

Carmakers failing to hit their own goals for sales of electric cars

Missed targets due to a lack of choice, availability and marketing

September 2017

Summary

This briefing collates a range of evidence and shows that carmakers are failing to achieve their own targets for sales of battery electric and plug-in hybrid vehicles. It also shows that the very limited choice of electric cars, long waiting times to receive cars, limited availability and crucially a lack of marketing investment are contributing for carmakers' lack of sales.

Analysis by T&E shows that in 2016, on average, carmakers aimed at selling 3.6% electric cars but only achieved 1.7%. This varied among companies: Volkswagen reached almost 2% EV sales while targeting at 3.5%. BMW sold 4% of EVs and aimed at 10%. Renault-Nissan sold 2.5% aiming at 8%.

While manufacturers complain about a lack of recharging infrastructure and incentives it is also clear they could have done significantly more to meet their own goals. There are just 20 battery electric on sale compared to over 400 conventionally fuelled models. But it is now clear many models are simply not available for sale in showrooms and others have long waiting times.

But data purchased from leading marketing analytical company Ebiquity shows that carmakers are making very little effort to market electric cars. While around 30% of German, French, and British consumers say they would consider buying an electric vehicle, on average across six major western European car markets just 2.1% of car marketing spend was on zero emission vehicles and 1.6% on plug-in hybrid models. Across the EU advertising spend is likely to be significantly lower than this percentage as little promotion of zero-emission vehicles is likely outline of the major new car markets. In Norway (where more than 1 in 3 new cars sold is now electric) marketing spend on electric cars as a proportion was much higher, indicating companies tend to follow demand rather than create a new market.

Analysis of future market growth by carmakers shows expectations are for strong growth such that by 2025 around 20% of new cars sold are expected to be electric. But past performance suggests without regulations they will fail to achieve their aspirations. This is why the forthcoming car CO2 regulation is so important in defining the speed of transition to zero-emission solutions and in particular a mandatory sales target for zero-emission vehicles of 15-20% along with a fleet average emission reduction of 7%pa.

1. Introduction

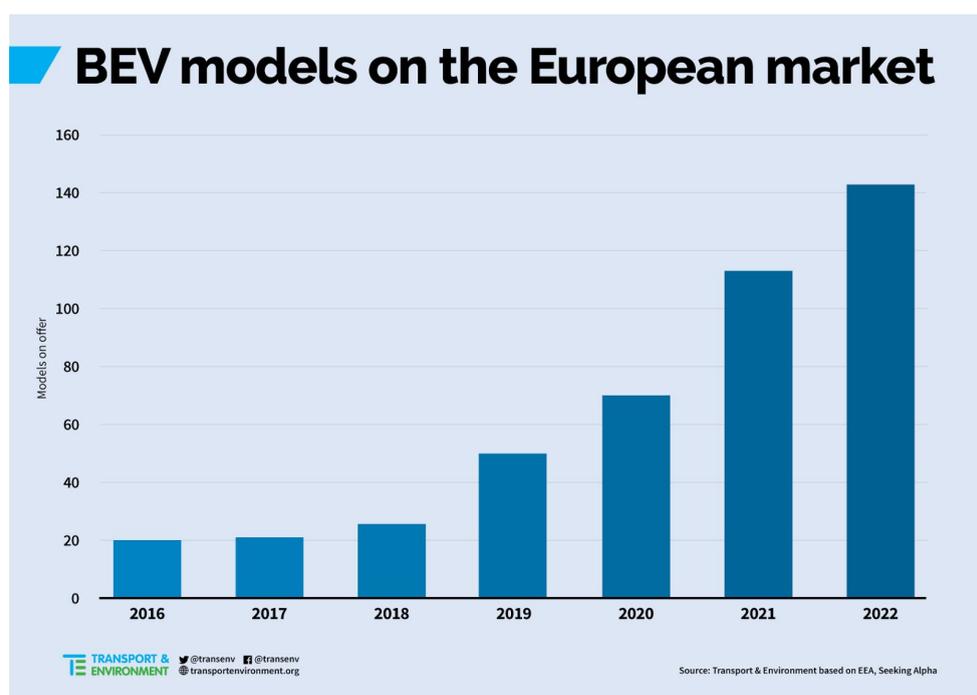
Zero Emission Vehicle sales in Europe have seen a strong growth in recent years and in 2016 accounted for 1.7% of new car sales. Sales in Europe (including Norway) are second to global market leader China but a

lack of customer demand and availability of recharging infrastructure are frequently cited as the reason the market remains niche. This paper examines whether the limited choice of models; availability of vehicles to buy; and low levels of marketing spend on zero emission models (all of which are directly within the remit of the vehicle manufacturers) is depressing sales. It also considers whether manufacturers are hitting their own sales targets and whether manufacturers could be doing more to meet these goals.

In November 2017, the European Commission will make a proposal for car and van CO2 targets for the post 2020 period. As part of its deliberations it is considering whether to introduce a zero emissions sales target for manufacturers. Such a policy is already operating in parts of the US and will soon commence in China and would provide the impetus to kick-start the market. The report also looks forward to 2025 and outlines the forecasts for zero emission vehicles sales manufacturers are making to give a pointer to the level of any sales target the Commission should be considering.

2. Availability of zero-emission vehicles significantly constrains the market

In 2016, there were only 20 BEV models on the European market across the main car segments,¹ as opposed to 417 conventionally-fuelled models available. The below graph gives an estimation of how the global offer will evolve in the next years.²



In the electric vans market there also remains a serious lack of choice. From a very low basis of around 1000 sales per year until 2014, there has been a significant acceleration in sales in 2015 to more than 11,000 along with an increase in the number of electric models on the market. This highlights the need for a range of different van sizes and types to be supplied with electric powertrains to capture an appreciable share of the van market. The market in electric vans is far more immature than that of cars with the top two models manufactured by partner brands Renault and Nissan respectively. France is by far the largest market for electric vans and makes up nearly half of the EU total, owing to a national purchase incentive scheme. Overall France has a very large market for vans, and EVs now account for about 1.5% of these. A striking second, however, is Denmark, with over 2,600 electric vans sold in 2015, accounting for 8.5% of all

¹ Element Energy, [Towards a European market for electro-mobility](#), October 2016

² <https://seekingalpha.com/amp/article/4086652-tesla-competition-watch-143-electric-car-models-market-2022>

vans sold there. It is striking that due to a lack of choice and availability Deutsche Post DHL group developed its own vehicle, StreetScooter, that it plans to begin to sell to others in 2017.

3. Marketing spend is not a the level required to kick start sales of zero-emission vehicles

A database of marketing and advertising sales in six major European Markets (Germany, France, UK, Spain, Italy and Norway) has been purchased by T&E from marketing analytics specialists Ebiquity.³ The data included a breakdown of the 2016 marketing budget allocated to conventional vehicles, Hybrid, Plug-in Electric vehicles and Battery Electric Vehicles, for 63 brands part of the following groups: BMW Group, Daimler, FCA, Ford, General Motors, Honda, Hyundai Motor Group, Jaguar-Land Rover, Mazda, Mitsubishi Motors, PSA Group, Renault-Nissan, Subaru, Suzuki, Tesla, Toyota Motor, Volkswagen Group, Volvo and others.⁴

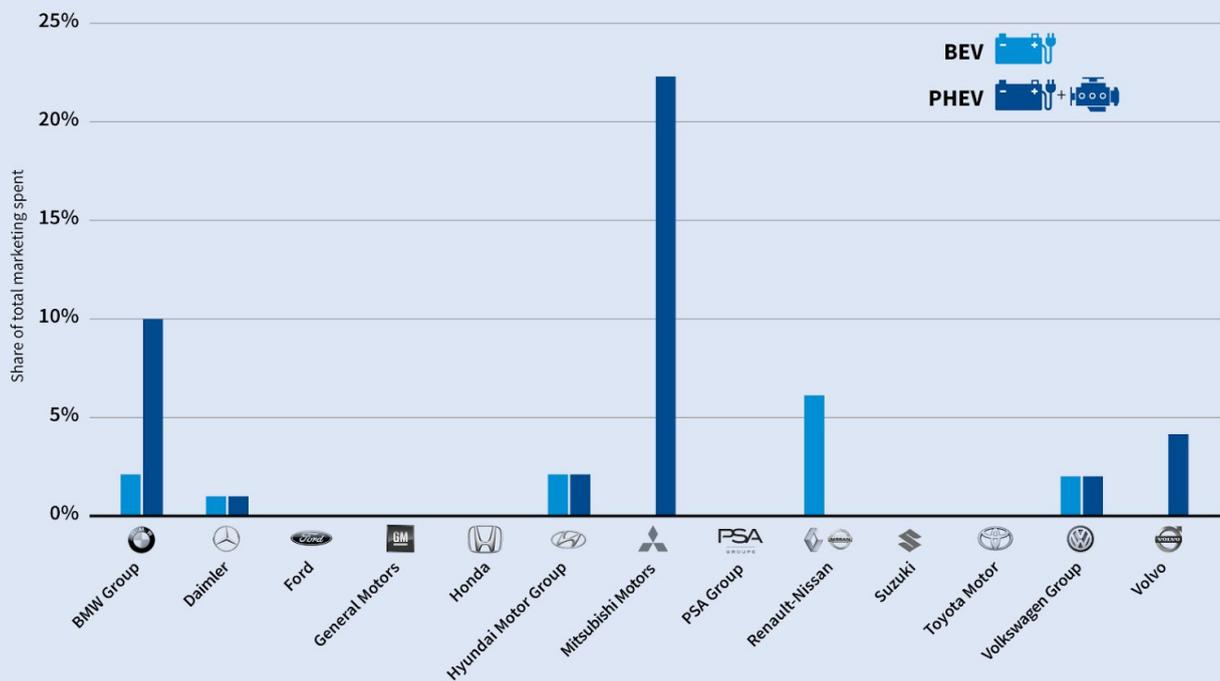
Around 30% of German, French, and British consumers say they would consider buying an electric vehicle,⁵ but choice of plug-in and electric vehicles remains very limited and advertising and marketing spend is rarely more than the market share - suggesting manufacturers are reacting to latent consumer demand from early adopters rather than actively growing the market share of zero-emission vehicles. On average in the analysed markets just 2.1% of car marketing spend was on zero emission vehicles and 1.6% on plug-in hybrid models. Across the EU advertising spend is likely to be significantly lower than this percentage as little promotion of zero-emission vehicles is likely outline of the major new car markets. Performance varies widely between companies as shown below.

³ <https://www.ebiquity.com/>

⁴ Full list of brands and groups in Annex.

⁵ Roland Berger, [Automotive Disruption Radar Issue #1](#), Tracking disruption signals in the automotive industry, April 2017

Marketing spent in 2016 across EU core markets



The outstanding performer is Mitsubishi which committed 22% of marketing spend to promote its Outlander PHEV model. BMW spent 10% on PHEV and a further 2% on battery electric models. Toyota heavily markets its hybrid models (67% of marketing spend), however, appear not to have marketed their PHEVs. Tesla data was excluded from the analysis but does not significantly impact upon the total marketing spend. Renault (6% for BEVs) is the only other company to spend more than 5% with other companies such as Volvo (4% for PHEVs), Volkswagen (2% on PHEVs, 2% on BEVs) and Daimler (1% BEVs; 1% PHEVs) showing much more modest marketing spend on zero emission models.

Notably, the former General Motors brands (Opel and Vauxhall) did not have any appreciable spend promoting the Ampera or Bolt. These models are supposedly available in Germany, The Netherlands and Norway but availability seems to be minimal with long waiting times and very few models to view in showrooms. In short, the company seems not to be trying to sell electric models. Ford and Peugeot-Citroen didn't market their zero emission or PHEV models.

The advertising budget for BEVs in Norway, where the government substantially incentivises their use, are much more significant. In Norway, BMW spends 24% of its budget on promoting BEVs, and Daimler 14% for its BEVs. Renault spends approximately 6 times more promoting its EVs in Norway (39%) than in the other countries. This indicates companies tending to follow demand rather than to create the market.

By 2016, only half of the announced EVs for Europe were sold

The disappointing marketing spend is more notable since companies are generally not meeting their own targets for sales of ZEVs. T&E has analysed stated commitments and compared these to actual performance that shows overall sales are around half the level or forecasts. No car maker has met their announced EV sales targets and there have been many announcements of pull-backs or stops in production.

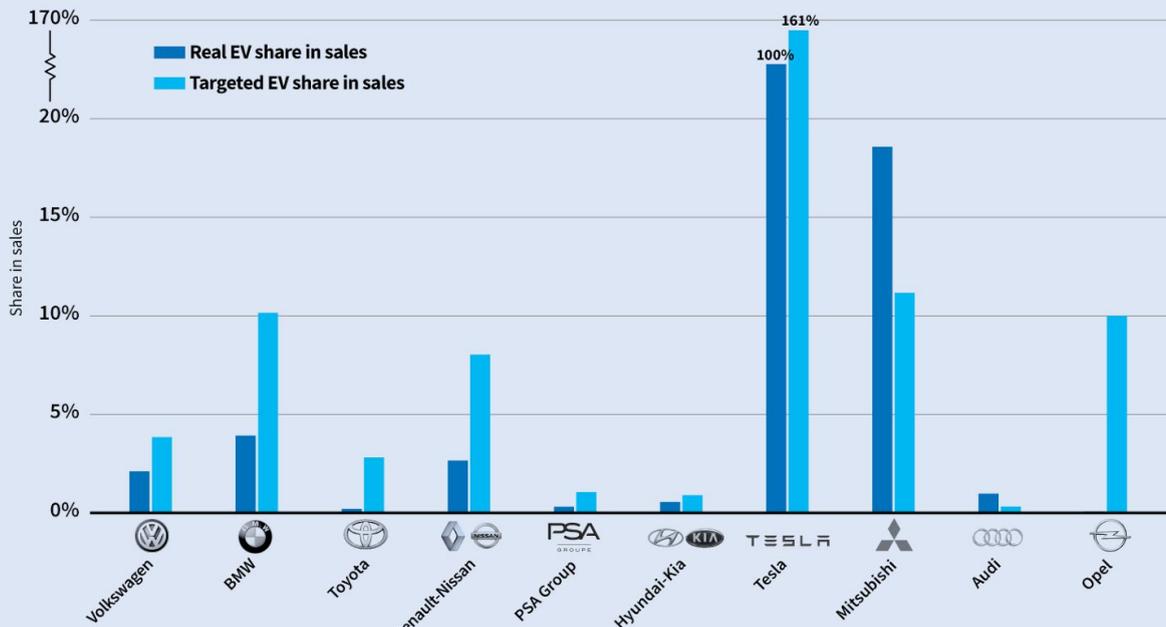
Some car makers hit production targets much later than scheduled. Renault predicted to sell its Zoe at 50,000 units annually in 2013, but after selling 10,000 in the first year the company achieved 50,000 cumulative sales by 2016. In 2009, Nissan aimed to sell 1.5 million zero emission cars by 2016. However, Renault-Nissan's cumulative EV sales were less than 500,000 worldwide through the end of the year 2016. In 2011, Mitsubishi expected that EVs and plug-in hybrids will account for 5% of sales in 2015, and reached a 4 % in 2016 - a far better performance helped by higher marketing spend.

Examples for production stops include the Audi R8 e-tron, launched in series-production at the 2015 Geneva auto show, which was stopped by the end of 2016 as less than 100 units were sold. Daimler decided in July 2017 to stop production of the electric B-Class, meaning that it is currently not producing any battery-electric model. Again, this seems to be mainly linked to a lack of effort in marketing this car: total marketing spend of the electric B-Class was only about 400,000 Euros out of which 387,000 Euros were spent on the Norwegian market. This lack of effort somewhat contradicts previous investments such as a 500 Million Euro investment in a new battery factory in Kamenz, Germany, an extension of a key production plant in Untertürkheim, Germany, to produce electric motors and battery packs, Daimler's entry into Formula E or the creation of an electric sub-brand 'EQ', likely to launch an SUV. In the case of Ford's electric Focus, which sold only 61 units in all of Europe in 2016, the company moved production from Europe (Germany) to China and imports the cars into the US. One of the reasons that sales were so low is that Ford did not spend any budget on marketing electric vehicles: 100% of Ford's marketing budget in EU core car markets went into its combustion models. PSA revealed in 2010 that it will buy total of 100,000 of the electric i-MiEV from Mitsubishi carmaker and planned to sell 25,000 units a year as the Peugeot iOn and Citroën C-Zero. However the deal is now in "temporary halt" as that goal was never met. In August 2012 PSA had only sold 6,500 units.

For a more systematic analysis for Europe, based on past target announcements from car makers preceding 2016, a to-be-expected volume of PHEVs and EVs was calculated and compared against actual EV sales in Europe. Results show that on average, car makers aimed at selling 3.6% EVs in their fleets and reached about half, 1.7%. This varied among companies: Volkswagen reached almost 2% EV sales while targeting at 3.5%. BMW sold 4% of EVs and aimed at 10%. Renault-Nissan sold 2.5% aiming at 8%. Mitsubishi and Audi overscored their EV targets. Had manufacturers invested to increase the number of available models and in marketing they would undoubtedly have got closer to their goals.

Real vs. targeted EV sales

Share in total sales 2016



3. Carmakers announce to sell around one third of EVs in Europe in 2025

Many carmakers estimates of the projected share of EV in sales in 2025 are bullish and to be met will require significant investment in development, manufacturing and marketing:

OEM	Commitment	Time horizon
Volvo	All new models will be electrified (48V mild hybrid, PHEV and BEV)	2019
Nissan	20% of its sales would be zero emission vehicles	2020
Porsche	50% of new sales to be electric	2023
Volkswagen	Electric cars to account for 25% of the sales	2025
Daimler	15-25% of sales in 2025 should be electrified	2025
Ford	70% of vehicles sold should be electrified (48V mild hybrid, PHEV and BEV)	2025

BMW	Estimation that 15-25% of sales should be plug-in or battery electric - all conventional vehicles should be mild hybrids	2025
Honda	2/3 of car sales should be PHEVs or ZEVs	2030

To estimate each car makers' announced EV sales for Europe in 2025, these global EV sales announcements were adjusted to the European market based on latest Bloomberg market forecasts, assuming sales in Europe of approximately 4.5% in 2020, 10% in 2025 and 28% in 2030 and a yearly growth of 27% between 2020 and 2025.⁶ Bloomberg also predicts that Europe's share of global EV sales will be around 20% in 2020 and 2025 but will fall to 15% in 2030. Overall, the analysis shows⁷ car makers' expected EV shares in the European sales by 2025 will lie between 22% and 34% of sales which translates into 2.3 and 3.6 million EVs. The table shows the more conservative estimate for all car makers that made a future sales target announcement for EVs (i.e. except Toyota, Ford, and FiatChrysler).

Company	2016 sales all	2016 EV sales	Share of EVs in sales (2016)	2025 adjusted EV sales	Share of EVs in sales (2025)
Volkswagen	1,720,829	33,687	1.96%	500,000	29.06%
BMW	1,030,734	36,597	3.55%	94,704	9.19%
Volvo	290,227	13,697	4.72%	46,000	15.85%
Toyota	651,199	227	0.03%		
Renault-Nissan	2,073,041	50,603	2.44%	398,400	19.22%
PSA	1,472,927	4,237	0.29%	73,646	5.00%
Daimler (Mercedes)	945,074	16,461	1.74%	111,400	11.79%
Ford	1,043,295	61	0.00%		
Hyundai-Kia	940,712	5,839	0.62%	42,918	4.56%
FCA (Fiat Chrysler)	992,712	0	0.00%		
Tesla	16,203	16,203	100.00%	657,983	4060.87%
Mitsubishi	117,216	21,771	18.57%	88,565	75.56%
Audi	830,956	10,791	1.30%	93,568	11.26%
Honda	159,126	0	0.00%	47,738	30%

⁶ Bloomberg New Energy Outlook (July 2017)

For these particular announcements, the Bloomberg forecasted average growth rate of the EV market is used between the corresponding years to obtain this adjusted 2025 sales target..

⁷ Starting from Bloomberg's assumption that in 2025, approximately 20% of EVs will be sold in Europe, these 20% were multiplied with the global 2025 adjusted target to obtain the European 2025 adjusted target and the corresponding share of EVs in sales. An alternative approach which consists in assuming that on average the share of sales of EVs is twice as big in Europe as it is globally for carmakers, leads us to higher predicted shares. In both methods, we also assume that total vehicles sales of a carmaker will be the same in 2025 and in 2016, only the proportion of EVs change.

Porsche	71,149	2,954	4.15%	35,667	50.13%
Opel	996,895	40	0.00%	99,690	10.00%
Others		9,341			
Total	10,505,963	222,509	1.67%	2,290,278	21.80%

Overall manufacturers are targeting just over 1 in 5 cars should be electric by 2025. But their historical performance suggests that without policy intervention they are likely to achieve around half of this level. The forthcoming proposals for post 2020 CO2 standards for cars and vans provides an opportunity to establish a policy framework that can help deliver carmakers own goals.

4. Global market pressure will raise as China introduces an 8% target for ZEVs

From 2018 onwards China's plans to introduce a quota, at 8% of ZEV production or imports in 2018, 10% in 2019 and 12% in 2020 have spurred the recent wave of announcements. China is already the world's largest EV market, the government aiming at 5 million ZEVs in 2025. Many of the recent carmaker announcements are likely to be linked to these plans. Volkswagen for example announced to extend its EV offer in China to 13 battery electric and plug-in models by 2020, and an additional 10 additional models from 2020 through 2025.⁸ The company will build the electric golf next year sourcing from a Chinese battery supplier, thus qualifying for the upcoming quota⁹. Ford¹⁰ has just created a joint venture to develop and produce full electric cars for the Chinese market, aiming at offering 70% of its models in an electric version by 2025. There are indications that companies are seeking to invest on EV production in China first to test and establish their market their before extending their offer globally.¹¹ This could result in a shift in jobs and value from the EU to China and could result in China exporting vehicles to Europe.

The US EV market keeps growing strongly (sales increasing by 37% in 2016) mainly driven by California and nine other US states that already incentivizes ZEV sales with a ZEV credit scheme and California aims at 16% of zero-emission, and 22% low emission vehicles in 2025. The Californian scheme allows car makers to trade credits they earned by selling Zero and Low Emission Vehicles. This way the scheme allows flexibility for companies that have not met or overscored their target, but also favors new market entrants that sell electric vehicles only. California's regulation has created the largest EV market in the US and inspired China to accelerate its EV market, providing investment security for a growing EV industry including battery producers, car suppliers, engineering, electricity and grid providers and ICT companies.

While the largest global EV markets are likely to reach ZEV shares of about 15% in 2025, Europe risks becoming a marginal market that imports the small numbers of ZEVs sold; rather than manufacturing vehicles locally for a more significant EU market that could also export vehicles to other regions. In order to build a European EV market with an EV industry delivering close-to-market, the offer of EVs needs to expand massively to give consumers sufficient choice and make EVs price competitive. Studies indicate that the cost of EV use will become equal to that of combustion cars in the early 2020s.¹² At the same time,

⁸ <http://www.autonewschina.com/en/article.asp?id=16349>

⁹ <http://europe.autonews.com/article/20170714/ANE/170719828/vw-taps-electric-golf-to-help-meet-chinas-ev-quota>

¹⁰ <https://www.electrive.net/2017/04/06/ford-nennt-elektrifizierungsplaene-fuer-china/>

¹¹ See T&E Briefing "How will electric vehicle transition impact EU jobs?"

¹² http://www.beuc.eu/publications/beuc-x-2016-121_low_carbon_cars_in_the_2020s-report.pdf

European Member States need to invest into a reliable EV charging infrastructure in public and private buildings and modernise electricity grids to allow smart charging of EVs.

5. A European sales target for Zero Emission Vehicles will help industry to deliver and secure its global competitiveness

To accelerate the transition to low and zero-emission mobility (fostered by cities' struggling to meet air pollution targets and consumers and policy makers' losing trust in diesels) some European governments are now announcing plans to phase out the combustion engine. These announcements, in addition to more and more cities banning Diesel engines, raise pressure on car makers to meet their own forecast levels of ZEV sales.

Country	Commitment	Time horizon
Norway ¹³	100% of new car sales should be zero-emission vehicles	2025
Netherlands ¹⁴	Petrol and Diesel Ban for new sales (pending senate's approval)	2025
UK ¹⁵	Petrol and Diesel Ban for new sales	2040
France ¹⁶	Petrol and Diesel Ban for new sales	2040
Austria ¹⁷	100% of new car sales should be zero emission vehicles	2030
Germany ¹⁸	100% of new car sales should be zero emission vehicles	2030

The lead being taken by Member States will require a significant ramp-up in EV and PHEV sales from current levels by 2025. The national goals are broadly in line with carmakers own aspirations of a 22 to 34% market share by then; but will require these goals to be delivered whereas current performance is that only half of targets are being met. To help carmakers meet their goals the EU, like California and China should establish a ZEV mandate or sales target. This will also help to deliver the 2030 climate goal of a 30% reduction in emissions from non-emissions trading scheme emissions (including transport). The ZEV sales target is akin to renewables targets that have successfully accelerated the uptake of zero emissions electricity generation in the power sector. It has 5 key benefits:

1. It guarantees a minimum market that helps reduce the commercial risk for investors in new recharging infrastructure helping to tackle the “chicken and egg” dilemma

¹³ Norway's National [Transport Plan](#), p. 30, “All new passenger cars and light vans sold in 2025 shall be zero-emission vehicles”

¹⁴ Recommendation by National Parliament, <http://www.dutchnews.nl/news/archives/2016/03/only-electric-cars-to-be-sold-in-netherlands-from-2025/>

¹⁵ Clean Air Plan, <https://www.theguardian.com/politics/2017/jul/25/britain-to-ban-sale-of-all-diesel-and-petrol-cars-and-vans-from-2040>

¹⁶ Climate Action Plan, <https://www.theguardian.com/business/2017/jul/06/france-ban-petrol-diesel-cars-2040-emmanuel-macron-volvo>

¹⁷ Target issued by Transport Ministry <http://derstandard.at/2000061796118/Grossbritannien-soll-ab-2040-Diesel-und-Benzin-Autos-verbieten>

¹⁸ Recommendations issued by Government Second Chamber, the Council of Federal Countries, <http://www.spiegel.de/auto/aktuell/bundeslaender-wollen-benzin-und-dieselaautos-ab-2030-verbieten-a-1115671.html>

2. It helps the electricity sector plan for the introduction of electric cars in particular enabling it to make use of electric cars as a mechanism to help manage grids flexibly
3. It will encourage manufacturers to bring more models to market and actively market these more aggressively
4. It will make it more likely ZEVs are manufactured locally as the market will be larger
5. It will send an important political signal that electrification of light duty cars represents the way forward that will in turn encourage member states to provide tax and other incentives to assist in meeting the targets.

With the upcoming Low Emissions Mobility Package announced for November 2017 the EU has the unique chance to set ZEV targets. As experience from US and China shows, a ZEV target is likely to drive EV market sufficiently to ensure a broad offer for consumers, and thus a sufficiently large market for OEMs to produce close-to-market rather than import from China. A ZEV target of 15-20% is needed as a 'tool to transition' and the Commission needs to propose one now for 2025 with a goal of at least 35% by 2030.

Further information

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Annex

Car maker	Announcement	Reality by 2016
Audi	R8 e-tron launched in series-production at 2015 Geneva auto show	stopped production and sales
Cadillac (GM)	Cadillac extended range hybrid ELR launched at North American International Auto Show in 2013	production cancelled
Daimler	500 Mio Euro investment in a new battery factory in Kamenz, Germany, EV and battery production capacities in Untertürkheim plant Germany, joined Formula E electric sub-brand 'EQ' created with electric SUV concept	stopped production of electric B-Class
Ford	In 2005: 250,000 hybrids a year 2010 revised: instead doubling number of flexible fuel vehicles	Ford sold 61 Focus Electric in EU in 2016 and stopped its production in Europe, instead importing from China
GM	2015 announcement: The Bolt sales target in the US is 30,000 a year.	
Honda	In 2012, target production number for the Fit EV was only 1,100	production stopped after 20 month after the first delivery
Hyundai	In 2011, Hyundai aimed at 20,000 electric units in 2014	Annual sales at about 16,000 units in 2016
Mitsubishi	In 2011, Mitsubishi expected EVs and plug-in hybrids at 5% of sales in 2015.	4 % EV and PHEVs sold in 2016
Nissan	In 2009, Nissan target to sell 1.5 million zero emission cars by 2016. In 2011, the first year production target of the all electric Nissan Leaf was of 50,000 units.	Renault-Nissan's cumulative EV sales less than 500,000 worldwide less than that sold during the first two years on the market

Opel	The Opel Ampera (US: Chevy Volt) was set to sell 10,000 units in 2012 but only 5,200 were sold that year.	In July 2014, Opel announced that Ampera production was stopped. Ampera-e, launched in Europe and Norway in May 2017, limited to few hundred by end of 2017
PSA	In 2010, PSA intended to buy 100,000 electric i-MiEV from Mitsubishi carmaker to sell 25,000 units a year as the Peugeot iOn and Citroën C-Zero. In August 2012 PSA had only sold 6,500 units.	Project was temporarily 'on halt'
Renault	2013 target of 50,000 annual units for the Zoe	After selling around 10,000 units the first year the 50,000 cumulative milestone was hit in 2016.
Toyota	At the launch of the Prius Plug-in Version in Japan in 2012, Toyota said that it has set goals to sell about 60,000 per year globally. Unveiled in 2010, the pure-electric Toyota eQ was supposed to be sold in several thousand units annually An all-electric SUV, RAV 4EV, was developed from 2012 to 2014	The carmaker didn't find the expected success and only sold about 75,000 units to date. 2 years later Toyota plans for wide-spread production production ended in September 2014. Toyota only sold the 2,600 vehicles
Volkswagen	At annual Media and Investor Conference in Berlin in 2014, Volkswagen claimed that plug-in electric vehicle sales would be 2% to 3% of the total annual sales.	Unfortunately the share of plug-ins in 2016 was only 0.6%