

Gigafactory and its benefits for the Czech economy

9 June 2022

Agenda

Presenter

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1 Why is Automotive crucial for the Czech economy?

2 Impact of the Gigafactory on the Czech economy

3 Transformation potential of Czech Automotive suppliers

Why is Automotive crucial
for the Czech economy?



The Automotive Industry is imperative to the prosperity of the Czech economy



The automotive industry accounts for c. **22 %** of all manufacturing in the CZ



More than **9 %** of total CZ GDP is from the automotive industry



Automotive accounts for **24 %** of CZ exports
Worth a total of **~36** billion euros

Source: CzechInvest



More than **1.1 million** motor vehicles manufactured (2021)



The electric vehicles has **11%** share in total car production (2021)

Source: AutoSAP



The automotive industry directly employs around **180,000** employees

Representing around 11% of CZ manufacturing employment



The Automotive industry accounts for **20 %** of all R&D investments in the CZ

More than 5,000 R&D workers focused on the automotive sector

Source: AutoSAP

Source: ACEA

Manufacturers of the EVs do not have to benefit just from the car itself, but also from the whole eMobility ecosystem



EV BUYERS

I don't believe that there are enough **charging points** for me to buy an electric vehicle yet

36%

For me to buy an electric vehicle, **home charging** included in the price and delivered with the car

64%

I think electric vehicles and the battery inside them should be part of my **home energy management system**

44%

For me to buy an electric vehicle, the car to be sold with a **complete energy package** (e.g. solar panels, in home storage and the ability to feed the grid)

47%

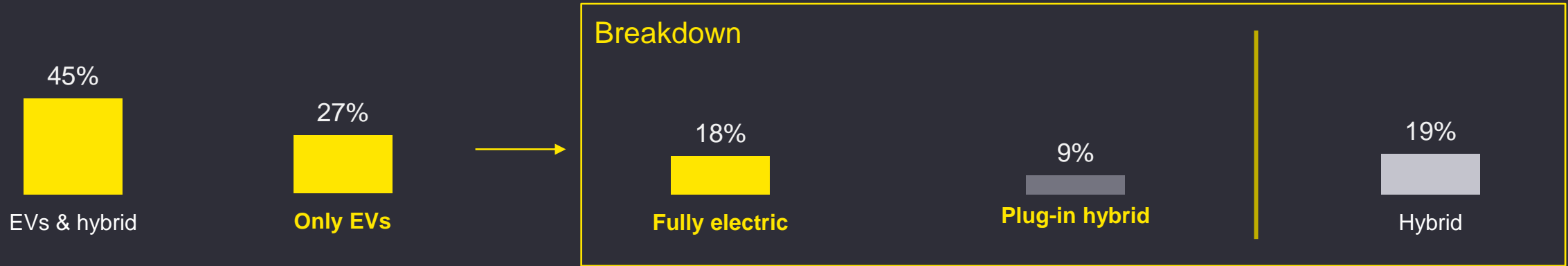
Note: for the first and third statements, figures indicate the proportion of respondents who strongly agree / agree

Survey data also suggests significant shift from ICE to electric vehicles among the current car owners; Existing EV owners are more likely to buy an EV again



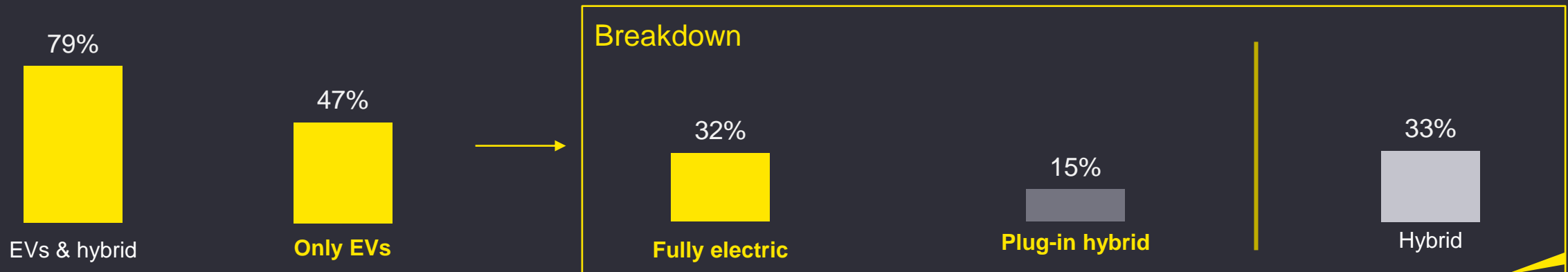
1 | Shift from ICE to EV ownership

Within the traditional vehicle owners who are planning to buy a car, 45% of them intend to buy an electric car



2 | Second time EV buyers

Among the EV owners who intend to purchase a car, nearly 80% would again prefer an EV in their next purchase



The pressure to abandon ICE powertrain in favor of the EVs will significantly increase in near future

Cities planning to ban the entry of internal combustion vehicles



Brussels - 2018 *(center, diesels EURO 0 & 1)*



Paris - 2019 *(diesels older than 13 years)*



Berlin - 2019 *(center, diesels manufactured before 2015)*



Madrid - 2020 *(center)*



Oslo - 2024 *(center)*



Rome - 2024 *(center, diesel)*



London - 2025 *(center)*



Amsterdam - 2030

Planned bans on sales of ICE vehicles



2025



2030



2030



2030



2030



2040



2040

Planned end of production of ICE



2025



2030



2026



2030 *(production in European factories)*



2030



2030 *(in Europe)*



2030



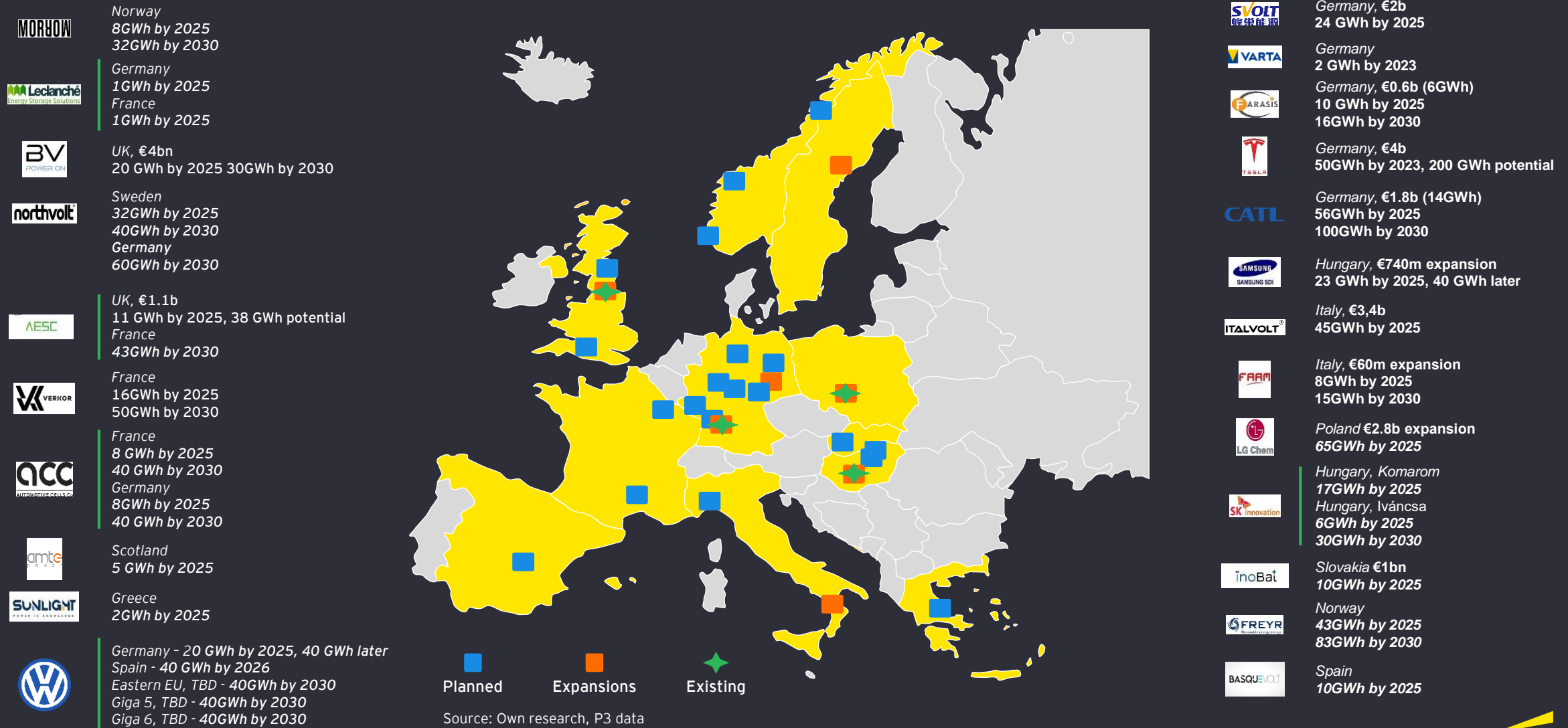
2035

Impact of the Gigafactory on the Czech economy



Europe is experiencing tremendous investment in the Lithium-ion battery industry as manufacturers try to grow alongside the inevitable future EV adoption

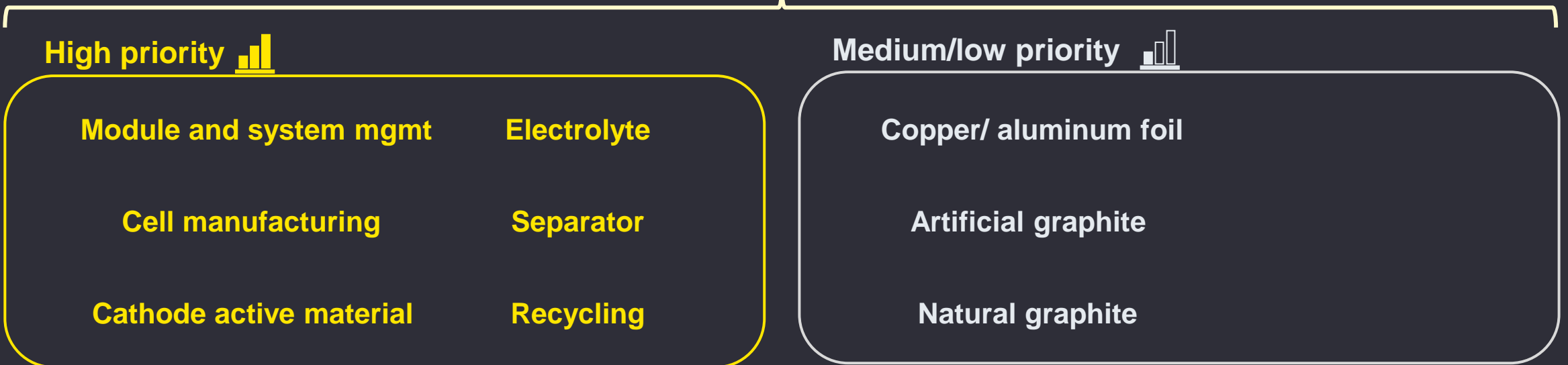
There is **over 1 TWh** of battery manufacturing capacity in the EU pipeline by 2030



Production of the EV battery is complex process with long planning and construction time, especially due to the material localization dependencies

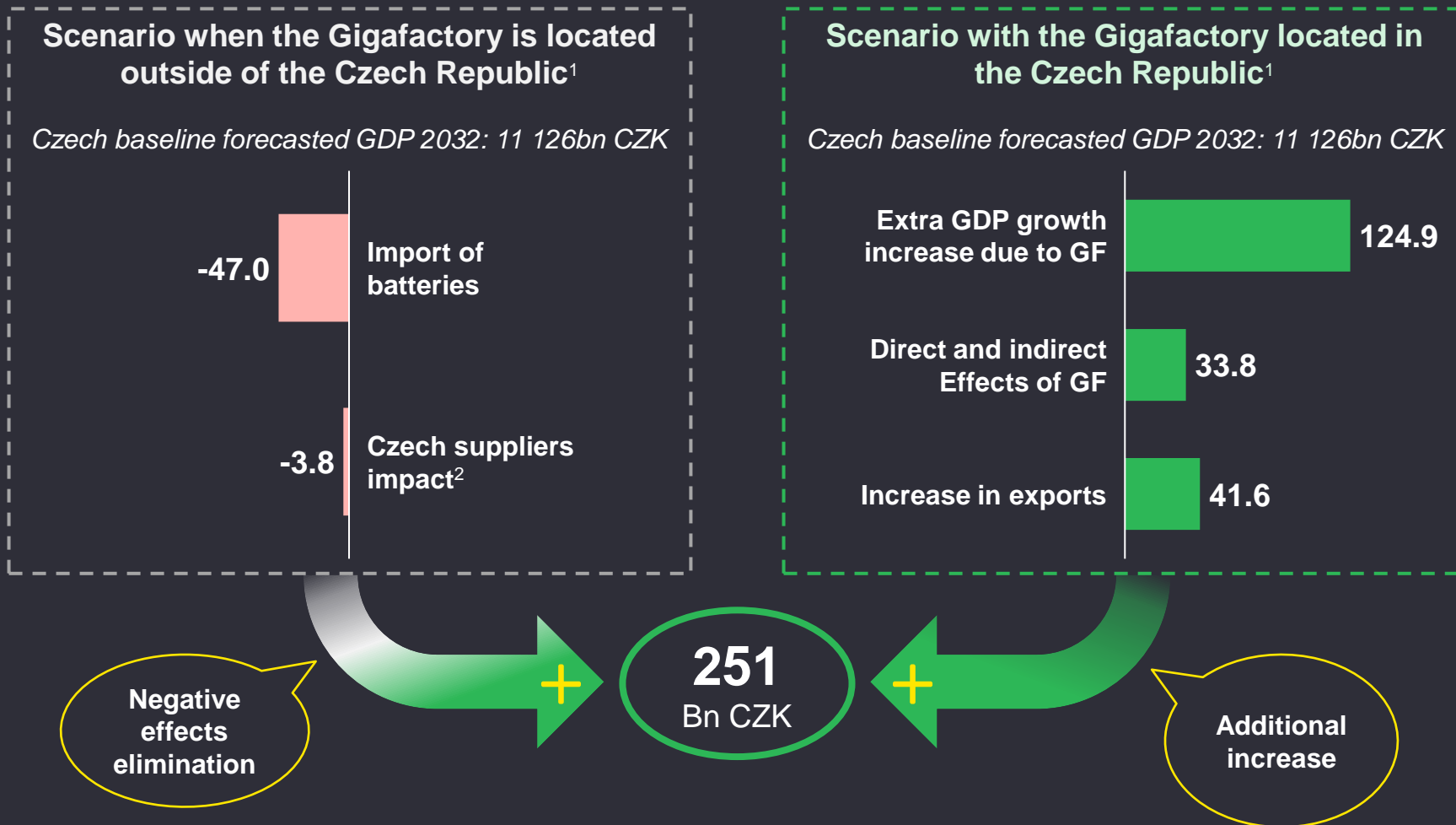
- ▶ Although automotive industry demand **significant amount of the batteries** for the eCars, battery producers have **limited capabilities**
- ▶ Limited capabilities are caused due to:
 - ▶ Li-Ion material and cell manufacturing are industrialization projects with approx. 18-30 months planning and construction period
 - ▶ Typical time of the ramp-up is 6-12 months to achieve targeted OEE and yield rates
 - ▶ The quality of the product must be confirmed by long-term field tests
- ▶ eCar battery consist typically of variety materials, each has **special manufacturing and localization requirements**

Battery materials by localization priority



The annual average net nominal GDP increase caused by the Gigafactory ecosystem is about 251 billion CZK between 2021-2032

The annual average impact to nominal GDP in 2 given scenarios:



Key findings

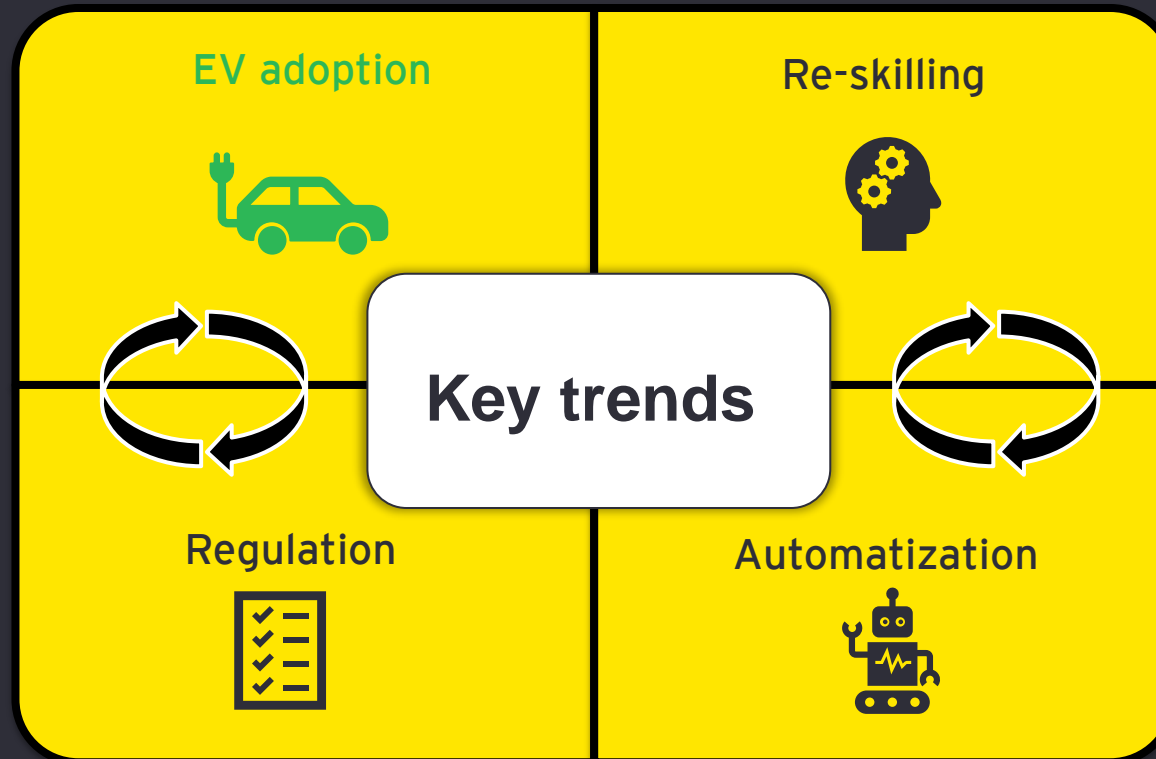
- ▶ The Gigafactory ecosystem can annually bring extra 251bn CZK to the nominal GDP combining the negative effects elimination (51bn CZK) and additional increase (200bn CZK)
- ▶ The biggest part of the increase is coming from **multiplication effects caused by the higher monetary flows** (125bn CZK)
- ▶ The second most impactful is **increase in export** related to Gigafactory ecosystem production (42bn CZK)
- ▶ The highest negative impact to the GDP growth (scenario without the Gigafactory) is coming from the **necessity of additional batteries import** for ŠKODA AUTO's BEV production which would otherwise be supplied by the Gigafactory (47bn CZK)

Transformation potential of Czech Automotive suppliers

These trends have a significant impact on the automotive industry and challenge the current supply base

- ▶ Global EV sales experienced **41%** growth (2019-2020)
- ▶ Projected EV sales to reach **31.1 millions** by 2030 (currently 3.1 millions)
- ▶ To a certain extent, lower amounts and different types of sub-components will be needed

- ▶ EV adoption is strongly supported by EU regulations such as: **a ban on ICE vehicles from 2035** and regulations included in Fit for 55
- ▶ **Euro 7** emission standards will impact the industry significantly from 2025 onwards



- ▶ Dramatically lower demand for **low-skilled** / manual jobs
- ▶ Conversely, higher demand for **high and medium skilled-job**
- ▶ This will be a challenge, however, the government offers support via **National recovery plan**

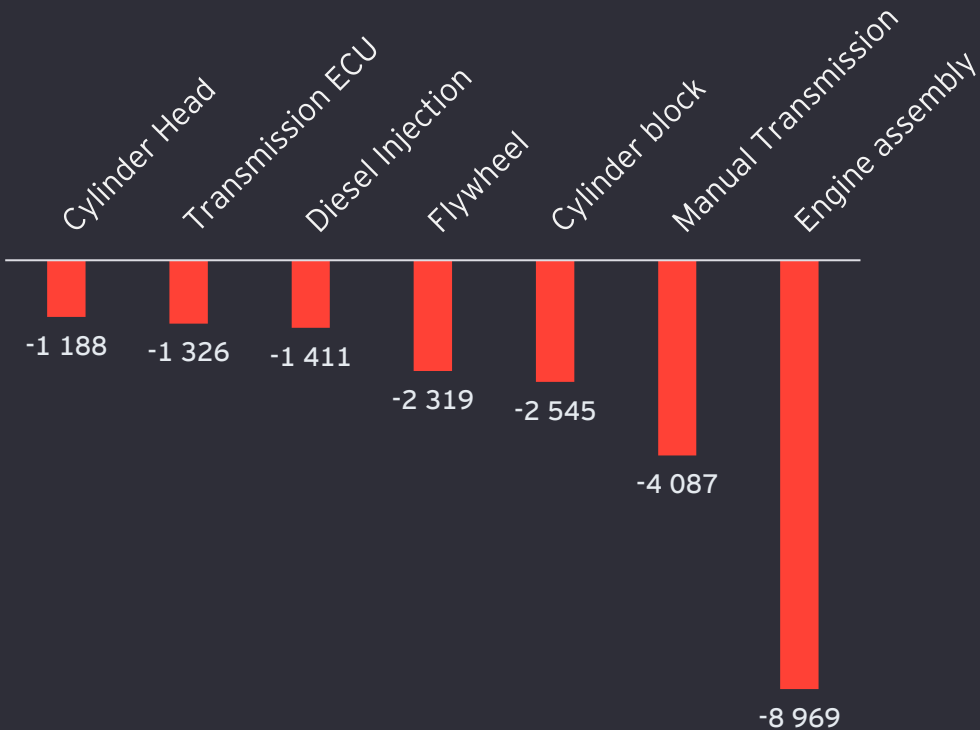
- ▶ The growing use of automation in manufacturing will increase output whilst reducing costs mainly thanks to **Industry 4.0**
- ▶ The automation efforts will require **significant investments** that will depend on the priorities of the owners
- ▶ Resulting in changing demand for **employee skillsets**

The market size of the electric powertrain supply chain is expected to rapidly increase at the expense of the conventional powertrain supply chain



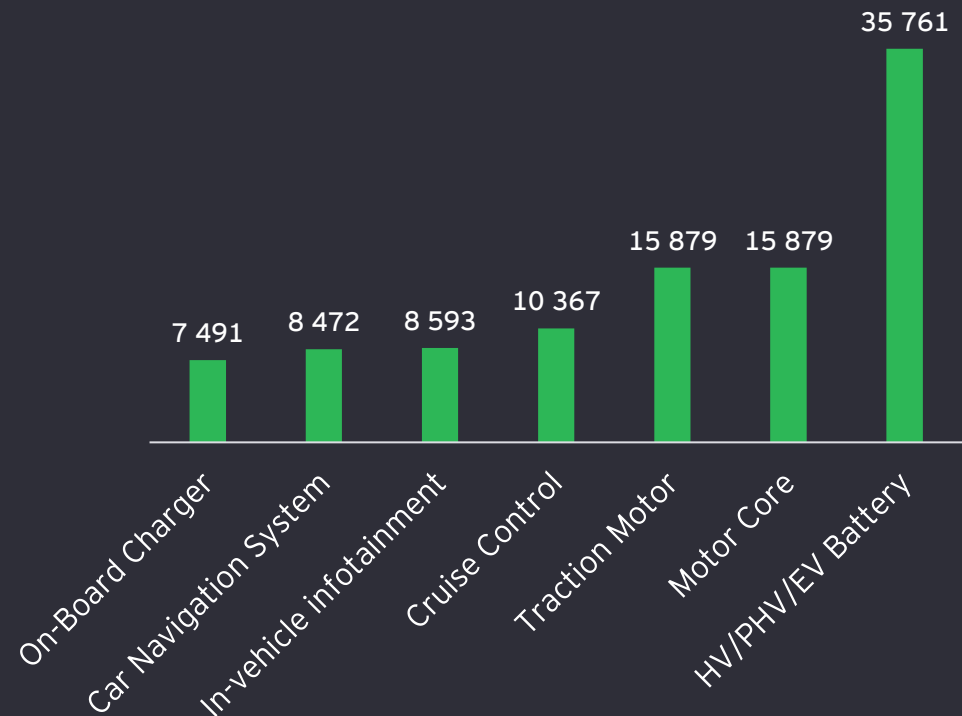
Market size of the conventional powertrain supply chain is expected to decrease between 2019 and 2030.

Component sub-category market value decline between 2019-2030 (in US\$ million)



Market size of the electric powertrain supply chain is expected to rapidly increase between 2019 and 2030.

Component sub-category market value increase between 2019-2030 (in US\$ million)



The study analyses 2,300 supplier groups supplying over 282 component sub-categories to 96 OEM groups in 44 countries.

Source: Marklines, EY forecasts, EY Parthenon analysis, Ricardo analysis



Current trends have accelerated the need to move from low value-added to higher value-added production and increased the importance of R&D.

European Automotive Supplier Park Transformation



Offshoring cycle



Offshore production of lower value-added products to countries with cheaper labor

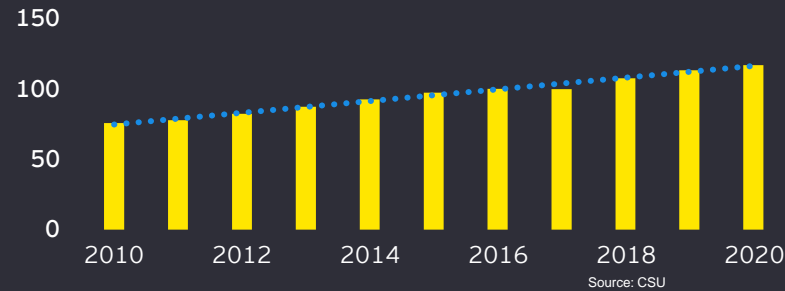


“Green deal” may threaten suppliers from Tier 2 or 3

Increased importance of R&D in CZE



Increasing number of R&D employees (thousand)



2018

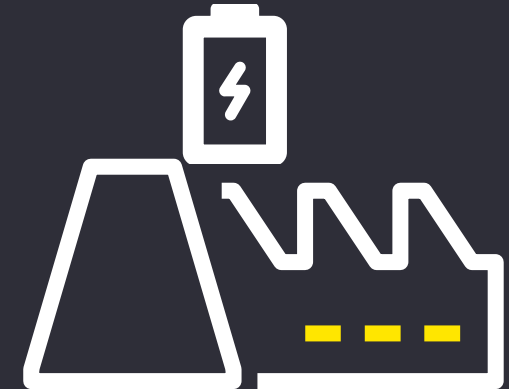


R&D investments in the Automotive almost doubled between 2015-2019 (bn CZK)



Companies, such as Continental, Robert Bosch, Valeo have decided to place their global **centers of excellence** in the Czech Republic

GF as a strategic hub for higher value-added production



Gigafactory strategic potential



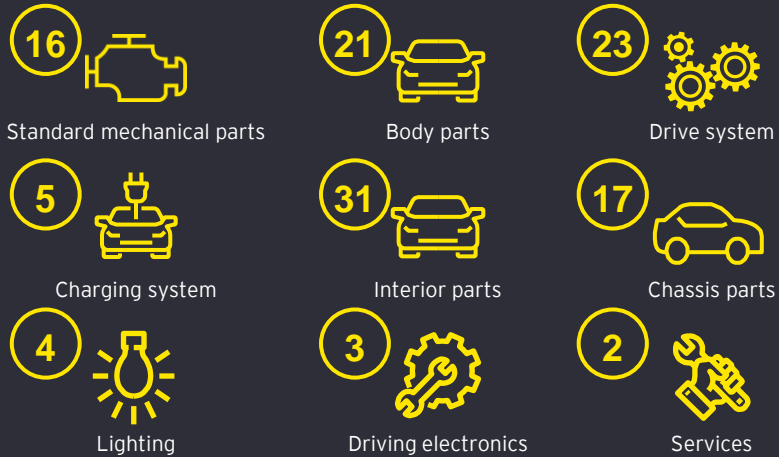
Gigafactory may attract other players resulting in even more R&D investments and supply of products with higher value-added



New companies could potentially fill the gap that may potentially emerge from offshoring activities

The current Czech supplier park produces a wide range of predominantly ICE components

Suppliers divided into 9 clusters:



Sample definition



A total of **122** Automotive suppliers



App. **90 %** of total market supplier base by its total revenue

21% of suppliers were identified as likely to be negatively affected by the shift to BEVs with Drive system as the most threatened supplier cluster

Breakdown into 3 categories of suppliers:

Not threatened by BEV



Based on their present competencies:

79% of suppliers should not significantly suffer from the BEV shift.

Threatened by BEV



Based on their present competencies:

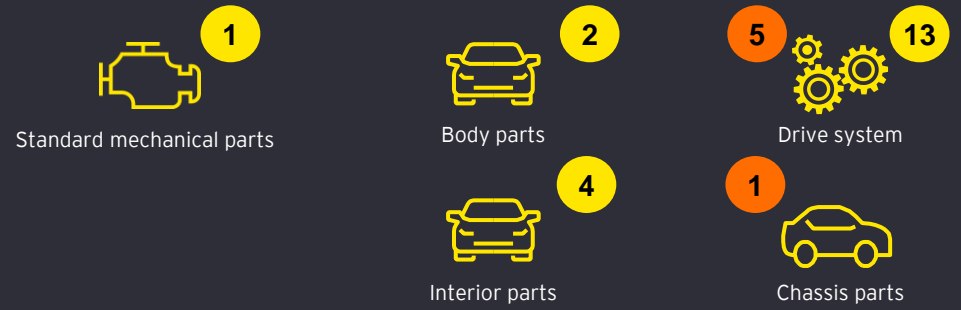
21% are identified as affected by the BEV shift to some extent*. The category counts for **14 % of employees from the whole supply chain..**

Threatened existentially by BEV

Based on their present competencies:



23% of identified partially affected suppliers are **existentially** threatened by the BEV shift, since their production is related solely to ICE.



*if one of their productive capabilities will be affected, then the supplier was labelled as partially threatened

Based on EY expertise, expert interviews with AutoSAP and interviews with selected suppliers.

25% of suppliers were identified as potential suppliers to the Gigafactory



Based on supplier's current competencies:



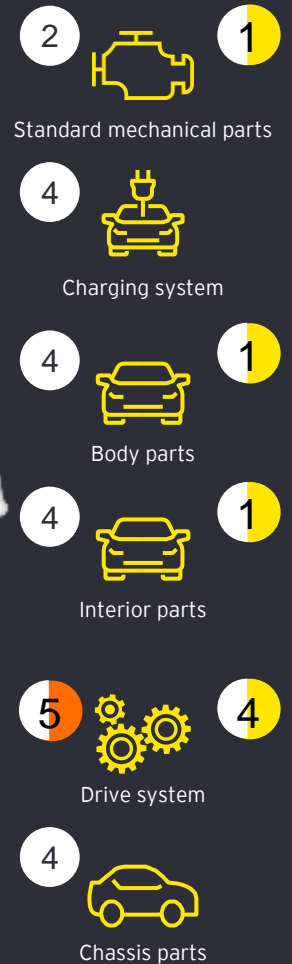
25%

of suppliers are identified as having the potential capabilities to supply sub-components for battery packs

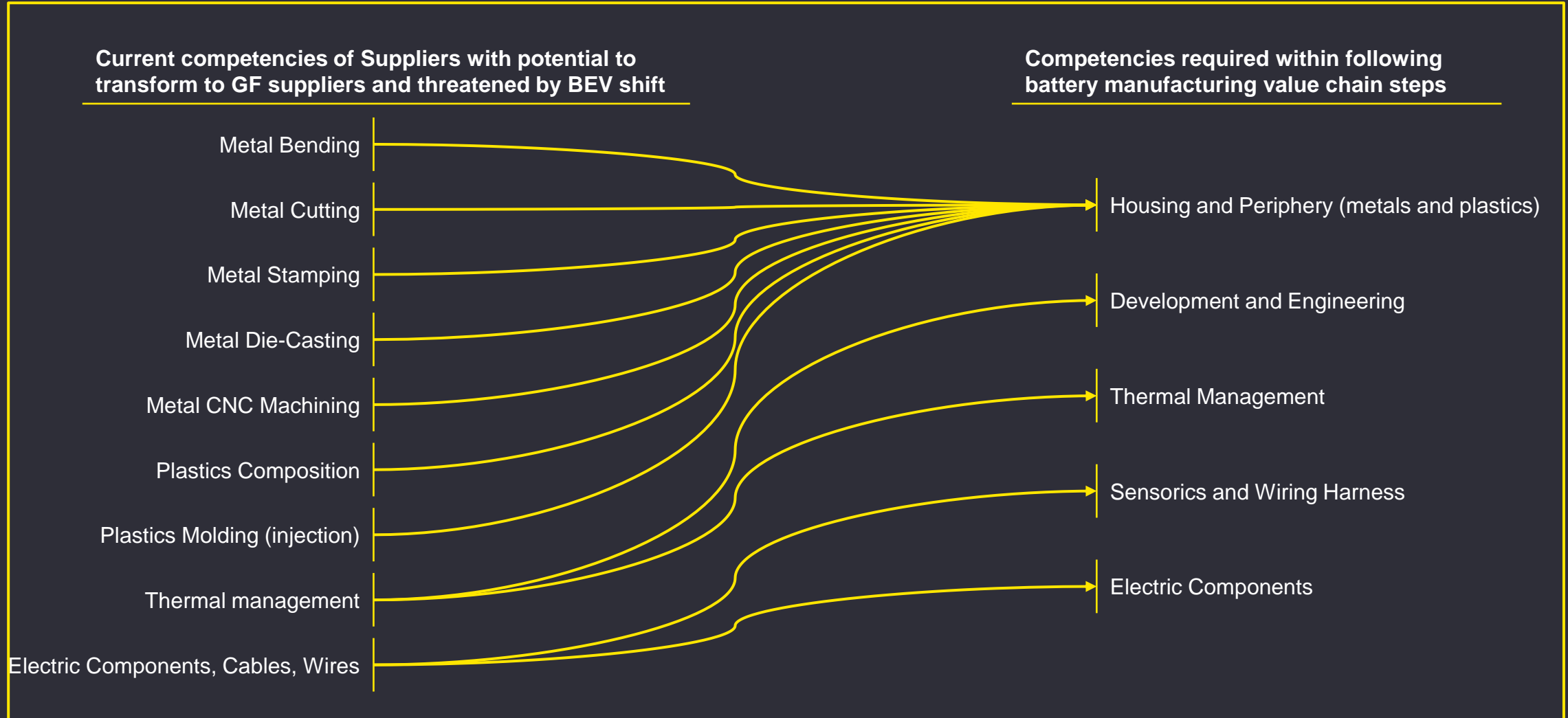


40%

of suppliers identified as having the potential to supply to the Gigafactory are in the threatened supplier's category



We have identified an overlap between competencies of the current supply park and the required competencies for the Gigafactory supply park



Suppliers need to start focusing on electric vehicles because the trend is inevitable and 21% of Czech suppliers are threatened by it.

SUPPLIER'S READINESS FOR CHANGE FROM ICE TO BEV

79 % of suppliers should be **less impacted** by the BEV shift as their components can be utilized in ICEs and in BEVs

Almost quarter of supplier base may suffer from BEV shift

The Automotive industry may **lose significant part** of the current supplier capacity

Suppliers believe that the **transformation will be an ongoing process** during this decade
Even after the ban in 2035, there will be an **aftermarket or demand for their goods outside of EU market**
Nevertheless, it will often mean further push for **cost cutting / cheaper locations**



Get rid of the nickname of an “assembly plant”



Battery has low number of components in comparison with ICE



30 companies can supply with sub-components and competencies



Production of batteries is deeply intertwined with chemistry

Gigafactory could become a source of support for eMobility, which is otherwise very limited in the Czech Republic.

The Czech Republic should not be a free-rider in this trend!

Based on EY expertise and from inputs obtained from interviews with AutoSAP and several suppliers

Gigafactory would have enormous impact on the Czech economy and suppliers should align with the trend



The electric vehicles already have 11% share in total car production in Czechia



Nominal GDP would increase by 251 bn CZK



Gigafactory may significantly increase R&D investments



21% of suppliers are likely to be threaten by shift to EV



25 % current suppliers have competencies to supply sub-components for batteries

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