

EVs:

A pricing challenge



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01 Foreword



David Krajicek,
CEO, JATO Dynamics

Over the past decade, a key focus for governments, policy makers and the automotive industry alike has been the development and growth of the electric vehicle (EV) market. It came as an opportunity for all, not only to tackle the climate crisis by reducing emissions outputs, but as an avenue for business growth across technology and innovation.

After the widespread impact of the COVID-19 pandemic, arguably environmental concerns have never been higher on the agenda and the next few years will prove crucial for reducing emissions and gaining traction in the race for EV leadership.

As some governments look to pull back incentive programmes and subsidies, manufacturers must start producing affordable vehicles without the assistance of these schemes if they are to remain competitive.

Operating in the industry for over 30 years, JATO Dynamics has unparalleled data on the adoption of EVs, and is in a prime position to help OEMs understand the crucial correlation between EV incentives, pricing and consumer demand.

We are committed to helping the industry in its recovery by providing rich data to assist OEMs across the globe. Our report does just that. Giving manufacturers detailed insights into the evolution of incentives, pricing and sales across key automotive markets, to help bring EV uptake into the mainstream.

02

Executive Summary:

Battery electric vehicles (BEVs – defined as “EVs” in this report) have been in the market for almost a decade, but the space is still evolving, and the next few years will be vital for OEMs looking to succeed in the marketplace.

At the fore of this changing landscape is the relationship between the pricing of EVs and government incentive programmes, which are currently supporting sales of these vehicles – a dynamic that OEMs must be mindful of as countries start to roll back this assistance.

The ‘EVs: A pricing challenge’ report explores the relationship between government incentives and EV pricing over the last decade. It examines key automotive markets, specifically China, the US, Germany, the UK, France, the Netherlands and Norway, highlighting how incentives and EV pricing has changed, alongside China’s steps towards producing affordable EVs.



03

How have incentives evolved over the last 10 years?

Incentivisation has been a driving factor in EV uptake over the last decade, but the market has shifted significantly compared to 10 years ago - and even more so in the last 18 months due to the COVID-19 pandemic.

China has become well-known for leading the way in EV adoption. In 2010, the Chinese government announced a trial programme to provide incentives of up to 60,000 yuan for the private purchase of new battery EVs, and 50,000 yuan for plug-in hybrids in five cities (Shanghai, Shenzhen, Hangzhou, Hefei and Changchun).¹ This began a decade-long period of developing the world's largest EV market and after widespread uptake, supported by high-cost subsidies for the government, China planned to phase out its EV incentives by the end of 2020. However, the global pandemic combined with subsidy cuts slowed EV sales, causing the government to extend monetary incentives at reduced rates, alongside prolonging the purchase-tax exemptions of NEVs to 2022. In December 2020, China's finance ministry announced a new policy for 2021 which included a 20% reduction in subsidies for EVs. Under this new policy, the previous subsidy for PEVs with a driving range of 300-400km was lowered from 16,200 yuan to 13,000 yuan and the subsidy for PEVs with a driving range of 400km or more was lowered from 22,500 yuan to 18,000 yuan. The government also plans to reduce EVs incentives by a further 10% next year.²



Ye Qi:

Member of the
VW Sustainability
Advisory Council



Environmental pollution in Chinese cities has been a significant issue for a number of years. In January 2013, China experienced major air pollution, with 26 days of the month covered by a very heavy smog. In many ways that was a significant turning point for the central government to engage in a so-called war on air pollution, with EVs proposed as a key approach to combat this. China's EV market development as an opportunity to be industry leaders is also a contributing factor, but this is quite secondary compared to the pollution problem."

Moving over to the USA, after 2010, EVs were made eligible for an IRS tax credit ranging from \$3,500 to \$7,500 – capped at 200,000 plug-in vehicles for each manufacturer³. In May this year, the US Senate Finance Committee advanced legislation that would boost EV tax credits to as much as \$12,500 for EVs assembled by US union workers. The tax credit has helped to seed their premium EV market, but does not help lower income buyers, and has therefore not motivated many carmakers to venture out of the segment towards more affordable cars⁴.

Shifting focus to key European markets, the environmental agenda has prompted many countries to develop incentivisation schemes. In 2011, the key incentive in Germany was exemption from the annual circulation tax for a period of five years from the date of their first registration⁵. Today, Germany's 'Umweltbonus' (environmental bonus) programme encourages the purchase of EVs and the decommissioning of diesel and gasoline vehicles. The country offers subsidies for different EV models and price brackets - for example €9,000 for fully electric and €6,750 for plug-in hybrids for vehicles priced up to €40,000⁶.

The UK has placed a similar focus on environmental concerns throughout its incentivisation plans. In 2011, the Plug-in Car Grant (PiCG) was put in place, reducing the up-front cost of eligible EVs by providing a 25% grant towards the cost of new plug-in cars capped at £5,000⁷. The landscape has developed greatly in the UK over the last ten years, especially due to the government's 'Road to Zero' electrification strategy. Incentives in the UK today include subsidies of 35% of the cost of an electric car (up to a maximum of £3,000).

EV incentivisation in France is centred around economic recovery. In 2011, consumers buying a vehicle emitting 60 g/km or less of CO₂ benefitted from a reduction of up to €5,000 from the total vehicle price under the country's bonus-malus scheme, and both electric and hybrid vehicles were exempt from company car tax.⁸ More recently, President Macron announced an €8 billion rescue plan for the automotive industry heavily focussing on EVs. To achieve the plan's objectives of producing 1 million EVs annually by 2025, and boosting EV adoption rates, €1.3 billion has been designated towards incentives. Residents can now save up to €19,000 when buying an EV from a range of purchase grants and bonuses.⁹

Both Norway and the Netherlands are known for being ahead of the curve when it comes to EV adoption and incentives. In 2011, EVs in the Netherlands were exempt from the registration tax BPM and annual circulation tax.¹⁰ Currently, incentives include subsidies of €4,000 for purchasing or leasing a new EV, and €2,000 for purchasing or leasing a used EV.

In contrast to other European countries, EV incentives in Norway focus on tax cuts and heavy investment in public EV charging infrastructure, rather than subsidies. In 2011, EVs in Norway were exempt from non-recurring vehicle fees, sales tax and annual road tax.¹¹ Current incentives in the country include no purchase tax and no VAT on the purchase of EVs, a 75% to 90% tax cut for annual road tax for both fully electric vehicles and plug-in hybrids, and exemption from acquisition tax and the country's 25% value-added tax.¹²

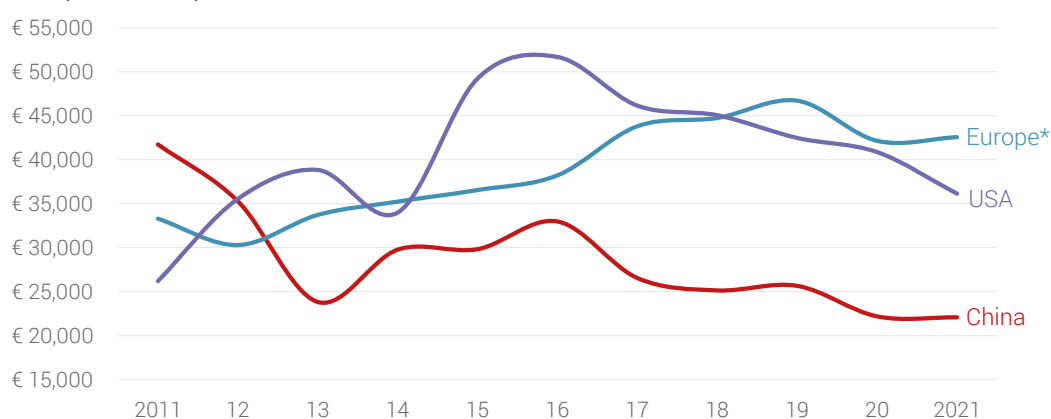
04 How have prices of EVs changed in the past decade?

Moving from EV incentivisation to pricing, an opposite trend between the US and Europe, when compared to China becomes clear. In particular, EV prices in the US and Europe continue to increase, while falling in China - having a direct consequence on demand.

In China, this year 40% of EVs sold were city-cars, which had an average retail price of €6,700.

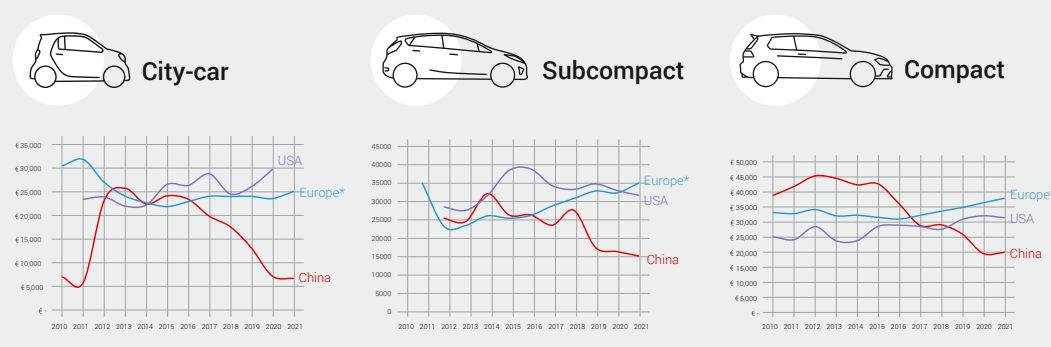
Volume Weighted Average Retail Price of BEVs sold

*Germany, France, UK, Norway, Netherlands



And consumers are able to buy a brand new EV for as little as €3,700. The price in Europe jumps greatly in comparison - with consumers needing at least €15,740 to purchase an EV. In the US it increases even further, to a minimum of €24,800.

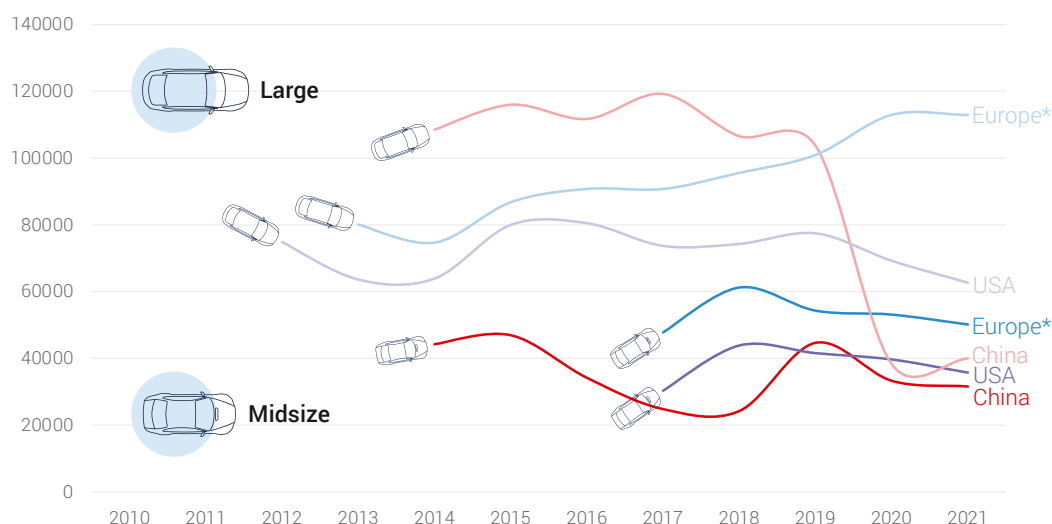
Volume Weighted Average Retail Price of BEV sold/registered



These price differentials are also impacted by demand for EVs and model offering. In Europe the market is dominated by SUVs, and in the US by midsize sedans - both of which are more expensive than city-cars which dominate the Chinese EV market.

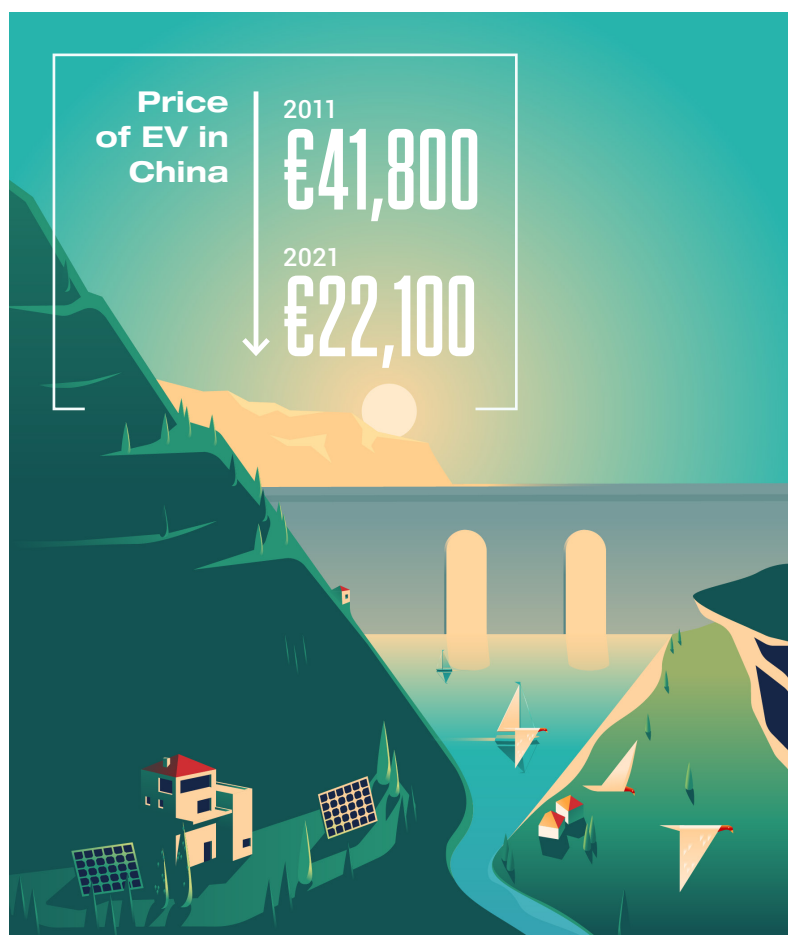
Volume Weighted Average Retail Price of BEV Midsize and Large Cars

*Germany, France, UK, Norway, Netherlands



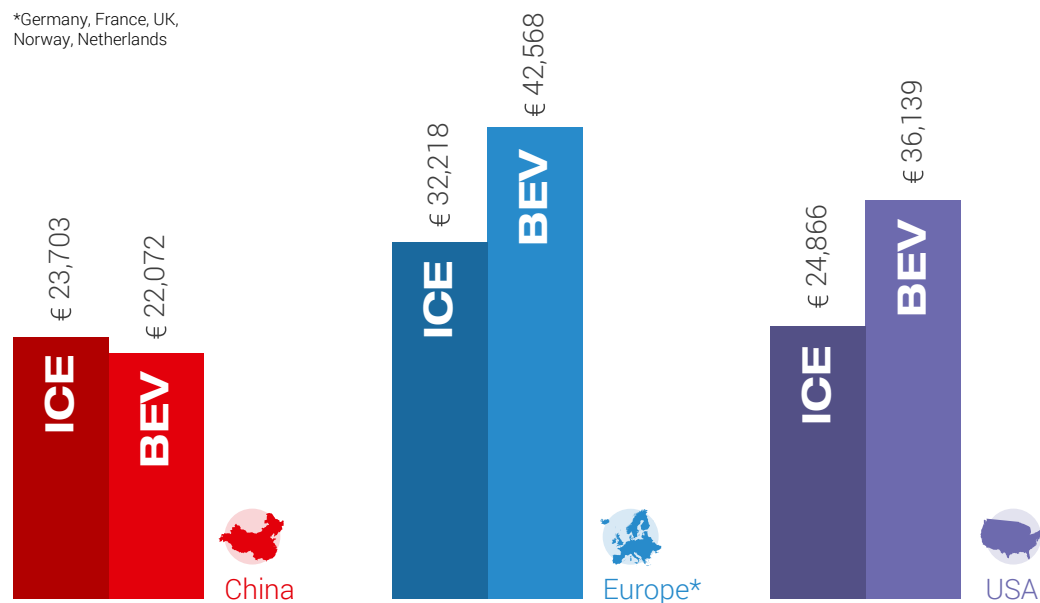
The progress seen across China's EVs is impressive. In 2011, the average retail price was €41,800, which has dropped significantly to just €22,100 this year - marking a huge decrease of 47%.

China's progress can be largely attributed to its focus on popular cars with affordable pricing. While the wider industry has placed its sights on the development of better technologies, higher ranges and premium cars, the Chinese market did both, adapting ICE models into more affordable EVs. This granted consumers of ranging socioeconomic backgrounds the opportunity to purchase an EV – widening the sales pipeline for OEMs.



Volume Weighted Average Retail Price Passenger Cars Regs. Jan-May 2021

*Germany, France, UK,
Norway, Netherlands



In comparison, the average retail prices of EVs registered in Europe jumped from a minimum of €33,292 in 2012 to €42,568 in 2021, increasing by 28% between 2011 and 2021. In the US, prices have jumped even further - from €26,200 in 2011 to €36,200 in 2021, a 38% increase. Although the US has posted the highest percentage increase in price over the last decade, the volume weighted average retail price of EVs is still lower than in Europe - the region where the average retail prices of these cars is the highest.

Homing in on the specific European countries, there are distinct differences between markets within the continent. In Germany, progress has been made in the gap between ICE and EV prices. This year, EVs were only 8% more expensive than the average retail price of diesel/gasoline cars (€39,755 compared to an average €36,979). However, the percentage differential has not shown significant decreases in recent years, and the only driver of price reduction has been electric SUVs (with average prices dropping from a maximum of €118,300 in 2017 to €49,700 this year). Volkswagen Group's - the largest OEM in Germany - presence in the EV market will have a significant impact on the future of EVs for the country, as they continue to produce EVs at pace and draw down pricing with comparatively affordable vehicles.

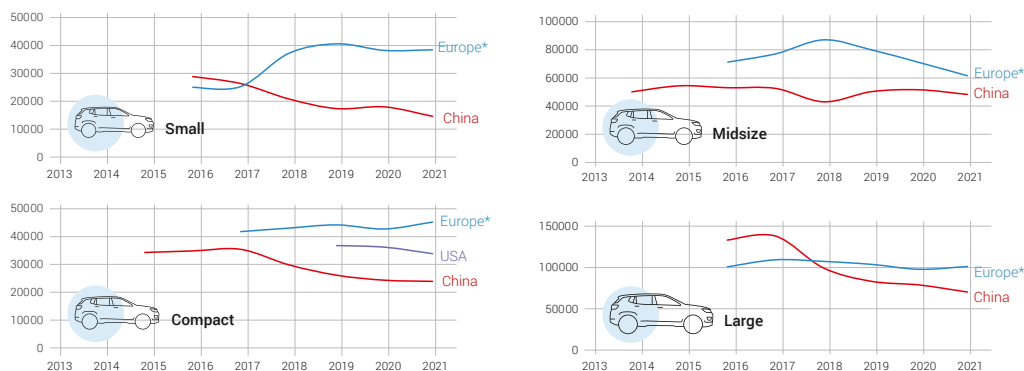


In the UK, as of May 2021, EVs were 52% more expensive than the average retail price of ICE cars registered - the second largest gap among the top five EV markets in Europe. The average price when buying a new passenger ICE car in Britain this year was €32,760, with the EV retail price a significant €17,200 more. To date, the focus has been on premium EVs. This has created an ongoing problem for the UK EV market, as the perception of EVs being too expensive is a key barrier in the face of their widespread adoption.

Despite government efforts, EVs are also becoming more expensive in France. In 2013,

an EV's volume average retail price was €23,900, and this jumped to €38,700 this year. Sales of the Renault Zoe in France can explain this price increase. When the Zoe increased in popularity in the country and more sales of the model were made, the average EV prices were reduced. However, Renault didn't launch any other EVs (apart from the vans Kangoo and the sedan Fluence), meaning French consumers did not have many options when looking to purchase EVs. Renault's lack of presence in the country allowed Tesla to gain traction more easily, causing the average retail price to increase due to their focus on more expensive EV models.

Volume Weighted Average Retail Price of Electric SUVs



*Germany, France, UK, Norway, Netherlands

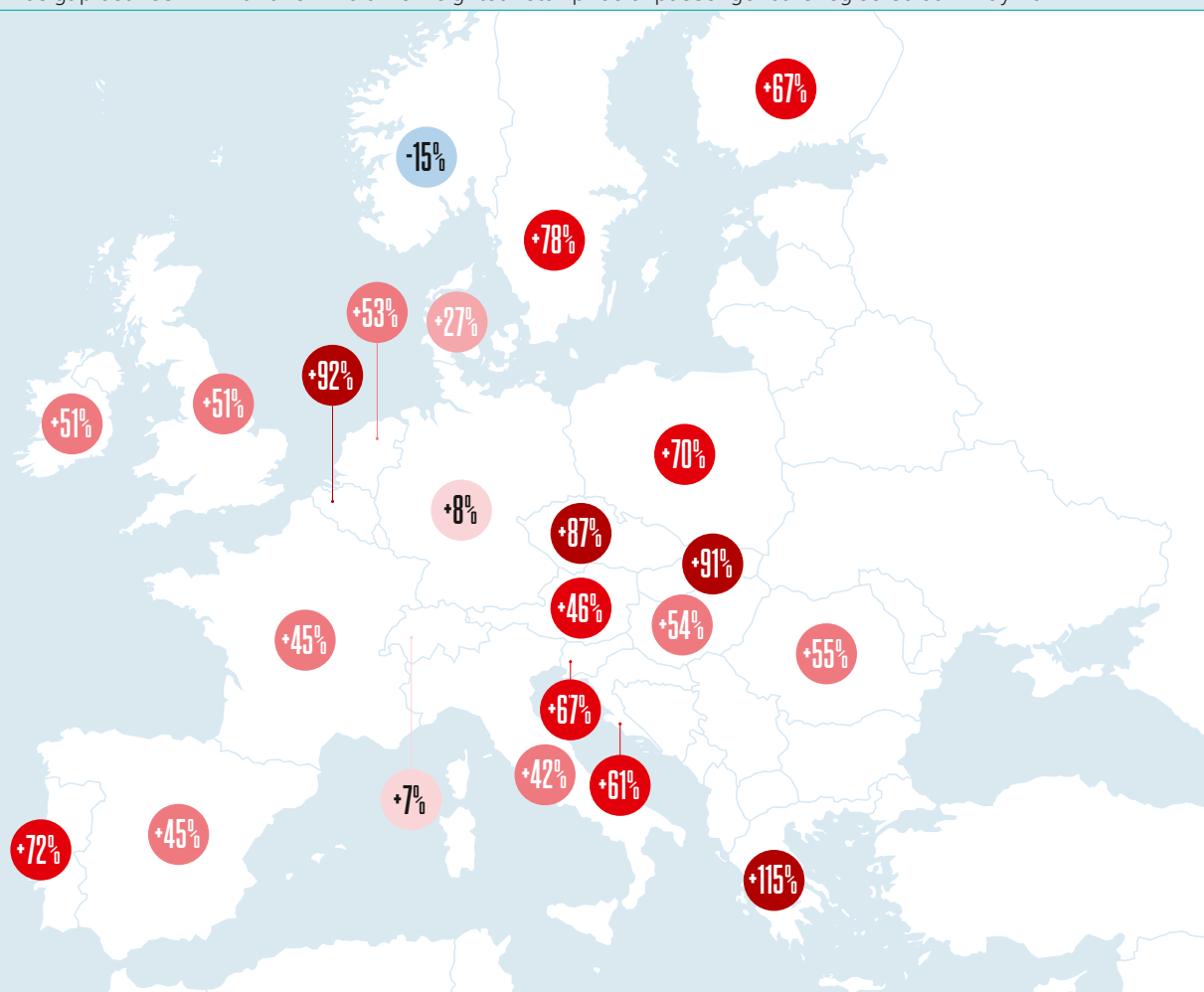
The Netherlands has made significant progress on its EV pricing in recent years, with the average price of an EV decreasing from €72,100 in 2017, to €48,200 this year. However, these cars are still 54% more expensive than the average retail price of the ICE cars registered in the Netherlands (€31,200) - the biggest gap among the top five markets in Europe.

Bucking wider trends, Norway is the only European country where the average retail price of an EV is lower than the average ICE car price. In Norway, the average ICE car price is €53,000, while being €44,500 for EVs. Policies in Norway have been focused on making EVs more competitive than ICE cars, due to its incentive programme. However, in Norway EV prices have not decreased in the last few years. In fact, the average EV price rose from €30,500 in 2010 - when only small cars were available - to €44,500 this year. The arrival and popularity of the Tesla Model 3, Audi e-tron,

and more recently, the Volkswagen ID.4 explain this increase due to their relative expense.

It is clear that Western markets need to catch up with their counterparts in China. Despite efforts made, EVs are still much more expensive than gasoline and diesel models - on average, the volume weighted average retail price of an EV in 2021 was 32% higher than an ICE car in Europe, and 45% higher in the USA. Until manufacturers are able to improve the affordability of EVs, consumer uptake will likely continue to fall behind sales in China.

Price gap between BEV and ICE. Volume weighted retail price of passenger cars registered Jan-May 2021



05

China's success and shift from incentives

China's rapid penetration of the EV market and resulting affordable pricing arises from a number of factors, including supportive policy implementation from its government, strong entrepreneurial leadership, and a clear strategy for developing a world-leading automotive market from the get-go.¹³

Once China identified electric vehicles as a viable avenue for becoming a market leader - all while reducing emissions levels and air pollution in the country - their government officials, industry experts and academics coordinated vigorous efforts to accelerate China's growth in the space.

In particular, China's former Minister of Science and Technology, Wan Gang, was a hugely influential figure behind the country's plan to replace ICE vehicles with domestic EVs. A former experienced engineer at Audi, Gang was known for his innovative ideas and ambitions. And upon being brought into the government, his aim was to create automotive technology that would outpace Western peers and push China ahead in the electric market, while developing solutions to China's problems with air pollution.

Ye Qi:



The development of EVs in China was led by the Ministry of Science and Technology. This is interesting, as you would typically expect operations like these to be led by the Ministry of Industry and Information Technology. In fact, the minister Wan Gang was extremely influential in the country's adoption of EVs. He was a former engineer at Audi, and his field of research focused on new energy vehicles. When he came back to China he brought with him his ideas and visions, and convinced his colleagues in the government that EVs were a worthwhile investment. The influence of visionary leadership has always been extremely important in China and perhaps other countries can learn from this."



From day one, the country developed national plans for new energy vehicles outlining detailed goals and targets, such as the 2009 'Ten Cities, Thousand Vehicles' programme. These included market growth, technology and innovation plans and such comprehensive road-mapping allowed each party to align on necessary steps and policy implementation.

This has also helped China create one of the strongest incentives programmes to assist in the growth of EVs, clean up their air quality and attract manufacturers into the country. In fact, due to their heavy subsidisation support, OEMs operating in China have been able to quickly expand their range - [with some suggesting that production is now cheap enough to no longer require government support](#).¹⁴

Ye Qi:

“Many local governments in China invested significantly in developing charging stations for their cities, which was a key factor in the successful uptake of EVs. Other governments should look at infrastructure investment in a similar way in order to help their own EV markets flourish.”

Ye Qi:

“China is now working on its roadmap, the blueprint and timetable for carbon neutrality. The recent government policy papers show that EV manufacturing and development is a major element of these plans, meaning the government will continue to provide support for EV development.”

As relatively new automotive players, Chinese OEMs are also unencumbered by a problem facing manufacturers in Europe and the US.¹⁵ As long-standing players in the automotive field, Western OEMs are producing vehicles through a dated operational model. Where, 10 years ago, factories, repair centres and dealerships all centred around ICE cars, regulation is now forcing the industry to think and breathe electric, but many businesses are far behind when it comes to shifting their production plans.

Manufacturers in Europe and the US need to find new ways to keep their current factories running, all while creating new EVs without hurting their profit margins. This will be vital for catching up with their peers in China, who are not burdened by this dilemma.



How can OEMs prepare for a world without incentives?

In the short term, it appears that manufacturers will continue to use government subsidies and incentives to entice consumers towards EVs. However, some OEMs are closer to giving up this dependency than others.

In particular, Tesla and Volkswagen (VW) are starting to take clear steps to reduce production costs and improve profitability. Tesla, through two production plants alone, is already producing over 500,000 vehicles each year – this year the two factories increased global production by 109% to 390,000 units – setting a new record. This increase in factory utilisation means the two are also on target to produce a combined 900,000 units by the end of the year – which is 86% of Tesla's current annual production capacity.

The company is also seeing increases to its profitability. In Q1 2021, earnings before interest, taxes, depreciation, and amortisation (EBITDA) increased by 94% when compared to the same period in 2020. This is a good indication that Tesla will soon be ready to enlarge its product line-up and take steps towards launching more affordable EVs.

VW is accelerating its electrification plans with the introduction of several new EVs. Currently, they offer 14 products across three different platforms. The ID family, in particular, is known for supplying a range of electric models across varying segments, to appeal to a broader base of consumers – all while using the same technology.

Currently the world's top-selling OEM for small, subcompact and compact vehicles, VW sold almost 6.5 million units in 2020. This demonstrates exactly how present the company is in the lower segments, and how well positioned they are to make moves into popular EV segments. In fact, the company already has plans to unite its platforms into a Scalable Systems Platform (SSP). The singular electric vehicle platform has the aim of unifying VW's product portfolio, into one comprehensive platform that includes all car types.

Ye Qi:



Tesla and Volkswagen provide two examples of OEMs that built and enhanced their brand name in China by focusing on building better technology, and better products. The EV market is huge and constantly growing, with exponential amounts of revenue potential, that truly values quality and technology. Other automakers in Western countries should look to the approaches taken by Tesla and Volkswagen in order to achieve their own levels of success."

It has been predicted that Volkswagen could overtake Tesla and fend off advances from Chinese rivals by 2025. Making an electric or hybrid model of every vehicle in its line-up, Volkswagen has pledged to spend €30 billion over the next five years and plans to launch 70 new electric models by 2028. Similarly, just two years after this, it aims for four in 10 car sales to be electric.¹⁶

That being said, a number of Chinese OEMs such as Nio, Xpeng and Li Auto are preparing to enter the European EV market, threatening the market position of long-standing giants who are only now really getting to grips with the EV market.¹⁷

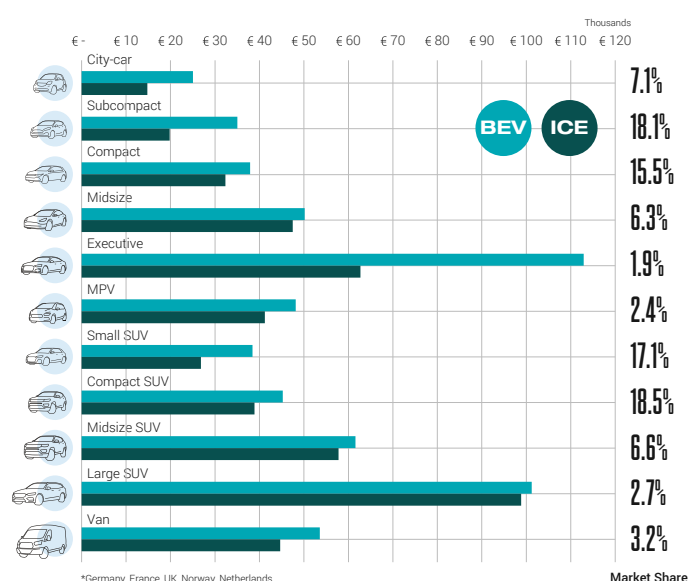
07 Conclusion

Despite attempts made across many markets and OEMs, EVs in Europe and the US are still too expensive when compared to ICE models. There is an urgent need for the industry to focus on affordable EV models that reflect consumer demand. For instance, last year, 44% of the global demand for passenger cars were for SUVs, but SUVs only accounted for 25% of the combined sales for passenger EVs in China, the US, and Europe.

With Western factories designed to produce upper segment vehicles at scale, it is unlikely that many OEMs will soon begin to shift their plans to produce entry-segment, affordable cars without existing consumer demand to warrant changing their operating models. However, if EV prices are not reduced as a priority, there will be significant consequences for the entire automotive industry, as a large proportion of the population will never be able to afford EVs.

How OEMs will prepare for the shift away from incentives – and reduce their pricing – is still unknown. One thing that is clear however, is that manufacturers in the US and Europe must translate existing consumer demand for their ICE models into their EV line-up and find avenues to reduce production costs or risk falling behind their counterparts in China.

Volume Weighted Average Retail Price of BEV and ICE by Segment. Passenger Cars registered in Europe* in Jan-May 2021



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¹ <http://blogs.edmunds.com/greencaradvisor/2010/06/china-announces-plan-to-subsidize-evs-and-plug-in-hybrids-in-five-major-cities.html>

² <https://www.metalbulletin.com/Article/3969254/China-cuts-EV-subsidy-for-2021-market-downplays-impact-on-lithium-cobalt-prices.html>

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³ <https://www.forbes.com/sites/jimgorzelany/2018/11/13/will-the-next-congress-extend-or-kill-the-electric-car-tax-credit/?sh=3d196a014e42>

⁴ <https://www.thedrive.com/tech/36860/cheap-electric-cars-wont-happen-in-america-until-we-fix-the-federal-tax-credit>

⁵ https://web.archive.org/web/20110927060852/http://www.acea.be/images/uploads/files/20110330_EV_tax_overview.pdf

⁶ https://blog.wallbox.com/en/ev-and-ev-charger-incentives-in-europe-a-complete-guide-for-businesses-and-individuals/#index_5

⁷ <https://www.theguardian.com/environment/2011/jan/01/electric-car-grant-uk>

⁸ https://www.europarl.europa.eu/document/activities/cont/201106/20110629ATT22885/20110629ATT22885EN.pdf_pg-8 https://web.archive.org/web/20110927060852/http://www.acea.be/images/uploads/files/20110330_EV_tax_overview.pdf

⁹ https://blog.wallbox.com/en/ev-and-ev-charger-incentives-in-europe-a-complete-guide-for-businesses-and-individuals/#index_4

¹⁰ https://theicct.org/sites/default/files/publications/ICCT_EVpolicies-Europe-201605.pdf_pg-37-46

¹¹ https://web.archive.org/web/20120302034445/http://www.emc-mec.ca/files/Electric_Mobility_Canada_2008_open.pdf

¹² https://blog.wallbox.com/en/ev-and-ev-charger-incentives-in-europe-a-complete-guide-for-businesses-and-individuals/#index_12

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¹³ [China-green-future-ev-jan2021.pdf](#)

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¹⁴ [china-electric-vehicle-subsidies-sales-tesla](#)

¹⁵ <https://www.theguardian.com/business/2021/apr/17/chinese-firms-prepare-to-charge-into-europes-electric-car-market>

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¹⁶ <https://edition.cnn.com/interactive/2019/08/business/electric-cars-audi-volkswagen-tesla/>

¹⁷ <https://www.theguardian.com/business/2021/apr/17/chinese-firms-prepare-to-charge-into-europes-electric-car-market>

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