

# **Hydrogen Council Update: Council Priorities & Hydrogen Cost Report**

**Presented By  
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**DOE Hydrogen and Fuel Cell  
Technical Advisory Committee**

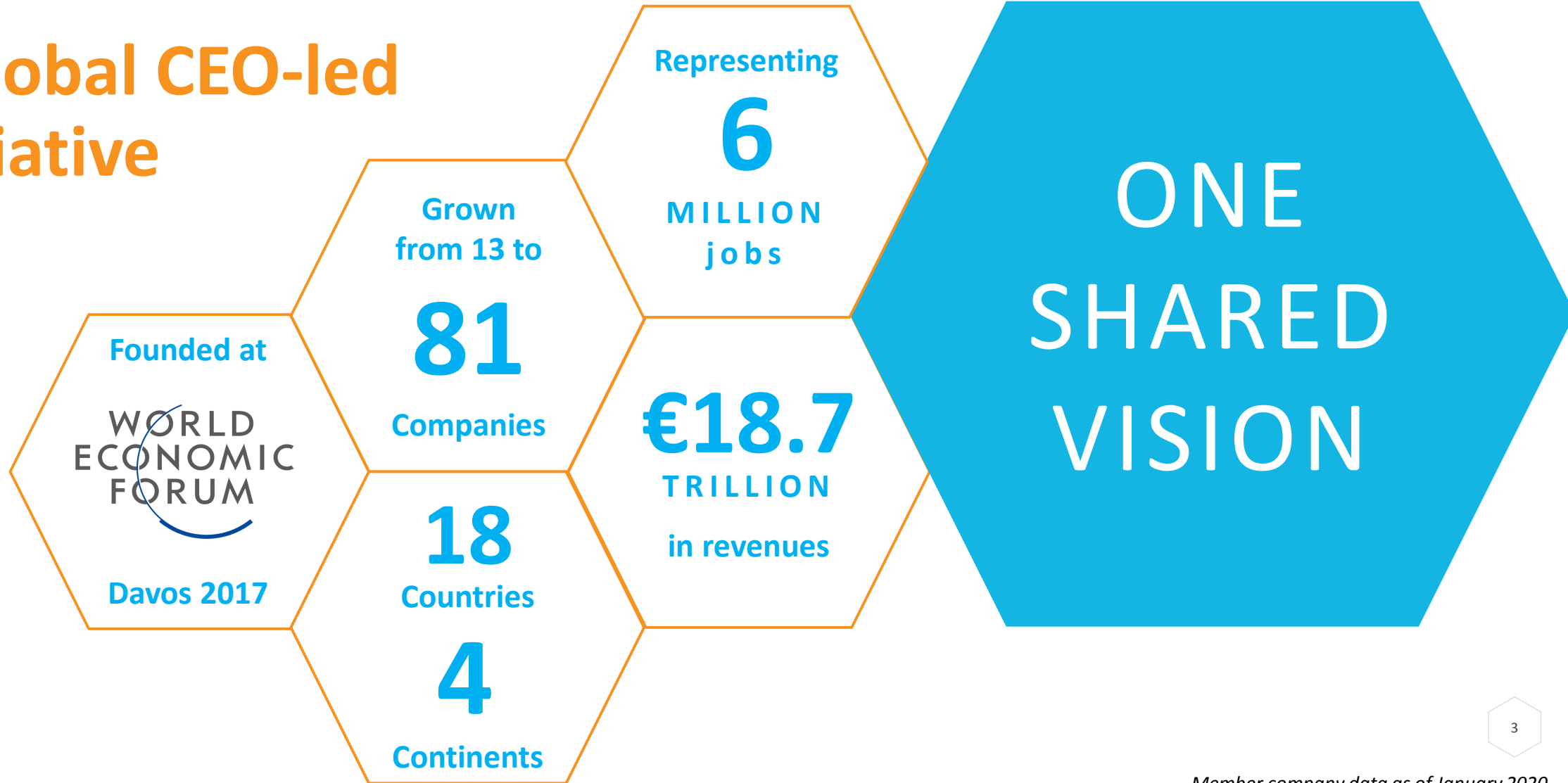
**March 9, 2020**



# THE HYDROGEN COUNCIL

# THE COALITION

A global CEO-led initiative

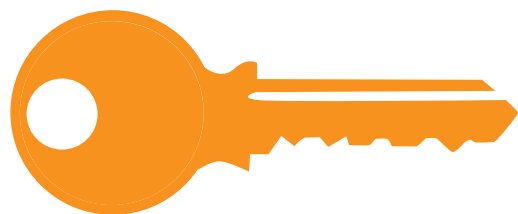


# A STRONG & DIVERSE GROUP



# OUR VISION

## Hydrogen has a key role to play in the energy transition



### Sources:

[“Hydrogen, Scaling Up” report, 2017](#)

[“Path to Hydrogen Competitiveness” report, 2020](#)

Based on **real industry data**, the Council sees hydrogen as an enabler of the future energy system, growing its role over time and delivering tangible benefits:

### By 2030

#### *H<sub>2</sub> scales up to achieve competitiveness*

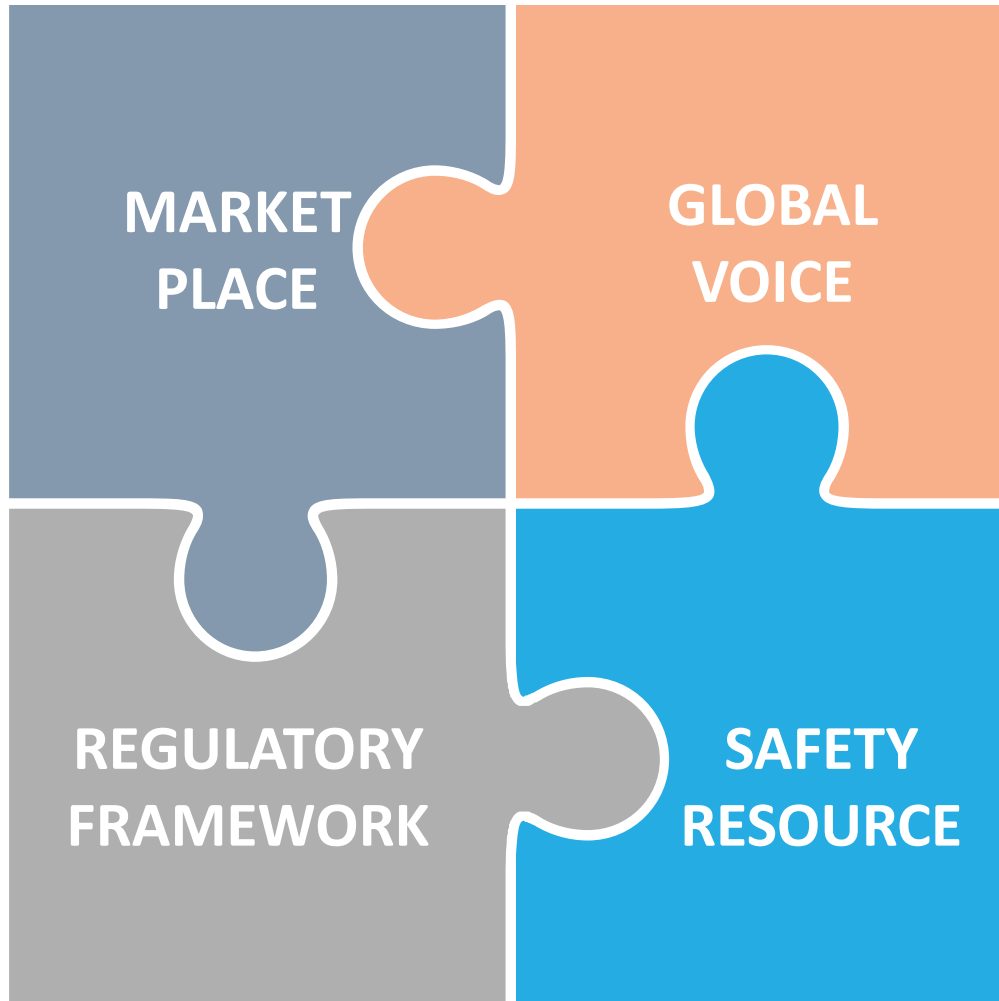
- ✓ Cost falls sharply, making hydrogen a competitive low-carbon option across 22 applications – equivalent to 15% of annual global energy demand

### By 2050

#### *H<sub>2</sub> reaches full potential*

- ✓ 6 GT of CO<sub>2</sub> abatement annually
- ✓ 30 million jobs
- ✓ \$2.5 trillion market

# OUR PRIORITIES



## 1. Bring together key stakeholders to enable investment & large scale projects

- Build a business marketplace
- Stimulate investment

## 2. Amplify the voice of hydrogen worldwide

- Understand hydrogen perception & challenges
- Address issues & leverage new/broader opportunities

## 3. Guide policymakers toward appropriate regulations

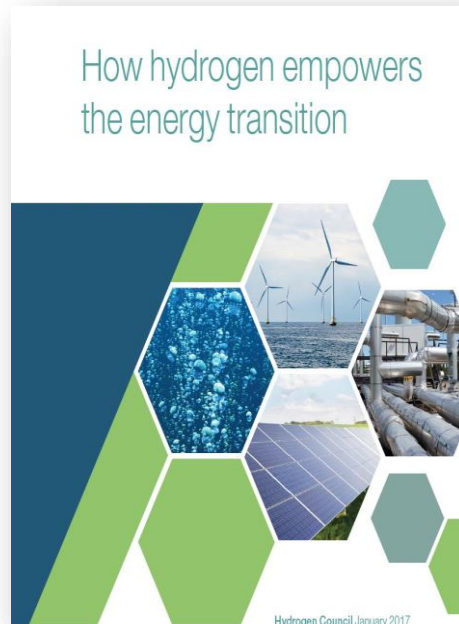
- Identify key policies & technical recommendations
- Influence through key organizations

## 4. Ensure transversal coverage of safety topics globally

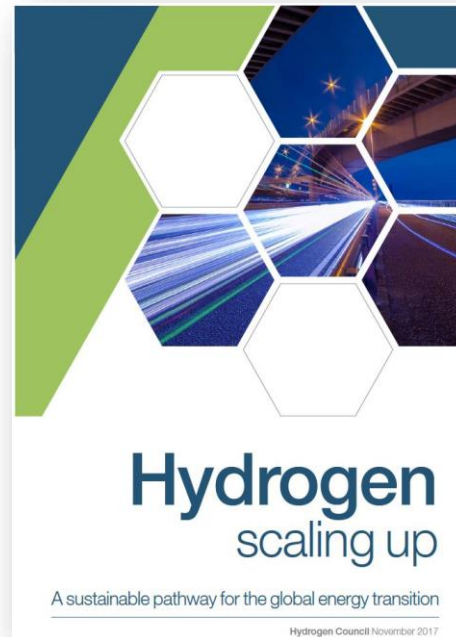
- Close safety/standards gaps
- Reputation management and crisis preparedness

# MAKING THE CASE FOR HYDROGEN

The Council creates studies on the use, development and deployment of hydrogen across sectors and industries. These studies further our understanding of **how to make the hydrogen economy a reality through concrete data provided by Council members** and informed conversations with key stakeholders around the globe. All studies are available [here](#).



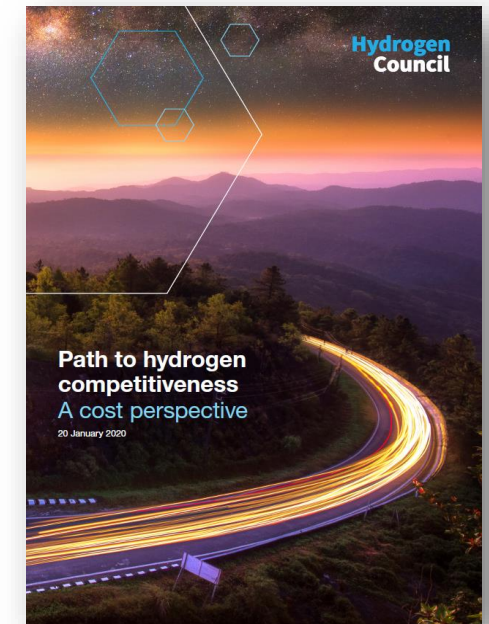
*Explores the role of hydrogen in the energy transition and offers recommendations to help accelerate deployment | [LINK](#)*



*Discusses the feasibility of our 2050 hydrogen vision and proposes tangible steps to get there | [LINK](#)*



*Considers how digitization and hydrogen could complement each other in the energy transition | [LINK](#)*



*Presents a cost trajectory for hydrogen to become cost competitive to other low carbon and conventional alternatives by 2030 | [LINK](#)*



# PATH TO HYDROGEN COMPETITIVENESS: A COST PERSPECTIVE



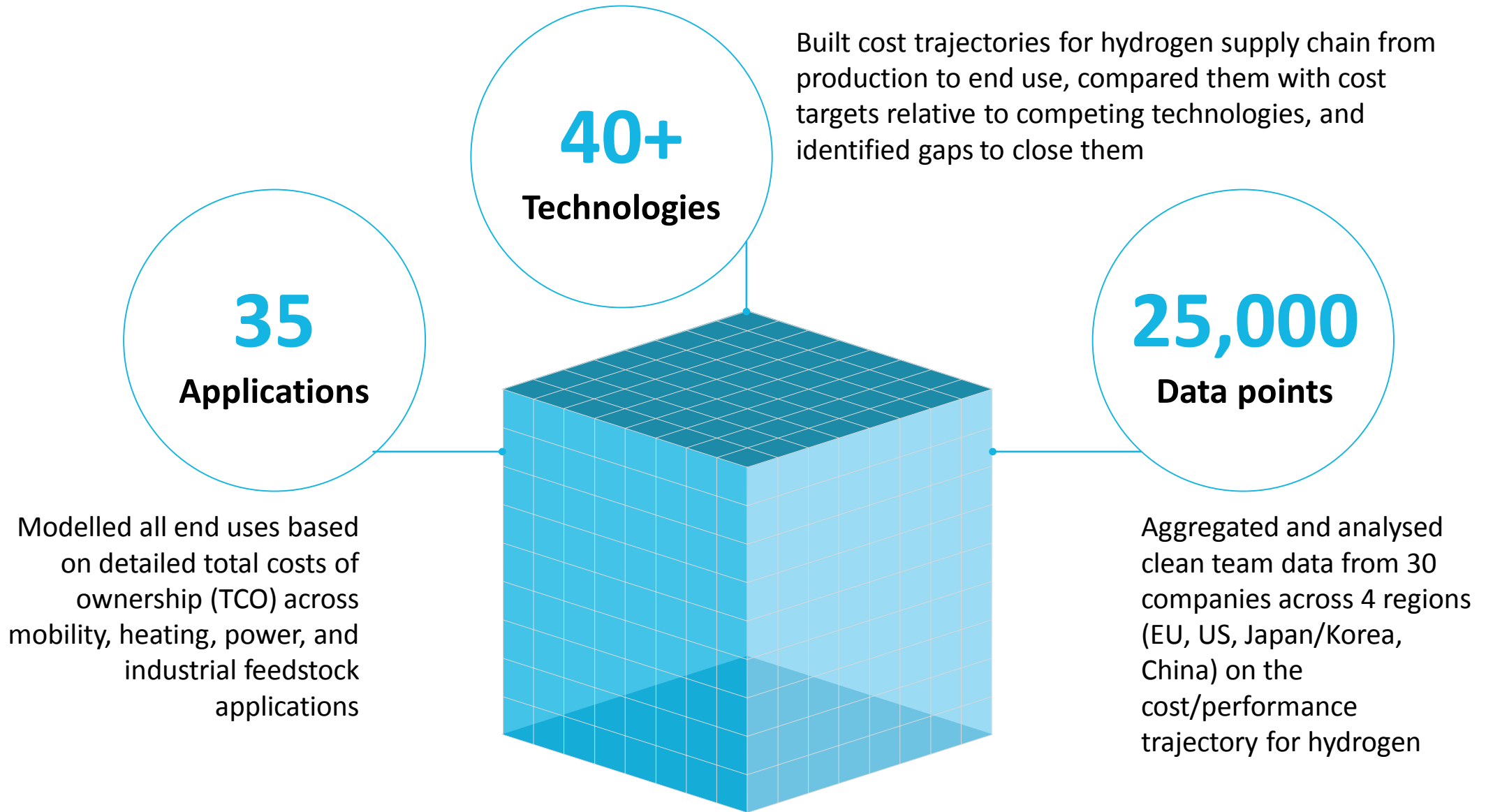
# HYDROGEN COUNCIL'S COST STUDY



## A Pathway to Competitiveness

- ✓ Detailed cost trajectory
- ✓ Key cost reduction levers analysis
- ✓ Competitiveness of hydrogen applications versus low carbon conventional alternatives by 2030

# METHODOLOGY



# KEY TAKEAWAYS

## Hydrogen becomes cost competitive...

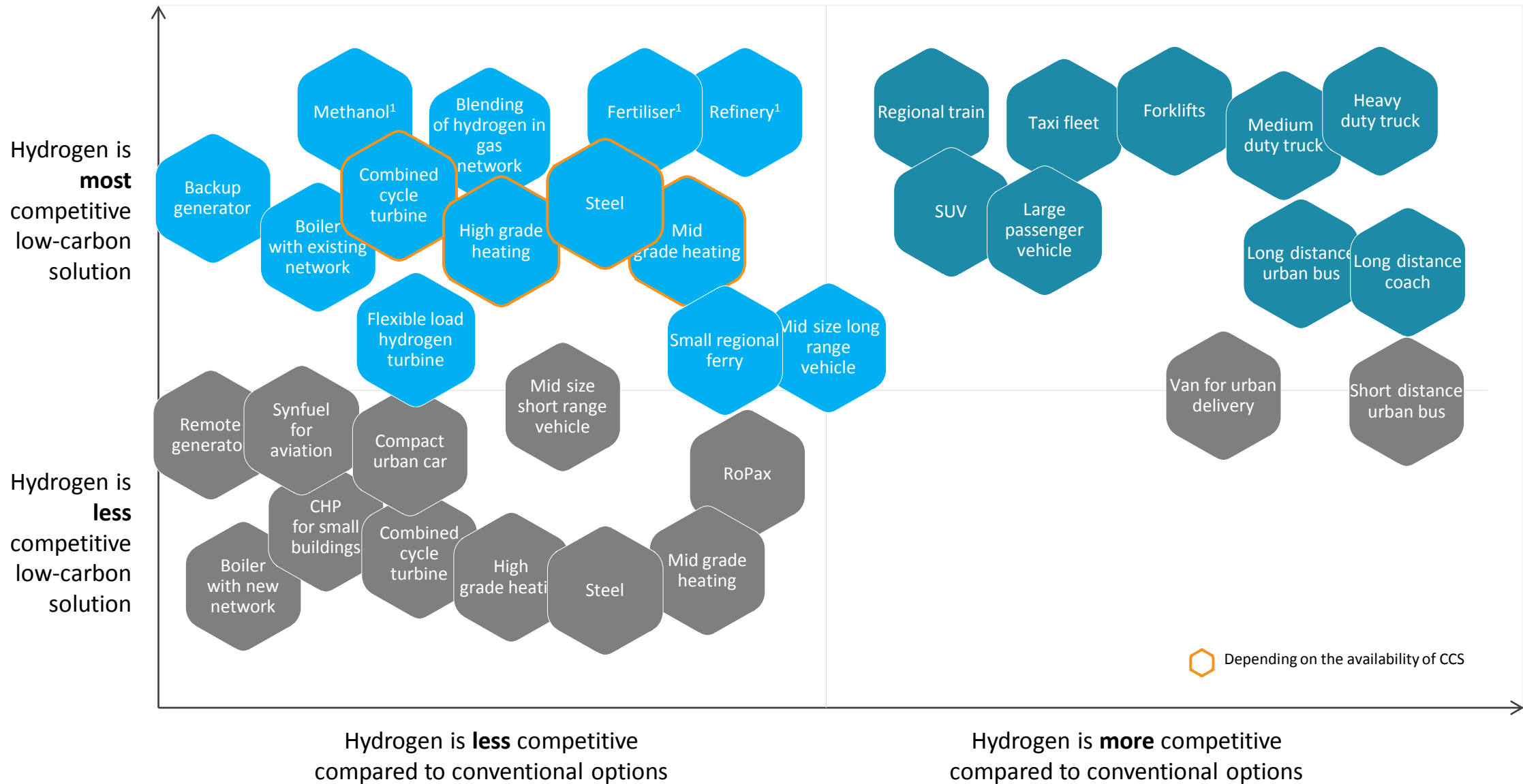
- Cost of hydrogen production projected to decrease by up to 50% by 2030 for several applications
- For 22 applications, hydrogen can become cost competitive to other low-carbon alternatives, representing 15% of global energy consumption

## ...Through scale up that impacts three main cost drivers

1. Decreased cost of producing low carbon and renewable hydrogen
2. Lower distribution and refueling costs thanks to higher load utilization and scale effect on infrastructure utilization
3. Decreased cost of components for end-use equipment under scaling up of manufacturing



# COMPETITIVE APPLICATIONS

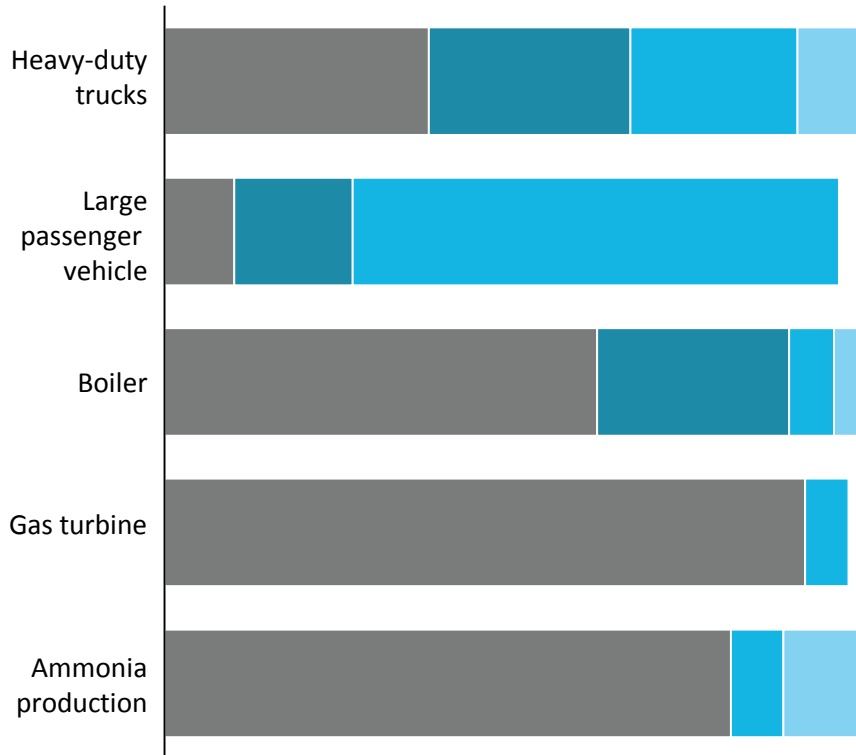


1. Hydrogen is the only alternative and low-carbon/renewable hydrogen competing with grey (optimal renewable or low-carbon shown)

# COST REDUCTION LEVERS

## Cost breakdown of hydrogen applications

Percentage of total cost 2020



## Cost drop 2020-30,

Percent

-50%

-45%

-45%

-35%

-45%

## Cost reduction levers to reach target

Scale-up of full supply chain Industrialisation of fuel cell and hydrogen tank manufacturing

Industrialisation of fuel cell and hydrogen tank manufacturing Scale-up and utilisation of HRS












Lower-cost hydrogen from renewables Higher pipeline network utilisation due to scale-up of demand

Scale-up of system size and manufacturing of electrolyzers for green hydrogen production

■ Hydrogen production<sup>1</sup> ■ Hydrogen distribution ■ Equipment capex ■ Other opex

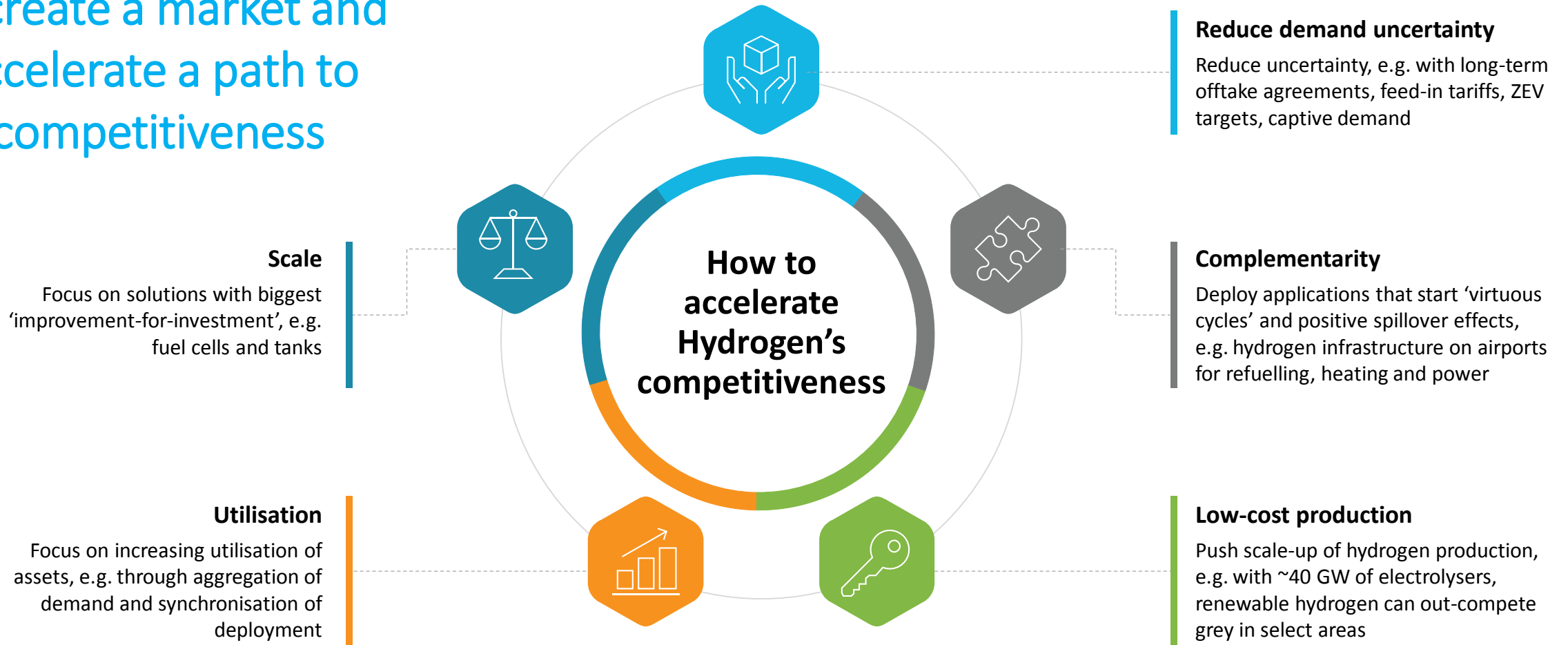
1. Assumes 50/50 blend of low-carbon and average renewable hydrogen

# SCALING UP REQUIREMENTS

	Segment	What needs to be achieved	Required premium to 2030, USD bn
HYDROGEN SUPPLY	 <b>Renewable hydrogen</b>	<b>Renewable production scale up</b> to cost parity with grey in countries with favourable renewables	<b>70 GW</b>  20
	 <b>Low-carbon hydrogen</b>	<b>Low-carbon production at scale</b> until cost parity with grey	<b>~10 Mtpa</b> in 2030  6
	 <b>Transportation</b>	<b>Distribution and refuelling station network scale up</b>	<b>20,000 HRS</b>  10
HYDROGEN APPLICATIONS		<b>Manufacturing scale-up</b>	<b>3 m FCEVs</b>  20
	 <b>Heat and power for buildings</b>	<b>Network and gas boilers upgrades, fuel cost gap bridged</b>	<b>6m households</b>  10
	 <b>Heat and power for industry</b>	<b>Fuel cost gap bridged</b>	<b>115 Twh</b> in 2030  7

# THE TIME TO ACT IS NOW

## 5 Principles to act now to create a market and accelerate a path to competitiveness



**Thank you for your time!**

[www.hydrogencouncil.com](http://www.hydrogencouncil.com)

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