34.1 Major Developments in 2018

34.1.1 VEA Strategy 2014-2020


Three main guidelines are considered in VEA Strategy: to promote R&D and industrialization measures regarding vehicles, components and infrastructure, to promote the demand of alternative energy vehicles and communication campaigns and to promote recharging and refueling networks for alternative energy vehicles.

VEA Strategy is congruent with the objectives of the Directive 2014/94/EU of 22 October 2014, relative to promotion of infrastructure of alternative fuels and technologies. This strategy establishes 30 key actions to place Spain as a reference country for the alternative energies applied to transport sector: Electric, Liquid Petroleum Gas (LPG), Natural Gas, Biofuels and Hydrogen vehicles, focusing on industrial development, in order to meet energy and environmental challenges.

34.1.2 Spanish National Policy Framework (MAN)

Directive 2014/94/EU of 22 October 2014 establishes that each Member State shall adopt a national policy framework for the development of the market as regards as alternative fuels in the transport sector and the deployment of the relevant infrastructure and notify them to the European Commission before the 18 November 2016.

Directive 2014/94/EU was transposed into Spanish normative through Royal Decree 639/2016 of 9 December, and the Spanish National policy framework (Marco de Acción Nacional-MAN), consistent with the VEA Strategy 2014-2020 and establishing an objective of 150,000 electric vehicles by 2020, was notified on time to the EC.
34.1.3 VEA Website

In the frame of the VEA Strategy, the VEA website was created, a Government official site for sharing relevant information of the different alternative fuels and technologies in the transport sector. On this website, a database of alternative vehicles is also available where users can search the different models of vehicles available in the Spanish market and technical information of them.

![VEA Website](http://www.vea.gob.es)

**MOVALT Plans: National Incentives Plans for the Acquisition of Alternative Vehicles and to Promote EV Charging Infrastructure**

“Plan MOVALT Vehicles”, an incentives program for alternative vehicles acquisition at National scale, was funded with an allocated budget of 20 million EUR and it was running effectively from 13 December 2017 to 30 June 2018.

Plan MOVALT Vehicles finally supported the acquisition of 2,977 alternative energy vehicles, powered by Electricity, NG and LPG energies, from which a number of 1,583 were electric vehicles (1,286 BEVs; and 297 EREVs/PHEVs), with a final budget amount of 6,921,500 EUR applied to them.

“Plan MOVALT Infrastructure”: an incentives program for alternative vehicles acquisition at National scale, was funded with an allocated budget of 20 million EUR and it was running effectively from 23 January 2018 to 31 December 2018. The evaluation of the applications will end by the 30
June 2019. At the end of 2018 and in the frame of Plan MOVALT Infrastructure, there were presented a number of 588 applications for incentives.

![Figure 2: MOVALT Vehicles: vehicles acquired per alternative energies](image)

![Figure 3: MOVALT Vehicles: vehicles acquired by alternative energies and categories](image)

**National Framework to 2030**

The Spanish Government is currently working in the National Integrated Plan for Energy and Climate and a National Climate Change Law to set the energy and climate strategic goals up to 2030. In this context, the electrification of the transport sector is one of the main issues with ambitious and challenging targets.

Table 1: MOVALT Infrastructure: charging points related type of use (provisional data at 31 December 2018)

<table>
<thead>
<tr>
<th>Access</th>
<th>Applications</th>
<th>%</th>
<th>Charging points</th>
<th>%</th>
<th>Budget (EUR)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>392</td>
<td>66.7</td>
<td>976</td>
<td>63.3</td>
<td>18,026,577</td>
<td>90.3</td>
</tr>
<tr>
<td>Private</td>
<td>196</td>
<td>33.3</td>
<td>566</td>
<td>36.7</td>
<td>1,940,285</td>
<td>9.7</td>
</tr>
<tr>
<td>Total</td>
<td>588</td>
<td>100</td>
<td>1,542</td>
<td>100</td>
<td>19,966,862</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2: MOVALT Infrastructure: charging points related charging power (provisional data at 31 December 2018)

<table>
<thead>
<tr>
<th>Charging type (power)</th>
<th>Applications</th>
<th>%</th>
<th>Reserved budget (EUR)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal (7-15 kW)</td>
<td>197</td>
<td>33.5</td>
<td>1,133,790</td>
<td>5.7</td>
</tr>
<tr>
<td>Semi-quick (15-40 kW)</td>
<td>201</td>
<td>34.2</td>
<td>3,659,317</td>
<td>18.3</td>
</tr>
<tr>
<td>Fast (40-100 kW)</td>
<td>189</td>
<td>32.1</td>
<td>14,834,289</td>
<td>74.3</td>
</tr>
<tr>
<td>Ultra-fast (&gt; 100 kW)-buses</td>
<td>1</td>
<td>0.2</td>
<td>339,466</td>
<td>1.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>588</strong></td>
<td><strong>100</strong></td>
<td><strong>19,966,863</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

34.2 HEVs, PHEVs and EVs on the Road

In the year 2018, there were registered a number of 22,586 electric vehicles in Spain, considering BEVs, PHEVs and REEVs, which doubles 2017’s figures, with a number of 11,160 EVs registrations. This increase was supported by National incentives programs for EVs acquisition (Plan MOVALT Vehicles) and also by other incentive programs at regional and local scales.

In the specific case of electric passenger cars (BEVs, PHEV/EREVs), this category had a market penetration of 0.9 % during 2018. Considering both, electric and hybrid electric vehicles (HEVs), resulted in a market penetration of 6.2 %.

![Figure 4: EVs market evolution (annual sales of cars –M1- and vans –N1-) in Spain](image)

Focusing on conventional hybrid vehicles, the huge increase of the hybrid passenger car registrations along the recent years 2016 to 2018 is remarkable, with a total number of 76,009 registrations during the year of 2018, coming from a total of 7,759 registrations during the year of 2015 (almost ten times the figures of 2015). It is remarkable that, at a National scale, there have not any incentives
programs running for the acquisition of these vehicles over the last years, but this is more than compensated by the impact of the new Environmental car labelling and the measures implemented for clean air in regions and cities.

Electric Vehicles (BEVs, PHEVS and REEVs) fleet in Spain at the end of 2018, resulted in a total number of 56,540, which more than doubles the figures of 2017, accounting a number of 24,817 EVs.

![Figure 5: HEVs market evolution (annual sales of passenger cars –M1-) in Spain](image)

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>EVs</th>
<th>HEVs</th>
<th>PHEVs</th>
<th>FCVs</th>
<th>Total¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycles</td>
<td>300,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>~30,000,000¹</td>
</tr>
<tr>
<td>Mopeds¹</td>
<td>8,878</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1,881,797</td>
</tr>
<tr>
<td>Motorbikes²</td>
<td>10,499</td>
<td>36</td>
<td>0</td>
<td>0</td>
<td>3,427,155</td>
</tr>
<tr>
<td>Quadricycles³</td>
<td>3,286</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>117,184</td>
</tr>
<tr>
<td>Passenger vehicles⁴</td>
<td>16,113</td>
<td>238,257</td>
<td>12,692</td>
<td>1</td>
<td>24,138,555</td>
</tr>
<tr>
<td>Commercial vehicles⁵</td>
<td>4,826</td>
<td>37</td>
<td>8</td>
<td>0</td>
<td>4,083,876</td>
</tr>
<tr>
<td>Buses⁶</td>
<td>99</td>
<td>537</td>
<td>58</td>
<td>0</td>
<td>65,364</td>
</tr>
<tr>
<td>Trucks⁷</td>
<td>68</td>
<td>167</td>
<td>13</td>
<td>0</td>
<td>917,261</td>
</tr>
<tr>
<td>Totals without bicycles</td>
<td>43,769</td>
<td>239,034</td>
<td>12,771</td>
<td>1</td>
<td>34,631,192</td>
</tr>
</tbody>
</table>

Table 1: Distribution and sales of EVs, PHEVs and HEVs in 2018 in Spain (Data source: IDAE, based on registrations of Spanish Traffic Authorities, DGT)
### Total Sales during 2018

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>EVs</th>
<th>HEVs</th>
<th>PHEVs</th>
<th>FCVs</th>
<th>Total&lt;sup&gt;h&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycles</td>
<td>100,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1,140,000&lt;sup&gt;i&lt;/sup&gt;</td>
</tr>
<tr>
<td>Mopeds&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4,336</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>17,416</td>
</tr>
<tr>
<td>Motorbikes&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3,516</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>164,313</td>
</tr>
<tr>
<td>Quadricycles&lt;sup&gt;c&lt;/sup&gt;</td>
<td>221</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2,928</td>
</tr>
<tr>
<td>Passenger vehicles&lt;sup&gt;d&lt;/sup&gt;</td>
<td>6,602</td>
<td>76,099</td>
<td>6,257</td>
<td>1</td>
<td>1,424,738</td>
</tr>
<tr>
<td>Commercial vehicles&lt;sup&gt;f&lt;/sup&gt;</td>
<td>1,575</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>171,387</td>
</tr>
<tr>
<td>Buses&lt;sup&gt;e&lt;/sup&gt;</td>
<td>53</td>
<td>182</td>
<td>8</td>
<td>0</td>
<td>3,848</td>
</tr>
<tr>
<td>Trucks&lt;sup&gt;g&lt;/sup&gt;</td>
<td>12</td>
<td>90</td>
<td>2</td>
<td>0</td>
<td>40,036</td>
</tr>
<tr>
<td>Totals without bicycles</td>
<td>16,315</td>
<td>76,373</td>
<td>6,271</td>
<td>1</td>
<td>1,824,666</td>
</tr>
</tbody>
</table>

n.a. = not available

<sup>a</sup> UNECE categories L1-L2
<sup>b</sup> UNECE categories L1-L5
<sup>c</sup> UNECE categories L6-L7
<sup>d</sup> UNECE categories M1
<sup>e</sup> UNECE categories M2-M3
<sup>f</sup> UNECE categories N1
<sup>g</sup> UNECE categories N2-N3
<sup>h</sup> Including both conventional and alternative technologies
<sup>i</sup> Estimated data at the end of 2018 (Source: AMBE -Spanish Association of Bicycles and Brands)

### 34.3 Charging Infrastructure or EVSE

**Package of Urgent Measures for Energy Transition and Consumer Protection: Liberalization of the Public Recharging Activity (National Level)**

In the year 2011, a national normative (Royal Decree 647/2011) was approved which establishes that public infrastructure service for charging electric vehicles should be operated by authorized “Charging operators”, which had to deal with special requirements. In this way and at the end of 2017, there were officially registered a number of 58 charging operators, which deployed a total of 278 public charging stations for EVs in different cities all over the national territory.

On 5 October 2018, the Council of Ministers approved a Royal Decree-Law 15/2018 on urgent measures for energy transition and consumer protection. The Plenary of the Congress of the Deputies of 18 October 2018, validated the RD-law by an absolute majority, also approving its processing as a draft law by way of urgency. Among other urgent measures, the “Charging operator” role was
removed, as it turned out, in its practical application, to be excessive rigid and
discouraging for the public recharging activity.

This new normative has opened the activity to any consumer and must be
registered by regional administrations in an official register for the appropriate
control and follow up of their activity and also, communicated to the Ministry for
Ecological Transition. The regulation for this registration should be prepared in the
next six months. This normative represents a measure oriented to reach the
objectives of the VEA Strategy, focused on the deployment of alternative energy
vehicles.

At the end of 2018, an estimated amount of more than 5,000 charging points exist
in Spain, which means an approximated ratio of 11 electric vehicles registered in
Spain per charging point.

**Barcelona City Council (Local Level)**

The Barcelona City Council has deployed an electric recharging network of nearly
1,200 points, being the operator and owner of the infrastructure within its ”Strategy
for the promotion of electric mobility in the city of Barcelona”89, that defines lines
of action for the period of 2018-2024.

**Madrid City Council (Local Level)**

In November 2018, the City of Madrid made a call for tenders to transfer charging
points to holders entities with free access locations, thus avoiding to devote public
land to charging infrastructure.

### 34.4 EV Demonstration Projects

**Aigües de Barcelona**

Aigües de Barcelona is the Company which manages the services related water
distribution in the city of Barcelona and also other 36 cities all over its
metropolitan area.

Since 2011, Aigües de Barcelona is progressive electrifying its vehicle fleet,
counting actually with a number of 132 electric vehicles (from its total number of
240 fleet vehicles).

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89 [https://bcnroc.ajuntament.barcelona.cat/jspui/bitstream/11703/109244/1/180309_MG%20Estrat%C3%A8tica%20VE_CEUM.PDF](https://bcnroc.ajuntament.barcelona.cat/jspui/bitstream/11703/109244/1/180309_MG%20Estrat%C3%A8tica%20VE_CEUM.PDF)
Aigües de Barcelona is also currently developing with “CitySensia”, an interactive Platform for citizen’s information on air quality, with information in real time about air quality parameters through receptors installed in the electric vehicles of the fleet, which allows knowing which city zones are more sensible to pollutants and their evolution figures.

**EMT Madrid**

Since January 2018, it is working in Madrid a bus line (line 76) fully operated by electric buses that are charged by inductive recharging systems. This initiative was launched by Madrid City Council in the framework of its “Plan A” for Air Quality.

To achieve that, 5 Hybrid buses (CGN Tempus Castrosúa) were transformed, by ETRA Technology Group, into pure electric buses and prepared for inductive recharging. This system combines partial recharging with connectors with inductive recharging through a subsoil inductor component. Inductive recharging systems are placed at the beginning of the line, where in less than 8 minutes batteries are fully recharged.

Similar initiatives were placed in other European cities, like Manheim, Braunschweig and Berlin (Germany), and Bruges (Belgium).

Electric buses acquisition plan: Apart from this initiative, Madrid Bus Transport Company (EMT) acquired 15 electric buses and 18 mini buses during 2018 and plans to incorporate other 40 electric buses between 2019 and 2020, with the objective of a total of 78 electric buses at the end of 2020.

Other interesting initiative promoted by EMT is “Electro-EMT” project, which consist in the deployment of fast charging systems placed in different parking lots all over the city of Madrid, as a new mobility service. These recharging systems can be reserved and used through its correspondent smartphone application. Currently prices for recharging vehicles are around 0,40 EUR/kWh.