

Recharging the batteries: Effects of the electric car revolution on CESEE countries

Vienna, November 22, 2021



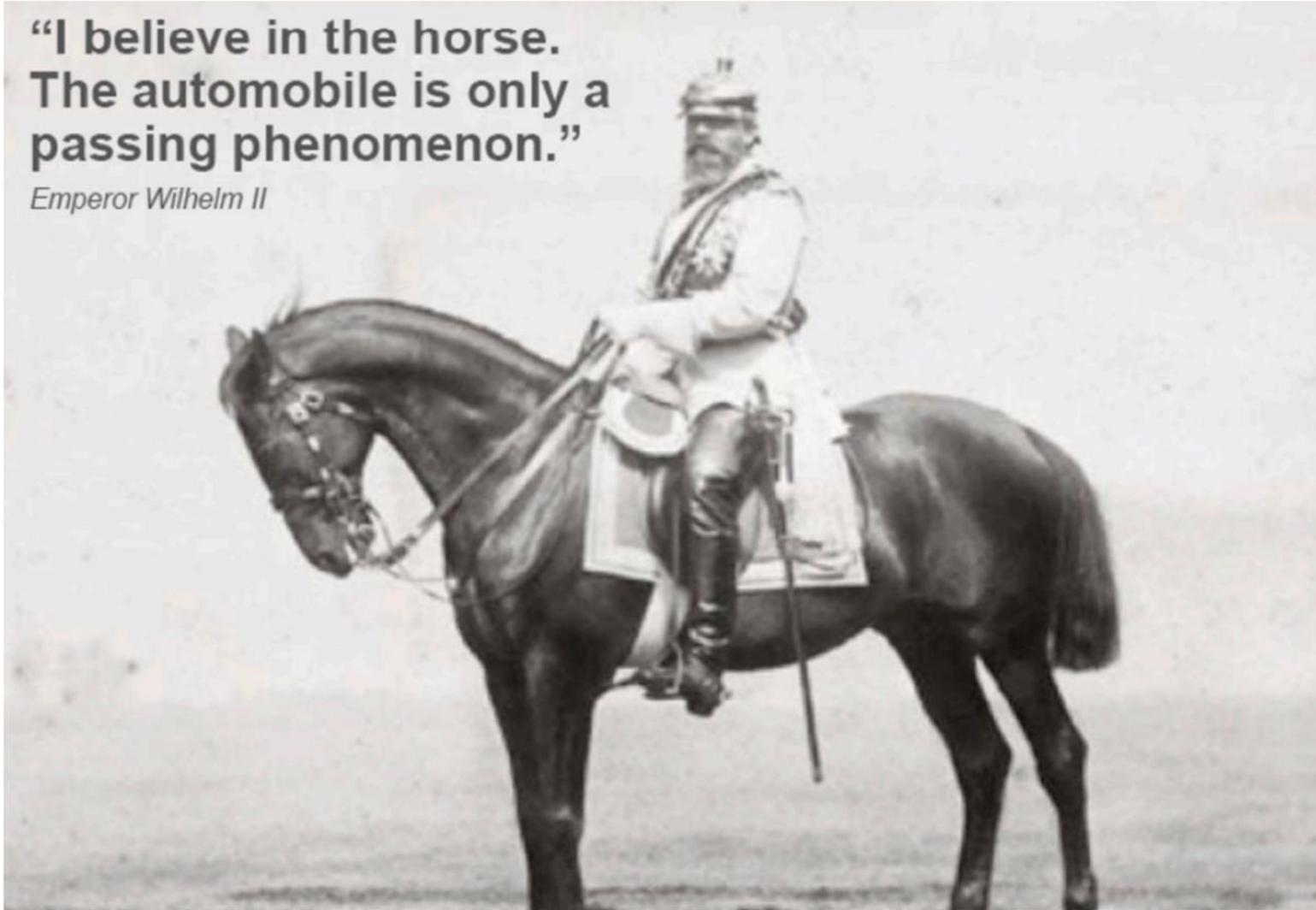
AGENDA

A sector in motion: the electric car revolution

Automotive sector in CESEE: ready for transformation?

**“I believe in the horse.
The automobile is only a
passing phenomenon.”**

Emperor Wilhelm II

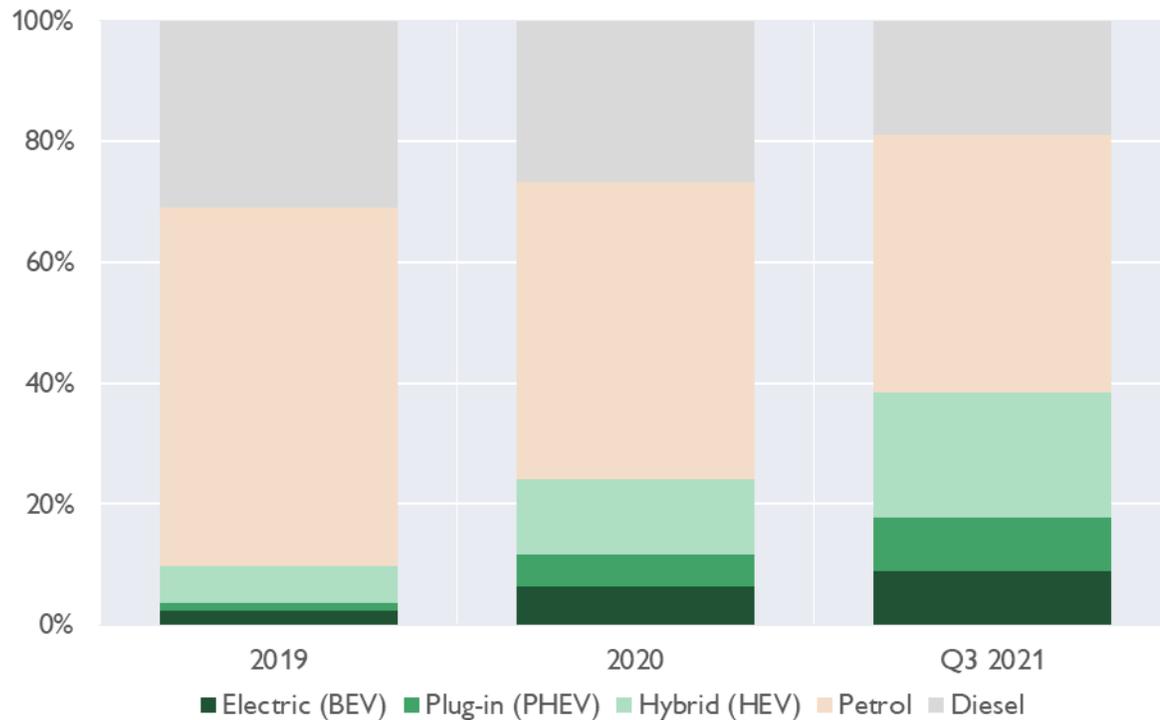


Source: *Technisches Museum Wien.*

The adoption of electric vehicles is taking off rapidly

New vehicle sales in Europe

(% on total)

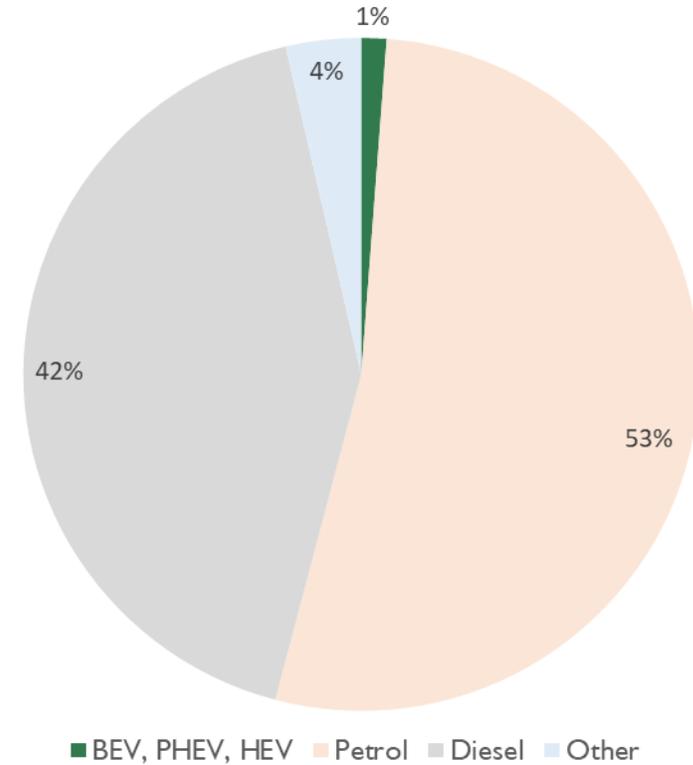


Note: BEV: Battery Electric Vehicles; PHEV: Plug-in Electric Vehicles; HEV: Hybrid Electric Vehicles

Source: ACEA.

Vehicles in circulation in Europe

(% on total, 2019)



Source: ACEA.

Long-term and new short-term trends at play, on top of electric transformation

LONG-TERM TREND

- Relocation of production to EMs: in triad (EU15+USA+JP) from 70% in 2000 to 33% of world production

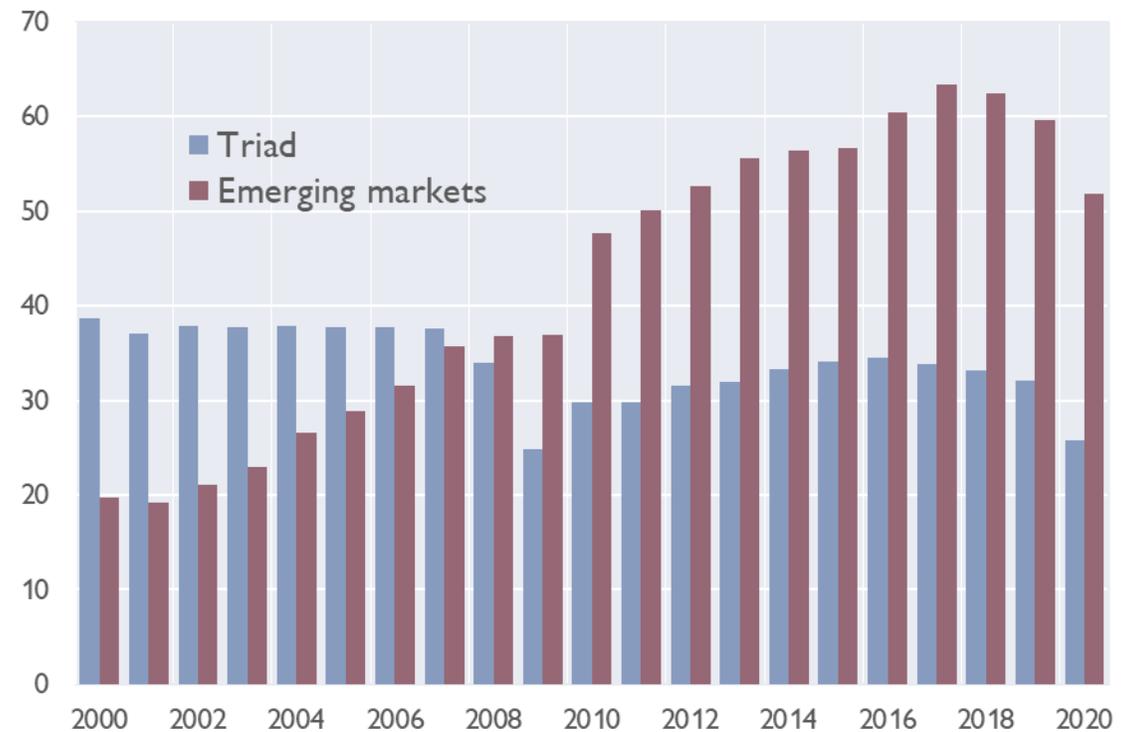
MORE RECENT TRENDS

- Autonomous vehicles
- Shared mobility and connectivity

COVID-19 RELATED

- EU production: -25% in 2020, +27% in H1 2021
- Supply bottlenecks (chip shortage)
- Increased teleworking and social distancing

World production (number of vehicles, mn)



Source: OICA.

Acceleration of electrification trend in EU largely driven by regulation



European Green Deal
(climate neutrality in
2050)

European Commission “Fit for 55” package (July 2021)

Emissions: CO2 -55% by 2030, -100% in 2035, “all new cars registered will be zero emission“

Upcoming Euro 7 targets (end-2021 or 2022)

100% phase-out of sales of new internal combustion engine cars

Norway (2025), Netherlands, Slovenia, Ireland, Austria (2030), UK, Denmark (2035), France, Spain (2040)

COP26 commitments in Glasgow

24 countries and some original equipment manufacturers (OEMs) commit to selling zero emission cars by 2035 in leading markets and by 2040 in emerging markets



De facto ban on fossil-fueled engines from 2035

Quick rush of all major automotive producers toward ambitious electrification targets

Share of Battery Electric Vehicles (BEVs) in total sales: producers' targets

	2025		2030	
	EU	World	EU	World
Toyota				50%
Volkswagen			70%	50%
Skoda (VW Group)		25%		
Audi (VW Group)		40%	100%	100%
Hyundai-KIA		15%		40%
GM*			100%	100%
Ford			100%	100%
Renault		30%		90%
Stellantis (PSA, FCA)			70%	
Daimler**	50%		100%	100%
BMW		25%		50%
Jaguar	100%	100%	100%	100%
Honda				40%
Nissan			100%	100%

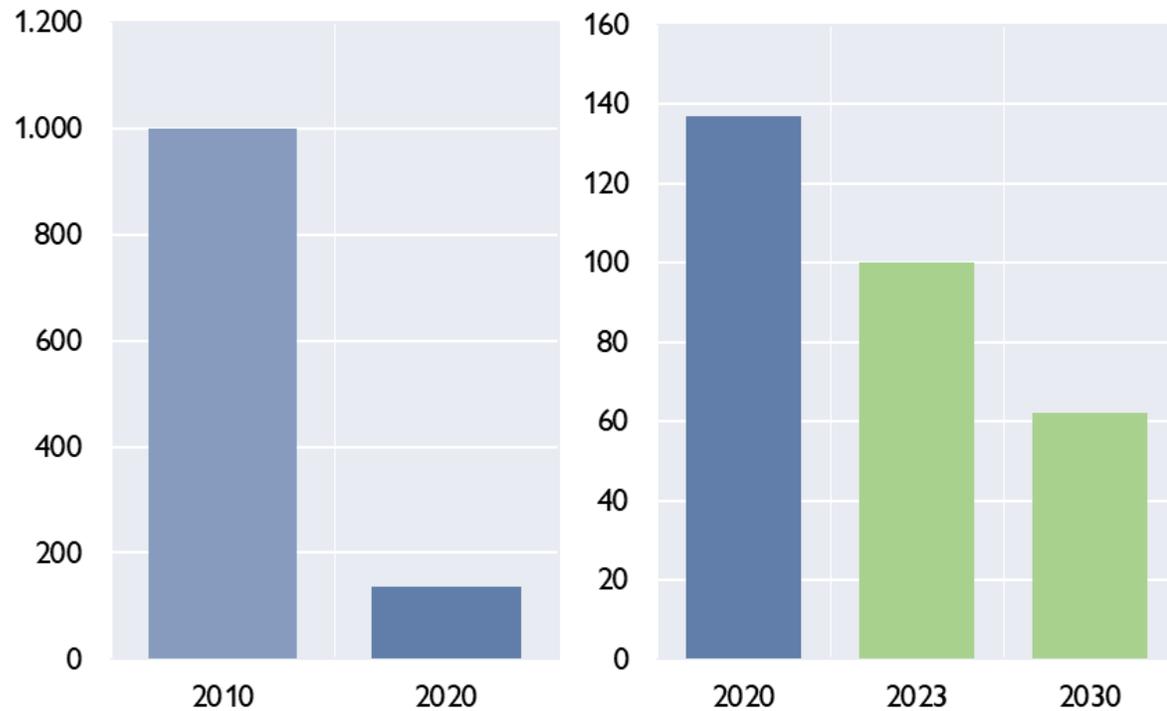
*by 2035; ** incl. PHEV;

Source: Companies' plans and announcements.

Batteries play key role in localization of production and vehicle costs

Battery pack costs over time

Pack wholesale cost (USD/kWh)



Note: the newest generation of the Li-ion battery pack.

Source: BNEF, LMC automotive.

Planned and realized gigafactories



Source: Deloitte, 2021.

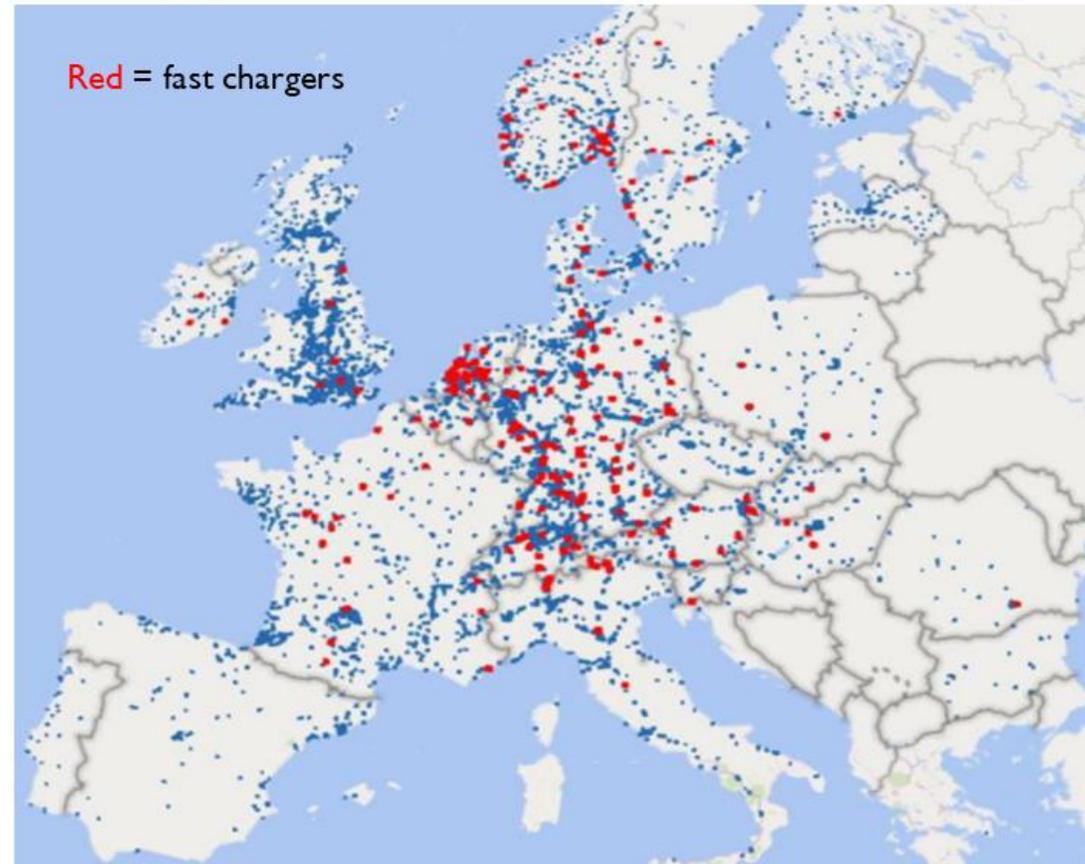
Charging infrastructures a key prerequisite



The distribution of the 213,000 charging points is currently very uneven across the EU.

- At least **1 mn publicly accessible recharging stations** are expected to be in place **by 2025** (European Green Deal)
- **3.5 mn by 2030** (“Fit for 55” package), one **every 60 km**

Publicly accessible charging points



Source: T&E, 2020.

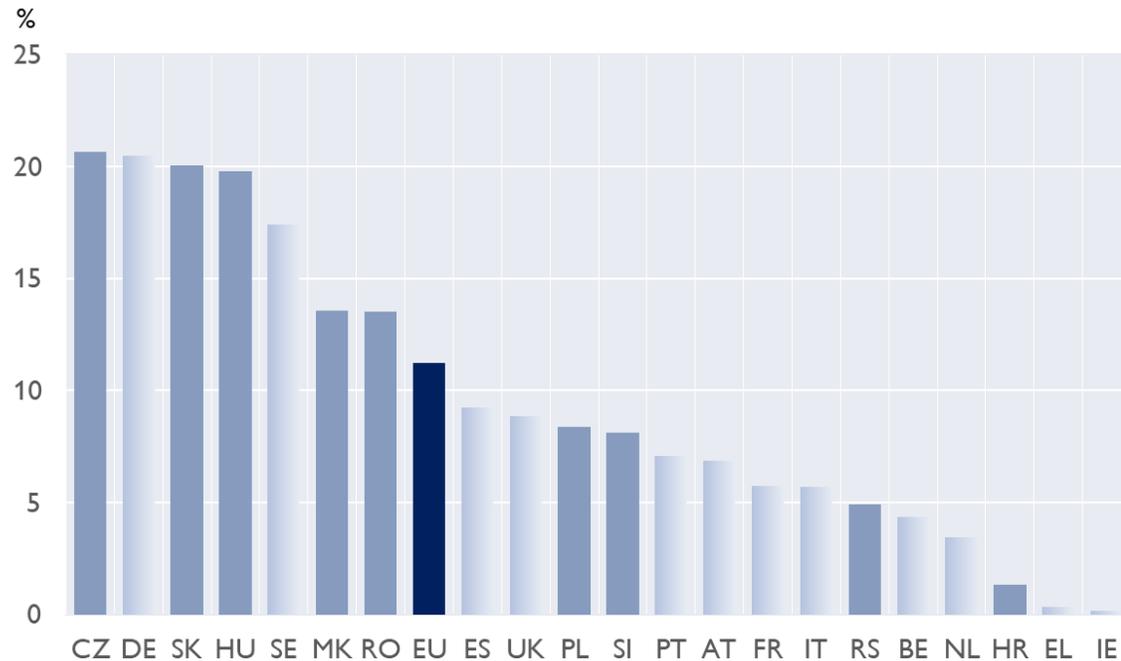
AGENDA

A sector in motion: the electric revolution

Automotive sector in CESEE: ready for transformation?

Automotive industry is the key industry in CESEE

Automotive sector value added (in % of manufacturing)



Note: Automotive sector defined as NACE rev. 2 C29 'Motor vehicles, trailers and semi-trailers'.

Note: EU includes the EU27+UK.

Source: OeNB.

Automotive exports (in % of total exports)



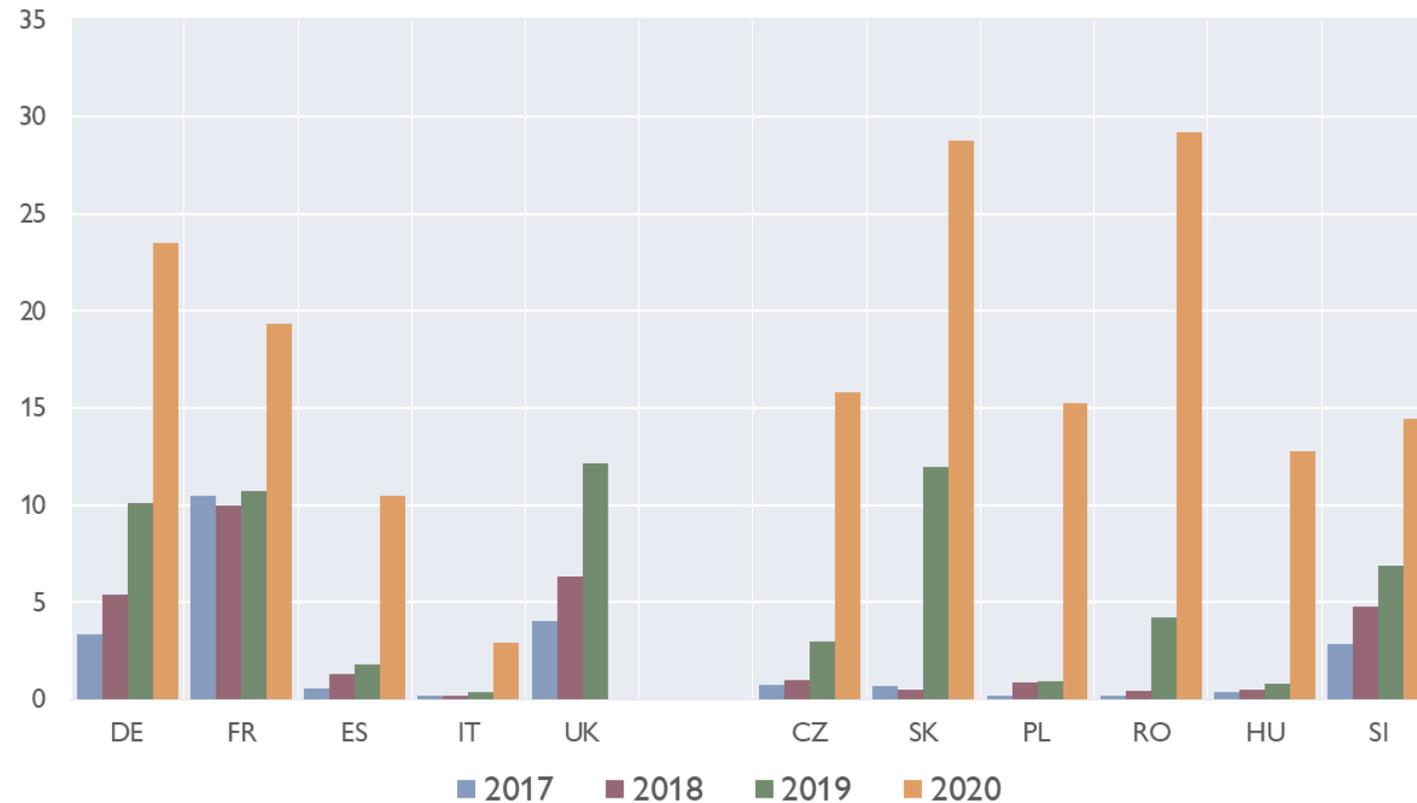
Note: Automotive sector defined as NACE rev. 2 C29 'Motor vehicles, trailers and semi-trailers'.

Source: UN Comtrade.

Transition to electric vehicle production in CESEE advancing fast

Exports of electric and hybrid cars

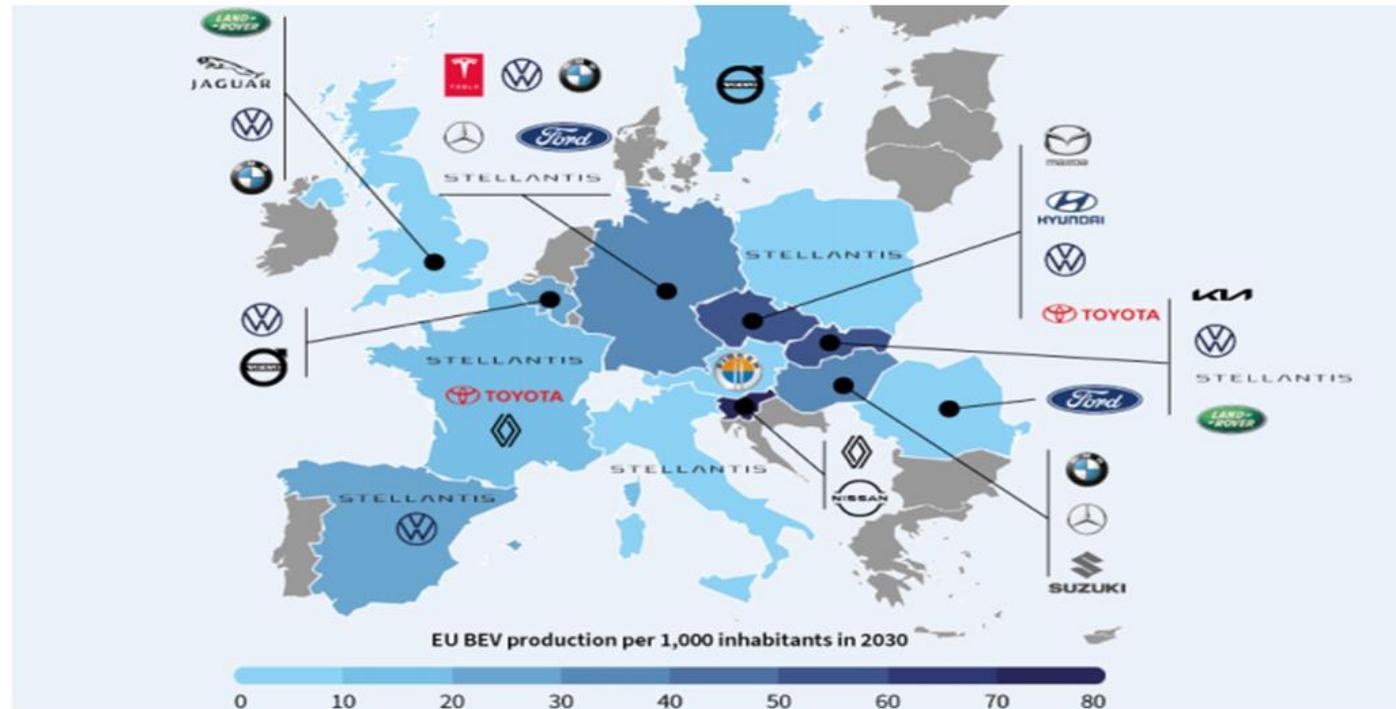
(share in % of total exported cars, 2017-2020)



Source: Eurostat Comext.

CESEE expected to benefit from electric transformation, but depends heavily on production decisions at automotive producers' headquarters

Forecast of European battery electric vehicle production in 2030 (production per 1,000 inhabitants)



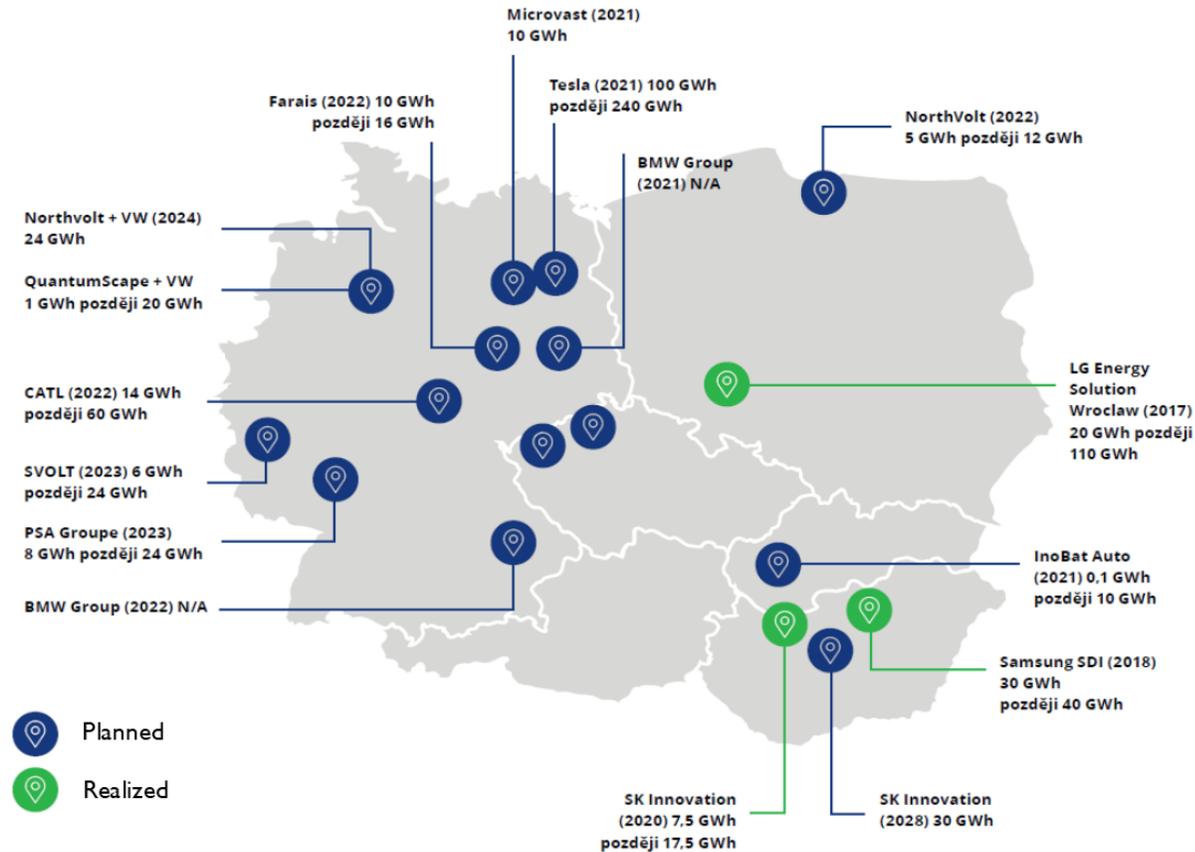
Source: Transport & Environment, based on IHS Markit car production forecast (April 2021).

Not only major automotive producers: Rimac and other innovators



Proximity to gigafactories will be crucial for car production

Planned and realized gigafactories in Central Europe



Source: Deloitte, 2021.

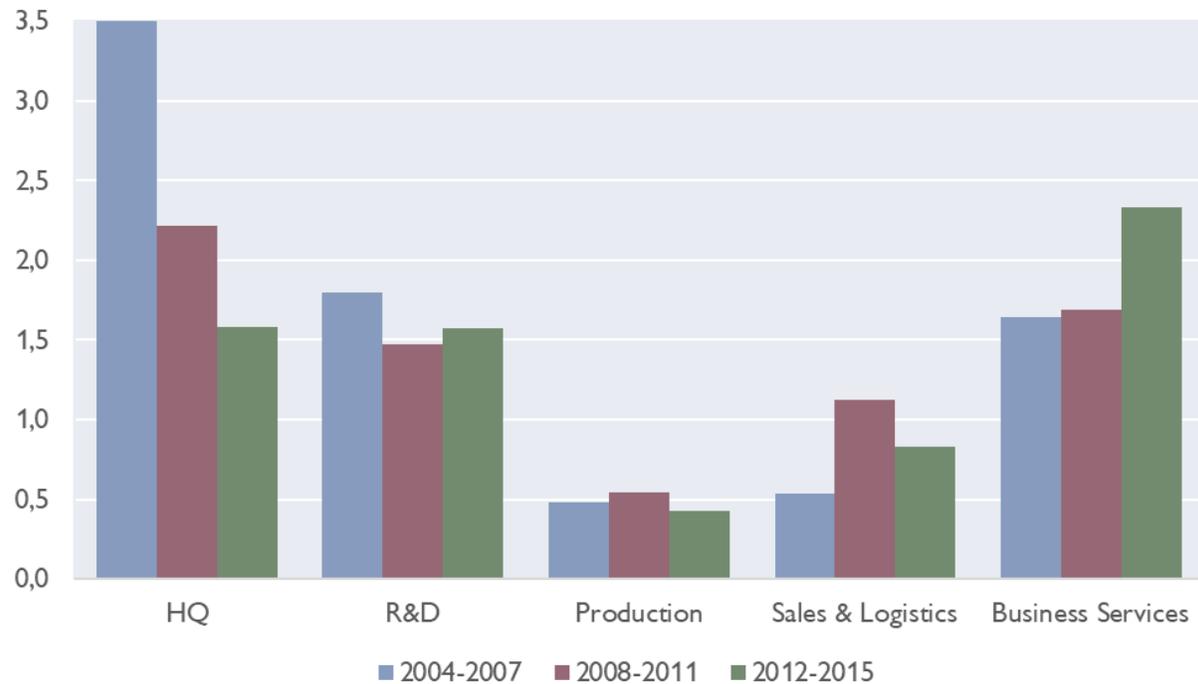
Electric transition entails a number of risks

- **Large-scale market acceptance**
- **Environmental issues**
- **Fierce global competition for scarce natural resources**
 - geopolitical risks: growing power of/dependency on (nondemocratic or corrupt) countries and firms
 - bottlenecks in supply likely
- **Massive investment needs**
 - power generation and transmission capacity
 - battery capacity
 - charging infrastructure
- **Social issues**
 - net job loss
- **Fiscal costs** (subsidies + tax revenue loss)

Risk for CESEE to remain trapped as “factory economies” in value chain functions

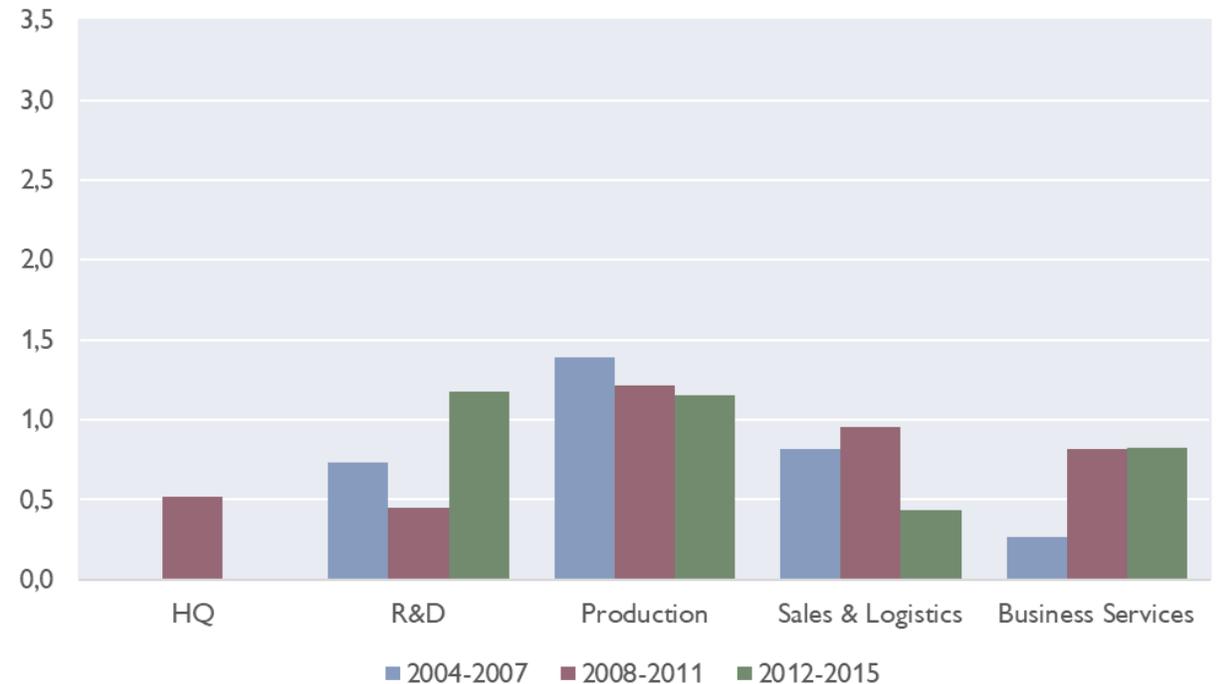
Relative functional specialization measure of the automotive sector

Germany



Note: Automotive sector defined as NACE rev. 2 C29 'Motor vehicles, trailers and semi-trailers'.
 Data based on the fDI markets database.
 Source: Stoellinger, 2021.

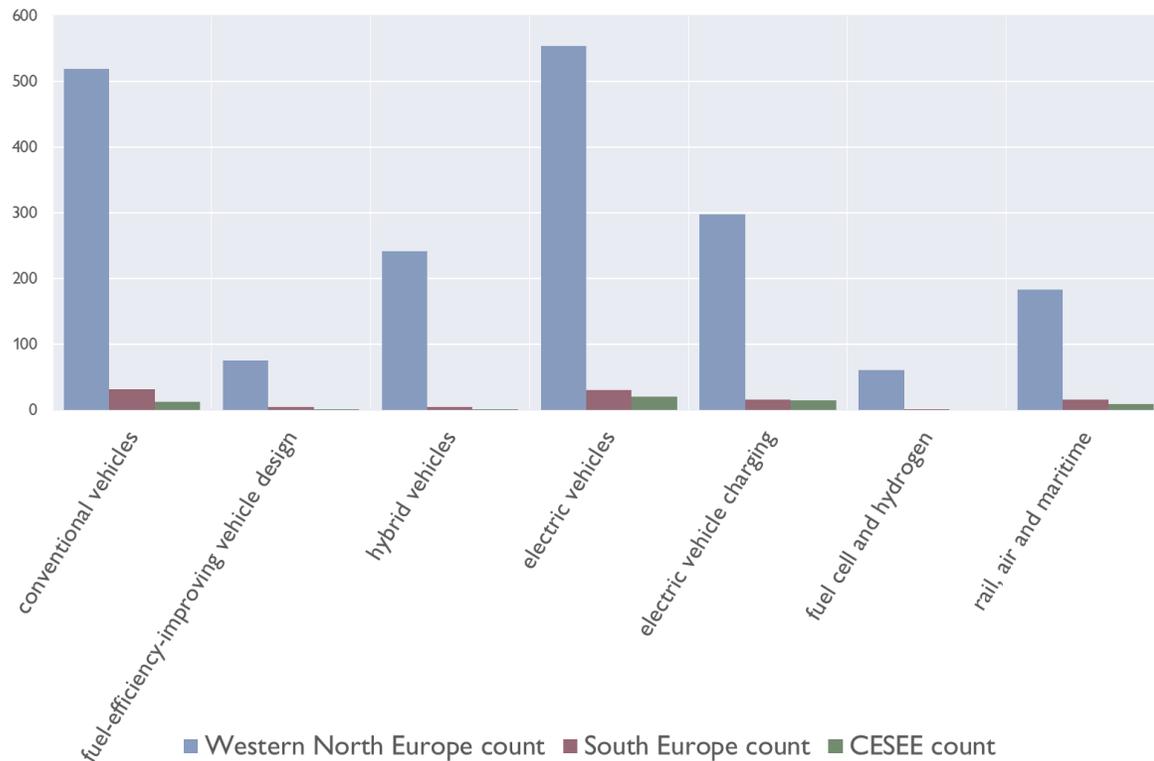
Czech Republic



Note: Automotive sector defined as NACE rev. 2 C29 'Motor vehicles, trailers and semi-trailers'.
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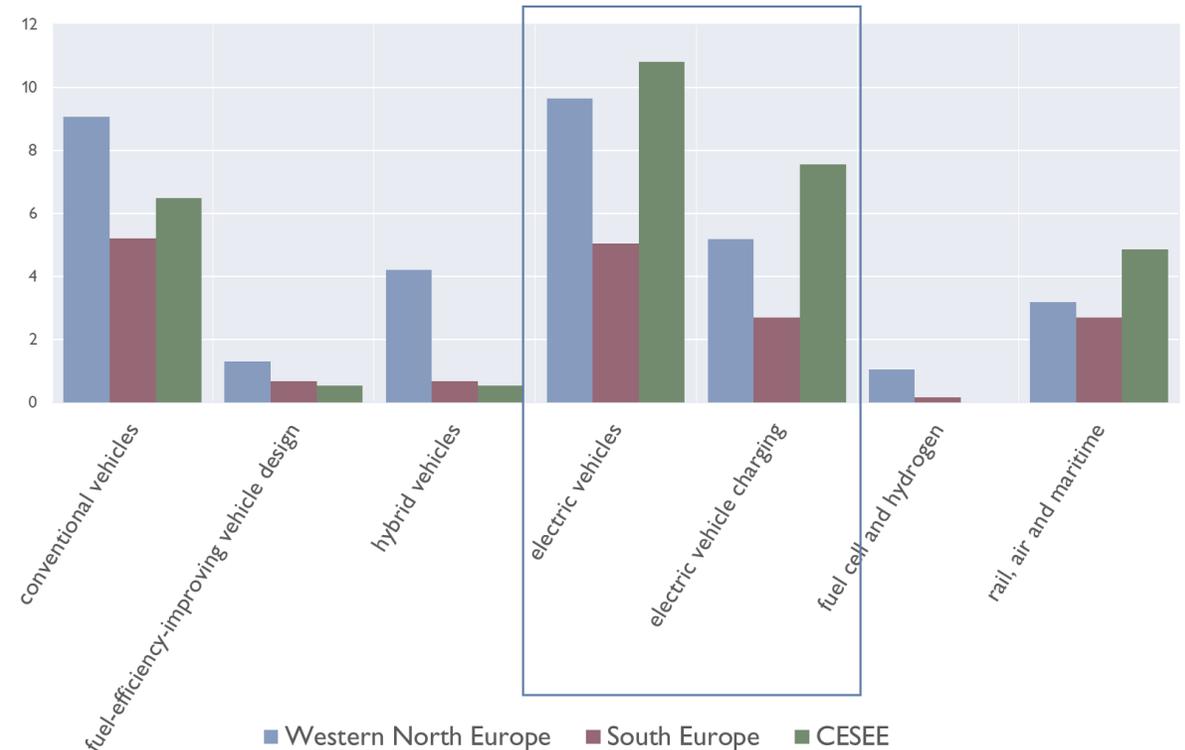
Catching-up in innovation activity a key prerequisite

Number of green patents in transport sector



Source: PATSTAT.

Share of green patents in transport sector (%)

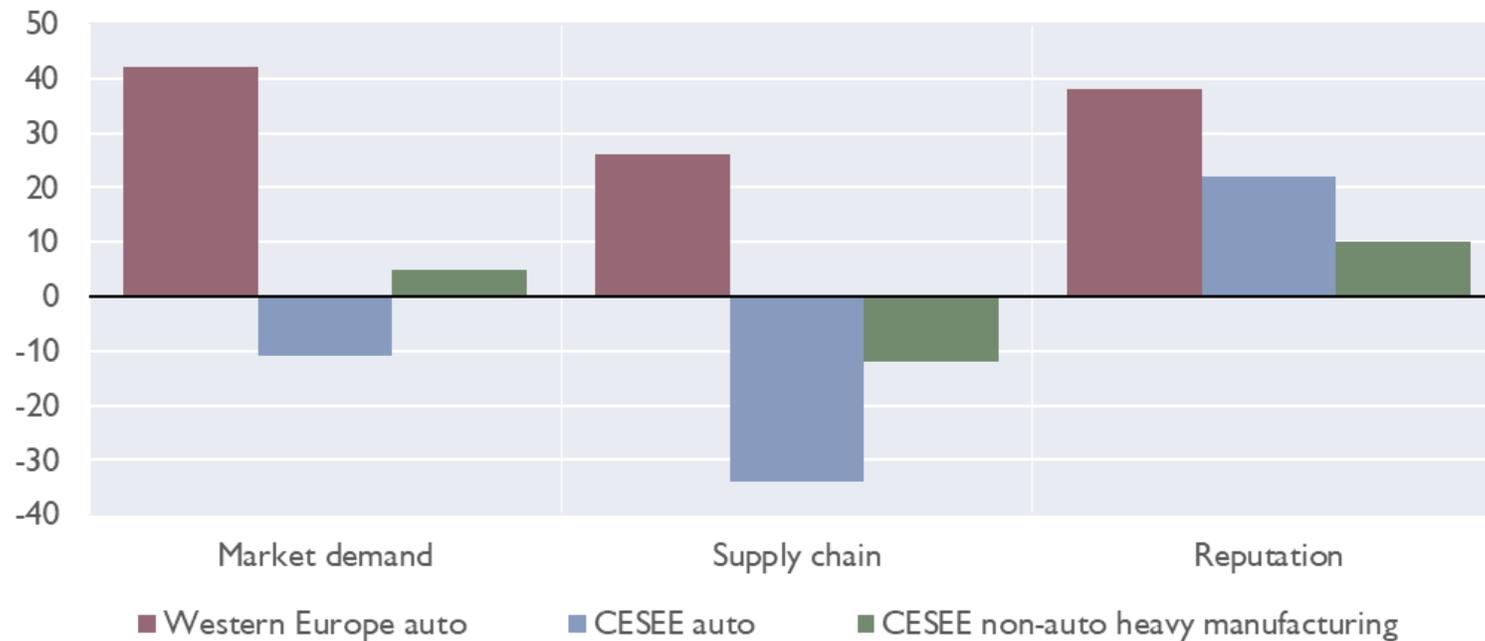


Source: PATSTAT.

Automotive firms in CESEE worried about impact of climate transition

Impact of climate transition over the next five years

(balance positive answers net of negative)



Q58: What impact, if any, will this transition to a reduction in carbon emissions have on the following aspects of your business over the next five years?

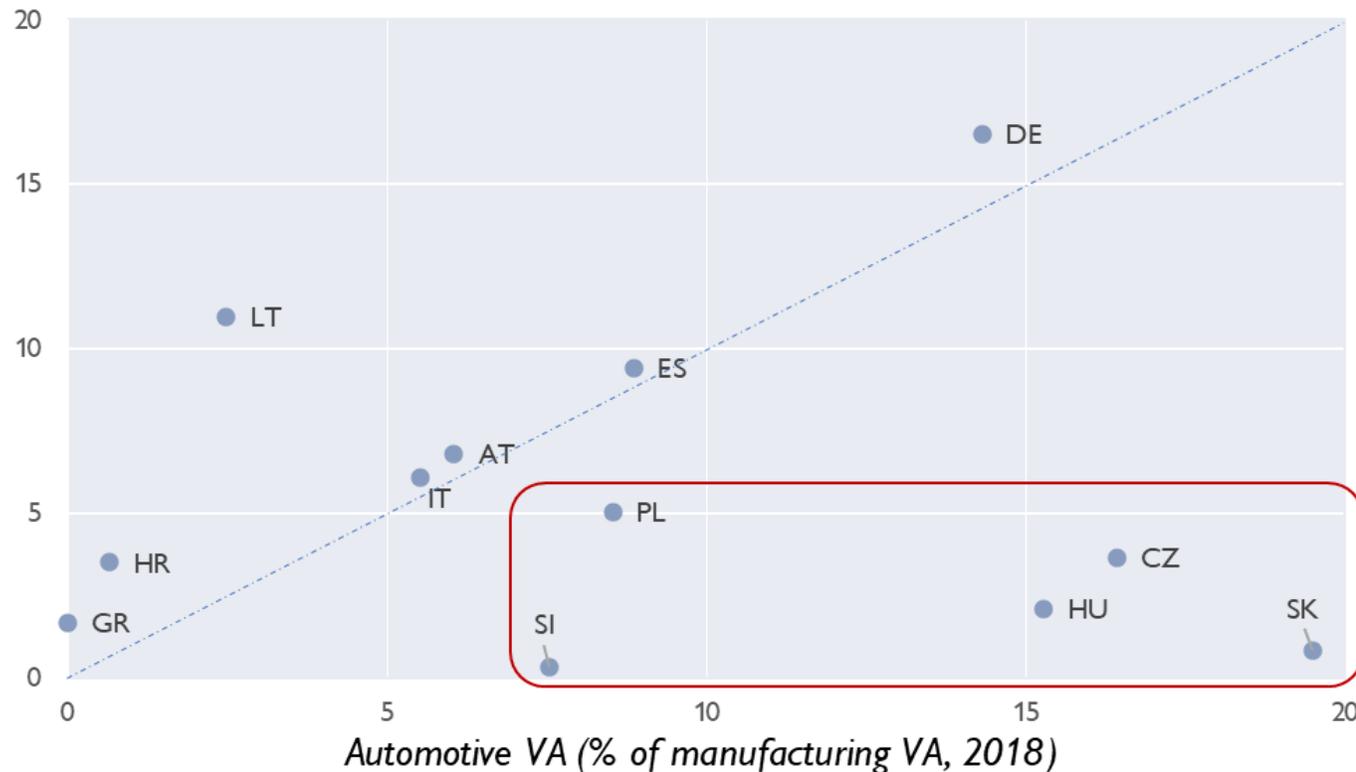
Note: Shown are balances: share of responses "positive impact" net of share of responses "negative impact", in per cent.

Source: EIBIS.

CESEE countries allocate relatively small shares of their Recovery and Resilience Facility funds to automotive and supporting infrastructure

Dedicated RRF-funded spending on automotive and supporting infrastructure

% of overall RRF-funded spending



Source: Eurostat, National Recovery and Resilience Plans, EIB.

To conclude:

If we want things to stay as they are, things will have to change.

(Giuseppe Tomasi di Lampedusa, The Leopard)

- A **deep and quick transformation** is taking place in the automotive sector.
- It is driven mainly by **(EU) regulations**.
- CESEE is currently on board with regard to electrification.
- **CESEE** is expected to largely **benefit from electrification** (not least thanks to Germany, the electrification hub).
- However, CESEE's automotive sector strongly depends on **headquarters' decisions**.
- There is a **lot of homework** to be done.

How can CESEE's car industry continue or expand its major role and escape the functional specialization trap?

- Remain **integrated with the core countries**, in particular Germany
 - **stay tuned for battery production**
- **Spur digitalization and/or robotization** of production to reduce dependence on wage costs and boost production efficiency
- **Attract FDI and/or activities with higher value added**, particularly in the IT/digital and chemical sectors
- Secure **prospective affordable energy sources**
- Diversify technological risks by **serving emerging and developing markets**

Thank you for your attention

 **ONB**

Most OEMs are developing an EV strategy in CESEE

COUNTRY

BRAND

e-MODELS



Poland

Stellantis (FCA), VW



Leader in electric vans and buses



Hungary

Audi, Daimler, BMW (from 2025)



BMW will dedicate the new factory to electric cars



Czech R.

Skoda, Hyundai, PSA



Skoda wants Czech to be an electromobility hub



Slovakia

VW, Stellantis (PSA), Jaguar L-R



Stellantis investing EUR 180mn in electromobility



Slovenia

Renault



1/3 of production is electric in 2021



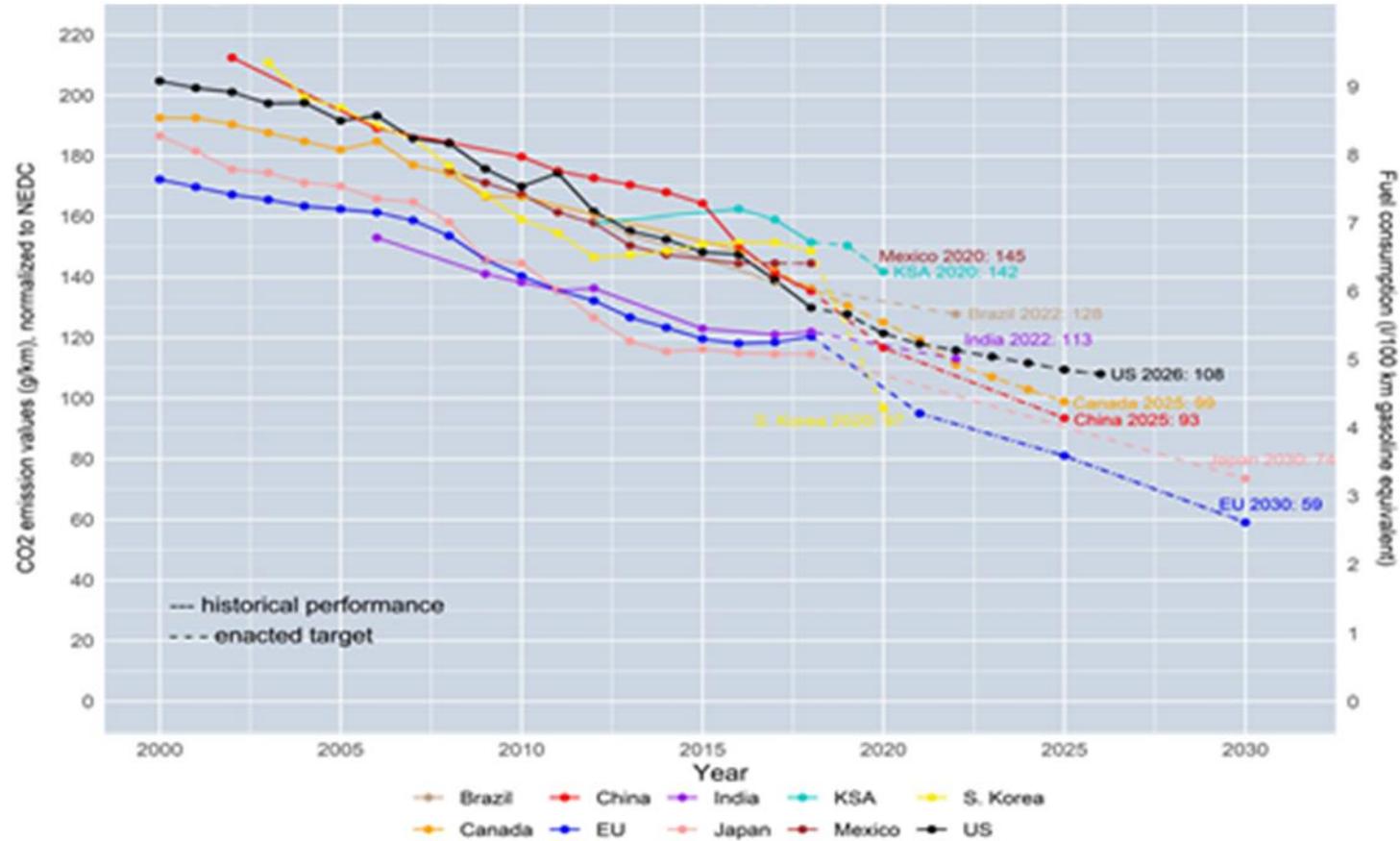
Romania

Dacia (Renault)



Source: Companies' announcements, press.

Passenger car CO₂ emission and fuel consumption values (normalized to New European Driving Cycle)



Source: International Council on Clean Transportation (ICCT, updated May 2020).

CESEE: a relatively small market but an important production base

n. of vehicles (mn, 2019)	World	Western Europe and UK	CESEE
Production (supply)	91.7	13.3	4.4 (25% of EU+UK)
Sales (demand)	91	16.1	1.7 (9% of EU+UK)

Combustion engines here to stay for some time. Hydrogen a dream of the future?

	Electric Vehicles (BEV, PHEV)	Internal Combustion Engine (ICE) and Hybrid (HEV) vehicles	Fuel Cells Electric Vehicles (FCEV)
TOYOTA	Yellow	Green	Green
VOLKSWAGEN	Green	Yellow	Red
SKODA (VW Group)	Yellow	Green	Red
AUDI (VW Group)	Green	Yellow	Red
HYUNDAI-KIA	Green	Yellow	Green
G.M.	Green	Red	Yellow
FORD	Green	Red	Yellow
RENAULT	Green	Green	Green
PSA - STELLANTIS GROUP	Green	Yellow	Green
SUZUKI	Yellow	Green	Yellow
DAIMLER	Green	Yellow	Green
B.M.W.	Green	Yellow	Green
JAGUAR-LAND ROVER	Green	Red	Green

Source: Companies announcements.