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Hazer Group Ltd

Clean and affordable Hydrogen available today

Tuesday, 21 November 2023

Bell Potter Environmental Conference

HazerGroup™

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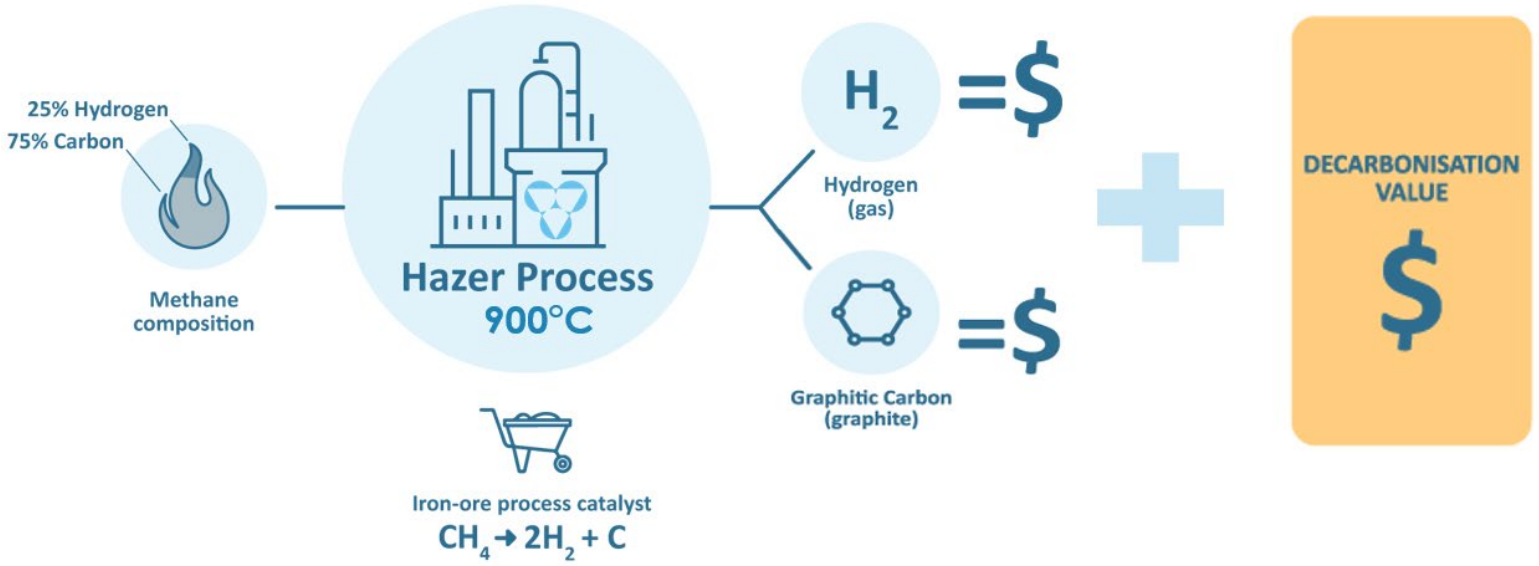
Corporate Overview

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 graphite, using iron ore as a process catalyst



Aligning with UN Sustainable Development Goals

Producing clean hydrogen from methane reducing emissions and accelerating the energy transition

Innovative climate technology decarbonising hard-to-abate sectors

Partnering with global corporations and governments in support of climate action

SUSTAINABLE DEVELOPMENT GOALS

Key Activities

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

Hazer Investment Highlights

Investment highlights

A disruptive and world-first hydrogen production technology well positioned to play a substantial role in global decarbonisation

1. Rapidly Growing H_2 Demand
2. Low-cost, Low-emissions, Proprietary Technology
3. Compelling Economics & Returns
4. Global Tier-1 Partnerships Across Strategic Markets
5. Advanced Technology Readiness & Proven Scale-up
6. Clear Commercial Pathway & Capex-lite
7. Graphite Production Diversifies Earnings
8. Government & Policy Support

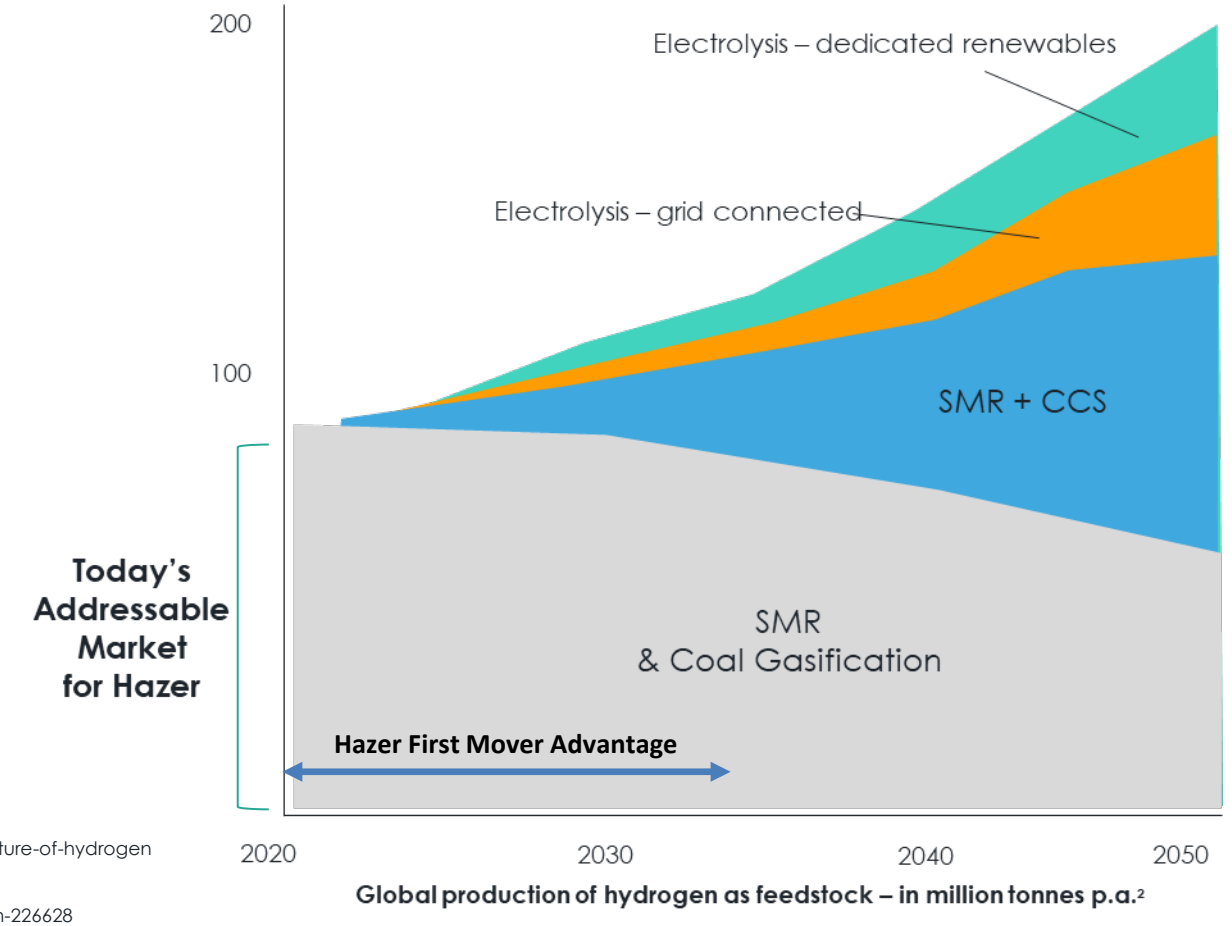
1 Building leading position in a rapidly growing market

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

Current market ~95 MTPA

500 MTPA in 2050*1

© Getty Images



Global production of hydrogen as feedstock – in million tonnes p.a.[2]

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

[2]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

2 Low cost & low emissions hydrogen

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

Existing Technologies

Steam Methane Reforming (SMR)

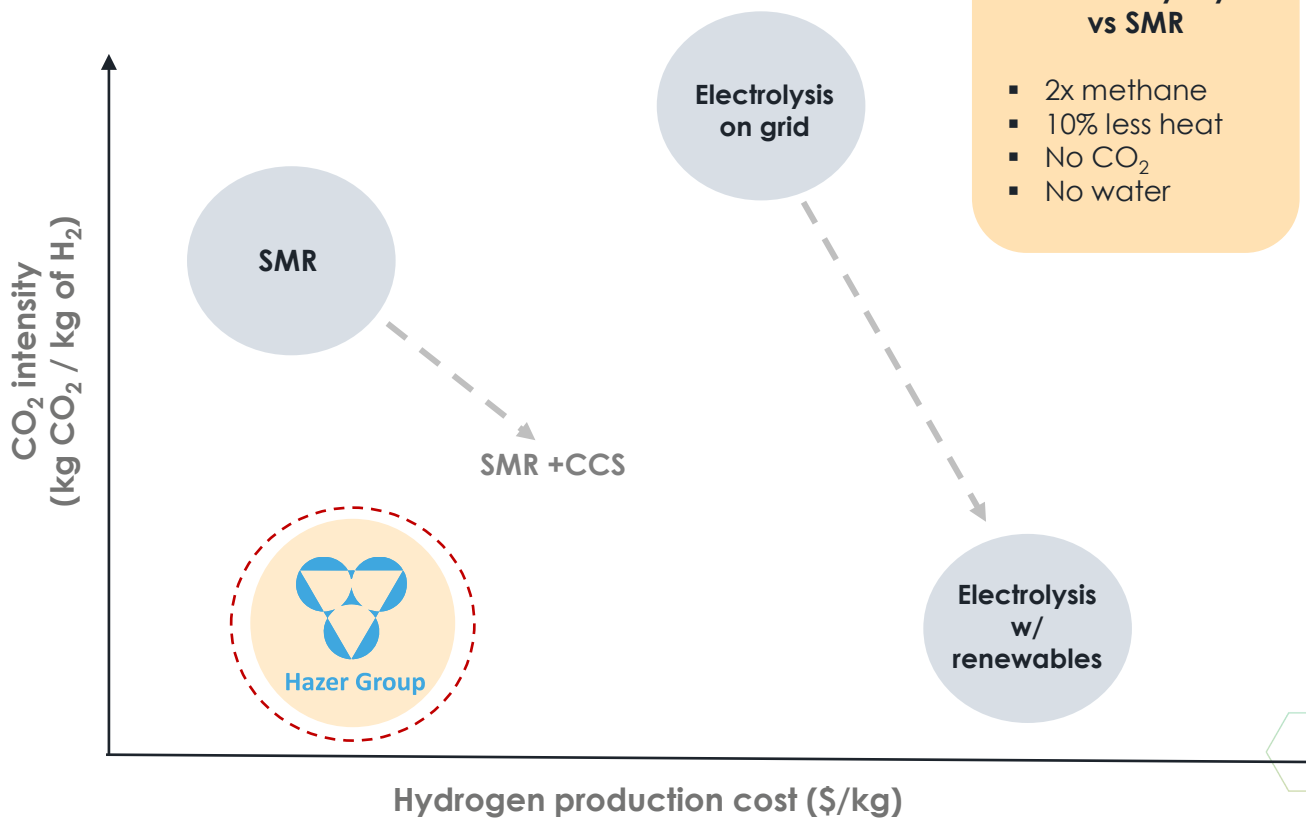
Significant CO_2 emissions

- Most widely used process for H_2 generation (~95%)
- High CO_2 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_2 sequestration

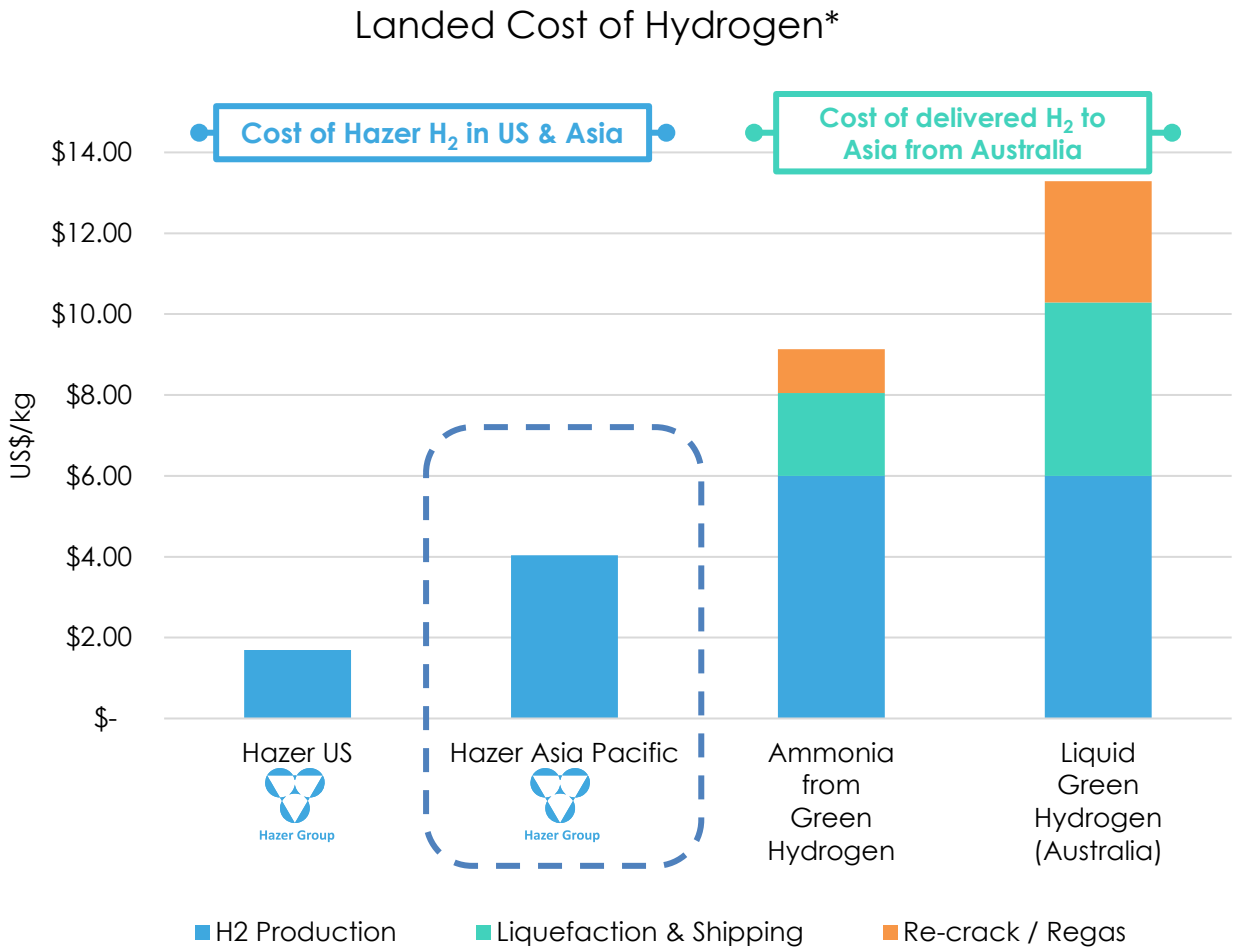
2 "Plug-in" technology using existing infrastructure

End-use deployment and application of the Hazer Technology eliminates H_2 transport risk and reduces cost

Conceptual design of Hazer facility co-located with 3rd 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 Delivered cost of H_2 – Hazer competitive advantage



- Hazer co-located at existing infrastructure eliminating requirement for shipping
- Ammonia is transportable however reconversion technology immature and potentially expensive
- Liquified H_2 technology (-253 °C) not available today and economic viability challenged
- Hazer in North America significantly cheaper with low-cost gas and power

* Company aspirations should not be read as forward-looking statements. Hazer does not yet have reasonable grounds to believe the aspirational portfolio will be achieved. See disclaimer - slide 2 and assumptions & notes – slide 23.

4 Global partners & projects

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

FORTIS BC™

CHIYODA CORPORATION

CHUBU Electric Power

ENGIE

HATCH

MITSUI & CO.

wood.

5 Advanced technology readiness

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

(<1g* batch)

(<100g* batch)

(~1Kg* batch)

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

(< 60kg/hr* continuous**)

2007–2013

Bench scale testing
- University of Western Australia
- Concept evaluation

2016–present

Scaled up bench test
- University of Sydney
- Catalyst kinetics and process research

2017

Bench scale fluid bed
- University of Sydney
- Conceptual testing of fluidised bed concept

2017–2021

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

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

Strategic Focus

Project Development Pipeline

FORTIS BC™

CHIYODA CORPORATION

CHUBU Electric Power

ENGIE

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*Combined product scale **CDP planned start up 2023

5 Commercial demonstration plant confirming scalability

The first fully-integrated demonstration plant of the Hazer Process

CDP Site, Perth, Australia

Project Summary

- 100 tpa H_2 and ~380 tpa graphitic carbon
- Carbon negative process with biogas feedstock
- Construction & Phase1 commissioning completed June 2022
- Ready for startup on-track for 2023.
- Fully funded with ~$9.4 million grant funding awarded by Australia Renewable Energy Agency (ARENA)

Australian Government
Australian Renewable Energy Agency
ARENA

5 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
- ✔ Hot equipment fabrication and installation
- ✔ Commissioning, RFSU and production

On-track

✔ Completed ✔ On-track

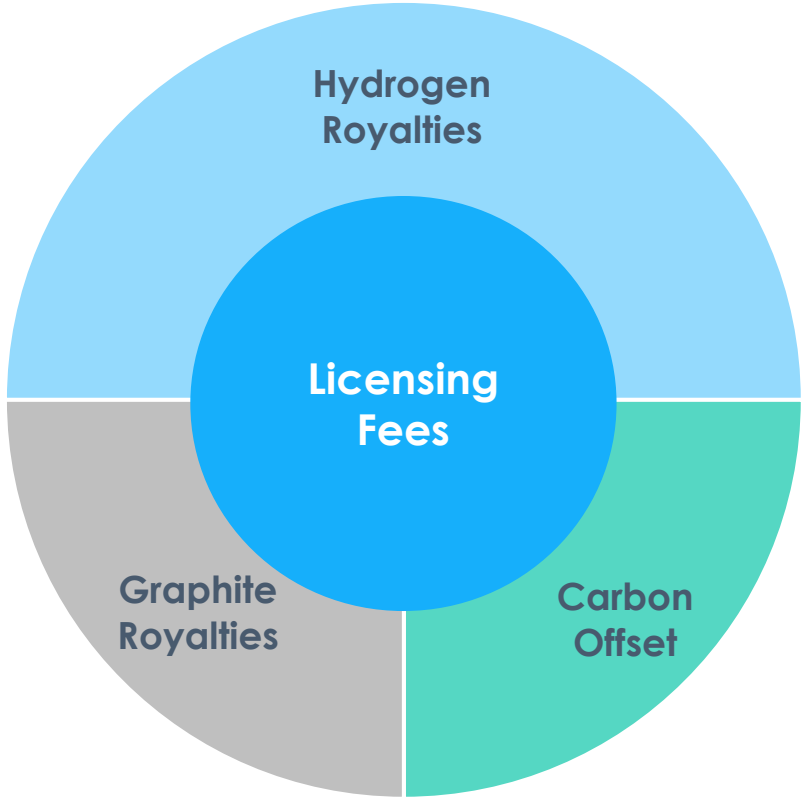
Latest Updates

- ✓ Reactor successfully installed
- ✓ Commissioning underway
- ✓ CDP start-up on-schedule

Reactor on truck prior to installation, Nov 2023

6 "Capex-lite" business model enables early free-cashflow

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

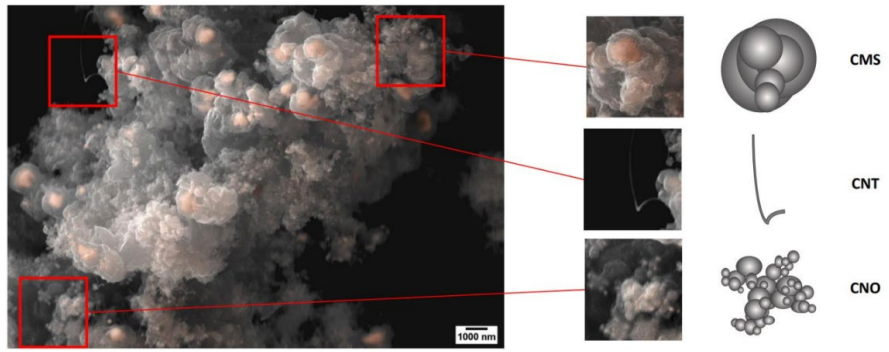


- One technology, two valuable markets
- Flexible combination of license fees and royalties
  - Fixed annual license fees commensurate with plant size
  - Royalties a percentage of H_2 and graphitic carbon revenues
- "Capex-lite" approach

7 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



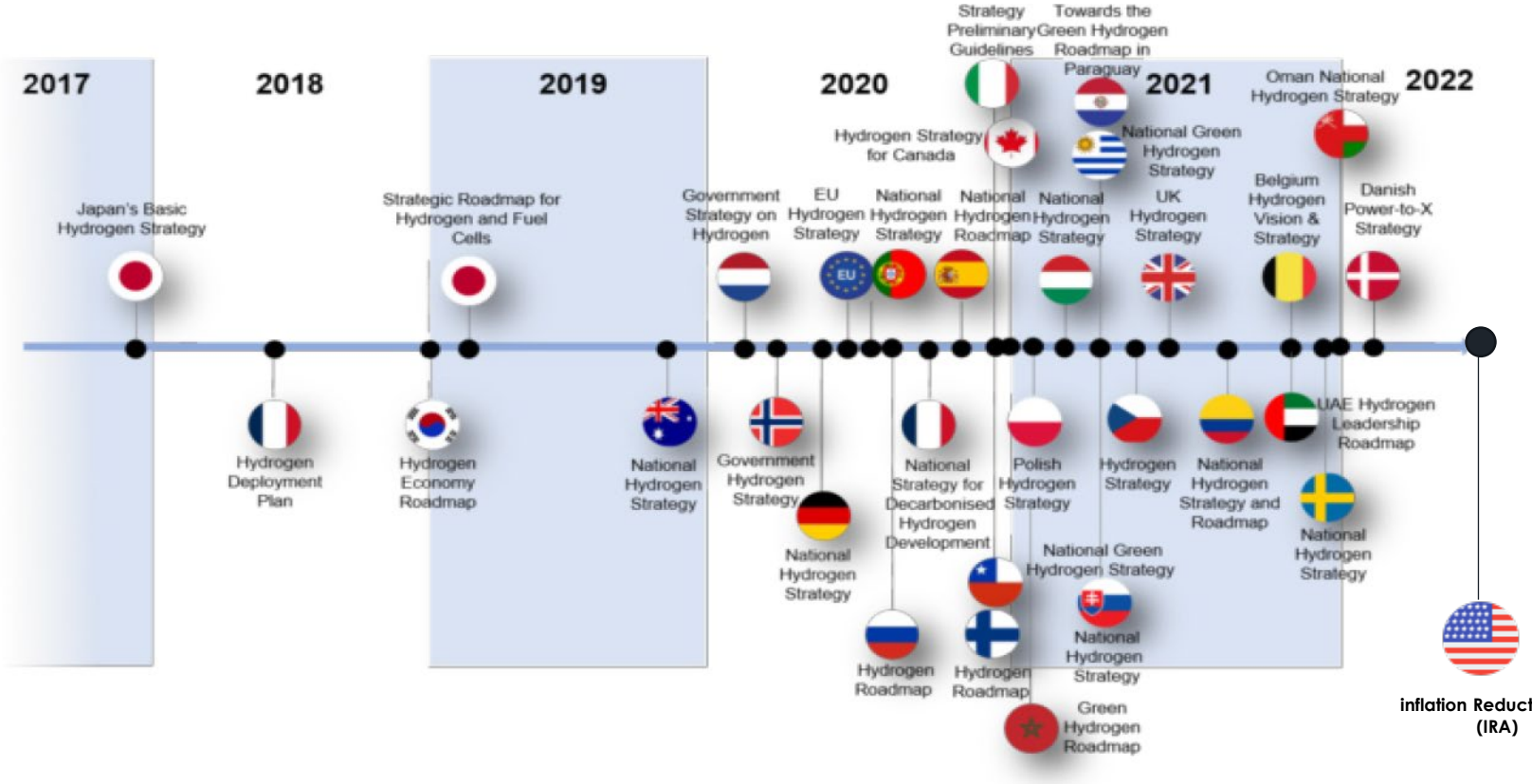
Mitsui MOU

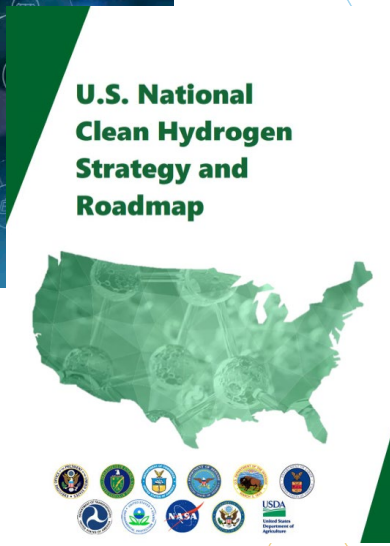
- A leading international trading and investment group based in Japan
- Collaboration advanced after positive feedback from several potential customers
- High confidence markets identified are steel making and chemicals industries
- Next phase includes testing of larger samples from Hazer's CDP

MITSUI & CO.

8 Global policy action gaining momentum

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





Source: Various sources; data compiled by Goldman Sachs Global Investment Research

Project Pipeline

Partnerships and scale-up into target markets

Overview of key scale-up development projects

BC, Canada

Nagoya, Japan

Montoir, France

	BC, Canada	Nagoya, Japan	Montoir, France
Description	• New site options in progress • Likely H_2 to be used at site location	• Existing LNG import terminal or power station site • H_2 as fuel for power generation, industry feedstock and mobility	• Existing LNG import terminal site identified • H_2 as fuel for power generation, industry feedstock and mobility
Partners	FORTIS BC™	CHUBU Electric Power; CHIYODA CORPORATION	ENGIE
Expected H_2 Production • **Phase 1** • **Phase 2**	2,500 tpa 100,000+ tpa	2,500 - 10,000 tpa Up to 100,000 tpa	10,000+ tpa 50,000+ tpa
Hazer Operating Model	Licensing	Licensing	Licensing
Targeted Start-up (phase 1)	2026-2027	2027-2028	2027-2028

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Abbreviations and units used

ARENA Australian Renewable Energy Agency

CCS Carbon Capture & Storage

CDP Commercial Demonstration Plan

FID Final Investment Decision

IRR Internal Rate of Return

KTPA thousands of tonne per annum

LNG Liquified Natural Gas

MOU Memorandum of Understanding

MMBTU Million British Thermal Units (A thermal unit of measurement for Natural Gas)

MTPA millions on tonne per annum

PDP Project Development Plan

PFS Pre-Feasibility Study

RFSU Ready for start up

ROI Return on investment

SMR Steam Methane Reforming

TPA tonne per annum

Assumptions and notes

Slide 12 – Delivered Cost of H2 – Hazer Competitive Advantage

1. *Hazer US and Asia Pacific costs of H2* - Company analysis and projections, modelling using an average feedstock gas price for North America of US$2.20/MMBTU, and US$12.80/MMBTU for Asia Pacific, ~US$400/tonne graphitic carbon revenue [offset against operating expense]. Learning curve of 30%.
2. Assume a single pass configuration (no PSA) with value ascribed to unreacted methane (e.g power generation or gas blending use case)
3. Green ammonia cost - Source IRENA, 2020 NH3 costs of US$720-$1,400/tonne, mid-point being $1,060/tonne. H2 equivalent is US$6.00/kg: https://www.futurebridge.com/industry/perspectives-energy/green-ammonia-an-alternative-fuel/#:~:text=Cost%20of%20green%20ammonia&text=The%20current%20Price%20of%20green,%2C%20to%20%24%20310%20per%20tonne.
3. Green hydrogen production cost - Source: IEA Global Hydrogen Review 2022, p.92. 2021 Wind Onshore and Solar PV average price of US$6/kg.
4. Shipping of ammonia and liquid hydrogen – Source: IEA Global Hydrogen Review 2022 & Energy Technology Perspectives 2023. Costs of shipping ammonia expected at $1.9-2.2/kgH2 (average $2.05/kg), LH2 $2.0-3.7/kgH2 (average $2.85/kg:: https://www.hydrogeninsight.com/innovation/iea-ammonia-and-lohc-will-be-cheaper-options-for-shipping-hydrogen-than-liquefied-h2-even-with-reconversion-costs/2-1-1387346
5. Ammonia re-crack to H2 - The cost of re-cracking ammonia to hydrogen is estimated to be € 1/kg / US$1.08/kg: https://pubs.rsc.org/en/content/articlehtml/2021/se/d1se00345c
6. Green hydrogen production cost - Source: IEA Global Hydrogen Review 2022, p.92. 2021 Wind Onshore and Solar PV average price of US$6/kg.
7. Green Hydrogen liquefaction - Unit costs of liquefaction system for hydrogen 1.44 $/kg LH2: https://www.sciencedirect.com/science/article/abs/pii/S0360319919311127
8. Green Hydrogen Load-out & Receiving Facilities - ~US$3/kg. Australian Hydrogen Market Study Sector Analysis Summary, May 2021, CEFC, p.84.