

LMC<sup>7</sup>

# Global Hybrid & EV Bulletin

April 2021

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# Introduction

LMC Automotive has been tracking and forecasting global sales of electrified vehicles (xEV) for more than ten years through its established **Global Hybrid & Electric Vehicle Forecast**. This service is published quarterly and provides forecasts extending 12 years into the future. More recently, in response to customer requests, we have added the **Battery and eMotor Module**.

However, as the world embarks on what appears to be a steep acceleration in the demand for electrified vehicles, leading to their domination at a not-too-distant time, the need for a more frequent snapshot of the global situation has become increasingly evident.

That is the purpose of the new **Global Hybrid & EV Bulletin**. This monthly publication contains comprehensive market and technology level sales data for electrified vehicles plus important sectoral information that has come to light during the month.

**Data** are timely - each release of the bulletin in the third week of the month contains sales data up to and including the preceding month. This is supplemented by concise and insightful commentary on market developments in electrification as well as information which will help users to interpret what is really happening right now and to direct their thinking in the short term on the xEV sector.

For those needing to keep a close eye on how the global xEV market is developing, the **Global Hybrid & EV Bulletin** is essential reading.

Actual Data provided  
by JATO Dynamics  
and national automotive  
industry associations



Our Knowledge is Your Power

# Global Highlights

## After a slow start to 2021, March saw strong xEV demand with BEV +170% YoY at 351k

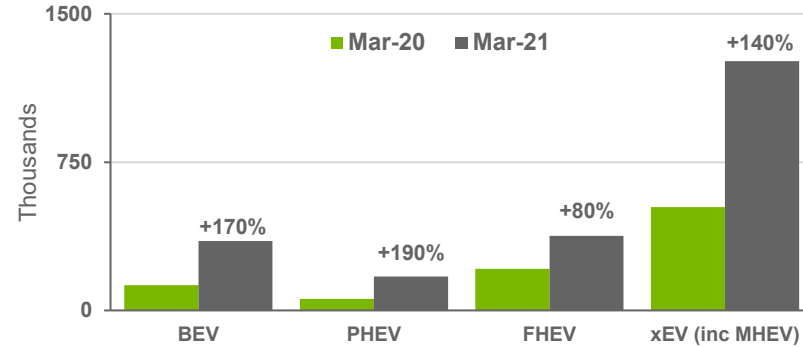
1.26 million electrified cars and N. America light trucks were sold globally in March 2021. That's an increase of 140% over March 2020 and a very significant uptick from February this year when 770,000 xEVs were sold. BEV demand continues to escalate, coming within 35,000 units of FHEV sales in March and no doubt heading towards being the leading xEV technology over time.

Our figures indicate that Tesla once again took the first and third slots in the global top 10 BEV sales ranking with the Model 3 being the most successful model overall. Volkswagen may have hoped that the ID.3 model would make a bigger impact on the top 10 list with the roll out of the 'Pro' battery version at an attractive price.

Global BEV sales by major market were split 50% China, 30% Europe and 14% North America in March. The big shift from March 2020 is that China has once again become the powerhouse of BEV demand. In 2020, it and Europe accounted for about the same share of global BEV demand (just under 40%). While Europe's BEV market makes great strides, China's is moving faster still.

\*includes global car and N. America light truck

### Global xEV PV\* Market



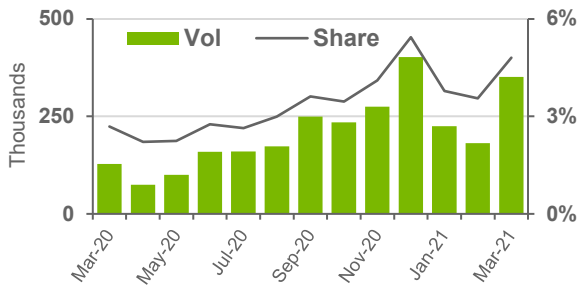
### March Top 10 BEV Models

Rank	Model	Sales ('000s)
1	Tesla Model 3	62.9
2	Hongguang mini	39.7
3	Tesla Model Y	26.7
4	Ora R1	8.5
5	BYD Han	8.0
6	Nissan Leaf	7.8
7	Volkswagen ID.4	7.4
8	Hyundai Kona	7.2
9	Chevrolet Bolt	6.0
10	Volkswagen ID.3	5.9

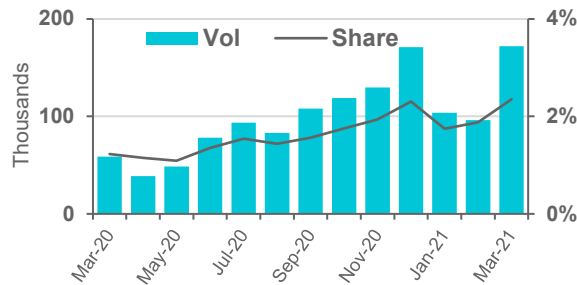
# Global xEV Sales Trends\*

\*includes global car and N. America light truck

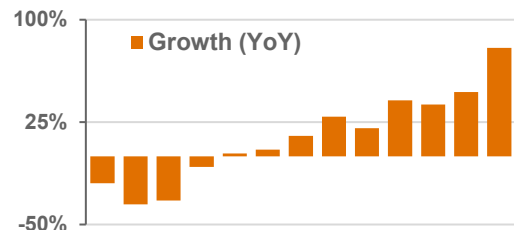
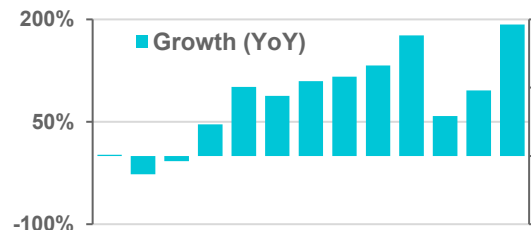
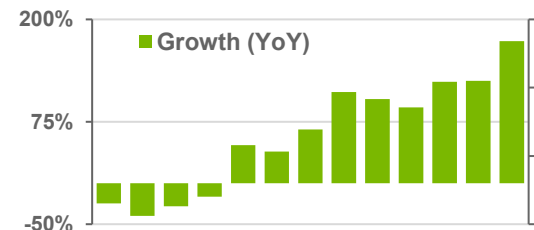
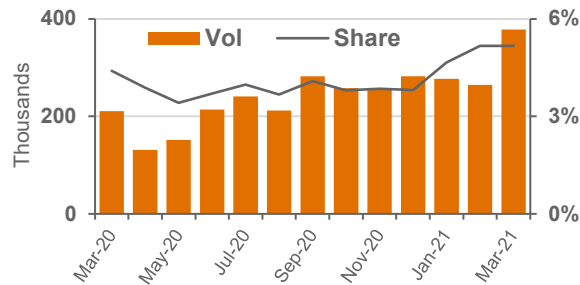
## BEV



## PHEV



## FHEV



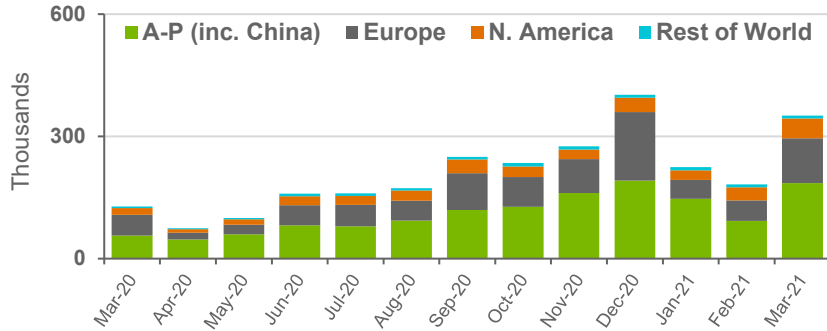
In broad terms, global xEV demand was split quite evenly between BEV, FHEV & MHEV (predominantly 48V). Each was in the 345k to 380k region with FHEV being most popular overall, driven by strong demand in the Asia-Pacific region and slower growth in Europe & N. America.

China's latest alternative powertrain policy favours faster adoption of FHEV while growing interest among European OEMs should help to keep it as a major player. But the recent trajectory of BEV indicates that, as the default ZEV technology, it will overtake FHEV by year-end.

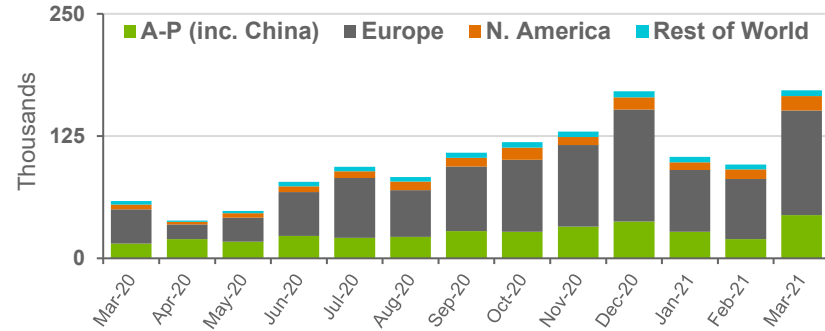
# Global xEV Sales by Region\*

\*includes global car and N. America light truck

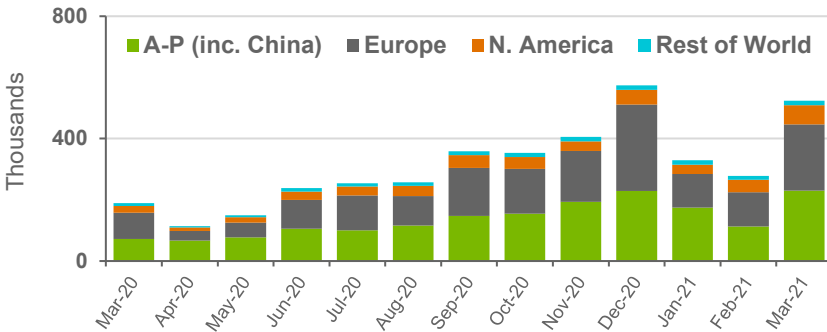
## BEV



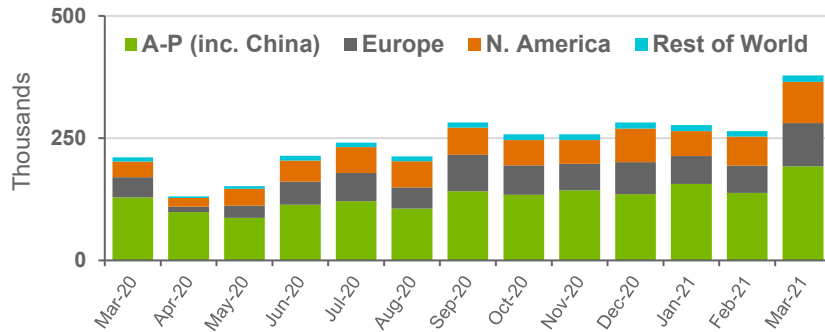
## PHEV



## PEV\*\*



## FHEV



\*\*Plug-in Electric Vehicle – the sum of BEV and PHEV

# Europe Overview\*

**Strong BEV demand in France, Germany and UK helped Europe's BEV market stay on track.**

**Half a million electrified cars were sold in March, not far short of Jan and Feb combined.**

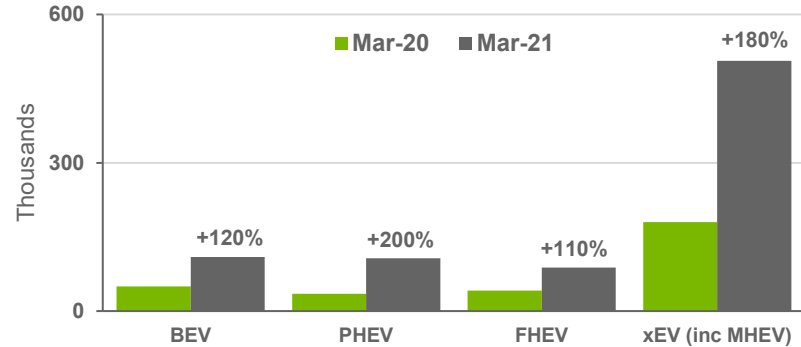
It must be a relief to those OEMs in Europe who are at risk of missing the year-end CO<sub>2</sub> target mandated by the EU that the xEV market, especially plug-ins, responded well to stimuli in March.

117,000 BEV passenger cars were sold, resulting in a market share of 7.5% - the highest this year by some distance although some way off December 2020's spectacular 13% figure. We expect BEV sales of circa 0.5mn in H1 of this year, approaching 0.7mn in H2, with the 210k Q1 total being in line with this forecast.

Interestingly, demand for PHEVs in Europe in March was strong. They are supported by incentives (though not to the extent of BEVs) but we think it was sustained marketing pressure from OEMs and more model availability that was key to their success. Our data indicate PHEV sales just above BEV in Q1 2021.

\*pan-Europe + CIS, includes car only

## Europe xEV PV\* Market



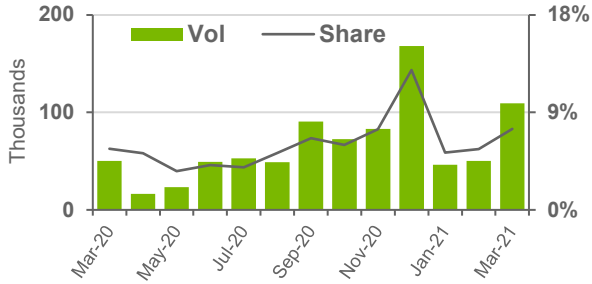
## March Top 10 BEV Models

Rank	Model	Sales ('000s)
1	Tesla Model 3	23.1
2	Hyundai Kona	5.7
3	Renault Zoe ZE	5.4
4	Volkswagen ID.3	4.8
5	Volkswagen ID.4	4.7
6	Nissan Leaf	4.4
7	Volkswagen Up!	4.2
8	Peugeot 208	4.0
9	Kia Niro	4.0
10	MINI Electric	3.4

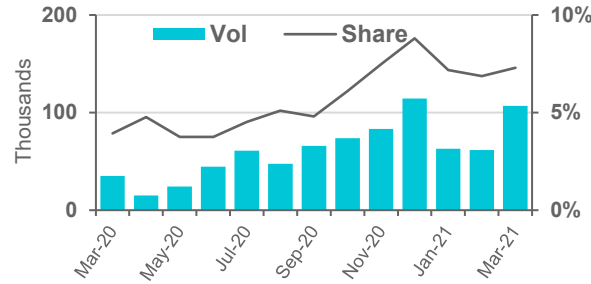
# Europe xEV Sales Trends\*

\*pan-Europe + CIS, includes car only

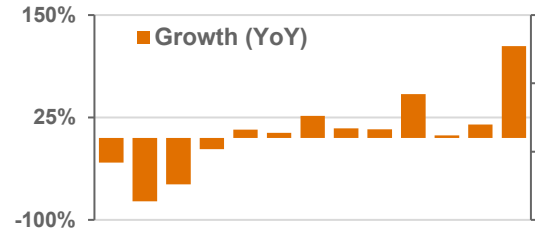
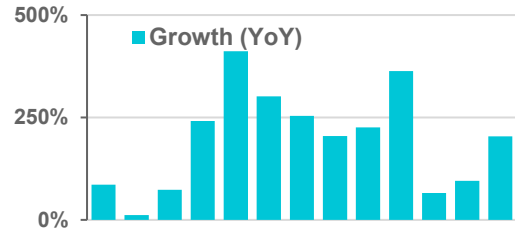
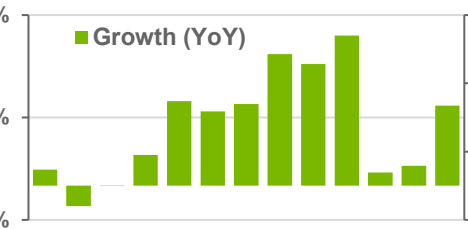
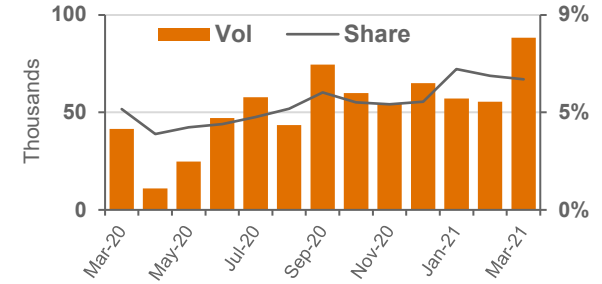
## BEV



## PHEV



## FHEV



All the technologies highlighted above show improvement in both sales and YoY performance in March of this year. Most dramatic are BEV (recovering from pull-forward into late 2020) and FHEV, a reflection of the growing number of models available in the European market.

BEV recovered its position as best-selling xEV type in March but there was little difference between the achievement of the three types, indicating a balanced electrification preference in Europe. We doubt the situation will last – BEV will move clear of the others by year-end.

# USA Overview\*

It may be model choice or more optimism, but Q1 BEV share grew from 1.3% to 2.4% YoY.

All xEV types made solid progress - combined March sales were 168,000, up by 160% YoY.

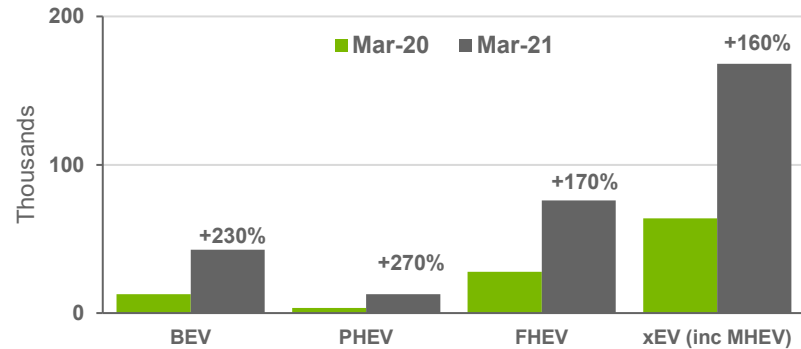
43,000 BEVs were sold in the USA in March 2021. By our reckoning, that was the best month ever, beating December 2018 (when Tesla's Model 3 was in the first flush of youth) and December last year when again Tesla had a bumper month. This time around, while Tesla still dominates, more players are selling in the thousands rather than hundreds per month. Chevrolet's Bolt has done this on-and-off for several years, but Ford's Mustang Mach-E had its second month of sales well over 2,500 units.

Having said that, Tesla's share of all BEV sales in March, at 69%, was slightly up on March 2020 when it gained 66% of all BEV sales. But with more product coming, we expect this number to drop to 45% by year-end although Tesla's sales won't decline.

March was a strong month for hybrid sales (+43%), PHEV sales (+53%) and indeed fuel cell sales which quadrupled to 750 units.

\*includes car and light truck

## USA xEV LV Market



## March Top 10 BEV Models

Rank	Model	Sales ('000s)
1	Tesla Model Y	15.1
2	Tesla Model 3	9.8
3	Chevrolet Bolt	5.2
4	Tesla Model X	2.8
5	Ford Mach E	2.6
6	Tesla Model S	2.0
7	Audi e-tron	1.4
8	Nissan LEAF	1.1
9	Porsche Taycan	0.6
10	Hyundai Ioniq	0.4

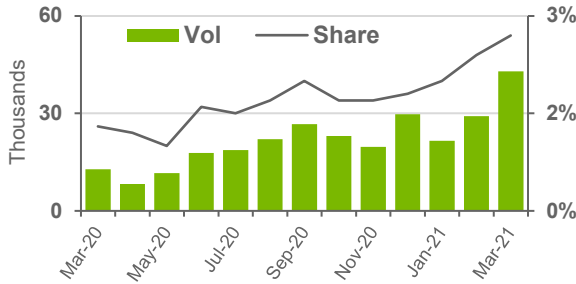


# USA xEV Sales Trends\*

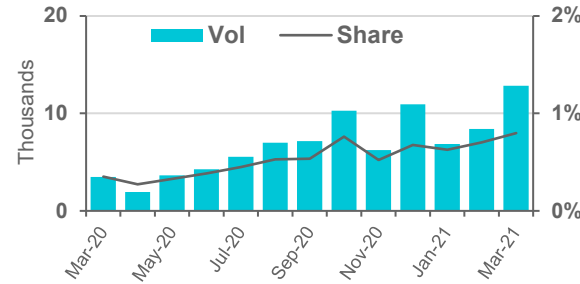


\*includes car and light truck

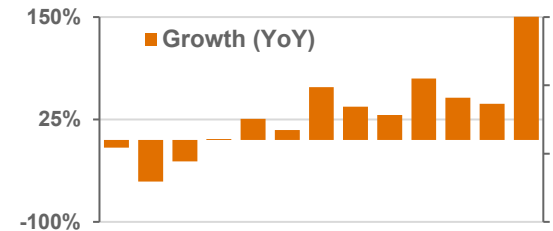
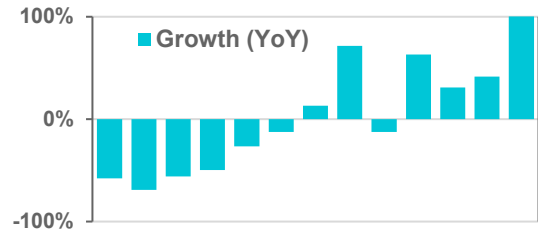
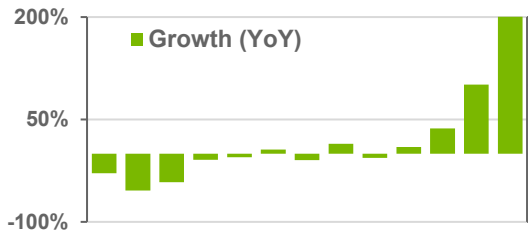
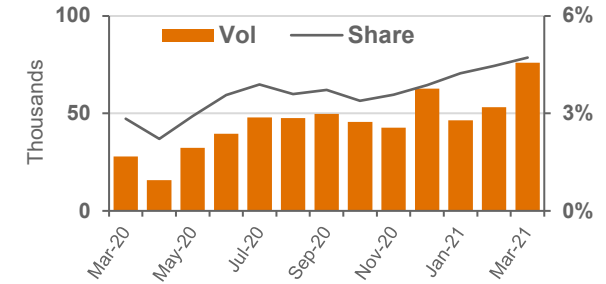
## BEV



## PHEV



## FHEV



The plug-in market is moving faster than the hybrid market. Over the last year, plug-in share has doubled (from 1.7% to 3.5%) while hybrid share went from 2.8% to 4.7%. The USA is moving into line with most electrifying markets, pushed in the ZEV direction by policy instruments.

That being said, March was a strong month for hybrid sales, dominated to the extent of 65% by Toyota (as usual). Adding Lexus to the mix takes Toyota group share to 72% of the total. The remainder was largely accounted for by Honda, Hyundai, Nissan and Kia models.

# China Overview\*

**China's NEV market is back to full speed – March sales were the second best on record.**

**And NEV's share of March sales hit an all-time high (11%), beating December 2020's 9%.**

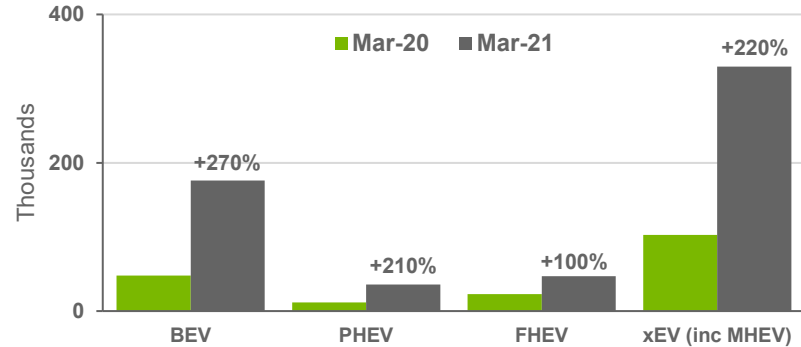
The mechanisms currently in place to steer buyers toward plug-ins are working rather well at present. License plate acquisition in Shanghai (free to those choosing a BEV from 1<sup>st</sup> March 2021), the remnants of the NEV subsidy system, greater NEV model choice and an NEV credit quota scheme that appears to be now working efficiently are having the desired effect in China, boosting demand.

BEV sales were 176,000 in March, only bettered by December 2020's figure of 188,000. It's rare for the year-end total to be almost beaten in other months, but this shows the waning effect of the NEV subsidy which usually results in peak sales in December.

Chinese consumers are being offered a multitude of new BEV models from which to choose, many from BEV-dedicated startups.

\*includes car only

China xEV PV Market



March Top 10 BEV Models

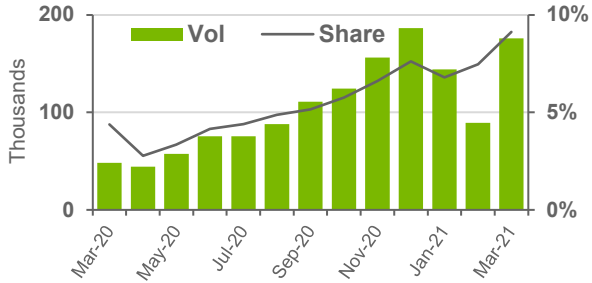
Rank	Model	Sales ('000s)
1	Hongguang mini	39.7
2	Tesla Model 3	25.3
3	Tesla Model Y	10.2
4	Ora R1	8.5
5	BYD Han	8.0
6	Aion S	5.7
7	Ant (EQ1)	5.3
8	Benben	4.1
9	BMW iX3	3.5
10	Neta V	3.2

# China xEV Sales Trends\*

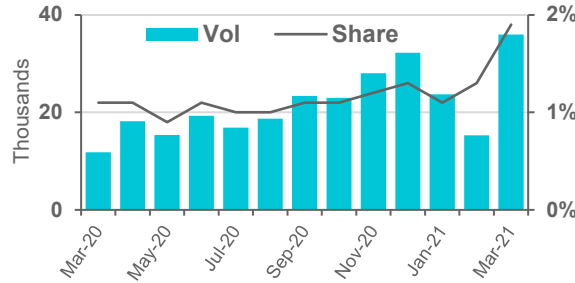


\*includes car only

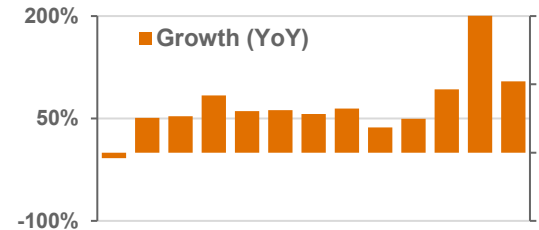
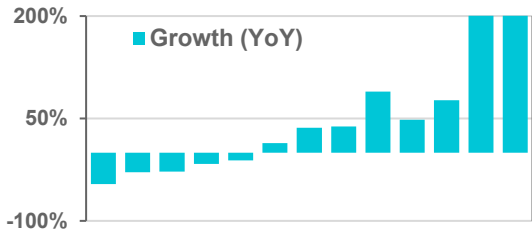
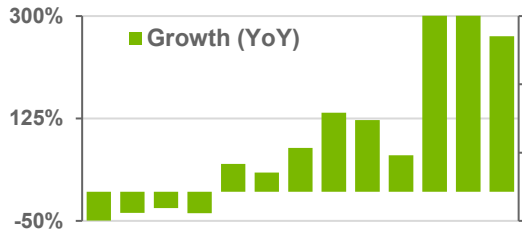
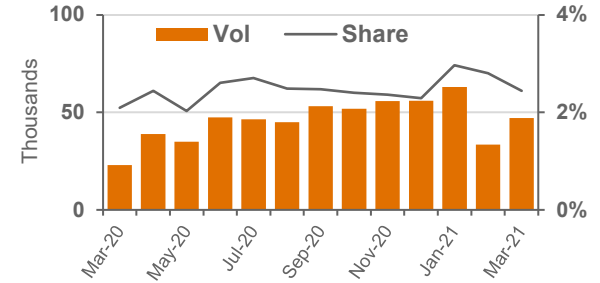
## BEV



## PHEV



## FHEV



The BEV market in March left other technologies in its wake as usual, achieving close to 10% of the China car market while PHEV and FHEV hover around the 2% level. While FHEV is increasingly supported by policy, domestic producers are generally not equipped to provide product. That currently limits growth in the sector, but we are expecting more FHEVs to come to market to plug the gap in the market that isn't filled by NEVs or FHEVs from established providers like Toyota or Hyundai Group. Currently it is filled by ICE, but fuel efficiency targets favour FHEVs.

# Policy & Regulation Update (1)

## Europe and North America

### Europe:

- **France:** The 'Environmental Bonus' & 'Conversion Premium' give a maximum of €7k+€5k off the price of a sub-20 gm/km CO<sub>2</sub> car (i.e. a BEV). The bonus declines over time: the max from 1<sup>st</sup> July 2021 is €6k+€5k and from 2022 is €5k+€5k.
- **Germany:** Will provide €5.5bn in funding for EV charging infrastructure, the funds lasting until 2024. The environmental subsidy for plug-in cars lasts until 2025, decreasing over time in two steps while the hybrid subsidy will probably be removed.
- **Italy:** 2021 incentives: new sub-20gm/km CO<sub>2</sub> cars qualify for a €10k Ecobonus (€8k from state + €2k from dealer. 21-60gm/km CO<sub>2</sub> cars can receive €6.5k (€4.5k+€2k) if a car is scrapped. 61-135gm/km CO<sub>2</sub> cars, some ICE-only, can also get subsidy.
- **Spain:** In March, Spain extended the MOVES II scheme for BEVs & PHEVs costing less than €45k. Private buyers can get up to €5k subsidy plus a further €0.5k if scrapping an old car. Scheme funding is extended by a further €20mn to €120mn.
- **UK:** In April, the UK government announced that the existing target for cutting CO<sub>2</sub> emissions would be brought forward by 15 yrs to 2035, a world-leading position. This brings UK in line with climate change goals, reinforcing ICE end-of-sales targets.

### North America:

- **USA:** Part of the American jobs Plan, the president proposes a \$174bn electrification investment in incentives & infrastructure:
- USA market share of plug-in electric vehicle sales is one-third the size of China's EV market. The President believes that must change. His investment proposal aims to put the USA at the forefront of global e-mobility development and production.
- Biden's plan will enable automakers to spur domestic supply chains from raw materials to parts, retool plants to compete globally, and support US workers to make batteries & EVs.
- It will give consumers point of sale rebates and tax incentives to buy American-made EVs, while ensuring that the vehicles are affordable for families and built by workers with good jobs.
- It will establish grant & incentive programs for state/local governments and the private sector to build a network of 500k EV chargers by 2030, while promoting strong standards.
- Working with the EPA, the plan will replace 50,000 diesel transit vehicles and electrify at least 20 percent of the school bus fleet with the aim of achieving a 100% clean bus fleet over time.
- Finally, it will utilise the tools of federal procurement to electrify the federal fleet, including the United States Postal Service.

# Policy & Regulation Update (2)

## Asia-Pacific

### China:

- Shanghai will withdraw the free license plate for buyers of PHEVs & EREVs from 1<sup>st</sup> January 2023 if the buyer has any other vehicles registered to them. BEV plates are unaffected. Shanghai is targeting 50% BEV share of private new cars by 2025, 50% share of ride-hailing cars and 100% share of buses. Shanghai also wants 10,000 FCEVs on the road by 2025.
- The government's NEV subsidy was cut by 20% for 2021. The maximum amount available to the buyer of a privately purchased BEV with a range 300km to 400km has been reduced from RMB 16,200 to RMB 13,000.

### Japan:

- In late 2020 the government announced that Japan would end the sale of ICE-only cars by 2035 although hybrid cars would still be allowed to be sold. At the same time the city of Tokyo set a more ambitious target of achieving this goal by 2030.
- From late 2020, BEVs can now receive up to 800k Yen subsidy (previously 400k Yen), PHEVs up to 400k Yen while FCEVs will continue to get a grant over 1mn Yen to offset their high price. The BEV subsidy coincided with a lower cost version of Tesla's Model 3 being introduced. Sales have increased significantly.

### Korea:

- In January 2021 the BEV subsidy was set at 19mn Won and that for an FCEV at 37.5mn Won. An upper car price limit of 60mn won is set. Cars costing from 60mn to 90mn Won are eligible for 50% while purchases over 90mn Won are excluded.
- The government plans to reduce BEV costs by 50% & introduce a battery lease scheme to help buyers choose plug-in cars.
- In March, the government tasked Hyundai and Kia with selling at least 10% of their cars as BEVs or FCEVs in 2021 and 12% in 2022. In fact, this mandate applies to all OEMs selling at least 20,000 cars annually. Fines apply if targets are missed.



# xEV Outlook: New Threats and Opportunities

## Regulatory, Fiscal & Technical Talking Points

### Europe:

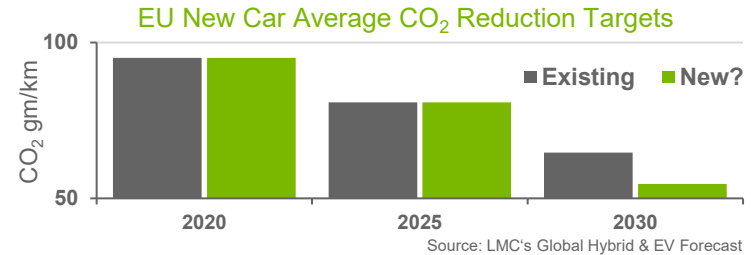
Over the last month, opinion in the European auto sector is increasingly starting to accept that the 50% reduction on 2020 CO<sub>2</sub> level by 2030 rather than the current 37.5% will be implemented. We are reflecting this in our latest forecasts, having added BEV volume for the Q1 update, and are likely to add more for Q2 2021.

### China:

In April, Chinese BEV startup Nio unveiled its latest battery swap station, the key upgrade being that the car can enter the station autonomously. This is seen as a real benefit and will improve the popularity of Nio's successful battery swap strategy. Swapping capacity is also increased by three times over the first generation.

### USA:

This year sees several new brands start sales in the USA BEV space, many of them in the truck sector. This profitable segment, especially in the case of pickups, is being targeted by several startups and could electrify quite quickly if BEV operating costs undercut diesel operating costs, but hurdles remain of course.



### Nio Battery Swap



### USA: Many new Brands Starting Sales in 2021



Lordstown Motors



Bollinger Motors



Rivian



BrightDrop



Workhorse



Cruise



Electric Last Mile



IONIQ

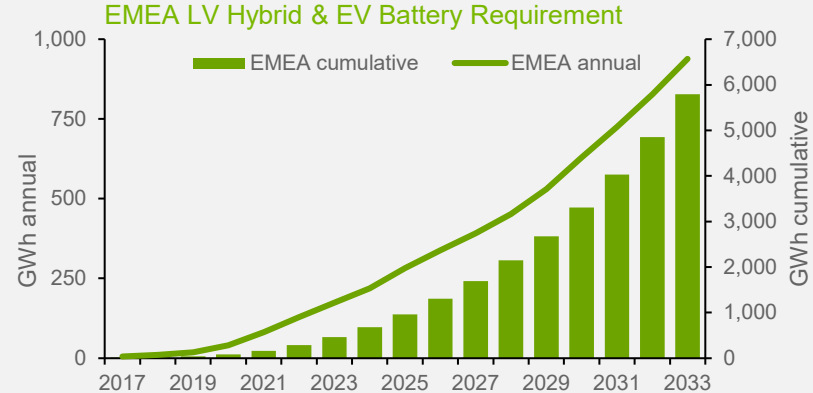
# Technical Developments

## European Battery Production

### Major cell production projects in Europe

Operator	Location	Capacity	Comment
Northvolt	Sweden	16 GWh initial, rising to 32	Expected 2021. Supplying VW, BMW
VW (Northvolt)	Germany	16 GWh initial, rising to 40	Expected Q1 2024. VW buying Northvolt stake
VW	Various, Europe	160 GWh (4 x 40 GWh plants)	4 more gigafactories planned by 2030
CATL	Germany	14 GWh initial, rising to 24	Expected 2022
LG Chem	Poland	10 GWh initial, rising to 65	In operation
LG Chem	Turkey	Unknown	In operation
SK Innovation	Hungary	7.5 GWh current, 17 by 2022, 30 by 2028	In operation
Samsung SDI	Hungary	3 GWh current	In operation
BYD	UK and/or EU	Unknown	Prospective
Britishvolt, Italtvolt	UK, Italy	10 GWh initial, rising to 30	2023, Prospective
Tesla	Germany	Would need to be ~9 GWh initially	Planning. Pilot line for new cells expected 2021
ACC (Stellantis)	France	8 GWh initial, rising to 24	Expected 2023
ACC (Stellantis)	Germany	24 GWh	Expected 2023. Plant conversion
Farasis	Germany	6 GWh initial, rising to 10	Expected 2022/23
Verkor	France	16 GWh initial	Prospective, but claimed 2023
S-Volt	Germany	24 GWh	Expected 2023/24

- **The LMC View:** Europe's economic & strategic motivation to localise battery sourcing has yielded results. VW Group has committed to make cells in-house (albeit partly), gaining control over its supply chain.
- Europe could be self-sufficient quickly. Summing the planned capacities gives a figure of 170 GWh by 2023, which matches the requirement we forecast that would come from xEVs assembled in the region that year.
- Looking further ahead and by way of estimation, Europe would need almost 30 'gigafactories' (assuming an average output of 30 GWh each) by 2033 – not an impossible endeavour, considering there are over 60 active IC engine plants in Europe, many of which could be converted.

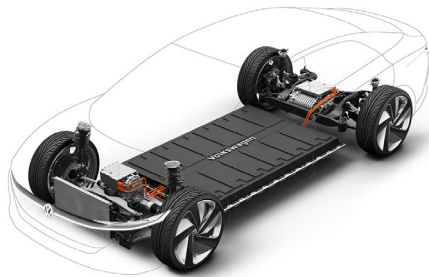


Source: LMCA Global Light Vehicle Powertrain Forecast with Battery & eMotor Module

# Technical Developments

## BEV Battery News & Comment

- **Quantumscape:** In December 2020 the US solid-state BEV battery startup in which VW has a \$300mn stake, said that its technology enables charging to 80% of capacity in 15 minutes, far faster than conventional Li-ion types. March brought news that Quantumscape is raising \$859mn to fund pilot production.
- VW's interest in Quantumscape stems from an attempt to accelerate its ability to offer longer-range and lighter BEVs to the market. Due to better stability under charging and use conditions, solid-state batteries may offer up to 50% more usable capacity than conventional Li-ion technologies. This could result in VW and others eventually being able to offer battery vehicles with a true range of up to 500 miles (800km).



- **The LMC View:** A mid-decade introduction is mentioned by Quantumscape but most major battery makers put mass commercialization of solid-state closer to decade-end. That remains our current assumption for roll out of this technology.
- Production is hugely expanding in Europe, China, the USA and elsewhere mostly using 'conventional' Li-ion technology, with as much homogeneity and commonality as possible.
- Solid-state *is* expected to become the default technology in the longer term, but the pressure to make BEVs profitable soon requires cell production at scale with designs and processes that remain largely unchanged for lengthy time periods to amortize the vast sums that are being earmarked.
- During its 'Power Day' presentation on March 15, 2021, VW stated its intention to shift quickly to a 'Unified Cell' from 2023. By 2030 this Li-ion cell type, with different chemistry options depending on market segment, is intended to account for 80% of all group BEV production, the remainder being high-end.
- If solid-state is commercialized faster than expected, we expect that it will be reserved for halo and range-topping models in the early years before percolating down to the mass market later.



# OEM Activity

## Selected mid-Term BEV Model Launches

Make	Model	Launch
Audi	Q4 e-tron	2021
Audi	Q6 e-tron	2022
BYD	E9	2021
Cadillac	LYRIQ	2022
Ford	C-SUV EV Entry	2023
Genesis	GV60	2021
Guangshu	B-SUV	2022
Honda	EA6	2021
IONIQ	5	2021
IONIQ	6	2022
Kia	B-SUV EV	2023
Kia	EV6	2021
Nissan	B-Hatchback EV	2023
Porsche	Macan	2023
Renault	B-SUV EV	2023
Renault	C-Hatchback EV	2022
Smart	B-SUV EV	2022
Smart	Coupe SUV EV	2023
Tesla	Cybertruck	2022
Volkswagen	ID.3 (FAW)	2021
Volkswagen	ID.3 (SAIC)	2023
Volkswagen	ID.4 (SAIC)	2021
Volkswagen	ID.5	2022
Volvo	XC20	2023



Audi Q4 e-tron



Hyundai Ioniq 5

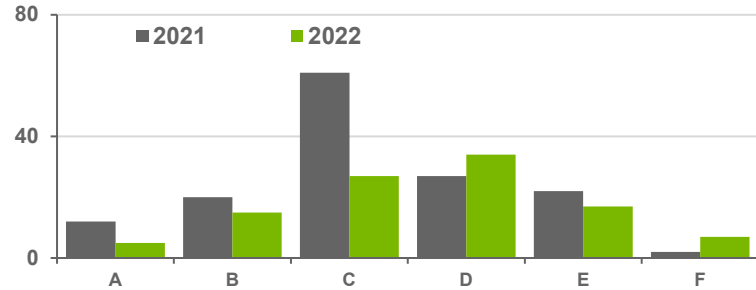


Cadillac Lyriq



Honda EA6

## Global BEV Launches by Size Segment (%)



## OEM Electrification Targets

**GM:** April 2021 - confirmed that the January announcement of a 2035 zero-emission line up is a target, not a promise. Will still sell gasoline if needed.

**Ford:** In February, Ford announced its ambition to sell only BEV cars in Europe from 2030, with two thirds of its LCV sales being plug-in by then.

**Land Rover:** Production of ICE vehicles for UK market will cease by 2030, and will stop producing ICE vehicles for the global market by 2036

**VW:** In March, VW again increased its ambition regarding the rate at which it will electrify. The latest target is that by 2030 60% of European car sales will be BEV, while those in the USA & China will be 50% BEV.

**Volvo:** Also in March, Volvo confirmed global plans to phase out gasoline and diesel cars from its range by 2030 and to sell only battery electric cars.

# Data 1 – World, China, India, Japan, Korea

Sales ('000s)	xEV Type	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sep 2020	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Mar 21 YoY (%)	Rolling 12 Month Total	Rolling 12 Month Market Share (%)
World	BEV	128.5	74.8	100.0	159.5	160.2	173.0	249.7	234.7	275.3	402.3	224.7	181.8	351.2	173	2,587	3.6
	PHEV	58.7	38.9	48.7	78.2	93.6	83.1	108.0	118.8	129.8	170.8	103.7	96.1	171.9	193	1,241	1.7
	FHEV	210.7	131.2	152.0	214.2	241.0	212.4	282.1	257.9	257.8	282.3	276.8	264.3	378.0	79	2,950	4.1
	MHEV*	121.8	78.9	116.7	168.8	192.8	171.5	244.7	235.5	242.1	274.8	229.4	221.1	353.3	190	2,530	3.5
	<b>xEV</b>	<b>522.3</b>	<b>327.4</b>	<b>420.1</b>	<b>623.3</b>	<b>691.3</b>	<b>643.9</b>	<b>889.3</b>	<b>852.0</b>	<b>910.8</b>	<b>1138.6</b>	<b>841.7</b>	<b>767.1</b>	<b>1261.0</b>	<b>141</b>	<b>9,366</b>	<b>13.1</b>
China	BEV	48.2	44.2	57.7	75.7	75.7	88.1	111.0	124.3	156.2	186.4	144.2	89.2	176.0	265	1,329	5.8
	PHEV	11.8	18.2	15.4	19.3	16.9	18.7	23.4	23.0	28.0	32.2	23.7	15.3	36.0	206	270.2	1.2
	FHEV	23.0	39.0	35.0	47.4	46.5	44.9	53.2	51.8	55.8	56.0	63.1	33.5	47.1	104	573.2	2.5
	MHEV*	18.4	31.6	36.5	44.7	37.6	40.5	49.1	39.7	50.0	50.1	40.6	24.2	68.2	270	512.8	2.2
	<b>xEV</b>	<b>102.8</b>	<b>135.7</b>	<b>146.6</b>	<b>188.9</b>	<b>179.2</b>	<b>194.9</b>	<b>240.4</b>	<b>242.6</b>	<b>294.6</b>	<b>331.0</b>	<b>277.1</b>	<b>164.6</b>	<b>330.2</b>	<b>221</b>	<b>2,726</b>	<b>11.8</b>
India	BEV	0.2	0.0	0.1	0.4	0.3	0.3	0.8	0.8	0.3	0.4	0.7	0.7	1.0	490	5.7	0.2
	PHEV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	72	0.4	0.0
	FHEV	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	-22	0.4	0.0
	MHEV*	0.5	0.0	0.2	0.6	0.7	0.9	0.9	1.2	1.2	1.3	1.7	1.7	1.9	300	12.3	0.5
	<b>xEV</b>	<b>0.7</b>	<b>0.0</b>	<b>0.4</b>	<b>1.1</b>	<b>1.0</b>	<b>1.3</b>	<b>1.8</b>	<b>2.1</b>	<b>1.6</b>	<b>1.7</b>	<b>2.5</b>	<b>2.5</b>	<b>3.0</b>	<b>299</b>	<b>18.8</b>	<b>0.7</b>
Japan	BEV	1.4	0.3	0.4	0.7	0.8	0.8	2.0	0.9	1.5	1.9	1.2	1.4	3.1	118	15.1	0.4
	PHEV	2.3	0.7	0.6	2.1	2.4	1.7	2.6	2.5	2.7	2.7	1.6	1.8	4.6	97	26.0	0.7
	FHEV	94.5	47.7	39.0	51.0	59.9	47.9	70.2	66.0	65.4	59.1	78.1	89.1	124.8	32	798.4	20.8
	MHEV*	12.0	4.2	2.4	5.5	6.8	5.8	9.5	6.3	6.8	8.0	5.7	6.6	9.3	-22	77.0	2.0
	<b>xEV</b>	<b>110.3</b>	<b>53.0</b>	<b>42.4</b>	<b>59.3</b>	<b>69.9</b>	<b>56.2</b>	<b>84.4</b>	<b>75.9</b>	<b>76.6</b>	<b>72.1</b>	<b>87.6</b>	<b>99.1</b>	<b>143.9</b>	<b>30</b>	<b>920.3</b>	<b>24.0</b>
Korea	BEV	5.3	2.3	1.5	4.5	2.2	2.8	3.8	0.9	2.0	1.0	0.2	0.6	3.7	-31	25.6	1.5
	PHEV	0.6	0.6	0.5	0.6	0.4	0.4	0.3	0.4	0.5	0.7	0.8	0.7	1.0	74	7.0	0.4
	FHEV	9.8	11.5	12.1	14.3	12.1	9.9	14.7	13.4	17.9	15.7	12.3	11.5	15.1	54	160.5	9.7
	MHEV*	0.3	0.6	0.6	0.5	0.4	0.3	0.4	0.3	0.4	0.6	0.8	0.8	1.5	498	7.4	0.4
	<b>xEV</b>	<b>16.7</b>	<b>15.9</b>	<b>15.0</b>	<b>20.1</b>	<b>15.8</b>	<b>14.2</b>	<b>19.7</b>	<b>15.7</b>	<b>21.1</b>	<b>18.3</b>	<b>14.3</b>	<b>14.3</b>	<b>21.7</b>	<b>30</b>	<b>206.1</b>	<b>12.5</b>

\*includes 48V MHEV

Source: JATO Dynamics, National automotive statistics associations, LMC Automotive estimates (see 'Notes' page)

[Access Excel sample](#)

# Data 2 – Asia Summary, North America

Sales ('000s)	xEV Type	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sep 2020	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Mar 21 YoY (%)	Rolling 12 Month Total	Rolling 12 Month Market Share (%)	
Thailand	BEV	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.3	0.1	0.2	0.3	491	1.3	0.3	
	PHEV	0.2	0.2	0.4	0.7	0.7	0.8	0.9	0.7	0.9	1.3	0.9	1.4	1.8	673	10.7	2.7	
	FHEV	1.2	0.6	0.8	1.0	2.3	3.0	3.1	2.6	3.8	4.6	2.5	3.2	4.1	251	31.6	8.1	
	MHEV*	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	282	1.1	0.3
	<b>xEV</b>	<b>1.5</b>	<b>0.8</b>	<b>1.2</b>	<b>1.8</b>	<b>3.1</b>	<b>4.0</b>	<b>4.1</b>	<b>4.1</b>	<b>3.5</b>	<b>5.0</b>	<b>6.4</b>	<b>3.6</b>	<b>4.9</b>	<b>6.3</b>	<b>324</b>	<b>44.7</b>	<b>11.4</b>
APAC (less China)	BEV	8.8	2.8	2.5	6.2	3.5	5.1	8.3	3.4	4.8	5.3	2.9	3.8	9.7	10	58.6	0.5	
	PHEV	3.3	1.6	1.8	3.9	4.2	3.5	4.5	4.1	4.6	5.6	3.6	4.5	8.3	148	50.1	0.4	
	FHEV	105.8	59.9	52.0	66.5	74.5	61.1	88.4	82.4	87.6	79.8	93.4	104.8	145.2	37	995.7	8.8	
	MHEV*	13.0	4.8	3.5	7.3	8.8	7.9	11.9	8.8	9.4	11.2	9.0	9.8	13.6	5	105.9	0.9	
	<b>xEV</b>	<b>131.6</b>	<b>69.9</b>	<b>60.0</b>	<b>84.2</b>	<b>91.7</b>	<b>78.3</b>	<b>113.8</b>	<b>99.5</b>	<b>106.9</b>	<b>102.5</b>	<b>110.0</b>	<b>123.7</b>	<b>179.3</b>	<b>36</b>	<b>1,220</b>	<b>10.8</b>	
Canada	BEV	4.2	0.7	1.4	4.1	2.9	3.1	6.7	3.1	3.6	5.4	1.9	2.5	5.6	32	40.9	2.6	
	PHEV	1.1	0.4	1.1	1.5	1.3	2.0	1.6	2.0	1.6	1.3	0.8	1.2	1.7	61	16.4	1.0	
	FHEV	2.4	1.2	2.0	2.7	3.6	4.7	4.6	4.8	3.9	4.0	2.8	4.0	6.2	154	44.6	2.8	
	MHEV*	1.1	0.6	1.5	0.9	1.7	1.7	1.6	1.8	2.0	1.8	1.4	2.0	3.0	171	19.9	1.2	
	<b>xEV</b>	<b>8.9</b>	<b>2.8</b>	<b>6.1</b>	<b>9.2</b>	<b>9.4</b>	<b>11.5</b>	<b>14.6</b>	<b>11.7</b>	<b>11.1</b>	<b>12.5</b>	<b>6.9</b>	<b>9.6</b>	<b>16.6</b>	<b>87</b>	<b>122.0</b>	<b>7.6</b>	
USA	BEV	12.8	8.3	11.6	17.8	18.7	22.1	26.7	23.1	19.7	29.7	21.6	29.2	42.9	235	271.3	1.8	
	PHEV	3.5	1.9	3.6	4.3	5.5	7.0	7.2	10.3	6.2	10.9	6.9	8.4	12.8	270	85.2	0.6	
	FHEV	27.9	15.8	32.4	39.6	48.0	47.6	49.8	45.7	42.6	62.7	46.5	53.2	76.0	172	560.0	3.8	
	MHEV*	19.6	17.3	25.0	24.5	27.3	29.9	30.3	35.8	35.0	54.6	37.1	31.2	36.2	85	384.1	2.6	
	<b>xEV</b>	<b>63.8</b>	<b>43.4</b>	<b>72.8</b>	<b>86.2</b>	<b>99.7</b>	<b>106.8</b>	<b>114.2</b>	<b>115.1</b>	<b>103.9</b>	<b>158.1</b>	<b>112.2</b>	<b>122.2</b>	<b>168.2</b>	<b>163</b>	<b>1,303</b>	<b>8.7</b>	
North America	BEV	17.1	9.0	13.1	21.9	21.6	25.3	33.5	26.2	23.4	35.1	23.5	31.8	48.6	185	312.9	1.8	
	PHEV	4.7	2.4	4.8	5.9	7.0	9.1	8.9	12.4	8.0	12.4	7.9	9.8	14.7	212	103.2	0.6	
	FHEV	31.7	17.7	35.2	43.3	52.7	53.5	55.2	51.9	48.0	69.0	50.9	59.5	84.4	166	621.3	3.6	
	MHEV*	20.8	18.2	26.8	25.9	29.4	31.9	32.2	38.0	37.5	57.6	39.2	33.9	40.1	93	410.8	2.4	
	<b>xEV</b>	<b>74.4</b>	<b>47.3</b>	<b>80.0</b>	<b>97.2</b>	<b>110.9</b>	<b>120.0</b>	<b>130.1</b>	<b>128.7</b>	<b>117.2</b>	<b>174.3</b>	<b>121.6</b>	<b>135.1</b>	<b>188.2</b>	<b>153</b>	<b>1,451</b>	<b>8.3</b>	

\*includes 48V MHEV

Source: JATO Dynamics, National automotive statistics associations, LMC Automotive estimates (see 'Notes' page)

[Access Excel sample](#)

# Data 3 – Europe Big 5

Sales ('000s)	xEV Type	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sep 2020	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Mar 21 YoY (%)	Rolling 12 Month Total	Rolling 12 Month Market Share (%)
France	BEV	5.4	1.2	4.0	13.6	9.7	5.3	9.7	9.9	9.4	20.5	6.5	8.4	15.6	187	113.8	6.6
	PHEV	2.0	0.4	3.3	8.0	7.8	5.4	7.4	9.0	9.1	18.7	8.1	8.6	13.4	580	99.2	5.8
	FHEV	2.6	0.2	4.8	8.9	7.9	6.2	8.2	8.4	7.3	13.1	10.8	10.4	14.0	448	100.3	5.8
	MHEV*	1.9	0.4	3.9	11.2	10.3	6.5	10.4	10.3	6.8	11.3	8.2	10.1	13.7	643	103.1	6.0
	<b>xEV</b>	<b>11.8</b>	<b>2.3</b>	<b>15.9</b>	<b>41.7</b>	<b>35.6</b>	<b>23.4</b>	<b>35.7</b>	<b>37.6</b>	<b>32.6</b>	<b>63.9</b>	<b>33.6</b>	<b>37.6</b>	<b>56.7</b>	<b>379</b>	<b>416.7</b>	<b>24.2</b>
Germany	BEV	10.1	4.5	5.3	7.8	15.7	15.0	20.2	22.4	28.3	42.8	16.1	18.2	29.8	197	226.0	7.9
	PHEV	9.4	5.5	6.4	10.0	17.5	15.4	18.8	24.4	30.0	37.8	20.4	21.6	35.1	271	242.8	8.5
	FHEV	4.0	2.5	3.1	3.6	6.2	6.2	5.9	6.3	7.2	7.3	3.0	3.6	6.7	68	61.5	2.1
	MHEV*	13.5	7.3	11.6	15.5	27.2	22.3	27.1	30.2	32.8	33.8	22.3	27.5	38.5	185	296.1	10.3
	<b>xEV</b>	<b>37.0</b>	<b>19.7</b>	<b>26.4</b>	<b>37.0</b>	<b>66.6</b>	<b>59.0</b>	<b>71.9</b>	<b>83.3</b>	<b>98.3</b>	<b>121.9</b>	<b>61.7</b>	<b>70.9</b>	<b>110.3</b>	<b>198</b>	<b>827.1</b>	<b>28.8</b>
Italy	BEV	0.9	0.5	1.8	2.2	1.6	1.9	4.1	2.9	4.8	7.2	2.5	3.4	7.3	704	40.3	2.7
	PHEV	0.4	0.0	1.2	1.7	2.1	1.6	2.8	3.6	4.9	6.3	3.5	4.5	7.4	1788	39.8	2.7
	FHEV	1.3	0.1	3.5	5.7	5.4	3.7	8.5	8.7	7.6	7.5	8.0	9.2	10.6	725	78.4	5.3
	MHEV*	2.3	0.2	7.7	10.5	12.3	9.7	24.0	30.3	24.5	18.2	24.5	31.8	35.4	1448	229.2	15.5
	<b>xEV</b>	<b>4.9</b>	<b>0.8</b>	<b>14.2</b>	<b>20.1</b>	<b>21.4</b>	<b>16.9</b>	<b>39.4</b>	<b>45.6</b>	<b>41.8</b>	<b>39.2</b>	<b>38.5</b>	<b>49.0</b>	<b>60.8</b>	<b>1147</b>	<b>387.8</b>	<b>26.2</b>
Spain	BEV	0.8	0.1	0.4	0.8	1.5	1.2	2.1	1.8	1.9	4.4	0.5	0.9	2.1	169	17.7	2.1
	PHEV	0.9	0.1	0.9	2.0	3.2	1.7	2.0	2.5	3.1	6.6	1.4	2.1	3.6	303	29.3	3.5
	FHEV	3.4	0.2	2.3	5.9	8.6	4.9	5.1	5.2	6.8	9.3	4.2	5.6	7.4	118	65.3	7.8
	MHEV*	1.3	0.1	1.6	3.6	6.3	3.0	3.4	4.0	8.1	12.7	4.6	6.9	11.1	759	65.3	7.8
	<b>xEV</b>	<b>6.3</b>	<b>0.4</b>	<b>5.2</b>	<b>12.3</b>	<b>19.6</b>	<b>10.8</b>	<b>12.6</b>	<b>13.5</b>	<b>19.9</b>	<b>33.0</b>	<b>10.6</b>	<b>15.6</b>	<b>24.2</b>	<b>281</b>	<b>177.7</b>	<b>21.3</b>
UK	BEV	11.7	1.4	2.4	8.9	8.2	5.6	21.9	9.3	10.3	21.9	6.3	3.5	21.9	88	121.6	7.7
	PHEV	7.3	0.1	0.9	5.2	7.9	3.2	12.8	8.2	8.0	9.4	6.6	3.4	18.1	148	83.6	5.3
	FHEV	14.7	0.0	0.6	10.0	12.3	5.3	25.5	10.3	6.7	7.6	6.3	3.0	20.8	41	108.4	6.9
	MHEV*	18.3	0.2	1.7	9.2	14.5	8.0	35.9	17.3	13.5	15.4	11.9	6.6	43.2	136	177.3	11.3
	<b>xEV</b>	<b>52.0</b>	<b>1.7</b>	<b>5.6</b>	<b>33.2</b>	<b>42.8</b>	<b>22.1</b>	<b>96.1</b>	<b>45.2</b>	<b>38.5</b>	<b>54.2</b>	<b>31.1</b>	<b>16.4</b>	<b>104.1</b>	<b>100</b>	<b>491.1</b>	<b>31.2</b>

\*includes 48V MHEV

Source: JATO Dynamics, National automotive statistics associations, LMC Automotive estimates (see 'Notes' page)

[Access Excel sample](#)

# Data 4 – Europe Other

Sales ('000s)	xEV Type	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sep 2020	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Mar 21 YoY (%)	Rolling 12 Month Total	Rolling 12 Month Market Share (%)
Austria	BEV	0.8	0.6	0.7	1.1	1.1	1.1	1.9	1.6	2.1	3.4	1.4	1.8	3.4	354	20.2	7.8
	PHEV	0.3	0.2	0.5	0.7	0.8	0.7	0.5	1.1	1.1	1.2	0.9	1.1	1.7	466	10.4	4.0
	FHEV	0.2	0.2	0.3	0.4	0.5	0.4	0.3	0.6	0.4	0.6	0.3	0.4	0.9	268	5.4	2.1
	MHEV*	0.7	0.7	1.4	1.7	1.8	1.6	2.2	2.5	2.2	2.4	1.7	2.3	4.1	496	24.7	9.6
	<b>xEV</b>	<b>2.0</b>	<b>1.7</b>	<b>3.0</b>	<b>3.9</b>	<b>4.2</b>	<b>3.8</b>	<b>4.9</b>	<b>5.9</b>	<b>5.7</b>	<b>7.6</b>	<b>4.3</b>	<b>5.6</b>	<b>10.2</b>	<b>408</b>	<b>60.8</b>	<b>23.6</b>
Belgium	BEV	1.3	0.2	0.8	1.3	1.2	1.5	2.0	1.6	1.5	2.8	1.1	1.1	2.0	49	17.0	4.0
	PHEV	1.4	0.3	1.9	2.6	3.0	2.8	3.3	3.7	4.3	4.6	3.0	2.9	3.0	116	35.4	8.4
	FHEV	0.9	0.2	1.1	1.1	1.1	1.1	1.0	1.1	0.6	0.7	1.6	1.5	1.5	66	12.7	3.0
	MHEV*	1.1	0.2	1.3	1.9	2.2	1.8	2.2	2.5	1.9	2.0	4.4	3.3	3.8	246	27.5	6.5
	<b>xEV</b>	<b>4.8</b>	<b>1.0</b>	<b>5.2</b>	<b>6.8</b>	<b>7.5</b>	<b>7.2</b>	<b>8.5</b>	<b>8.8</b>	<b>8.4</b>	<b>10.0</b>	<b>10.0</b>	<b>8.9</b>	<b>10.3</b>	<b>118</b>	<b>92.6</b>	<b>21.9</b>
Denmark	BEV	1.1	0.4	0.4	0.9	0.5	1.1	2.3	1.1	1.7	3.9	0.6	0.3	2.1	89	15.1	7.8
	PHEV	0.8	0.5	0.6	1.5	2.6	2.5	1.4	1.7	2.4	3.4	1.3	1.3	4.6	453	23.8	12.2
	FHEV	0.6	0.4	0.4	0.7	0.6	0.7	0.8	0.9	1.0	1.1	0.4	0.4	1.4	152	9.1	4.7
	MHEV*	0.8	0.5	0.6	1.0	1.1	1.1	1.3	1.4	1.4	2.0	1.0	0.8	2.0	153	14.2	7.3
	<b>xEV</b>	<b>3.3</b>	<b>1.8</b>	<b>2.0</b>	<b>4.1</b>	<b>4.8</b>	<b>5.4</b>	<b>5.9</b>	<b>5.0</b>	<b>6.6</b>	<b>10.4</b>	<b>3.3</b>	<b>2.9</b>	<b>10.1</b>	<b>208</b>	<b>62.3</b>	<b>32.0</b>
Finland	BEV	0.5	0.2	0.1	0.3	0.2	0.3	0.7	0.2	0.3	0.9	0.4	0.4	0.4	-32	4.3	4.5
	PHEV	1.4	0.8	0.7	0.9	1.3	1.3	1.4	1.2	1.3	1.5	1.3	1.4	1.4	0	14.7	15.3
	FHEV	1.0	0.6	0.5	0.6	0.9	1.1	1.1	1.0	1.0	0.8	1.5	1.4	1.4	36	11.8	12.3
	MHEV*	0.4	0.3	0.2	0.5	0.6	0.6	0.6	0.6	0.7	1.0	1.8	1.3	1.5	301	9.6	10.0
	<b>xEV</b>	<b>3.3</b>	<b>2.0</b>	<b>1.6</b>	<b>2.3</b>	<b>3.0</b>	<b>3.2</b>	<b>3.7</b>	<b>3.0</b>	<b>3.3</b>	<b>4.2</b>	<b>5.0</b>	<b>4.4</b>	<b>4.7</b>	<b>41</b>	<b>40.4</b>	<b>42.0</b>
N'lands	BEV	3.8	1.4	1.3	2.8	3.8	4.3	6.1	7.2	7.5	29.3	0.9	1.2	2.2	-42	67.9	20.3
	PHEV	1.2	0.6	0.7	1.2	1.6	1.3	1.6	1.7	1.9	1.2	3.0	1.6	2.4	99	18.8	5.6
	FHEV	2.3	1.1	1.1	1.2	1.8	2.1	2.3	2.5	2.3	2.2	2.7	1.7	2.0	-13	23.0	6.9
	MHEV*	1.3	0.9	0.9	1.4	2.3	1.6	2.6	2.8	3.2	1.5	5.6	3.5	3.3	160	29.7	8.9
	<b>xEV</b>	<b>8.6</b>	<b>4.0</b>	<b>4.0</b>	<b>6.6</b>	<b>9.5</b>	<b>9.3</b>	<b>12.6</b>	<b>14.2</b>	<b>15.0</b>	<b>34.2</b>	<b>12.3</b>	<b>8.0</b>	<b>9.9</b>	<b>16</b>	<b>139.6</b>	<b>41.8</b>

\*includes 48V MHEV

Source: JATO Dynamics, National automotive statistics associations, LMC Automotive estimates (see 'Notes' page)

[Access Excel sample](#)

# Data 5 – Europe Other, Europe Summary

Sales ('000s)	xEV Type	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sep 2020	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Mar 21 YoY (%)	Rolling 12 Month Total	Rolling 12 Month Market Share (%)
Norway	BEV	6.9	3.6	3.3	4.9	4.3	5.6	9.5	7.8	7.0	13.7	5.4	5.1	8.6	25	78.9	54.0
	PHEV	2.0	1.2	1.6	1.9	1.9	1.7	2.7	1.9	3.0	4.2	2.8	3.4	4.3	114	30.6	20.9
	FHEV	0.8	0.5	0.8	0.9	0.7	0.8	1.1	1.6	1.1	1.0	0.8	0.9	0.9	10	11.3	7.7
	MHEV*	0.3	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.5	62	4.3	3.0
	<b>xEV</b>	<b>10.0</b>	<b>5.6</b>	<b>6.1</b>	<b>8.2</b>	<b>7.2</b>	<b>8.5</b>	<b>13.7</b>	<b>11.8</b>	<b>11.4</b>	<b>11.4</b>	<b>19.3</b>	<b>9.4</b>	<b>9.7</b>	<b>14.3</b>	<b>42</b>	<b>125.1</b>
Portugal	BEV	1.0	0.2	0.3	0.5	0.4	0.4	0.7	0.6	0.8	1.1	0.4	0.5	0.7	-30	6.7	5.1
	PHEV	0.6	0.3	0.6	0.8	1.1	0.9	1.2	1.4	1.5	2.1	0.9	1.0	1.4	122	13.1	10.0
	FHEV	0.4	0.1	0.2	0.4	0.6	0.4	0.4	0.5	0.4	0.6	0.9	0.3	0.4	-2	5.0	3.8
	MHEV*	0.3	0.1	0.2	0.5	0.7	0.5	0.6	0.9	0.9	1.5	1.3	0.5	0.7	138	8.6	6.5
	<b>xEV</b>	<b>2.4</b>	<b>0.7</b>	<b>1.2</b>	<b>2.2</b>	<b>2.7</b>	<b>2.2</b>	<b>2.9</b>	<b>3.4</b>	<b>3.6</b>	<b>3.6</b>	<b>5.3</b>	<b>3.5</b>	<b>2.3</b>	<b>3.2</b>	<b>38</b>	<b>33.4</b>
Sweden	BEV	3.0	1.1	0.8	1.7	1.3	2.1	3.7	2.3	2.7	6.6	1.1	1.4	2.6	-14	27.3	8.6
	PHEV	4.7	3.2	2.6	4.7	5.3	5.1	5.7	7.8	7.1	9.4	5.3	6.5	14.5	205	77.2	24.3
	FHEV	1.7	1.3	1.3	1.1	1.5	2.8	3.4	2.6	2.4	2.1	1.1	1.6	3.7	114	25.0	7.9
	MHEV*	1.9	1.4	1.1	1.7	1.8	2.0	2.5	3.2	4.1	5.8	4.3	4.0	9.6	402	41.4	13.0
	<b>xEV</b>	<b>11.4</b>	<b>7.0</b>	<b>5.8</b>	<b>9.2</b>	<b>9.9</b>	<b>11.9</b>	<b>15.2</b>	<b>15.9</b>	<b>16.4</b>	<b>23.9</b>	<b>11.9</b>	<b>13.5</b>	<b>30.3</b>	<b>166</b>	<b>170.8</b>	<b>53.9</b>
Swit'land	BEV	1.6	0.5	0.7	1.4	1.0	1.6	2.9	1.5	2.2	4.6	1.0	1.4	2.3	45	21.0	8.9
	PHEV	0.9	0.4	0.7	1.1	1.3	1.0	1.5	1.6	2.0	3.1	1.2	1.1	1.9	103	17.0	7.2
	FHEV	0.6	0.3	0.6	1.0	0.8	0.7	1.0	0.9	1.0	1.3	1.0	1.3	1.3	103	11.2	4.7
	MHEV*	1.5	0.8	1.3	2.2	2.1	1.6	2.4	3.0	3.2	3.7	2.4	2.2	3.8	162	28.8	12.1
	<b>xEV</b>	<b>4.6</b>	<b>2.1</b>	<b>3.3</b>	<b>5.7</b>	<b>5.2</b>	<b>5.0</b>	<b>7.8</b>	<b>7.0</b>	<b>8.4</b>	<b>12.7</b>	<b>5.6</b>	<b>6.0</b>	<b>9.3</b>	<b>102</b>	<b>78.1</b>	<b>32.9</b>
Europe + CIS	BEV	50.4	16.5	23.4	49.5	53.0	48.9	90.7	72.7	83.1	168.1	46.4	50.4	109.5	117	812.0	6.4
	PHEV	35.2	15.1	24.4	44.6	61.1	47.5	66.0	73.7	83.4	114.6	63.0	61.5	106.9	204	761.9	6.0
	FHEV	41.6	11.0	24.8	47.1	57.8	43.5	74.5	60.0	54.4	65.0	57.1	55.5	88.2	112	638.8	5.0
	MHEV*	53.1	17.3	40.0	71.4	98.1	72.3	129.4	124.7	120.1	129.6	112.7	128.0	201.0	279	1,245	9.8
	<b>xEV</b>	<b>180.5</b>	<b>60.0</b>	<b>112.7</b>	<b>212.7</b>	<b>270.1</b>	<b>212.4</b>	<b>361.0</b>	<b>331.3</b>	<b>341.1</b>	<b>478.0</b>	<b>279.3</b>	<b>295.4</b>	<b>506.1</b>	<b>180</b>	<b>3,460</b>	<b>27.3</b>

\*includes 48V MHEV

Source: JATO Dynamics, National automotive statistics associations, LMC Automotive estimates (see 'Notes' page)

[Access Excel sample](#)

## Data, Vehicle Type & Coverage

### Actual Data

Some of the actual data presented in this service come from a variety of national automotive statistical organisations but the vast majority is supplied by JATO Dynamics Ltd. ([www.jato.com](http://www.jato.com))



### Estimated data

Some data, particularly in the case of MHEV, FHEV and PHEV may be estimated for the final month of the data set. In almost all cases, BEV data are actual, but a degree of estimation is also possible for the most recent month.

The estimates, where they are shown, are based on LMC Automotive's forecast data taken from the quarterly publication: ***Global Hybrid & EV Forecast.***

### Vehicle Types Included

The figures in the charts and tables refer to vehicles registered as passenger cars apart from North America where both cars and light trucks are included in the data set. Light commercial vehicles outside of North America are not currently included in the data set.

[Access Excel sample](#)



## Electrification Types (The term 'xEV' includes all of these)

### **MHEV: Mild Hybrid Electric Vehicle**

IC & electric motor(s) working in parallel. Electric-only driving not usually available. E-assistance >5kW, <30kW and is typically 10kW to 15kW.

### **MHEV (48V): Mild Hybrid Electric Vehicle (48V)**

As MHEV but e-assistance typically 10kW to 25kW. Electrical propulsion and some other systems operate at 48V, giving benefits, but also has 12V net.

### **FHEV: Full Hybrid Electric Vehicle**

IC & electric motor(s) working in parallel. Can be driven for short distances under electric power alone. E-assistance >30kW, typically 60kW to 165kW.

### **PHEV: Plug-in Hybrid Electric Vehicle**

Full hybrid electric vehicle with larger battery pack which can be recharged from the electricity grid thereby enabling a longer electric-only driving range.

### **BEV: Battery Electric Vehicle**

No IC engine. Relies on energy stored in the battery to provide propulsion via one or more electric motor. Recharged from the national electricity grid or from a local micro-grid.

### **EREV: Extended Range Electric Vehicle**

A BEV with on-board charger (usually IC+generator) for the battery to enable longer driving range than BEV. Charger & electric motor(s) work in series.

### **FCEV: Fuel Cell Electric Vehicle**

As BEV but the battery is replaced by a fuel cell. The fuel (typically hydrogen) is processed in a stack of fuel cells to generate electricity for the e- motor(s).

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### **IC Only: Internal Combustion Engine Only**

Conventional internal combustion engine powertrain with no electric assistance of any type. Stop-start systems (including micro-hybrids) are counted here.



# About LMC Automotive



For over 30 years, LMC's mission has been to provide the most comprehensive, timely and actionable services to all sectors of the auto industry. Focusing exclusively on this sector, while being highly responsive to our large and growing client base of car and truck makers, component manufacturers and suppliers, and financial and government institutions, has fostered our rapid growth. Today, from offices in all the major automotive markets, LMC provides insights and forecasts for both the Light Vehicle and Commercial Vehicle sectors, with specific emphasis on vehicle sales, production and propulsion systems. Our experts examine global industry dynamics from every angle – be they macroeconomic trends, market and production developments or regulatory and technological changes. These insights are shaped into a comprehensive suite of services that can be tailored to an individual client's needs and are delivered in a range of flexible and sophisticated formats.

As a company, we pride ourselves on the quality of our products, as well as our commitment to customer service. Our team, and our carefully selected partner companies, are dedicated to what they do – bringing the most accurate information to market and helping our clients to gain maximum benefit from our insights.

The ***Global Hybrid & Electric Vehicle Forecast***. Published quarterly, this service provides a model level forecast of demand for electrified passenger cars and US light trucks in the world's most important vehicle markets with a time horizon of the current year plus 12 years. These forecasts are provided by technology type, from mild hybrids through battery electric vehicles to fuel cell electric vehicles. They are supplemented by market-by-market overviews of the key drivers of vehicle electrification and how these may change over time and OEM-by-OEM profiles detailing, for all major hybrid and electric vehicle producers, their global and local product plans, strategic approach to the sector, vehicle production snapshots and regional highlights.

An additional Battery & eMotor module is also available.

# Core Forecasting Services

The **Global Light Vehicle Powertrain Forecast**. This service provides data and 7-year forecasts of powertrain fitment rates and volumes. For each model, LMC provides forecasts of the volumes of each engine, transmission and electrification combination that will be fitted, as well as the total demand for each powertrain. The service is published quarterly, and covers, IC, hybrid, full electric and fuel cell propulsion systems. In addition, as an optional add-on, the xEV forecasts are linked to information on the batteries and eMotors which will be fitted to these models.

The **Global Commercial Vehicle Powertrain Forecast**. Published in partnership with Knibb, Gormezano & Partners (KGP Auto), this service, which is updated quarterly, takes the 12-year forecasts as provided in the Global Commercial Vehicle Forecast and details powertrain fitment for this sector. Initially focused on engines, aftertreatment systems and emissions compliance, coverage now includes electrification & decarbonisation of the sector. An additional module is available for transmissions.

The **Global Light Vehicle Production Forecast**. LMC's premium vehicle production forecasting service. Published monthly, forecasts are provided by manufacturer, make, model, model generation, platform, design lead, assembly plant with capacity and utilisation, in monthly, quarterly and annual time slices and with a 7-year forecasting time horizon. These forecasts are supplemented by concise monthly regional commentaries as well as a global snapshot of vehicle production and detailed quarterly reports. As an add-on to these services, forecasts by bodystyle and number of doors are also available.

The **Global Light Vehicle Sales Forecast**. Published in association with JATO Dynamics Ltd, this service builds on macro-economic forecasts generated by our partner, the renowned Oxford Economics, which, combined with an examination of demographics, fiscal and regulatory influences by LMC's own specialist automotive research team, presents twelve-year forecasts at a global, regional and country level for Light Vehicle demand in 137 countries. In its most detailed form, model level forecasts are updated monthly and are provided in annual, quarterly and monthly time slices. Quarterly summary reports analyse the current market situation and likely future evolution from the perspective of developments at a country level and from the position of each major OEM.

The **Global Commercial Vehicle Forecast**. This service provides the most comprehensive view of the current state of the medium (6-15t GVW) and heavy (15t+GVW) commercial vehicle sectors of the automotive industry together with detailed twelve-year forecasts of sales and production in quarterly and annual time slices. Produced in association with ACT Research, and covering trucks and buses, this service is published quarterly and offers coverage of all the world's major markets. Updates can also be provided on a monthly basis while Model Line detail is available as a separate module for Western Europe, the Czech Republic and Poland.

The **Global Light Vehicle Forecast**. LMC's entry-level service designed for automotive industry executives and decision makers who need to see global coverage of Light Vehicle sales and production in one single publication with detailed forecasts going out seven years into the future, and indicative forecasts for 10 and 15 years. However, the core of the service is the associated database providing sales and production of Light Vehicles, the former by marque and the latter by model. These forecasts are supplemented by detailed reviews of the economic drivers of vehicle demand and of the major OEMs. The service, which is updated quarterly, includes introduction and run out dates for all new models.

The **Global Automotive Scenarios Service**. Published quarterly in association with our partner, Oxford Economics (OE), this service assesses the impact of a range of plausible scenarios for the global macroeconomic landscape, and the resulting effects on Light Vehicle sales and production over the coming years. Three-to-five different sets of global macroeconomic projections, based on different events or trends, are used, each quarter, to formulate consistent vehicle industry outcomes. The scenarios are delivered alongside the baseline macroeconomic and vehicle industry forecasts for reference.

# Other Core Forecasting Services

The **Automotive Market Reports** are six automotive services specifically addressing the rapidly developing economies in Asia. They include the Automotive Market Updates, published monthly and covering China, India and ASEAN, which monitor the latest market developments in these areas; and the Automotive Market Forecasts, published monthly and also covering China, India and ASEAN and offering 7-year forecasts of sales, by segment, brand, group and fuel type and production by plant and model.

The **China Monthly Inventory Level Monitor**. By comparing Retail and Wholesale sales numbers, the China Monthly Inventory Level Monitor is able to offer the most comprehensive picture of personal vehicle sales in China and to provide a valuable indicator of future short-term movements in both sales and production.

The **China Medium & Heavy Truck Forecast** provides a clear and concise view of the Chinese medium and heavy vehicle market in a single user-friendly report. The latest registration volumes for medium and heavy trucks are analysed in a comprehensive market overview, with overall sales trends reviewed as well as key structural developments concerning segments and manufacturers.

The **European Light Vehicle Trade Flow Forecast**. Published quarterly, this service monitors Light Vehicle sales and their flows within, into and out of Europe. For each model produced at a European plant, the service provides 7-year forecasts detailing the country of final destination and for all European imports, the country and plant of origin. As sourcing patterns shift and new challenges emerge, this service provides detailed statistical data and forecasts essential to plan and react to changing events and is of particular relevance to OEMs, component suppliers, logistic providers and financial planners.

The **European Light Vehicle Trade & Inventory Service**. Published every month, the aim of this service is to provide an early warning system that highlights risks that emerge from imbalances in supply/demand in Light Vehicles sourced from Europe, for which little published inventory information is available. This unique service provides LMC's estimate of inventory levels, represented by "days' supply" for all sales groups, brands and models and explains what this means for the short-term outlook for vehicle production.

In addition to the above services, LMC publishes multi-client studies, which offer comprehensive and systematic analysis of topical automotive industry subjects, and, based on its extensive analysis of the industry, LMC frequently undertakes customised projects on client-generated subjects, such as luxury sales, CO2 emissions, powertrain strategies and electrification. For further information about our company, its activities and how LMC might help you, please refer to our website ([www.lmc-auto.com](http://www.lmc-auto.com)) or contact us directly at [forecasting@lmc-auto.com](mailto:forecasting@lmc-auto.com).

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A world map in shades of green and blue. Overlaid on the map are several terms: 'Production' in the top right, 'Forecasts' in the top left, 'Markets' in the center, and 'Growth' in the bottom left. A bar chart with vertical bars in various shades of green and blue is positioned over the European continent. The LMC logo, consisting of the letters 'LMC' in white with a green square containing a white '7' shape, is in the top right corner.

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