


10 (IN)CONVENIENT TRUTHS ABOUT DECARBONIZING TRANSPORT


Daimler Truck AG



THREE KEY MESSAGES

The decisive role of the German Government to successfully decarbonize trucking

#1 DECARBONIZING TRANSPORT NEEDS GREEN ELECTRICITY AND GREEN H2 AT COMPETITIVE PRICES

- ▶ Trucks will remain the backbone of freight transportation – zero-emission vehicle (ZEV) technology is ready
- ▶ Trucks are an investment good – customers only buy ZEVs, if economics are better than with diesel
- ▶ We need higher CO2 tax, slightly increased axle weights and further developed toll system
- ▶ H2-Global must be opened also for the mobility sector
- ▶ Use of H2 internal combustion engine should be handled like fuel cell technology – without putting the energy tax on hydrogen

#2 INFRASTRUCTURE IS THE BOTTLENECK – WE NEED BUILD-UP-PUSH AND DE-BUREAUCRATIZATION

- ▶ Infrastructure needs to be truck-specific – it is faster and cheaper to build two infrastructures (charging & H2)
- ▶ German Government should stick to AFIR commitments – the speed of built-up is by far not sufficient

#3 IN CASE INFRASTRUCTURE KEEPS DELAYING DECARBONIZATION WE NEED A JOINT OFF-RAMP

- ▶ We have very tough sector targets and extreme penalties – not establishing the right boundary conditions (#1 and #2) equals watching the truck industry fail – a phase-in depending on infrastructure is one option
- ▶ The Implementation of Renewable Energy Directive (RED) 2 & 3 need to be developed fraudproof (CO2-credits only for truly CO2-neutral solutions)




#1 COMMERCIAL VEHICLES ARE PART OF THE PROBLEM

Big lever: Commercial vehicles account for 7% of global CO₂ emissions




**EU Transport in figures 2020*

Daimler Truck



2,5 Gt CO₂ emissions globally
7% share of global CO₂ emissions
~700 million t diesel demand



6 Mio. trucks above 3,5t
300 billion km mileage
200 Mt CO₂ emissions
60 Mio. t diesel demand
~750 TWh energy equivalent

#2 COMMERCIAL VEHICLES ARE NOT OPTIONAL

They are the backbone of our economy and society and contribute to prosperity



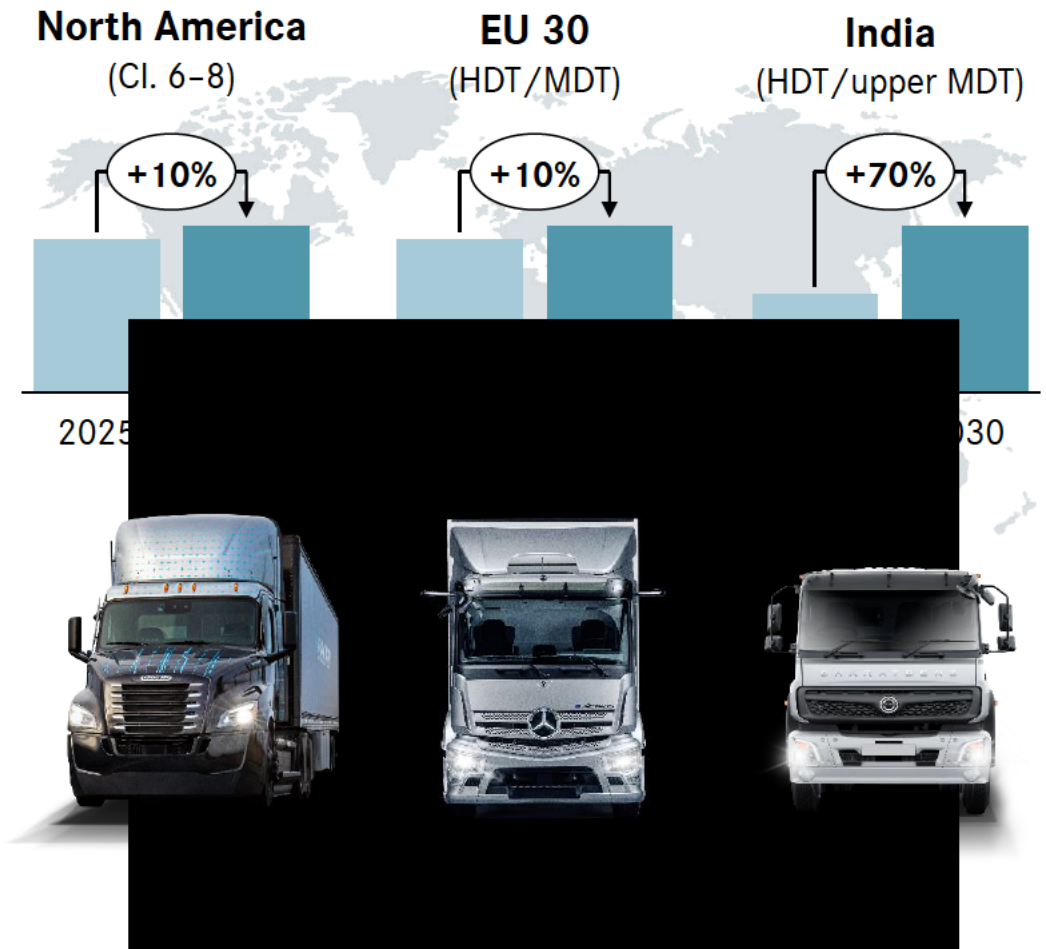
#2 COMMERCIAL VEHICLES ARE NOT OPTIONAL

Trucking remains a growth industry as global economy transitions to lower carbon

- ▶ Global transport volume has grown over the past years and will continue to grow ~2% p.a.
- ▶ Road transportation remains number one for long-haul and last mile distribution
- ▶ Truck industry has high barriers to entry – we benefit from our close customer relationship, our dealer network and broad portfolio

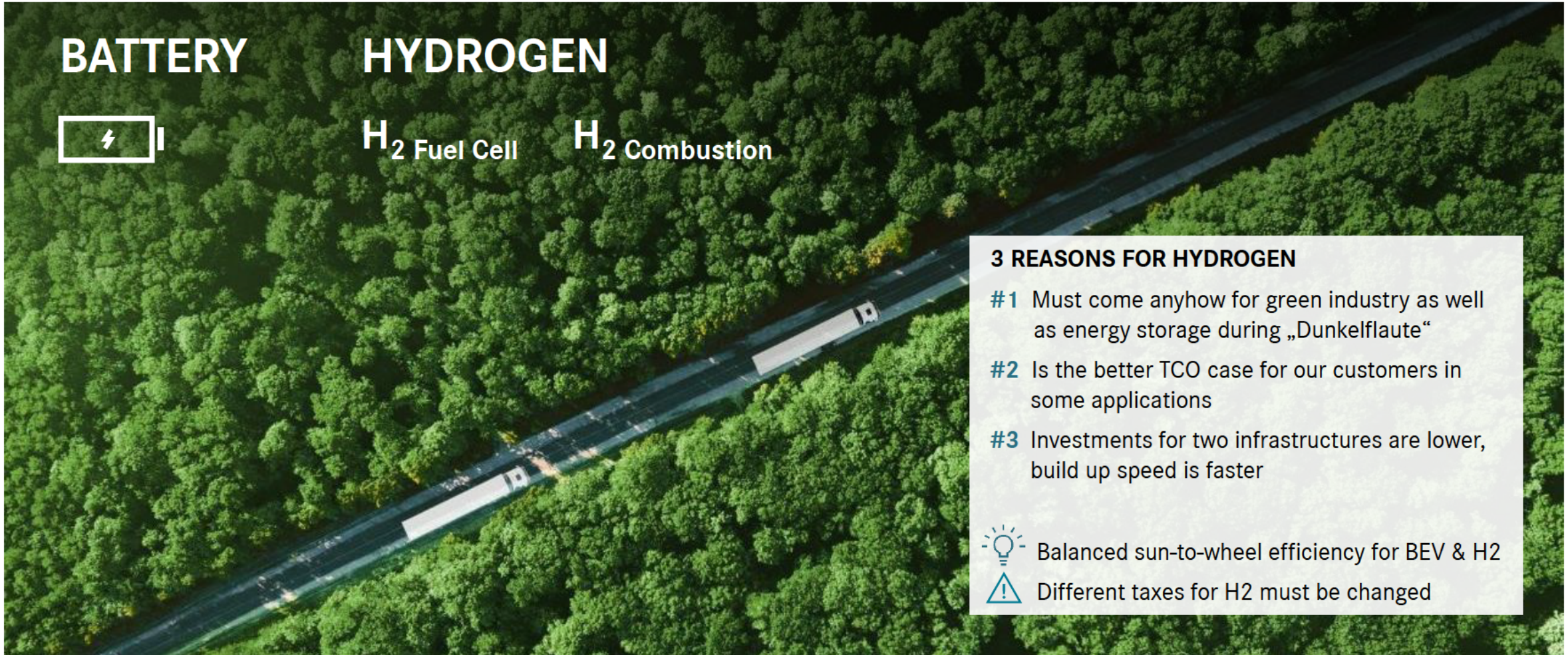
WE ARE WELL POSITIONED AS ONE OF THE WORLD'S LARGEST COMMERCIAL VEHICLE MANUFACTURERS

**CORE TRUCK MARKETS TO STAY ON A HIGH LEVEL,
INDIA WITH SIGNIFICANT GROWTH POTENTIAL**




#3 COMMERCIAL VEHICLES ARE PART OF THE SOLUTION

We are pursuing a dual-track strategy with batteries and hydrogen for decarbonization



BATTERY





HYDROGEN

H_2 Fuel Cell H_2 Combustion

3 REASONS FOR HYDROGEN

- #1** Must come anyhow for green industry as well as energy storage during „Dunkelflaute“
- #2** Is the better TCO case for our customers in some applications
- #3** Investments for two infrastructures are lower, build up speed is faster

 Balanced sun-to-wheel efficiency for BEV & H2

 Different taxes for H2 must be changed

#3 COMMERCIAL VEHICLES ARE PART OF THE SOLUTION

Product transformation in full swing – ZEV offering is not the bottleneck of decarbonization



Years after 2023 indicate planned start of production

#3 COMMERCIAL VEHICLES ARE PART OF THE SOLUTION

Product transformation in full swing – ZEV offering is not the bottleneck of decarbonization

WINNING FORMULA

FACTOR 1
Product Offering



X

FACTOR 2
Cost Parity



X

FACTOR 3
Infrastructure



=

DECARBONIZATION SPEED

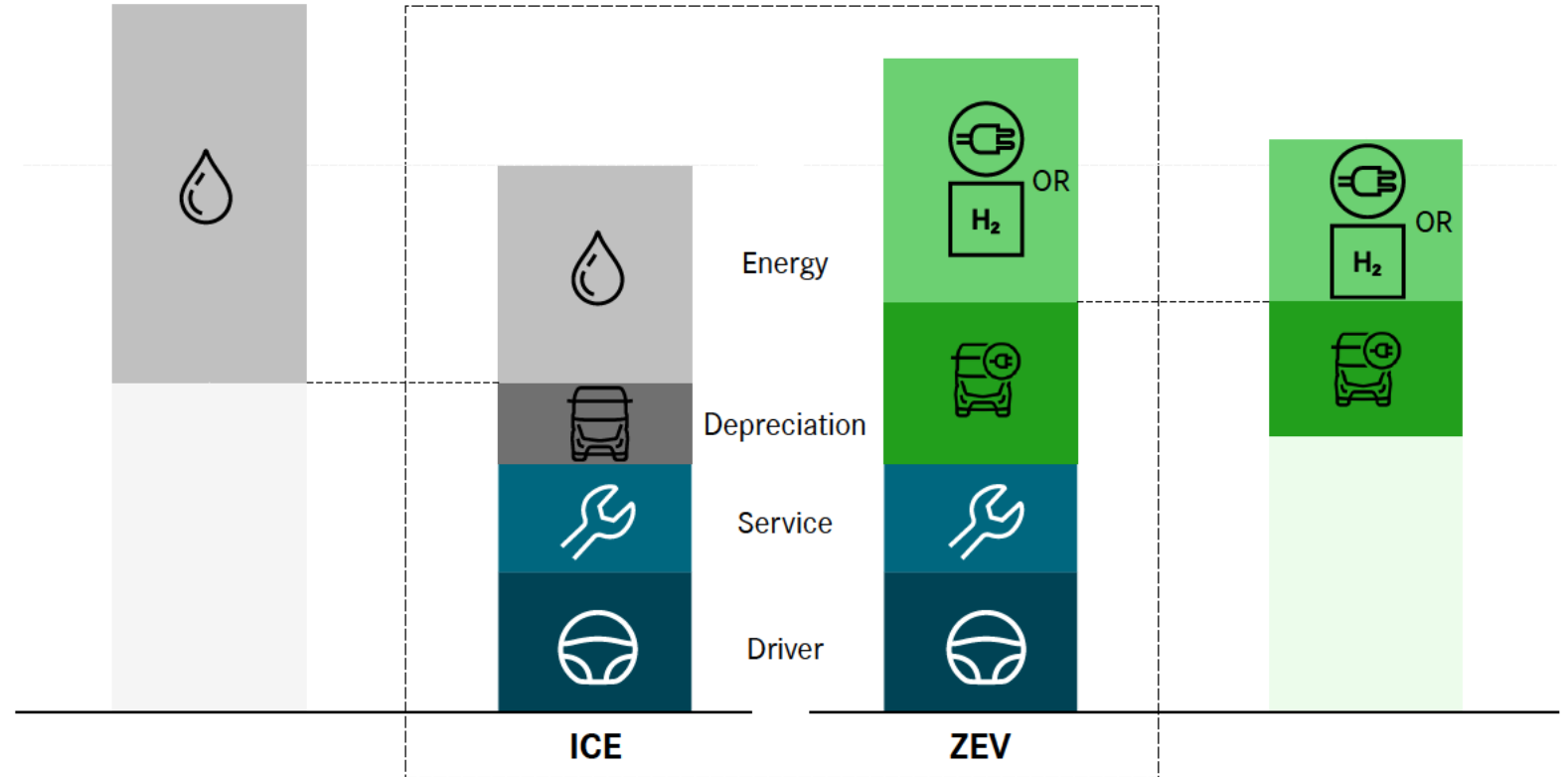


#4 COMMERCIAL VEHICLE BUSINESS IS A COST GAME

Cost parity will change customer demand over night and is influenced by two key levers



strongly depending on
CO₂ price



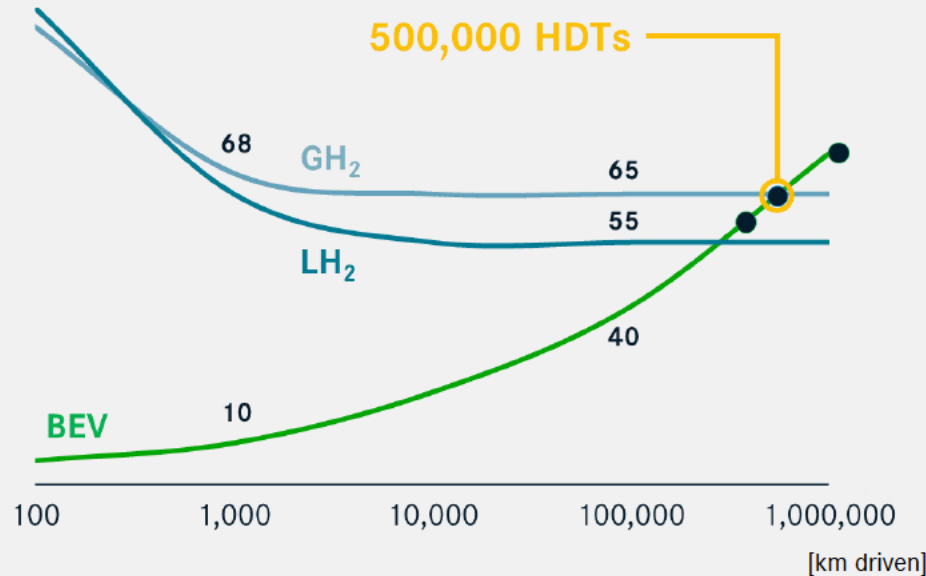
Exemplary illustration for Total Cost of Ownership - ICE vs. ZEV

#5 COMMERCIAL VEHICLE MARKETS ARE NOT ONE SIZE FITS ALL

Adding hydrogen makes decarbonization faster and less capital-intensive

Infrastructure CapEx

in k€ per HDT



External perspective on market

BEV charging infrastructure

- ▶ Low initial cost, mainly installation of additional chargers
- ▶ Required grid upgrades require significant invest and time



Hydrogen refueling stations (HRS)

- ▶ High initial invest and time demand, especially upstream
- ▶ Increasing demand and utilization offer huge scales



#6 EU OEMs FACE A DILEMMA

Infrastructure build up is disconnected from CO2 reduction targets; OEMs pay the price



VERY AMBITIOUS CO2 REDUCTION TARGETS

-15% by 2025

-45% by 2030

EXTREME PENALTIES FOR OEMS WHEN TARGETS ARE MISSED

Missing the target by 15%
in 2030:

*2.1 billion € penalty, to
be paid to EU-COM*



INFRASTRUCTURE IS BOTTLENECK, OEMS WITH MINIMAL INFLUENCE

Today we have



~200

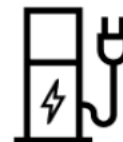
high power
chargers
< 400 kW



~120

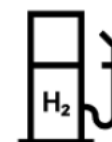
refilling
stations
mostly 350 bar

By 2030 we need



~35,000

high power
chargers
> 400 kW



~2,000

refilling
stations
700 bar/LH2

Per month we need to implement



~400

high power
chargers
> 400 kW



~30

refilling
stations
700 bar/LH2

#6 EU OEMs FACE A DILEMMA

Example Germany: Infrastructure build up is dramatically losing momentum

PUBLIC CHARGING



Goals lowered

- ▶ Started with 2,100 MCS & 7,900 CCS charging points
- ▶ Reduced to 1,750 MCS & 2,450 CCS charging points

Tender postponed to Q3/24

- ▶ Reduced to uncultivated areas



Daimler Truck

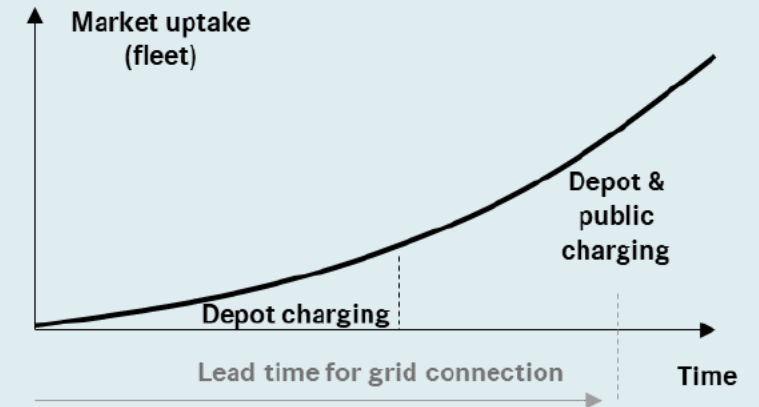
DEPOT & LOGISTICS HUB CHARGING



Funding on hold due to KTF cancellation

- ▶ No planning certainty for logistics companies
- ▶ Costs for depot charging infrastructure depend on network utilisation (can vary from ~100k to ~450k)

WHAT WE NEED



- ▶ Ensure planning certainty for logistics companies
- ▶ More efficiency and transparency in application and authorisation procedures
- ▶ 4,000 MCS & 6,000 CCS by 2030
- ▶ Extend tender to car depots

#7 EU OEMs NEED A FALL-BACK

RED II needs more focus on electricity and hydrogen



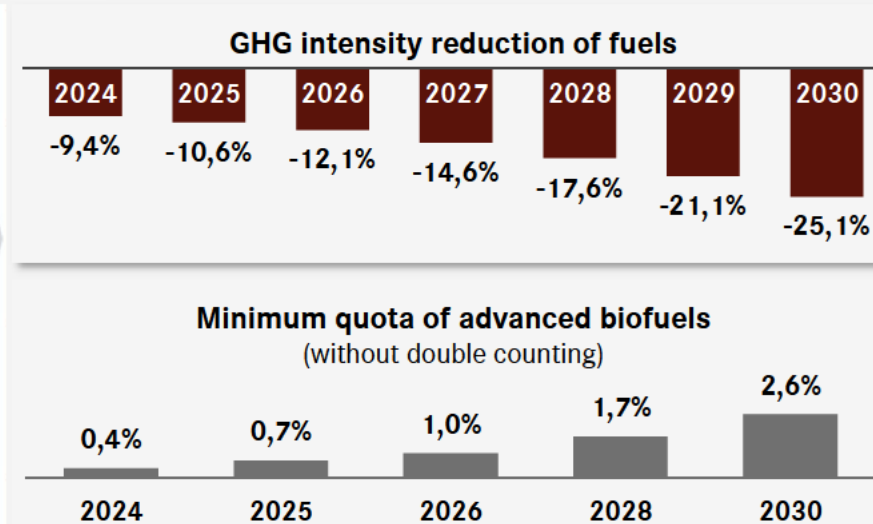
EU LEVEL

Regulations	Renewable Energy Directive (EU) 2018/2001 and amendments (EU) 2023/2413 and Delegated Acts
Obligations on fuel suppliers for implementation of renewable fuels	<p>Implementation of renewable fuels (energetic content) by 2030</p> <p>or</p> <p>GHG intensity reduction of fuels by 2030</p> <p>29% renewable fuels 71% fossil fuels</p> <p>100% fossil fuels only 85.50% incl. renewable fuels</p>
Minimum quota of advanced biofuels / RFNBOs	5.5% of advanced biofuels and RFNBOs with 1% of RFNBOs in 2030
GHG quota trading	Article 25(4): implementation of national trading of fulfilment of obligation by third party

Transposition into national law within 18 months (May 2025)



NATIONAL LAWS, EXAMPLE GERMANY



Multiplier to count on targets

2x Advanced Biofuels

3x Electricity & RFNBO

FRAUD OF CARBON NEUTRAL FUELS (CHINA) ENDANGERS GREENHOUSE QUOTA PRICE:

Biofuels

(Bio-LNG, HVO)

Electricity

(counts with actual CO₂ factor)

Hydrogen

Must be green!



Large quantities of Chinese non-compliant HVOs diluted quota-prices.

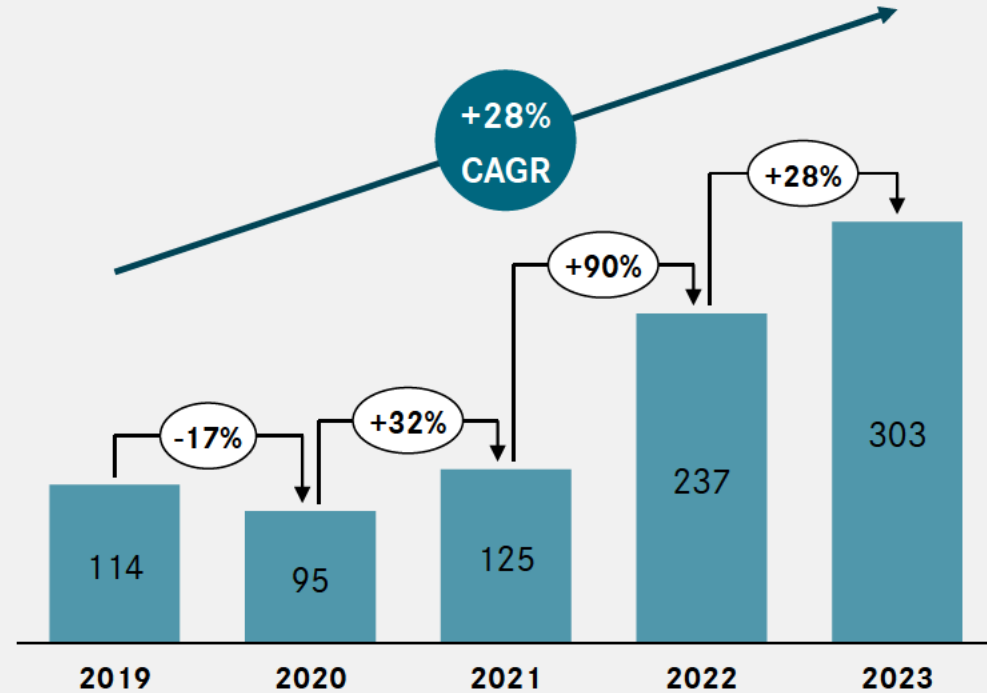
We need a reliable and provable quota-system, focusing on *the* future technologies.

#8 EU OEMs FACE FIERCE COMPETITION

Chinese OEMs with unparalleled resources and subsidies – H2 & BEV sales grow quickly

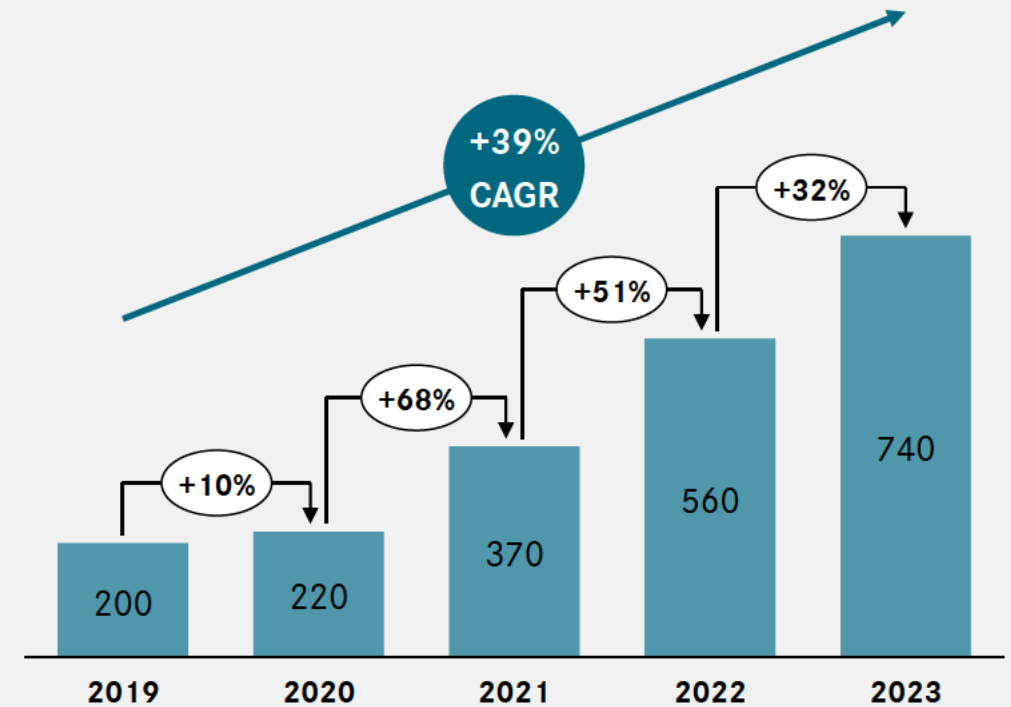
CHINA ZEV DOMESTIC SALES: STRONG GROWTH MOMENTUM

[commercial vehicles, in k units]



CHINA CV EXPORT SALES: HUGE INCREASE, LIKELY TO CONTINUE WITH ZEV

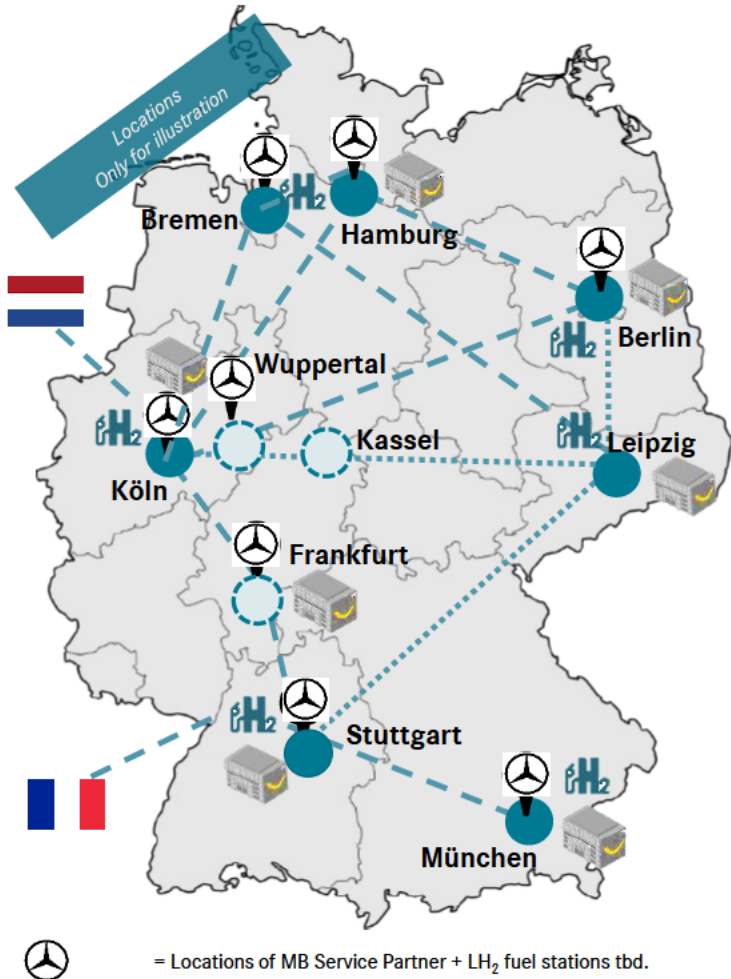
[commercial vehicles, in k units]



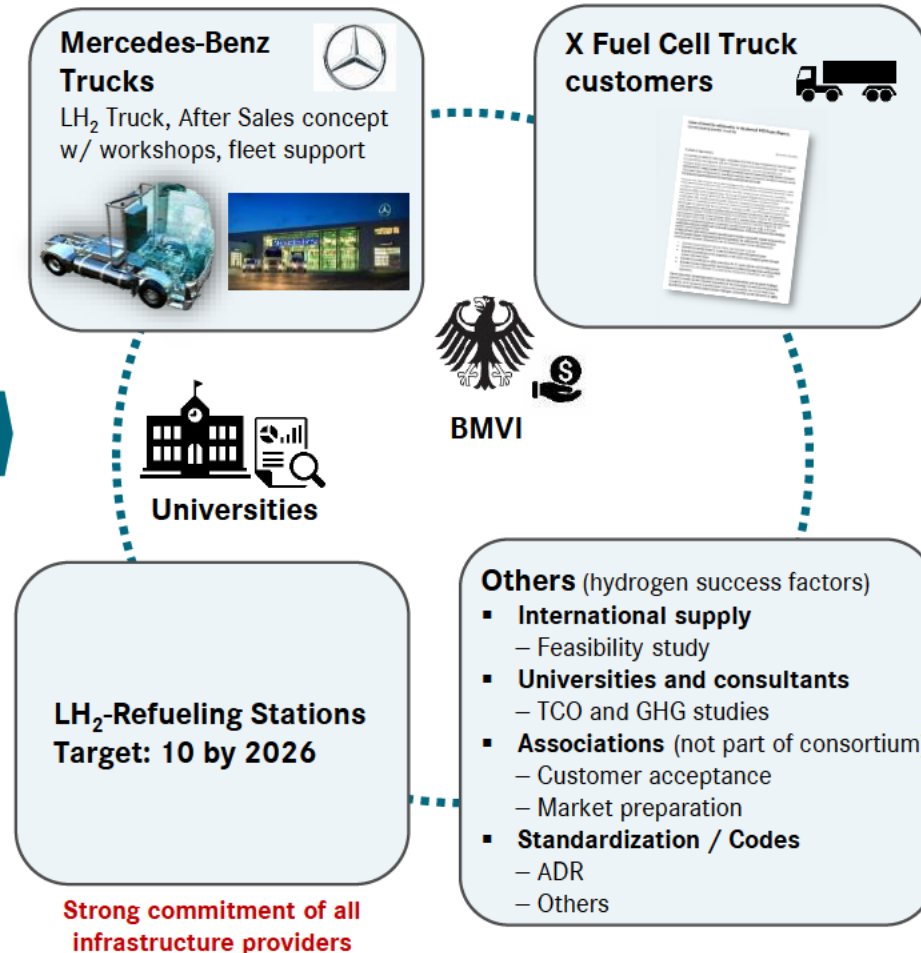
#9 EU OEMs ARE SLOWED DOWN BY BUREAUCRACY

Pegasus application in 02/2021 – still pending despite EU-COM announcement in 07/2022

Target picture: LH₂ infrastructure



Hydrogen consortium members



Key challenges and tasks

- ▶ **Hydrogen consortium will be led by Daimler Truck**
- ▶ **LH₂ infrastructure** with locations for fuel stations, hubs etc. **to be aligned with final customer routes**
- ▶ **Customers in Germany already acquired**; detailed negotiations ongoing
- ▶ **After Sales concept** with qualified workshops and fleet support committed



= Locations of MB Service Partner + LH₂ fuel stations tbd.

#10 DECARBONIZATION REMAINS A JOINT EFFORT BY ALL OF US

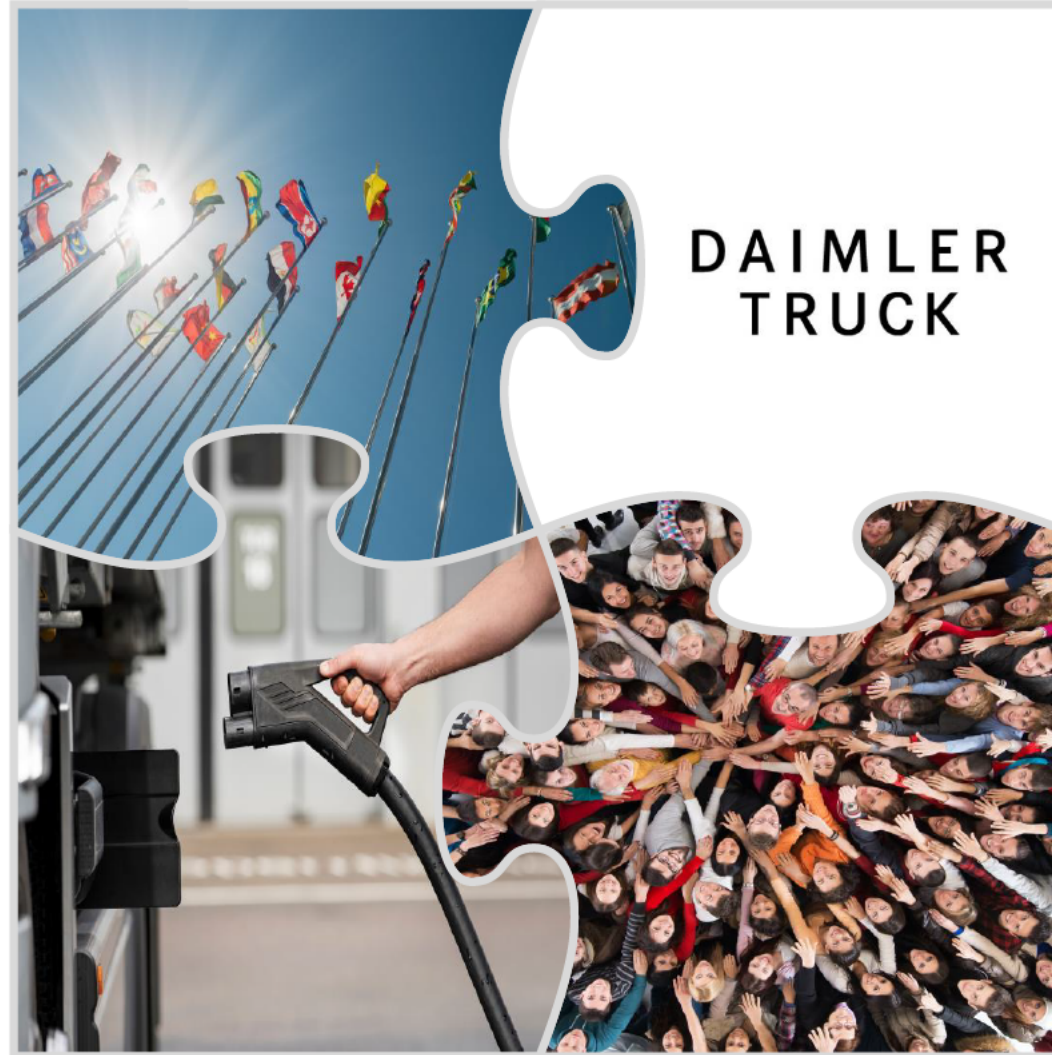
An additional price tag for green transportation will remain

POLITICS

- ▶ CO2 regulation in place, but only selected member states implement toll
- ▶ Need to increase subsidies and reduce bureaucracy

INFRASTRUCTURE

- ▶ Bottleneck for decarbonization
- ▶ So far only minor activities



OEMs

- ▶ Massive invest in zero-emission products
- ▶ Existential penalties if CO2 targets are not achieved

SOCIAL ACCEPTANCE

- ▶ Basic agreement on sustainability, as long as nothing changes
- ▶ Need for clear communication and future-oriented narrative



**THE BIGGEST CHALLENGE
IS THE BIGGEST OPPORTUNITY!**