Roland Berger views on H_2 market development

Opportunities for Hydrogen Storage Systems in Mobility & Infrastructure

Paris, December 2023

Roland Berger

H_2 storage addresses several mobility applications including on-road & off-road applications, railway, aerospace, maritime and infrastructure storage applications

Addressable market segments & applications for H_2 storage

1 Mobility

On-road

Heavy Duty Trucks
Above 16t

Medium Duty Trucks
6-16t

Light Commercial Vehicles
Below 6t

Pick-ups
Below 6t

Passenger Cars
Below 6t

Urban busses
Above 8 passengers

Coaches
Above 8 passengers

Off-road

Construction
- Excavators (>110kW)
- Wheel loaders/ dozers (>110kW)
- Dump trucks (>560kW)

Industrial
- Forklifts, incl. RT Forklifts (all)
- Self-propelled cranes (>110kW)

Agriculture
- Tractors (>110kW)

Other

Railway

Aerospace

Maritime

H_2 penetration only after 2030

2 Infrastructure

Stationary storage for H_2 production sites
- On-site electrolyzer at HRS location

Mobile storage for H_2 transportation
- H_2 supply to HRS sites
- H_2 supply to industrial sites

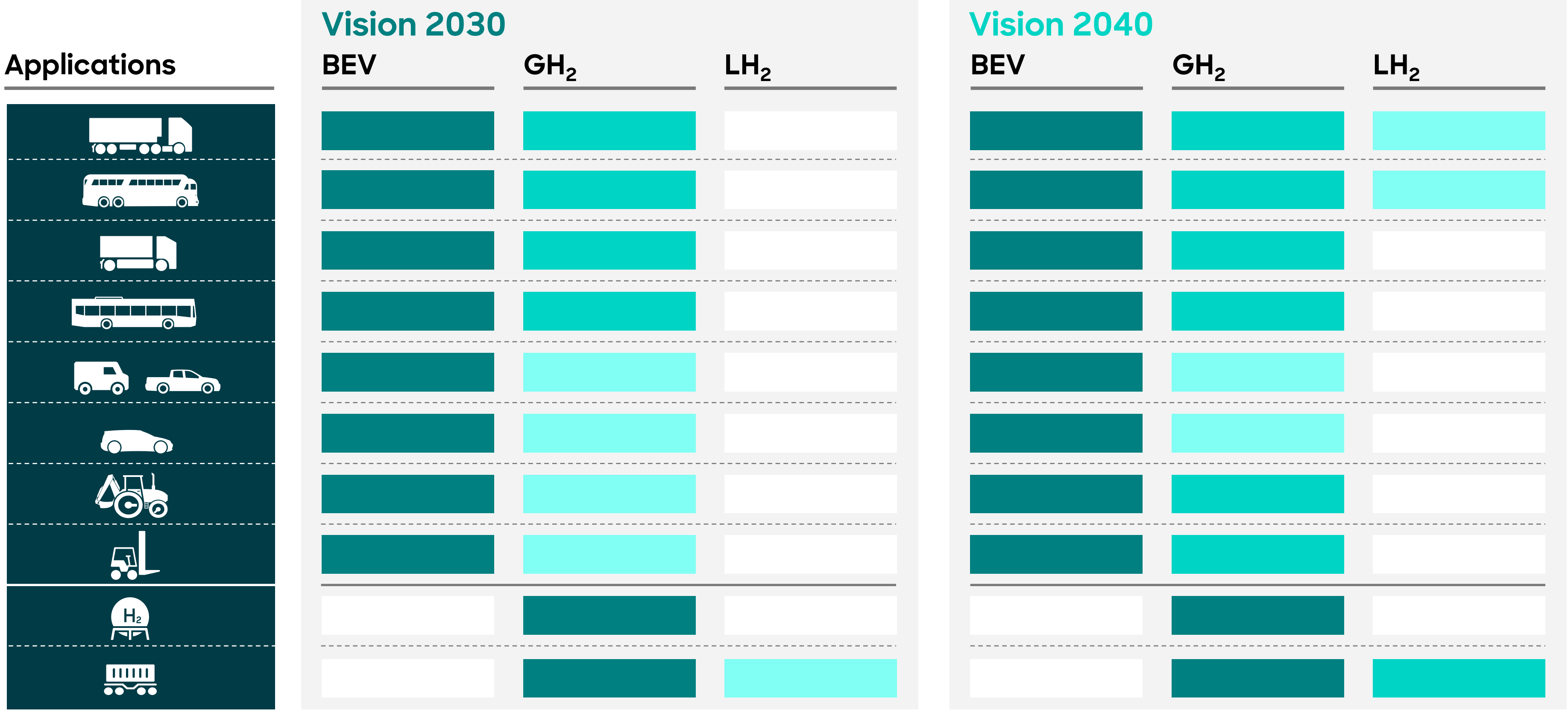
HRS
Industry

Source: Roland Berger

1 Carbon fiber required volumes for H_2 vessels market

BEV & Gaseous H_2 are expected to be the main Zero-Emission technologies in the next decade; beyond 2030, Liquid H_2 is expected to address very limited applications

Overview of Zero-Emission technological outlook by segment



Comments

- **BEV is the most competitive technology in major vehicles segments** driven by recent progress in battery technology
- **Gaseous H_2 with higher ranges and shorter refueling time,** is driving **strong use cases** in segments requiring heavy duty cycles : **long ranges above c. 600 km** and **high utilization rate**
- **Liquid H_2 benefits are hampered** by **an unfavorable economical equation and significant challenges** to overcome in terms of **technology** (boil-off), **safety and regulation**

No application expected 1 | 2 | 3 | 4 | Major expected technology

Mobility – On-road vehicles; Mobility – Buses & Coaches; Mobility – Forklift; Mobility – Off-road vehicles (including Rail)

Infra. – Stationary storage for H_2 production sites; Infra. – H_2 transportation storage

Source: Expert interviews, Roland Berger

The scope of Roland Berger global H_2 storage market study focuses on carbon fiber type III / IV tanks that are expected to become the main technologies by 2030

General overview of H_2 tanks solutions & scope of RB market study

Type	Type I	Type II	Type III	Type IV
Illustration				
Inner liner material	**Metal**: steel or aluminum	**Metal**: steel or aluminum	**Metal**: steel or aluminum	**Plastic**: polyethylene or polyamide
Overwrap material	n/a	**Composite**: glass fiber or carbon fiber, hoop direction overwrap	**Composite**: glass fiber or carbon fiber, full direction overwrap	**Composite**: glass fiber or carbon fiber, full direction overwrap
Pressure level [bar]	~350 bar	Up to 1,000 bar	350 to 700 bar	350 to 700 bar
Tank price[2] [EUR/kg; 2023]	100-150 EUR/kg	250-350 EUR/kg	350- 550 EUR/kg depending on pressure	400-500 EUR/kg depending on pressure
Target applications	1)			
Existing homologation area	Worldwide	Worldwide	Worldwide	Only from Q1 2024
Pros & Cons – Weight	High weight	High weight	Medium weight	**Low weight**
Pros & Cons – Space requirement	Large space requirement	**Little space requirement**	**Little space requirement**	**Little space requirement**
Pros & Cons – Cycles resistance	Low resistance to intensive stress cycles	Medium resistance to intensive stress cycles	Medium resistance to intensive stress cycles	**High resistance to intensive stress cycles**
Pros & Cons – Maintenance	**Low level of maintenance**	**Low level of maintenance**	**Low level of maintenance**	Low level of maintenance

Expected main technology by 2030 (scope of RB market study) High Medium Low

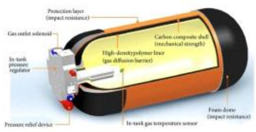
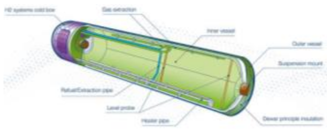
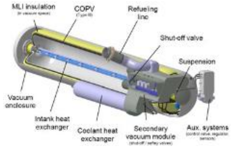
Mobility – On-road vehicles Mobility – Off-road vehicles Infra. – Stationary storage for H_2 production sites Infra. – Mobile storage for H_2 transportation

1) Only for specific forklifts applications; 2) Optimal price level for maximum reservoir pressure capacity

Source: Expert interviews, Roland Berger

To store H_2 in mobility, Gaseous H_2 solutions are the main systems already in operation while Liquid H_2 & Cryo-compressed H_2 are still under development

H_2 storage system technologies – Overview

	Gaseous – GH_2			Liquid & affiliated – LH_2	
	GH_2 – Type III	**GH_2 – Type IV**	**GH_2 – Type V**	**sLH_2[1)]**	**$Cc\text{-}H_2$[2)]**
Description	 CF vessel – Aluminum liner	 CF vessel – Polymer liner	 CF vessel - No liner	 Steel inner & outer vessel with isolated inner vessel	 CF inner & steel outer vessel with isolated inner vessel
Use of CF:	✓	✓	✓	✗	✓
Comments	**Temporary solution** (esp. in China) before switch towards type IV given better performances, easier manufacturing process and comparable costs of type IV	**Main solution expected until 2035**: • Mature product • Lower energy cost (c. 25% less vs LH_2) • RfQs: Main OEMs requiring Type IV vessels • Infrastructure readiness: c. 900 HRS in operation as of 2023 in the world	**Limited applications forecasted** for H_2 given: • Permeability issues of CF due to no use of liner **No significant gains** in weight and space constraints compared to type IV to justify higher costs	**Benefits:** • Longer range (> 1,000 km) • Expected lower CAPEX (c. -35% vs GH_2) **Issues still to be fixed**: • Maturity: Safety issues, refueling management • Infrastructure readiness: No infrastructure available • Relevant in particular use cases esp. long distance	**Benefits:** • Longer range (> 900 km) • No boil-off issues **Issues still to be fixed**: • Maturity: No prototypes available • Infrastructure readiness: No infrastructure available • Relevant in particular use cases esp. long distance

No commercial applications expected before 2030

1) Subcooled Liquid H_2; 2) Cryo-compressed H_2

Source: Research, Expert interviews, Roland Berger

We defined following segmentation to analyze the Infra. & Mobility markets – Retrofit is included in the Mobility sub-segments

Hydrogen market segmentation – Segmentation synthesis

Type	Category	Sub-category	Sub-segment	Tank pressure		Comments
1 Mobility	On-Road[2]	Goods transportation & PC	HD (> 16 T)[3]	350 bar	**700 bar**	Long range vehicles requiring large storage capacity
			MD (6 T < X < 16 T)[3]	**350 bar**	**700 bar**	Depending on the usage/ type both H_2 tanks to be used
			LCV including Pick-ups (<6 T)	**350 bar**	**700 bar**	Depending on the usage/ type both H_2 tanks to be used
			PC	350 bar	**700 bar**	Standards set by Toyota + Compacity constraints
		Buses	Urban	**350 bar**	700 bar	Limited distance travelled per day with refueling access
			Coaches	350 bar	**700 bar**	Long range vehicles requiring large storage capacity
	Off-Road[2]	Construction	Excavators (>110kW)	**350 bar**	700 bar	Heavy duty vehicles requiring fast refueling
		Industrial	Forklifts	**350 bar**	700 bar	Vehicles requiring fast refueling and counterweight (type I)
		Agricultural	Tractors (>110kW)	**350 bar**	700 bar	Heavy duty vehicles requiring large range and fast refueling
	Railway	Multiple units, Passenger Locomotives, Shunters		**350 bar**	**700 bar**	Potential fit to replace current Gasoline trains
	Maritime			350 bar	700 bar	Very small market by 2030 – due to limited technological fit
	Aerospace			350 bar	700 bar	Very small market by 2030 – due to limited technological fit
2 Infra-structure	Upstream		Stationary storage for H_2 prod. sites	**350 bar**	**700 bar**	HRS with production on-site requiring stationary storage
	Midstream		Mobile storage for H_2 transportation	**350 bar**	**700 bar**	Cost efficiency requiring high-pressure storage
			Buffer storage along midstream	350 bar	700 bar	Limited market for type III/IV, less competitive and no benefit
			Tank as part of cascade stor. inside HRS	350 bar	700 bar	Very limited market for type III/IV
	Downstream		Storage linked to industrial end-uses	350 bar	700 bar	Included in stationary /mobile storage – no other application
			Storage linked to mobility applications	350 bar	700 bar	*See mobility section*
			Storage linked to H_2 energy uses	350 bar	700 bar	Included in stationary /mobile storage – no other application

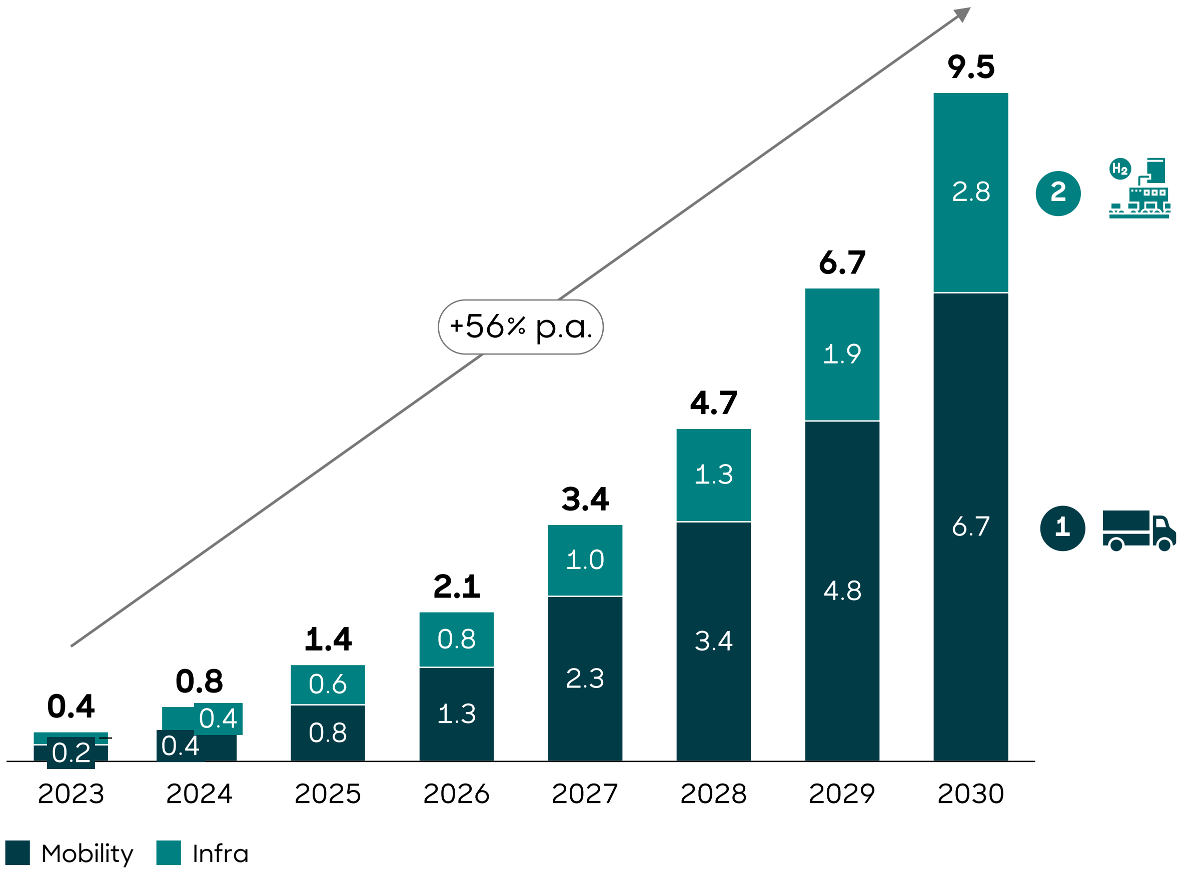
1) Including back-up applications 2) Including retrofit market; 3) Deep dive in HDT and MDT use cases (Long-haul, last mile delivery, waste collection …)

Source: Expert interviews, Roland Berger

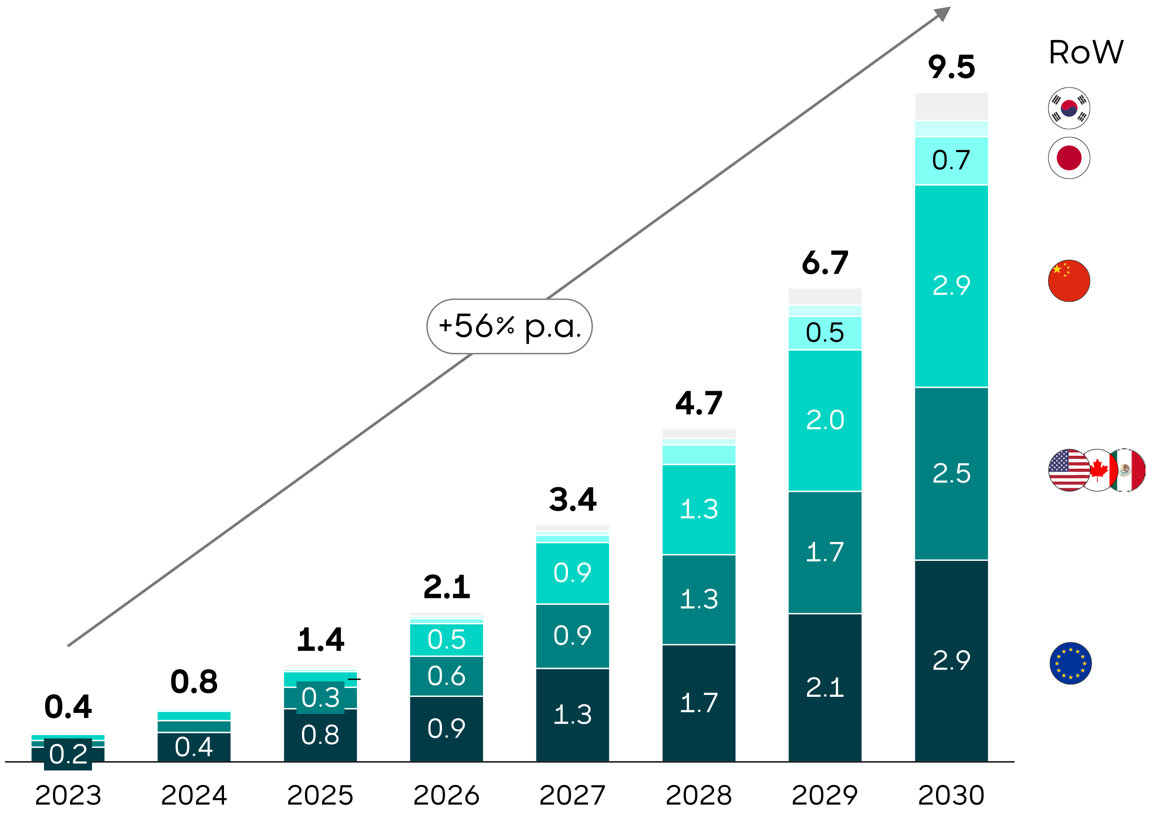
Roland Berger expects the total market for H_2 storage solutions for Mobility and Infrastructure application to reach almost EUR 10 bn by 2030

H_2 storage market size synthesis for Mobility and Infrastructure applications [2023-2030]

Market value per segment [EUR bn]



Market value per region [EUR bn]



Source: Expert interviews, Roland Berger

1. Zoom on mobility market

H_2 vessels addressable market in mobility includes all on-road vehicles, selected heavy-duty off-road applications and Forklifts, and Railway

Mobility: Addressable market segments & applications for H2 vessels

On-road

Heavy Duty Trucks
>16 t

Medium Duty Trucks
6-16 t

Light Commercial Vehicles
<6 t

Pick-ups
<6 t

Passenger Cars
<6 t

Urban buses
>8 passengers

Coaches
>8 passengers

Off-road

Construction
- Excavators (>110kW)
- Wheel loaders/ dozers (>110kW)
- Dump trucks (>560kW)

Industrial
- Forklifts, incl. RT Forklifts (all)
- Self-propelled cranes (>110kW)

Agriculture
- Tractors (>110kW)

Railway (some potential before 2030)

Maritime (potential after 2030)

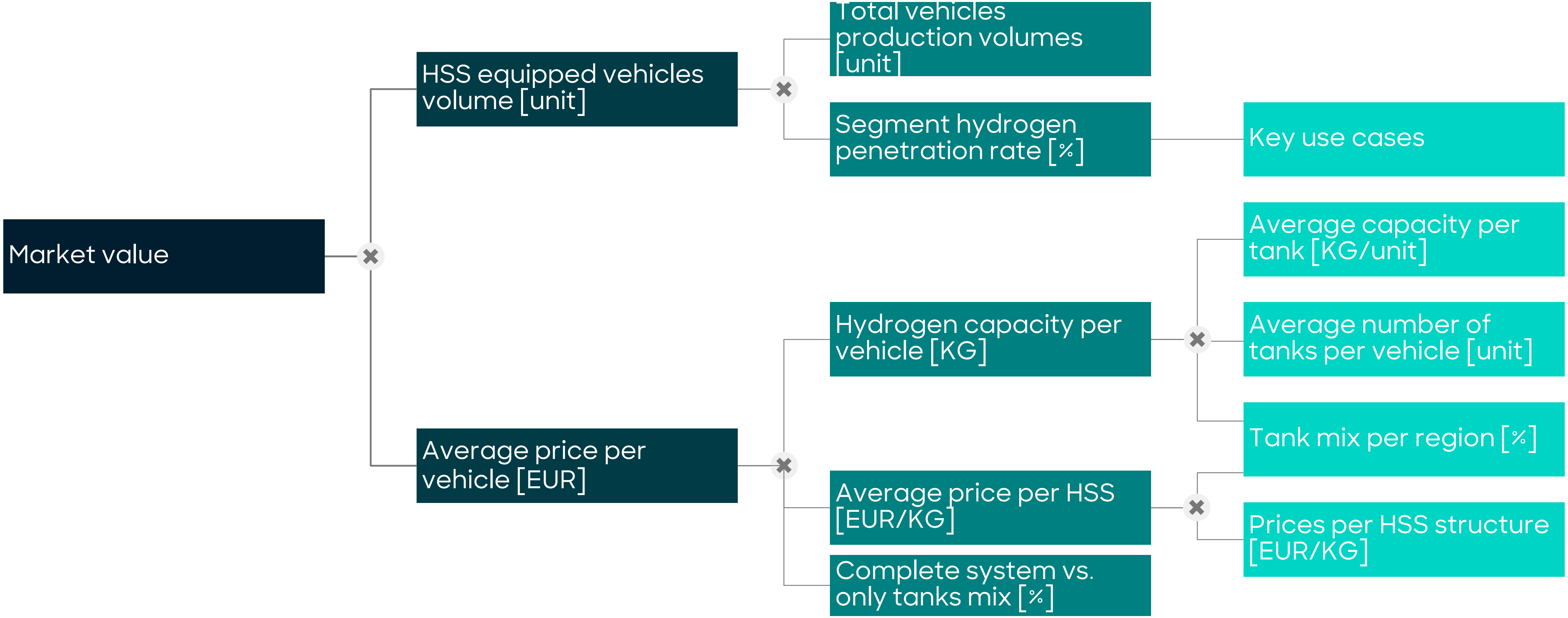
Aerospace (potential after 2030)

X: In scope

Source: Expert interviews, Roland Berger

Our market model is built based on bottom-up use cases and confronted with experts' recent views of the market

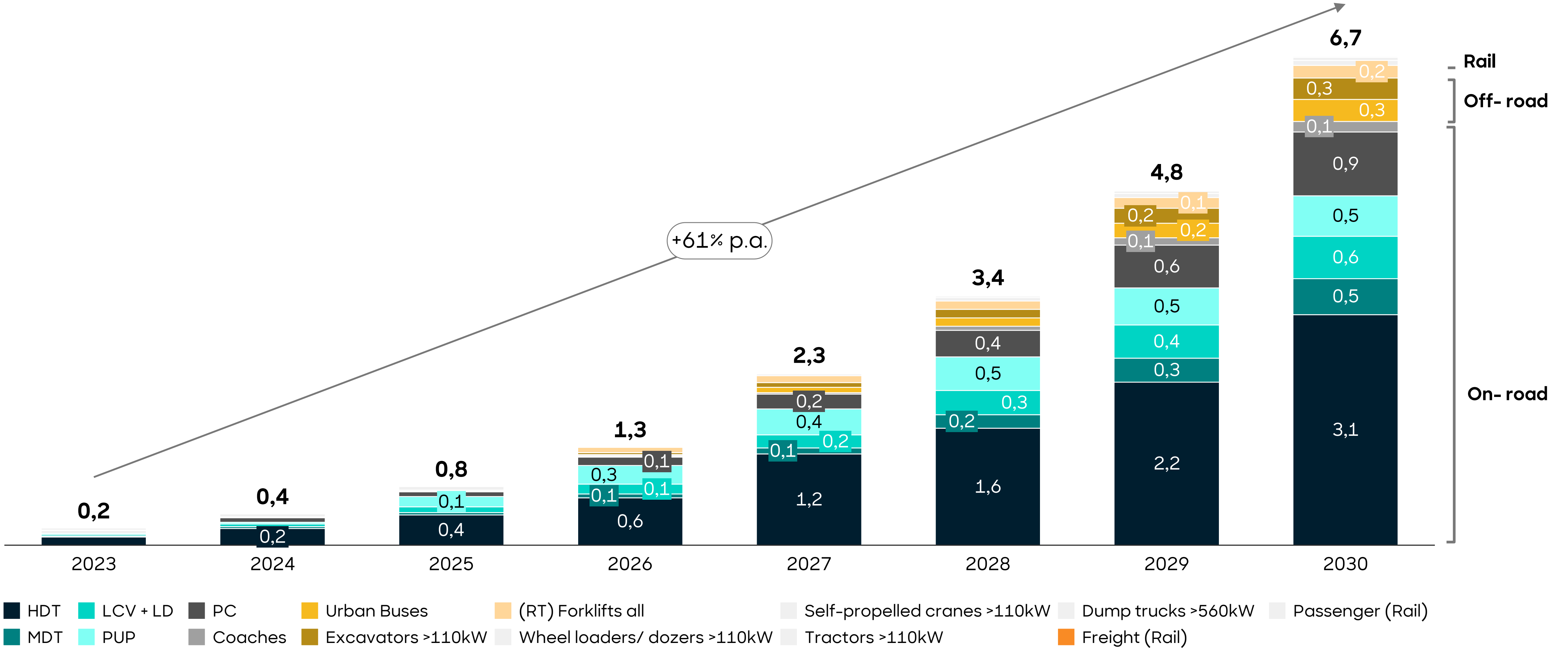
Market model



Source: Expert interviews, Roland Berger

Roland Berger expects the Mobility market to represent almost EUR 7bn by 2030

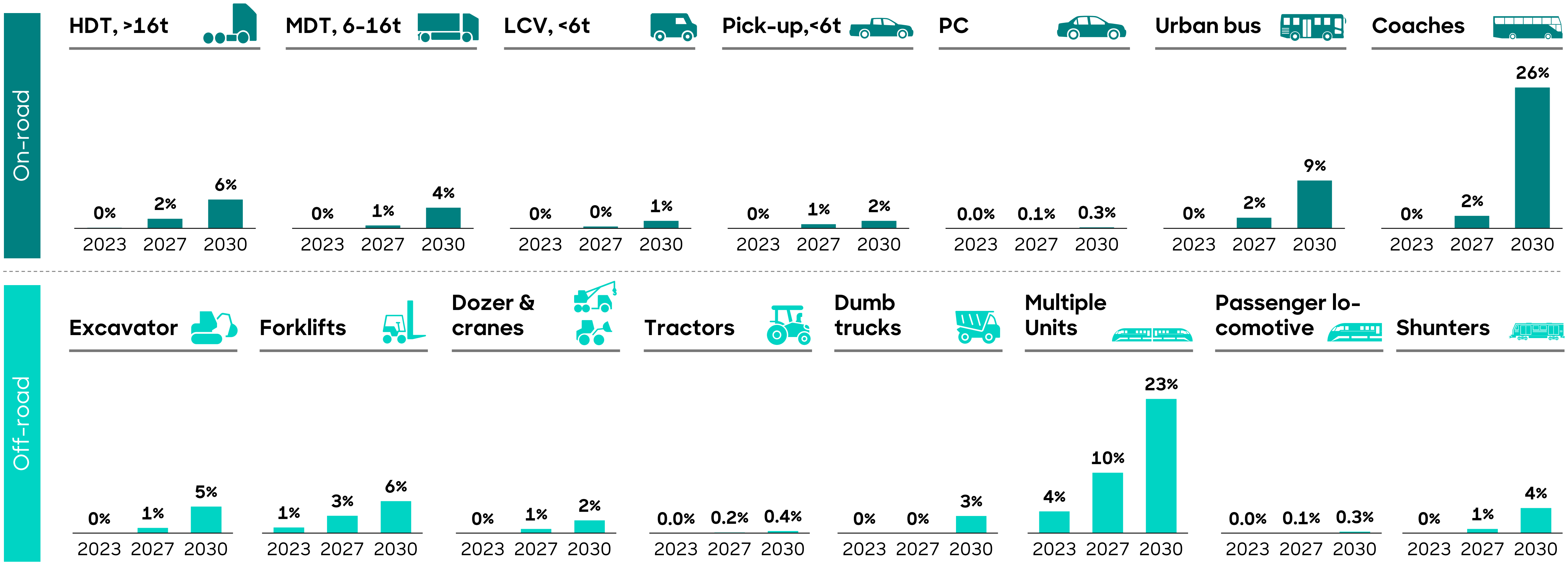
H_2 storage market for mobility – Market value per sub-segment [EUR bn]



Source: Expert interviews, Roland Berger

H_2 is expected to have higher penetration in buses, HDT, forklifts and multiple units due to its competitiveness compared to other zero emissions technology

H_2 penetration[1)] in total vehicles production by segment, '23-'30 [%]

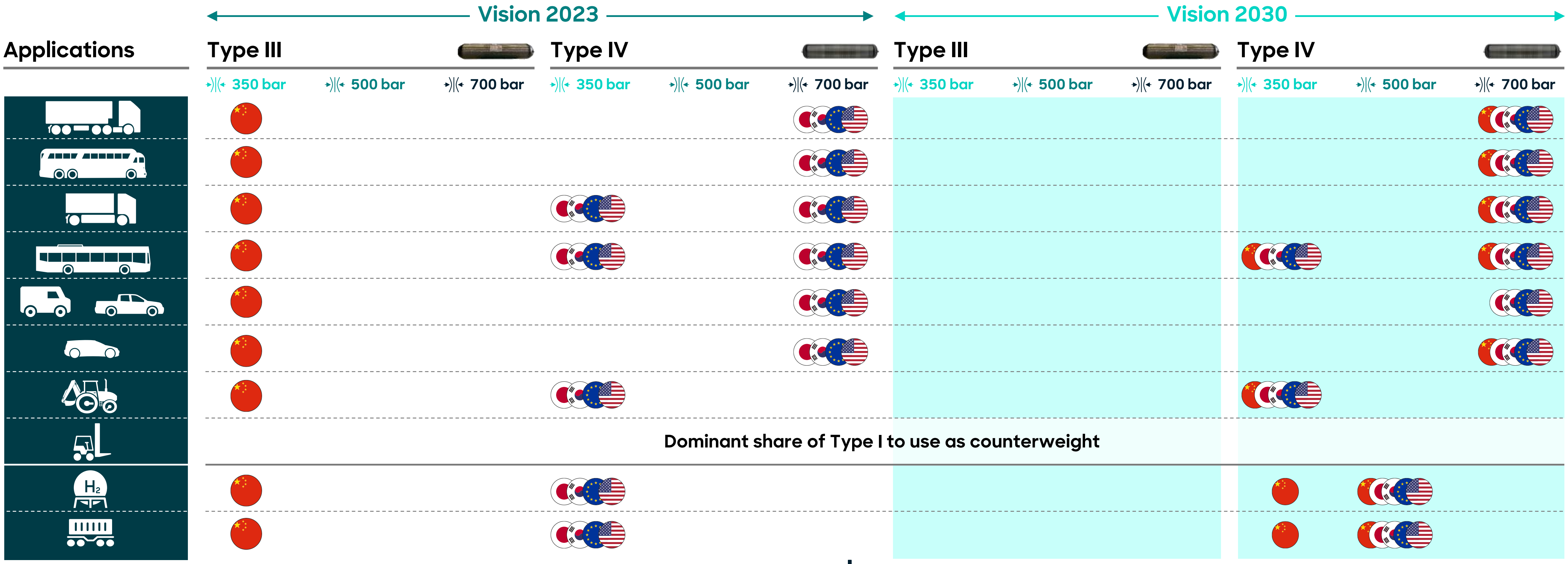


1) Includes FCEV and H_2 ICE technologies

Source: Roland Berger

Type IV vessels are expected to be the dominant technology used by 2030 with mostly 700 bar in mobility and 350/500 bar in infrastructure

Main H_2 vessels types by application and geography



Mobility – On-road vehicles

Mobility – Off-road vehicles (including Rail)

Mobility – Forklift

Infra. – Stationary storage for H_2 production sites

Infra. – H_2 transportation storage

Mobility – Buses & Coaches

Source: Company information, Roland Berger

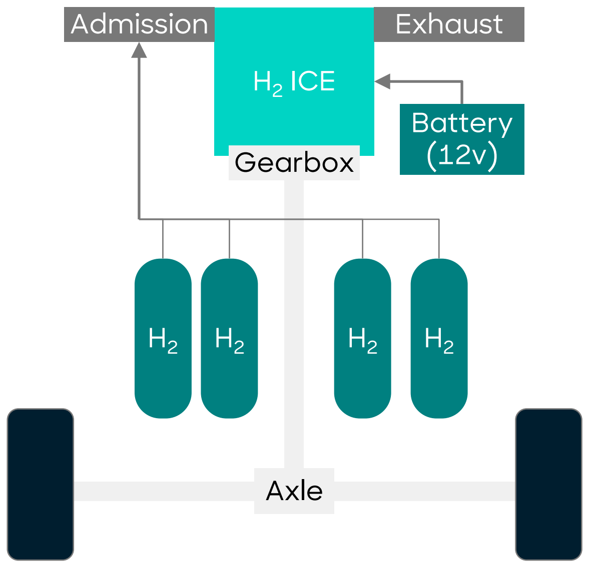
To decarbonize mobility, three main architecture are considered: H_2 Internal Combustion Engines, Fuel Cell Electric Vehicles & Battery Electric Vehicles

H_2 ICE, FCEV, BEV main architecture

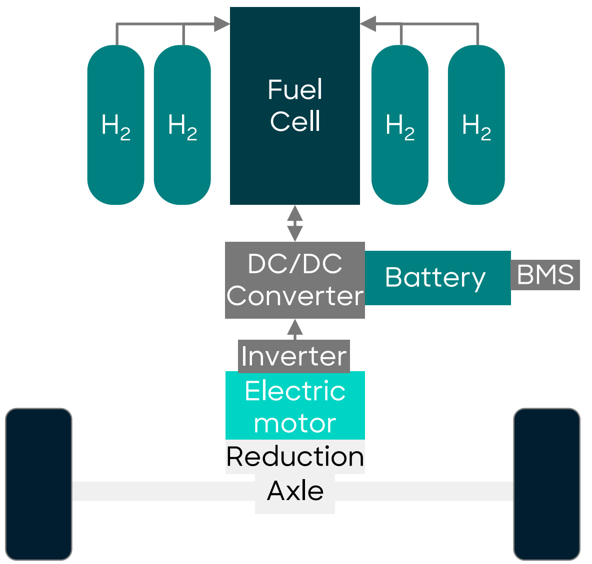
Illustrative

Powertrain architecture

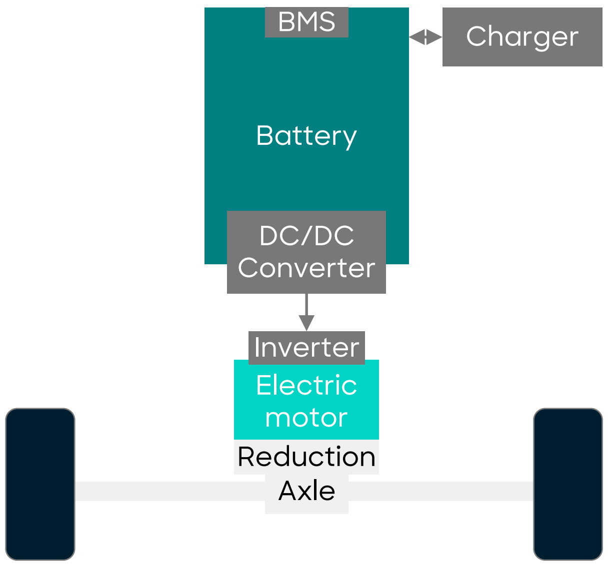
H_2 ICE



FCEV



BEV



Comments

H_2 ICE
- Axles main change depending on OEM choices

FCEV
- Some architectures, especially large vehicles use 2 or more electric motors
- Battery required as a buffer to the electric motor after the Fuel Cell

BEV
- Some architectures, especially large vehicles use 2 or more electric motors, often on each axle
- Development of E-Axles to optimize space

Energy storage | Energy conversion | Power generation | Auxiliaries | Reduction | Wheels

Source: Expert interviews, Roland Berger

FCEV is more competitive than BEV in the HDT segment, in term of costs, energy consumption and range, H_2 ICE lacks efficiency to offer similar performances

H_2 ICE, FCEV, BEV comparison – Vision 2030

Illustrative

		PC – *Sedan/SUV*			LCV & Pick-up			HDT – *39 Tons*		
		H_2 ICE	FCEV	BEV	H_2 ICE	FCEV	BEV	H_2 ICE	FCEV	BEV
Energy stored	**Battery**	-	c. 20 kWh	c. 75 kWh	-	c. 30 kWh	c. 100 kWh	-	c. 100 kWh	c. 700 kWh
	HSS	c. 8 Kg H_2	c. 6 Kg H_2	-	c. 12 Kg H_2	c. 10 Kg H_2	-	c. 70 Kg H_2	c. 70 Kg H_2	-
	Fuel cell	-	c. 40 kW	-	-	c. 50 kW	-	-	c. 350 kW	-
Powertrain cost		c. 10 EUR k	c. 15 EUR k	c. 12 EUR k	c. 15 EUR k	c. 25 EUR k	c. 18 EUR k	c. 60 EUR k	c. 120 EUR k	c. 110 EUR k
Energy consumption		c. 10 EUR / 100 Km	c. 7 EUR / 100 Km	c. 6 EUR / 100 Km	c. 20 EUR / 100 Km	c. 15 EUR / 100 Km	c. 15 EUR / 100 Km	c. 110 EUR / 100 Km	c. 70 EUR / 100 Km	c. 70 EUR / 100 Km
Max range		c. 800 Km	c. 900 Km	c. 450 Km	c. 600 Km	c. 750 Km	c. 400 Km	c. 650 Km	c. 1000 Km	c. 500 Km
Recharge 0-100%	**Normal**	< 5 min	< 5 min	45 – 75 min	< 5 min	< 5 min	1 - 3 hours	10 - 15 min	10 - 15 min	8 – 10 hours
	Fast			5 - 10 min			10- 15 min			75 – 90 min
Uses cases for hydrogen		Usage for long distance benefiting to the FCEV thanks to longer range and faster charging time			Usage for long distance benefiting to the FCEV thanks to longer range and faster charging time			Usage for long distance and higher payload benefiting to the FCEV thanks to longer range, faster charging time & lighter powertrain		

Expected leading technology by segment

Source: Expert interviews, Roland Berger

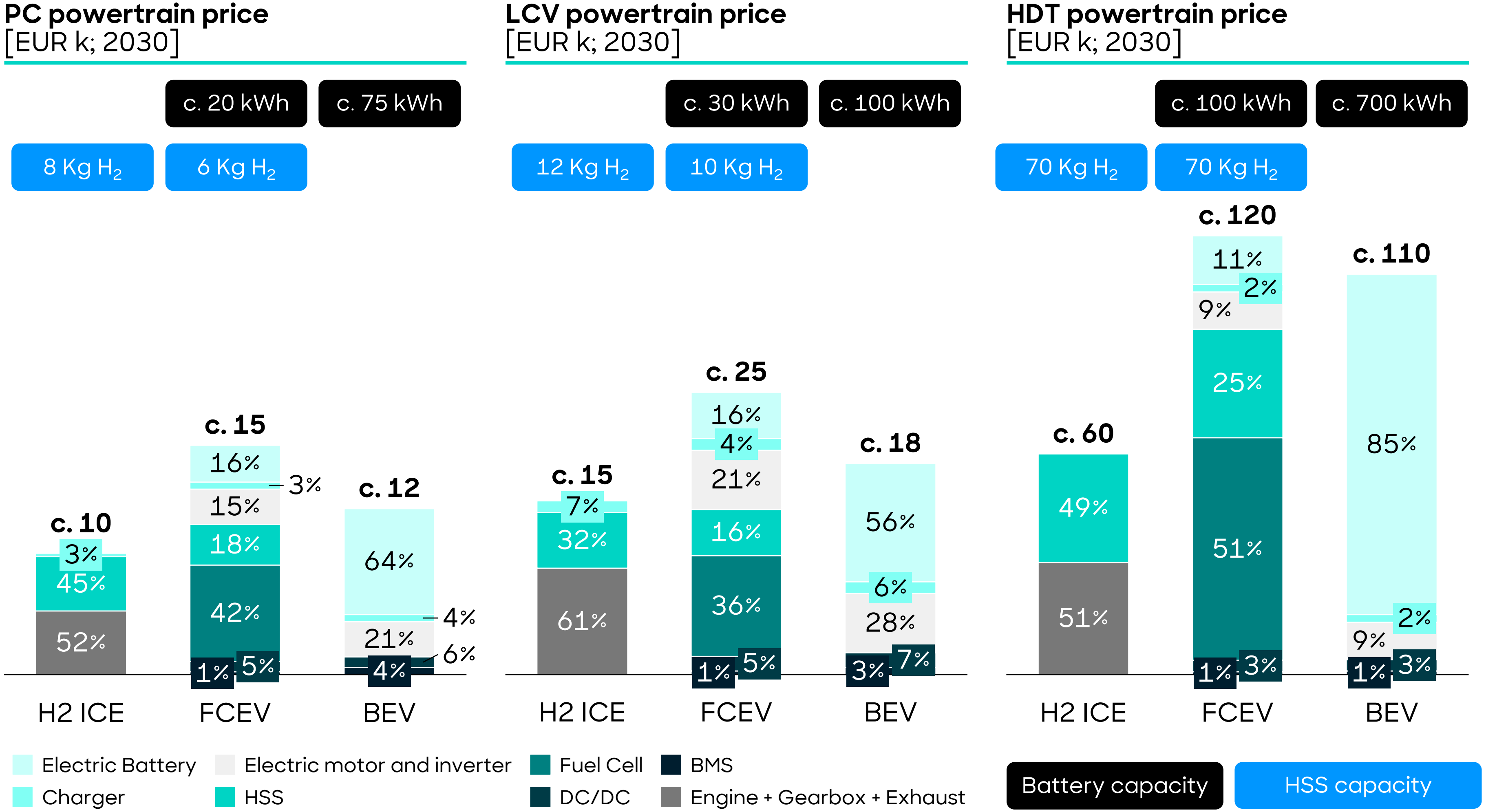
FCEV powertrain are more competitive in HDT compared to BEV powertrain driven mainly by the high capacity of battery required for the BEV HDT

H_2 ICE, FCEV and BEV powertrain price comparison

Illustrative

Key assumptions

- **Average EV system price**
  - **Battery** (EUR/kwh): HDT: 130 PC: 100
  - **Charger** (EUR/vehicle):
    - HDT: 2 000 vs PC: 500
  - **E-motor + inverter + DC / DC** (EUR/vehicle):
    - HDT: 13 000 vs PC: 3 250
- **Average FCEV system price**
  - **HSS** (EUR/kg): HDT: 413; LCV: 390; PC: 480
  - **Fuel cell** (EUR/vehicle): HDT: 60 000; LCV: 8 500; PC: 7 000
  - **DC/DC converter**(EUR/vehicle):
    - HDT: 3 000; LCV: 1 250; PC: 750
  - **BMS** (EUR/vehicle):
    - HDT: 1 000; LCV: 600; PC: 500
- **Average ICE system price**
  - **Engine + Gearbox + Exhaust** (EUR): HDT: 30 000; LCV: 9 000; PC: 4500



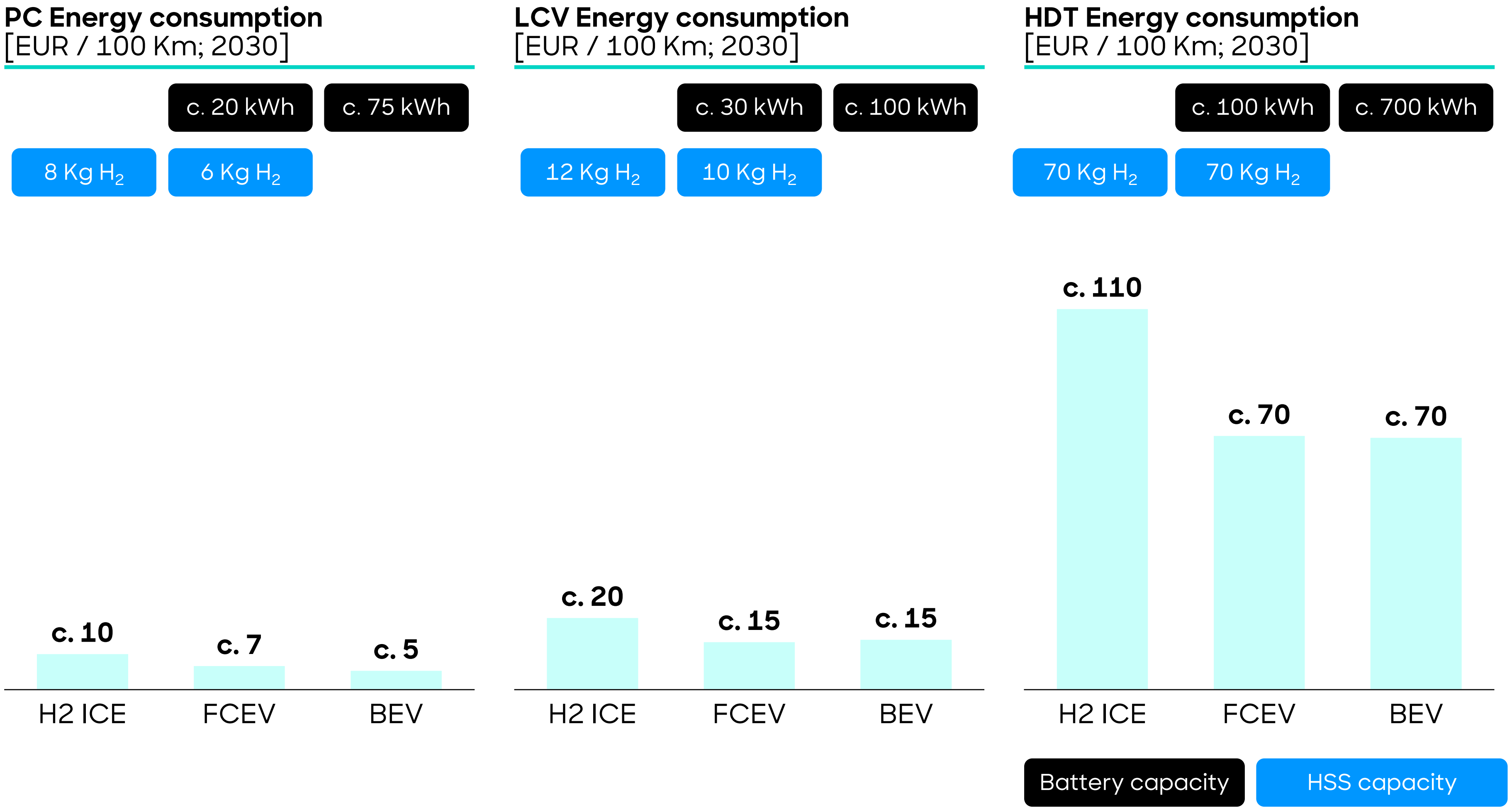
FCEV energy consumption is more competitive in HDT compared to BEV, while BEV energy consumption is lower in LCV and PC segments

H_2 ICE, FCEV and BEV energy consumption comparison

Illustrative

Key assumptions

- **Electricity energy prices**
  - **Electricity price for public recharging** (EUR/kWh): 0.6
  - **Electricity price for private (households) recharging** (EUR/kWh): 0.2
  - **Electricity price for private (enterprise) recharging** (EUR/kWh): 0.4
  - **Recharging mix:**
    - HDT: 50% public & 50% private
    - LCV: 50% public & 50% private
    - PC: 25% public & 75% private
- **Hydrogen & Gas energy prices**
  - **Hydrogen price** (EUR/kg): 10
- **Unitary consumption**
  - **Hydrogen FCEV** (kg/100 km):
    - HDT: 7.2; LCV: 1.4; PC: 0.7
  - **Electric** (kWh/100 km):
    - HDT: 134; LCV: 27; PC: 18
  - **Hydrogen ICE** (kg/100 km):
    - HDT: 13.3; LCV: 2.5; PC: 1.3



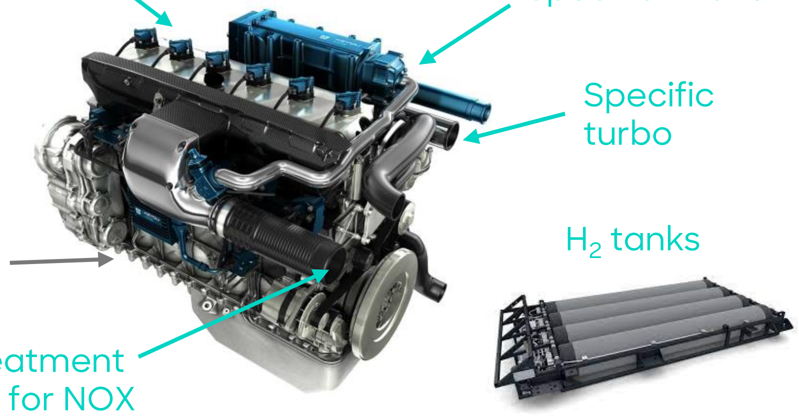
Source: Expert interviews, Roland Berger

H_2 ICE meets zero emission target, but will remain limited as a transition solution for low volumes or for niche applications due too higher TCO than FCEV / BEV

Comparison of key technologies to decarbonize mobility – Zoom on H_2 ICE

H_2 ICE zoom

H_2 ICE architecture: upgraded traditional ICE with H_2 tanks



Key players

Cummins, Volvo, Hyundai, Toyota

Very limited retrofit of existing fleets as it remains very expensive (disposal of the engine, switch of parts) and offers worse efficiency

Advantage

- \+ Common platform with traditional ICE, enabling bargaining power on parts and scale effects
- \+ Quicker time to market
- \+ Zero emission compliance
- \+ Mature technology (already tested in 1990s)
- \+ Lower use of precious metals (only in exhaust aftertreatment)
- \+ Robust solution to work in dirty environment (e.g., construction & agriculture)

Drawbacks

- – Low efficiency (c. 35% vs c. 95% for BEV vs c. 65% for FCEV)
- – Aftertreatment requirements due to NOX emissions
- – Lower range due to the lower efficiency of H_2 ICE compared to BEV, FCEV considering the limited infrastructure
- – Space constraint limiting the use of larger H_2 tanks
- – High consumption cost due to H_2 cost

→ H_2 ICE expected to remain for niche applications especially for small production, in construction and agriculture – Potential upside to be stronger than expected linked to regulation and use case

Specific to H_2 ICE → Neutral impact

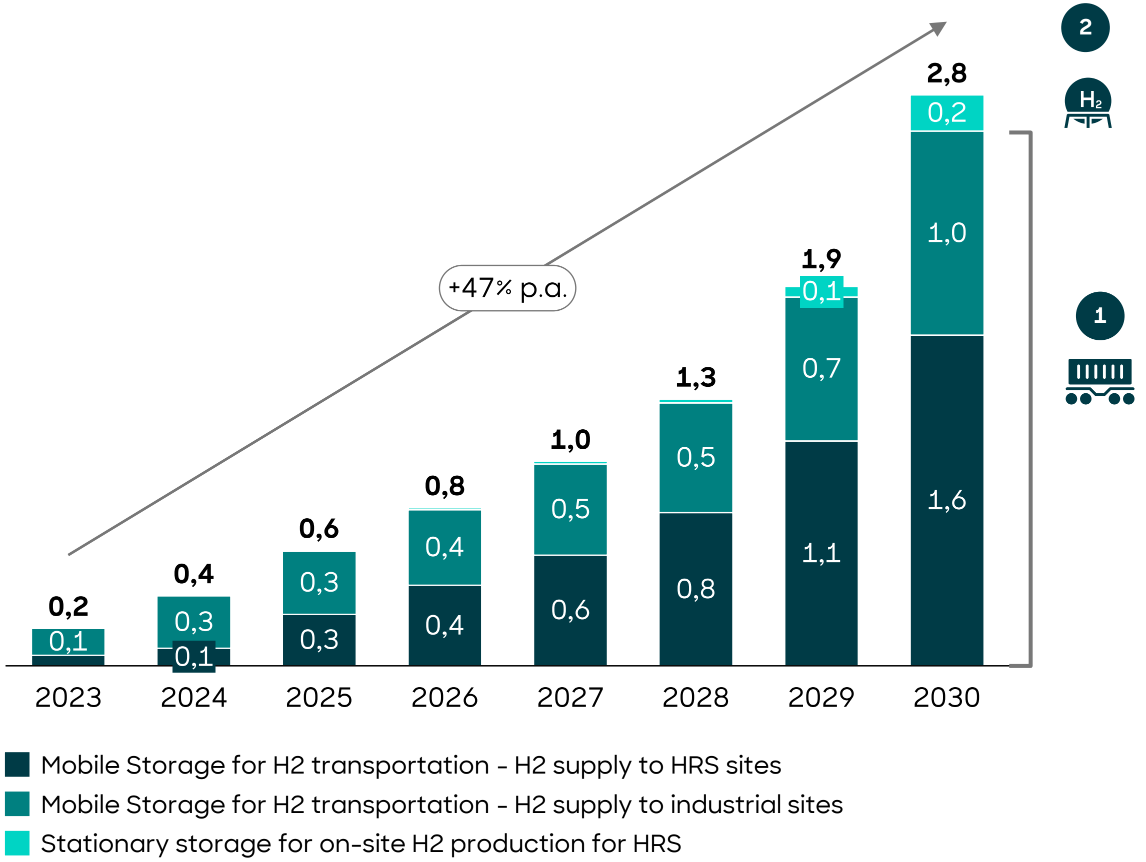
Source: Expert interviews, Roland Berger

2. Zoom on infrastructure market

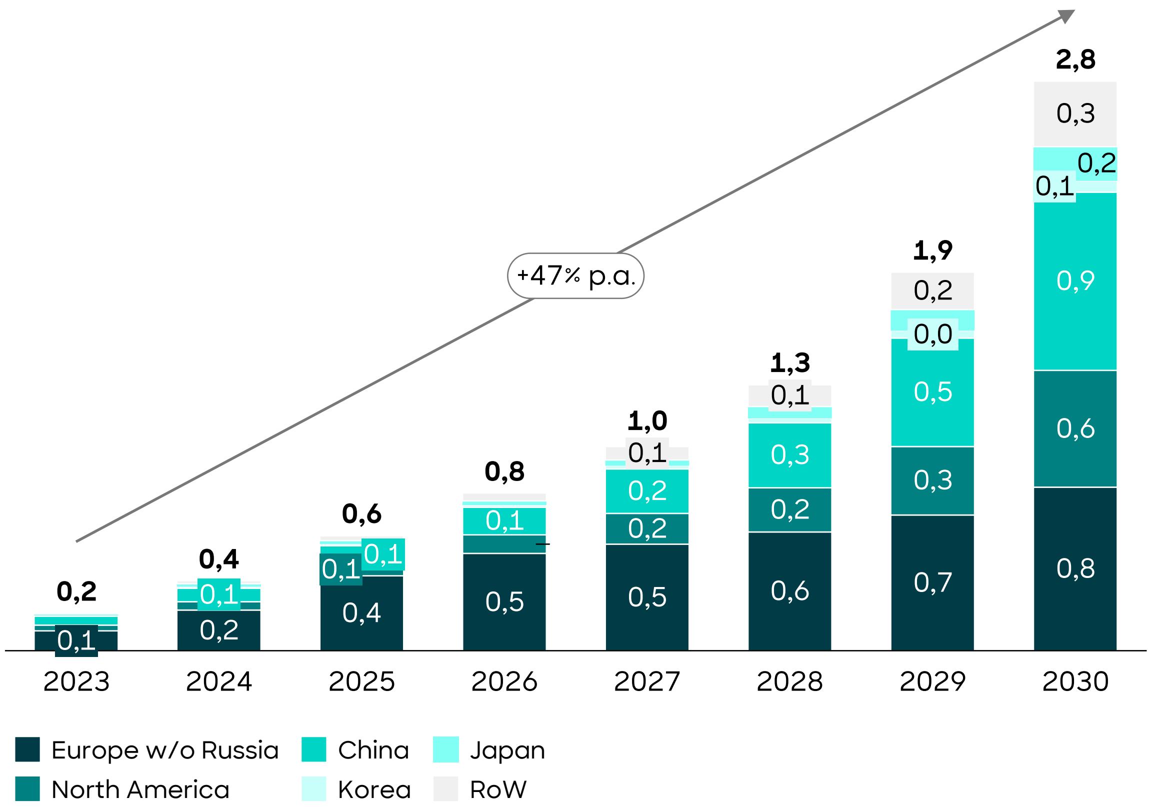
Roland Berger expects the infrastructure market for H_2 mobile storage for transportation and stationary storage within HRS to reach EUR 2.8Bn by 2030

Infrastructure market size by segment & application [2023-2030]

Market value per segment [EUR bn]



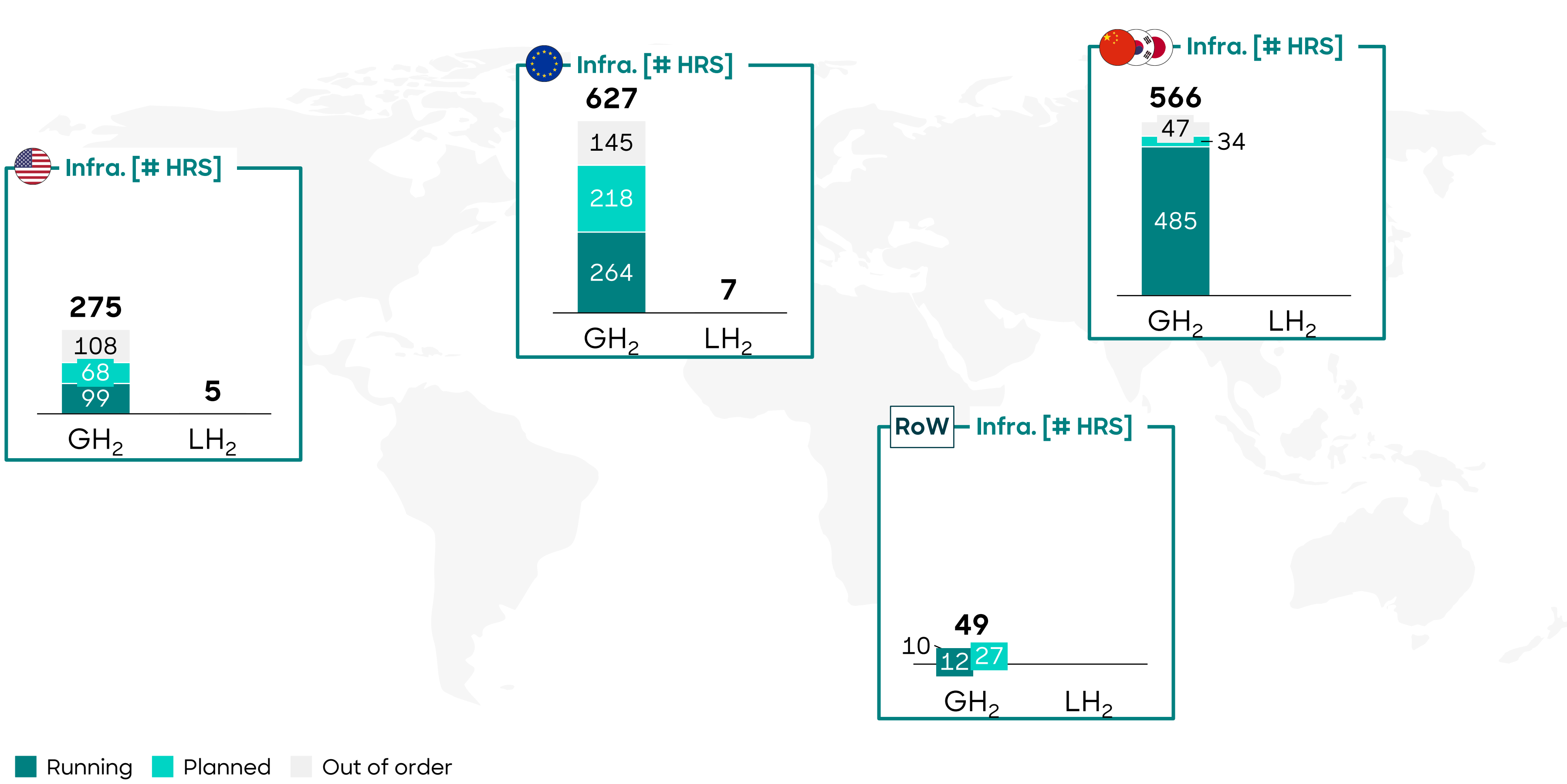
Market value per region [EUR bn]



Source: Expert interviews, Roland Berger

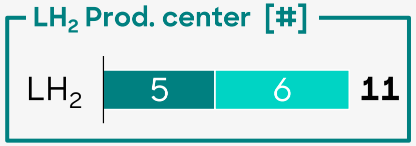
Current H_2 infrastructure for mobility is exclusively made of gaseous HRS – All liquid HRS were experimental and are now out of order with no further plans

Mapping of existing H_2 production and distribution infrastructure



Comments

- **Limited LH_2 HRS scalability:** Liquid H_2 HRS not scalable as of 2023 due to safety issues and no certified refueling protocol
- **Out of operation LH_2 HRS:** Some LH_2 HRS were used are demonstrator and are now no longer in operation



- **Regional/local H_2 production** given homogeneous electricity costs by country less suited for liquid H_2
- **Centralized H_2 production** given heterogenous electricity costs between states

Source: H2Stations.org, Expert interviews, Roland Berger

Along the clean H_2 value chain, two main applications for type III & IV vessels emerge : Stationary storage in production and H_2 transportation

Identification of opportunities for Carbon Fiber Vessels (Type III & IV) along the H_2 value chain

H_2 value chain:	Upstream: Feedstock	Upstream: Production	Midstream: Conversion	Midstream: Transport	Midstream: Storage	Midstream: Separation / Reconversion	Midstream: Distribution, HRS	Downstream: End-use markets	Downstream: End-use markets	Downstream: End-use markets
Need for H_2 storage:	Storage of electricity (batteries)	1 **Stationary storage for green H_2 production sites**	Storage solutions of H_2 derivatives	2 **H_2 transportation storage to supply HRS, Industries, Energy**	**Buffer storage midstream (terminals, seasonal storage, etc.)**	Storage solutions of H_2 derivatives	Storage as part of **cascade solution** inside HRS	Storage solutions linked to **industrial** end-uses	Storage solutions linked to **mobility** applications	Storage solutions linked to H_2 **energy** uses (e.g., re-electrification)
Need for CF vessels: H_2 pressure level	*Not applicable*	++	*Limited applications by 2030*	+++	++	*Limited applications by 2030*	++++	*Included in Transport. storage and/or Stationary storage*	*Please see mobility section*	*Limited applications by 2030*
Need for CF vessels: # of stress cycles		+++		+++	++		++			
Need for CF vessels: Impact of weight		+		+++	+		+			
Need for CF vessels: Impact of price		++		+++	+		+++			

Requirements per segment: + Limited ++ Medium +++ High ▭ In scope

X Infrastructure ▭ Potentially growing need for H_2 storage solutions until 2030 ⬚ Potentially growing need for H_2 storage solutions until 2030 – already covered via other value chain segments

Source: Expert interviews, Roland Berger

Type III & IV vessels are used as stationary storage in refueling stations with H_2 production capabilities and to supply refueling stations and industrial sites

Deep-dive on sub-segments for carbon fiber vessels (type III & IV)

1 Stationary storage for H_2 production sites

Description

Green H_2 production plants (either for on-site direct usage or delivery) **require stationary storage** to balance intermittent production. Most sites are currently equipped with type I & II vessels but are, **in certain applications**, expected to be (partially) replaced by **type III or IV vessels**. Main factors of choice being **space constraints, resistance to repeated stress cycle & CAPEX**

Sub-segment

Stationary storage for H_2 production sites

1.1 Central ELY for local H_2 delivery
- Med. emerg. market
- **Less competitive** vs. transportation storage used as temporary storage or type II (CAPEX)

1.2 Central ELY for long-distance H_2 delivery/"exports"
- Large emerg. market
- **Less suitable:** high storage & low-pressure needs

1.3 On-site ELY at HRS
- Growing market
- **Adapted:** Space constraints, resistance to stress cycles

1.4 On-site ELY at industrial consumers
- Large ermerg. market
- **Less suitable :** Mostly low-pressure storage needs

2 H_2 transportation storage

Description

Storage solutions made of type III & IV vessels, used to **transport H_2 from production sites to consumption sites** (including temporary storage in case of containers/trailers left on-site as temporary storage solutions) in order to supply mainly HRS and industrial consumers without on-site electrolyzer, vs. type I and type II solutions

Sub-segment

H2 transportation storage also used as temporary storage

2.1 H_2 supply to HRS[1] sites
- Growing market
- **Adapted:** Weight & space constraint, high resistance to stress cycles

2.2 H_2 supply to Industrial[1] sites
- Growing market
- **Adapted:** Weight & space constraint, high resistance to stress cycles

2.3 H_2 supply to energy sites
- **Limited H_2 market** by 2030
- **Suitability uncertain:** Some space constraints, back-up applications require little H_2, large on-site consumers should require pipelines

☐ Selected use cases | Market potential by 2030 | Fit for type III/IV by 2030

1) Without on-site ELY

Source: Expert interviews, Roland Berger

3. Competitive landscape

10 OEMs have high H_2 ambitions, Hyundai & Toyota covering all segments, Renault, GM & Stellantis focusing on LCV and remaining players trucks and buses specialists

Overview of OEMs with highest H_2 ambitions

	Main OEMs[1]	Regions	Heavy Duty Truck	Coach	Medium Duty Truck	Bus	Commercial Vehicle	Passenger car	Programs #	Launch Year	Maturity
Historical H_2 players	Hyundai	EU, US, Korea	✓		✓	✓	✓	✓	x 9	2013	◕
Historical H_2 players	Toyota	EU, US, Japan	✓		✓	✓	✓	✓	x 8	2014	◕
LCV & Passenger cars specialist	Renault Group	EU			✓		✓		x 4	2014	◕
LCV & Passenger cars specialist	GM	US					✓	✓	x 2	2026	◑
LCV & Passenger cars specialist	Stellantis	EU, US			✓		✓	✓	x 9	2021	◑
Truck & Bus specialists	Nikola	US	✓						x 2	2023	◑
Truck & Bus specialists	Volvo	EU, US	✓		✓				x 3	2025	◔
Truck & Bus specialists	Tevva	EU, US	✓		✓				x 4	2026	◔
Truck & Bus specialists	Daimler Truck	EU, US, China	✓		✓		✓		x 4	2026	◑
Truck & Bus specialists	Iveco	EU	✓		✓				x 2	2023	◑

✓ Program announced; Heavy Duty Truck; Medium Duty Truck; Passenger car; Commercial Vehicle; Bus; Coach

1) Selection of the OEMs with the highest volume over the period 23-30 excluding Chinese OEMs; 2) Vehicles volumes among announced programs over 23-30 period challenged by RB

Source: IHS Market, Roland Berger

Forvia, PO and Hexagon have wider coverage of market segments while remaining players are focusing on specific segments

Vessel manufacturer positioning

	FORVIA	OP Plastic Omnium	HEXAGON PURUS	MAGNA	NPROXX H_2 Storage Solutions	VOITH	WORTHINGTON INDUSTRIES	Faber CYLINDERS	QUANTUM FUEL SYSTEMS	LUXFER GAS CYLINDERS
Heavy Duty Truck	+++	++	++	++		+++	+			
Coach	+		+	+		++		+		
Medium Duty Truck	+		++	++	+	++	+	+	+	+
Bus	++	++						++		++
Light Commercial vehicle & Pick-up	+++	+++		+						
Passenger car	+++	++	+							
Mobility – Off Road	+	+	+++	+	+		+			+
Infrastructure	++	+	+++		+++	+	+	++		++

+ Low ++ Medium +++ High

Heavy Duty Truck, Coach, Medium Duty Truck, Bus, Light Commercial vehicle & Pick-up, Passenger car, Mobility – Off Road, Infrastructure

Source: Roland Berger

Roland Berger