



Shifting molecules to electrons
IEEJ Roundtable at SIEW 2018, Singapore
Quentin Vaquette

HYDROGEN

a key enabler of the Energy Revolution

WHY?

We will always need to physically move energy around

Total energy demand

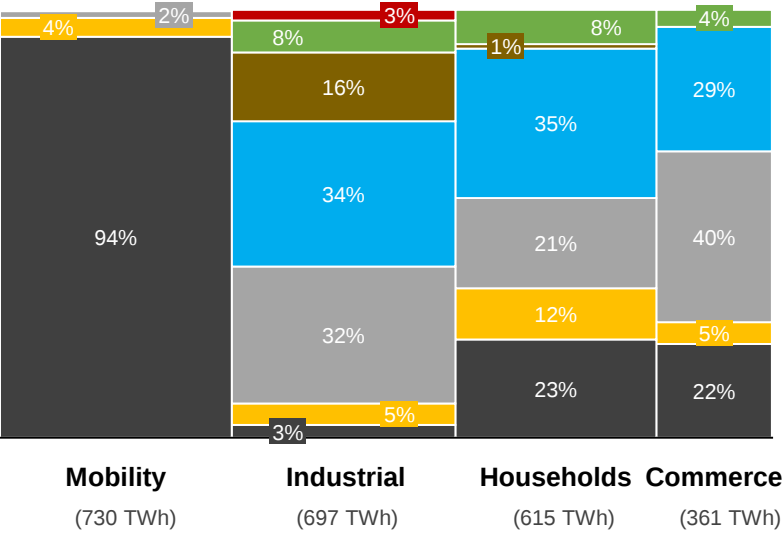
RES potential

Timing

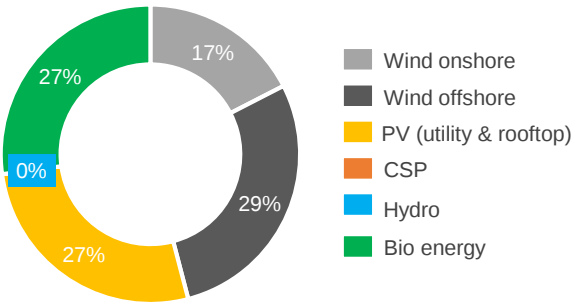
Total energy demand: 2,400 TWh



Germany



Total renewable energy potential 1,106 TWh

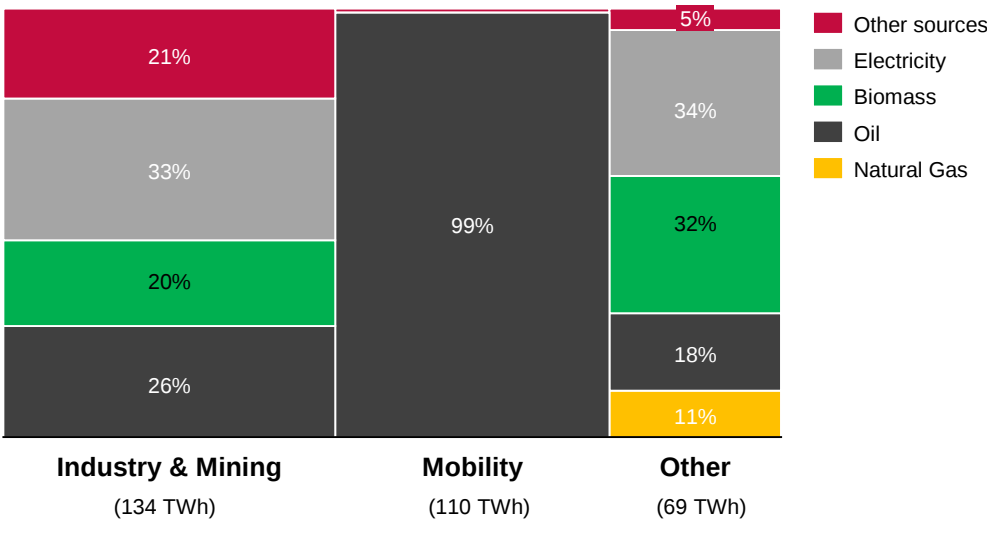


Bio energy is a stable source
Solar PV is mostly available during summer
Wind is subject to periods of zero production

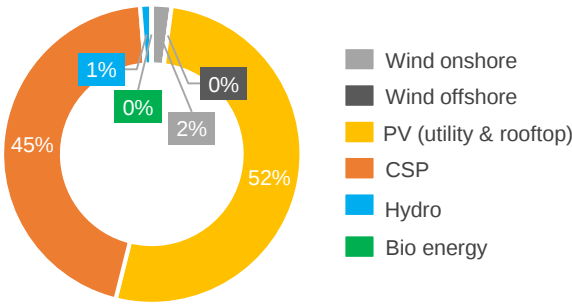
Total energy demand: 313 TWh



Chile



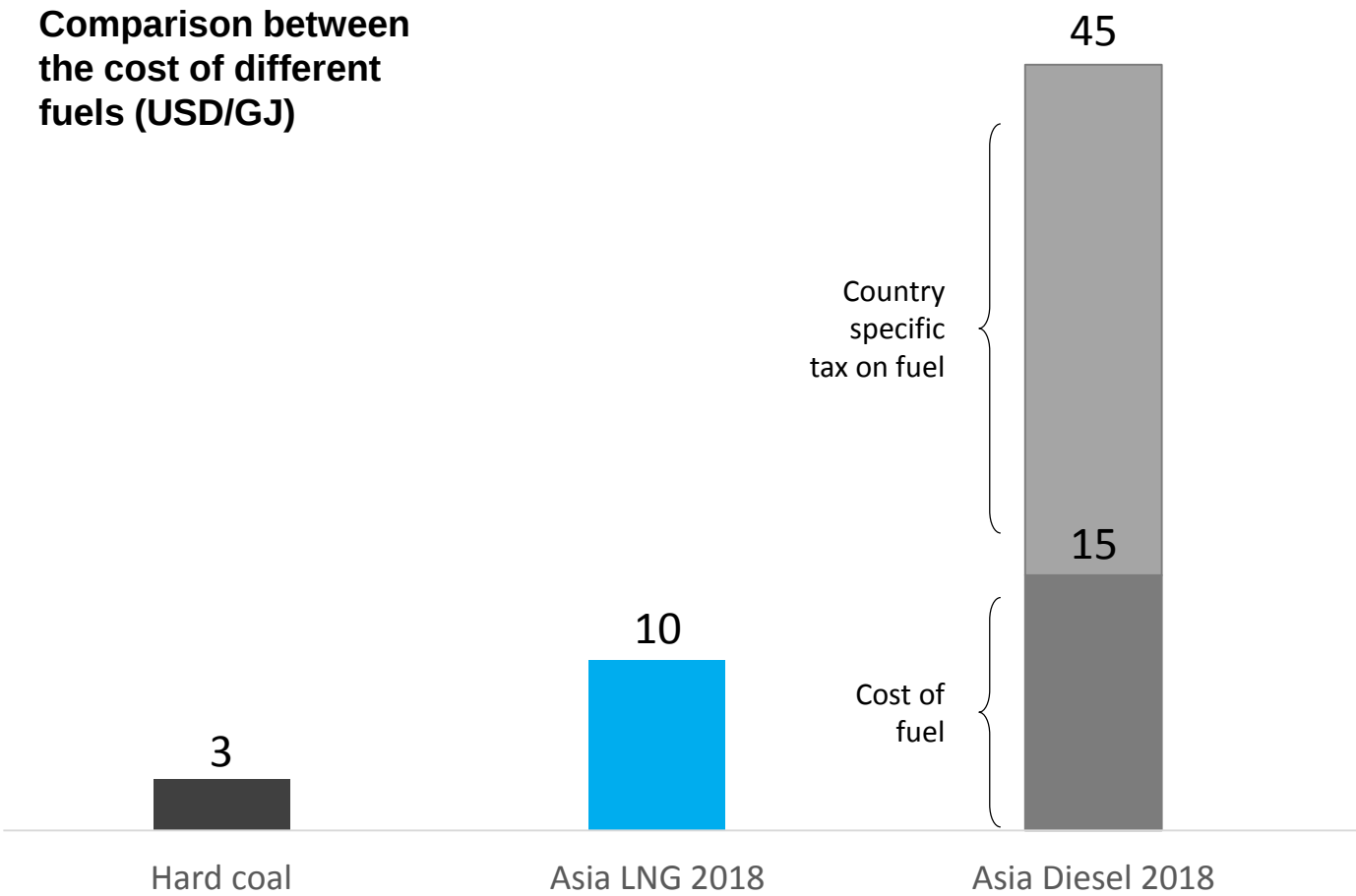
Total renewable energy potential 5,585 TWh



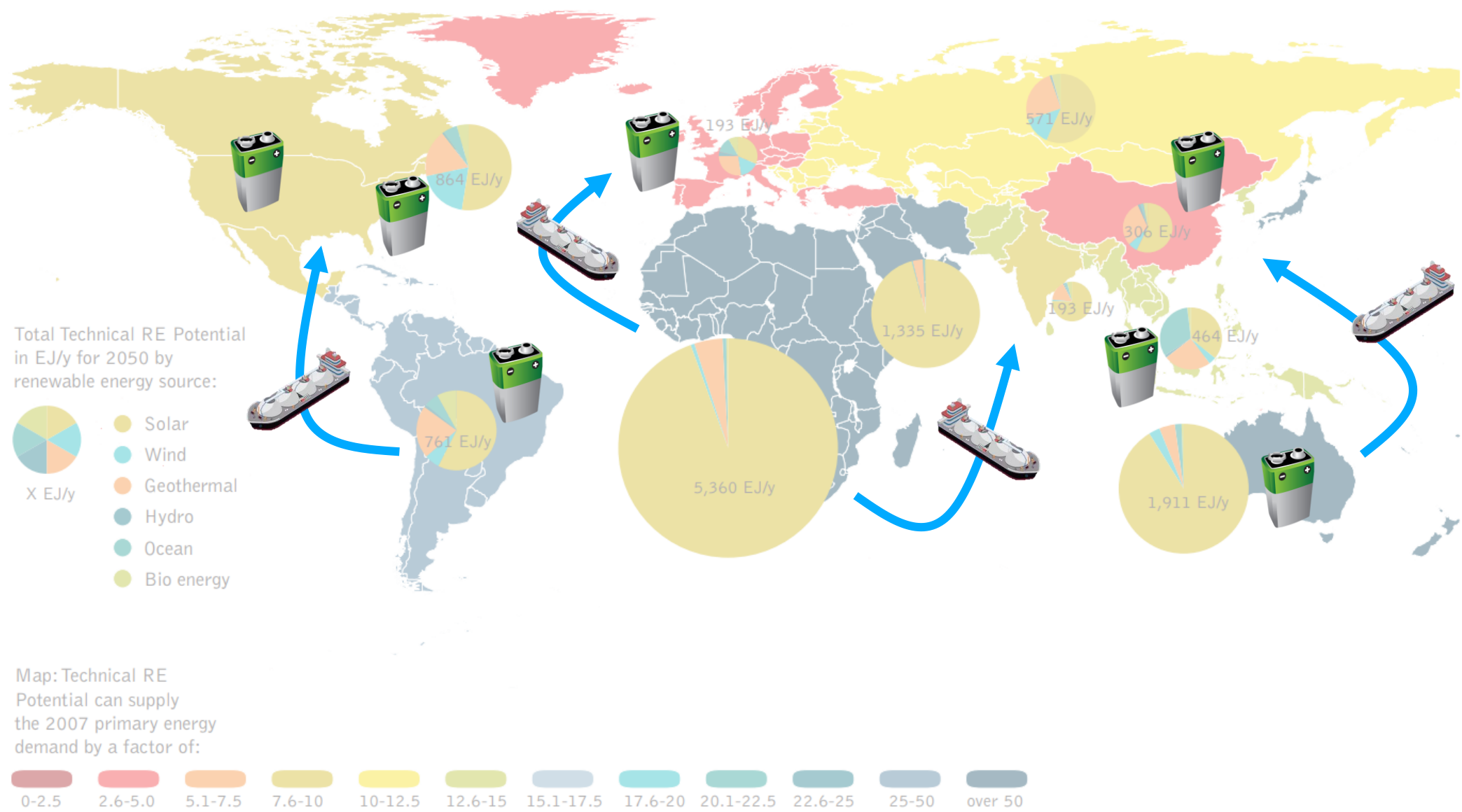
Solar PV is available during most of the year
CSP is even available throughout day and night

WHAT?

The economics of mass-scale zero-carbon hydrogen are not so different from fossil fuel



Hydrogen could become a carbon-free version of today's global LNG market

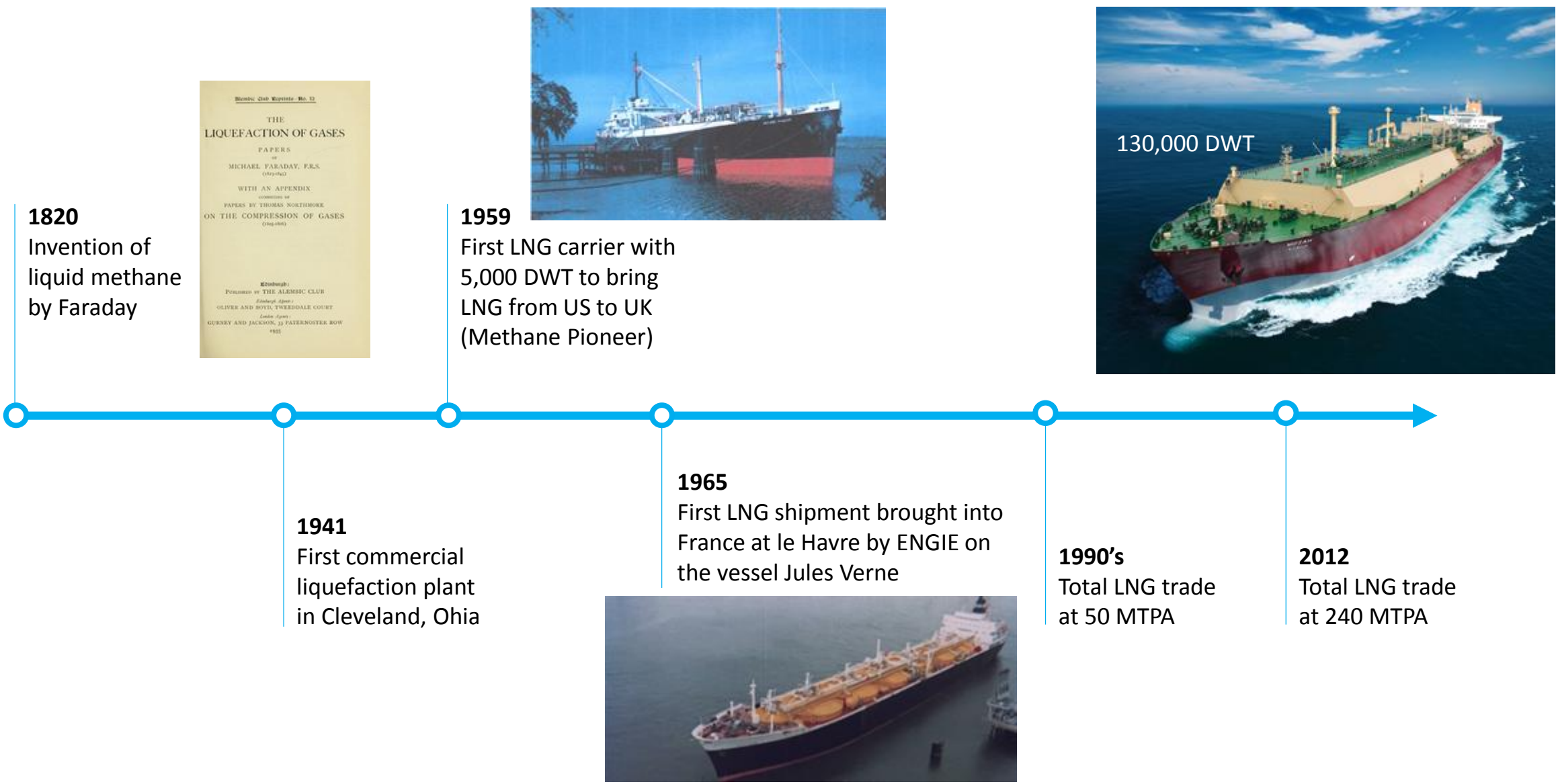


HOW?

How do we make zero-carbon hydrogen competitive?

Production		Storage and transport			Industrial use		
Solar	Electrolysis	Gas storage	Transport	Store & conversion	Heat production	Electricity generation	Heavy mobility
							
✓	On track	✓	Priority	Priority	✓	Priority	On track

Are we repeating history from less than 50 years ago?





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