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The legal environment of electromobility in Hungary

*Abstract*

*The EU considers it a strategic goal to propagate electric transport. This goal ties into (among others) the Europe 2020 Strategy, the Clean Transport Systems Initiative, and the Horizon 2020. In Hungary, the propagation of electric cars was accelerated by the adoption of the Jedlik Anyos Plan (Henceforth: Plan) in 2015. Electric vehicles reduce the sound pollution of traffic, they are significantly quieter than traditional motor vehicles.*

**Keywords:** electromobility, range extender, electric, charging station, fast-charging

## 1. Introduction

Two-thirds of the world's fossil fuel consumption comes from motor vehicles. Transport also constitutes the sector with the largest CO<sub>2</sub> emission after electric power generation. It is also a critical sector for achieving the goals outlined in the Paris Agreement<sup>1</sup> and the objectives of EU climate policy.<sup>2</sup> Thanks to the EU's transport policy, recent decades saw the pollution caused by transport decline, while environmentally friendly transport technologies advanced. Reforms in this sector include methods which go beyond the usage of fossil fuels. We call the movement to replace fossil fuel-based motor vehicles with electric ones<sup>3</sup> e-mobility or electromobility.

Electromobility is a rapidly evolving area, and has become the symbol of environmental consciousness,<sup>4</sup> climate protection and sustainable development.<sup>5</sup> It can also assist with fulfilling the 2020 EU objectives regarding climate and energy.<sup>6</sup>

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<sup>1</sup> Read more: Faragó 2016, 8–12.

<sup>2</sup> The United Nations Climate Change World Report 2018, following the Paris climate summit in 2015, points the way to keeping warming below 1.5 °C. This includes using alternative energy sources and switching to electric transport. Gutassy & Gutassy 2019, 9–10.

<sup>3</sup> The 'electric' category includes pure electrically-propelled vehicles or combustion motor vehicles which can run 25 or 50 km in pure electric operation, as well as electric vehicles. They are entitled to use a green license plate. (Paragraph 60 of 326/2011 (XII.28.) Government statute).

<sup>4</sup> If we want to make the vehicle more environmentally friendly, we need to reduce energy use.

<sup>5</sup> Objective 7 of the new 2030 Agenda for Sustainable Development is to ensure access to sustainable and modern energy for all, including the expansion of the infrastructure necessary



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The beginning of electromobility lies in the appearance of the world's first electric automobile, built by the Hungarian engineer Jedlik Ányos in 1828.<sup>7</sup> The electric motor vehicle was not invented by a single person, but came into being through a series of revolutionary developments.<sup>8</sup> Electric propulsion is combined by manufacturers with other forms of propulsion (for example, hybrid car, plug-in hybrid, range extender electric car, fuel cell-based electric car). Today, we can find hybrid cars in every manufacturer's catalogue, but electromobility is not just simply about electric motor vehicles.<sup>9</sup> Its purpose is to reduce pollution at the place of operation during the full lifecycle of the vehicle.

There are three defining international 'actors' in electromobility: the USA, China and Europe. In the United States, California is the frontrunner, where their support is significant both on the supply and the demand side. There are manufacturers in the United States who only build electric motor vehicles (Tesla Motors Inc.). The number of charging stations is also increasing rapidly. Meanwhile, China could be a leading country in the future when it comes to the manufacturing and sale of motor vehicles using alternative energy sources. There, the government assists propagation through supporting the demand side.<sup>10</sup>

## 2. Legal background

The EU considers it a strategic goal to propagate electric transport. This goal ties into (among others) the Europe 2020 Strategy,<sup>11</sup> the Clean Transport Systems Initiative, and the Horizon 2020.<sup>12</sup> Car manufacturers are forced by ever more strict environmental rules and standards to develop hybrid, plug-in hybrid and purely electric cars.<sup>13</sup> The EU's regulation regarding the reduction of CO<sub>2</sub> emissions incentivizes manufacturers to market low-emission motor vehicles.<sup>14</sup> And in order to incentivize the

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for modern and sustainable energy supply and technological development in developing countries by 2030. See: Horváth 2017, 194–199.

<sup>6</sup> Directive 2009/28/EC set mandatory targets for calculating the share of energy from renewable sources in each Member State in order to meet the Union's target of the share of energy from renewable energy sources reaches 20 % and in the transport sector, the share of energy from renewable sources reaches 10%, by 2020. In addition, in its White Paper, the Commission proposed a 60% reduction in greenhouse gas emissions from transport by 2050 compared to 1990 levels.

<sup>7</sup> Wakefield 1994.

<sup>8</sup> Hawken 2019, 158. and Kampker 2014.

<sup>9</sup> Kovács 2018, 15.

<sup>10</sup> Merre tart az elektromos autók piaca? (2020).

<sup>11</sup> Europe 2020 A strategy for smart, sustainable and inclusive growth, 2010, Brussels.

<sup>12</sup> Within Horizon 2020, it provides funding specifically for electric vehicle developments.

<sup>13</sup> Kovács 2018, 3.

<sup>14</sup> According to the transport white paper, the transport sector as a whole should reduce its CO<sub>2</sub> emissions by 60% by 2050 compared to 1990 levels. In line with the 'European strategy for low-emission mobility', the European Commission presented three sets of proposals to Member States under the title 'Europe on the move'. EU legislation has set the framework for the electromobility market by reducing CO<sub>2</sub> emissions from new cars by 35% by 2030 and from light commercial vehicles by 20% by 2021. (European strategy for low-emission mobility)

propagation of alternative fuels,<sup>15</sup> the European Parliament and Council adopted the 2014/94/EU Directive.<sup>16</sup> (AFI Directive) Based on this, the member states are obligated to create national rules based on which a European infrastructure could be built for alternative fuels (electric power, biofuels, CNG, LNG, LPG and hydrogen). It established uniform requirements on the EU level too for electric motor vehicle charging stations, technical specifications and consumer information. Member states are obligated to ensure that public charging stations provide adequate coverage for the use of electric motor vehicles at least in the urban/suburban agglomerations and other densely populated areas. The charging stations also must contain a smart measuring system. It is a given that clients must be provided with electromobility service on an ad-hoc basis as well. This service must be provided without discrimination and with transparency. As a part of this, the prices of the service must be made available publicly. From the perspective of e-mobility, electric power is the cleanest of alternative fuels.<sup>17</sup> When it comes to Hungarian regulations, the 17/2017. (V.26) NFM (Nemzeti Fejlesztési Minisztérium – National Development Ministry) statute on the quality requirements of engine fuel, which expanded the category of allowed fuels (gasoline, diesel, biodiesel, E85, CNG, liquid hydrocarbon gas) with electric power used in transport.

The rapid evolution of e-mobility generates demand for increasingly broader regulation. The first step of Hungarian legislature was the 6/1990. (IV.12.) KÖHÉM (Közlekedési, Hírközlési és Építésügyi Minisztérium – Transportation, Communication and Construction Ministry) statute,<sup>18</sup> which created the definition of environmentally friendly motor vehicle. This included the electric motor vehicle<sup>19</sup> and the zero-emission motor vehicle.<sup>20</sup>

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Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Brussels, 20.7.2016 COM(2016) 501 final, Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 set out emission performance standards for new passenger cars.

<sup>15</sup> Parliament adopted Act CXVII of 2010 on the Promotion of the Use of Renewable Energy for Transport and the Reduction of Greenhouse Gas Emissions from Transport. This law defined the concept of alternative fuels, which could be at least partially substituting oil sources for transport energy: electricity, hydrogen, biofuels, synthetic fuels, Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG); and Liquid Petroleum Gas (LPG).

<sup>16</sup> Directive 2014/94/EU of the European Parliament and of the Council on the deployment of alternative fuels infrastructure.

<sup>17</sup> In November 2016, the European Commission proposed a 'Clean Energy for all Europeans' package (IV or Winter Energy Package) to reform the energy market. The share of renewables in electricity generation is already over 10% at EU level (up to 50% by 2050). Clean Energy for all European package (2020).

<sup>18</sup> Section (6)-(7) of paragraph 2 of the 6/1990. (IV.12.) KÖHÉM statute on the technical conditions of registration and entry into service of road vehicles.

<sup>19</sup> Electric vehicle: (a) a purely electric vehicle, the power train of which comprises at least one electrical energy storage device, an electrical power conversion unit and an electrical machine which converts stored electrical energy to propel the vehicle into mechanical energy and has no other means of propelling the vehicle (i.e. BEV); (b) a plug-in hybrid electric vehicle, which is equipped with a connector and a converter, as factory design, to charge its electrical energy storage device from an external source of electrical power, with an electric range of at least 25

The Hungarian legislature partially addressed its obligations under the AFI<sup>21</sup> by introducing electromobility-related amendments to the 2007. LXXXVI. law on electric power (VET). This 2016. LXXXI. law (effective from 01.07.2016) introduced provisions on the charging of electric motor vehicles, the creation and operation of charging stations into the VET. These provisions defined the electric motor vehicle, the charging of electric motor vehicles and the charging station operator terms (the latter was deemed a system user). It contains that the charging of electric motor vehicles requires licensing, which can be acquired through the licence produced by the MEKH (Magyar Energetikai és Közmű-szabályozási Hivatal – Hungarian Energy- and Utility-regulating Bureau), except if the charging is accomplished through the personal measured user equipment of the residential or non-residential consumer (and this cannot be for the purposes of generating revenue). For a significant length of time, the VET didn't allow for the charging operator to transfer electric power to the consumer. Beyond the clarification of basic definitions, the above regulations empower the Government to deal with remaining electric motor vehicle questions in a separate statute (in concordance with the AFI Directive).

In Hungary, the propagation of electric cars was accelerated by the adoption of the Jedlik Ányos Plan (Henceforth: Plan) in 2015.<sup>22</sup> As part of the Plan, public administration proceedings related to the establishment of a fundamental charging infrastructure were deemed high priority proceedings by the 369/2015. (XII.2.) Government statute. In a similar fashion, the 10/2016. (II.9.) Government statute – modifying the 253/1997. (XII.20.) Government statute (OTÉK) on national urban design and construction requirements – ensured that the propagation of electromobility is taken into account in residential environments.

Paragraph 4 of the 281/2016. (IX.21.) Government statute modified the 273/2007. (X.19.) Government statute on the execution of the VET (VET Vhr.). As a result, detailed rules on the licensing of electric motor vehicle charging were established.

The 170/2017 (VI.29.) Government statute on certain questions of electric motor vehicle charging services created the foundations for the regulation of the charging market.

The statutes reinforced and expanded the fundamental definitions, and also established the basic requirements related to electric motor vehicle charging service and its pricing. It also made it clear that charging is not energy-trading but a service, and also defined the concept of electromobility service. This statute once again defined the term electric motor vehicle, based on which it constitutes "motor vehicles that run

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km (PHEV); (c) hybrid electric vehicles with extended range, which comply with point (b) and have a pure electric drive range of at least 50 km (ie EREV).

<sup>20</sup> A zero-emission car is one which, when used normally, does not emit air pollutants covered by the statute.

<sup>21</sup> The Ministry of National Development adopted The National Policy Framework Program set up by the Deployment of Alternative Fuels Infrastructure Directive in the fall of 2016, in which the development of electric vehicles and charging infrastructure by 2030 has set out.

<sup>22</sup> The primary legislative tasks are set out by the 1487/2015. (VII.21.) Government statute by the adoption of the Jedlik Ányos Action Plan.

partially or fully on an electric motor, and for the functioning of which it is necessary to acquire electric power from an electric storage system that can be charged from an outside source.” The purely electric car<sup>23</sup> carries energy in a charged battery, and runs solely on an electric motor.

A new pack of legislation was promulgated on 09.07.2019<sup>24</sup> that (among other things) expanded the 1998. I. law on public traffic, <sup>25</sup> providing electromobility with a framework in the process. These expansions concerned the operation of electric car chargers, electromobility services, electromobility consumers and electric car dealers.<sup>26</sup> The new legislation differentiates between the operators of electric chargers and electromobility service providers. The former is to ensure the installation and operation of the charger, while the latter is responsible for servicing clients. These two roles can be of course fulfilled by the same economic actor, but operators can transfer the right to service to another, and can also allow for other service providers alongside their own at a given charger they operate. According to the new legislation, distribution system operators (DSO) are those who possess and operate the electric network, and can be neither an operator of the electric charger nor an electromobility service provider. Operation still requires a licence for an indefinite period from the MEKH as before. The operator of the electric charger can sign connection and network-use agreements with the local DSO, and can acquire electric power from any electric power-trader on a market basis. Electromobility service providing activity requires notification to the MEKH. Access to the service must be provided without discrimination.

The 243/2019 (X.22) Government statute on certain questions of electromobility service defined two terms: the electric charging station<sup>27</sup> and electric charging place.<sup>28</sup> Operating an electric charging station requires a licence from the MEKH, which the operator must request at least 75 days before the planned activation of the station. The operator is responsible for potential damages caused to the electromobility consumer within the context of service providing. In case the damage cannot be lead back to the actions of the operator, the indemnity towards the consumer

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<sup>23</sup> The category is derived from the English term Battery Electric Vehicle (BEV) and has an environmental rating of 5E. Singh 2019.

<sup>24</sup> No. 120 of the Magyar Közlöny (Hungarian Official Journal) 2019. Act LXVII of 2019 on the Promotion of Long-Term Shareholder Participation and the Amendment of Certain Acts for Legal Harmonization. Effective October 1, 2019.

<sup>25</sup> Points (f) and (g) of Section (1) of paragraph 2 have been added to the Act. Paragraph 32–34 of the Act LXVII of 2019.

<sup>26</sup> In this respect, the amended Act shall apply to the proceedings of the MEKH in accordance with the provisions of the MEKH Act and the VET. In the Amended Road Transport Act, electromobility related additions are included in the newly added paragraphs 45/A to 45/E. Point A of the new block ensures that the rules apply to service providers established in another country within the Community but also active in Hungary, while point B clarifies the most important concepts and redefines the terms of 170/2017. (VI.29.) Government statute.

<sup>27</sup> It is an area which contains at least 2 public chargers to provide electricity to the electric vehicle's electrical storage, to the electric mobility user on an ad hoc basis or on a permanent basis.

<sup>28</sup> It is a place designated for the use of the electro-mobility service in front of a public charger.

does not restrict further claims of the operator based on the general rules of civil law.<sup>29</sup> The service provider must issue an invoice to the consumer. The invoice contains the unit price, the amount of electric power used for the charging of the vehicle's battery (kWh), and the offset of the service used by the electromobility consumer. The statute also considered the question of fines: fines can be justified for example, if the operator acquired its licence by deceiving the authorities. If the operator breached their obligations (based on licence, law or executive statute), the MEKH may notify them and assign a deadline for corrections, fine them, or temporarily (6-12 months) ban them from continuing their activities, and as a last resort, may revoke the licence.

The fine's amount is either 1% of the previous year's net revenue, or 100 million HUF. The higher of the two counts.

According to point g) of the second section of paragraph 60. in the 326/2011. (XII. 28.) Government statute (on the administrative tasks related to public road traffic, the issuing of documents related to public road traffic and their revocation), it is possible to request special light green number-plates<sup>30</sup> for environmentally friendly vehicles.<sup>31</sup> This can be accompanied by special advantages and rights.<sup>32</sup> Recently, the Government suggested in the Jedlik Ányos 2.0 Plan to tighten the regulation of green number-plates, so that plug-in hybrid cars with high pollutant emissions and weight can be excluded from acquiring one. No law has been passed regarding this so far.

### **3. Environmental and economic ramifications, and effects on the electric power system**

It can be stated that electric cars, in general, improve quality of life within large cities through reducing pollutant emissions and the strain of harmful flue-dust. Furthermore, in densely populated areas, they can contribute to reducing noise levels as well.<sup>33</sup> Electric vehicles reduce the sound pollution of traffic, they are significantly quieter than traditional motor vehicles.

One of their most important advantages is reducing CO<sub>2</sub> emissions. Their environmental effect manifest globally (indirectly) and locally (directly). Their direct emissions consist of tailpipe emission, while their indirect emissions, well-to-wheel, are produced throughout their life cycle, from their manufacturing (and the manufacturing of their components) all the way to them becoming scrap.

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<sup>29</sup> Point c) of Section (3) of paragraph 7 of the 243/2019. (X.22) Government statute.

<sup>30</sup> According to 326/2011 (XII.28.) Government statute on the issuance and withdrawal of road transport documents, the color of the license plate issued to the environmentally friendly car is light green, its characters and the color of the frame are black, consisting of three letters and three numbers. In the case of a uniquely authorized registration plate, it shall consist of at least four, and at most five, continuous letters, and at least one, and at most two, continuous numbers, and together, it shall consist of six characters.

<sup>31</sup> Environmentally friendly vehicles as defined in Chapter I, point 6 of paragraph 2 of the 6/1990. (IV.12.) KÖHÉM statute.

<sup>32</sup> Such discounts include free parking, tax breaks, etc. See more financial incentives and benefits with regard to some countries: Polgári & Farkas 2020; 1/1975. (II.5.) KPM-BM joint decree prohibits the use of the bus lane by green license plates.

<sup>33</sup> Szilágyi 2018, 32–33.

The electric car does not pollute its direct environment, and if electric power is generated through an environmentally friendly method (which can be covered through renewable energy), it does not pollute elsewhere as well. The air quality advantages of the electric car manifest locally in an obvious manner, pollutant emissions in the motor vehicle's environment and place of use is non-existent if it's purely electric. Pollutant emission can manifest indirectly through the power plants producing the used electric power,<sup>34</sup> especially if they use fossil fuels. Global advantages manifest primarily through its effects on CO<sub>2</sub> emissions,<sup>35</sup> and specifically where electric power is generated through renewable, clean energy (wind energy, nuclear energy, hydro-energy). Electric cars are often mistakenly labelled ZEV (zero emission vehicle), even though it is not applicable to all cases.

From an environmental perspective, it is not enough to change how vehicles are powered and to develop new motors, but energy consumption itself must be reduced too. As for economic ramifications, the shrinking of governmental revenue from taxes and fees placed on petrol and gasoline, as a result of the reduction in fuel use, must be mentioned. Moreover, financial incentives are required to propagate electromobility, and new investments are needed to further build the charging station infrastructure. The costs of these are also supported by the EU.

The external costs of public traffic can also be reduced, meaning those costs that result from transport but are not paid by those taking part in it. For example, through the polluter pays principle, external costs of air pollution on Europe's roads can be included in the road fees (smart road fees), with zero-emission vehicles receiving more favourable treatment.

These vehicles have the important advantage that they balance the strain on electric power system. When charging electric motor vehicles, energy is stored in the battery besides the energy gained from the electric power system. The electric power use of these motor vehicles in themselves do not require the establishment of extra energy production capacity, as the electric power demand increase from charging is not significant.<sup>36</sup> When determining the strain on the system during battery charging, it must be taken into account that in which part of the day and for how long does the charging occur. The type of charging station (commercial – public, especially near malls or highways – fast-charging points or home charging).

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<sup>34</sup> Gács 2019, 25–27.

<sup>35</sup> Bándi 2014, 464. As far as fuels are concerned, due to specific pollution, the Parliament and the Council adopted the directive 94/63 in 1994 aimed at reducing volatile organic compound (VOC) emissions from the storage and distribution of petroleum derivatives. Mandatory technical standards for carbon monoxide, unburnt hydrocarbons, oxides of nitrogen and particulate matter from certain petrol vehicles (Directive 70/220) and Regulation (EC) No 443/2009.

<sup>36</sup> See the related analysis MAVIR: Medium and long term source-side capacity development of the Hungarian Electricity System, Budapest, 2013, 5.

Finally, they also take into account backwards charging for determining the strain on the system, as electric motor vehicles are not only capable of receiving electric power but also of transferring their stored energy back into the network. Vehicles with superfluous capacity backwards charge into the network, thus creating balance in the system and the market.<sup>37</sup>

#### 4. Limitations

The acceptance and propagation of electromobility is limited by the acquisition costs, the effective range, the established charging infrastructure, environmental protection, security and reliability.<sup>38</sup> On one hand, the propagation of electric cars is slowed by the issue of effective range. From a consumer perspective, the actual range is a significant question. Batteries were originally designed so that one charging can take the vehicle for 150 kilometres, while a plug-in hybrid, chargeable from the system, can go 80 kilometres purely on electric power.<sup>39</sup> This issue will be solved by developing the batteries and the network of charging stations. There has been no significant breakthrough so far when it comes to economic mass production of batteries.<sup>40</sup> These continue to represent a significant cost.

On the other hand, that these vehicles are more expensive to purchase compared to traditional combustible engine-based vehicles. The prices of plug-in hybrids and purely electric motor vehicles are increased by the in-built batteries. Subsidies could assist with purchases. A supportive system for purchasing electric cars is thus a highlightable element of governmental priorities.

Furthermore, propagation is slowed by the situation of the charging infrastructure. The charging network is ever-expanding, public chargers, fast-charging stations and commercial chargers are getting more innovative and advanced.<sup>41</sup> The spread of home-charging will also be important. Every country treats the development of the charging system as a strategically important programme, to provide permeability and security to e-drivers. The developing infrastructure will increase the number of electric cars.

A further critical element of electromobility's propagation is a security question related to the treatment of used up batteries. These are considered hazardous waste, and as such, manufacturers are working on solutions for repurposing and reuse.

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<sup>37</sup> Merre tart az elektromos autók piaca? (2020).

<sup>38</sup> These factors are also confirmed by a survey conducted by Automotive World in 2013. (Automotive World: Technology Roadmap - Battery Electric Vehicles, 2013), which interviewed global automotive players. Among other things, they were asked what they thought was the only factor that would improve the sales of electric vehicles the most. Almost half of the respondents mentioned the lower price in their response.

<sup>39</sup> Benoit 2019.

<sup>40</sup> Mercedes Benz, for example, is expanding its battery assembly capacity and building new factories for the electric car market. Chemical companies like BASF are also conducting research into battery development. Kovács 2018, 15.

<sup>41</sup> Zsebik & Novák 2018, 48–55.



## 5. Summary

In conclusion, legislation related to e-mobility in Hungary started with the amendments to the VET and the VET Vhr., which established the basic framework for the establishment of electric charging stations. This process is still at its beginning, and thus it would be worthwhile to wait for further detailed rules related to e-mobility investments. An electromobility law has been planned for years, but the Hungarian Parliament has not yet received a concrete proposal in this regard. Certain public duties connected to the propagation of electromobility in Hungary are handled by the so-called e-Mobi Elektromobilitás Nonprofit LLC.<sup>42</sup>

The electric car market is in an upswing worldwide. Electric travel, e-mobility can be expanded with the establishment of a support system, which increases the population's receptiveness towards new developments. Governmental support plays a significant part in accelerating this process. The establishment of charging stations, supporting the purchase of electric cars through various systems and the support of technologies related to charging stations (from an industrial development perspective) are all important parts of the government's tasks in this regard. Many areas of the electromobility sector (which has shown extensive development and innovation in the past years) could be regulated not just on the governmental side, but also on the market side. Hungary also provides support for purchasing electric vehicles and developing the charging infrastructure.

Electromobility will play a significant role in the creation of liveable and 'smart' large cities in the future, both with regards to public transportation and private motor vehicles. The propagation of solutions integrating smart cities and smart energy is desirable for Hungary as well, and these solutions will also provide charging services. Smart measuring will be indispensable for supporting electric transport on the long term.

The development and prioritization of decarbonization<sup>43</sup> technologies is necessary, as is the propagation of zero emission transport technologies.

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<sup>42</sup> 443/2017. (XII.27.) Government statute on certain public tasks related to the dissemination of electromobility in Hungary.

<sup>43</sup> Directive 2009/33/EC introduced incentives for the promotion of electric and other low-emission vehicles. A European strategy for low-emission mobility. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. European Commission, Brussels, 20.7.2016 COM(2016) 501 final.

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