

# 2017 UK AUTOMOTIVE SUSTAINABILITY REPORT

18<sup>TH</sup> EDITION – 2016 DATA





► The UK automotive industry had another successful year in 2016, with production achieving the best performance since the turn of the century, record exports and an all-time high for new vehicle registrations. At the same time, manufacturers delivered on key environmental indicators, including CO<sub>2</sub>, energy, water and waste per vehicle produced, while improving their economic and social performance.

This progress puts the industry on a good footing to meet the challenges ahead, not least Brexit, skills shortages and the need to improve air quality and CO<sub>2</sub> emissions. 2017 sees the introduction of a new test cycle to measure CO<sub>2</sub> and fuel economy which will deliver more representative figures for consumers. At the same time, new vehicle types will have to comply with the toughest new emissions standards in the world, including Real Driving Emissions tests designed to measure cars' on-road performance for the first time.

And, as this latest report shows, progress remains strong on a number of key sustainability indicators. UK manufacturers have continued to improve the environmental performance of the vehicles and components they produce, as well as within their manufacturing processes. In 2016, average CO<sub>2</sub> emissions per vehicle fell -2.9%; energy use fell -3.2%; water use fell -3.5%; and waste to landfill was down -33.7%. In fact, almost 90% of waste was recycled in 2016.

Despite the increase in production, industry employment levels remained stable at 169,000 employees. Productivity is now at a record high, with 11.8 vehicles produced for each person employed in the industry. Investment in skills rose, with the number of days' training per employee up 9.1%. Despite this, skills shortages persist – and we continue to work closely with government to help develop existing talent and attract the employees of the future. Government's Industrial Strategy will be integral to this issue, as well as helping industry remain competitive to attract further inward investment and enable growth and innovation, particularly in the development of next generation connected, autonomous and low-emission vehicle technology.

The pathway to improved CO<sub>2</sub> and air quality performance will be reliant on a variety of technologies: improved diesel and petrol vehicle technology, as well as alternative sources such as electricity and hydrogen. That's why SMMT advocates a technology-neutral approach to fleet renewal, promoting the right technology for specific driving needs. While industry continues to invest in alternatively fuelled vehicles – with more than 60 different models available on the market – uptake is still low. Modern petrol and diesel

vehicles with advanced engine and emissions control technologies will continue to be fundamental to air quality solutions, while diesels will remain vitally important in lowering CO<sub>2</sub> emissions.

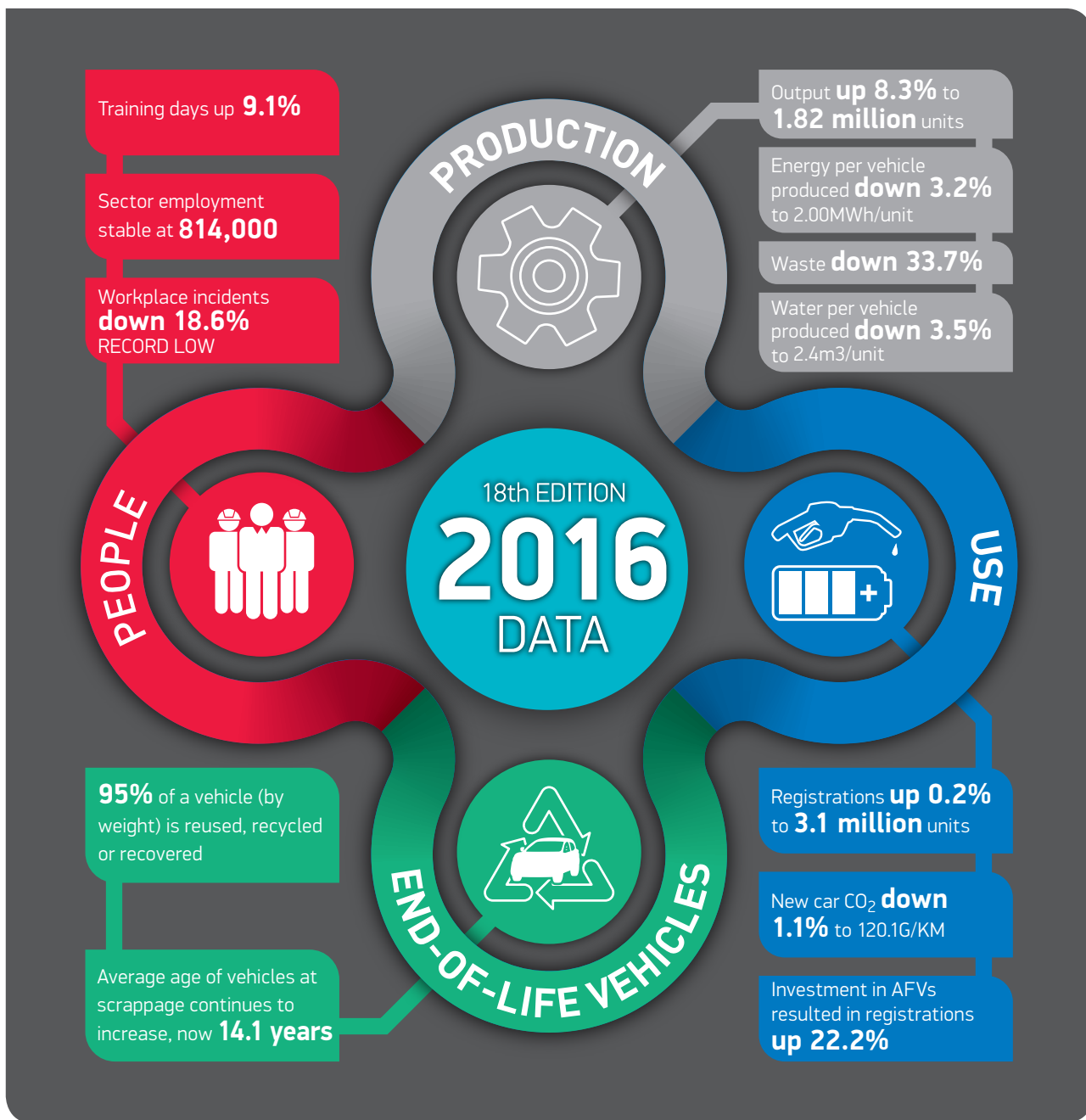
Industry recognises and is responding to the air quality challenge, to climate change and to the need to deliver on its social responsibilities. It makes a vital contribution to the UK economy and we will continue to engage with policymakers to ensure the industry remains competitive and innovative – and, importantly, rooted in the UK to help maintain jobs and maximise the economic potential of the nation.

For this report, we welcome three new signatories: Lotus, McLaren Automotive and ATP, a remanufacturing company, further enlarging the breadth of businesses this report covers. Lotus and McLaren Automotive join Aston Martin to give the report additional insight into the small volume manufacturing sector and you'll find a specific focus on this sector on page 11. The total number of signatories has risen to a new high of 28, representing an even broader range of member company activities.

In addition, for the first time, SMMT has undertaken a materiality assessment, examining current, emerging and future priorities of vehicle manufacturers and suppliers, as well as other stakeholders, including government advisors, academics, charities, environmental NGOs and trade unions. The findings, which you can read on page 25, will help shape future reports, ensuring they continue to provide a true reflection of the industry and its progress in improving sustainability, aiding strategic planning, operational management and future investment decisions. ■

A stylized, handwritten signature in blue ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

**Mike Hawes** Chief Executive  
The Society of Motor Manufacturers and Traders (SMMT)



**PRODUCTION** (pages 5-13)

- n Automotive manufacturing turnover up 9%
- n UK vehicle production 1.8 million, up 8.3%
- n Energy use dropped by 3.2% per vehicle
- n All relative environmental performance improved

**PEOPLE** (pages 14-15)

- Signatories' employment up 11.8%
- Number of training days per employee up 9.1%
- Accident rate fell to record low, down 5%
- Staff turnover just 5%

**USE** (pages 16-22)

- New vehicle registrations up 0.2% to record 3.1 million
- Alternatively Fuelled Vehicles volumes took 3.3% market share
- New car CO<sub>2</sub> emissions fell 1.1% to 120.1g/km
- Number of low carbon buses on the road increased to 3,700, 4.2% of bus parc

**END-OF-LIFE VEHICLES** (pages 23-24)

- 95% ELV target met in 2016
- Increasing remanufacturing extending vehicle life cycle

## SUMMARY: KEY PERFORMANCE INDICATORS (KPIs)

		Units	2000	2015	2016	% change 2016 on 2015
<b>AS</b>	Number of signatories		17	27	28	3.7%
<b>ECONOMIC PERFORMANCE</b>						
<b>WI</b>	Automotive manufacturing sector turnover *	(£ billion)	47.9	71.0	77.5	9%
	Expenditure on Business R&D **	(£ billion)	0.9	2.5	2.5	0.0%
	Total number of cars and CVs produced	(million)	1.8	1.68	1.82	8.3%
	Total new car and CV registrations	(million)	2.5	3.06	3.07	0.2%
<b>AS</b>	Signatories' combined turnover	(£ billion)	21.0	75.1	74.9	-0.2%
<b>VMs</b>	Total number of vehicles produced	(million)	1.6	1.66	1.81	8.9%
<b>ENVIRONMENTAL PERFORMANCE</b>						
Production inputs						
<b>AS</b>	Total combined energy use	(GWh)	7,013	4,588	4,673	1.9%
<b>VMs</b>	Energy used per vehicle produced	(MWh/unit)	3.9	2.07	2.00	-3.2%
<b>AS</b>	Total combined water use	(000m <sup>3</sup> )	6,090	5,344	5,516	3.2%
<b>VMs</b>	Water use per vehicle produced	(m <sup>3</sup> /unit)	5.3	2.5	2.4	-3.5%
Material outputs						
<b>AS</b>	Total combined CO <sub>2</sub> equivalents	(tonnes)	2,182,926	1,316,989	1,344,026	2.1%
<b>VMs</b>	CO <sub>2</sub> equivalents per vehicle produced	(tonnes/unit)	1.1	0.58	0.56	-2.9%
	Volatile Organic Compounds emissions (cars)	(g/m <sup>2</sup> )	55.0	33.6	32.2	-4.2%
	Volatile Organic Compounds emissions (vans)	(g/m <sup>2</sup> )	59.0	50.3	50.6	0.5%
<b>AS</b>	Total combined waste to landfill	(tonnes)	80,399	4,415	3,180	-28.0%
<b>VMs</b>	Waste to landfill per vehicle produced	(kg/unit)	40.3	2.0	1.4	-33.7%
Vehicle use						
<b>AC</b>	Average new car CO <sub>2</sub> emissions	(g/km)	181.0	121.4	120.1	-1.1%
<b>SOCIAL PERFORMANCE</b>						
<b>WI</b>	Number of jobs dependent on the sector***		907,000	814,000	814,000	0.0%
<b>AS</b>	Combined number of employees		100,036	98,161	109,890	11.9%
	Number of lost-time incidents per 1,000 employees		13.4	2.0	1.7	-18.6%
	Number of training days per employee		3.8	2.7	2.9	9.1%

Key – See p10 for full details. **AS** Signatories **WI** Whole Industry **VMs** Vehicle Manufacturers only

### MATERIALITY ASSESSMENT

To gather insight on the relative importance of specific environmental, social, governance and other issues to the stakeholder base and the automotive industry itself, SMMT appointed an external organisation to conduct a materiality assessment. The study identified a wide range of issues, most of which were ranked as important or very important to the industry and external stakeholders. We plan to use the outcomes to inform future sustainability reporting.

The assessment consisted of desk-based research, interviews with external stakeholders and a stakeholder workshop to review findings. A wide range of stakeholders were consulted with academics, charities, consultancies, environmental NGOs, government advisory body and trade unions. To draw on the assessment conclusions, this report will explore the most material issues identified.

### GLOBAL TRENDS

During the materiality assessment, external stakeholders and SMMT members highlighted the importance of global mega trends – such as the sharing economy, urbanisation, climate change, air quality, an ageing population, connected cities and alternative powertrains – and their impact on the automotive industry and the future of mobility. These trends will interlink and are widely expected to create new business models and innovations.

The trends are developing in the context of globalisation and geopolitical uncertainty. These can manifest themselves into significant political shifts, as evident in 2016 in the US and the Brexit vote in the UK (see page 10). These changes create business uncertainty, with diverging legal and regulatory schemes, currency fluctuation and customers' expectations, which need to be taken into account and will impact on the automotive sector.

**PERFORMANCE**

- Vehicle output up 8.3%
- Energy per vehicle down 3.2%
- Relative waste and water use down 33.7% and 3.5% respectively
- Increased output of premium and luxury vehicles

**REASONS**

- Global economic recovery, including in the EU
- Benefits of recent inward investment
- Ongoing focus to minimise environmental impact and improve competitiveness
- Starting on the road towards digital manufacturing
- Working with government to ensure UK competitiveness

**FUTURE CHALLENGES**

- Creating shared value by creating economic and social benefits
- Improving competitiveness and productivity to attract future investment
- Addressing the challenges of Brexit and wider political uncertainty
- Adapting to requirements of an ageing population

► **The UK automotive industry has been exceptionally successful in recent years, with car production at its highest level since 1999, exports at record level and an increasingly competitive UK supply chain. Now the automotive sector is going through further transformation, including, for example, digitalisation and increasing automation of manufacturing. It is expected that the industry will change more in the next five years than in the past 50. At the same time, political, economic and social changes, notably in the UK and US, create uncertainty for businesses. This uncertainty was affirmed during the materiality assessment and could become the most significant challenge to the industry’s competitiveness in a generation.**

**UK AUTOMOTIVE PRODUCTION**

UK car production achieved a 17-year high in 2016, with 1.73 million cars produced by 15 manufacturers. This was an 8.3% rise on 2015 car production, and a significant contribution to the 8.3% overall increase in total vehicle production. Ten brand new car models began production in the UK last year, nine of them from premium brands. This helped make the UK the second biggest producer of premium cars after Germany and the third biggest car producer overall in Europe.

As a proportion of the mix, cars accounted for 95% of UK vehicle production and 96% of UK vehicle exports in 2016. Light vehicle engine output grew 7.5%, to 2.54 million units, supported by the new Jaguar Land Rover plant in Wolverhampton and this provided a boost to the UK’s domestic demand for engines, which grew significantly in 2016. Exports of UK engines still accounted for the majority of production, with 55% of those produced destined for export markets. The UK has a reliance on Europe, which supplies a significant proportion of components that go into UK built vehicles, highlighting the critical importance of tariff-free and barrier-free trade for the UK automotive sector.

Exports of UK produced cars grew 10% in 2016, with 78% of production intended for external markets. The majority of which (56%) was traded with the EU, a slight decline in terms of percentage share. Exports of cars to the rest of the EU still grew 7% in 2016, to just under 750,000 for the year in total. UK car exports to non-EU markets were stronger still with growth of 13%, rising from an increase in popularity for UK premium cars in markets such as the US.

UK Commercial Vehicle (CV) output remained broadly steady in 2016, with an output of 94,000 vans, trucks, buses and coaches, a small 0.6% decline. Exports of UK built CVs represented 4% of total UK vehicle exports, with 16.2% growth in 2016. The number of CVs manufactured for export markets continued to grow, with 58.4% of production exported, the largest proportion in seven years. This was driven by an increase in exports to the

EU, which grew 25% in 2016 and accounted for 94% of total CV exports. The counterbalance of a 48% reduction in CV exports to the rest of the world was led by a decline in Asian demand. The overall picture for UK vehicle production remains positive despite uncertainties with an independent report by Auto Analysis revising projections for UK vehicle production in 2017 to reach 1.9 million vehicles, led by strong growth to export markets for both cars and CVs and increased investment in the UK providing a boost to engine production. Many of the projections for future production are based on assumptions of transition as the UK leaves the EU, with the latest report suggesting the UK may fall just short of its 2 million vehicle output potential in 2020.

**DHL’S NEW EAST MIDLANDS HUB**

DHL’s hub at the UK’s East Midlands Airport demonstrates excellence in sustainability. Following an extension investment of €23 million at the 174,000 square metre site, the hub improves delivery services in the UK by handling 450 trucks daily and serving 24 incoming and 24 outgoing flights per day. The facility includes energy efficient features such as internal and external LED lighting and a solar photovoltaic system that enables on-site power generation. 100% of the hub’s electricity comes from renewable sources. In addition, waste recycling since 2004 has increased from 77.6% to 90.5%.



# PRODUCTION

## PRODUCTIVITY

Using official statistics, we can estimate that each automotive manufacturing employee contributed £130,000 of added value to the industry in 2016. At current prices, value added per employee has more than doubled over the past eight years led by stable employment levels and exceptionally strong growth of added value, the sector's contribution to GDP. The effects of industry restructuring and investment continue to feed into sector performance with advances in manufacturing automation. Productivity growth across the rest of the sector, including in vehicle distribution and repairs, continued to improve in 2016.

## TURNOVER

The success of automotive manufacturing in 2016 can be seen in the growth of vehicle production and exports. Moreover, the success of the sector including retail, distribution and repairs, has been boosted by a record number of new cars demanded by UK customers, with 2.7 million registered in 2016, up 2.3% on the previous year. Automotive manufacturing turnover continues to climb to an estimated £77.5 billion (SMMT estimate based on official data), a new high and up 9% on 2015. SMMT estimates of value added were £21.5 billion, up 7.3% on 2015.

Signatories reported £74.9 billion turnover (note; signatories include more than just manufacturers), this represented a drop of 0.2% on the previous year. This was mainly the result of one larger signatory showing a downturn, however, many others reported growth.

## RESEARCH AND DEVELOPMENT

Expenditure on business research and development in the automotive sector in 2016 totalled approximately £2.75 billion. This figure is up 10% from £2.5 billion in 2015.

### PSA PEUGEOT CITROËN NEW PARTS DISTRIBUTION STRATEGY

PSA Peugeot Citroën has boosted the efficiency of its parts distribution centre by appointing 30 dealers to act as regional hubs to deliver parts to local dealers three times a day, instead of delivering to 500 outlets across the UK. Those introduced efficiencies helped lower operating costs and provide environmental benefits by reducing the number of trucks on the roads and therefore emissions. The changes also improve customer satisfaction, because parts are available on the day to the majority of the dealers, which means typically cars can be returned to the customers on the same day.



## INVESTMENT DURING 2016

### Castle Bromwich

**Jaguar Land Rover**  
£100 million  
Expand its West Midlands manufacturing

### Wolverhampton

**Jaguar Land Rover**  
£450 million  
Engine manufacturing centre

### Solihull

**Jaguar Land Rover**  
£250 million  
1,300 new jobs investment in lightweight technologies announced  
All-new Discovery revealed

### Bridgend

**Ford**  
£181 million  
New low-emission engines at Bridgend plant

### Sunderland

**Nissan**  
£100 million  
Production of the New Juke  
New Qashqai and X-Trail models safeguards 700 jobs into next decade  
**Infiniti**  
300 new jobs  
Production of the Q30 and QX30 models

### Swindon

**Honda**  
500 new employees support production of new 5-door Honda Civic  
£200 million  
Manufacturing centre in Swindon to produce the next generation 5-door Civic

ENVIRONMENTAL PERFORMANCE

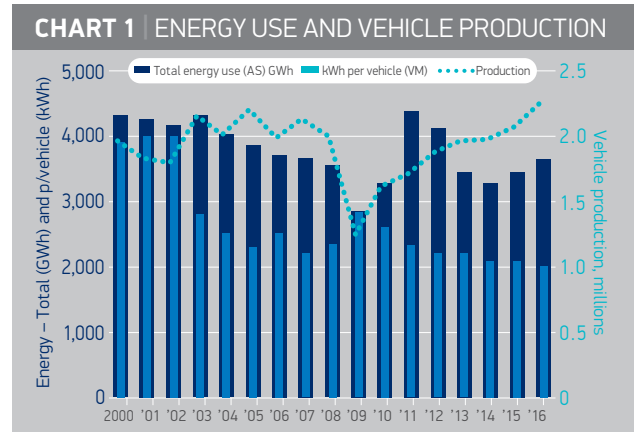
► The UK automotive industry constantly strives to improve its performance. Automotive production processes are the perfect example of where improved efficiency can reduce costs, increase competitiveness and minimise the impact on the environment. Further implementation of digital manufacturing and automation will most likely further improve the overall efficiency and the resource efficiency of automotive production processes.

ENERGY

In 2016, energy use per vehicle produced decreased by 3.2%, to reach 2MWh (Chart 1, right). This was achieved thanks to ambitious in-house targets and increased production levels. It should be noted that the relative figure also includes energy used by some signatories to produce engines and powertrains destined for export. Recent increases in engine production capacity could impact the overall industry performance.

In 2016, vehicle manufacturers' (VMs) absolute energy usage increased by 5.2%, which followed an 8.9% increase in production.

The latest energy management system, ISO 50001, has been embedded in the production processes of four signatories: Bentley, Honda, Leyland Trucks and Toyota.



RENEWABLE ENERGY

In 2016, the number of signatories reporting on their on-site renewable energy production remained stable. Eleven signatories produced 57.7GWh of energy, which would be sufficient to power 14,420 homes. This represents a 3.2% drop on the previous year's performance. This may be due to less favourable weather conditions, for example less wind. In addition, one signatory reported metering issues.

CO<sub>2</sub>

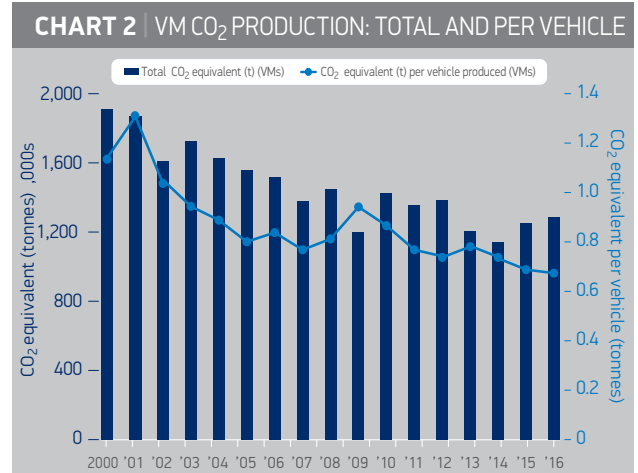
CO<sub>2</sub> emissions are calculated based on the official conversion factors for each energy stream used by manufacturers. Last year, Defra reviewed its conversion factors to account for a lower carbon footprint of energy production in the UK, resulting in industry figures for the past two years being revised.

VMs' absolute CO<sub>2</sub> emissions increased by 5.6% year on year, in line with the energy usage increase of 5.2%. CO<sub>2</sub> per vehicle produced was down by 2.9% to 0.56 tonnes of CO<sub>2</sub> equivalent. Electricity accounted for 43.3% of the overall energy used by VMs. Green energy made up 11% of all the electricity purchased in 2016 (Chart 2, below).

ENERGY SAVING AT MCLAREN AUTOMOTIVE LIMITED

The McLaren Technology Centre (MTC) was designed to maximise natural light and LED energy-efficient bulbs were installed throughout to reduce energy usage. MTC has two combined heat and power systems (CHP) installed which reuse the heat produced during the energy production elsewhere in the building. MTC also uses a man-made lake located next to it, to assist the building's cooling system by regulating the temperature and decreasing the need for cooling towers.

Through efficient use of the existing Building Management System, McLaren Automotive Limited only increased electrical consumption in the Production Centre by 20% in 2016 compared with 2015, despite introducing an additional shift and almost doubling total production. The second shift started in February 2016 with the new roles adding approximately 40% to the existing headcount in the Production Centre. However, by the end of 2016, electricity consumption was reduced to below 2015 levels in the same period.



## PRODUCTION: ENVIRONMENTAL PERFORMANCE

Some signatories such as Bentley Motors, Toyota Motor Manufacturing UK and McLaren Automotive have had their carbon emission reductions certified annually by Carbon Trust, to ensure continued improvement.

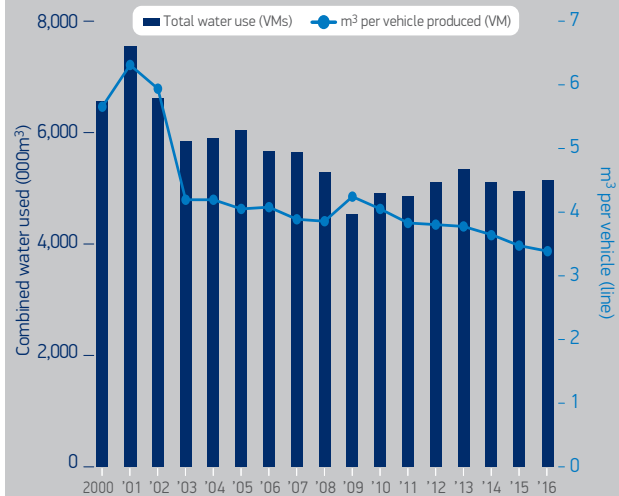
Honda Motor, Nissan Motor Company, PSA Peugeot Citroën and Toyota Motor Corporation have all now committed to science-based sustainability targets covering their global operations. This sets targets in line with the level of decarbonisation required to keep global temperature increase below 2°C compared to pre-industrial temperatures.

### WATER

Water use per vehicle produced has dropped 3.5%, to a new low of 2.4m<sup>3</sup> per vehicle. This could be attributed to further improvements in water reuse, and painting processes where most water is used. However, due to the overall increase in production levels, absolute use increased by 3.2%.

1.2% of the overall water used by VMs came from sources other than mains water such as rainwater harvesting (Chart 3, right).

**CHART 3** TOTAL VM WATER USE AND ON A PER VEHICLE BASIS



### LEYLAND TRUCKS IMPROVES TESTING FACILITIES

In 2016, the first phase of improvements for Leyland Trucks' dynamometer and brake testing facility involved the installation of a dyno, which includes regenerative dyno and brake technology. It will generate electricity during the test cycle and reduce energy consumption by more than 300,000 kWh/year. This more efficient facility will also provide significant fuel savings due to reduced test cycle times.

### FORD'S DAGENHAM CUTS WATER USAGE

The installation of a new production line has helped Ford's Dagenham Engine Plant reduce its water use by 98% while reducing energy. A two-year, £475 million investment (including £9 million from the government), enabled the installation of the first line at Dagenham to use Minimum Quantity Lubrication (MQL). MQL replaces the traditional need for coolant (a mix of oil and water) to keep machines running at the correct temperature by replacing it with a fine mist of lubricant. In the past, about 100,000 litres of coolant had to be cooled to keep it at the right temperature. The water saving equates to around 17.5 million litres per year – enough to fill seven Olympic-sized swimming pools. MQL also means less oil in the air and around the general environment, which also saves water needed for cleaning.



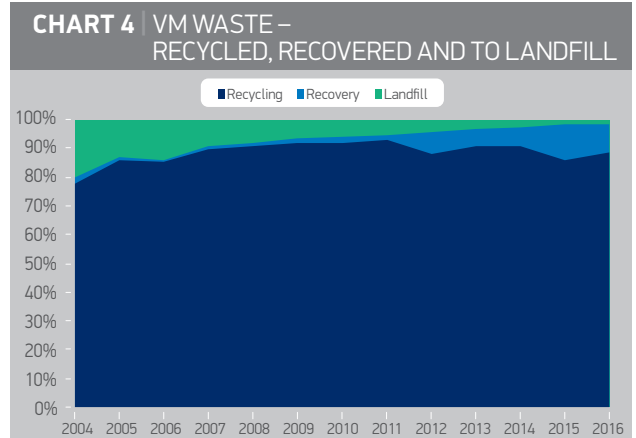


**WASTE**

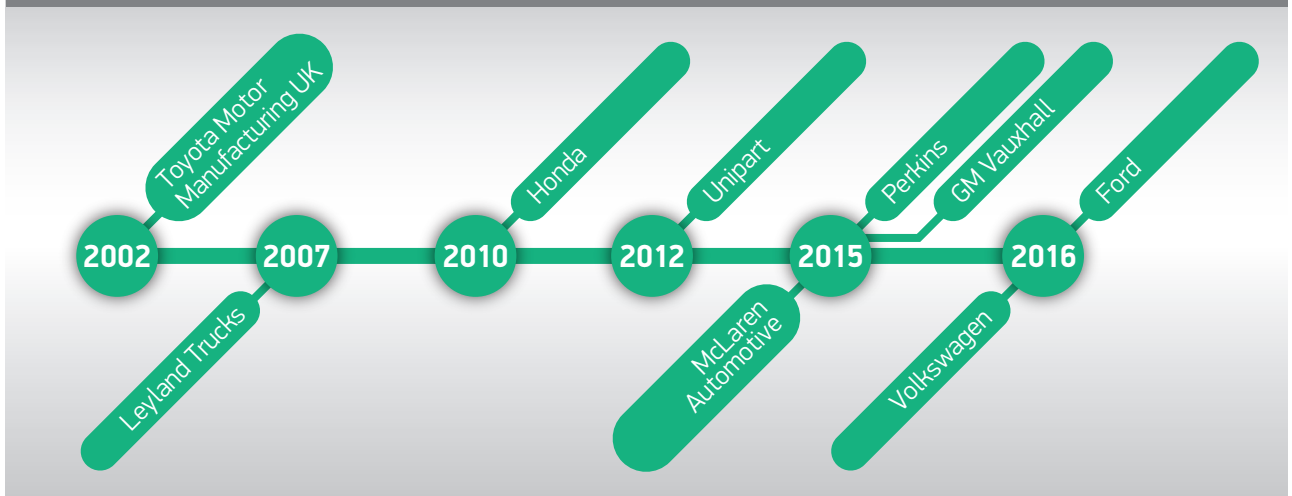
Effective landfill diversion techniques continue to deliver gains, resulting in waste to landfill falling to a new low of 0.9% of all waste produced.

Almost 90% of waste was recycled in 2016. Vehicle manufacturers also reduced waste to landfill per vehicle by 33.7% year on year.

One of the contributing factors to this achievement is a continued close cooperation between VMs and suppliers to reuse and recycle parts packaging (Chart 4, right).



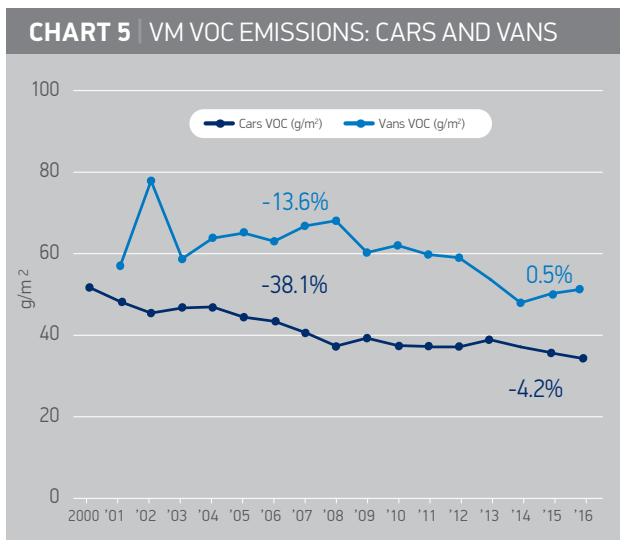
BY 2016, THE FOLLOWING 10 SIGNATORIES WERE ZERO TO LANDFILL



**VOLATILE ORGANIC COMPOUNDS (VOCs)**

VMs have invested heavily in the most efficient paint shops, which enable them to comply and go beyond the strict legal requirement of limiting Volatile Organic Compounds (VOC) emissions.

In 2016, VOC from painting cars declined by 4.2% year on year, while for vans it rose marginally by 0.5% (Chart 5, below). Both car and van values are well below the legal limit.



**MICHELIN DRASTICALLY REDUCED SOLVENT EMISSIONS**

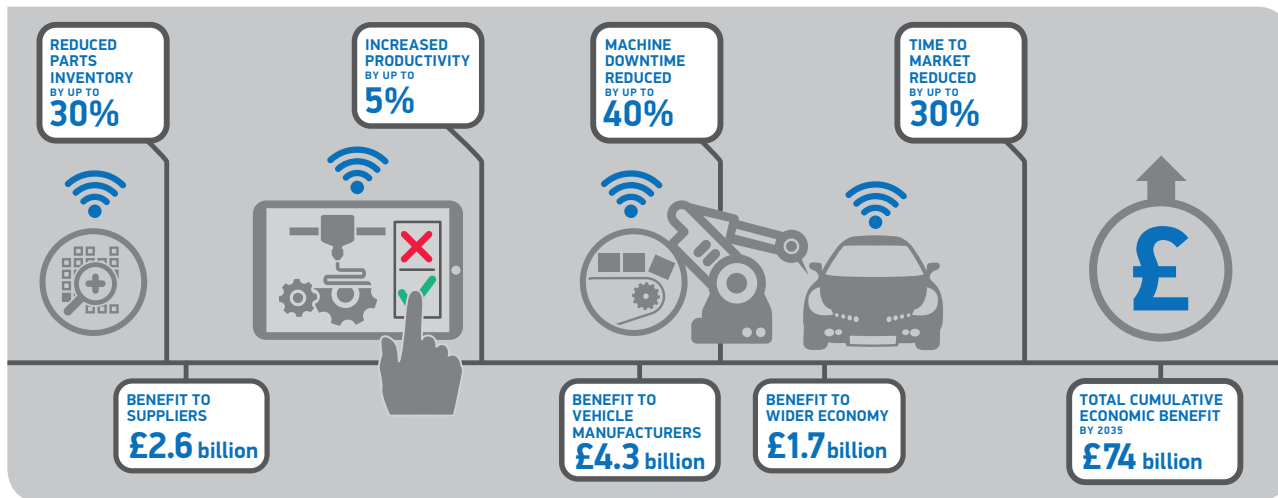
Michelin invested heavily in the production and remanufacturing process at its Stoke-on-Trent factory to reduce emissions from the solvent-based rubber solution used to coat tyres. The production line was upgraded to enable tyre production without the main solvent-based rubber solution process. Also both remanufacturing processes at the site were integrated into the new production line. Consequently, in 2016 absolute solvent use and mass emissions were reduced by almost 95% in comparison with the 2011 performance.



# PRODUCTION

## DIGITALISATION OF MANUFACTURING

► Digital technology in the form of the personal computer and the internet has already transformed the way we live and work. The ubiquitous use of computing has caused the rapid development of the digital economy.



To remain competitive, the automotive industry has to rapidly adapt to growing trends with the digitalisation of manufacturing (also referred to as ‘Industry 4.0’) playing a critical role. Digitalisation, alongside automation has also been identified by the materiality assessment as one of the most important areas for the sector from the external stakeholders’ perspective, due to its impact on manufacturing-related jobs. However, it can be reasonably assumed that as new job roles are created as a result of digitalisation, a growing number of students will begin to specialise in topics that will enable them to secure those jobs, while those already employed in manufacturing will retrain.

In 2016, SMMT published **The Digitalisation of the UK Automotive Industry**. It showed that if UK automotive continues to embrace digital manufacturing, leading to fully digital vehicle manufacturing factories (in addition to digitalisation of the supply chain), there could be £8.6 billion value added to the UK economy every year up to 2035. The next step in the digitalisation of automotive production will be to connect vehicle manufacturers with their supply chains – for example, to monitor supply deliveries in real time and

immediately assess the impact of traffic disruption on the production schedule. From the supply chain’s perspective, having greater visibility of changes in customer demand will enable improved scheduling, reduced downtime and overtime, as well as reduced component inventory.

To ensure that UK automotive enjoys the full benefits of digitalisation, the government needs to put this technological change at the heart of the Industrial Strategy.

### INDUSTRIAL STRATEGY

The government published a consultation on industrial strategy in January 2017. This recommitment to industrial strategy is strongly welcomed by the automotive sector. If the UK is to retain its position as one of the leading locations in the world for automotive manufacturing, industrial strategy must provide a long-term vision and build upon the partnership approach the automotive sector currently enjoys through an automotive sector deal. It should also prioritise science, research and innovation, developing skills, upgrading infrastructure, supporting businesses to start and grow, encouraging trade and inward investment, delivering affordable energy and regional/local measures.

### BREXIT

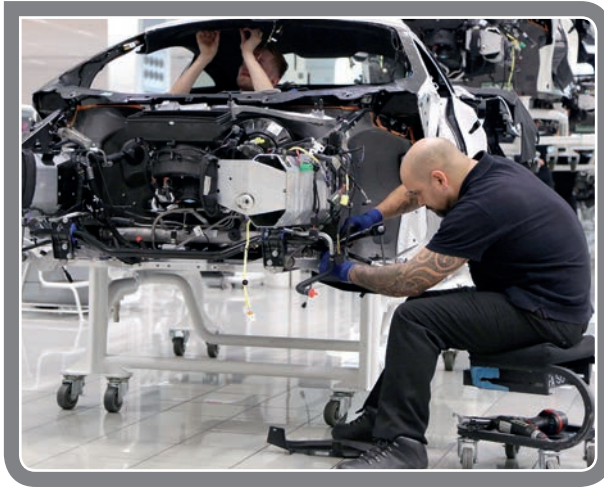
The UK’s withdrawal from the European Union (EU) is likely to have a significant impact on automotive manufacturing. The automotive sector is a highly integrated global industry and has built its success on favourable trading conditions resulting from the UK’s membership of the single market. This has allowed UK automotive to trade freely across the EU without incurring the cost of tariff and non-tariff barriers or customs checks; access talent from right across the continent; and enjoy preferential trading terms with numerous global markets through EU free trade agreements. The introduction of new barriers to trade with the EU risks undermining the competitiveness of the automotive sector.

### The automotive sector therefore wants the UK to:

- Retain the benefits of the single market and secure tariff and customs free automotive trade with the EU;
- Guarantee regulatory certainty through harmonisation of product regulation and type approval;
- Ensure that UK automotive has unrestricted and reciprocal access to EU talent;
- Secure the full accumulation of UK and EU content for the purposes of free-trade deals, including with the EU; and
- Secure the closest possible long-term relationship between the UK and the EU.
- Manage the transition from EU membership to a new trading relationship by continuing existing trading arrangements with the EU and third country markets in the event of no deal being agreed.

**SMALL VOLUME MANUFACTURERS**

► **SMMT welcomes two new small volume manufacturers (SVMs) as signatories to the report this year; Lotus and McLaren Automotive, which, along with Aston Martin, represent a distinctive element of the UK automotive sector.**



The UK has the largest number of small volume producers in the world, making a diverse array of vehicle types from sports cars to limousines. The three SVM signatories are all sports and luxury car producers, and iconic global brands. Even though they are made in small numbers, they are exported to markets across the globe.

These SVMs each produce less than 10,000 units per annum, yet they are significant contributors to jobs, the manufacturing base and the overall economy in the UK. Both Aston Martin and McLaren Automotive have announced multimillion pound investments in new plants in the UK. While their environmental performance per vehicle might be high in absolute terms, reflective of their

low volumes and often complex construction, they have delivered a year-on-year improvement above those seen by the volume manufacturers.

Although signatories have seen impressive net growth in output and economic metrics, they still face considerable pressure to remain competitive and grow further. Key concerns for SVMs are around the need to meet ever stricter regulatory requirements across the globe. While they may be luxury brands, they are still small businesses and typically have fewer employees to manage and implement the changing global regulatory landscape.

SVMs are particularly concerned by a future outside the EU and a loss of influence in shaping forthcoming regulations. This comes with the risk of policymakers not taking into account that SVM products often have far less impact on the environment or in accident statistics as they are sold in such low numbers and typically drive lower annual mileages than more mainstream vehicles.

SVMs would greatly benefit from greater harmonisation of global technical standards, having suitable lead times to implement new regulations and requirements, which are proportional to their economic and technical potential. Because companies such as the three SVM signatories often have to compete in the global marketplace, but only have a small number and limited portfolio of models in which to recoup any investment, measures to support the sector would be most welcome.

**SVM KPIs**

This year, with the additional two new signatories, we are able to showcase the SVM consolidated environmental performance. The KPIs displayed below show a very positive year-on-year trend, thanks to continued technical and operational improvements as well as an increase in production volumes. Only absolute water use increased, and only marginally.

		2015	2016	% change 2016 on 2015
<b>ECONOMIC PERFORMANCE</b>				
Production	(tonnes)	4,729	6,888	45.7%
<b>ENVIRONMENTAL PERFORMANCE</b>				
<b>Production inputs</b>				
Total combined energy use	(MWh)	83,011	81,536	-1.8%
Energy used/output (per tonne shipped)	(MWh/unit)	17.55	11.84	-32.6%
Total combined water use	(000m <sup>3</sup> )	71	72	1.3%
Water use per vehicle produced	(m <sup>3</sup> /unit)	15.0	10.4	-30.5%
<b>Material outputs</b>				
Total combined CO <sub>2</sub> equivalents	(tonnes)	25,722	25,544	-0.7%
CO <sub>2</sub> equivalents per vehicle produced	(tonnes/unit)	5.44	3.71	-31.8%
Total combined waste to landfill	(tonnes)	6	4	-41.7%
Waste to landfill per vehicle produced	(kg/unit)	1.3	0.5	-60.0%

# PRODUCTION: AUTOMOTIVE SUPPLY CHAIN

## AUTOMOTIVE SUPPLY CHAIN

► The automotive industry is reliant on fully integrated supply chains. Record high automotive production levels have benefited the supply chain, but they also would not be possible without a highly efficient and dynamic components production and delivery system. The future of both manufacturers and suppliers is interdependent and the uncertainty of a future outside the EU also challenges supply chain sustainability.

### SUPPLY CHAIN KPIs

In 2016, ATP, a remanufacturing company, became a new signatory to the report, increasing the diversity of participating companies. This report has 11 supply chain signatories representing a wide range of activities, from component production to freight and remanufacturing.

The overall activity level expressed as weight of product produced has dropped year on year. One of the signatories reported closing one of its plants in 2016, which affected the overall year-on-year comparison. One signatory reported using more lightweight materials. Signatories' efficiency in terms of production input and output improved in both absolute and relative terms. Only relative water use increased.

This positive performance can be partially attributed to a long-term close cooperation between vehicle manufacturers and the supply chain, including small and medium-sized enterprises (SMEs), in building a robust UK supply chain capable of competing globally.

An important part of those efforts is ensuring that effective management practices deliver environmental benefits by reducing resource consumption and delivering cost savings. One of the ways of facilitating this is by setting up a minimum environmental requirement suppliers contracts. Out of 28 signatories to this report, 13 require an environmental management standard from their suppliers (e.g. ISO14001) and 16 engage with UK suppliers to improve efficiency.



### SUPPLY CHAIN PRODUCERS' ECONOMIC AND ENVIRONMENTAL PERFORMANCE

		2015	2016	% change 2016 on 2015
<b>ECONOMIC PERFORMANCE</b>				
Output (weight of product shipped)	(tonnes)	575,888	533,033	-7.4%
<b>ENVIRONMENTAL PERFORMANCE</b>				
Production inputs				
Total combined energy use	(GWh)	548.3	478.3	-12.8%
Energy used/output (per tonne shipped)	(MWh/tonne)	0.95	0.90	-5.8%
Total combined water use	(000m <sup>3</sup> )	589	580	-1.6%
Water use/output (per tonne shipped)	(m <sup>3</sup> /tonne)	1.0	1.1	6.3%
Material outputs				
Total combined CO <sub>2</sub> equivalents	(tonnes)	162,136	143,775	-11.3%
CO <sub>2</sub> equivalents/output (per tonne shipped)	(tonnes/tonne)	0.28	0.27	-4.2%
Total combined waste to landfill	(tonnes)	766	708	-7.6%
Waste to landfill/output (per tonne shipped)	(kg/tonne)	1.3	1.3	-0.1%

Data from logistics companies is not included in the table above (to focus on producers of automotive components and so enable per/unit of output comparisons). One signatory left SMMT membership and therefore is no longer a participant in this report.

## UK SUPPLY CHAIN

► **2016 was generally a positive, albeit mixed, year. Many long-term negotiations came to fruition, bringing substantial investment from large global tier one suppliers to address gaps in the UK supply chain.**

These multimillion pound, long-term investments were in line with the trend of recent years set by UK vehicle manufacturers, demonstrating the competitiveness of component manufacture and assembly in the UK.

These results highlight the progress made by SMMT and other key stakeholders in promoting the value of doing business in the UK. Further improvements in the supply chain will be possible with support from government as part of the Industrial Strategy. To date, cross-sector and government collaboration has worked very well, supporting an increase in UK-made content from 36% in 2011 to 41% in 2015.<sup>1</sup>

There is no doubt this positive momentum has been affected by Brexit. While various multimillion pound investments from tier one suppliers and vehicle manufacturers have been welcome, uncertainty has meant some investment decisions may have been put on hold, potentially threatening the long-term development of the UK's supply chain.

In addition to the uncertainty, Brexit raises issues around customs, tariffs and the movement of parts, particularly for the supply chain. The current supply chain is a deeply embedded, complex, cross European network, with crossing borders multiple times through the assembly process. A reversion to World Trade Organisation (WTO) tariffs and implementation of full customs checks at UK borders will have a significant impact on end-user costs.

That said, the opportunity for UK suppliers is still very clear. With post-Brexit investments continuing to come to the UK from vehicle manufacturers, including Nissan, Jaguar Land Rover, Toyota Manufacturing (UK) and McLaren Automotive, suppliers have a significant sourcing opportunity to aim at. The reshoring opportunity for the upstream supply chain, estimated at £2 billion annually, in addition to the £4 billion<sup>2</sup> opportunity for tier ones, should be realised regardless

of Brexit outcomes. And with recent vehicle manufacture commitments to the UK, the sourcing opportunity is arguably the largest the UK supply chain has ever seen. Alongside domestic activity, a weaker pound provides new export opportunities some of which have already been captured, helping to address the UK-EU trade deficit.

One key growth area to explore is in digitalisation of manufacturing. The recently published KPMG and SMMT report on the matter highlighted 30% of the economic benefit generated by the sector would be driven by suppliers. There is a clear opportunity for UK suppliers to leverage productivity from investment in these technologies, enabling global competitiveness and the capture of opportunities both at home and abroad.

In addition to new ways of manufacturing products, a new generation of products will also bring their own wave of opportunity. With sales of ultra-low emission vehicles (ULEVs) accelerating globally, the UK will look to maintain and develop its current competitive advantage in key strategic technologies and capitalise on the resulting supply chain opportunities. Similarly, the proliferation of connected and autonomous vehicle technologies will bring opportunities for new entrants to suppliers looking to increase and diversify their range of products and services.

With events such as the recently launched Automechanika Birmingham, suppliers now have an opportunity to showcase their capabilities to a domestic and international audience. More than 550 exhibitors and 12,000 visitors took part in the 2016 launch and the 2017 show is expected to have been 70% bigger. With SMMT bringing events like Meet the Buyer and Open Forum to the show, SMMT continues to drive the reshoring conversation and provide opportunities for buyers and suppliers to link up and develop new business. ■

### GKN SUPPORTS FORMULA STUDENT

GKN is an official partner of Formula Student, which is aimed at supporting the next generation of young engineers. Run by the Institution of Mechanical Engineers, it is the world's largest student motorsport competition, challenging engineering students from across the globe to design, build and race their own Formula One-style racing car. In 2016, GKN broadcast live from across the four days of Formula Student, while a digital campaign reached more than 1.5 million people via social media. GKN also offered free parts to 60 teams across the world for use on their racing cars. See more at [www.gkn.com/formulastudent](http://www.gkn.com/formulastudent)



## PEOPLE

► UK automotive has a talented and dynamic workforce, characteristics which have been a key factor in its recent successes. This was reflected in the materiality assessment, which identified human capital as a key area to the sector and external stakeholders. To ensure continued growth, there is a need to maintain and build upon these strengths through a holistic approach to skills, delivered through a comprehensive and long-term skills strategy. Such a strategy should focus upon: increasing the take-up of automotive careers; the training, upskilling and retention of people in work; and addressing the skills challenges posed by new technologies and demographic trends (such as the ageing workforce).

The introduction of the Apprenticeship Levy has focussed attention on apprenticeships, which industry welcomes, as long as alternative routes into automotive careers are also developed and well communicated. The innovation agenda is also a priority, with digitalisation of manufacturing and new technologies such as connected, autonomous and alternatively fuelled vehicles presenting both a skills challenge and an opportunity. It is important that the sector's talent pool is primed for the introduction of these technologies, allowing the UK to remain in the vanguard of future development.

### EMPLOYMENT

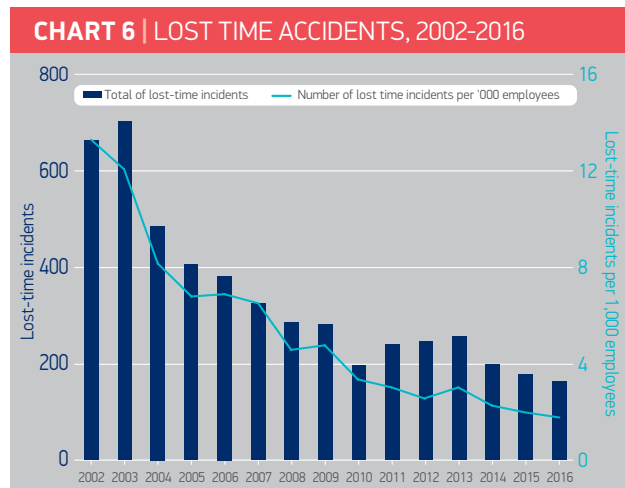
The growth of the sector has been reflected in an 11.9% increase in employment reported by signatories, which reached 109,890 employees in 2016. Signatories reported that around 18% of the workforce in 2016 were agency workers, up from 16% the year before. In line with increased industry growth, the number of jobs dependent on the automotive sector in the UK remained stable at 814,000 in 2016, with direct employment in automotive manufacturing jobs also stable at 169,000.

### STAFF TURNOVER

The automotive industry remained an attractive employer with a high retention rate. This was reflected in a low staff turnover which dropped in 2016 to 5% from 7% the year before.

### HEALTH AND SAFETY

The safety performance of automotive production processes improved significantly over the year thanks to investment in training and technical advances. The number of lost time incidents dropped in 2016 by 0.5% to 1.9 per 1,000 employees (Chart 6, below). Increasing automation of production processes is expected to bring further safety gains. Furthermore, a new standard ISO 45001 on occupational health and safety management systems is currently being developed, which will further improve employees' safety.



### TRAINING

A continued upskilling of its workforce enables the industry to stay competitive and prepare for future challenges. The number of formal training days per employee reported by signatories increased in 2016 by 9.1%, from 2.7 to 2.9 days. This is in addition to informal training such as e-learning, toolbox talks and mentoring, which is not officially measured. Signatories also reported their staff achieving 549 nationally recognised qualifications. In 2016, more than 870 new apprentices were taken on and almost 800 were retained by signatories.

On many occasions, the report's signatories are the main employer in the region they operate in and have strong links with local communities, sometimes with several generations of one family working for the same employer. Therefore, it is particularly important to businesses to maintain engagement and attract local talent.

#### BENTLEY PARTNERS WITH NEW TECHNICAL COLLEGE

Crewe Engineering and Design University Technical College (UTC) opened its doors to students in September 2016. Bentley and other industry partners have been working to deliver the college for 14-18 year olds. Bentley is designing real-world projects for students to work on, as well as offering behind-the-scenes access and the opportunity to learn from Bentley designers and engineers. The partnership with the UTC builds on Bentley's application of the dual-education model applied at its Apprenticeship Training Centre also in Crewe and will help provide a pipeline of local talent for the future.



### CHARITABLE DONATIONS

In 2016, signatories reported cash donations to charities of more than £8.3 million and made other contributions worth more than £4.1 million. Signatories also reported giving in excess of 180,000 hours of employees' time to local causes.

### SUSTAINABLE SOURCING

As part of its corporate social responsibility, the automotive industry also looks beyond its own operations, working closely with and monitoring its supply chain performance. The industry's primary focus is on building capability among suppliers to improve environmental performance, meet legal requirements and promote sound working conditions in their own facilities and those of their suppliers. A number of OEMs uses the Carbon Disclosure Project (CDP) supply chain programme to identify and manage risk in the supply chain.

### ETHICAL SOURCING: MODERN SLAVERY

In response to the Modern Slavery Act in 2015, the UK automotive sector has taken an active role in supporting government ambitions to prevent modern slavery and human trafficking in business and supply chains. The industry has led the way in being among the first to publish publicly accessible modern slavery statements on company websites as soon as reasonably practicable after the end of each financial year. Recognising the increased importance the government has placed on the issue by setting up the first ever government taskforce on modern slavery, the industry has also taken steps to commit to ensuring modern slavery practices do not take part in any part of a company's

business. Through SMMT hosted meetings, and with an input from business organisations such as the CBI, our members share best practices principles to ensure the industry is doing all it can to remove modern slavery practices from the automotive supply chain.

### AGEING POPULATION

People in the UK and around the world are living longer than before. In mid-2014, the average age in the UK exceeded 40 years for the first time. By 2040, nearly one in seven people are projected to be over 75 years old.<sup>3</sup> As a result we need to adapt how we live, commute and work. The significance of this trend was identified during the materiality assessment conducted by SMMT earlier this year.

As the population ages so does the workforce. All employers, including the manufacturing sector, need to plan for the future to enable their employees to work for longer in a productive way. This involves removing barriers to remaining in work, catering to different health needs, adjusting workplace design and encouraging access to new technologies. On some occasions, this would involve retraining staff to undertake less physically demanding tasks or using collaborative robots (cobots). Also, further digitalisation and automation of automotive production processes will most likely result in moving away from manual labour to digital process control. ■

#### ASTON MARTIN SUPPORTING THE COMMUNITY

Aston Martin is partnering with a number of local and national charities. In February 2016, following the successful launch of the 24th James Bond film, Spectre, Aston Martin auctioned one of the DB10s used in the film at a special event at Christies. This extremely rare model was sold for £2,434,500.

This was the only Aston Martin DB10 to be made available for public sale, with only 10 models produced in total.

The money raised by the auction was donated to Doctors without Borders – a global humanitarian aid organisation that provides medical care and support to victims of armed conflict, epidemics and other disasters.



#### TOYOTA UK STEM PROMOTION FOR YOUNG PEOPLE IN EDUCATION

Toyota's vehicle manufacturing facility in Derby is within a "social mobility cold-spot", with many young people from second or third generation non-working families.

Toyota's educational support programmes see young people travel along a journey of STEM (Science, Technology, Engineering and Mathematics) inspiration. This journey starts at primary school with the Art of Manufacturing, seeing the world of manufacturing within a stimulating and safe environment. At secondary school, students can join the Industrial Cadets programme and have a one-week work experiential placement at the Toyota factory, all designed to encourage young people to follow a path into a STEM based career.

Toyota is actively involved in supporting Derby Manufacturing University Technical College and the JCB Academy through governorship, design and active delivery of curriculum based content. Toyota has also established its own on-site Apprentice Academy, catering for local SMEs and suppliers as well as Toyota's own apprentice intake.



**PERFORMANCE**

- Increased new vehicle uptake
- AFV registrations up 22.2%, accounting for 3.3% share of the market
- Average CO<sub>2</sub> emission reducing albeit at slower rate due to changes in the market structure
- Overall transport CO<sub>2</sub> emissions rise as vehicle usage increase

**REASONS**

- Enhanced product offering from investment in new technologies
- Attractive finance packages
- Consumer uptake of new powertrain technologies, helped by government incentives

**FUTURE CHALLENGES**

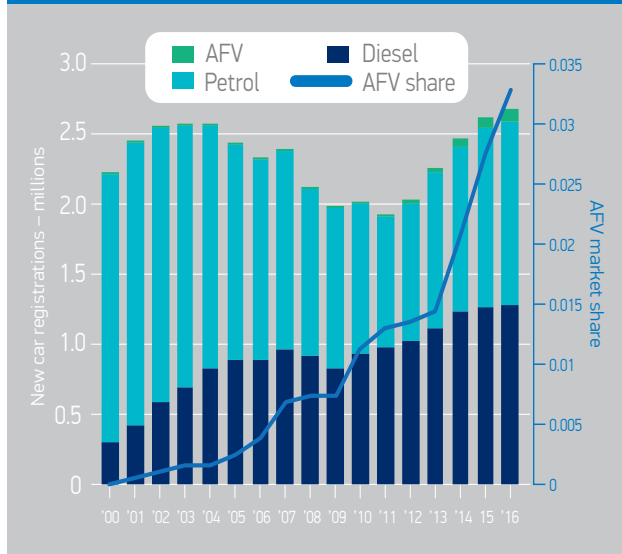
- Continuing to encourage the uptake of cleaner, newer vehicles to address both the CO<sub>2</sub> and air quality challenge
- Work needed on regulations, public acceptance and workable business models to bring CAVs to the market

► More than 100 years ago, the first cars transformed the way people travel. This increased mobility has improved the lives of millions of people across the world. This success story, however, also has local and global environmental implications. The industry has invested heavily to increase the efficiency of conventionally powered vehicles, develop alternative powertrains, and invest in future mobility including Connected and Autonomous Vehicles (CAVs). In addition, the way in which customers access and use vehicles is changing. The industry needs to adjust its business models to adapt to those changes in how we conceive of mobility and also address the increasing importance of data and cybersecurity.

**NEW VEHICLE REGISTRATIONS**

New car registrations rose for a fifth successive year in 2016, up 2.3%, with 2.6 million units registered. The 2016 market was 12% or almost 300,000 units above 2007's pre-recession total. Fleet registrations rose by 4.8% to represent 51.3% of the market total. Diesel registrations rose by 0.6% to a record 1.285 million units, while petrol demand grew 2.7%. Alternatively fuelled vehicles (AFVs) showed the greatest growth – up 22.2%. However, with 88,919 units registered, this segment still represents only 3.3% of the overall market (Chart 7, below). Further incentives will be needed in order to boost volumes significantly.

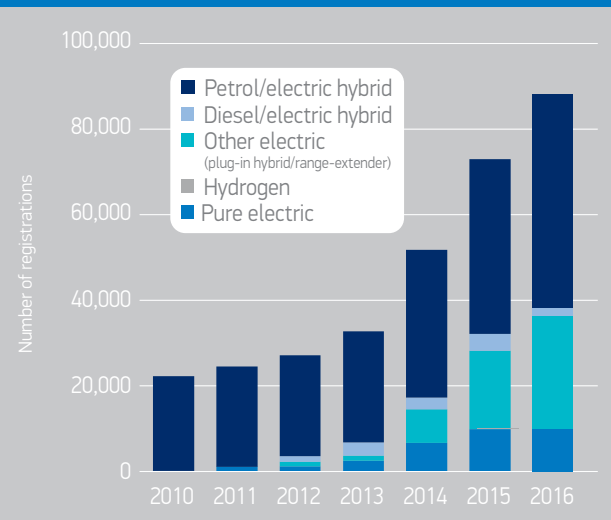
**CHART 7 | NEW CAR REGISTRATIONS AND FUEL TYPE**



**NEW CAR CO<sub>2</sub>**

UK average new car CO<sub>2</sub> emissions continued to decline in 2016, to just 120.1g/km. This was 33.6% below the 2000 level of 181.0g/km. However, the reduction was a relatively modest 1.1% compared with 2.6% recorded in 2015. It was

**CHART 8 | AFV REGISTRATIONS**



the slowest rate of decline since 2004 and is well below the 3.5% averaged since 2008 (Chart 8, above). The slowdown in the rate of improvement most likely represents the increasing challenge of delivering further technological gains. This is also reflective of consumer demand and

**VOLVO SETS AMBITIOUS EV SALES TARGET**

In 2016, Volvo Cars announced it aims to see up to one million electrified cars by 2025. The Swedish company plans to achieve this aim by offering at least two hybrid versions of every model in its range and releasing its first all-electric car in 2019.





market trends, most notably a shift in vehicle segment type towards higher CO<sub>2</sub> emitting segments (e.g. dual purpose and executive) as well as a decline in diesel penetration (given diesels typically emit around 20% lower CO<sub>2</sub> than the equivalent performance petrol-engined vehicle).

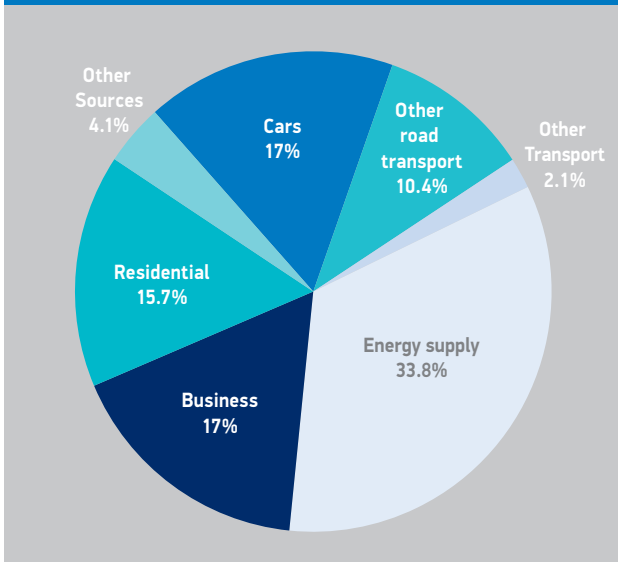
A new car will also offer the consumer increased information to help reduce emissions in use, for example, gear shift indicators, trip computers and sat navs (helping reduce distance travelled through optimising route guidance and avoiding congestion). New cars are lower emitting, safer, more reliable and more desirable than their older counterparts. In 2016, new cars only represented around 8% of the 34.4 million cars in use. It is also a concern that the average age of the car in use has increased, from 6.8 years to 7.8 years over the past decade, which will be to the detriment of the environmental profile of the fleet.

**TRANSPORT CO<sub>2</sub> PERFORMANCE**

Road transport is one of the largest sources of CO<sub>2</sub> generation, just below emissions from energy supply (2015 data, Chart 9 below).<sup>4</sup> Although emissions from road transport have been cut since 2000, albeit by a modest 3.5%, they have risen in each of the past two years. The recent increase corresponds to a rise in vehicle use, which has begun to offset the improvements in new vehicle efficiency. This has put an increased focus on the role of transport in meeting the UK’s carbon reductions targets. Emissions from all cars in use have fallen by 8.9% since 2000, although they rose in 2015.<sup>4</sup> There was also a notable growth from the van sector.

There are a number of fleet CO<sub>2</sub> emissions influencers, some of which are set out in the diagram below. Action can be taken on a broad number of measures to help reduce emissions. This could include measures to reduce the need to travel at all such as using electronic communications, or choosing the right mode of transport and, ensuring vehicles are well-maintained and well driven. A poorly maintained vehicle can emit as much as 50% more CO<sub>2</sub>, while eco-driving techniques can reduce emissions by 5-15%.<sup>5</sup>

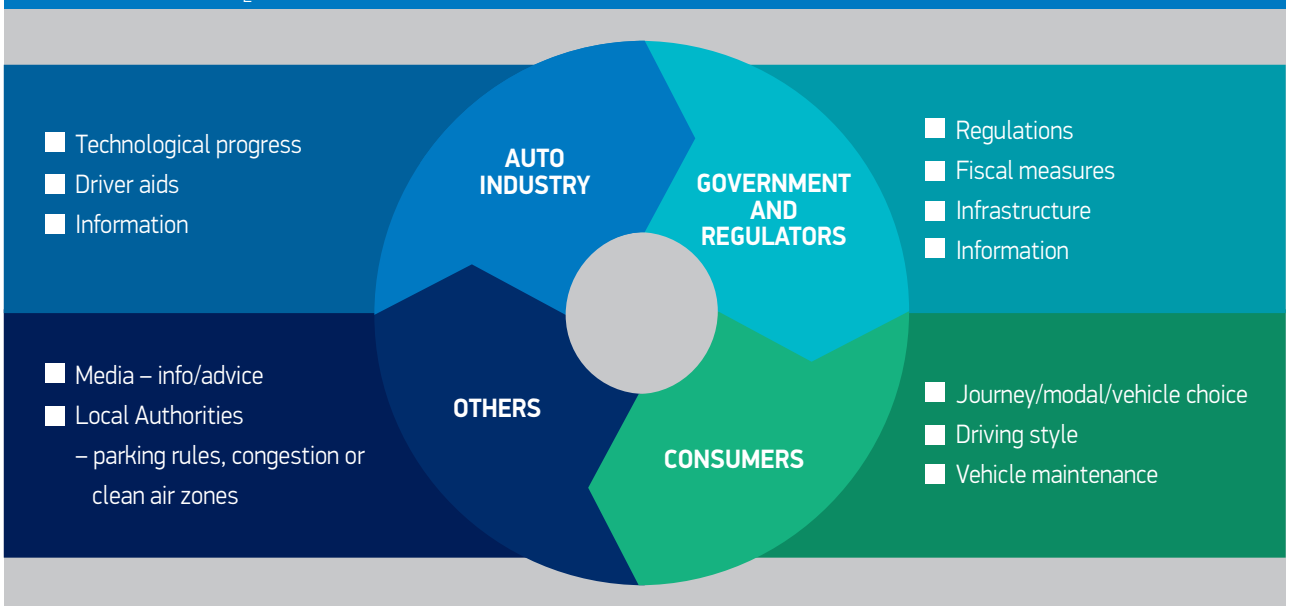
**CHART 9 | CO<sub>2</sub> EMISSIONS BY SOURCE**



Further information on vehicle environmental performance can be found in SMMT’s

**New Car CO<sub>2</sub> Report 2017**  
[www.smmt.co.uk/co2report](http://www.smmt.co.uk/co2report)

**TACKLING FLEET CO<sub>2</sub> EMISSIONS – STAKEHOLDERS AND THEIR ROLES**



## AIR QUALITY

The automotive industry recognises its part in the air quality challenge, as underlined by the findings of SMMT's materiality assessment, which scored air quality as one of the most important issues for the industry and external stakeholders. It is investing billions of pounds to engineer and produce the cleanest, lowest emitting vehicles in history.

Industry takes tackling air quality pollutants very seriously and looks to the latest Euro standards (setting maximum levels that a vehicle can emit) and the introduction of the additional Real Driving Emissions (RDE) test to help them deliver on air quality targets and help ensure confidence in the on-the-road environmental performance of new vehicles. At the same time there will be a new test cycle introduced for

air quality (because long-distance diesel drivers often use motorways which are not typically in urban areas). However, it would have an adverse impact on CO<sub>2</sub> performance.

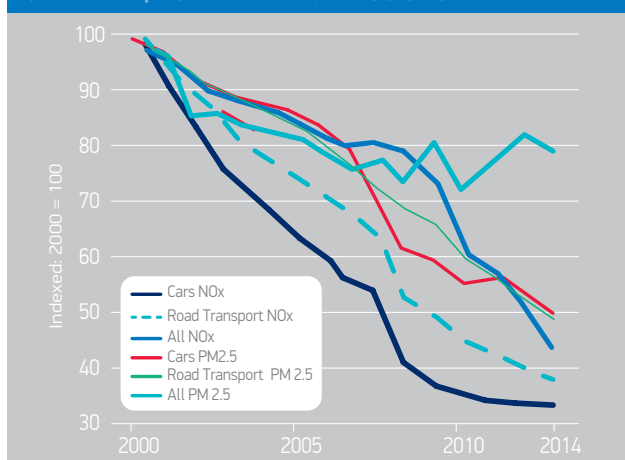
While advanced Euro 6 technology will deliver great improvements, it cannot solve the air quality problem on its own. In addition, policymakers must encourage consumers to purchase these latest low-emission vehicles and implement measures to tackle congestion in urban areas. Air pollution is a local issue, and so needs local solutions, but these must be guided by central government to ensure a coordinated and consistent approach.

The UK government has recently published its National Air Quality Action plan. Clean Air Zones will be implemented in a variety of cities and the plan includes a consultation on proposals to address air quality issues in the areas impacted by these issues.

New vehicles fitted with the latest technologies, will contribute towards improving the environmental profile of the fleet. Almost 30 million out of 34.4 million cars in use on the UK roads are pre-Euro 6. Increasing fleet renewal will help improve the environmental profile of the fleet. As with fuel consumption, driver behaviour can influence the amount of fuel used and so pollutant emissions. Industry, alongside the Automotive Council, is working to ensure driver efficiency can be improved and help contribute to reducing emissions.

With the reduction in exhaust particulate emissions, the relative contribution of other sources of particulates has become more significant. Non-exhaust particulate emissions from brake and tyre wear are now being researched by industry and health experts within the remit of the United Nations in order to better understand their contribution to air quality and to evaluate the health impacts.

**CHART 10 | NO<sub>x</sub> AND PM<sub>2.5</sub> EMISSIONS**



new vehicle types from which CO<sub>2</sub> figures are derived – the World Light vehicle Test Procedure (WLTP). National figures, published by the Department for Transport, show NO<sub>x</sub> and PM<sub>2.5</sub> (Particulate matter less than 2.5 micrometres in diameter) (both NO<sub>x</sub> and PM<sub>2.5</sub> are connected to respiratory problems; <https://www.gov.uk/government/statistics/emissions-of-air-pollutants>) emissions from road transport and, in particular, cars, fell between 2000 and 2014 (see Chart 10). In 2014, road transport accounted for 31.6% of all NO<sub>x</sub> emissions, with cars accounting for 15.7%. For PM<sub>2.5</sub> the figures were 13.6% and 3% respectively. Since 2000, NO<sub>x</sub> emissions from cars have fallen by 62.8% and PM<sub>2.5</sub> emissions<sup>6</sup> by 52.7%. However, at a local level, concerns are be much more acute and the need for action more pronounced. Under the latest Euro 6 standards, the NO<sub>x</sub> emissions of a petrol and diesel car are at their lowest ever levels and are approaching parity – 60mg/km for petrol and 80mg/km for diesel (limits for previous Euro 5 diesel were 180mg/km). This should help reduce concerns over the air quality impact of new diesel cars. New diesel cars should continue to be used as an important part of the solution to reducing CO<sub>2</sub> emissions. It would also safeguard the UK's (and Europe's) position as a key developer and manufacturer of diesel technologies. Diesels still play an important role for the right user, notably those travelling long distances or with heavy loads. Converting such users to petrol may not improve urban

### VOLKSWAGEN ENTERS NEW PARTNERSHIP WITH ZIPCAR

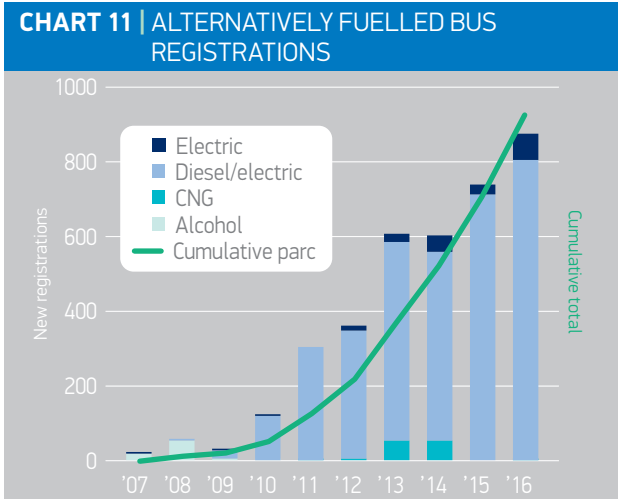
In 2016, Volkswagen joined forces with the world's largest car-sharing network, Zipcar, to launch the ultra-low emission Golf GTE in London. They put 40 cars into central London and a further 10 cars throughout the rest of the capital, with dedicated charging stations for Zipcar members. More are due to follow in late 2017. The partnership allows members of the car club access to low- and zero-emission driving vehicles for as little as £7 per hour.



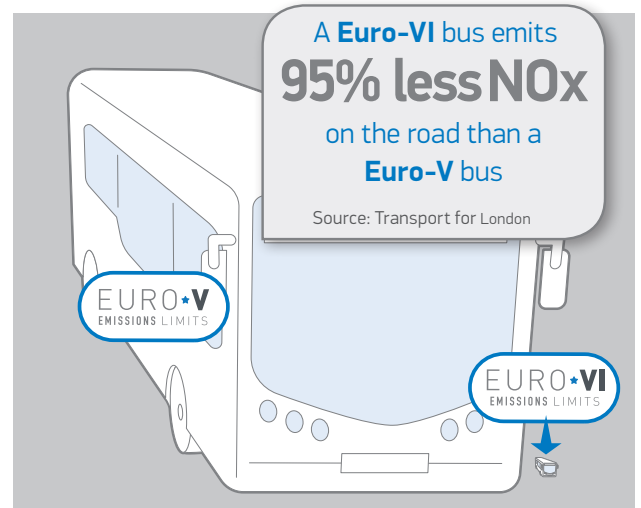
**ALTERNATIVELY FUELLED BUSES**

The number of alternatively fuelled buses on UK roads grew to 3,700 in 2016, accounting for 4.2% of bus parc (Chart 11). Almost 90% of them are diesel-electric and 4.8% full electric. The UK bus market has already seen the emergence of a variety of lower-carbon technologies – notably hybrid and pure electric powertrains with the use of biofuels and

an operator to a route, requires the vehicle to meet certain standards, including those relating to the environment. Buses are one of the key components to solving the air quality issues in urban areas. Real world tests using the London 159 bus route equipped with Euro VI technology show a 95% drop in NOx compared with previous generation Euro V buses. Consequently, if every older bus operating in the capital was replaced with a Euro VI version, total NOx emissions in London would fall by 7.5%.<sup>7</sup> Therefore, it is important that these policies pull in a common direction rather than create a patchwork of differing requirements, which make it difficult for manufacturers and operators to plan and bring to market effective solutions. Broader policy considerations, including better planning and suitable infrastructure provision, could also help ensure modal and technological shifts can be delivered.



hydrogen. Efficient diesels, using mild-hybrid systems for the ancillaries (rather than to drive the vehicle) can also be effective in reducing the overall emissions associated with bus use. Most buses run on prescribed routes in urban areas and with dedicated depots, and they more easily lend themselves to using alternative fuels than many other vehicle types. Unlike cars and vans, buses and coaches do not face tailpipe CO<sub>2</sub> regulations, but are often regulated by the local authority or city which as part of the appointment of



**OPTARE IMPROVES PRODUCTION EFFICIENCY**

Optare identified a host of measures to improve its manufacturing efficiency, which will also reduce annual expenditure on energy and fuels by 18.5%. Subsequently in 2016 Optare completely changed production warehouse lighting and office lighting to energy saving LEDs. Monitoring and targeting software was installed, offering step-by-step control which should help the company shave another 5% from its use. This means that processes can be monitored and targeted for improvement, through engineering and improved tooling solutions. Optare is also working with paint suppliers to find solutions to further reduce its bake cycle/cure time to make savings on gas use, while still ensuring its low Volatile Organic Compounds emissions remain unaffected. In 2017, there are plans to install fast action automatic roller shutter doors to contain warmth and reduce gas heating usage further.

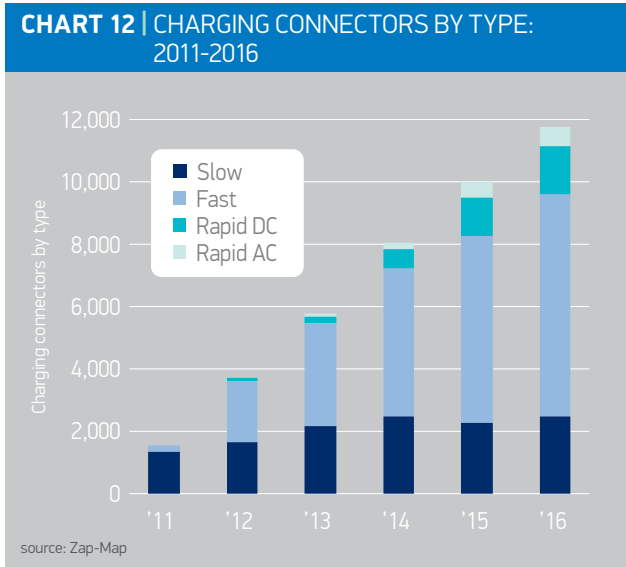


**ALTERNATIVE FUELS**

Sustainable biofuels form a part of the solution to reducing CO<sub>2</sub> emissions and some pollutant emissions, including particulate matters. Currently petrol and diesel fuels sold in the UK already contain biofuels. E5 allows for up to 5% of petrol to consist of ethanol and B7 allows for up to 7% of diesel fuel to be biodiesel. The UK is also considering the introduction of E10, and all petrol cars now sold are designed to run on this fuel (provided it meets the appropriate fuel specification and quality standards). Natural gas (both in compressed and liquid forms) is also used in trucks and bus applications, resulting in improvements in air quality pollutant emissions. For all fuels, it is essential that the quality is correct, to avoid any issues which impede the normal operation of the vehicle and negatively impact the introduction of such fuels.

**ELECTRIC VEHICLES INFRASTRUCTURE**

The number of electric vehicle (EV) charging points has been increasing steadily in recent years (Chart 12 below). By the end of 2016, there were 4,169 locations in the UK, with a total of 11,605 charging points available. This represents almost an eight fold increase since 2011, when 1,537 charging points were available.



While the industry welcomes this positive trend, it should be ensured that the right infrastructure is located in the right place. This should mean ensuring a proper UK network, with sufficient provisions where demand is highest, and the provision of the right type of infrastructure for example, avoid installing rapid chargers at places where vehicles might be stationary for many hours on end. Charge points in visible places can also provide peace of mind for consumers about the availability of recharging points, and help encourage switch-over to EVs by removing fears over range anxiety. However, the vast majority of EV drivers are expected to charge at home and at their place of work, with public charging infrastructure only used occasionally by most drivers.

**JAGUAR I-PACE CONCEPT CAR**

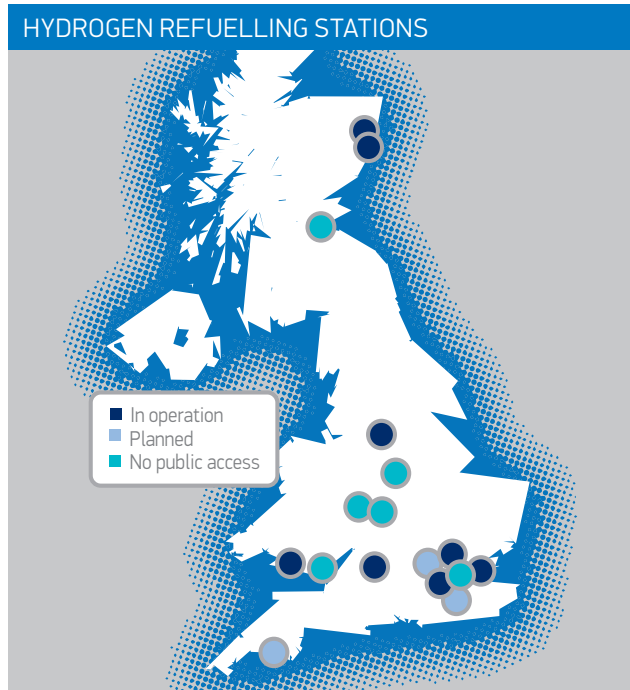
Last year, Jaguar announced the I-PACE concept car, its first electric sport utility vehicle (SUV). The I-PACE will have a range from a single charge of 310 miles, and will be able to accelerate from 0-62mph in about four seconds. The all-wheel-drive I-Pace will use a pair of electric motors that will produce close to 400bhp and 516lb ft of torque, all powered by a 90 kWh lithium-ion battery pack.

As part of its electrification plan, Jaguar has gone back to racing in the Formula E all-electric series. This provides Jaguar with an exciting test-bed for battery and electrification technology, and a developing pipeline of learning for its electrification strategy.



**HYDROGEN INFRASTRUCTURE**

In March 2017, the government announced a £23 million fund to stimulate the infrastructure and uptake of hydrogen vehicles. Hydrogen fuel providers will be able to bid for funding in partnership with organisations that produce hydrogen vehicles to help build high-tech infrastructure, including fuel stations. In 2016, there were nine publicly accessible Hydrogen Refuelling Stations (HRS) on UK roads. 2017 will also see an installation by Shell of three hydrogen stations located in Cobham, Gatwick and Beaconsfield.



**TOYOTA ROLLS OUT FURTHER SPECIALIST H2 SERVICE CENTRES IN UK**

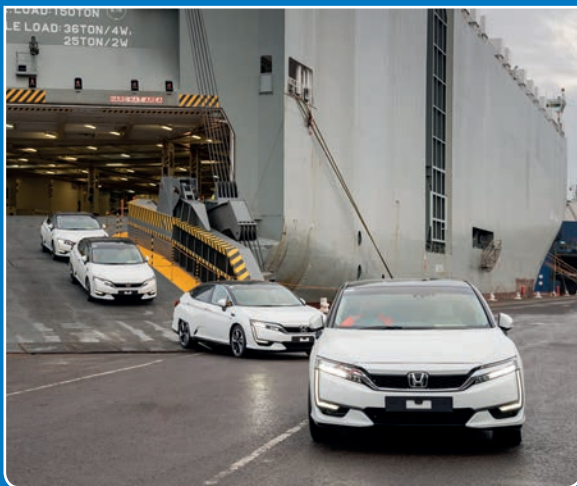
In 2016, Toyota won the UK government’s funding to boost the number of ultra-low emission vehicles on Britain’s roads, resulting in 20 new Toyota Mirai hydrogen fuel cell cars joining public and private sector fleets in the UK. Toyota is supporting the roll-out of hydrogen-fuelled vehicles in the UK with the provision of specialist service centres for the Mirai model at additional locations across the country. From 2016, centres in London, Swindon, Sheffield, Swansea and Aberdeen have been helping to extend the reach of the technology, in line with the national H2 infrastructure network plan.



**HONDA CLARITY FUEL CELL ARRIVES IN UK**

The first examples of the Clarity Fuel Cell, Honda’s most advanced zero emissions vehicle, arrived in Europe in 2016. The first six vehicles have been based with customers in London and Copenhagen as part of the Hydrogen for Innovative Vehicles (HyFIVE) demonstration project, partly funded by the Fuel Cell and Hydrogen Joint Undertaking (FCHJU).

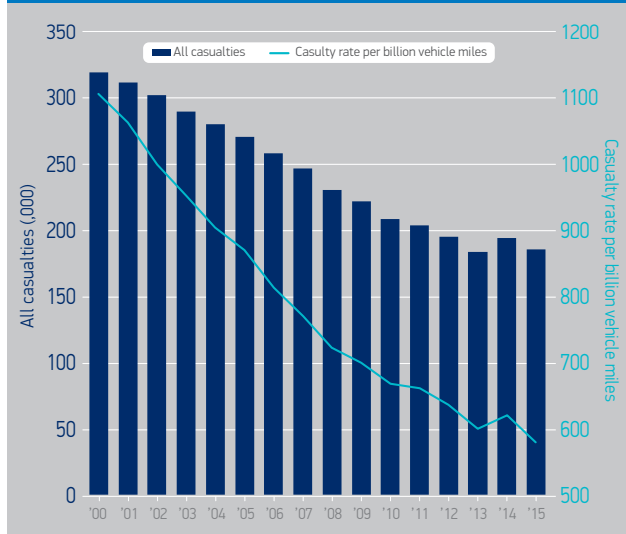
The new Clarity Fuel Cell features Honda’s latest technological enhancements in the field. It is the first fuel cell sedan to house the entire stack underneath the bonnet, making the cabin spacious enough to carry five occupants. A recent US Environment Protection Agency (EPA) test measured an effective range of 366 miles (589km).



**ROAD SAFETY**

The UK has one of the best road safety records in the world. The motor industry has a long-standing tradition of innovation to improve vehicle safety features, which plays a key part in ever improving road statistics. An increasing number of vehicles are being sold with autonomous safety technology such as autonomous emergency braking or collision warning systems installed as standard or available as an option. Further future implementation of CAVs onto UK roads is expected to bring additional safety advances. However, in the anticipated lengthy transitional period, there will be a mixed fleet of CAVs and manually driven vehicles and managing their interaction will be critical.

**CHART 13 | NUMBER OF CASUALTIES vs DISTANCE DRIVEN**

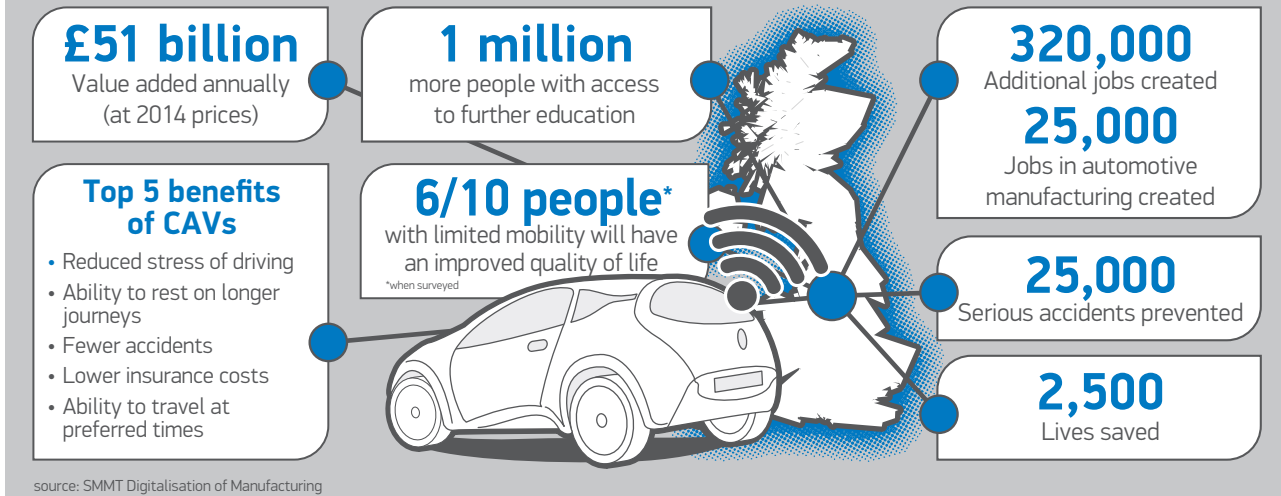


Since 2000, the overall number of UK road casualties has dropped by 42%<sup>8</sup> and the casualty rate per distance driven reduced by more than 46%. This was achieved despite an increase in distance driven of 9.3% in the same period. Also there were 6.3% fewer casualties per mile driven between 2014-15 (Chart 13 above). The automotive industry has contributed significantly to initiatives for safer use of roads and through continuous improvements in the active and passive measures to ensure occupant and other road users’ safety.

**FUTURE MOBILITY/SHARED MOBILITY**

In the past few years a new phenomenon of sharing mobility has started to emerge, notably in larger cities, where private vehicles are underused due to high congestion. In those circumstances public transport is mainly used for the weekly commute and private vehicles driven during weekends only. Consequently some people fulfil their individual mobility needs by using car clubs, ride share or ride-hailing apps. This trend is expected to lead to decreasing private ownership levels, which would create a radical departure from the traditional automotive business model. Offering integrated connectivity solutions and the flexibility of sharing cars presents future opportunities and has already been embraced by some vehicle manufacturers.

UK SOCIAL AND ECONOMIC IMPACT OF CONNECTED AND AUTONOMOUS VEHICLES



**CONNECTED AND AUTONOMOUS VEHICLES (CAVs)**

SMMT’s materiality assessment identified future mobility as another key issue for the industry and its stakeholders. Currently, a new generation of vehicles, which are connected and increasingly autonomous, is emerging. This technological revolution will change how our society functions, improving safety and efficiency and reducing congestion and emissions. While some vehicles already feature some connected or autonomous technologies, the industry has already begun testing prototype fully self-driving vehicles on UK roads.

By operating at optimised speeds, reducing gaps between vehicles on the move, route optimisation, greater vehicle use and reduced congestion, CO<sub>2</sub> emissions could be significantly cut, as well as journey times shortened – both in the order of 20%. For details see the SMMT report: Connected and Autonomous Vehicles; revolutionising mobility in society.

In order to realise the full benefit of CAVs the entire ecosystem will need to be joined up. The challenges of sharing data will need to be overcome in order to create new or improved services and enable decision making based on real-time information. Interoperability, standardisation of data formats, exchange protocols and data quality still need to be agreed. By creating a truly Intelligent Transport System, vehicles will be able to deliver informed and efficient mobility for all users.

The government must develop a clear and joined-up national strategy for making the UK a global centre of excellence in relation to CAVs, based on a thorough understanding of UK strengths and competencies. The strategy should articulate in very clear terms how the UK could leverage the outcomes of the publicly funded CAV projects and testbed ecosystem, set out plans to create the conditions (e.g. national infrastructure, R&D capabilities, skills and finance opportunities) that will make the UK attractive for CAV investment, and prioritise developing a pipeline of highly skilled engineering talent from non-traditional automotive engineering backgrounds.

Data protection and vehicle cybersecurity are also areas of key focus for the industry. The EU General Data Protection Regulation (GDPR) was approved in April 2016 and will come into effect in all member states two years after this date. The new legislation makes personal data exchange more challenging owing to its new requirements and hefty fines for breaches. The UNECE, meanwhile, is seeking to draw up a set of high-level guidelines for vehicle cybersecurity.

See SMMT video on connectivity:

<https://www.youtube.com/watch?v=w4tNEQFqW0g>

**VAUXHALL ONSTAR**

Connectivity will play an ever-increasing role in the industry and Vauxhall’s emergency response, personal online and service assistant OnStar continues to go from strength to strength, recording more than 11 million customer interactions in Europe since its launch in 2015. The OnStar Command Centre is based at Vauxhall’s HQ in Luton, and in 2016 the service was expanded into 18 new markets and picked up several industry and technology awards including the UK “Car Tech Awards” where the New Astra won “Tech Car of the Year” for “Best Safety Innovation” for OnStar.”



## PERFORMANCE

- The industry met the 2015 target for 95% of a vehicle (by weight) to be recovered.

## REASONS

- Continued co-operation with regulators and recycling industry.

## FUTURE CHALLENGES

- Illegal operators and their lack of enforcement undermine the legitimate operations.
- Changing metal prices impact profit margins of ELV processing.

► The end of life stage of a vehicle's life cycle is taken into account at the design stage, when the recyclability and recoverability of vehicles is ensured. Consequently, components can be reused and remanufactured to extend their natural life. Also materials coming out of vehicle shredding operations can be recycled and used to produce vehicles and other products. This ensures the optimal resource preservation and aligns with circular economy principles.



Industry calls upon government to increase the enforcement of the ELV requirement to root out non-compliance, ensuring that the UK meets its obligations with regards to the reuse, recycling or recovery of ELVs.

While there are no official figures, industry analysis has shown that every year there is a large percentage of ELVs, believed to have been scrapped but which are unaccounted for. The likelihood is that they have been unofficially scrapped, while being marked as “disposed into trade”. To address this issue, industry has entered into discussions with Defra and DVLA to try to eliminate alternative ways of scrapping an ELV other than via a CoD, and would welcome further government effort to expedite this matter.

## PRODUCER RESPONSIBILITY

When a vehicle reaches the end of its life it must be disposed of in an environmentally responsible way through an Authorised Treatment Facility (ATF). Vehicle manufacturers (VMs), through the End of Life Vehicles Directive, have an obligation to provide free take-back for cars and light commercial vehicles across the UK. VMs have appointed Autogreen and Cartakeback to accept vehicles that have reached the end of their life and issue the Certificate of Destruction (CoD).

In line with the EU target, vehicle manufacturers’ approved networks of ATFs have achieved 85% reuse and recovery of materials from ELVs each year from 2006, when the requirement came into force. Also since 2015, the industry has managed to better its performance by 10% to reach the new pan-European target of 95%.

## AVERAGE VEHICLE AGE

Vehicles are designed to meet recyclability criteria but also to be durable and longlasting. The average age of vehicles at scrappage continues to increase and reached 14.1 years in 2016. This is now on a par with the average vehicle life in 2003. The lowest vehicle scrappage age was recorded in 2009, when the scrappage scheme took place. See Chart 14 below for details.

A similar upward, but more gradual, trend can be observed in the average parc age, which in 2016 reached 7.83 years.

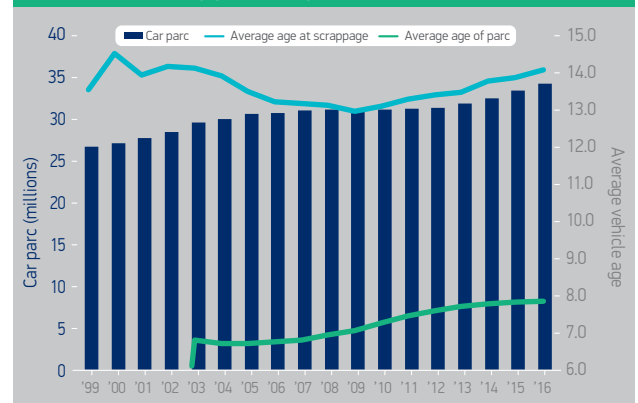
This indicates a slower fleet renewal, which as indicated earlier in the report means that the environmental and safety benefits of the latest technologies will be released more slowly on to the market.

## LEVEL PLAYING FIELD

A large network of unlicensed operators still exists and is capturing ELVs for the value of their metals. There is concern that to maximise their profits they fail to carry out the legally required depollution, putting the environment at risk.

In order to achieve the new 95% target, a sizeable investment has been made in highly efficient processes, which deal in post shredder residue such as gasification plants and plastics recovery. The long-term viability of these investments requires high volumes of vehicles going through the system, and this process is being undermined by the increasing numbers of vehicles being processed outside of the manufacturers network, where non-compliant processes may be evident.

**CHART 14 | CAR PARC AND AVERAGE VEHICLE AGE AT SCRAPPAGE**



## END-OF-LIFE VEHICLES (ELVs)

### EV BATTERIES

With the emergence of alternatively fuelled vehicles, the biggest share of a vehicle's carbon footprint will shift from use to the production process and vehicle end of life. To address this issue for electric vehicles, manufacturers are focusing their efforts on battery remanufacture and reuse to extend their life while reducing the overall environmental impacts. In line with circular economy principles, some manufacturers already work on using them as energy storage for private and commercial use.

The industry also provides battery dismantling information through the International Dismantling Information System (IDIS) to enable their safe removal from vehicles, which have reached the end of their life.

### REMANUFACTURING

Remanufacturing, commonly defined as the process of bringing a product to a like-new condition, is enjoying significant growth as vehicle manufacturers recognise its value not only from an environmental perspective but also for its proven ability to reduce warranty costs and increase customer satisfaction.

The flexibility of remanufacturing can also deliver significant benefit in addressing replacement part availability in the car parc and help to keep millions of vehicles on the move. As the number of niche models grows, product cycles shorten and parts ranges proliferate, it is becoming extremely hard for new replacement part providers to ensure the necessary range for service and repair, particularly of electronics content. Remanufacturing can provide timely availability solutions to this problem.

Remanufacturing will also help to maintain the affordability and quality of the growing number of electric and hybrid vehicles in use. With diverse architectures, complex software and expensive drive systems, battery pack and associated ancillary equipment, remanufacturing can address essential cost considerations in the maintenance of these vehicles and meet the rising quality thresholds from OEM customers.

Increasing use of software driven products and the difficulties experienced in accessing technical information and parts details are a key concern to many in the sector, but with growing engagement from all quarters in the circular economy the future for remanufacturing looks healthy.

### QUEENS AWARD AWARDED TO ATP

ATP has grown a small business repairing automatic transmissions into one of Europe's leading independent transmission remanufacturers and innovators, whose customers include Ford, Volvo, Jaguar Land Rover, Fiat Chrysler Automobiles, Aston Martin and JCB.

ATP received the 2016 Queens Award for Industry in Innovation in recognition of the development of unique transmission test equipment. Also last year the company invested almost £650,000 into automated cleaning equipment, which provides a consistent 30% improvement in levels of cleanliness, as well as reducing water consumption and discharge by more than 100,000 litres per year compared with the previous manual processes.





## MATERIALITY ASSESSMENT

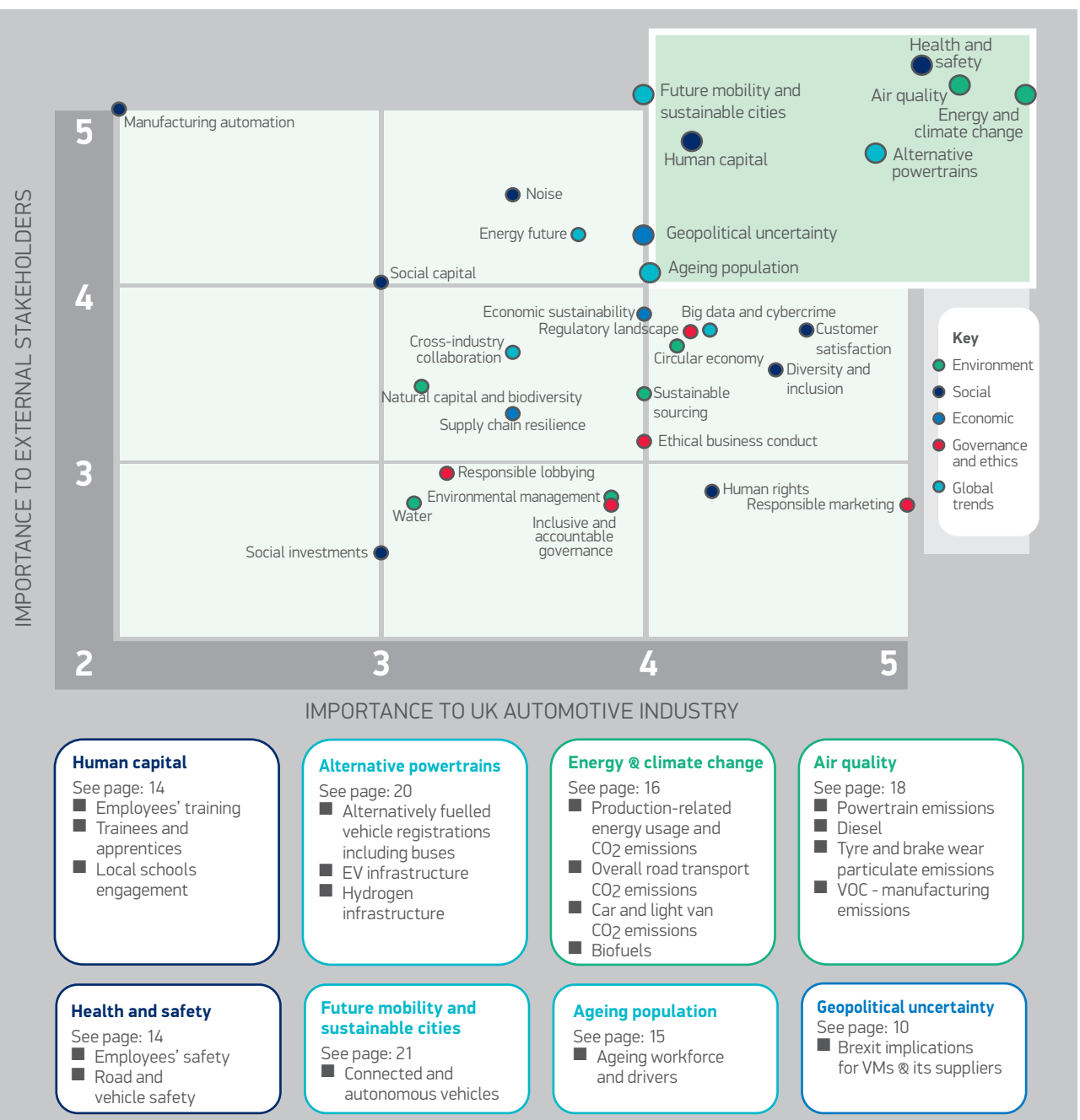
The SMMT sustainability report has evolved considerably since its inception, and the latest development is the addition of SMMT's first materiality assessment (see page 4) to ensure the report continues to cover the most important challenges facing the industry.

The assessment involved desk-based research interviews with 12 external stakeholders and nine SMMT members (a balanced mix of vehicle manufacturers and suppliers) were invited to comment on the sustainability issues identified and rate each in terms of its importance to the UK automotive industry. This was followed by a workshop, where eight SMMT members and 12 external stakeholders

ranked the new issues that arose during the interviews and workshop and agreed their overall rating. The post-workshop materiality matrix was then circulated to stakeholders for final comment.

In this edition, as a starting point, SMMT aims to cover topics scored highest by external and internal stakeholders. In future reports, we plan to cover the remaining issues identified by the assessment.

It needs to be noted that the assessment outcomes presented here represent only a snapshot in time. The issues identified are evolving and additional ones are appearing over time. Therefore, future assessments can be expected.



## SIGNATORIES TO THIS REPORT

Signatories to this report	Brands
<b>ATP</b>	ATP
Aston Martin Lagonda Ltd	Aston Martin, Lagonda
<b>Bentley Motors Ltd</b>	Bentley
<b>BMW Group UK including Rolls-Royce Motor Cars Ltd</b>	BMW, MINI, Rolls-Royce
<b>Bosch</b>	Bosch
<b>CabAuto</b>	CabAuto
<b>Caterpillar</b>	Caterpillar, Perkins
<b>Covpress Assembly Ltd</b>	Covpress Assembly
<b>DHL</b>	DHL
<b>Ford Motor Company Ltd</b>	Ford
<b>General Motors UK Ltd</b>	Vauxhall, Opel and Holden
<b>GKN Driveline Ltd</b>	GKN
<b>Honda (UK) and Honda of the UK Manufacturing (HUM) Ltd</b>	Honda
<b>IBC Vehicles Ltd</b>	Vauxhall, Opel
<b>Jaguar Land Rover Ltd</b>	Jaguar Cars, Land Rover
<b>Leyland Trucks</b>	DAF Trucks
<b>Lotus</b>	Lotus
<b>McLaren</b>	McLaren
<b>Michelin Tyre plc</b>	Michelin
<b>Nissan Motor Manufacturing (UK) Ltd and Nissan Technical Centre Group</b>	Infiniti, Nissan
<b>Optare</b>	Optare
<b>Pritex</b>	Pritex
<b>PSA Group</b>	Citroën, Peugeot, DS Automobiles
<b>Schaeffler</b>	Schaeffler
<b>Toyota (GB) plc Toyota Motor Manufacturing (UK) Ltd</b>	Lexus, Toyota
<b>Unipart</b>	Unipart Logistics
<b>Volkswagen Group (UK) Ltd</b>	Audi, SEAT, ŠKODA, Volkswagen Passenger Cars, Volkswagen Commercial Vehicles
<b>Volvo Car UK Ltd</b>	Volvo

## SEE PAGE 4 FOR THE FULL SUMMARY TABLE

Key – See page 20 for full details.

**AS** = signatories

**WI** = whole industry

**VMs** = vehicle manufacturers only

**(WI)** Whole industry data

**(AC)** All car registrations in the UK

**(AS)** All signatories

**(VMs)** UK vehicle manufacturer signatories

**(CV)** Commercial vehicles

**(CO<sub>2</sub>)** Carbon dioxide.

The report has 28 signatories which represent 99.6% of vehicle production in the UK. New signatories include, ATP, Lotus and McLaren – a remanufacturing company and two low volume car producers respectively. Also two companies Alexander Dennis and CEVA Logistics left SMMT's membership and therefore are no longer signatories to the report.

- \* The 2015 and 2016 data has been adjusted to take into account new and leaving signatories to enable year-on-year comparison.
- \*\* Sector turnover, R&D and jobs dependent on the sector are compiled from several official sources using expert SMMT analysis. The 2015 and 2016 figures are based on projections.
- \*\*\* 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.

**UK Production** – the completed 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 Islands or Isle of Man.

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

**UK expenditure on Business and R&D** - the amount, in monetary terms, spent on research and investment, each year.

**REFERENCES AND DETAILED DATA ON THE AUTOMOTIVE INDUSTRY PERFORMANCE CAN BE FOUND AT [www.smmt.co.uk/sustainability](http://www.smmt.co.uk/sustainability)**

The webpage also contains links to signatories' sustainability websites.

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