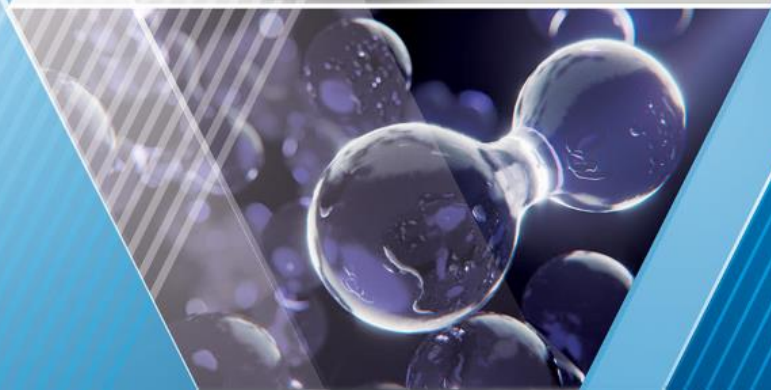




UNLOCKING THE HYDROGEN ECONOMY



JULY 2021

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Delivering our Launchpad Strategy

Inline with Nanofilm's earlier communication that new energy is a high potential new application

Existing Markets Strategy



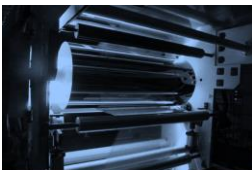
3C



Automotive

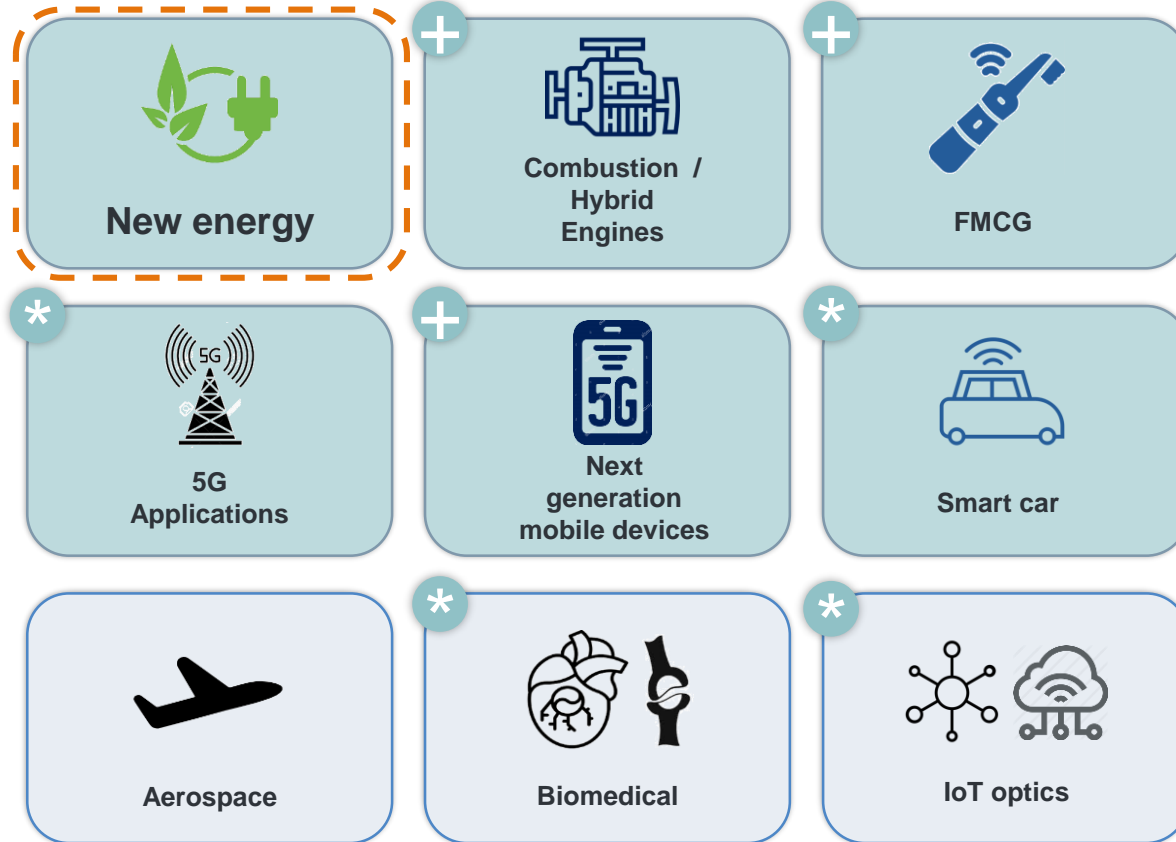


Precision Engineering



Printing & Imaging

New Markets Focus



* Initial discussion with customers in such industries have begun

+ Existing footprint

Source: Frost & Sullivan.

Table of Contents



①	Introducing Sydrogen	5
②	The Compelling Hydrogen Opportunity	12
③	Roadmap, Execution and Technology	18



1. INTRODUCING SYDROGEN



Unlocking the Hydrogen Economy Through Sydrogen



Key Highlights

-  **New JV between Nanofilm and Temasek to Tap the Hydrogen Economy**
-  **Leveraging Core Technologies and Strategic Partnerships**
-  **c. US\$32bn commercial FCEV market globally in 2030**
-  **Production Scale Up in Manufacturing Sites Close to End-Markets**
-  **COE⁽¹⁾ in Singapore Focusing on Fundamental Research and Engineering / Product Development**
-  **R&D with Support from Leading Universities**
-  **Immediate Market: BPP⁽²⁾ for Fuel Cells and Electrolysers; CCM⁽³⁾**

Backed by Strategic Shareholders



Differentiated technology solutions across attractive markets



Global network

65%⁽⁴⁾

35%



*...with up to **S\$140mm** in initial investment⁽⁵⁾*

Source: Loop Energy.

Notes: (1) Center of Excellence. (2) Bipolar Plates. (3) Catalyst Coated Membrane. (4) Can be increased upon exercise of warrants. (5) Comprising cash contribution of up to S\$21 million by Nanofilm and transfer of its hydrogen energy business along with license of the intellectual property relating to the business for a 65% shareholding, and cash contribution by Temasek for the remainder.

The World is Trying to Solve Its Fossil Fuel Problem

Bloomberg Green

Green

Japan Seeks to Aggressively Cut Fossil Fuel, Lift Renewables

South China Morning Post

China aims for greener energy mix with higher non-fossil fuel target

• Beijing's 2025 goal is in line with climate commitments made last year by Xi Jinping, analysts say

THE BUSINESS TIMES

Singapore to stop registration of diesel cars and taxis from 2025

new car and taxi registrations to be of cleaner-energy models from 2030, said Minister for Transport Ong Ye Kung on Thursday.

BBC

Climate change: EU to cut CO2 emissions by 55% by 2030

The Washington Post

Climate and Environment

Biden plans to cut emissions at least in half by 2030

The target, intended to reassert America's global leadership on climate action, would require profound changes at home

Source: Press releases.



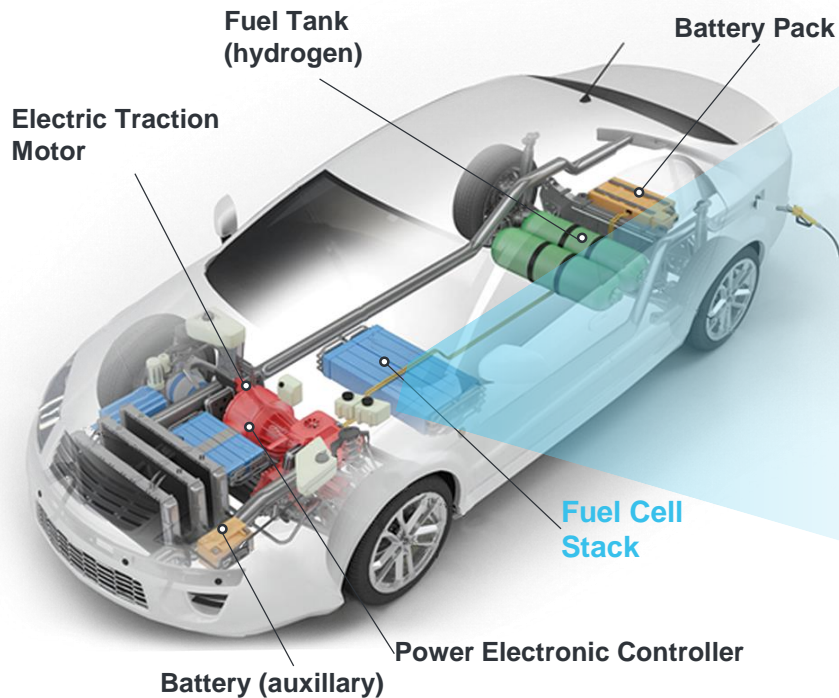
Hydrogen Transition is Happening All Around Us



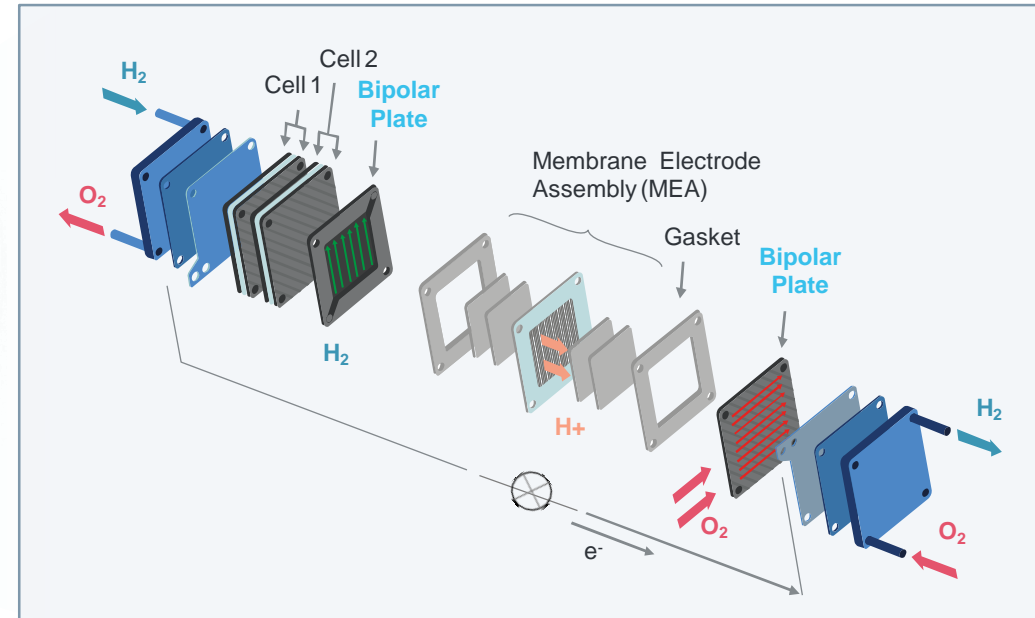
Source: Trinomics B.V. (as of August 2020).

The Fuel Cell is at the Heart of Hydrogen

Hydrogen Fuel Cell Electronic Vehicle



Hydrogen Fuel Cell Stack



- Every fuel cell stack consists of 400–1,200 bipolar plates, making up c. 10% of system costs
- Potential to reduce thickness of bipolar plates to <1mm (previously 3mm)



Versatile with wide range of applications



Environment Friendly



Driver of Decarbonisation



Cost Effective



Higher Driving Range

Enabling Fuel Cell Technology Adoption

Sydrogen will leverage Nanofilm's proprietary coating technologies to offer innovative solutions to challenges faced in fuel cells

Challenges in Fuel Cell



High Cost



Lack of suitable coating materials



Corrosion or Ion Leaching Issues



Bulky graphite bipolar plates



Sydrogen's Proposition

Black Diamond



Improved Properties



Longer Life



Better Performance



Our Leadership Team



James Rowan

Chairman

- Wealth of experience from earlier roles with leading technology and product companies, serving as CEO, COO, and Executive Director of the Dyson Group, and COO of BlackBerry Limited
- Advisory Board Member of NTU's School of Mechanical and Aerospace Engineering



Dev Rudra

Chief Executive Officer

- Joined Sydrogen in 2021
- Over two decades of global leadership experience in high technology engineered product companies like Pratt & Whitney and General Electric
- MBA from University of Michigan



Prof. Chan Siew Hwa

Co-Director, Energy Research Institute, NTU⁽¹⁾

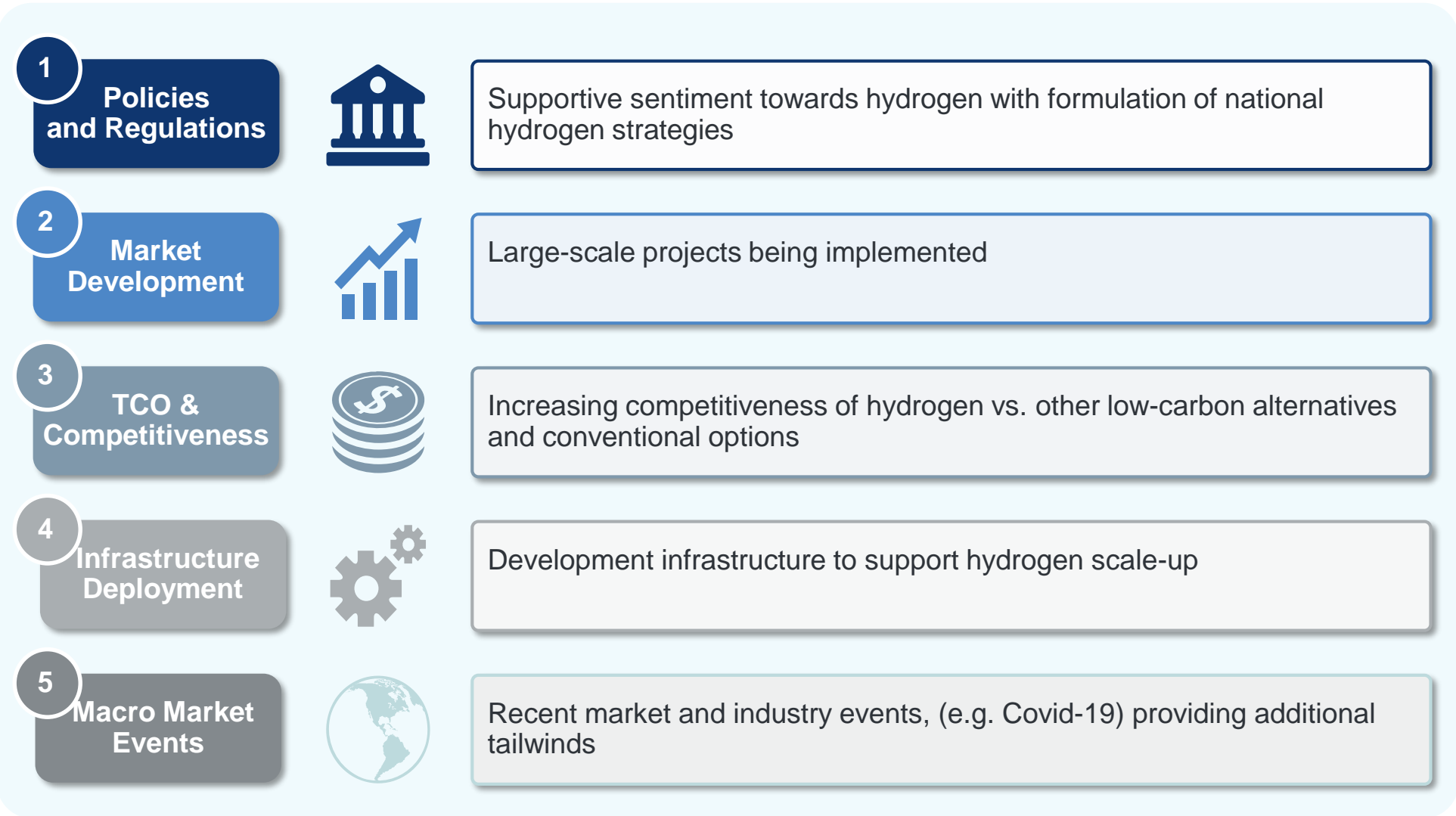
- Over 30 years experience in Hydrogen and fuel cell segment, leading the research in NTU while serving as a Professor in School of Medical & Aerospace Engineering
- PhD from Imperial College London

Note: (1) Nanyang Technological University.

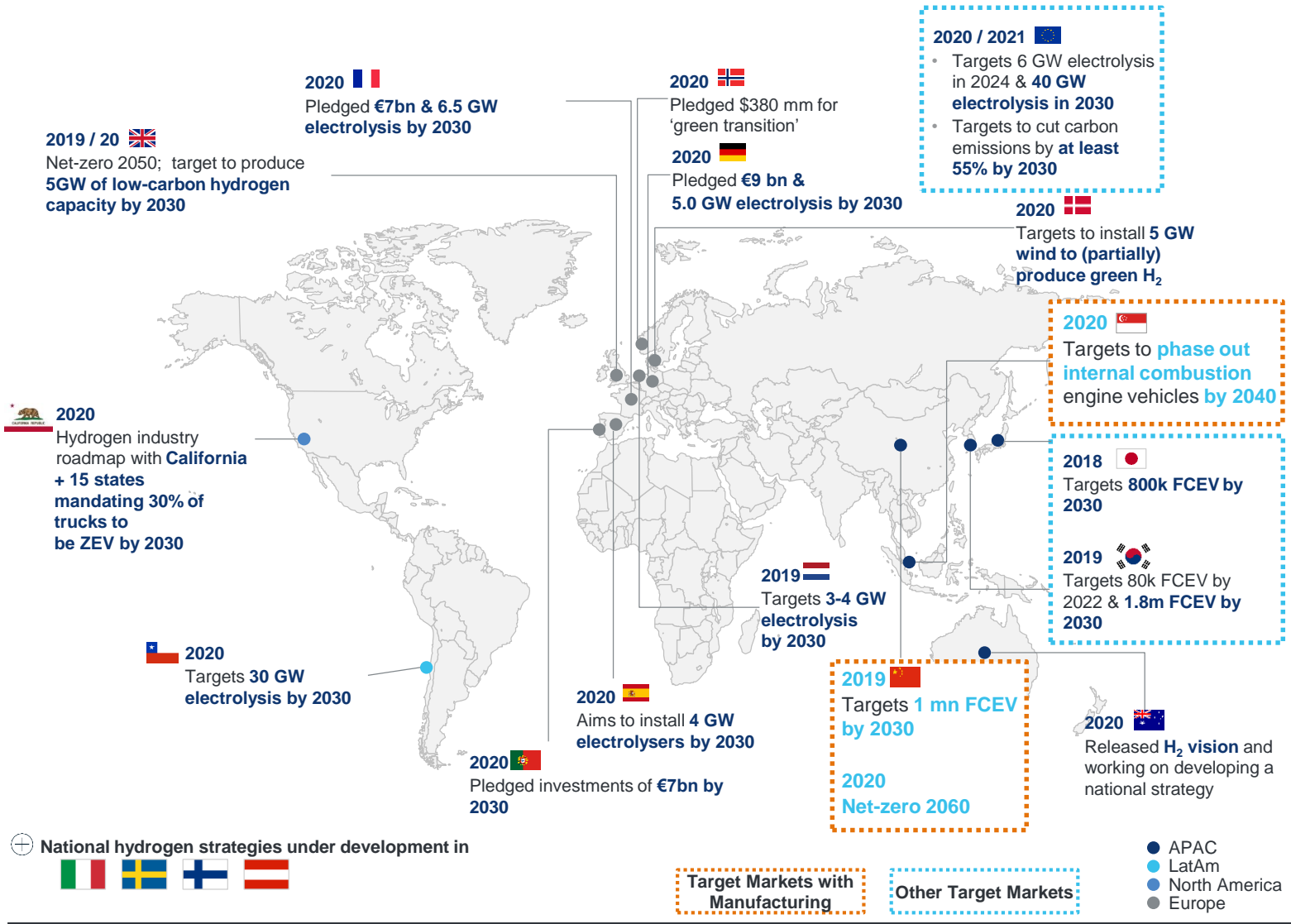
2. THE COMPELLING HYDROGEN OPPORTUNITY



Hydrogen Transition Driven by Five Factors



Policies & Regulations Favoring Hydrogen Transition



75+ GW



National targets for low-carbon hydrogen production until 2030

3.5mn+



FCEVs targeted to be on the road in China, Japan, and Korea by 2030

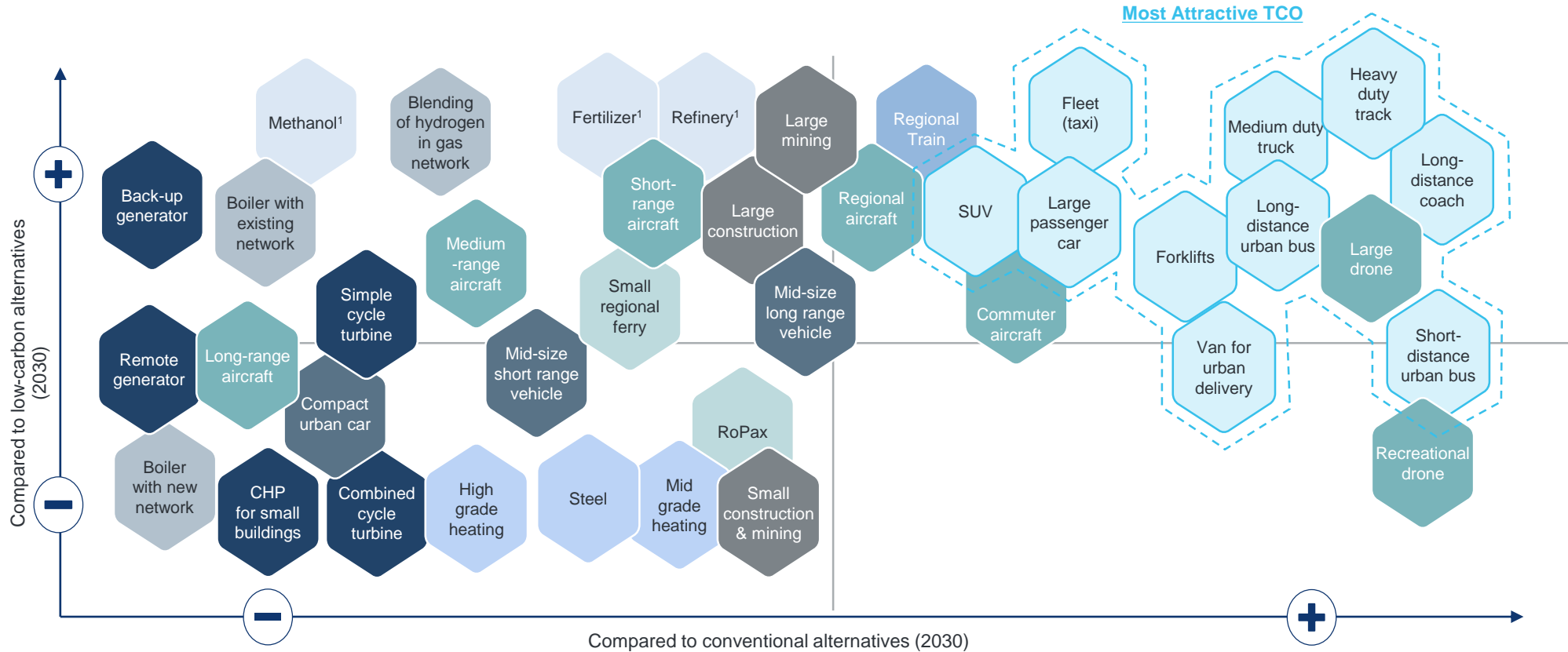
10,000+

Refueling stations deployed by 2030 globally

Source: Country Hydrogen strategy, press search.

Hydrogen Competitiveness by 2030

Fields of use to gain adoption sooner due to higher taxes on road fuels and emission regulations coupled with greater efficiencies from fuel cell deployment



Transportation

Power Generation

Automotive

Off-highway

Aviation

Rail

Marine

Buildings

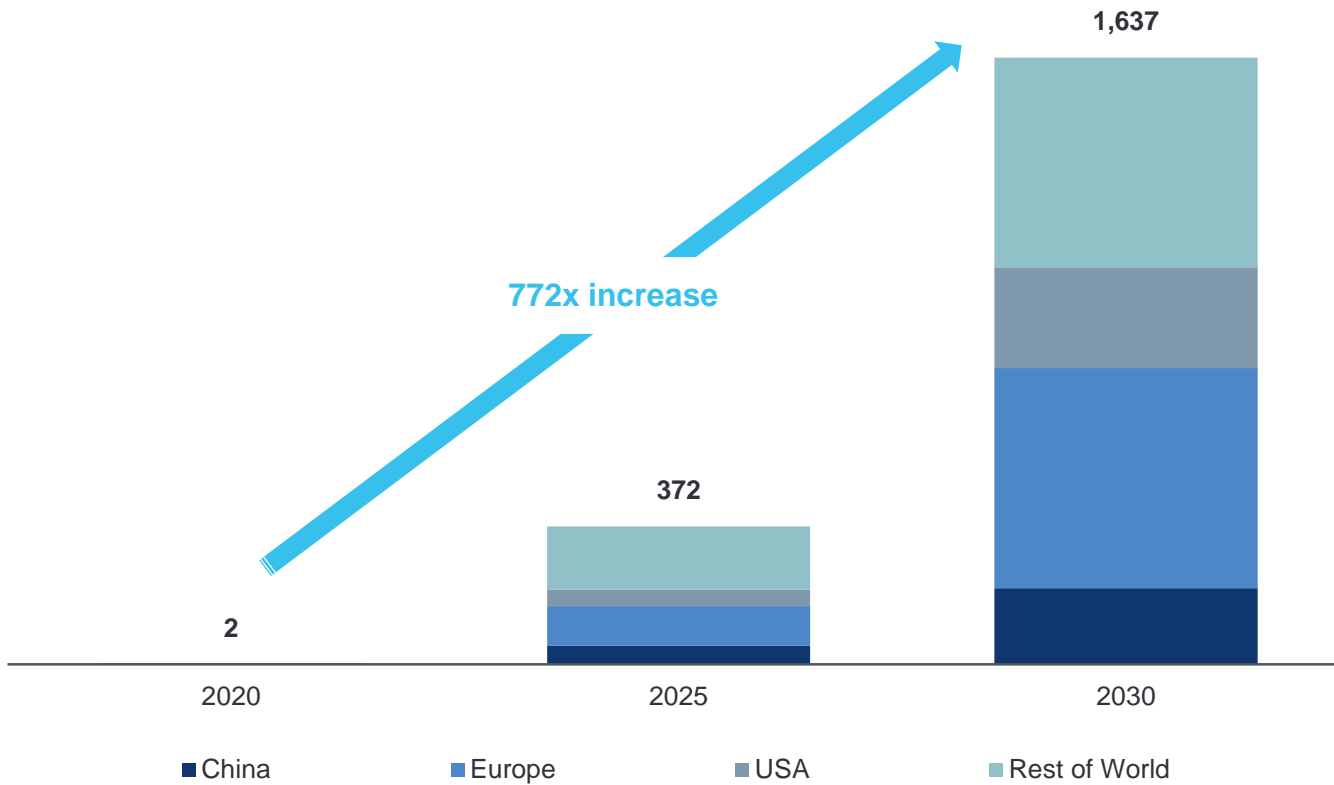
Industry

Feedstock uses

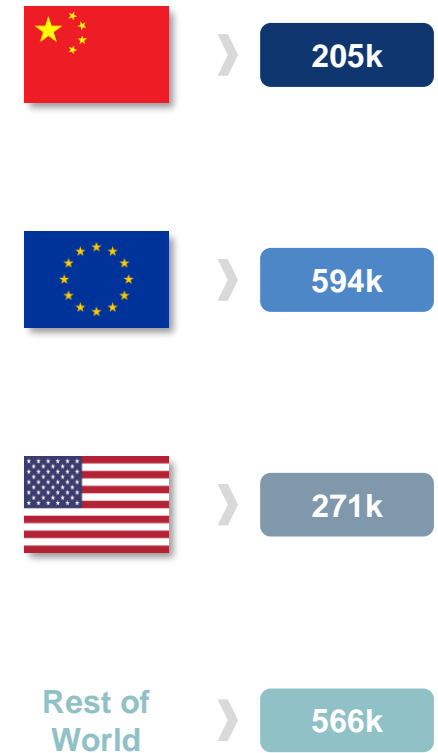
Source: Hydrogen Council: Path to hydrogen competitiveness: A cost perspective.

Fuel Cell Vehicle Opportunity Is Massive

Global Passenger FCEVs⁽¹⁾ Projected Sales Units sold 000's



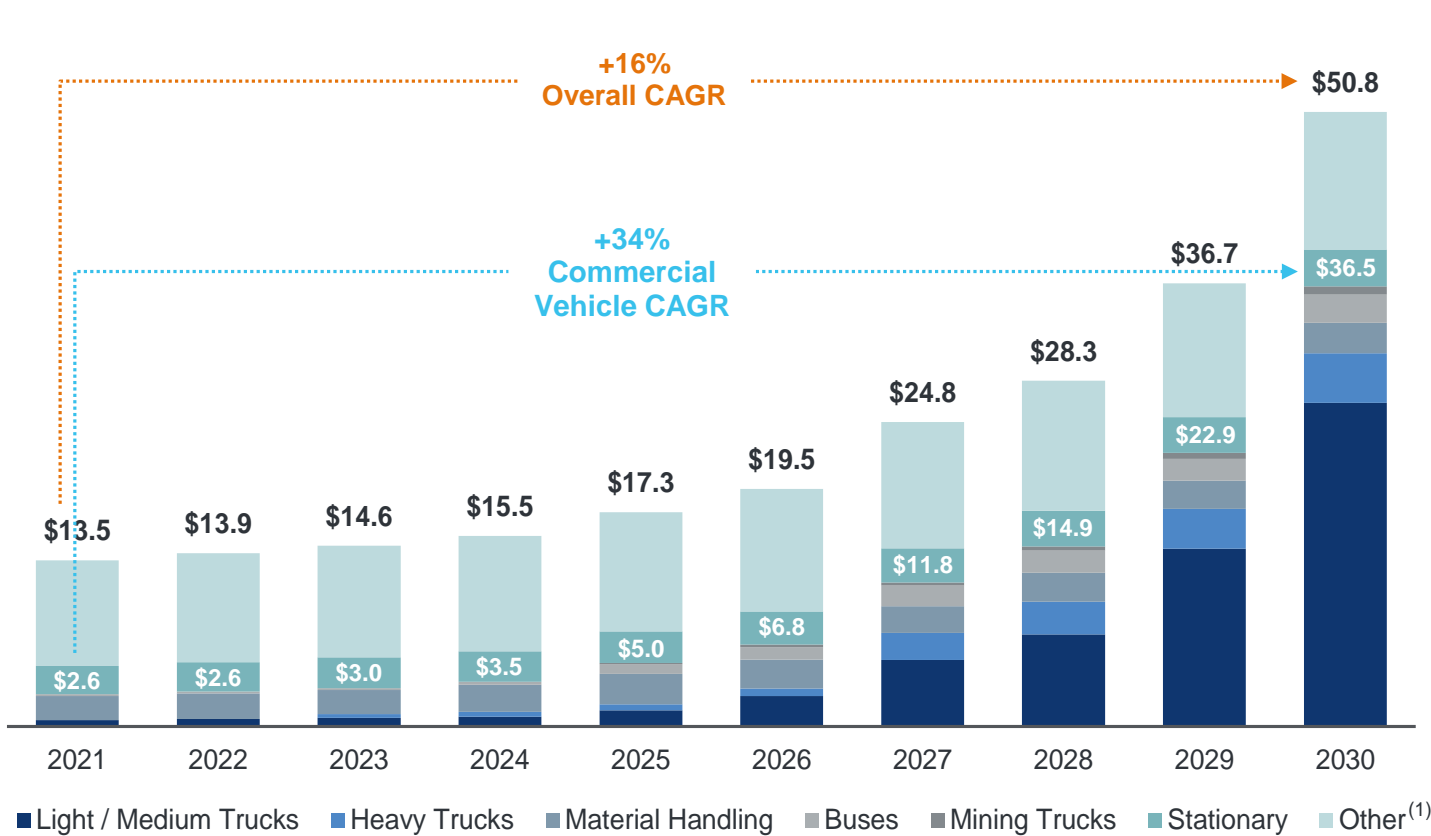
Country / Region 2030 Projected Units



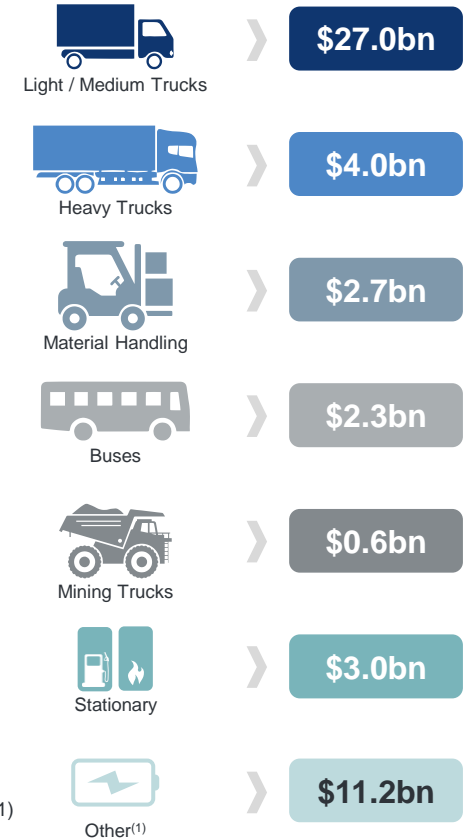
Source: International Energy Agency.
Note: (1) Includes passenger cars and vans.

Fuel Cell Vehicle Opportunity Is Massive (Cont'd)

Commercial FCEVs Market Evolution by Vehicle Class US\$ billion



Vehicle Class 2030 TAM



Source: Third party industry research.

Notes: (1) Other markets include portable power and electrolysers.

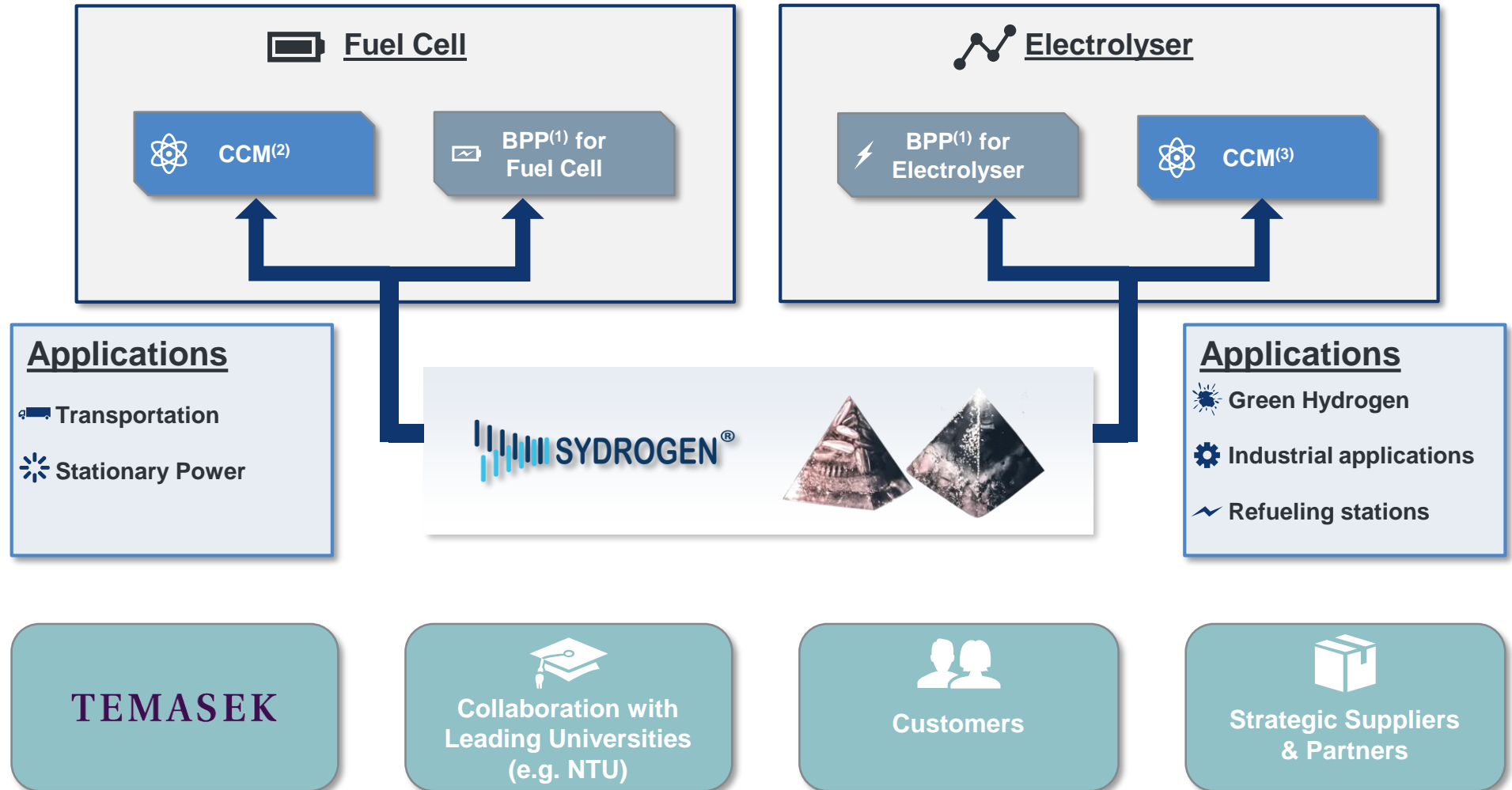


3. ROADMAP, EXECUTION AND TECHNOLOGY



Sydragen's Roadmap

Our entry points enabling vertical integration



Notes: (1) Bipolar plates. (2) Catalyst Coated Membrane for Proton Exchange Membrane. (3) Catalyst Coated Membrane for Anion Exchange Membrane.

Other Technologies

Coated Titanium BPP



Hybrid materials required



High manufacturing and raw material costs



Slow processing speed and high capex intensity



Unable to manufacture sufficiently thin plates

Graphite BPP



High carbon black content in material mix



Long forming cycle times



Thick graphite mats



High-volume process to be developed



Insufficiently wide channel widths



Black Diamond Coated Steel BPP



Affordable



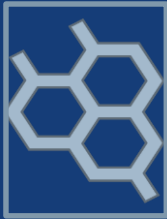
Lightweight



Durable



Compact



Technology

- Accelerate technology development & application
- Proprietary technologies integrated into components and products of strategic value chain partners





Manufacturing - Production

- Establish mass production with operational excellence
- Lowered cost through scale



Location & Partnerships

-  
- Inclusive Ecosystem - build strategic partnerships with like minded partners
- Customized solutions for various applications and partners



Leverage existing capabilities and network in auto



Manufacturing close to market



THANK YOU

