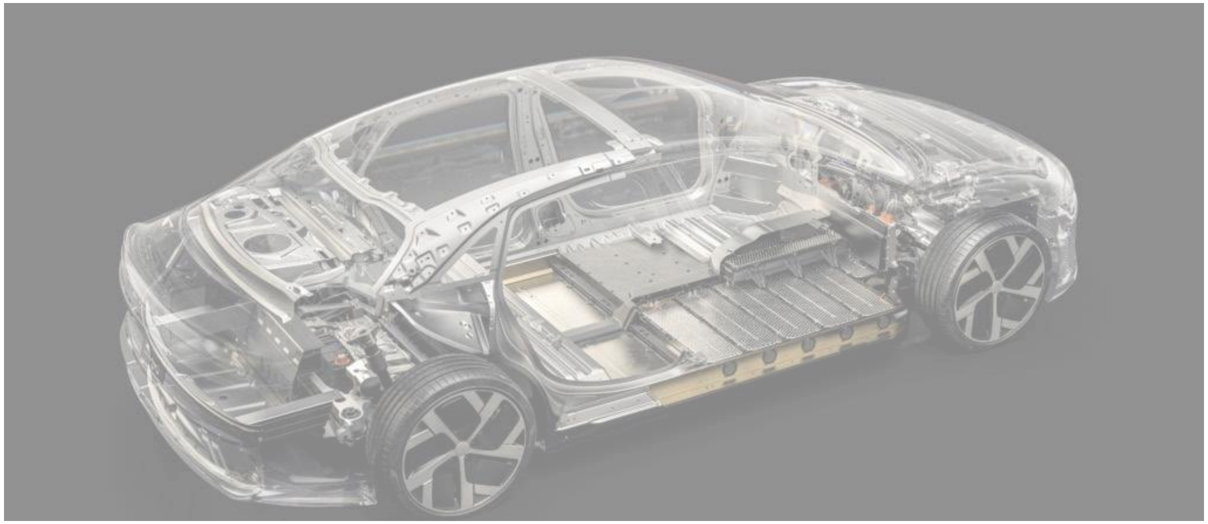
Professional MBA
Automotive Industry

AGENDA

- Introduction
- Overview and trends e-mobility
- Impacts on the supply chain
  - Inbound
  - Outbound
  - Aftermarket

- Questions

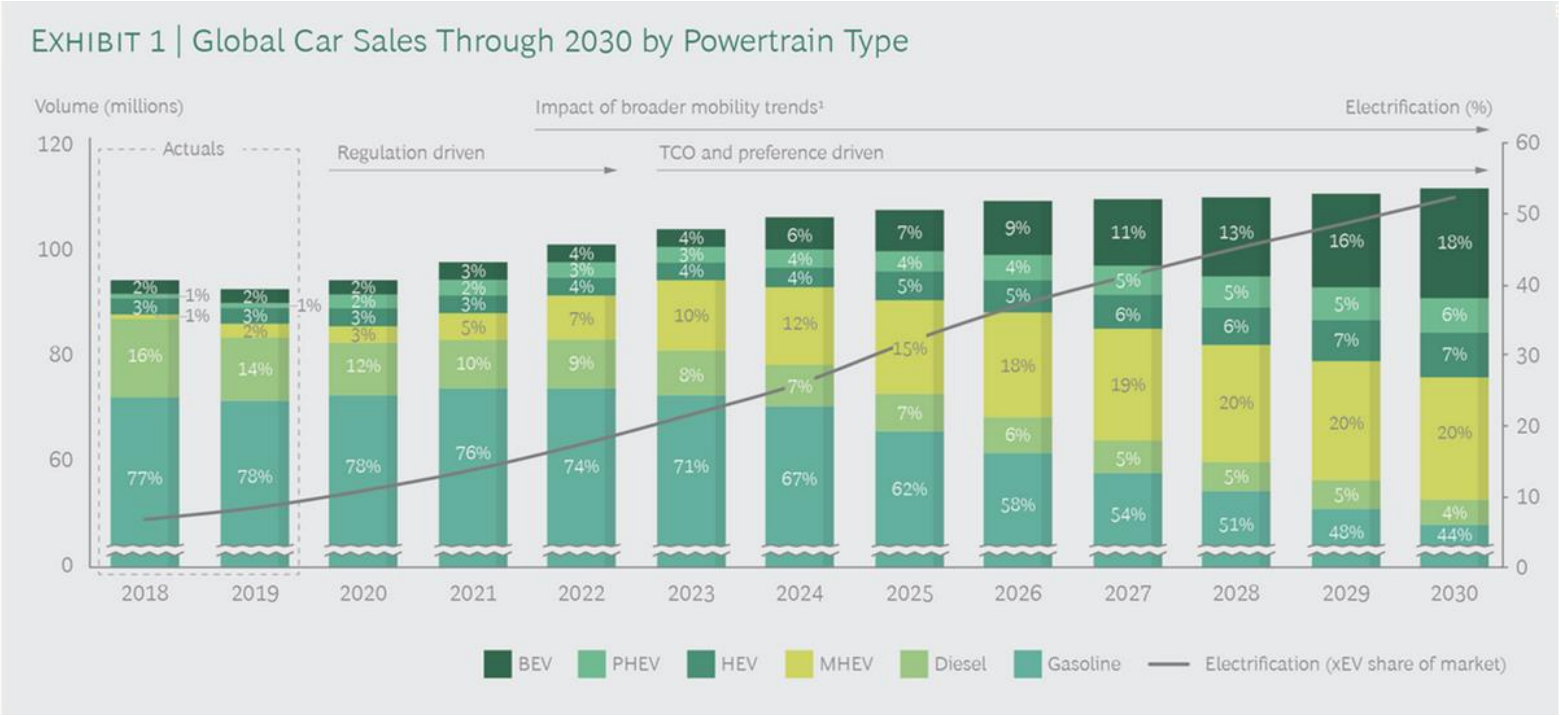


Introduction

- Christian MOSER

- Global lead for Battery logistics at DB SCHENKER
- Global Account Manager Automotive
- Alumni Professional MBA
  Automotive Industry 2014

Outlook of E-Mobility



https://www.bcg.com/publications/2020/drive-electric-cars-to-the-tipping-point

Driver of E-Mobility

OEMs +$300 BN investments in EV production until 2030

Some 400 new models until 2025

BCG study 2020: +50% of car sales 2030 Electric vehicles

24%	**BEV/PHEV**
27%	**HEV/MHEV**
49%	**ICE**

Triggered by:

- **Oil price**
- **Governmental regulations**
- **Battery price**
- **Loading infrastructure**

JAPAN

Own dynamics
HEV 2019: 22%
BEV to increase
+ short distances
- Traditional buying behavior

No local battery producer for Automotive
Technological focus spread
Development influences US car market

USA

Missing US wide regulation
Long mileages, cheap oil

vs

FORD: Mustang Mach-e, but last in class
FCA: No strategy
GM: +50% by 2030

Rivian: MIT spin off, (Amazon) LCV
Lucid: Supreme market
TESLA: the driver of the development

China

Government driven at least until 2022
BEV 2025: 12%   2030: +25%
No traditional brand awareness, easy to steer market
(Fast) growing market, open for newcomers
Capacity & raw materials for Battery productions

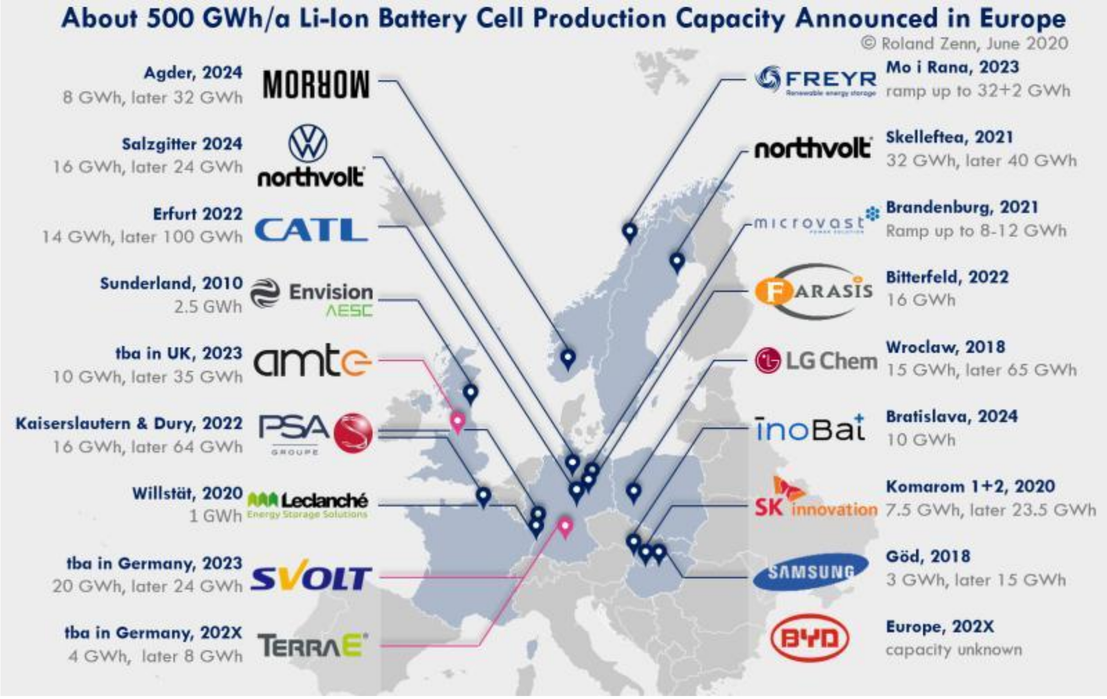
Different concepts and brands
e.g. NIO Motors / Dongfeng Voyah

Europe

Most diversified market(s) with different speeds
Decrease of exports expected

Bottleneck:
local battery production & price

2015: $540 per kwH
2030: $100 per kwH

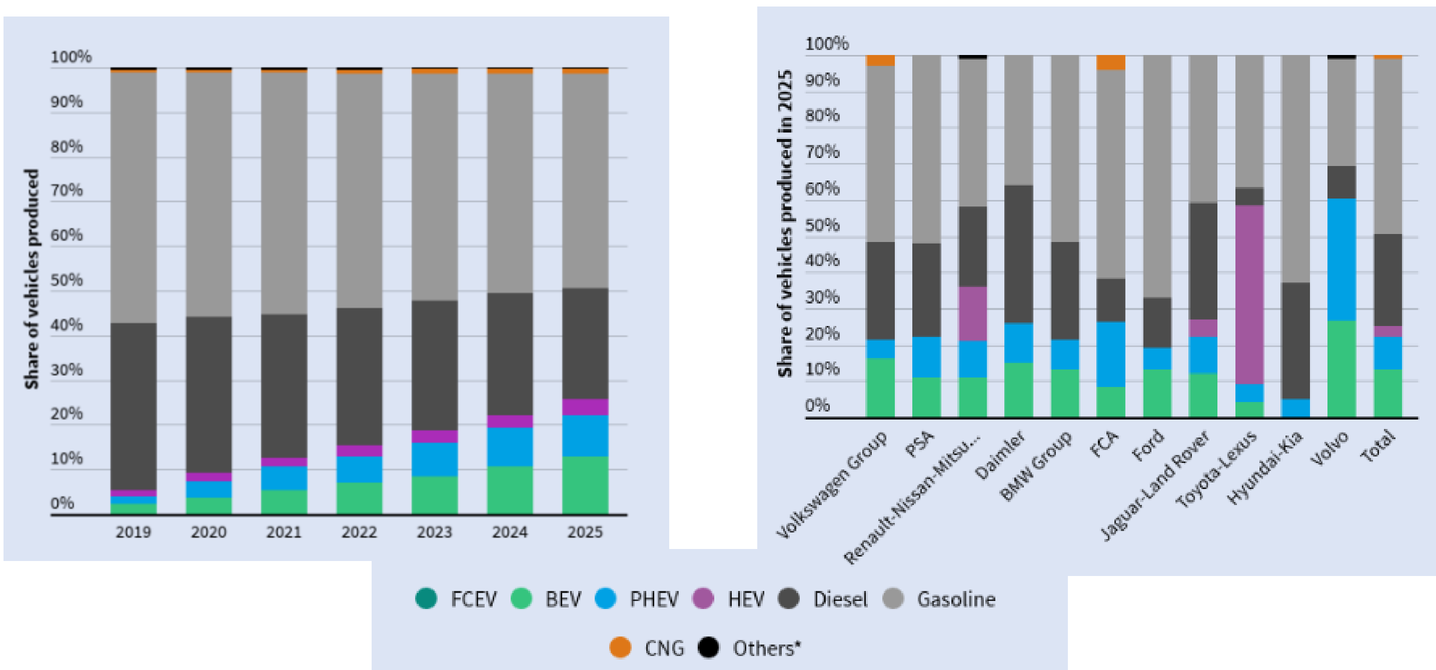


https://www.orovel.net/insights/li-on-battery-gigafactories-in-europe-june-2020

Europe

EU production by share 2025

Split per OEM



https://www.transportenvironment.org/sites/te/files/publications/2019_07_TE_electric_cars_report_final.pdf

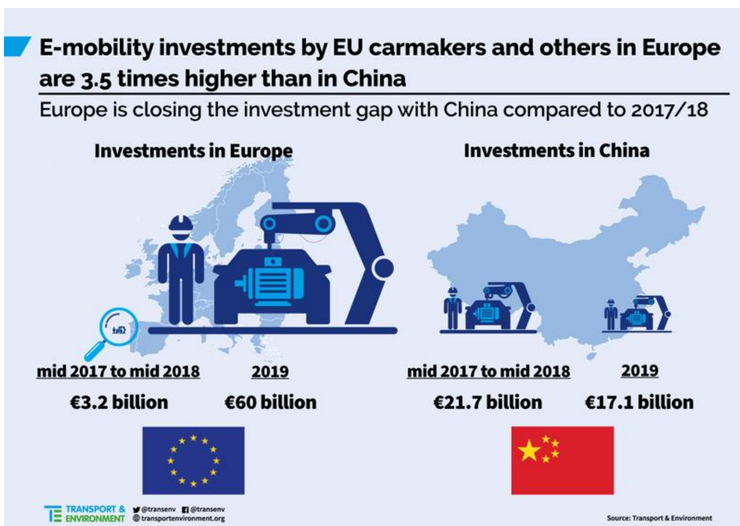
Most of the EV manufacturing in Europe is expected to be located in Germany, France, Spain and Italy but parts of the future manufacturing are also expected to be located in central and eastern EU counties, notably Slovakia, Czech Republic and Hungary which rely on conventional car manufacturing today.

Europe

85 sites producing

- **electrified vehicles**
- **batteries**
- **components**

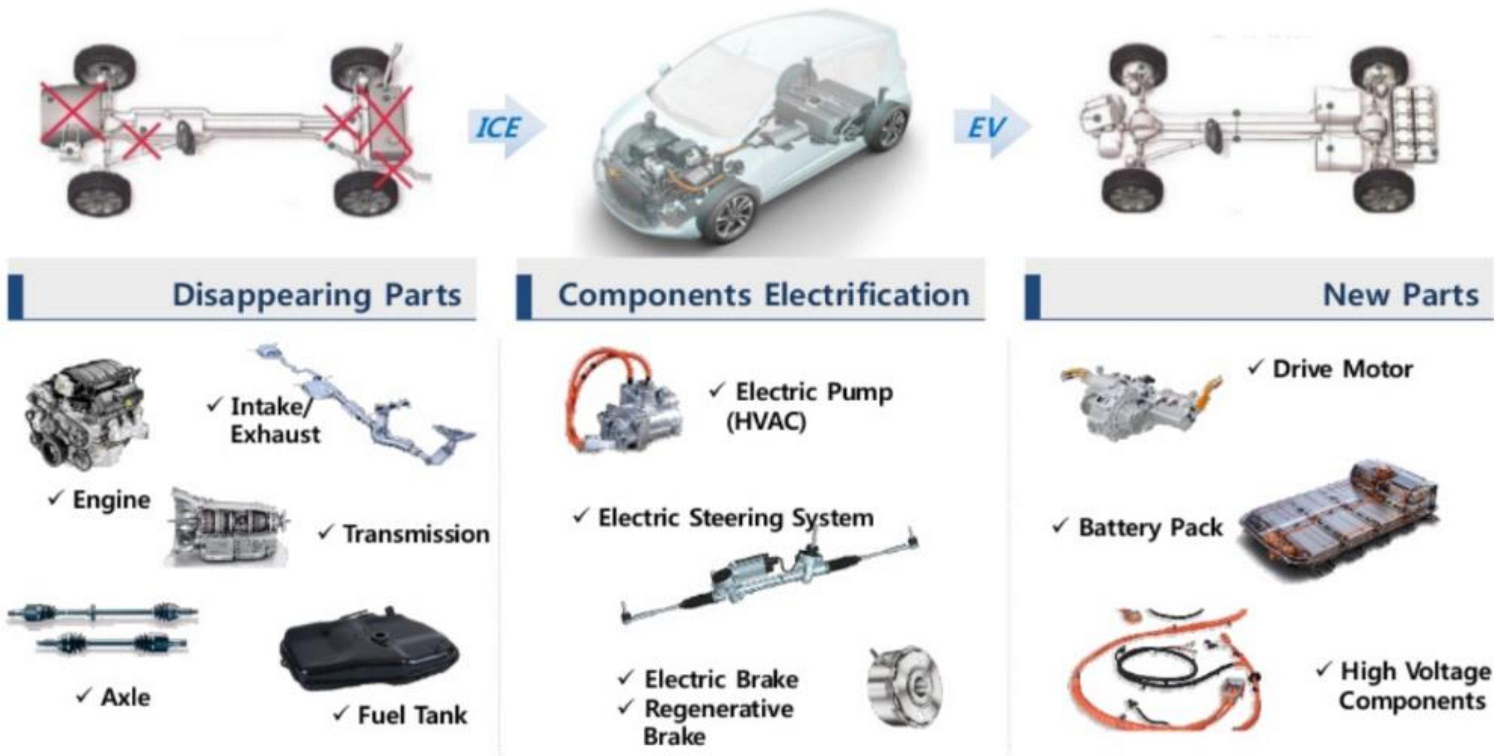
Increase of 39% y-o-y



https://www.transportenvironment.org/press/record-€60bn-investment-electric-cars-and-batteries-europe-secured-last-year

https://europe.autonews.com/e-car-and-component-map-europe

IMPACTS on part landscape



Source: POSCO research institute

INBOUND LOGISTICS

Trend

Reduction of part numbers and complexity

Impact on the supply chain

- Increase of parts per SKU
- Optimized streams
- Groupage/Milkrun to FTL
- LTL to FCL
- From JIS to JIT
- From Storage to Warehouse on Wheel
- High impact on packaging

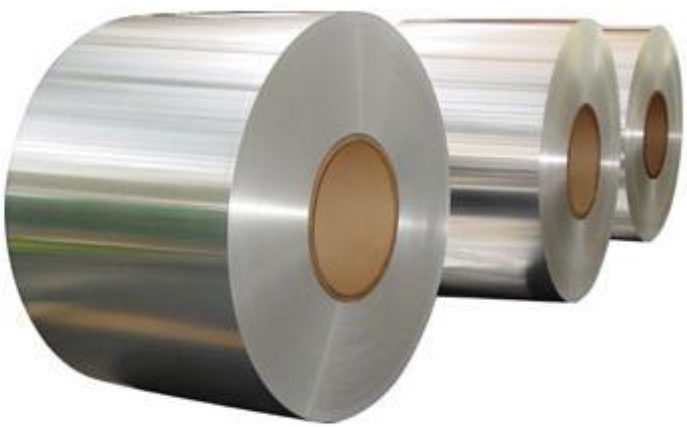
INBOUND LOGISTICS

Trend

Different material mix

Impact on the supply chain

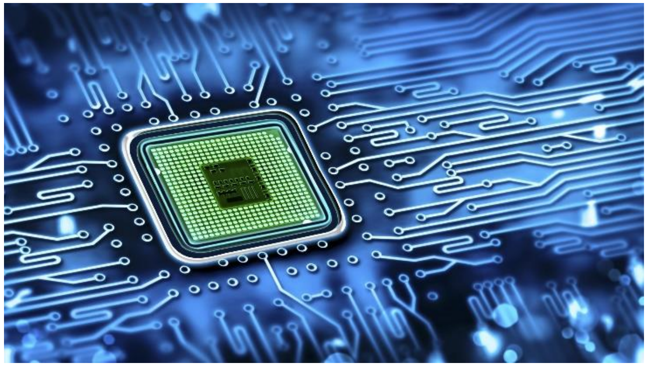
- Changes in Coil logistics (From steel to aluminium)
- High value transports through preassembled parts & electronic components



INBOUND LOGISTICS

Trend

Growing importance of IT & electronic parts



Impact on the supply chain

- **Automotive to Electronics SC**
  - **Certified security handling**
  - **Sensitivity tracing**
  - **SC coverage via Air**
- **Mindset of logistics staff**
- **High flexibility needed**

Aftermarket

Trend

Simplification and less wear parts

Impact on the supply chain

- **Centralization of distribution center**
- **High IT integration lead to low inventory**
- **Decentralized webshop administration**
- **Flexible workshop set ups lead to flexible delivery/pick up options**

Outbound

Trend

Changing customer needs

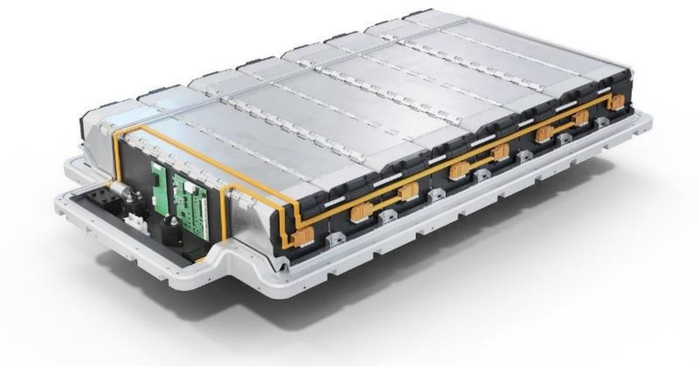
Impact on the supply chain

- Change in car dealer landscape (online?)
- Different buying and delivering behavior (pick up, home delivery)
- Self driving cars (compound)
- High pressure for fast delivery (real time tracking)

Inbound, Aftersales and Outbound

Trend

Battery logistics



Impact on the supply chain

- DG capabilities along the whole SC
- Rail service preferred
- Full lifetime cycle demand
  - damaged/used
  - Recycling/reusage
  - Storage
  - Delivery/pick up
- Add on services needed
  - Voltage measurement
  - packaging

Inbound, Aftersales and Outbound

Trend

CO2 policy

Impact on the supply chain

- Pressure to lower carbon footprint for Inbound and Outbound
- Emission calculator
- Back up solutions/modes of transport availability

Supply chain is determined by OEM strategy

Trends differ from OEM to OEM

Start up vs. established company
Assembly vs. Production
Design vs. Full lifetime cycle service
Integration of aftermarket service
Existing and future IT capabilities
Insourcing vs. Outsourcing of production and material
Niche vs. Mass market

How to be prepared as a logistics provider?

- **FLEXIBILY & ADAPTIVNESS**
- **Challenging of own business models**
- **Stable basic processes and products – avoid overengineering by providing workable solutions**
- **Service enlargement**
- **High IT integration**
- **Close to the market**

THANK YOU FOR YOUR ATTENTION

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