

AUTOMOTIVE SUSTAINABILITY REPORT 24TH EDITION

2022 DATA

Environmental performance

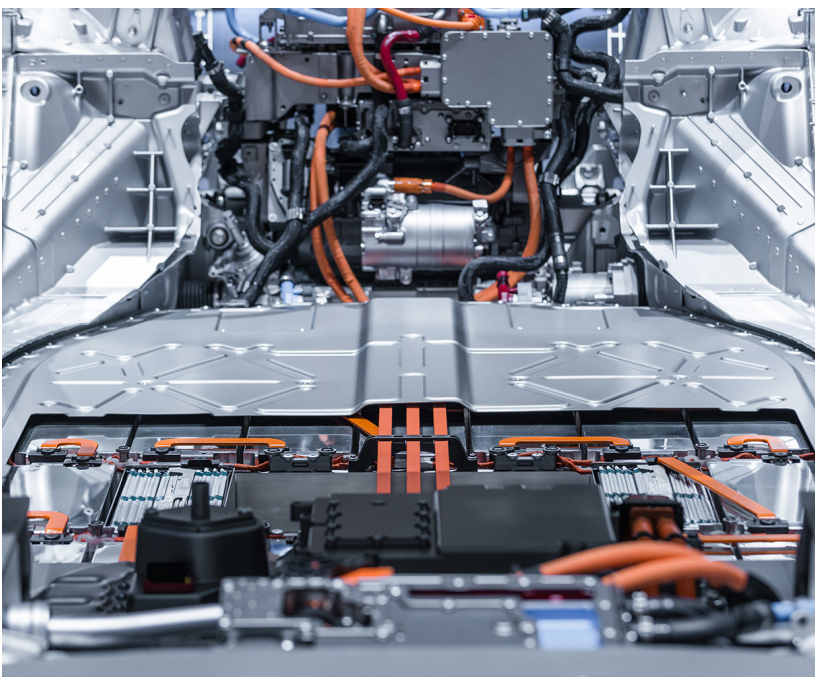
Social performance

Economical performance

"2022 was an incredibly tough year for UK manufacturing, though we still made more electrified vehicles than ever before – high value, cutting-edge models, in demand around the world. The potential for this sector to deliver economic growth by building more of these zero emission models is self-evident."

CONTENTS

3	FOREWORD
4	2022 SUSTAINABILITY SUMMARY
10	CHAPTER 01: ENVIRONMENTAL PERFORMANCE
20	CHAPTER 02: SOCIAL PERFORMANCE
24	CHAPTER 03: ECONOMIC PERFORMANCE
27	SIGNATORIES





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Mike Hawes Chief Executive

The Society of Motor Manufacturers and Traders (SMMT)

LETTER FROM THE CEO

Following the devastating impact of the Covid-19 pandemic, 2022 was a year in which the first green shoots of the UK automotive industry's recovery began to emerge, marked by five consecutive months of growth in new car sales at the end of the year, a trend that has since continued into 2023. However, while this was, and is, cause for optimism, the market remained far from full strength in 2022 with vehicle registrations, around 700,000 units below pre-pandemic levels.

2022 was an incredibly tough year for UK manufacturing, though we still made more electrified vehicles than ever before – high value, cutting-edge models, in demand around the world. The potential for this sector to deliver economic growth by building more of these zero emission models is self-evident. However, as we do this, it is critical that we also ensure we maintain our industry's broader sustainability momentum, striving for continued improvements across a variety of environmental, social and economic metrics that support the well-being of our people and our planet. The corresponding shift to new technologies – with more intensive manufacturing processes – provides additional challenges in this regard.

While the events of the past few years have been anything but business as usual, the commitment of the automotive sector to be greener, cleaner and better remains undiminished. Since last year's report, more signatories have added their public commitment to setting Science Based Targets that seek to limit global warming to well-below 2°C above pre-industrial levels. And while energy use per vehicle rose in 2022, CO₂ per vehicle fell – a result of significant investment in renewable energy generation and a shift to lower carbon tariffs. Additionally, the 40.1% jump in battery electric car sales in 2022 helped to reduce overall fleet CO₂ tailpipe emissions from new cars by 6.9%. In fact, EVs were the second most popular car type in 2022, a reflection of the significant investment, innovation and commitment of the UK automotive industry.

However, if the UK is to fulfil its ambition of becoming an electric mobility leader, the progress made by our vehicle manufacturers must be matched by policies and investments that remove any lingering consumer uncertainty over switching, particularly in addressing the understandable anxieties of potential customers around the lack of adequate charging infrastructure and cost of energy.

The UK's future growth is net zero. By the time we publish next year's sustainability report, the UK Zero Emission Vehicle (ZEV) Mandate for cars and vans will have begun, with end-of-sale dates for non-ZEV HGVs, buses and coaches also on the horizon. Going forward, we need a strategy to drive both the rapid upscaling of UK battery production and the shift to electric vehicles, one which plays to the UK automotive sector's fundamental strengths – a highly skilled, diverse and flexible workforce, engineering excellence, technical innovation and productivity levels that are amongst the best in Europe.

In doing this, we must maximise our potential talent pool, creating opportunity for all regardless of background, ethnicity or gender. In this regard, I am incredibly proud of SMMT's recent role, alongside partners, in launching the Automotive Diversity & Inclusion Charter, embedding DE&I policies into company values throughout the industry.

The metrics covered by this report represent a journey. We celebrate the progress we have made as an industry, while acknowledging the distance we still need to travel. We cannot do it alone, and I look forward to continued, open engagement and dialogue with partners and stakeholders as we strive to improve our environmental, social and economic performance in 2023 and beyond.

2022 SUSTAINABILITY SUMMARY

ENVIRONMENTAL



Average new car CO₂ tailpipe emissions down **-6.9%**



BEVs up to **16.6%** new car market share and **5.9%** new van market share



Overall CO₂ down **-2.7%**

2.4%

Energy per vehicle produced up **2.4%**

-2.8%

CO₂ per vehicle produced down **-2.8%**



46GWh of on-site renewable generation - up **4.7%**



Water per vehicle produced up **11.3%**

SOCIAL



144,176 training days delivered to staff

3.4%

Sector dependent jobs up **3.4%**



Lost time incidents up **12.3%**



Proportion of women in automotive workforce rises to **13.4%**



New apprentices & trainees – up **45.3%**



ECONOMIC



Manufacturing turnover up **19.9%**



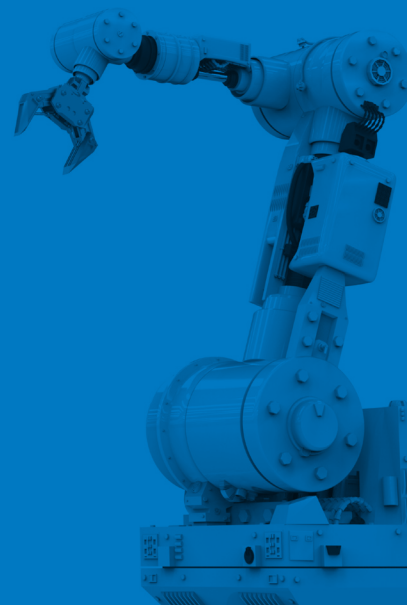
Manufacturing GVA down **-3.1%**



Vehicle production down **-6.0%**

2022 NEW

Vehicle registrations down **-5.0%**



SUMMARY

	Unit	1999	% Change 2022 on 1999	2021	2022	% Change 2022 on 2021	
Environmental performance							
Production inputs							
AS	Total combined energy use	(GWh)	7013	-52%	3281.1	3361.3	2.4%
	...of which is on-site renewable generation	(GWh)	N/A	N/A	43.9	46.0	4.7%
	...of which is green tariff	(GWh)	N/A	N/A	672.8	721.4	7.2%
VMs	Energy used per vehicle produced	(MWh/unit)	3.9	-17%	3.289	3.369	2.4%
AS	Total combined water use	(000m3)	6090	-40%	3290.0	3655.6	11.1%
VMs	Water used per vehicle produced	(m3/unit)	5.3	-26%	3.6	4.1	11.3%
Material inputs							
AS	Total combined CO ₂ equivalents	(tonnes)	2,182,926	-71%	650,499	632,814	-2.7%
	CO ₂ equivalents per vehicle produced	(tonnes/unit)	1.1	-44%	0.652	0.634	-2.8%
VMs	Volatile Organic Compounds emissions (cars)	(g/m2)	55.0	-53%	23.3	25.7	10.1%
	Volatile Organic Compounds emissions (vans)	(g/m2)	59.0	-47%	36.0	31.3	-13.2%
AS	Total combined waste to landfill	(tonnes)	80,399	-99%	1493	966	-35.3%
	Total combined waste reused and recycled	(tonnes)	N/A	N/A	182,511	218,235	19.6%
VMs	Waste to landfill per vehicle produced	(kg/unit)	40.3	-98%	2.7	1.6	-39.6%
Vehicle use							
AC	Average new car CO ₂ emissions	(g/km)	N/A	N/A	119.7	111.4	-6.9%
	Number of new zero emission cars sold	(thousand)	N/A	N/A	190.73	267.2	40.1%
	Proportion of new zero emission cars sold	(%)	N/A	N/A	11.6%	16.6%	5.0pp
	Number of new zero emission vans sold	(thousand)	N/A	N/A	12.76	16.7	31.2%
	Proportion of new zero emission vans sold	(%)	N/A	N/A	3.6%	5.9%	2.3pp
Social performance							
WI	Number of jobs dependent on the sector		907,000	-12%	774,000	800,500	3.4%
	Combined number of employees		95,214	-19%	74,147	77,436	4.4%
AS	Number of lost time incidents per 1000 employees		13.4	-88%	1.48	1.67	12.3%
	Number of training days		N/A	N/A	N/A	144,176	N/A
	Number of training days per employee		3.8	-45%	1.7	2.1	23.5%
	Number of new apprentices & trainees		N/A	N/A	833	1210	45.3%
	Proportion of women in workforce	(%)	N/A	N/A	12.5%	13.4%	0.9pp
Economic performance							
	Automotive manufacturing sector turnover	(£ billion)	47.9	62%	64.8	77.7	19.9%
WI	Automotive manufacturing gross value added (GVA)	(£ billion)	N/A	N/A	16.6	16.1	-3.1%
	Total number of cars and CVs produced	(million)	1.8	-52%	0.93	0.88	-6.0%
	Total new car and CV registrations	(million)	2.5	-25%	2.00	1.90	-5.3%
AS	Signatories' combined turnover	(£ billion)	21.0	198%	61.2	62.5	2.1%

Key:

WI whole industry data;
 AC all car registrations in the UK;
 AS all signatories;
 VMs vehicle manufacturers;
 SVM small volume manufacturers;
 CV commercial vehicles;
 SC supply chain manufacturers.

*The 2021 data has been adjusted to ensure consistency with the current number of signatories and enable year-on-year comparisons. This reflects slight changes to signatories and methodologies for calculating the data.

**Sector turnover, R&D and jobs dependent on the sector are compiled from several official sources using expert SMMT analysis.

***Estimate of manufacturing, distribution, refuelling and repair of vehicles where automotive is the main activity of the firms. All per vehicle figures also contain resources used during engine and battery production, some of which are destined for export.

Production – the complete vehicles as they leave the production line in a UK facility.
 Registrations – vehicles registered for road use in the UK for the first time with the DVLA or the DVLA's equivalent organisation in Northern Ireland, Channel Island's or Isle of Man.

Turnover – the money/income that a business generates each year.

Gross value added – the contribution to the economy of an individual producer, industry or sector.

CO₂ – calculated using UK Government GHG Conversion Factors for Company Reporting methodology.

This report has 20 signatories, including manufacturers that represent 99.8% of the UK car and commercial vehicle parc, as well as those that supply the automotive industry and import vehicles for sale. All data presented is for UK operations only, unless explicitly stated otherwise.

2022 was a year of two halves for the UK automotive industry in terms of vehicle production and sales. By December 2022, the UK new car market had recorded its fifth consecutive month of growth. However, an improved second half year performance was not enough to offset the declines recorded during the first half of the year. Despite underlying demand, global parts shortages related to the pandemic and war in Ukraine saw overall car and van production fall -6.0% compared to 2021, with registrations of new vehicles down -5.3%.

However, as the UK automotive sector gradually recovers in the aftermath of the Covid-19 pandemic, it is clear that sustainability commitments remain at the heart of manufacturer strategies for growth. In 2022, battery electric vehicles (BEVs) accounted for 16.6% of all new car registrations, surpassing diesel for the first time to become the second most popular powertrain after petrol. More broadly, plug-in vehicles (both BEVs and PHEVs) accounted for 22.9% of new registrations in 2022 – a record high. With hybrid electric vehicles (HEVs) also increasing in number, average CO₂ tailpipe emissions fell -6.9% to 111.4g/km.

Despite a reduction in the overall number of vehicles produced in 2022, the increased proportion of BEVs coincided with a 2.4% increase in both overall energy use and energy per vehicle, reflecting an increase in the energy intensity of the vehicle production process. However, 46GWh of renewable electricity was generated on automotive manufacturing sites in 2022, up 4.7% on the previous year, while the use of green electricity tariffs also rose 7.2%. This, combined with increased energy efficiency measures, meant that the amount of CO₂ per vehicle fell by -2.8% in 2022, despite the overall increase in energy use. In the same period, overall industry CO₂ fell by -2.7%, saving a further 17,685 tonnes CO₂ per year, and down -71% since our first report in 1999.

Continued efforts to reduce volatile organic compounds (VOC) emissions from vehicle manufacturing processes provided a mixed picture in 2022, with emissions for vans falling by -13.2% but emissions for cars increasing by 10.1%. Long-term progress for both car and van VOC reduction remains significant (-53% and -47% since 1999, respectively), and the increase in car VOC in 2022 may be partially explained by improvements to monitoring methodologies and changes to vehicle production at some manufacturing sites.

There was a marked 11.1% rise in overall water use in 2022, reflected in an 11.3% rise in water used per vehicle. This may be attributed to the less efficient stop-start nature of production lines at a time when manufacturers continued to experience supply chain interruptions, and the knock-on impact on water-based and, in particular, steam-based processes. While the increase in water use in 2022 represents a retrograde step, it comes in the context of a longer-term trend of a -26% reduction in industry water use since 1999.

Industry waste to landfill has fallen by -98% since 1999, with zero waste to landfill the ultimate aim for the automotive industry. In this context, combined waste to landfill continued its decline in 2022, falling -35.3% compared to the previous year, while the total volume of material reused and recycled rose 19.6%. For vehicle manufacturers, waste to landfill per vehicle fell -39.6% in this period.

The automotive industry continues to recognise the criticality of a skilled, diverse workforce in delivering the technologies and innovations that will underpin the UK's net zero future. The total number of UK jobs dependent on the automotive sector rose by 4% in 2022 to 800,500. Many of these are manufacturing jobs outside London and the South East, with wages that are around 14% higher than the UK average.

In 2022, 77,436 people were employed by signatories to this report, a rise of 4.4% on the previous year. In the same period, the proportion of women employed by signatories rose by 0.9 percentage points to 13.4% of the total workforce. Following a Covid-affected 2021, there was also a rise in the number of apprentices and trainees taken on within the industry, rebounding 45.3% compared to the previous year.

A combined 144,176 training days were provided to automotive employees in 2022. Some of this training is related to changes to roles as a result of supply chain disruption and the knock-on interruptions to normal processes and work patterns. This may also explain the 12.3% increase in reported lost time incidents per 1000 employees in 2022, albeit from a low baseline. While, again, this represents a retrograde step in progress, it is in the context of an -88% fall in lost time incidents since 1999 and ongoing recognition by the industry of the critical need to keep incidents as close to zero as possible each and every year.

SMALL VOLUME MANUFACTURERS (SVM) KPIS

Four small volume manufacturers (SVMs) reported their performance this year: Aston Martin, Bentley, Lotus and McLaren Automotive, at a combined turnover of over £5bn in 2022, employing more than 12,000 workers.

In 2022, SVM signatories bucked the overall industry trend by recording a 4.9% increase in vehicle production levels and, in doing so, delivered greater efficiencies across both energy and water use. These smaller manufacturers were able to produce a greater number of vehicles while reducing their overall combined energy use by -4.0% and their energy use per vehicle by -10.1%. In addition to the improved energy efficiency of SVMs in 2022, a 5.6% increase in the use of renewable generated energy and a 55.4% increase in green tariff energy combined to reduce their overall CO₂ by -7.9% and their CO₂ per vehicle by -13.8%.

While the overall combined volume of water used by these smaller manufacturers increased in 2022 by 3.1% – reflecting the rise in the number of vehicles produced – greater efficiencies meant that the volume of water used per vehicle fell by -5.9%.

Industry waste to landfill has fallen by -98% since 1999 and many SVMs already achieve the ultimate whole-industry target of zero waste to landfill. Furthermore, the total volume of material reused and recycled by SVMs rose 9.2% in 2022.

Like their larger counterparts, SVMs recognise the criticality of a skilled, diverse workforce and continue to make progress in this area. In 2022, the proportion of women employed by these smaller manufacturers rose by 1.1 percentage point to 16.1% of the SVM workforce. While the number of new apprentices and trainees fell by -12.8%, a combined 10,326 training days were provided to existing SVM employees in 2022.

SMALL VOLUME MANUFACTURERS (SVM) KPIS			2020	2021	% change 2021 on 2020
Environmental performance					
Production inputs					
AS (SVM)	Total combined energy use	(GWh)	250.8	240.7	-4.0%
	...of which is on-site renewable generation	(GWh)	5.7	6.0	5.6%
	...of which is green tariff	(GWh)	3.7	5.7	55.4%
	Energy used per vehicle produced	(MWh/unit)	10.6	9.5	-10.1%
	Total combined water use	(000m ³)	197.6	203.6	3.1%
	Water used per vehicle produced	(m ³ /unit)	8.8	8.3	-5.9%
Material outputs					
AS (SVM)	Total combined CO ₂ equivalents	(tonnes)	48,901	45,023	-7.9%
	CO ₂ equivalents per vehicle produced	(tonnes/unit)	2.1	1.8	-13.8%
	Total combined waste reused and recycled	(tonnes)	9,050	9,879	9.2%
Social performance					
AS (SVM)	Combined number of employees		10,981	12,185	11.0%
	Number of training days		N/A	10,326	N/A
	Number of new apprentices & trainees		227	198	-12.8%
	Proportion of women in workforce	(%)	15.0%	16.1%	1.1pp
Economic performance					
AS (SVM)	Signatories' combined turnover	(£ billion)	4.19	5.02	19.7%
	Total number of vehicles produced		24,998	26,229	4.9%

SUPPLY CHAIN KPIS

Four supply chain signatories reported their performance this year: Autocraft, Caterpillar, Michelin and Unipart. These supply chain signatories represent a wide range of UK activities, from component production to remanufacturing, employing over 1500 people in 2022. Compared to the previous year, their activity level, defined as the combined weight of products, increased by 26.7%.

Despite the increase in their overall output (both in terms of the number and weight of their products) supply chain signatories reduced the amount of energy used in 2022 by -4.3% and the amount of energy used per tonne of output shipped by -23.4%. In combination with a 60% increase in reported on-site renewable energy production, these automotive suppliers reduced their total recorded CO₂ emissions by -8.2% and their CO₂ per tonne of output shipped by -26.5%.

Supply chain signatories provided 1878 training days to their employees in 2022, while also showing a significant recovery in the number of new apprentices and trainees, up 50% from the previous year. Their proportion of women in the workforce also showed an incremental increase of 0.6 percentage points, raising the overall share to 15.2%.

SMMT's 2023 report, Race to Zero: Powering up Britain's EV Supply Chain, highlights the "truly unique automotive offering" in the UK, including an established and extensive, if proportionally small, electric supply chain, world-class R&D and a competitively low-carbon energy mix.¹ We now need a clear Green Automotive Transformation strategy that capitalises on these strengths and opens up new opportunities – by de-risking investment, accelerating approvals and securing new trade deals and partnerships that give us greater access to essential raw materials.

¹ <https://www.smmmt.co.uk/wp-content/uploads/sites/2/SMMT-Race-to-Zero-report.pdf>

SUPPLY CHAIN KPIS		2020	2021	% change 2021 on 2020
Environmental performance				
Production inputs				
SC	Total combined energy use (GWh)	104.1	99.6	-4.3%
	...of which is on-site renewable generation (GWh)	1.0	1.7	60.0%
	...of which is green tariff (GWh)	38.6	37.8	-2.0%
	Energy used/output (per tonne shipped) ((MWh/tonne))	0.33	0.26	-23.4%
	Total combined water use (000m3)	127.1	121.3	-4.6%
	Water use/output (per tonne shipped) (m3/tonne)	0.41	0.31	-23.6%
Material outputs				
SC	Total combined CO ₂ equivalents (reporting weight) (tonnes)	20,274	18,618	-8.2%
	CO ₂ equivalents/output (per tonne shipped) (tonnes/tonne)	0.07	0.05	-26.5%
	Total combined waste reused and recycled (tonnes)	9,701	12,220	26.0%
Social performance				
SC	Combined number of employees	1,454	1,518	4.4%
	Number of training days	N/A	1,878	N/A
	Number of new apprentices & trainees	16	24	50.0%
	Proportion of workforce that are women (%)	14.5%	15.2%	0.6pp
Economic performance				
SC	Output (units)	1,168,639	1,215,180	4.0%
	Output (weight of product) (tonnes)	315,010	399,085	26.7%

ENVIRONMENTAL PERFORMANCE

→ The automotive industry continues to make steady progress towards net zero and sustainability goals, with greater efficiency and CO₂ savings for each vehicle manufactured in the UK. However, at the same time, some manufacturing processes are becoming more energy intensive as the industry transitions to producing an ever-increasing number of zero emission vehicles, particularly with regard to battery production. Global events have continued to cause disruption to supply chains and, as a consequence, manufacturing processes, creating additional challenges for water efficiency in the short term.



Total combined CO₂ down **-2.7%** and CO₂ per vehicle produced down **-2.8%**

46GWh of renewable energy generated at automotive manufacturing and supply chain sites

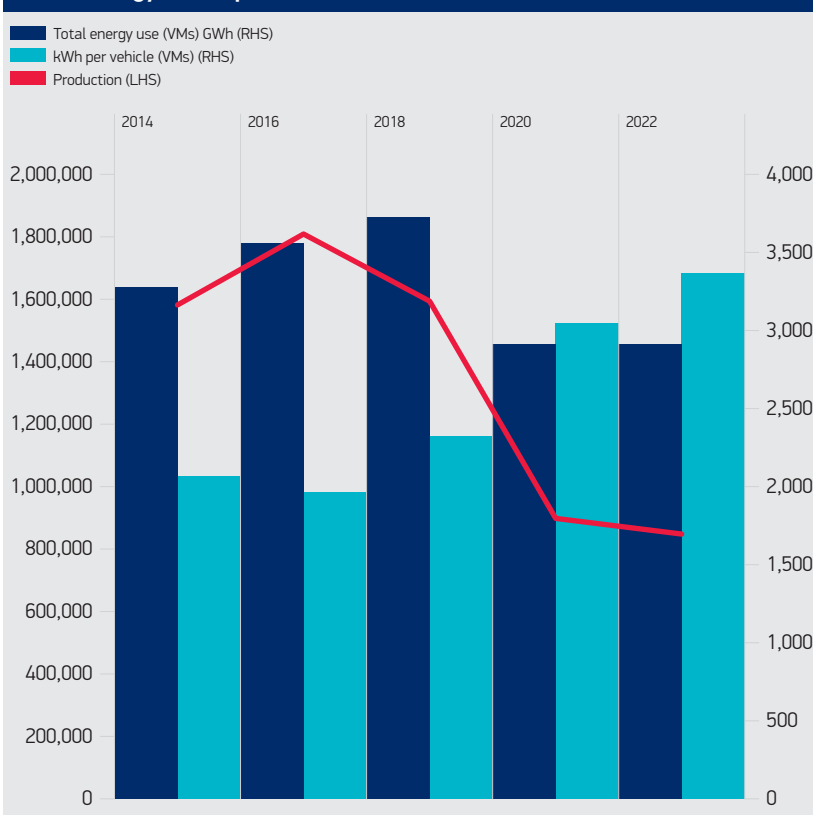
BEVs up to **16.6%** new car market share and **5.9%** new van market share

VEHICLE MANUFACTURING

ENERGY USE

On average, the amount of energy required to manufacture a vehicle in the UK has been rising steadily since 2016. This trend is likely to continue with the roll-out of an increasing proportion of battery electric vehicles being manufactured in the coming years.

Chart 1 Energy use vs production



CASE STUDY: ALEXANDER DENNIS

ENERGY GOVERNANCE COMMITTEE



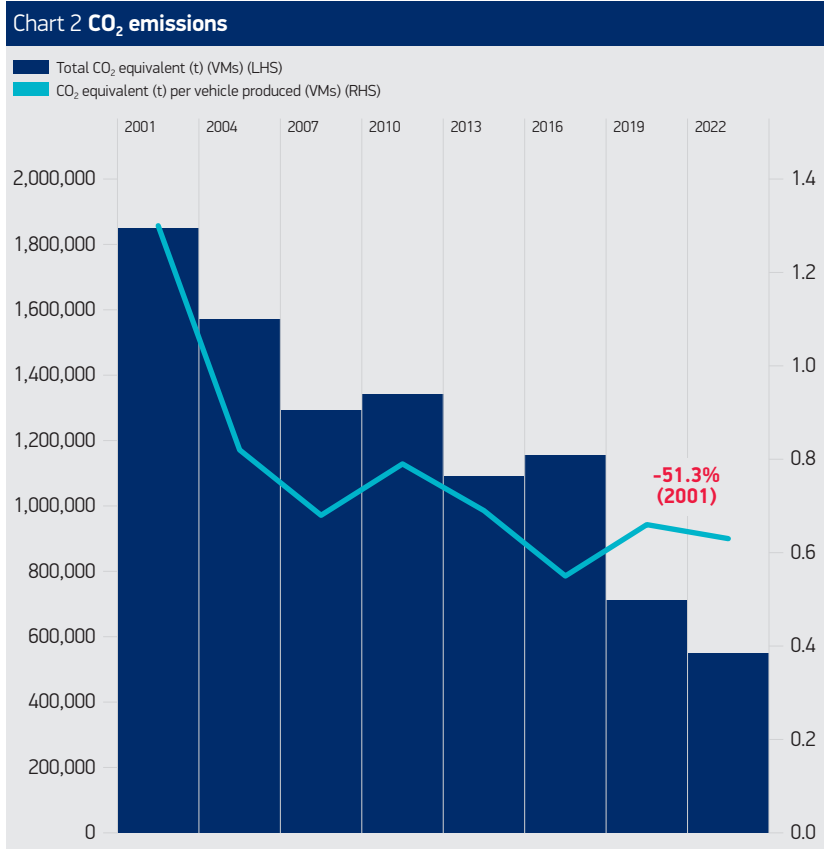
Alexander Dennis formed a cross-functional Energy Governance Committee in 2022, a key governance milestone for the company's wider ESG journey. The committee is made up of representatives from across the business, including HR, procurement, aftermarket and operations. Due to importance of ESG to Alexander Dennis, the committee meets monthly to ensure efficient energy use and identify initiatives for further energy reductions through collaboration. Initiatives to date include office space consolidation, reviewed shift patterns and evaluating the efficiency of paint operations.

Looking to individual company site operations, Facilities Managers follow a continuous improvement model. Their local experts use power analysis equipment and sub-metering to identify further energy reduction opportunities across Alexander Dennis's operations including replacing inefficient lighting systems with LEDs and monitoring heavy machinery efficiency, such as CNC and paint ovens. Since the implementation of the committee, Alexander Dennis has made significant savings of more than 400,000KWh.

The committee is currently developing a new Energy Management Framework, which will benchmark UK sites against an industry standard. Based on CIBSE TM46, this allows for ongoing energy reduction targets to be set. The Framework will also allow for frequent analysis of energy consumption, facilitate their continuous improvement model and improve future forecasting.

CO₂ EMISSIONS

Despite the steady rise in the energy intensity of producing vehicles in recent years, manufacturers continue their longer-term trend of reducing both their overall and 'per vehicle' CO₂ emissions, the latter now down -51.3% since 2001, through a reliance on renewable and lower-carbon energy sources.



CASE STUDY: ASTON MARTIN

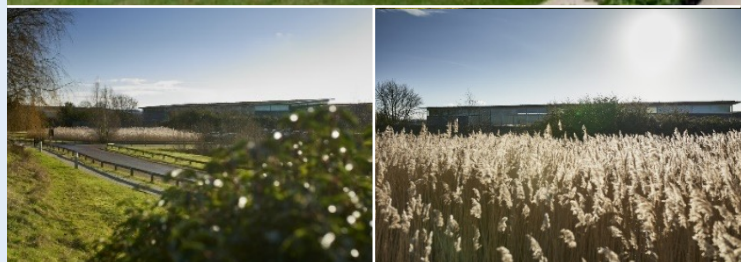
RACING. GREEN. – ACHIEVING CARBON NEUTRAL MANUFACTURING

Manufacturing efficiencies delivered through Aston Martin's streamlined paintshop strategy provided a -3.9% fall in CO₂ emissions per car manufactured in 2022. Longer term, Aston Martin is committed to achieving carbon neutral manufacturing at its Gaydon and St Athan facilities.

Launched in April 2022, the Racing. Green. sustainability strategy formalises core principles, aligned with the UN Sustainable Development Goals, with a focus on tackling climate change, creating a better environment and building a stronger, more diverse company.

Since 2019, all manufacturing facilities at Aston Martin have been powered by 100% renewable electricity. Recently installed solar panels at the historic Aston Martin Works facility and heritage dealership in Newport Pagnell support up to 90% of the energy used at the site in the summer months.

Meanwhile, plans are underway to introduce thousands of solar panels to the DBX SUV manufacturing plant in St Athan, which will be capable of generating around 20% of the plant's total annual demand. The installation of LED lighting at St Athan saves over 24,000kg of CO₂ emissions every year.



RENEWABLE ENERGY

Renewable energy generation and supply are a critical part of automotive manufacturers' journeys towards net zero. In 2022, vehicle manufacturers and their suppliers generated 46GWh of renewable energy generation.

CASE STUDY: UNIPART

RENEWABLE SOLAR GENERATION

Solar panels fitted to one of the warehouses at Unipart Logistics Honeybourne site in Worcestershire are expected to generate around 46,000 kWh of energy per year.

The solar panels fitted to the roof of the 80,000 square feet warehouse produce enough energy to run it, as well as feed electricity back into the grid. The whole facility has been developed with sustainability at its heart, using 100% renewable energy, and has a zero rated carbon footprint for energy usage.

An upgrade programme also continues with the facility's LED lighting, with future planning set to install even more solar panels to further power needs in other areas of the site.



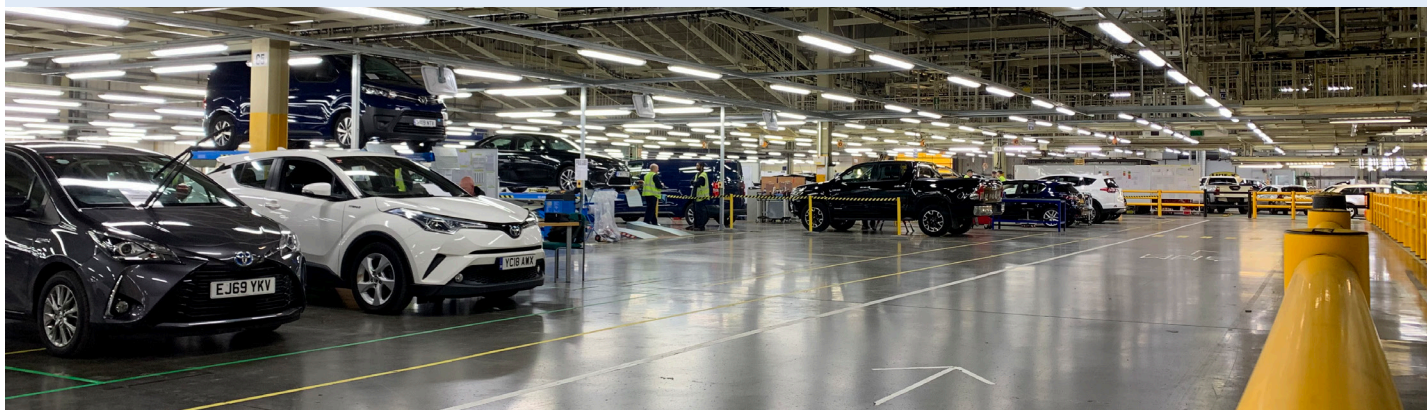
CASE STUDY: TOYOTA

VEHICLE LIFETIME VALUE ENHANCEMENT ACTIVITY

Toyota Manufacturing (UK) Ltd started its Used Vehicle Refurbishment activity in January 2022. Cars are already products designed to have an exceptionally long lifetime. In addition, servicing and maintenance support provided by the retailer network helps to ensure that the vehicles have as many utilisation cycles over the course of their lifetimes as possible.

In addition to the strict recycling, reuse and recovery targets set out in End-of-Life vehicle legislation, it is imperative to make the best use of the materials used to manufacture and maintain vehicles both during and at the end of their lives.

In order to achieve this challenge, TMUK set about offering factory-refurbished vehicles. The vehicles go through a rigorous process of verification and repair, and once complete they are sold back to the retailer network. This helps to prolong the lifetime of the vehicles. It also allows greater access to mobility for people who may not be able to afford a brand new car but who will still appreciate the level of care, attention and built-in quality from this dedicated facility.



SCIENCE BASED TARGETS

The automotive industry remains committed to decarbonisation and a net zero future. Since our last report, several signatories have added their commitment to setting Science Based Targets. These targets are set in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement signed at COP21 – limiting global warming to well-below 2°C above pre-industrial levels and pursuing efforts to limit it to 1.5°C.

From April 2022, the largest UK-registered companies and financial institutions have been required to disclose climate-related financial information on a mandatory basis, using guidelines from the Task Force on Climate-related Financial Disclosures (TCFD).



CASE STUDY: BENTLEY MOTORS

CARBON NEUTRAL RETAILERS

Bentley has identified its retailer network as an important stakeholder in its end-to-end carbon neutral ambition. It is also the first physical touch point for many of their customers. As such, Bentley has worked closely with its retailers, supporting them to embed sustainable practices within retail operations as part of its Beyond 100 strategy.

The manufacturer has set itself a target to ensure 100% of its global retailers are carbon neutral by 2025. Efforts to meet this target are well underway and, in 2022 they overachieved on their annual target of 30%, with 62% of global retailers achieving independently certified carbon neutral status. 100% of UK retailers have been independently certified as carbon neutral consecutively since 2020.

Bentley has focused its retailers on achieving year-on-year reductions in their carbon footprint to further reduce their impact on the environment. Any residual emissions that are not possible to currently abate are compensated by carbon credits verified to the Gold Standard.

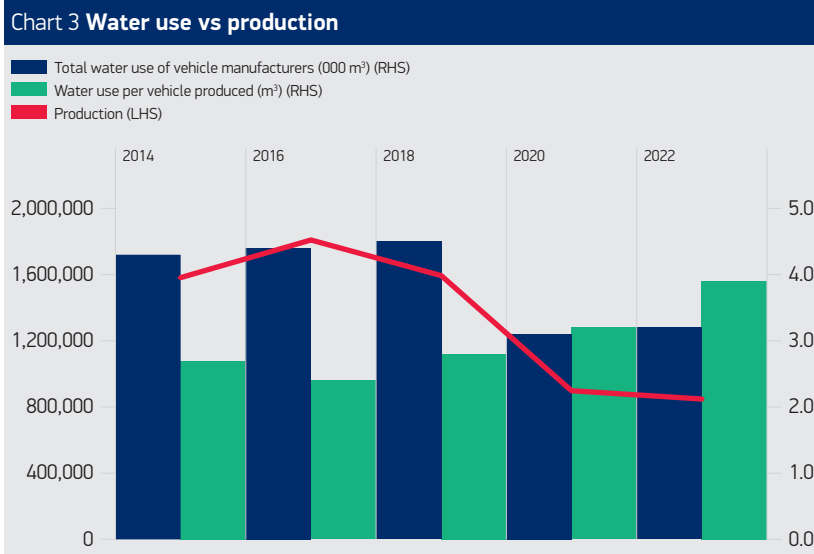
Each year, Bentley asks its retailers to set out a sustainability plan for reducing their carbon footprints. It supports retailers by sharing best practice and offering sustainability-focused training modules, through its retailer portal. Retailer sustainability plans are monitored through a Global Monthly Sustainability Forum and Quarterly Improvement Plans. Additionally, the Bentley field team conducts site visits throughout the year in which it observes progress towards the defined targets.

SCIENCE BASED TARGETS

Rank	Company name	Near term – target status	Near term – target classification	Near term – target year	Net-Zero committed
1	Aston Martin Lagonda	Committed			Yes
2	BMW Group	Targets Approved	1.5°C / Well below 2°C	2030	Yes
3	Ford Motor Company	Targets Approved	1.5°C / Well below 2°C	2035	Yes
4	JLR	Targets Approved	1.5°C / Well below 2°C	2030	Yes
5	McLaren Racing	Committed			Yes
6	Mercedes-Benz AG	Targets Approved	1.5°C / Well below 2°C	2030	
7	Michelin	Targets Approved	Well below 2°C	2030	Yes
8	Nissan Motor Co	Targets Approved	Well below 2°C	2030	Yes
9	PSA Automobiles SA (Stellantis)	Targets Approved	2°C	2034	
10	Scania CV	Targets Approved	1.5°C	2025	Yes
11	Toyota Motor Corporation	Targets Approved	1.5°C / Well below 2°C	2035 / 2030	
12	Unipart Group	Committed			Yes
13	Volkswagen AG	Targets Approved	1.5°C / 2°C	2030 / 2025	
14	Volvo Car Group	Targets Approved	1.5°C / Well below 2°C	2030	Yes

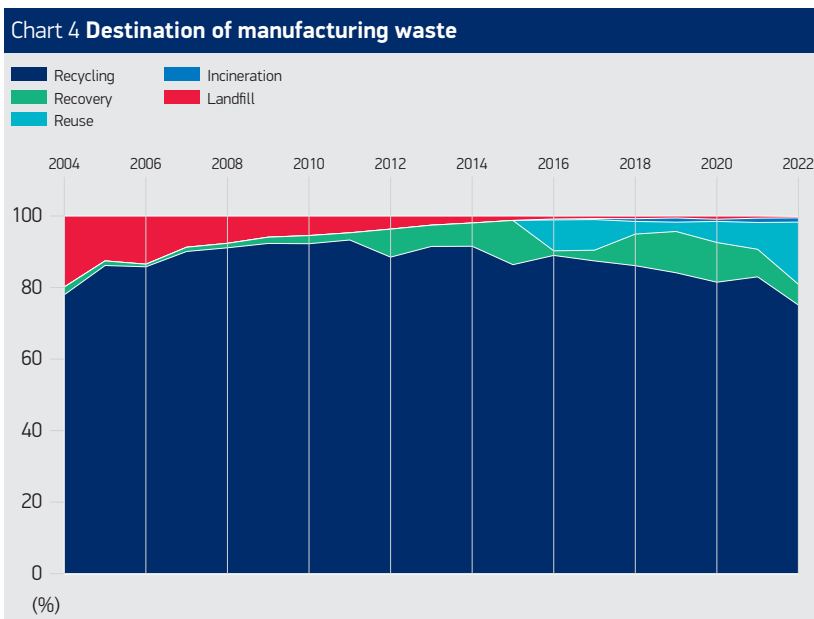
WATER

The longer-term trend for water use in vehicle manufacturing shows an inverse relationship between total overall volume (a factor of the number of vehicles produced) and efficiency. As vehicle production has fallen since 2016, so too has overall water consumption. However, over the same period, there has been a steady rise in the volume of water used per vehicle.



WASTE

Industry waste to landfill has fallen by -98% since 1999. Zero waste to landfill is the ultimate aim for the automotive industry and many manufacturers have achieved this already. While recycling remains a critical factor for automotive manufacturers, the longer-term trend also shows their continued efforts towards a circular economy and the growing importance of recovery and reuse of materials.



CASE STUDY: SCANIA

EUROCENTRAL – A SUSTAINABLE, FUTURE-PROOF SERVICE CENTRE

Eurocentral is more than a modern, state-of-the-art service centre. It's a statement of intent – a sustainable and future-facing one. It is the jewel of Scania UK's network and sets the standard for what a future modern heavy transport service centre needs to be.

The L-shaped building, split into two wings, allows the team to service all of Scania's vehicles from conventional combustion engines to gas and electrified vehicles, safely. The installation of LED lighting, may be an energy efficient choice, but it also gives the team a nice, bright environment to work in, as do the glass panels on the workshop doors, designed to draw in as much natural light as possible. By getting the small details right, it has made a big difference to the wellbeing of the team.

The building's air-sourced underfloor heating, HVAC system and thermal efficiency provide effective temperature control, even when any of the 27 large, 25 sqm doors are open.

Powering the facility are several green sources. From the photovoltaic panels on the roof to using only fossil-free generated electricity, something every Scania UK owned site has done since 2017. Scania UK also future-proofed the electrical input into the vast 7.8 acre plot by installing 950 kVA of power on site, with 350 kVA

allocated to install future electric vehicle charging locations around the vast yard.

The site also sustainably redistributes surface water from the yard via permeable paving in the car park and an urban drainage system. Captured rainwater is used to supply the wash bay area.



CASE STUDY: JLR

SECOND LIFE BATTERIES

JLR has partnered with Pramac, a global leader in the energy sector, to develop a portable zero emission energy storage unit powered by second-life Jaguar I-PACE batteries.

Called the Off Grid Battery Energy Storage System (ESS), Pramac's technology – which features lithium-ion cells from Jaguar I-PACE batteries taken from prototype and engineering test vehicles – supplies zero emission power where access to the mains supply is limited or unavailable.

The partnership is the first in JLR's plans to create new circular economy business models for its vehicle batteries. As part of its commitment to net zero status by 2039, the company will be launching programmes that deliver second life and beyond uses for its electric vehicle batteries.

The flagship system has a capacity of up to 125kWh – enough to power a regular family home for a week. Pramac directly reuses up to 85% of the vehicle battery supplied by JLR within the storage unit, including modules and wiring. The remaining materials are recycled back into the supply chain.

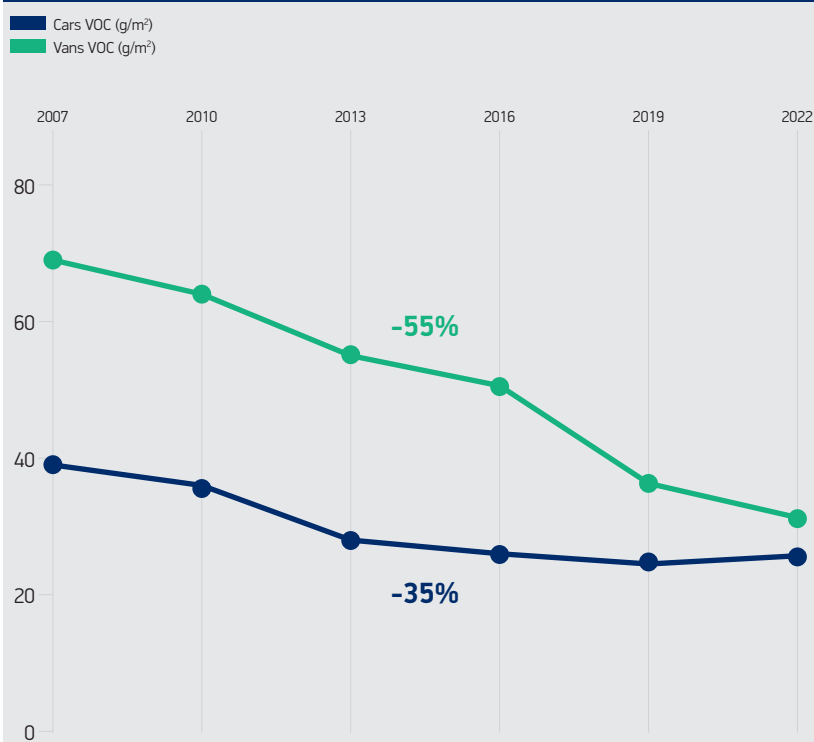
Charged from solar panels, the unit is a self-contained solution that consists of a battery system linked to a bi-directional converter and the associated control management systems. Available for commercial hire, the units are fitted with Type 2 Electric Vehicle (EV) charge connections with dynamic control and rated at up to 22kW AC to allow electric vehicle charging.



VOLATILE ORGANIC COMPOUNDS (VOCs)

Vehicle manufacturers have invested heavily in the most efficient paint shops, enabling them to comply and go beyond the strict legal requirement of limiting VOC emissions. While there has been a marked jump in these emissions in 2022 compared to the previous year, the longer-term trend is one of a steady decrease in VOC emissions over time, with a -53.3% and -46.6% reduction for cars and vans respectively, since our first report in 1999.

Chart 5 VOC emissions



CASE STUDY: MICHELIN

SUSTAINABLE TYRE MATERIALS

In a world first, Michelin has unveiled two tyres – one for use on cars and the other for buses – containing 45% and 58% of sustainable materials respectively. Approved for road use, these tyres have performance levels exactly in line with Michelin's conventional tyres.

Michelin has taken a new step towards the pre-production and marketing – within two to three years – of new ranges that will include high levels of sustainable materials. The Group is thus well set to meet its commitment to global production with 100% bio-sourced, renewable or recycled materials by 2050, with an interim target of 40% for 2030.

Michelin owes this progress to the increased use of natural rubber, together with the inclusion of recycled carbon black, oils such as sunflower oil and bio-sourced resins, silica from rice husks and even recycled steel in its tyres. The inclusion of sustainable materials in the development of its tyres is a real undertaking of the Group, in which no compromise is made in terms of performance, and care is taken not to impact the environment in each of the steps in the life cycle – design, manufacture, transport, use and recycling.

To stick to its road map, Michelin can rely on its expertise in the field of high-tech materials, along with the contribution of every one of the 6,000 engineers, researchers, chemists and developers in its R&D department.



VEHICLES

ZERO EMISSION VEHICLES (ZEVs)

The UK automotive industry is committed to delivering the UK Government’s decarbonisation ambition and achieving net zero by 2050 and, with the right regulatory framework, flexibilities and support mechanisms, it can deliver a successful and competitive ZEV transition.

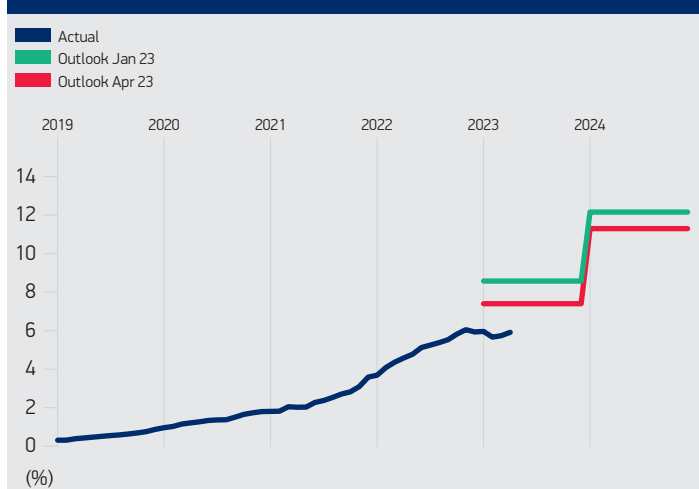
The Government’s ZEV mandate is due to come into force in January 2024 and will require each manufacturer, as a proportion of their overall new vehicle registrations, to meet rising targets each year for zero emission cars and vans. In 2024, this target is proposed to be 22% for cars and 10% for vans, rising to 100% by 2035.

SMMT’s own outlook for 2024 suggests that the overall market is on course to achieve the 2024 target, predicting a market share of 22.6% for BEV cars and 11.3% for BEV light commercial vehicles (LCVs). However, importantly, the mandate requires each individual brand – rather than the market as a whole – to deliver that proportion of vehicles. For many, this will require the use of proposed regulatory flexibilities or costly trading and compliance payments.

Chart 6 UK new car market BEV share and SMMT outlook



Chart 7 UK new LCV market BEV share and SMMT outlook



CASE STUDY: LEYLAND TRUCKS

BATTERY ELECTRIC TRUCK TRIAL



In what was one of the largest and most significant deployments of zero emission trucks in the UK in 2022, 20 DAF LF Electric vehicles entered service with a range of public bodies including the National Health Service (NHS) and Local Authorities, as part of the Battery Electric Truck Trial (BETT) funded by Department for Transport (DfT).

The trucks entered day-to-day operations while at the same time gathering real-time data; the results from which are publicly available on an interactive website to inform future fleet operator buying decisions and help stimulate the sale of battery electric trucks.

One of the key operators in partnership with BETT is NHS Supply Chain, which, supported by financing and maintenance services from Prohire Ltd, is deploying eight DAF LF Electric rigs with refrigerated bodies in several of its locations around the country.

All the vehicles in the trial feature the distinctive Battery Electric Truck Trial logo.

BETT is valued at £10 million and focuses on an end-to-end solution, covering vehicles, charging infrastructure, user training, repair and maintenance and total-cost-of-ownership, providing operational insight across a variety of duty cycles. It is part of the Government’s wider £20 million Zero Emission Road Freight Trial and is delivered using the SBRI (Small Business Research Initiative). Lancashire-based Leyland Trucks – where the LF Electric is manufactured – is working with CENEX, the low carbon research and consultancy organisation, to create the interactive BETT report and website.

TAILPIPE CO₂ EMISSIONS

The automotive industry understands the critical role it will play in decarbonising the road transport sector and enabling the UK's transition to net zero, through its investments and innovations and the delivery of affordable zero emission vehicles across all transport sectors.

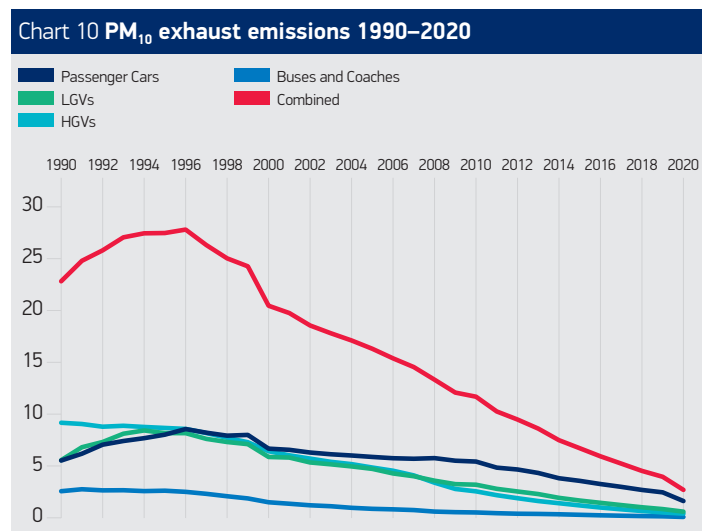
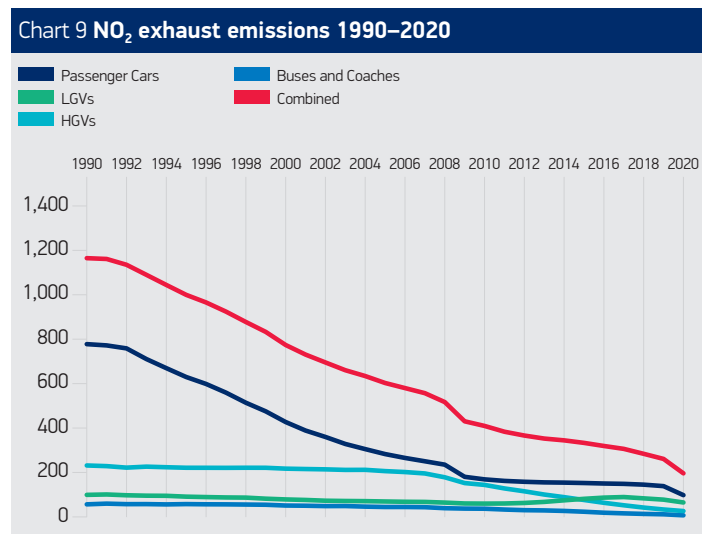
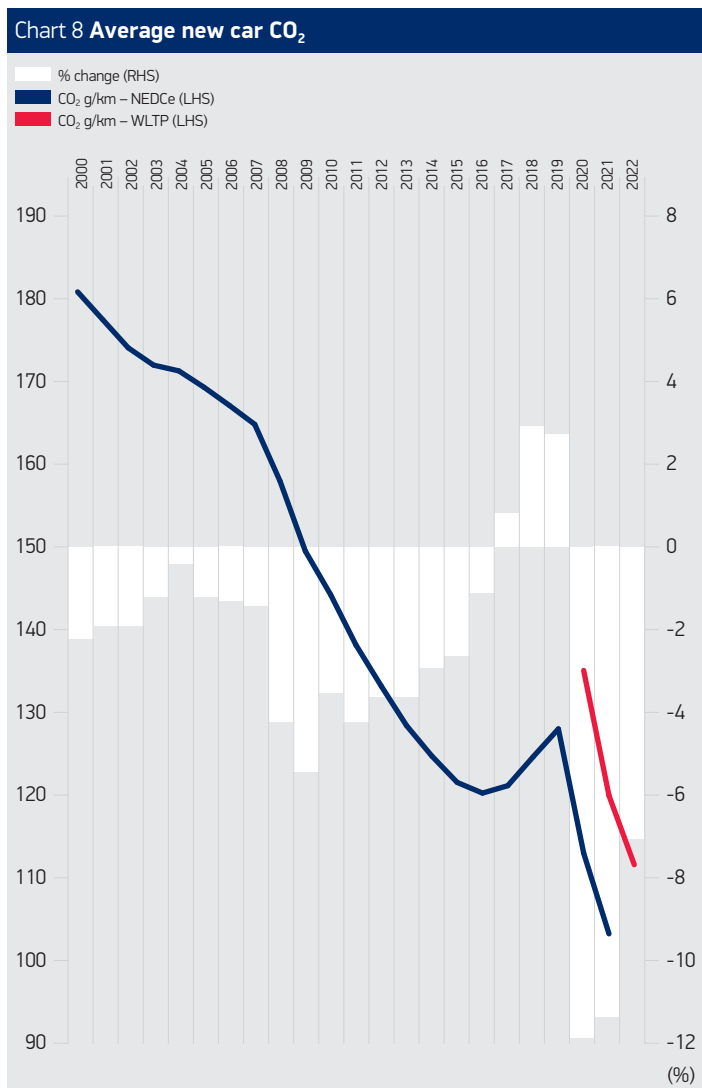
Extensive investment by manufacturers in advanced powertrains, lightweight materials and aerodynamics has reduced the average tailpipe CO₂ emitted by new vehicles significantly since 2000. In 2022, the average CO₂ emitted by new cars in 2022 was 111.4g/km, down -6.9% on the previous year.

Going forward, the ZEV Mandate, rather than CO₂ regulation, will take over the primary role of bringing down average new car and van CO₂ emissions in the UK. The ZEV Mandate will necessitate a rise in the proportion of new zero emission cars sold in the UK to 80% by 2030, with the subsequent 2035 end-of-sale deadline bringing down tailpipe CO₂ emissions to zero by the end of this period.

AIR QUALITY

The National Atmospheric Emissions Inventory provides data showing a significant decrease in emissions from road transport. Latest available published data covers 2020 and, while the long-term trend of decreasing NO₂ and particulate matter emissions since 1990 is clear, an especially steep drop between 2018 and 2020 shows the likely combined impact of the introduction of Euro 6 emissions standards and the accelerated uptake of zero emission vehicles.

The Covid-19 pandemic will no doubt create a further, temporary reduction in NO₂ and particulate matter emissions, due to the reduction in vehicle miles during this period. However, the impact of the pandemic is unlikely to be seen until these charts are updated to include 2021 data.



SOCIAL PERFORMANCE

- The automotive industry continues to recognise the criticality of a skilled, diverse workforce in delivering the technologies and innovations that will underpin the UK's net zero future. The total number of UK jobs dependent on the automotive sector rose by 3.4% in 2022 to 800,500. Many of these are manufacturing jobs outside London and the South East, with wages that are around 14% higher than the UK average.
- In 2022, 77,436 people were employed by signatories to this report, representing a rise of 4.4% for those companies compared to the previous year. Following a Covid-affected 2021, there was also a rise in the number of apprentices and trainees taken on within the industry, rebounding 45.3% compared to the previous year. A combined 144,176 training days were provided to existing automotive employees in 2022.
- In the same period, proportion of women in the workforce rose by 0.9 percentage points to 13.4% of the total workforce.



1,210 new apprentices & trainees – up **45.3%**

Proportion of women in the workforce rises to **13.4%**

144,176 training days delivered to staff

DIVERSITY, EQUITY AND INCLUSION

In November 2022, nineteen of the UK automotive industry’s biggest brands came together to launch the sector’s first Automotive Diversity & Inclusion Charter in a collective commitment to make their workforce reflective of wider society and attract more talent to fill critical skills gaps. As part of this commitment, signatories agree to embed DE&I policies into their company values and ensure they are reflected in all communications. Additionally, signatories agreed to collate and provide data on diversity within their organisations, with that data due to be published in 2024.

This landmark initiative supports ongoing efforts to retain and attract top talent as the industry undertakes its biggest technological and industrial transformation in more than a hundred years amid critical skills shortages. Since the Charter’s launch, companies have continued to add their names, bringing the total number of signatories to 24.

The launch of the DE&I Charter followed the 2022 Auto Council publication – Driving diversity, equity & inclusion in the UK automotive industry – exploring the importance of gender balance in supporting UK automotive competitiveness.³ The report identifies a number of challenges and solutions to tackle the under-representation of women in the sector, with a particular focus on recruitment, retention, progression, culture and leadership.

³ Available at: <https://www.automotivecouncil.co.uk/wp-content/uploads/sites/13/2022/09/Automotive-Council-Driving-diversity-equity-inclusion-in-the-UK-automotive-industry.pdf>

UK AUTOMOTIVE DIVERSITY & INCLUSION CHARTER SIGNATORIES



SMMT DE&I TOOLKIT

SMMT members recognise the importance of embedding DE&I policies to create a workforce that represents all of society and the customers they serve. Following the launch of SMMT's DE&I toolkit⁴, we have hosted workshops for members to support their own initiatives and allow organisations to learn from one another's best practice.

Hosted by Hyundai, at the most recent workshop, members discussed the importance of collating data to understand diversity in our organisations, including what data to collect and how.

EMBRACING DIVERSITY, EQUITY AND INCLUSION WILL ENABLE A BUSINESS TO:

- Benefit from a broader range of perspectives.
- Recruit from a larger pool of talent.
- Better understand its customers.
- Improve business innovation.
- Deliver faster, better problem solving.
- Improve overall business performance.
- Improve its overall reputation.

⁴ Available at: <https://www.smmt.co.uk/wp-content/uploads/sites/2/DEI-Toolkit-for-Automotive.pdf>

INTERNATIONAL WOMEN'S DAY

SMMT data shows positive progress in raising the number of women employed in the automotive industry, but the current figure of 13.4% share of the total workforce shows the importance of continued improvement in this area.

In celebration of International Women's Day on 8 March, SMMT held an event based on the theme of 'Embrace Equity'. SMMT President, Alison Jones, shared her experience of working in the industry, followed by a facilitated conversation to explore how the career experiences of different members of SMMT staff have differed due to their gender.



CASE STUDY: BENTLEY

EMPLOYEES DRIVING A MORE DIVERSE AND INCLUSIVE FUTURE

Bentley has focused on creating a culture of inclusion and its employees have played an integral role in supporting this journey, championing diversity and minority topic causes, both internally and externally.

Bentley supported its colleagues to form five DEI networks aligned to its company strategy and in 2022 over 410 employees got involved. The networks engage employees from all backgrounds to help identify and remove barriers, provide peer support and build people networks to improve understanding and awareness, to drive positive change in the business.

These networks have had great success in 2022, for example, Bentley's BeProud network took part in the Manchester Pride parade, and Bentley signed both the Menopause Workplace Pledge and the Business In The Community Race at Work Charter, supported by the BeInspired and BeUnited networks.



HEALTH AND SAFETY

Health and safety continues to be a priority for the industry and, over the longer-term, there has been a significant -87.6% reduction in the rate of lost time incidents per employee since 2002. All manufacturers continue to strive for zero lost time incidents, and will share concern that there has been a recent increase in the rate of these incidents in 2022, albeit from a low baseline. It is possible that some of this increase is related to Covid-19 and supply chain disruption, alongside the knock-on interruptions to normal processes and work patterns.

CASE STUDY: STELLANTIS

RETAILER NETWORK TRAINING ON ELECTRIC VEHICLE SAFETY IN THE METAVERSE

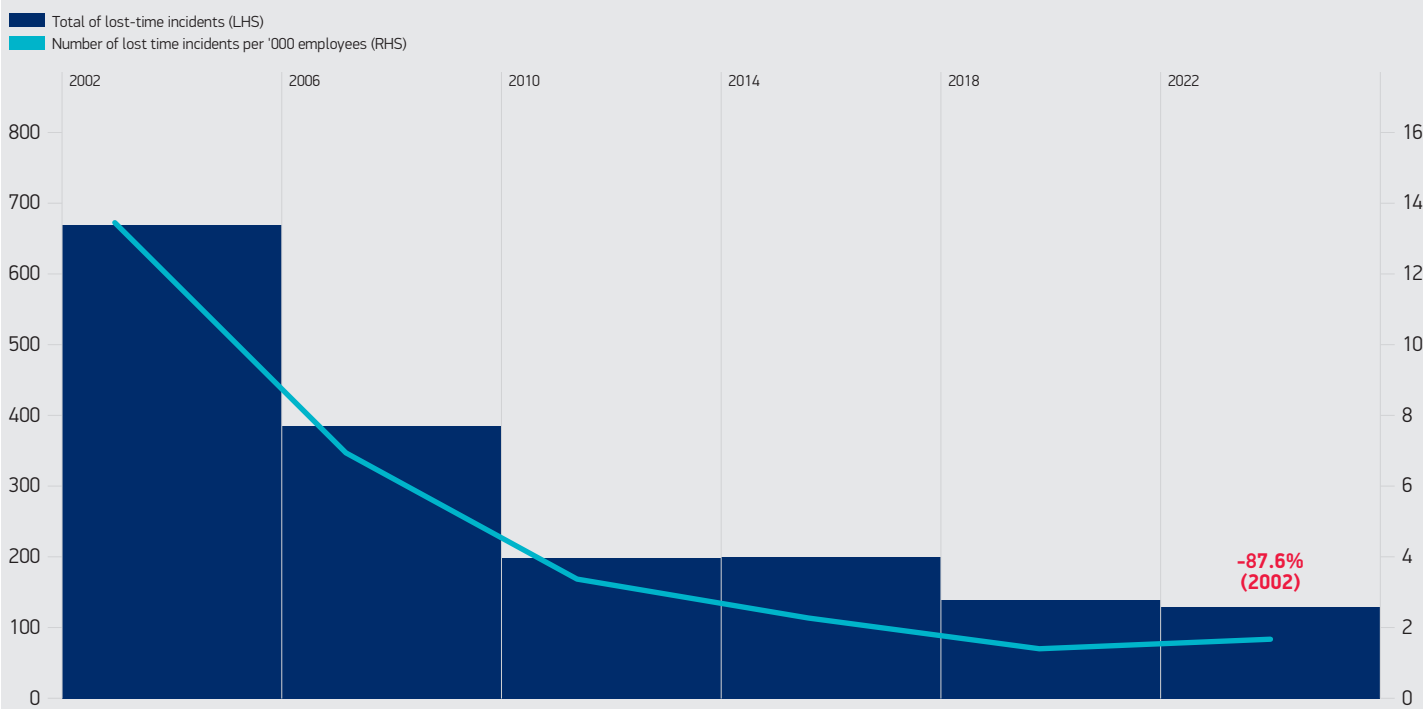
Stellantis is rolling out mandatory training to all technicians through its whole retailer network – owned and franchised – using immersive Virtual Reality (VR). The two-day course on Electric Vehicle Safety, one of which takes place in VR classrooms, conducted by expressive avatars, allowing Stellantis to deliver a fully immersive training experience using mixed reality for technicians to learn process and carry out practical examples.

The training is filmed in 8K, giving 360° 3-dimensional view, which is five-times more immersive than traditional video and includes workshop simulations. There are benefits of using this technology for the technicians and Stellantis, alike. The VR training is longer lasting and learning in the virtual environment can be repeated at any time. It reduces technicians time spent away from the retailer and can be reused affectively for assessment and reassessment.

Stellantis is also developing training courses in Augmented Reality (AR) enabling retailers to service a vehicle in real time, improving the capacity in the network and getting vehicles serviced more efficiently for our customers.

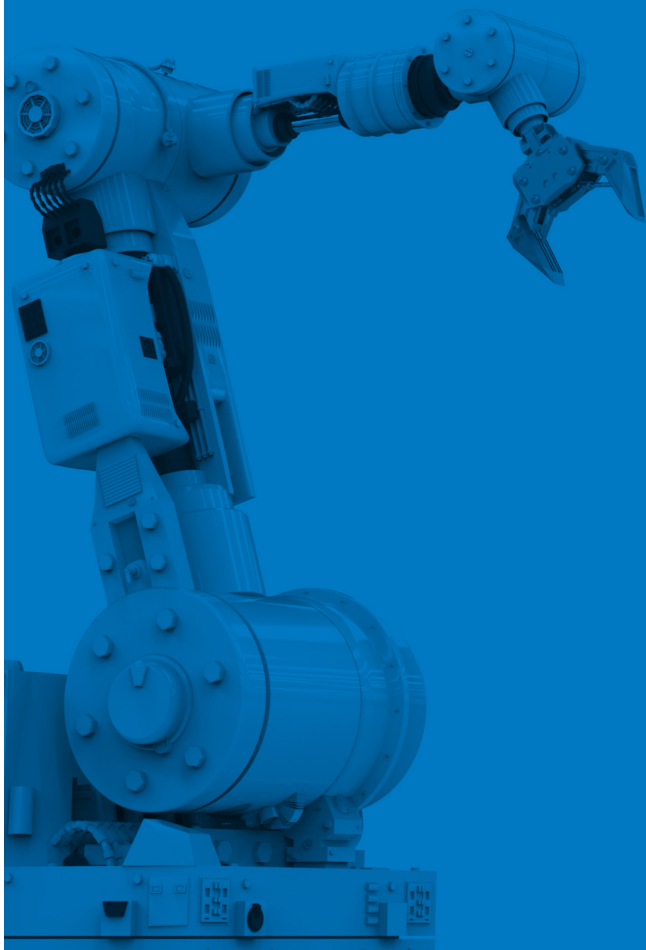


Chart 11 Lost time incidents



ECONOMIC PERFORMANCE

- The automotive industry is a vital part of the UK economy, and integral to supporting the delivery of the agendas for levelling up, net zero, advancing global Britain and the plan for growth. Today, more than 25 manufacturers build more than 70 models of vehicle in the UK, supported by more than 2,500 component providers and some of the world's most skilled engineers.
- Following the UK's departure from the EU, two years of lockdowns, and crippling global supply chain shortages, the automotive sector began to demonstrate the first signs of recovery in 2022, with momentum expected to increase throughout 2023 as supply chain shortages eased, particularly in regard to semiconductors. In 2022, the automotive manufacturing industry contributed £77.7 billion turnover and £16.1 billion gross value added (GVA) to the UK economy, investing around £3 billion in R&D. With more than 208,000 people employed directly in manufacturing and some 800,000 across the wider industry, we accounted for 10% of total UK goods exports in 2022, with more than 150 countries importing UK produced vehicles, generating £94 billion of trade.
- The automotive sector also supports jobs in other key sectors, including advertising, chemicals, finance, logistics and steel. Many of these jobs are outside London and the South East, with wages that are around 14% higher than the UK average.



£77.7 billion turnover – up 19.9%

£16.1 billion GVA – down -3.1%

Vehicle production down -6.0%

Vehicle registrations down -5.3%

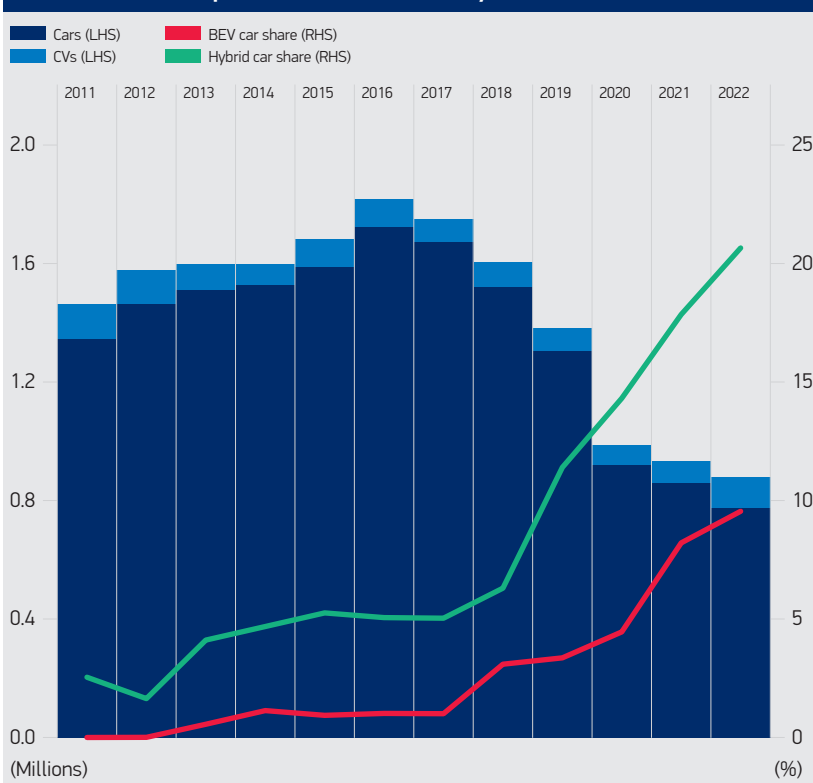
PRODUCTION & EXPORTS

UK vehicle production declined -6% in 2022 to 876,614 units. Global supply chain challenges continued to negatively impact UK production, limiting the ability of manufacturers to build vehicles in line with demand. The dataset for 2022 also reflects significant changes to UK capacity, with the loss of production at two volume manufacturing sites, one permanently and one temporarily as a result of a transformation to a new vehicle type.

Despite these challenges, UK factories turned out a record 234,066 battery electric (BEV), plug-in hybrid (PHEV) and hybrid (HEV) electric vehicles, with combined volumes up 4.5% year-on-year to represent almost a third (30.2%) of all car production. Total BEV production rose 4.8%, with hybrid volumes up 4.3%.

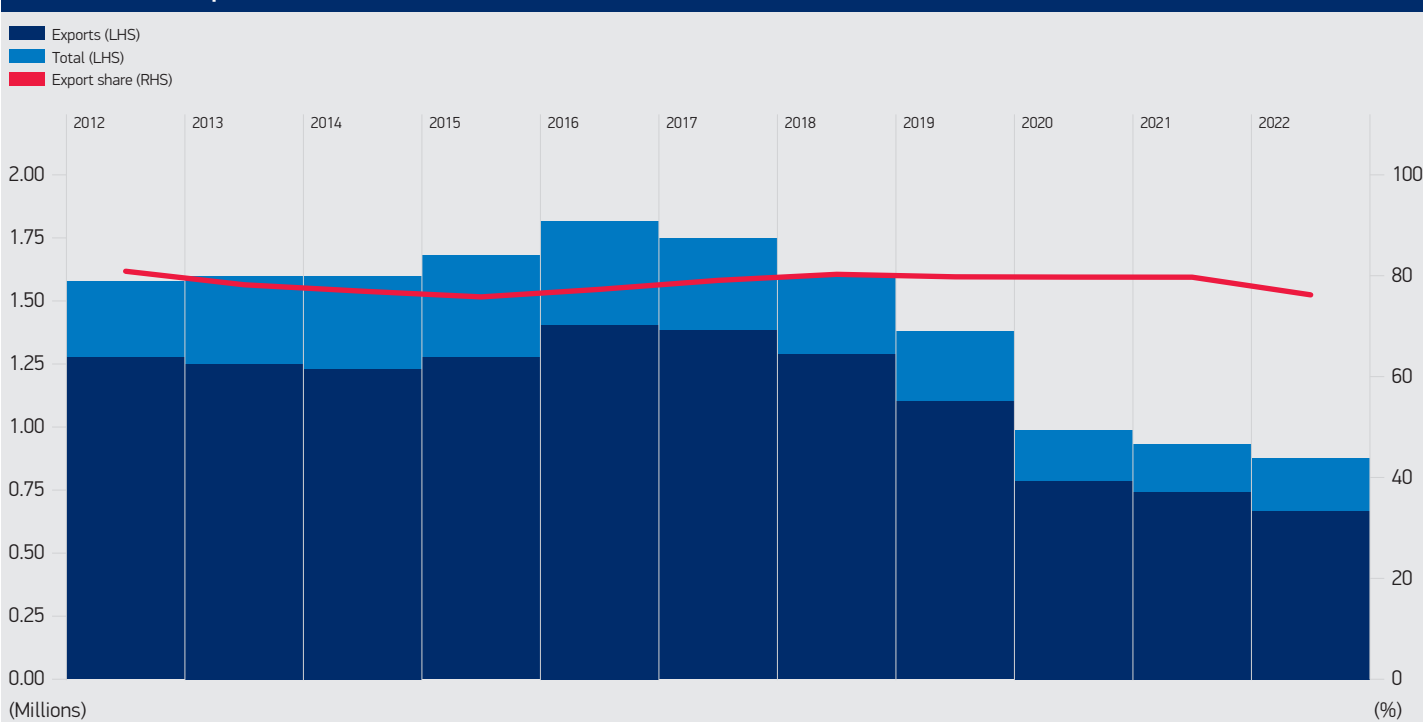
In 2022, 76.2% (668,029 units) of all vehicles manufactured in the UK were built for overseas markets. Electrified vehicles represented 44.7% of the value of all UK car exports, with the value of UK BEV, PHEV and HEV exports now worth more than £10 billion. BEVs, in particular, are critical to the future prosperity of the UK, with their export value rising to £1.3 billion.⁵

Chart 12 UK vehicle production and car BEV/hybrid share



3 <https://media.smmmt.co.uk/december-2022-uk-car-manufacturing/>

Chart 13 UK vehicle production



REGISTRATIONS

Despite underlying demand, pandemic-related global parts shortages saw overall vehicle registrations for the year fall -2.0% to 1.61 million in 2022.

However, by the end of the year, the UK new car market had recorded its fifth consecutive month of growth and, while these green shoots of recovery were welcome, they were not enough to offset the declines recorded in previous months, leaving the 2022 market still almost 700,000 units below pre-Covid levels.

Sales of battery electric vehicles (BEVs) have been rising steadily since 2019 and, by 2022, accounted for 16.6% of all car registrations, surpassing diesel for the first time to become the second most popular powertrain after petrol.⁶ With plug-in hybrids (PHEVs) also taking a 6.3% market share, plug-in cars accounted for a combined 22.9% of new registrations in 2022 – a record high. Hybrid electric vehicles (HEVs) also enjoyed growth in 2022, rising to an 11.6% share of the car market.

Constrained supply in 2022 saw many manufacturers prioritise deliveries of the latest zero emission-capable models. Fleets and business buyers accounted for two thirds (66.7%) of all BEV registrations and 74.7% of the volume gain.

For vans, despite strong order books throughout 2022, registrations continued to be held back by persistent supply chain issues, resulting in limited model availability. This left the market -22.9% down on pre-pandemic 2019, marking the fewest LCV registrations since 2013.⁷ However, despite the significant economic and supply challenges faced by the sector, demand for battery electric vans grew, with deliveries up 31.2% to 16,744 units in 2022.

Chart 14 UK new car registrations by fuel type

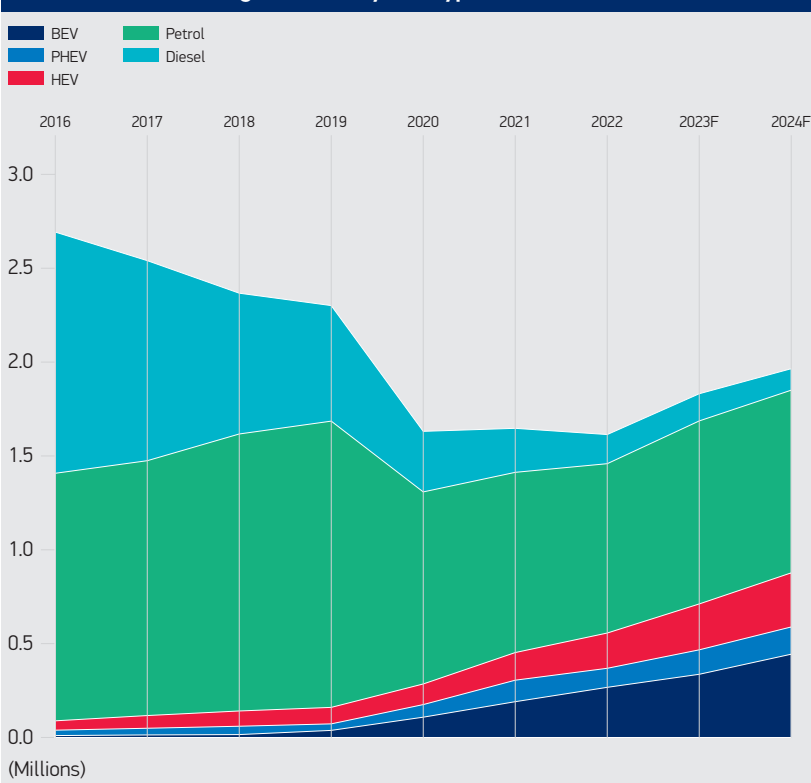
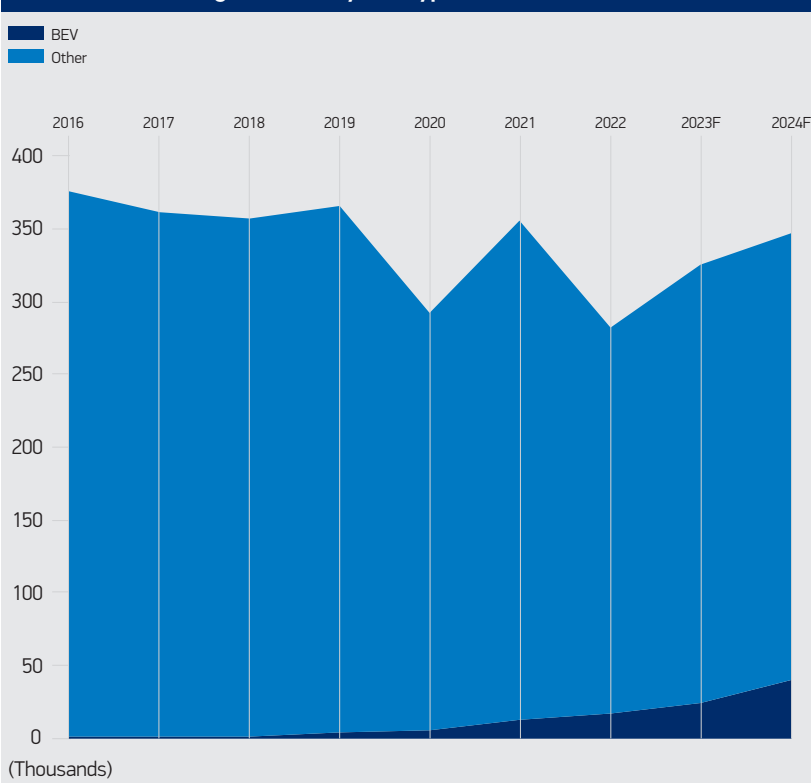


Chart 15 New LCV registrations by fuel type



6 <https://media.smmmt.co.uk/december-2022-new-car-registrations/>
 7 <https://media.smmmt.co.uk/december-2022-new-lcv-registrations/>

SIGNATORIES

Signatories to this report	UK Brands
Alexander Dennis Ltd	Alexander Dennis
Aston Martin Lagonda Ltd	Aston Martin, Lagonda
Autocraft	Autocraft
Bentley Motors Ltd	Bentley
BMW Group UK, including Rolls-Royce Motor Cars Ltd	BMW, MINI, Rolls-Royce
Caterpillar	Caterpillar, Perkins
Ford Motor Company Ltd	Ford
JLR	Jaguar, Range Rover, Defender, Discovery
Leyland Trucks	DAF Trucks
Lotus Cars Ltd	Lotus
McLaren Automotive	McLaren
Nissan	Nissan
Michelin Tyre plc	Michelin
Scania UK	Scania
Stellantis	Vauxhall, Peugeot, Citroën, Fiat, DS, Jeep, Alfa Romeo, Maserati, Abarth, Fiat Professional
Toyota (GB) plc Toyota Motor Manufacturing (UK) Ltd	Lexus, Toyota
Unipart	Unipart Logistics
Volkswagen Group (UK) Ltd	Audi, Cupra, SEAT, ŠKODA, Volkswagen Passenger Cars, Volkswagen Commercial Vehicles
Volvo Car UK Ltd	Volvo

REFERENCES AND ONLINE CONTENT

References and detailed data on the automotive industry performance can be found at:

www.smmmt.co.uk/sustainability

The webpage also contains links to signatories' sustainability websites.

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THE SOCIETY OF MOTOR MANUFACTURERS AND TRADERS LIMITED

71 Great Peter Street, London, SW1P 2BN

Tel: +44 (0)20 7235 7000

E-mail: communications@smmt.co.uk



@SMMT



SMMT

www.smmt.co.uk

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