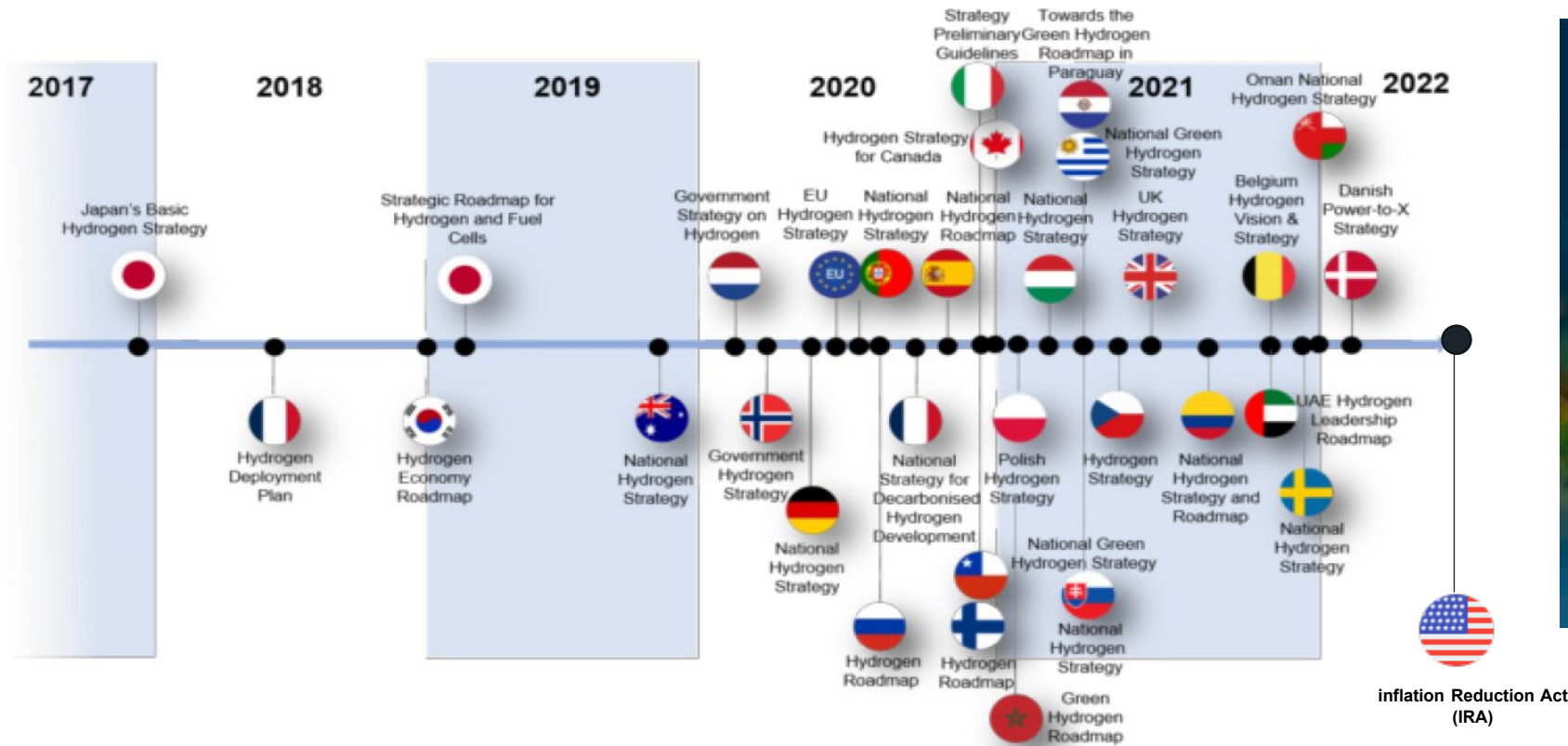
<sup>1</sup>International Energy Agency (IEA) - The Future of Hydrogen, June 2019: <https://www.iea.org/reports/the-future-of-hydrogen>

<sup>2</sup>DNV (June 2022) – 'Hydrogen forecast to 2050':

<https://www.dnv.com/news/hydrogen-at-risk-of-being-the-great-missed-opportunity-of-the-energy-transition-226628>

## 8 Global policy action gaining momentum

Hydrogen strategies expected in countries representing over 80% of global GDP by 2025



**U.S. National Clean Hydrogen Strategy and Roadmap**





# Key Activities

	CY2023		CY2024
	H1	H2	H1
Commercial Demonstration Plant (100 tpa)	<div>Procurement, Fabrication, Engineering &amp; Installation</div> <div>Ready for Start-up</div> <div>Targeted Production &amp; Testing Program</div> <div>Today</div>		
Hazer-Fortis 2,500 tpa Canada Plant	<div>FEED Studies in Canada and Targeted FID</div>		
New Potential Projects in Target Markets	<div>Identify New Commercial Projects</div> <div>Japan &amp; France Project Development Plans</div>		
Mitsui & Graphite Market Development	<div>Developing Market for Hazer Graphite</div>		<div>Offtake Agreement</div>
Corporate Updates	<div>ARENA Grants</div>	<div>R&amp;D Rebates</div> <div>Corporate Access Events</div>	<div>ARENA Grants</div>





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