



## **Policy Report**

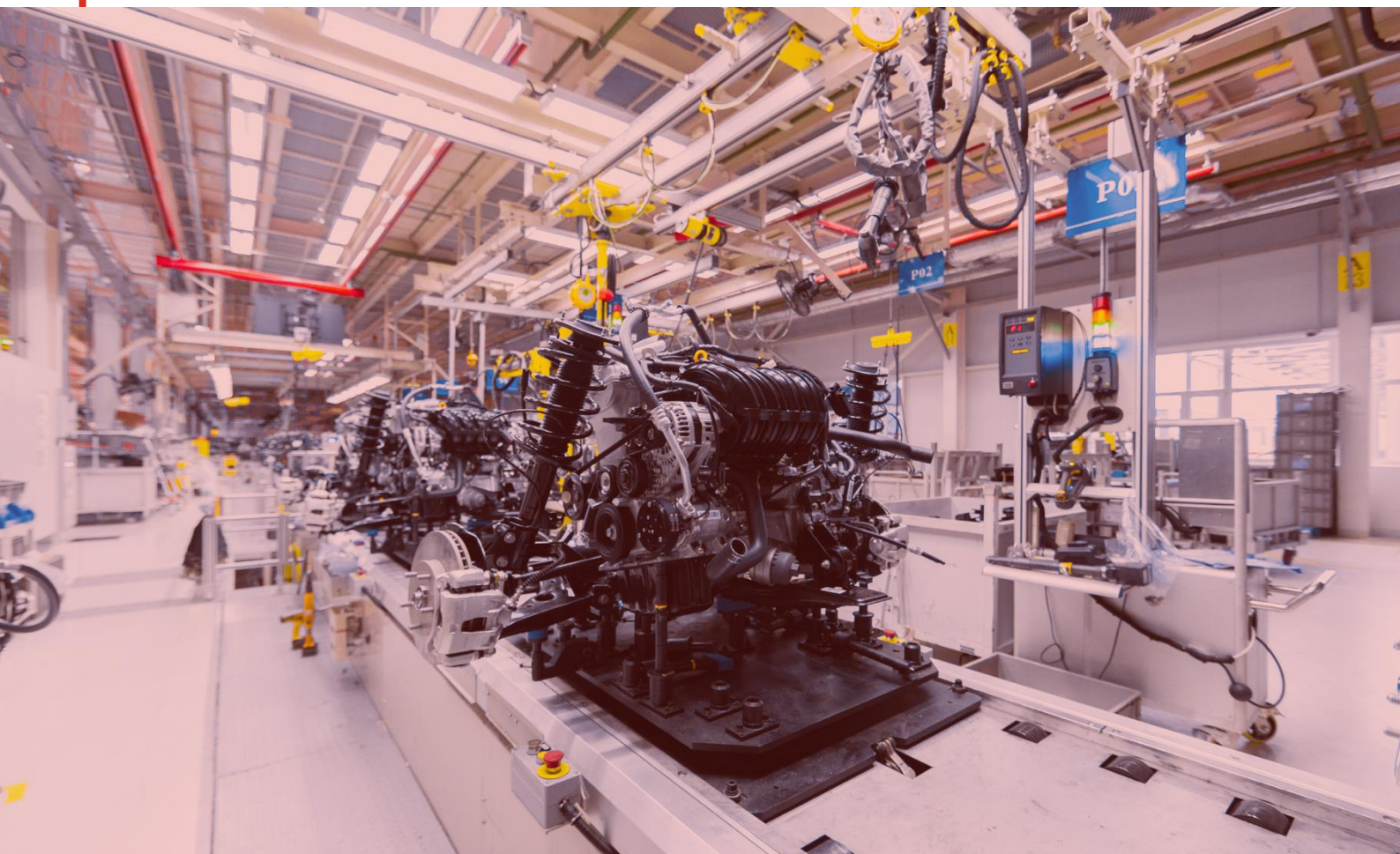
The perspectives of the Czech automotive industry's decarbonization – an updated review

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## Executive Summary

From the perspective of consumption, Czechia lacks the momentum of electric vehicles adoption as seen in the rest of Europe. Moreover, its fleet is on average one of the oldest in the EU. From the perspective of production, Czechia is highly dependent on automotive production and 90% of the final production is currently exported. With the pledges for transport decarbonization made around the globe, Czechia needs to produce such products that will be both of high value added and sought-after in the upcoming years – electric vehicles and batteries. There are two major challenges ahead. First, it is the need to decarbonize the transport sector in Czechia, which was responsible for 14% of total emissions in 2019 – the majority of which is attributable to passenger car transport (60% of yearly emissions<sup>1</sup>). Second, it is the need to maintain the competitiveness of the Czech automotive sector, build a better position in the CEE<sup>2</sup> value chain and possibly gain value added in the emerging e-mobility and battery value chain. Global trends inevitably shape local production towards clean mobility. Yet, the need for the automotive sector to keep up with global trends does not mean that the Czech public will accept these trends in terms of consumption, nor that the production side would be dependent on such consumption change. Nevertheless, e-mobility has been gaining momentum in CEE. In Czechia, the private sector is the primary driving force of this acceleration.

The major findings of this paper are the following:

**An issue to tackle:** A close look at registered imported cars reveals a rising trend of old car imports, especially of those older than 15 years (later referred to as end-of-life cars), which has grown tenfold in the last 12 years. Now, the current average age of the Czech passenger car fleet is 15.6 years. Although Czechia has already achieved a 0.24% share of chargeable electric vehicles in the fleet (almost 10,000 BEVs and 5,200 PHEVs)<sup>3</sup>, it is still in its infancy. The country had 9 chargeable electric vehicles per public charging point (more than 1,500 public charging points – as of September 2021), yet findings show that most drivers prefer to charge at home. Most consumers would prefer a car with battery longevity (8-10 years), 350 km per charge and price around CZK 300,000 (~€11,700<sup>4</sup>). Such a price is now only achievable on the used car market, which has also not matured yet – the used BEV market penetration is negligible.

**An assembly value chain:** The CEE region profited from the automotive value chain creation, as the net gain of jobs created between 2005-2016 skyrocketed. However, Czechia has one of the highest foreign control shares in automotive and quite a low innovation index. Achieving higher value added could be based on a skilled workforce in the emerging battery value chain, yet it could also represent a rise in wages, with low wages being a competitive advantage in CEE so far. The Czech government estimates that 50,000 jobs could be lost due to the automotive transition (10% of all indirect automotive jobs) in a worst-case scenario. Nevertheless, neutral and positive scenarios also exist, especially for the supply chain, and due to the spill-over effect. Inevitably,

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<sup>1</sup> Transport Research Centre. 2021. Study on Transport Trends from Environmental Viewpoints in the Czech Republic 2020, September 2021. Available at: [https://www.mzp.cz/C1257458002F0DC7/cz/doprava/\\$FILE/OOO-Studie\\_doprava\\_2021-20220117.pdf](https://www.mzp.cz/C1257458002F0DC7/cz/doprava/$FILE/OOO-Studie_doprava_2021-20220117.pdf).

<sup>2</sup> Central and Eastern Europe.

<sup>3</sup> Battery electric vehicles and Plug-in hybrid electric vehicles.

<sup>4</sup> In this report, the 2021 nominal exchange rate of CZK 25.645 = EUR 1 is used.



upskilling, reskilling and requalification programmes must be implemented together with updating the curricula at universities.

**What stakeholders think:** Stakeholders point to the high potential of the EU Multiannual financial framework for the upcoming 2021-2027 period and the Recovery and Resilience Facility. These funds will generally support clean mobility solutions, including the adoption of BEVs by the private sector, government, state institutions, as well as municipalities. In Czechia, most of this support goes to the private sector which is also the driving force of BEVs adoption. More than 70% of new cars are bought by the private sector and 80% of BEVs is currently operated by the private sector as well. The goal is to keep the incentivization in the form of accelerated depreciation for BEVs and lower the reference rate (1% of car purchase price) for calculating employees' taxable income. As well as to think about other applicable tax incentives – not only the purchase subsidy. However, the incentivization should also be targeted at education, infrastructure, and other areas to foster the green transition.

The main perceived risks are generally those that could negatively impact the value chain (including SMEs<sup>5</sup>) and consumers (some societal groups face a higher risk of job loss or inability to adopt BEVs due to lower purchase power). Stakeholders agree on the need to educate, reskill, and upskill the Czech workforce. Many stakeholders highlight the need to stop talking only about negative scenarios and instead focus on the opportunities which the automotive transition offers, including localization, new battery value chain, new green and technology patents in automotive and other emerging technology solutions. The newly amended Investment Incentivization Act could attract new investments in the battery value chain as well as a local “gigafactory”<sup>6</sup>, which stakeholders consider to be crucial. Some caveats point to technical issues connected to the proposed alternative infrastructure in the *Fit for 55* package. Furthermore, the upcoming EURO 7 emission standard (publication foreseen in Q1 2022) could lead to a much faster e-mobility transition than predicted. This standard would be in force already from 2025.

**What to expect:** Czechia plans to invest a minimum of CZK 34 billion (~€1.326 billion) into e-mobility infrastructure and transport.<sup>7</sup> There are still many incentives not utilized yet – low-emission zones, zero-emission lines, BEV-only parking capacities, or a car scrappage scheme coupled with BEV purchase subsidy. Although the *Fit for 55* package brings new and ambitious legislative proposals, the goal to collectively reduce EU emissions by at least 55% by 2030 (compared to the reference year 1990) has already been approved by all the EU member states. Furthermore, many countries, and, most importantly, OEMs<sup>8</sup> and their suppliers have already made intermediate targets and pledges to foster the e-mobility uptake. Binding Czech policy-making to an outdated model of the automotive sector and not giving the private sector a clear signal of understanding the need and urgency of green automotive transition could only undermine the Czech industrial competitiveness.

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<sup>5</sup> Small and medium-sized enterprises.

<sup>6</sup> Generally accepted term for large battery cell production plant – not only that of Tesla.

<sup>7</sup> Not only passenger e-mobility, but also public transport and its public charging infrastructure, and heavy-duty transport and its infrastructure.

<sup>8</sup> Original equipment manufacturers.



## Recommendations

The following recommendations were selected for their perceived importance amongst key automotive stakeholders. Moreover, these recommendations are of high importance before the upcoming Czech EU presidency starting in July 2022 and could be therefore taken into consideration by Czech policy-makers, the government and other key stakeholders.

1. **Need for systematic support of fleet renewal:** Czech government and local municipalities could both keep the existing BEV incentives (selected free parking, registration and road tax exemption, toll fees exemption) and introduce new incentives such as low-emission zones and zero-emission parking lots in municipalities across Czechia, city centre toll or zero-emission lines in large cities (i.e. Prague, Brno), and purchase subsidies for consumers coupled with an end-of-life car scrapping scheme by Ministry of Finance and Ministry of Environment. The Czech government could propose to raise the registration fee based on emission charge and try to decrease the rising import of old cars with higher charges.
2. **Strategic e-mobility communication:** The upcoming Czech presidency of the EU Council starting in July 2022 could be framed by a clear communication strategy for the e-mobility transition and marked by the willingness of policy-makers to find consensus on how to tackle the respective proposals included in the *Fit for 55* package. The Czech government in cooperation with Ministry of Transport, Ministry of Environment and Ministry of Industry and Trade could introduce new concise explanatory guidelines to clean mobility and guidelines for EU fundings opportunities in e-mobility. Another stream of communication could target the production side – there is no need to stress further only the negative scenarios of the impact on the Czech economy and its automotive sector. The employment spill-over effect could be addressed primarily, especially through education policy incentivizing upskilling, reskilling and new curricula, which can ensure competitiveness and jobs for the Czech workforce. Ministry of Education, Youth and Sports and Ministry of Labour and Social Affairs could promote the available fundings from the Recovery and Resilience Facility and Operational Programme Jan Amos Komenský.
3. **Investment (and reinvestment) incentivization:** Investment incentivization is necessary to strengthen the automotive sector, especially in the emerging battery value chain. The Czech government through the Ministry of Industry and Trade could propose a state aid targeted at battery value chain creation to support the future consortium of investors. There is a need to couple rising wage costs with higher value added of output per employee. Otherwise, Czech automotive employees could become relatively more expensive compared to the workforce in other CEE countries. The battery value chain could deliver such higher value added of output. Until now, the uptake of automotive jobs and FDIs in Czechia correlated with lower relative wages and lower corporate tax.
4. **Private sector incentivization:** To bolster the used car market and fleet renewal, the existing tax incentive of accelerated tax depreciation for vehicles (2 years) could be maintained for BEVs in the upcoming years. Moreover, an amount equal to 1% of the vehicle's purchase price considered as taxable income for the employee using a fleet car for personal purposes could be decreased by the Ministry of Finance to incentivize employees to



use BEVs, which are usually of the higher purchase price. Easy-to-go accounting rules or electricity reference prices could be better promoted through smart-metering deployment.

5. **Warranty for battery condition and longevity:** OEMs and technology providers could introduce new warranty programmes or promote existing ones that would target both consumers and the private sector including business lease companies. The information asymmetry prevails. People are generally not seeking to have up-to-date information. New guarantee programmes, risk insurances and other mechanisms for promoting battery condition of used cars can decrease the effect of market for *electric lemons* – an example would be an extension of the existing warranty programmes like Škoda Plus<sup>9</sup>, Hyundai Promise<sup>10</sup> or Toyota Prověřené vozy<sup>11</sup> for used cars to communicate the battery condition and longevity of used electric vehicles. It is possible that public is not familiar with such programmes.
6. **Battery value chain is the key for future automotive:** Several studies point to the necessity of battery value chain deployment to keep the jobs in the automotive sector and boost the value added. There is an urgent need on the EU level for strategic communication of mining activities and mining BATs<sup>12</sup>. The Ministry of Regional Development and the respective (coal) regions included in Just Transition Fund could address and bolster the battery value chain creation through the available funding. Ústecký and Moravskoslezský region could seize the cooperation between VSB-TUO<sup>13</sup> (operating in both regions) and other universities, mining companies, and enterprises of the emerging battery value chain. Geopolitics of raw materials will become more urgent in the coming years. Though it is impossible to become autonomous in the battery value chain on the EU level, new mining policies and deployment can partially lower the existing dependencies.

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<sup>9</sup> See: <https://www.skodaplus.cz/>.

<sup>10</sup> See: <https://www.hyundai.com/cz/prodej/vozy-bez-cekani/ojete-vozy.html>.

<sup>11</sup> See: <https://proverenevozy.toyota.cz/>.

<sup>12</sup> Best available techniques.

<sup>13</sup> Technical University of Ostrava – known not only for its history in education of geology and mining, but also for the research in the field of battery cells. See: <https://www.vsb.cz/en>.





## Introduction

The *Fit for 55* proposal<sup>14</sup> and the COP26 conference in Glasgow<sup>15</sup> initiated many public discussions of climate-related issues in the media primetime. Although automotive emission standards have been tightened in 2019<sup>16</sup>, a brand-new milestone is emerging in the automotive sector through the proposed *Fit for 55* and new EURO 7 emission standards.<sup>17</sup> On the one hand, the Czech public discourse has not changed vastly, and e-mobility is still perceived rather negatively by many consumers who prefer the status quo and reject it as decarbonization solution. On the other hand, a clear transition of the private sector towards clean mobility can be seen, which could also boost the used car market, hence the wider adoption of electromobility afterwards. Member states will be increasingly more responsible for transport emissions reduction under the *Fit for 55* package, which proposes a complex set of targets and policies to navigate the decarbonization challenge.

This report presents the results of Europeum's year-long project *Decarbonization of the automotive industry in Czechia*<sup>18</sup>. Firstly, we focus on adoption of BEVs and PHEVs in Czech passenger car fleet (M1) and the used car market. Secondly, we present the significance of automotive sector to Czech economy and selected macroeconomic indicators. Thirdly, we describe the results of project roundtables and stakeholder interviews. Lastly, we focus on the trend of e-mobility in the European context, its inevitability and the support seen in Czechia. This paper is a follow-up study to the first initial policy report<sup>19</sup> published in June 2021 with the intention to specify selected aspects and broaden the scope of research. The focus is particularly given to the BEV market. The goal is to overcome the mobility status quo by the time Czechia begins its EU presidency in July 2022.

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<sup>14</sup> European Parliament. Undated. Legislative Train Schedule Fit For 55 Package Under the European Green Deal. Available at: <https://www.europarl.europa.eu/legislative-train/theme-a-european-green-deal/package-fit-for-55>.

<sup>15</sup> See: <https://ukcop26.org/>.

<sup>16</sup> See: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R0631>.

<sup>17</sup> European Commission. Undated. European vehicle emissions standards – Euro 7 for cars, vans, lorries and buses. Available at: [https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12313-European-vehicle-emissions-standards-Euro-7-for-cars-vans-lorries-and-buses\\_en](https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12313-European-vehicle-emissions-standards-Euro-7-for-cars-vans-lorries-and-buses_en).

<sup>18</sup> EUROPEUM. Undated. Decarbonization of the automotive industry. Available at: <https://europeum.org/en/articles/detail/4276/decarbonization-of-the-automotive-industry>.

<sup>19</sup> Hrubý, M. 2021. The perspectives of the Czech automotive industry's decarbonization. EUROPEUM Policy Report, June 2021. Available at: <https://europeum.org/data/articles/pr-policy-report-ecf-01-1.pdf>.





## Climbing the wall

### *Market for electric lemons*

BEVs can have lower GHG emissions<sup>20</sup> over their lifecycle even with the current Czech carbon intensity of electricity.<sup>21</sup> While this paper focuses primarily on the CO<sub>2</sub> emissions of vehicles, passenger car transport is responsible for other GHGs and air pollutants. See Figure 1 for overview of the selected GHGs and pollutants, which are emitted by passenger cars transport (mostly due to tailpipe emissions, tires and breaks degradation or road abrasion). Pollutants such as nitrogen oxides (NO<sub>x</sub>), sulphur oxides (SO<sub>x</sub>) and carbon monoxide (CO) are responsible for range of diseases and premature deaths. Tailpipe emissions are nonexistent in the case of BEVs and FCEVs<sup>22</sup>, leading to drops in dangerous air pollution related to transport, especially in urban areas.

At the end of 2020, there was around 7,100 BEVs and 2,700 PHEVs registered in Czechia, which represented only as much as 0.15% of the total passenger cars fleet.<sup>23</sup> By the end of 2021, it rose to almost 10,000, 5,200, and 0.24%, respectively.<sup>24</sup> A research report on the attitudes of the Czech public on electromobility<sup>25</sup> shows that the public is not very opinionated. Almost half of the public is positive about the EU's influence on electromobility. However, skepticism persists about the nature of the subject of electromobility and its importance – according to the survey, citizens rank it behind all other environmental issues. Subsidies are supported by only 41% of the population. At the same time, there is great concern (60%) about the impact on the economy, industry, and labour market.<sup>26</sup>

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<sup>20</sup> Greenhouse gases. Although this report focuses on decarbonization (lowering CO<sub>2</sub> equivalent emissions through the life-cycle of passenger vehicles), one must remember that pollutants such as NO<sub>x</sub> or CO by ICEVs (internal combustion engine vehicles) as tailpipe emissions are responsible for deterioration of air quality and negatively influence health condition of mankind. Figure 1 depicts how the levels of selected pollutants have developed in Czechia since 2013. BEVs and FCEVs do not emit such tailpipe emission, yet still emit pollutants from tyre and breaks degradation or road abrasion (PM, SO<sub>x</sub> and others).

<sup>21</sup> Current Czech electricity emission factor is 0.38 tCO<sub>2</sub>/MWh (2020), it dropped by 31% compared to 2010, see: <https://www.mpo.cz/cz/energetika/statistika/elektrina-a-teplo/hodnota-emisniho-faktoru-co2-z-vyroby-elektriny-za-le-ta-2010-2020--260559/>. Also: IEA. 2021. Energy Policy Review: Czech Republic 2021, September 2021. Available at: <https://www.iea.org/reports/czech-republic-2021>.

<sup>22</sup> Fuel cell electric vehicles.

<sup>23</sup> European Alternative Fuels Observatory. Undated. Vehicles and fleet. Available at: <https://www.eafo.eu/countries/czech-republic/1729/vehicles-and-fleet>.

<sup>24</sup> CIVINET. 2021. Registrace všech čistých vozidel v ČR, January 2022. Available at: <https://www.civinet.cz/registrace-vsech-cistych-vozidel-v-cr/>.

<sup>25</sup> EUROPEUM, AMO and STEM. 2021. Nástroje a využití strategické komunikace v členských státech EU: boj proti dezinformacím a komunikace krizí v době předsednictví Rady EU a v rámci komunikace evropských záležitostí, 2021.

<sup>26</sup> Ibid.

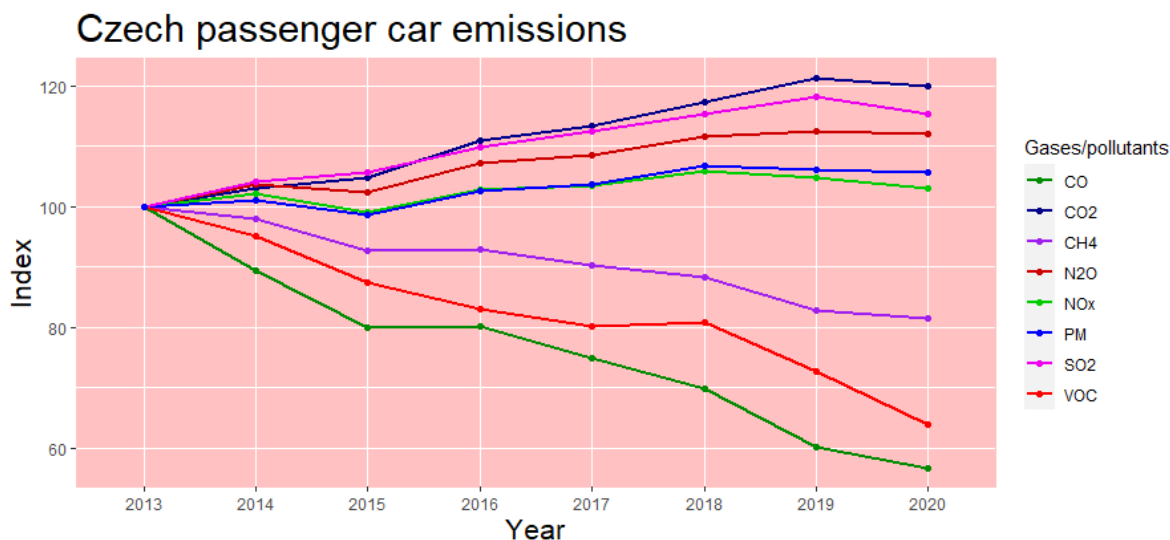


Figure 1 – CO<sub>2</sub> and other transport emissions on the rise<sup>27</sup>

A survey among Czech consumers also showed that they consider a range of at least 350 km per charge with a battery life of 8 to 10 years to be sufficient. At the same time, up to 43% of consumers said that they would plan to purchase a BEV/PHEV if the lower purchase price of around CZK 300,000 was reached (~€11,700).<sup>28</sup> The conclusions are consistent with previous research on Czech consumers, which showed a preference for BEVs with a range of at least 260 km per charge and a price below CZK 430,000 (~€16,800).<sup>29</sup> However, this can only be now achieved with a robust used electric car market. In the most recent consumer survey, 76% of respondents say they would worry about the battery condition if planning to buy a used electric vehicle (67% would worry about the lowering range per charge).<sup>30</sup>

These consumer preferences are only self-reported (stated), which might not reflect the actual adoption of BEVs in the upcoming years. However, the survey shows that 10% of respondents has already decided that they will buy an electric car in the future (4% BEV, 6% PHEV).<sup>31</sup> Nevertheless, the Czech consumers are the least willing ones to adopt e-mobility compared to the rest of the EU, as shown in the Climate Survey by European Investment Bank.<sup>32</sup>

<sup>27</sup> Own calculation. Data provided by: Transport Research Centre. 2021. Study on Transport Trends from Environmental Viewpoints in the Czech Republic 2020, September 2021. Available at: [https://www.mzp.cz/C1257458002F0DC7/cz/doprava/\\$FILE/OOO-Studie\\_doprava\\_2021-20220117.pdf](https://www.mzp.cz/C1257458002F0DC7/cz/doprava/$FILE/OOO-Studie_doprava_2021-20220117.pdf).

<sup>28</sup> Příbyl, M. 2021. Česká představa o elektromobilu? Cena do 300 000 korun, dojezd 350 km, ukázal průzkum, September 2021. Available at: <https://zpravy.aktualne.cz/ekonomika/auto/ceska-predstava-oelektromobilu-cena-do-300-000-korundojezd/r~bc1567a20a5411ecb91a0cc47ab5f122/>.

<sup>29</sup> Doronin, N. 2020. Návrh nástrojů marketingové komunikace elektromobilů vůči českému zákazníkovi. Diploma Thesis ŠKODA AUTO Vysoká škola, 2020. Available at: <https://theses.cz/id/a2lo3r/>.

<sup>30</sup> Ernst & Young. 2021. Očekávání automobilových zákazníků při nákupu a užívání vozidel, December 2021. Available at: [https://assets.ey.com/content/dam/ey-sites/ey-com/cs\\_cz/news/2021/12/ey-automotive-survey-2021.pdf](https://assets.ey.com/content/dam/ey-sites/ey-com/cs_cz/news/2021/12/ey-automotive-survey-2021.pdf).

<sup>31</sup> Ibid.

<sup>32</sup> European Investment Bank. 2022. Shopping for a new car? Most Europeans say they will opt for hybrid or electric, February 2022. Available at: <https://www.eib.org/en/surveys/climate-survey/4th-climate-survey/hybrid-electric-petrol-cars-flying-holidays-climate.htm>.



### Box 1 – National Action Plan for Clean Mobility

Czech key strategic document for clean mobility is the Czech National Action Plan for Clean Mobility (NAP CM) introduced in 2015 in a reaction to the EU directive on the deployment of alternative fuels infrastructure from 2014. An updated action plan was introduced at the end of 2019 by the Ministry of Industry and Trade, Ministry of Environment and Ministry of Transport, accepted by the Czech Government in 2020.<sup>33</sup> Based on the Information on the implementation of the 2020 NAP CM update, Czechia is fulfilling most of the measures indicated in the plan.<sup>34</sup> However, the high speed of technological development can be presented on the fact that the 2015 NAP CM assumed that electric car range per charge will be 150km in 2020 and 200 km per charge in 2025.<sup>35</sup>

Such technological development cannot be easily predicted. Today, we can buy a BEV with range higher than 400 km per charge, while mostly driving only distances lesser than 200 km. The 2020 NAP CM estimates that by 2030, there could be between 220,000 and 500,000 BEVs operating in Czechia. Other estimates of BEV fleet evolution show somehow similar scenarios. See Figure 2 which averages the existing scenarios and uses an element of extrapolation of annual growth rate from the previous years.

### Forecasted BEV fleet from 2020 to 2030

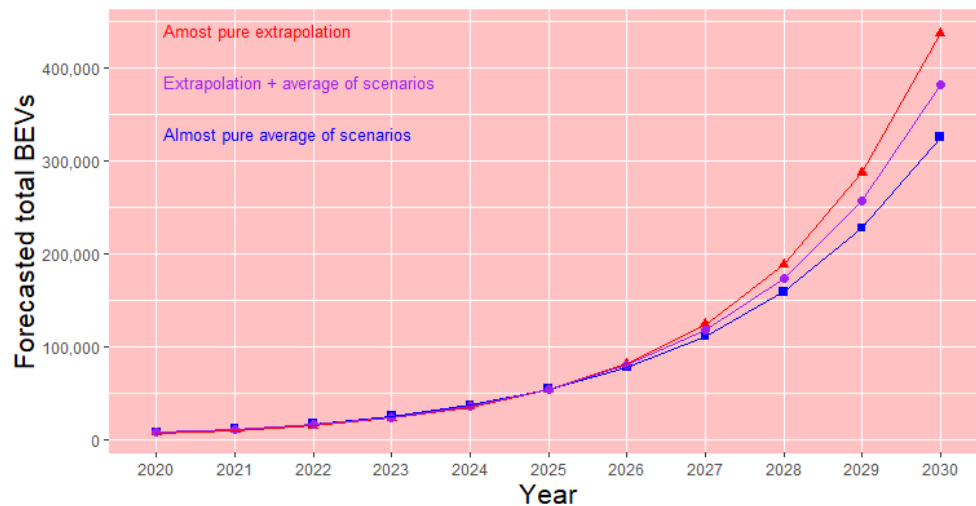


Figure 2 – Czech BEV fleet forecast<sup>36</sup>

<sup>33</sup> Ministry of Environment. Undated. Čistá mobilita. Available at: [https://www.mzp.cz/cz/cista\\_mobilita\\_seminar](https://www.mzp.cz/cz/cista_mobilita_seminar).

<sup>34</sup> Ministry of Industry and Trade. 2021. Opatření z Národního akčního plánu čisté mobility se daří plnit, October 2021. Available at: <https://www.mpo.cz/cz/rozcestnik/pro-media/tiskove-zpravy/opatreni-z-narodniho-akcniho-planu-ciste-mobility-se-dari-plnit-263903/>.

<sup>35</sup> Ministry of Industry and Trade. 2015. Národní akční plán čisté mobility, October 2015. Available at: <https://www.mpo.cz/assets/dokumenty/54377/62106/640972/priloha001.pdf>.

<sup>36</sup> Own calculation based on average annual growth and scenarios provided by: National Action Plan for Clean Mobility 2015, Car Importers Association, EuroEnergy, Česká spořitelna, National Action Plan for Clean Mobility 2019 and McKinsey & Partners.



In this report we focus mainly on adoption of BEVs and PHEVs. But speaking about newly sold cars is only one part of the decarbonization story, because issues related to the average age of Czech passenger car fleet (at the end of 2021 being approximately 15.6 years<sup>37</sup>) are newly registered imported cars and, more generally, the used car market. See Figure 3 representing the division of yearly registrations into two categories – newly registered imported cars and newly registered cars sold locally. In 2021, there were 185,000 imported cars registered compared to almost 207,000 new cars registered.<sup>38</sup>

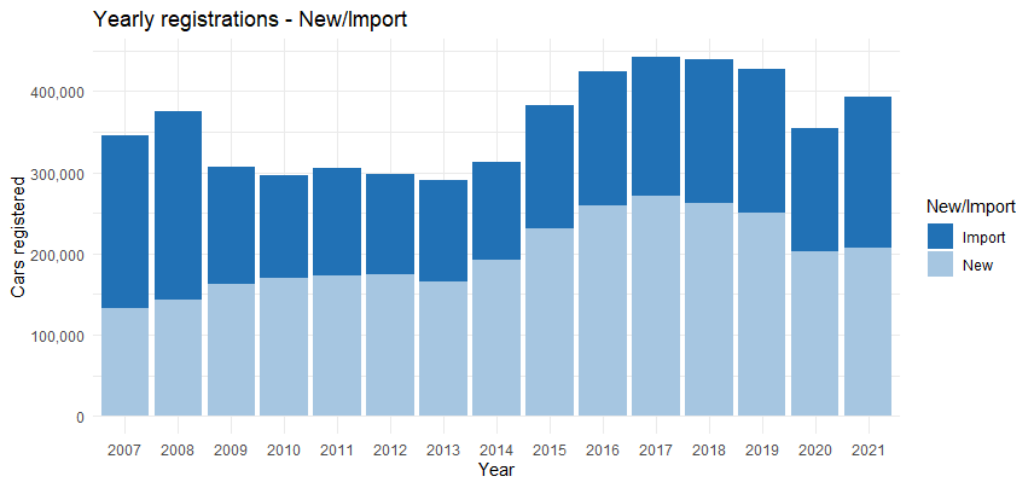


Figure 3 – Yearly registrations of new and imported cars<sup>39</sup>

A closer look at registered imported cars (see Figure 4) reveals a trend of rising import of old cars, especially of those older than 15 years (referred to as end-of-life cars), that has grown tenfold in the last 12 years.<sup>40</sup> This fully supports the caveat of Czechia being at the risk of peaking import of old ICEVs from western countries once bans or restrictions on ICEVs are set there. In 2021, cars older than 10 years counted for more than 50% of all registered imported cars (more than 21 pp of it were the end-of-life cars). As of January 2022, there is no scrappage scheme included in Czech legislation as a financial incentive for fleet renewal. It is mainly in competence of car dealers or OEMs to introduce similar schemes.<sup>41</sup>

<sup>37</sup> Car Importers Association. 2022. Přehled stavu vozového parku, January 2022. Available at: <https://portal.sda-cia.cz/stat.php?v#str=vpp>.

<sup>38</sup> Car Importers Association. 2022. Registrace nových OA v ČR 12/2021, January 2022. Available at: <https://portal.sda-cia.cz/stat.php?m#str=nova>.

<sup>39</sup> Car Importers Association. 2022. Registrace ojetých vozidel kat. "OA" v ČR, January 2022. Available at: <https://portal.sda-cia.cz/stat.php?o#str=ojie>.

<sup>40</sup> Ibid.

<sup>41</sup> Matoušek, J. 2020. Automobilky přichází s vlastním "šrotovným". Bonus za starý vůz nabízí Škoda i Toyota, June 2020. Available at: <https://zpravy.aktualne.cz/ekonomika/auto/srotovne/r~61fda262afc311eab408ac1f6b220ee8/>

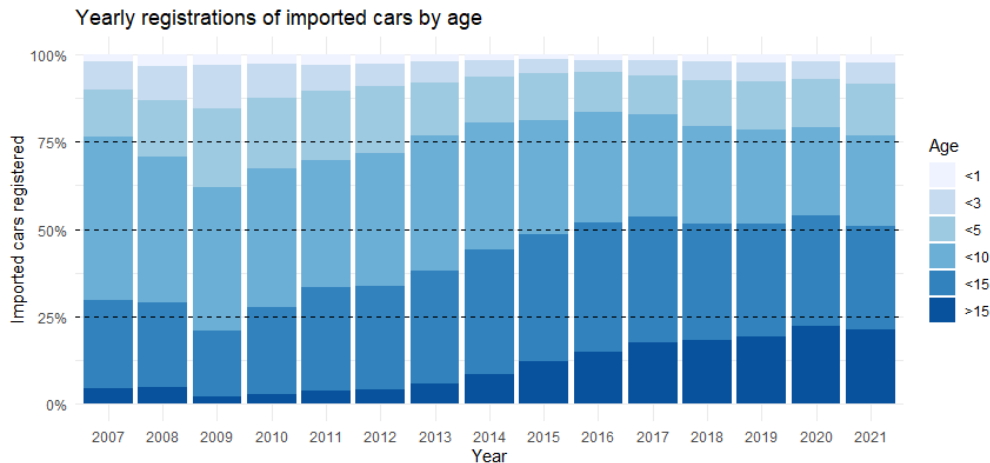


Figure 4 – Yearly registrations of imported cars by age<sup>42</sup>

### Chicken & egg problem?

From the perspective of infrastructure, there was more than 1,200 public charging points at the end of 2020.<sup>43</sup> As of Q3 2021, there was more than 1,500 public charging points, meaning 9 chargeable EVs (BEVs and PHEVs) per one public charging point.<sup>44</sup> The number of private charging points is unknown.

As reported previously<sup>45</sup>, there was a high inconsistency in the density of charging infrastructure across Europe. At the end of 2020, 75% of all public charging points was in the Netherlands, Germany, and France. This is also true when speaking about differences across regions – in Czechia, Liberecký region had 25 public charging points, Jihomoravský region had 171 public charging points and Prague, the capital, had 350 public charging points (as of Q3 2021).<sup>46</sup>

To decarbonize Czech transport, visible and easily attainable charging infrastructure is the basis for BEVs and PHEVs adoption. Although the transport emissions per capita are not the highest compared to selected EU member states and Norway (see Table 1), it is true that Czechia is facing the risk of an old cars increase in the upcoming years, which would lead to another increase in the average age of the passenger cars fleet. In Czechia, it is also true that wealthier people can on the one hand afford new and “cleaner” cars, but on the other hand they generally travel more, and their transport emissions from passenger car use are significantly higher.<sup>47</sup>

<sup>42</sup> Car Importers Association. 2022. Registrace ojetých vozidel kat. "OA" v ČR, January 2022. Available at: <https://portal.sda-cia.cz/stat.php?o#str=ojie>.

<sup>43</sup> CIVINET. 2021. Veřejné dobíjecí stanice v ČR, September 2021. Available at: <https://www.civinet.cz/verejne-dobijeci-stanice-v-cr/>.

<sup>44</sup> Ibid. EAFO shows slightly less than 1,500 – however, the local CIVINET statistics should be more up-to-date.

<sup>45</sup> Hrubý, M. 2021. The perspectives of the Czech automotive industry's decarbonization. EUROPEUM Policy Report, June 2021. Available at: <https://europeum.org/data/articles/pr-policy-report-ecf-01-1.pdf>.

<sup>46</sup> CIVINET. 2021. Veřejné dobíjecí stanice v ČR, September 2021. Available at: <https://www.civinet.cz/verejne-dobijeci-stanice-v-cr/>.

<sup>47</sup> Cibulka, J. et al. 2021. Uhlíkovou stopu bohatých navyšuje cestování, chudých vytápění. Spočítejte si tu svoji, May 2021. Available at: [https://www.irozhlas.cz/zpravy-domov/co2-uhlikova-stopa-letani-tridy-rozdeleni-klimatem-svobodou-kalkulacka-spocitat\\_2105100500\\_cib](https://www.irozhlas.cz/zpravy-domov/co2-uhlikova-stopa-letani-tridy-rozdeleni-klimatem-svobodou-kalkulacka-spocitat_2105100500_cib).



<b>Transport 2019</b>	<b>Czechia</b>	<b>Slovakia</b>	<b>Poland</b>	<b>Hungary</b>	<b>Germany</b>	<b>Denmark</b>	<b>Norway</b>
% of emissions	13.8	23.9	17.4	24.6	20.0	25.3	36.0
ktCO <sub>2</sub> eq	19,100	8,100	66,100	14,700	165,500	13,100	12,300
tCO <sub>2</sub> eq per capita	1.79	1.48	1.74	1.50	1.99	2.26	2.30
PCPs	780	580	840	720	39,300	2,700	13,770
vs. 2021 PCPs	1,420	1,270	3,670	2,260	50,080	4,170	19,540
BEVs	3,900	900	2,900	3,700	134,000	16,300	242,800
vs. 2021 BEVs	10,000	3,000	13,600	10,000	659,000	55,300	433,200
PHEVs	1,300	800	2,400	2,100	111,000	8,400	105,000
vs. 2021 PHEVs	5,200	2,700	15,600	9,500	609,800	67,200	172,600
2021 fleet share	0.24%	0.23%	0.12%	0.53%	2.62%	4.50%	21.12%

Table 1 – Transport emissions and BEVs adoption in selected EU member states and Norway<sup>48</sup>

<sup>48</sup> Statistics of 2019 total net emissions with international transport. See: <https://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer> and <https://www.eafo.eu/countries/european-union/23640/summary> and <https://www.civinet.cz/verejne-dobijeci-stanice-v-cr/>.



As discussed in chapter “Looking into the future”, it is true that the charging infrastructure development as well as BEVs adoption will be vastly supported in the upcoming years. In addition to the *Fit for 55* proposal, the emission targets will also be affected by the possible enforcement of the new EURO 7 emission standard, which could be applicable from 2025 for both light and heavy-duty road vehicles. This standard is to be presented in Q1 2022 and could both limit the range of offered engine types and accelerate the increase in the share of zero and low emission vehicles in the fleet. This transition to sales of BEVs and PHEVs at even faster pace is foreseen as a possible threat, if BEVs and PHEVs were not affordable for Czech consumers by the time of the standard coming into force.<sup>49</sup>

### *Looking at employment in automotive*

Although the adoption of BEVs and PHEVs is not that fast in CEE as in the Western Europe, one must focus not only on the transport decarbonization itself (on the consumer side), but also on the production side. For Czechia, the automotive industry is one of the pillars of the national economy. Apart from its almost 10% share in GDP<sup>50</sup>, 26% share in industrial production and 180,000 direct employees, it also accounts for almost a quarter, 23%, of the total exports of the Czech economy.<sup>51</sup> See Figure 5, where the automotive GVA<sup>52</sup> and employment are plotted. Therefore, it is necessary to look at the transport decarbonization task both in terms of national interest (the performance of the Czech economy) as well as in terms of the global interest (efforts to protect the climate). In 2021 (and in previous years, too), around 90% of produced passenger vehicles was exported – and, most importantly – the share of produced and exported electric vehicle is rising. Around 11% of produced passenger vehicles was electric (BEV or PHEV).<sup>53</sup>

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<sup>49</sup> Česká tisková kancelář. 2021. Emisní norma pro auta Euro 7 může vést ke zdražení aut, varuje Havlíček Evropskou komisí. EURACTIV, September 2021. Available at: <https://euractiv.cz/section/doprava/news/emisni-norma-pro-auta-euro-7-muze-vest-ke-zdrazeni-aut-varuje-havlicek-evropskou-komisi/>.

<sup>50</sup> Gross domestic product.

<sup>51</sup> Automotive Industry Association. Undated. Obecné základní přehledy. Available at: <https://autosap.cz/zakladni-prehledy-automotive/obecne-zakladni-prehledy/>.

<sup>52</sup> Gross value added.

<sup>53</sup> Automotive Industry Association. 2022. Výroba elektrických vozidel v České republice, January 2022. Available at: <https://autosap.cz/wp-content/uploads/2021/02/vyroba-a-odbyt-vozidel-1-12-2021.pdf>.



## GVA and employment in Automotive

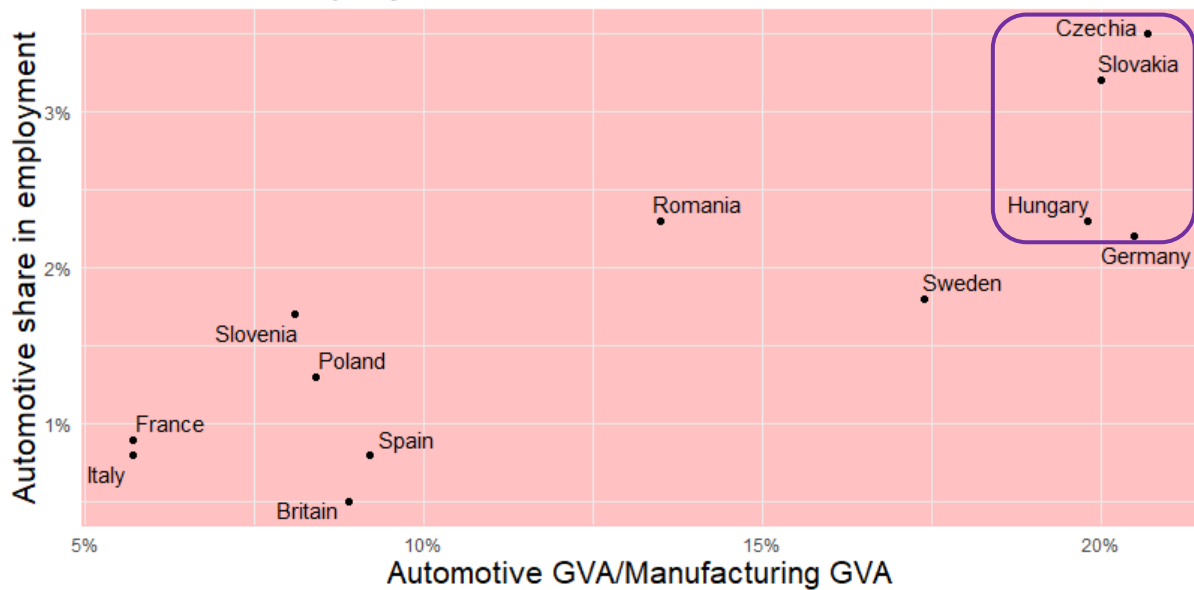


Figure 5 – GVA and employment in automotive<sup>54</sup>

In the past years, a raise in automotive employment was witnessed not only in Czechia, but also in other CEE countries. This “integrated periphery”, a term coined by prof. Pavlínek, has the advantage of lower labour wages, geographic proximity to lucrative markets, high degree of foreign ownership or limited development of high value added functions.<sup>55</sup> Pavlínek shows that there is statistically significant and negative relation between job creation and personnel costs, as well as job creation and corporate tax.<sup>56</sup> Figure 6 depicts the restructuring of EU automotive jobs by countries, showing the developments during the period 2005-2016 was very favorable towards CEE countries in terms of net job gains.

<sup>54</sup> Based on data provided by: Čížinská, R. et al. 2021. Position and Perspectives of the European Automotive Industry. ŠKODA AUTO University, 2021. ISBN: 978-80-7654-037-8.

<sup>55</sup> Pavlínek, P. 2021. Transition to the Production of EVs in the Integrated Periphery of the European Automotive Industry. Conference on European Economic Integration (CEEI) 2021, Recalibrating tomorrow's global value chains – prospects for CESEE, Vienna, November 2021. Available at: <https://www.oenb.at/Termine/2021/2021-11-22-ceei.html>.

<sup>56</sup> Pavlínek, P. 2020. Restructuring and internationalization of the European automotive industry. Journal of Economic Geography, Volume 20, Issue 2, March 2020, Pages 509–541. Available at: <https://doi.org/10.1093/ieg/lby070>.



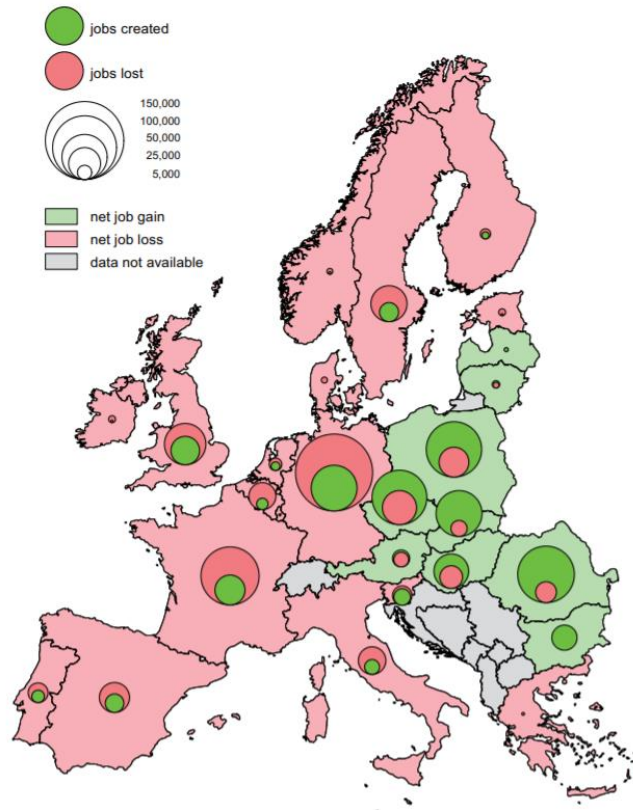


Figure 6 – Automotive jobs created and lost between 2005-2016<sup>57</sup>

A recent study<sup>58</sup> by Deloitte and the Modern Energy Union estimates that investment in battery production would not only contribute to the value added of the Czech GDP, but also boost employment in coal regions if the investments are directed this way.<sup>59</sup> In the best-case scenario, 33,000 jobs could be created in the whole battery supply chain (including indirect jobs).<sup>60</sup> However, Czechia has not yet joined the European Battery Alliance, as Hungary did at the end of September 2021, for example. Hungary shows a clear pathway strategy for the development of electromobility and a full-chain battery production.<sup>61</sup> Although there are many steps taken towards battery cell production and recycling<sup>62</sup> in the EU, Czechia is still at the very beginning of battery business development.<sup>63</sup> As GLOBSEC AutoFocus Slovakia project<sup>64</sup> shows, the modeling

<sup>57</sup> Ibid.

<sup>58</sup> Deloitte and Modern Energy Union. 2021. Rozvoj výroby baterií v Česku, September 2021. Available at: <https://www2.deloitte.com/cz/cs/pages/energy-and-resources/articles/proc-by-cesko-melo-mit-svou-gigafactory.html>.

<sup>59</sup> It would then fulfill the parameters to be applicable for Just Transition Fund.

<sup>60</sup> Deloitte and Modern Energy Union. 2021. Rozvoj výroby baterií v Česku, September 2021. Available at: <https://www2.deloitte.com/cz/cs/pages/energy-and-resources/articles/proc-by-cesko-melo-mit-svou-gigafactory.html>.

<sup>61</sup> Holubec, J. 2021. Evropská bateriová aliance, March 2021. Available at: <https://www.byznys-energie.cz/danek/evropska-bateriovaaliance>. See also: <https://hungarianbatteryday.hu/>.

<sup>62</sup> Northvolt. 2021. Northvolt produces first fully recycled battery cell – looks towards establishing 125,000ton/year giga recycling plant, November 2021. Available at: <https://northvolt.com/artides/recycled-battery/>.

<sup>63</sup> Strouhal, J. 2021. Gigafactory je signál, že chceme být součástí moderního autoprůmyslu, říká šéf ABB, September 2021. Available at: <https://forbes.cz/gigafactory-je-signal-ze-chceme-byt-soucasti-moderniho-autoprumsly-rika-sef-abb/>.



of future employment in automotive will highly depend on scenarios of battery production in respective EU countries. In Czechia, the memorandum<sup>65</sup> regarding the preparation of a project for a battery cell factory, the so-called gigafactory, signed by the Ministry of Industry and Trade and ČEZ, half-national energy provider<sup>66</sup>, is a good beginning. The gigafactory could be tied to the largest lithium deposit in the EU which is located in the Ústecký region in Czechia.<sup>67</sup> Another step towards new investments is the proposed amendment to the Investment Incentive Act, which could lead to an overall support of up to 20% of eligible costs of selected foreign investments.<sup>68</sup>

*Box 2 – Hungary: Love for BEVs and battery production?*

Currently, Hungary has a BEV purchase subsidy of €7,350 for cars with gross price of up to €32,000 and €1,500 if price is between €32,000-44,000. Tax exemption is valid for both BEVs and PHEVs for acquisition, ownership and for company fleet.<sup>69</sup>

As of September 2021:<sup>70</sup>

- 3<sup>rd</sup> largest battery production capacity in EU (26 GWh/year – Samsung SDI and SK Innovation)
- Since 2016, FDIs<sup>71</sup> in battery production reached €5.3 billion and created 14,000 new jobs
- Formed the Hungarian Battery Alliance, joined the European Battery Alliance since Q4 2021
- Created the Hungarian Battery Industry Strategy 2030
- Car and battery production and innovations must become integrated ecosystems

In January 2022, European Commission approved yet another state aid of €24 million for a battery copper foil plant<sup>72</sup>, which is the newest aid that builds on the previous state aids to the battery value chain in Hungary.

<sup>64</sup> Theisen, N. 2021. Slovakia: An Automotive Industry Perspective, August 2021. Available at: <https://www.globsec.org/publications/slovakia-an-automotive-industry-perspective/>.

<sup>65</sup> Ministry of Industry and Trade. 2021. Další krok k výstavbě Gigafactory. MPO a ČEZ uzavřely memorandum, July 2021. Available at: <https://www.mpo.cz/cz/rozcestnik/pro-media/tiskove-zpravy/dalsi-krok-k-vystavbe-gigafactory--mpo-a-cez-uzavrely-memorandum--262584/>.

<sup>66</sup> ČEZ also invests into Slovakian battery company InoBat, see <https://inobatauto.eu/>, and owns a majority in Geomet company – therefore it oversees the largest lithium deposit in the EU, Cínovec project, see <http://www.geomet-cz.com/ocinovci.php>.

<sup>67</sup> Government of the Czech Republic. 2021. Na záměru využití lithia z Cínovce spolupracuje veřejný, akademický i soukromý sektor, August 2021. Available at: <https://www.vlada.cz/cz/media-centrum/aktualne/na-zameru-vyuziti-lithia-z-cinovce-spolupracuje-verejny-akademicky-i-soukromy-sektor-190375/>.

<sup>68</sup> Confederation of Industry of the Czech Republic. 2021. Stanovisko k novele nařízení vlády k investičním pobídkám, September 2021. Available at: <https://www.spcr.cz/aktivity/stanoviska/14805-stanovisko-k-novele-narizeni-vlady-k-investicnim-pobidkam-2021>.

<sup>69</sup> European Automobile Manufacturers' Association. 2021. Electric Vehicles: Tax Benefits & Purchase Incentives, November 2021. Available at: [https://www.acea.auto/files/Electric\\_vehicles-Tax\\_benefits\\_purchase\\_incentives\\_European\\_Union\\_2021.pdf](https://www.acea.auto/files/Electric_vehicles-Tax_benefits_purchase_incentives_European_Union_2021.pdf).

<sup>70</sup> Kaderják, P. 2021. The Hungarian Battery Alliance (HUBA). Conference Hungarian Battery Day, Budapest, Hungary, September 2021. Available at: [https://hungarianbatteryday.hu/wp-content/uploads/2021/10/Kaderjak-Peter\\_Battery-Day\\_Zero-Carbon-HUB\\_prezentation.pdf](https://hungarianbatteryday.hu/wp-content/uploads/2021/10/Kaderjak-Peter_Battery-Day_Zero-Carbon-HUB_prezentation.pdf).

<sup>71</sup> Foreign direct investments.

<sup>72</sup> European Commission. 2022. State aid: Commission approves €24 million Hungarian investment aid to Volta Energy Solutions' battery copper foil plant, January 2022. Available at: [https://ec.europa.eu/commission/presscorner/detail/en/IP\\_22\\_182](https://ec.europa.eu/commission/presscorner/detail/en/IP_22_182).



During the National Convention on the EU, where national stakeholders discussed the future of e-mobility, the Czech Government expressed concern about the automotive employment, foreseeing a loss of around 50,000 jobs.<sup>73</sup> That would mean approximately 10% of indirect automotive jobs or almost 30% of direct automotive jobs. This estimate is also highlighted in the Czech government framework position regarding the *Fit for 55* package and the proposed CO<sub>2</sub> limits; however, the original study with calculation of such job loss estimate was not found.

Up-to-date study by CLEPA<sup>74</sup> shows a slightly different prediction for the Czech automotive supply chain.<sup>75</sup> The estimates show that between 2020 and 2040, the number of supply-chain employees will be stable (around 40,000), and there will be a raise in value added (+115%) made by suppliers thanks to the BEV market transition. This will be due to relatively long phase-out period of ICEV production and because of the low costs of personnel and energy.<sup>76</sup> It is complementary to the overall findings of Cambridge Econometrics<sup>77</sup> that a gradual shift to BEV and PHEV production will protect jobs better than an immediate shift to battery vehicles only. Although there are currently many more challenges and perceived risks in the Czech and EU automotive sector such as the pandemic-induced disruptions or shortage of materials, these are not examined in this paper.

*Box 3 – Germany: How many jobs could be lost? Or gained?*

In Germany, some studies point both to possible loss of around 170,000-200,000 jobs (from 882,000 direct automotive jobs) and to possible job creation of similar amount in energy sector and other services by 2030.<sup>78</sup> On one hand, German National Platform Future of Mobility<sup>79</sup> estimates the worst-case scenario of 400,000 lost jobs by 2030 (less than 50%), on the other hand, Volkswagen study by Fraunhofer Institute says that it could be actually around 105,000 lost jobs in this decade.<sup>80</sup> What must be stressed is the need for upskilling and reskilling of employees in order to prepare for automation, digitalization and spill-over effect between automotive and energy sector. For Czechia, it will be interesting to see the results of an ongoing project with participation of Masaryk University, Just Transition in the European Car Industry, to be presented in May 2022.<sup>81</sup>

<sup>73</sup> National Convention on the EU. 2021. Národní konvent o Evropské unii: Udržitelná mobilita v kontextu balíčku „Fit for 55“, Prague, Czech Republic, October 2021. Available at: <https://www.narodnikonvent.cz/2021/10/27/udrzitelna-mobilita-v-kontextu-balicku-fit-for-55-2/>.

<sup>74</sup> Automotive Association of Automotive Suppliers.

<sup>75</sup> PwC Strategy& and CLEPA. 2021. Electric Vehicle Transition Impact Assessment Report 2020 – 2040, December 2021. Available at: <https://clepa.eu/wp-content/uploads/2021/12/Electric-Vehicle-Transition-Impact-Report-2020-2040.pdf>.

<sup>76</sup> Ibid.

<sup>77</sup> Cambridge Econometrics. 2018. Reviewing the impact of the low-carbon mobility transition on jobs, September 2018. Available at: <https://www.camecon.com/what/our-work/reviewing-impact-low-carbon-mobility-transition-jobs/>.

<sup>78</sup> Amelang, S. 2021. How many car industry jobs are at risk from the shift to electric vehicles? July 2021. Available at: <https://www.cleanenergywire.org/factsheets/how-many-car-industry-jobs-are-risk-shift-electric-vehicles>.

<sup>79</sup> National Platform Future of Mobility (Germany). 2020. 1. Zwischenbericht zur Strategischen Personalplanung und -Entwicklung im Mobilitätssektor. January 2020. Available at: <https://www.plattform-zukunft-mobilitaet.de/wp-content/uploads/2020/03/NPM-AG-4-1-Zwischenbericht-zur-strategischen-Personalplanung-und-Entwicklung-im-Mobilit%C3%A4tssektor.pdf>.

<sup>80</sup> Fraunhofer IAO. 2020. Employment 2030, November 2020. Available at: <https://www.volkswagenag.com/presence/stories/2020/12/fraunhofer-studie/6095-EMDI-VW-Summary-um.pdf>.

<sup>81</sup> Just Transition in the European Car Industry. Undated. About the project. Available at: <https://justtransition.eu/about-project>



Yet, when talking about this transition, it has to be pointed out that many decisions in the automotive supply chain (Tier 1-3) and on the OEM-level are made outside of Czechia in the parent companies of different concerns. Regarding the value added in automotive production, R&D<sup>82</sup>, automation, and new patents will be strongly supportive to the overall automotive value. The CEE region, referred to as the integrated periphery, has not had the best position so far. See Figure 7.

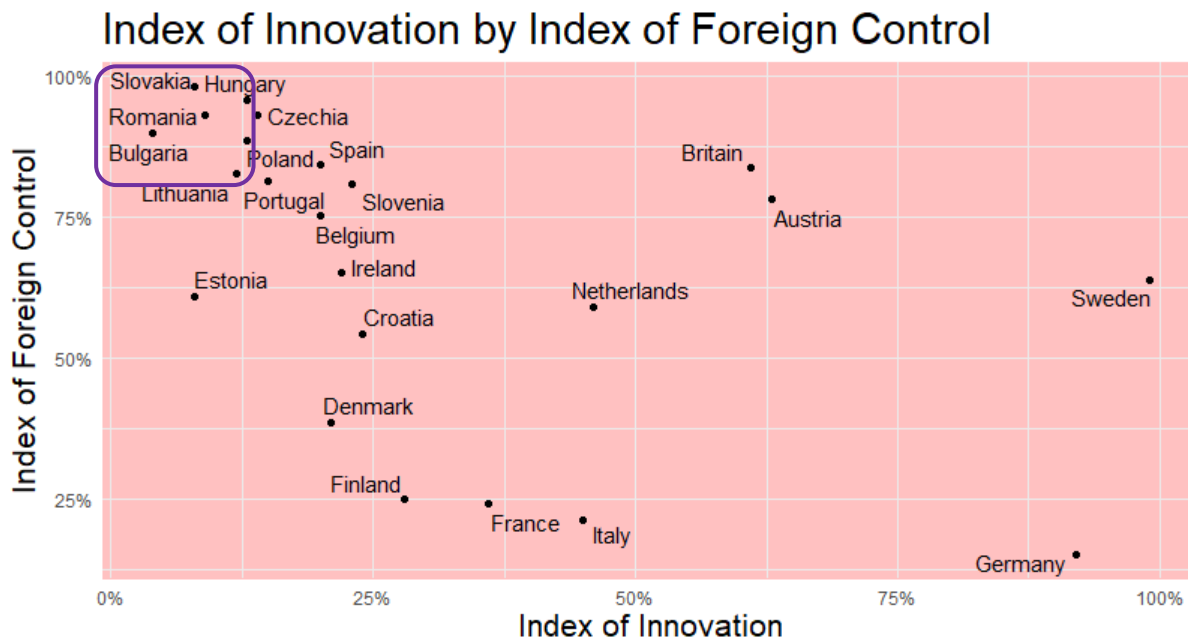


Figure 7 – Index of Innovation by Index of Foreign Control<sup>83</sup>

<sup>82</sup> Research and development.

<sup>83</sup> Based on data provided by: Pavlínek, P. 2021. Transition to the Production of EVs in the Integrated Periphery of the European Automotive Industry. Conference on European Economic Integration (CEEI) 2021, Recalibrating tomorrow's global value chains – prospects for CESEE, Vienna, November 2021. Available at: <https://www.oenb.at/Termine/2021/2021-11-22-ceei.html>.



## The (qualitative) opinion of stakeholders

To collect the opinion of Czech key stakeholders in the automotive sector and climate-related research, we conducted 2 closed-door roundtables and 7 follow-up interviews with selected stakeholders. In total, we were able to collect ideas coming from representatives of 34 different organizations, see Table 2.

Type of stakeholder	Number of participating stakeholders	Number of interviewed stakeholders
EU-level institutions	2	
Governmental institutions	5	2
Unions, confederations, platforms	3	1
Universities	4	
NGOs	11	
Automotive OEMs and suppliers	2	2
Energy and technology providers	4	2
Law & consulting	3	
Total	34	7

*Table 2 – Participating stakeholders*

Although the debates were unstructured and generally followed an open-discussion format after the initial presentation, we summarized the main ideas highlighted by the participants of roundtables and interviews. It is nevertheless important to distinguish between topics that are mostly connected to the Czech government and those connected to the private sector. We therefore collected the ideas and divided them into categories of Strengths (green), Opportunities (blue), Weaknesses (purple) and Threats (red). The given order of the ideas and thoughts does not mean that those on top would be relatively more important, they are ordered subjectively by the author.

We first start with the government-related opinions that could be considered Strengths and Opportunities (Figure 8). Most importantly, it was stressed that allocation of EU funds is really skyrocketing between 2021-2027 and many opportunities are connected to this in the clean mobility ecosystem. Moreover, the government can reassure the private sector in its priorities of green transition via new framework position towards *Fit for 55* package, increase the subsidy absorption and follow project results from other countries, where the e-mobility transition was initiated much earlier. The *Fit for 55* package will also bring higher sectoral emission reduction targets, which member states will be responsible for delivering.<sup>84</sup>

<sup>84</sup> European Commission. Undated. European Climate Law. Available at: [https://ec.europa.eu/clima/eu-action/european-green-deal/european-climate-law\\_cs](https://ec.europa.eu/clima/eu-action/european-green-deal/european-climate-law_cs).

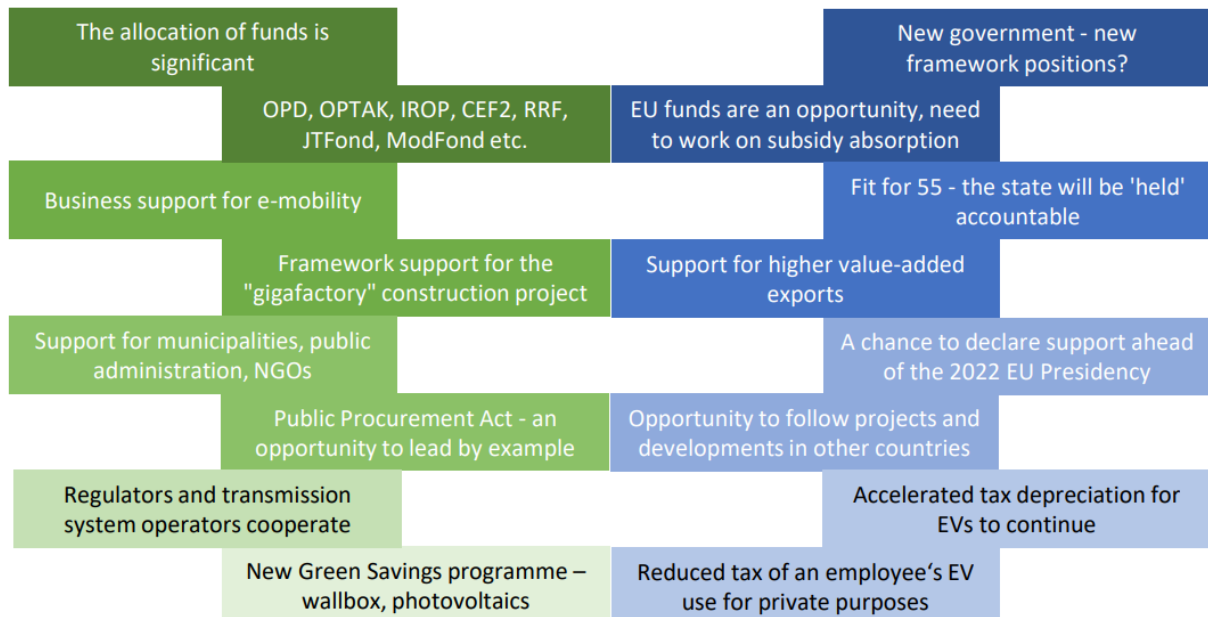


Figure 8 – Strengths and opportunities from the state's perspective<sup>85</sup>

In terms of Weaknesses and Threats (Figure 9), the main caveat was the lack of confidence in neutral or positive impact scenarios on macroeconomic indicators by the government. New skills and more qualified employees are necessary for such transition, yet there is not enough of them. It is not always the case that up-to-date information is circulating amongst consumers and much disinformation is connected to e-mobility, which is sometimes retweeted by media or the government itself. The Czech government does not support consumers via purchase subsidy of BEVs, and the administrative burden put on private sector is also seen as a barrier to fighting the status-quo. The main perceived threat is the impact of automotive transition on selected societal groups of Czech consumers. Facing the ongoing transition, SMEs are also considered at risk of this “green” restructuring in the whole automotive supply chain. Unemployment could be of regional or company-specific character. Speaking of BEVs adoption, one of the issues connected to Czech fleet is the high level of import of old cars and relatively low number of incentives for consumers to buy new cars. See also other ideas in Figure 9.

<sup>85</sup> OPD – Operational Programme Transport, OPTAK – Operational Programme Technologies and Applications for Competitiveness, IROP – Integrated Regional Operational Programme, CEF2 – Connecting Europe Facility, RRF – Recovery and Resilience Facility, JTFond – Just Transition Fund, ModFond – Modernization Fund.



Figure 9 – Weaknesses and threats from the state's perspective<sup>86</sup>

From the perspective of the private sector and its perceived Strengths and Opportunities (Figure 10), we found quite positive stance in regards to the green transition. It may be the case that those who joined our roundtable were also seeking more positive-oriented debate about e-mobility. Nevertheless, the path is clearly set according to stakeholders and the investments towards low-carbon solutions have already been decided. The key opportunity in the view of stakeholders is the possibility to keep or even increase value added of local products and to keep the relative share of exports. Many new sectors are emerging – battery production and recycling, energy storage solutions, new services. All these open doors to new investments, both local and FDIs. Still, localization and reinvestments of international concerns would be the preferred option.

<sup>86</sup> STK – state technical inspection.

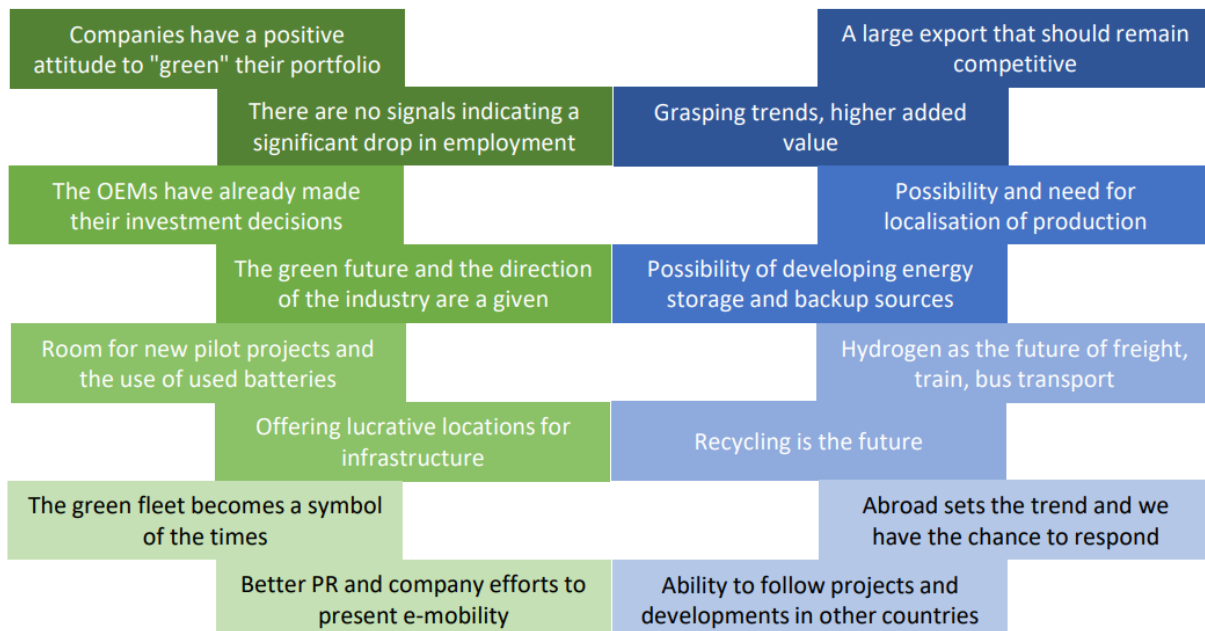


Figure 10 – Strengths and opportunities from the private sector's perspective

Considering both Weaknesses and Threats (Figure 11), the private sector is generally more cautious about human capital and new climate-related investment risks. New skills are needed for their employees to stay competitive on the market – upskilling, reskilling, and requalification programmes. However, already now there is a lack of workforce in Czechia and many foreign workers would be needed for the capacity of Czech assembly manufacturing, if such assembly manufacturing model is to prevail. Furthermore, many companies are foreign-owned and bringing higher value added to local production may not always be in local competencies. Speaking of infrastructure, although the subsidies for capital expenditures are significant, it does not cover operating costs and it brings some disadvantages to the possible upgrade of already built charging stations. Furthermore, some envisioned infrastructure milestones set by the *Fit for 55* proposal seem technically unachievable. Then there are many “unknown knowns” such as the EURO 7 emission standard proposal to be published in 2022, the changing goals and ambitions of the green transition and the prediction for sourcing and prices of raw materials and other inputs.





Figure 11 – Weaknesses and threats from the private sector's perspective<sup>87</sup>

<sup>87</sup> AC – alternating current.



## Looking into the future

### *Fit for 55 challenges*

Czechia now stands in front of the upcoming EU presidency starting in July 2022. Whatever the public debate, both the Czech government and the key automotive stakeholders cannot afford to defend the industry without a modern battery value chain and e-mobility supply chain. Such value and supply chains will probably be the basis for exports, hence Czech economy. The automotive sector is a private sector; therefore, it depends on private decisions. Yet it operates within a wider framework, where legislation, political decision-making and public acceptance play a significant role.

#### *Box 4 – National Convention on the EU<sup>88</sup>*

Debate organized by the Czech Office of the Government on e-mobility during the National Convention on the EU was concluded with these final recommendations for the Czech government. Although the newly formed government might take a different framework position on the *Fit for 55* package, it holds that the Czech government could:

- Be cautious when considering postponing the 2035 date set by the *Fit for 55* proposal as the end of sales of non-zero emission vehicles. It is a preferred date by majority of EU member states and EURO 7 can make this transition even faster.
- Demand a revision of the methodology for setting targets for passenger and freight charging/refueling infrastructure. The targets for passenger cars seem insufficient given the ambitions of *Fit for 55* and too ambitious for freight transport.
- Consider developing a unified concept for clean mobility communication. The challenge seems to be the strategic communication of clean mobility and communication towards Czech consumers.
- Take technology neutrality into account and continuously and unanimously support the available solutions for decarbonization of transport (e.g. through tax and levy instruments) – e-mobility, hydrogen technologies and the development of bio- and synthetic fuels.
- Use the available EU financial framework for the renewal of the public transport fleet, as well as for motivating consumers to use it through appropriate incentives and for the development of sustainable mobility in Czechia.

Within the proposed *Fit for 55* package<sup>89</sup>, there are several proposals directly or indirectly affecting transport, which follow the European Commission communication on Sustainable and

<sup>88</sup> Hrubý, M. 2021. Doporučení: Udržitelná mobilita v kontextu balíčku „Fit for 55“, October 2021. Available at: <https://europeum.org/data/articles/pdf-cz.pdf>.

<sup>89</sup> European Parliament. Undated. Legislative Train Schedule Fit For 55 Package Under the European Green Deal. Available at: <https://www.europarl.europa.eu/legislative-train/theme-a-european-green-deal/package-fit-for-55>.



Smart Mobility Strategy.<sup>90</sup> All the proposals in the *Fit for 55* package have the goal of collectively reducing Europe's CO<sub>2</sub> emissions by at least 55% by 2030 compared to 1990. For transport, the essential proposals are:

- revision of the Regulation setting CO<sub>2</sub> emission performance standards for new passenger cars and for new light commercial vehicles,
- revision of the Directive on the deployment of alternative fuels infrastructure,
- revision of the Effort Sharing Regulation (ESR),
- amendments to the Renewable Energy Directive (RED),
- revision of the EU Emissions Trading Scheme (EU ETS); and
- revision of the Energy Taxation Directive (ETD).

In December 2021, the Czech Senate voted against the currently proposed *Fit for 55* package. It has adopted reasoned opinions on both of the main proposals relating to car transport – revision of the Regulation setting CO<sub>2</sub> emission performance standards and revision of the Directive on the deployment of alternative fuels infrastructure. However, this served mostly a declaratory purpose and it did not change the fact that the goal of at least 55% emission reduction by 2030 is mandatory for the EU and the *Fit for 55* proposal remains on the table and will be in all likelihood approved by the member states and the European Parliament in due course.

Furthermore, if the European automotive industry wants to stay competitive, necessary steps are needed in critical raw material strategy, and delays of the Sustainable Battery Regulation, proposed in December 2020, are not productive.<sup>91</sup> The European Commission announced the launch of an industrial alliance dedicated to securing a sustainable supply of raw materials in Europe.<sup>92</sup> Recently, Northvolt has made the first EU-sourced battery cell<sup>93</sup>, yet many more similar projects would be needed to supply the rising demand for battery cells in the EU-wide automotive sector, including recycling.<sup>94</sup>

The transition towards battery value chain is supported vastly by the EU, be it the legislative framework and strategies, education and R&D support or strategic alliances such as the European Battery Alliance. In Czechia, Technical University of Ostrava, Czech Automotive Industry Association and private company He3da are involved in one such EU-wide project<sup>95</sup>, and many more joint projects exist. Nevertheless, the EU has approved already second large public support

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<sup>90</sup> European Commission. 2021. Strategie pro udržitelnou a inteligentní mobilitu – nasměrování evropské dopravy do budoucnosti, September 2020. Available at: <https://data.consilium.europa.eu/doc/document/ST-14012-2020-INIT/cs/pdf>.

<sup>91</sup> European Commission. Undated. Critical raw materials. Available at: [https://ec.europa.eu/growth/sectors/raw-materials/areas-specific-interest/critical-raw-materials\\_en](https://ec.europa.eu/growth/sectors/raw-materials/areas-specific-interest/critical-raw-materials_en)

<sup>92</sup> European Commission. 2020. Critical Raw Materials Resilience: Charting a Path towards greater Security and Sustainability, September 2020. Available at: <https://ec.europa.eu/docsroom/documents/42849>.

<sup>93</sup> Northvolt. 2021. Northvolt produces first fully recycled battery cell – looks towards establishing 125,000 ton/year giga recycling plant, November 2021. Available at: <https://northvolt.com/artides/recycled-battery/>.

<sup>94</sup> EIT InnoEnergy – EBA250. 2021. Closing the loop: battery recycling picking up momentum in Europe, December 2021. Available at: <https://www.eba250.com/closing-the-loop-battery-recycling-picking-up-momentum-in-europe/>.

<sup>95</sup> ALBATTs. Undated. About Albatts. Available at: <https://www.project-albatts.eu/en/aboutus>.



via state aid for battery value chain of selected countries, and Czechia was not part of such IPCEI.<sup>96</sup>

### *Is the in-EV-itable future happening now?*

As you can see in Figure 12, there were many pledges and targets made before 2021.<sup>97</sup> Last year, the need to decarbonize the transport sector, including passenger car fleet, was highlighted during the Glasgow COP26 by many nations – Europe is not the only region planning to heavily decarbonize. It has also been stressed by Zero Emission Vehicle Transition Council under ICCT<sup>98</sup> that only BEVs and FCEVs are able to become “very low-GHG passenger vehicles” with currently used technologies.<sup>99</sup>

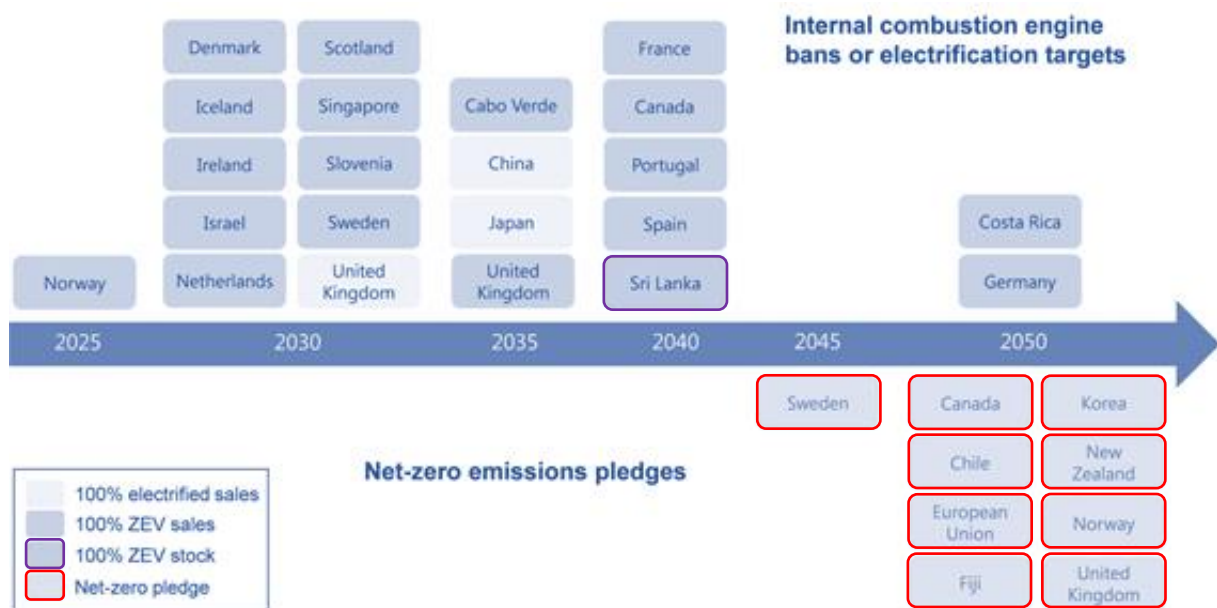


Figure 12 – Zero Emission Vehicle announcements<sup>100</sup>

There is a clear transition path and Czechia must follow these trends, otherwise the industry will easily lose its competitiveness. In the post-pandemic recovery, many EU funds are targeted at “greening” the industry, usually through the dual green-and-digital transition. However, countries

<sup>96</sup> Important Project of Common European Interest. European Commission. 2021. State aid: Commission approves €2.9 billion public support by twelve Member States for a second pan-European research and innovation project along the entire battery value chain, January 2021. Available at: [https://ec.europa.eu/commission/presscorner/detail/en/IP\\_21\\_226](https://ec.europa.eu/commission/presscorner/detail/en/IP_21_226).

<sup>97</sup> IEA. 2021. Global EV Outlook 2021, April 2021. Available at: <https://iea.blob.core.windows.net/assets/e5f4484-f556-4110-8c5c-4ede8bcba637/GlobalEVOutlook2021.pdf>.

<sup>98</sup> See: <https://theicct.org/publication-type/zev-transition-council>.

<sup>99</sup> ZEV Transition Council. 2021. Decarbonizing road transport by 2050, July 2021. Available at: <https://theicct.org/sites/default/files/publications/zevtc-decarbonizing-by-2050-jul2021%E2%80%AF.pdf>.

<sup>100</sup> IEA. 2021. Global EV Outlook 2021, April 2021. Available at: <https://iea.blob.core.windows.net/assets/e5f4484-f556-4110-8c5c-4ede8bcba637/GlobalEVOutlook2021.pdf>.



could create individual investment plans for their National Recovery and Resilience Plan (investments made in the following 2 years). Figure 13 by European Investment Bank shows the vastly different levels of dedicated spending on automotive plotted by relative share of automotive in national manufacturing value added.

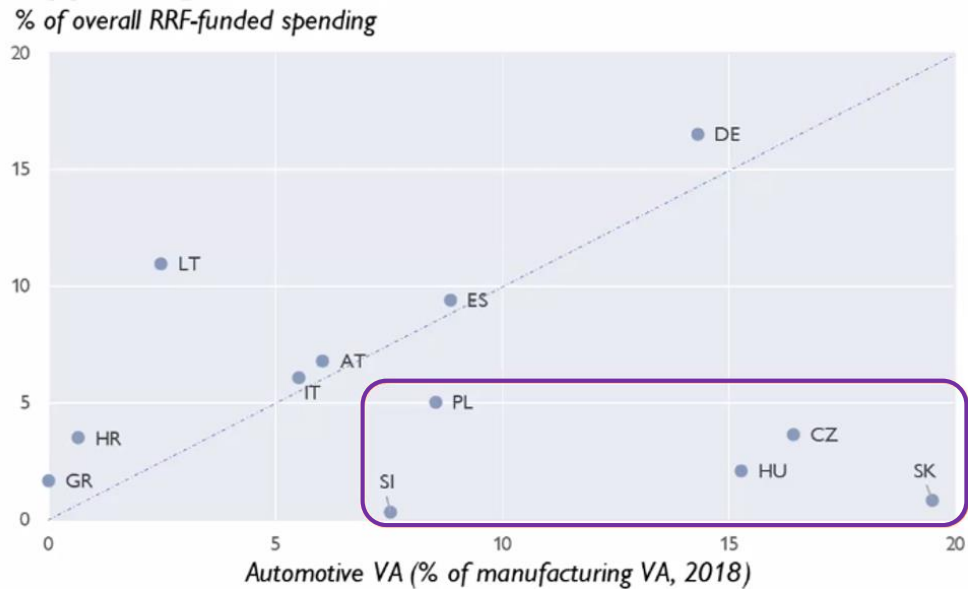


Figure 13 – RRF-dedicated spending on automotive compared to its relative value added<sup>101</sup>

With other EU funds, Czechia seems to accelerate the support for clean mobility ecosystem, see Table 3. Although the share of funding for passenger cars is only a small part of these and the detailed programme content is not yet approved, it is a good signal to the private sector. The allocation of these funds to clean mobility was valid for September 2021.

Operational Programmes 2021-2027	CZK billion	~EUR million
Recovery and Resilience Facility	4.9	191
Operational Programme Transport	6.0	234
Operational Programme Technologies and Applications for Competitiveness	1.7	66
Integrated Regional Operational Programme	8.9	347
Modernization Fund (up to 2030)	13.4 <sup>102</sup>	523
<b>Total</b>	<b>34.8</b>	<b>1,361</b>

Table 3 – Czech operational programmes to finance green transport transition<sup>103</sup>

<sup>101</sup> Ferrazzi, M. and T. Slačík. 2021. Recharging the batteries: Effects of the electric car revolution on CESEE countries. Conference on European Economic Integration (CEEI) 2021, Recalibrating tomorrow's global value chains – prospects for CESEE, Vienna, November 2021. Available at: <https://www.oenb.at/Termine/2021/2021-11-22-ceei.html>.

<sup>102</sup> A rise in total budget of Modernization Fund is foreseen due to the rise of revenues generated from the EU ETS. If the budget rose to CZK 250-300 billion and 8.5% was allocated to transport (in general), it would be an allocation of CZK 21-25 billion (~€819-975 million).



### Box 5 – Czechia: On the verge of BEV rebellion?

As you can see in Table 3, there are 5 major programmes to support the adoption of electric vehicles, renewal of public transport and building of alternative fuels infrastructure. However, from these, only Recovery and Resilience Facility (National Recovery Plan, approximately CZK 1.2 billion, or ~€47 million, allocated for private sector), Operational Programme Technologies and Applications for Competitiveness (CZK 1.7 billion, or ~€66 million) and Modernization Fund (CZK 13.4 billion, or ~€523 million) will subsidize private sector and SMEs, governmental institutions, public institutions and municipalities to buy alternative fuel vehicles including BEVs and PHEVs.<sup>104</sup> Modernization Fund will also vastly support railway transport from the allocated amount. Operational Programme Transport will subsidize the public charging and refueling infrastructure, not only for passenger transport but also for heavy duty transport. Integrated Regional Operational Programme will only subsidize public transportation and its infrastructure.

Just Transition Fund (not included in Table 3) will also allocate money to green projects, however, e-mobility will be only a small part of these complex projects.<sup>105</sup> According to Deloitte, this fund would be crucial for building gigafactories in the 3 respective regions (Karlovarský, Ústecký and Moravskoslezský).<sup>106</sup>

In 2021, there was no funding programme call opened to incentivize BEV purchase by the private sector, in 2022 the Recovery and Resilience Facility (National Recovery Plan) call will be opened to boost private sector BEV adoption<sup>107</sup> as well as the call under Operational Programme Technologies and Applications for Competitiveness.<sup>108</sup>

Other incentives (for all consumers) to adopt BEVs and PHEVs are:<sup>109</sup>

- Exemption from registration tax for BEVs and PHEVs (<50gCO<sub>2</sub>/km)
- Exemption from road vignettes
- Exemption from toll fees
- Advantage of free parking in selected areas of Prague or other cities
- Subsidy for home EV charger – Wallbox<sup>110</sup>

<sup>103</sup> Muřický, E. 2021. Plnění NAP ČM, 7. ročník konference čisté mobility Loučeň, September 2021. Available at: [https://www.mzp.cz/files/loucen21/opvpuur\\_01Muricky\\_20210915.pdf](https://www.mzp.cz/files/loucen21/opvpuur_01Muricky_20210915.pdf).

<sup>104</sup> Confederation of Industry of the Czech Republic. 2021. Daňové otázky elektromobility – aktualizované vydání, December 2021. Available at: [https://www.spcr.cz/images/Da%C5%88ov%C3%A9\\_ot%C3%A1zky\\_elektromobility\\_SPCR\\_prosinec\\_final6\\_clean.pdf](https://www.spcr.cz/images/Da%C5%88ov%C3%A9_ot%C3%A1zky_elektromobility_SPCR_prosinec_final6_clean.pdf).

<sup>105</sup> Kepka, J. 2021. Podpora čisté mobility z pohledu MŽP. 7. ročník konference čisté mobility, Loučeň, Czech Republic, September 2021. Available at: [https://www.mzp.cz/files/loucen21/opvpuur\\_04MZP\\_20210915.pdf](https://www.mzp.cz/files/loucen21/opvpuur_04MZP_20210915.pdf).

<sup>106</sup> Deloitte and Modern Energy Union. 2021. Rozvoj výroby baterií v Česku, September 2021. Available at: <https://www2.deloitte.com/cz/cs/pages/energy-and-resources/articles/proc-by-cesko-melo-mit-svou-gigafactory.html>.

<sup>107</sup> Ministry of Industry and Trade. 2021. Aktuální informace k výzvám z Národního plánu obnovy, December 2021. Available at: <https://www.mpo.cz/cz/podnikani/narodni-plan-obnovy/aktualni-informace-k-vyzvam-z-narodniho-planu-obnovy--265012/>.

<sup>108</sup> Ministry of Industry and Trade. 2021. Operační program Technologie a aplikace pro konkurenceschopnost (2021–2027), September 2021. Available at: <https://www.mpo.cz/assets/cz/podnikani/dotace-a-podpora-podnikani/optak-2021-2027/aktualni-informace/2021/10/Programovy-dokument-OP-TAK-2021-2027---verze-zari-2021.pdf>.

<sup>109</sup> See also: [https://www.acea.auto/files/Electric\\_vehicles-Tax\\_benefits\\_purchase\\_incentives\\_European\\_Union\\_2021.pdf](https://www.acea.auto/files/Electric_vehicles-Tax_benefits_purchase_incentives_European_Union_2021.pdf)



In Czechia, the NAP CM<sup>111</sup> and The Czech Transport Policy for the period 2021-2027 with a view to 2050 are the key strategic documents and, above all, create a roadmap for a policy that would be aligned with the prospects of reducing transport emissions under the ESR.<sup>112</sup> Yet there is much untapped potential for reducing passenger traffic. No low emission zones have yet been introduced anywhere in Czechia, but the vignettes are updated and ready for use.<sup>113</sup> Prague is also considering city center tolls if the Prague Ring Road is completed.<sup>114</sup>

There has been no in-depth debate on the concept of carbon tax so far, which is changing with the proposal to introduce a parallel EU ETS<sup>115</sup> system for road transport. Car scrappage scheme has not been introduced yet by the government. There are green recovery scenarios for the V4 modelled by Cambridge Econometrics that count on the possibility of applying car scrappage scheme in connection to BEV purchase with subsidy of 15% on retail prices.<sup>116</sup> Regarding the vehicle fleet, the biggest obstacle remains the high average age of vehicles. The expansion of e-mobility is then heavily dependent on the corporate fleet, which accounts for up to 70% of new vehicle sales.<sup>117</sup> Good news is that the Czech private sector and fleet managers (61% of respondents) consider BEV purchase now or in the future.<sup>118</sup> Currently, 80% of all operated BEVs is owned by the private sector.<sup>119</sup> The Czech government could also lead by example if they are able to adopt the legislative proposal on public procurement soon.<sup>120</sup> It would lead to a mandatory share (30%) of low-emission vehicles by 2025.

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<sup>110</sup> Státní fond životního prostředí ČR. Undated. Nová zelená úsporám. Available at: <https://novazelenausporam.cz/>.

<sup>111</sup> Ministry of Industry and Trade. 2020. Aktualizace Národního akčního plánu čisté mobility, May 2020. Available at: <https://www.mpo.cz/cz/prumysl/zpracovatelsky-prumysl/automobilovy-prumysl/aktualizace-narodniho-akcniho-planu-ciste-mobility-254445/>.

<sup>112</sup> Ministry of Transport. 2021. Dopravní politika České republiky pro období 2021–2027 s výhledem do roku 2050, March 2021. Available at: <https://www.mdcr.cz/getattachment/Media/Mediaa-tiskove-zpravy/Vlada-schvalila-dopravni-politiku-do-roku2027-Pr/III-DP-Navrh.pdf.aspx>.

<sup>113</sup> Šůra, J. 2020. Stát zdraží emisní plakety a vytvoří další kategorie, hybridy mají být ve stejné kategorii jako elektromobily, June 2020. Available at: <https://zdopravy.cz/stat-zdrazi-emisniplakety-a-vytvori-dalsi-kategorie-hybridy-maji-byt-ve-stejne-kategorii-jako-elektromobily-50471/>.

<sup>114</sup> Magistrát hlavního města Prahy. 2021. Klimatický plán hlavního města Prahy do roku 2030, May 2021. Available at: [https://klima.praha.eu/DATA/Dokumenty/Klimaticky\\_plan\\_HMP\\_2030\\_revidovany\\_k\\_27\\_5\\_2021.pdf](https://klima.praha.eu/DATA/Dokumenty/Klimaticky_plan_HMP_2030_revidovany_k_27_5_2021.pdf).

<sup>115</sup> European Trading System for emission allowances.

<sup>116</sup> Kiss-Dobronyi, B. et al. 2021. Macroeconomic assessment of possible Green Recovery scenarios in Visegrad countries. *Society and Economy*, Volume 43, Issue 3, August 2021, Pages 227-252. Available at: <https://akjournals.com/view/journals/204/43/3/article-p227.xml?body=pdf-23898>.

<sup>117</sup> Transport Research Centre and Ministry of Transport. 2021. Analýza složené vozového parku, June 2021. Available at: <https://www.cdv.cz/file/analiza-slozeni-vozidloveho-parku-v-navaznosti-na-narodni-akcni-plan-ciste-mobility/>.

<sup>118</sup> Knap, P. 2021. Elektromobilita pohledem českých firem, November 2021. Available at: <https://www.ev.com/cs/automotive-transportation-future-mobility/elektromobilita-pohledem-ceskych-firem>.

<sup>119</sup> Ministry of Transport. Undated. Registr vozidel – statistické přehledy a výdej dat. Available at: <https://www.dataovozidlech.cz/>. From newly registered Škoda Enyaq (BEV) in 2021, 93% was registered by private sector companies, see: <https://www.cdv.cz/tisk/v-cesku-se-vloni-registrovalo-o-19-mene-elektromobilu>.

<sup>120</sup> Ministry for Regional Development. 2021. Pravidla pro nákupy ekologických vozidel schválena, July 2021. Available at: <https://www.mmr.cz/cs/ostatni/web/novinky/pravidla-pro-nakupy-ekologickych-vozidel-schvaleny>.



## Conclusion and final remarks

As evidenced, the Czech automotive sector remains in a rather competitive position in the CEE region. Nevertheless, many signals indicate that the future supply chain will depend on battery production, competitive BEVs and PHEVs with affordable price for consumers, electric services, and new business models such as mobility as a service. There is no bright future in new ICEV development, which is clearly stated and confirmed by the key automotive stakeholders.<sup>121</sup> If Czechia and its government do not support the new battery value chain and innovations in electric powertrain, it could mean that the high value added products will be invented and finalized in other countries. This would leave Czechia with basic assembly plants only. However, it holds that some degree of technological neutrality is perceived as critical by selected stakeholders. For this reason, further research ought to focus on other aspects of modern e-mobility, too. Hydrogen FCEVs, bio and synthetic fuels for ICEVs left operating in the next decades, shared e-mobility, peer-to-peer platforms and other areas of mobility will play an important role in transport decarbonization. At the moment, it is crucial that decision-makers, politicians and the media in Czechia start working on countering the overwhelmingly negative narrative surrounding the green transition and its impacts on Czech economy. Many changes are already inevitable, and the future of Czechia's competitiveness will largely depend on the political elite acknowledging and promoting that. It is time to shift the political paradigm towards green automotive.<sup>122</sup>

This report presented the results of Europeum's year-long project *Decarbonization of the automotive industry in Czechia*. Firstly, we focused on the used car market, adoption of BEVs and the Czech M1 fleet. Secondly, we stressed the significance of the automotive sector to the Czech economy and its macroeconomic indicators. Thirdly, we described the results of project roundtables and stakeholder interviews. Lastly, we focused on the trend of e-mobility in the European context, its inevitability and support schemes, which have been so far implemented in Czechia. This paper is a follow-up study to the initial policy report published in June 2021.<sup>123</sup> After the initial report was published, the *Fit for 55* package came out and changed the public discussion in a dramatic way, often presenting the proposed 2035 ban on new ICEV sales (100% tailpipe emission reduction) as a threat to both the local automotive sector and the wider Czech economy. Information in the public sphere is often unbalanced or even false. The ultimate goal of our project was thus to present up-to-date information with verified data and help decision-makers to get to know the topic in order to understand it in its complexity.

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<sup>121</sup> McKinsey & Company. 2021. Why the automotive future is electric, September 2021. Available at: <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/why-the-automotive-future-is-electric>.

<sup>122</sup> See the recommendations at the beginning of this study.

<sup>123</sup> Hrubý, M. 2021. The perspectives of the Czech automotive industry's decarbonization. EUROPEUM Policy Report, June 2021. Available at: <https://europeum.org/data/articles/pr-policy-report-ecf-01-1.pdf>.





	Abbreviation	Explanation
Battery electric vehicle	BEV	Fully electric vehicle with no combustion engine and a battery
Plug-in hybrid electric vehicle	PHEV	Vehicle with chargeable battery and an ICE, can be plugged in to recharge
Fuel cell electric vehicle	FCEV	Hydrogen fueled vehicle with fuel cell and a battery-powered electric motor
Internal combustion engine vehicle	ICEV	Conventional vehicle with petrol/diesel fueled internal combustion engine
Zero-emission vehicle	ZEV	Currently BEVs and FCEVs are considered zero-emission vehicles based on the tailpipe metrics
Category of passenger cars	M1	Passenger vehicles with no more than eight seats in addition to the driver seat

*Table 4 – Vehicle types and abbreviations*



	Abbreviation
Best available technique	BAT
Central and Eastern Europe	CEE
Czech crowns	CZK
Effort-Sharing Regulation	ESR
EU Emission Trading System	EU ETS
Foreign direct investment	FDI
Gross domestic product	GDP
Greenhouse gas	GHG
Gross value added/value added	GVA/VA
Gigawatt hour	GWh
Emission Vehicle Transition Council	ICCT
Non-governmental organization	NGO
Original equipment manufacturer	OEM
Public charging points	PCP
Research and development	R&D
Recovery and Resilience Facility	RRF
Small and medium enterprise	SME
Visegrad countries	V4

*Table 5 – List of abbreviations*

## About the Author

Michal Hrubý has completed his master's degree in economics at Škoda Auto University and is now looking for an opportunity to pursue a PhD. His research focuses on green economics, industrial decarbonisation and consumer behaviour. He has been contributing to the student journal EkonTech since 2020. During his master's studies he participated in a student grant competition project focusing on sustainable consumption behaviour.

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