



UK Automotive International Competitiveness - 3rd Report



September 2022

Executive summary

This third international competitiveness report comes following significant changes since the last paper in 2018. The UK has left the EU, suffered the Covid-19 pandemic, and is now living with huge disruptions to global supply chains and a cost of living / cost of doing business crisis. At the same time, the industry is facing a crunch time for new investment to deliver zero emission vehicles produced in net zero emitting facilities.

Against that background, recent investment announcements have been hugely welcome. They demonstrate the fundamental attractiveness of the UK as an investment destination – and the significant potential for Britain’s automotive manufacturing industry to contribute to growth across the nations of the UK.

All this means that this is an important time to take stock of the fundamentals once again: what makes the UK a good place to invest in automotive, and how we can do more to capture continued new investment. The industry is well positioned to deliver on our shared ambitions with government – the high value jobs and wealth creation that characterise the sector; accelerating the delivery of net zero; and contributing to a Global Britain by taking a leading role in international trade.

Joined-up action by industry and government is critical to ensure that the industry can deliver on these shared ambitions, and this report aims to provide a focus for this.

Key drivers of investment remain broadly consistent with past reports. In summary:

- Access to skilled, flexible employees who are able to deliver high productivity – enabling cost competitive design and manufacture of vehicles and their components – is critical, and the UK demonstrates strengths in these areas.
- Factors surrounding the cost of operating in the UK, notably energy and transport, were judged as key areas requiring attention.
- Perception of government support packages did not score in the top percentiles for either size or accessibility – although notably the survey took place prior to the post-Brexit state aid regime and the flexibility that could be delivered may become a key strength.
- Access to trade with international partners emerges in this report as a key driver – demonstrating the industry’s global ambitions, and also the importance of keeping automotive at the core of the UK’s negotiations, and implementation of, free trade agreements (FTAs).
- We also sought views on diversity and inclusion, seen as a key UK strength. While judged relatively low as a direct driver of investment, it can significantly impact key drivers such as productivity, skills and flexibility.

Perceptions of the UK’s strengths again showed an imbalance to actual performance in some key areas. This underlines the continued importance of engagement by both government and trade associations with OEMs at senior level, to explain Britain’s strengths and our seriousness of intent to tackle remaining weaknesses.

Now that the UK’s relationship with the EU has been resolved, we have started to see some major investment announcements. This is positive, but competition for investment is fierce. The sector today is making key strategic, time-critical decisions about where to build zero emission vehicles and associated supply chains.

At this important juncture, only timely, focussed and decisive collaboration through the Automotive Council – to reinforce UK Automotive’s undoubted strengths while systematically tackling areas of weakness – will enable the industry to remain at the forefront of this generational change.

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About the Automotive Council

The Automotive Council was established in 2009 to enhance dialogue and strengthen co-operation between UK government and the automotive sector. The Council is made up of senior figures from across industry and government and meets three times per year.

The activities of the Automotive Council are channelled through six mission and enabler groups, as below, each divided into a range of workstreams:

- Advancing Digitalisation
- Connected and Autonomous Mobility
- Skills
- Supply Chain
- Transition to Zero
- UK Competitiveness and Business Environment

These groups cover issues of critical importance to the UK automotive sector.

Survey results

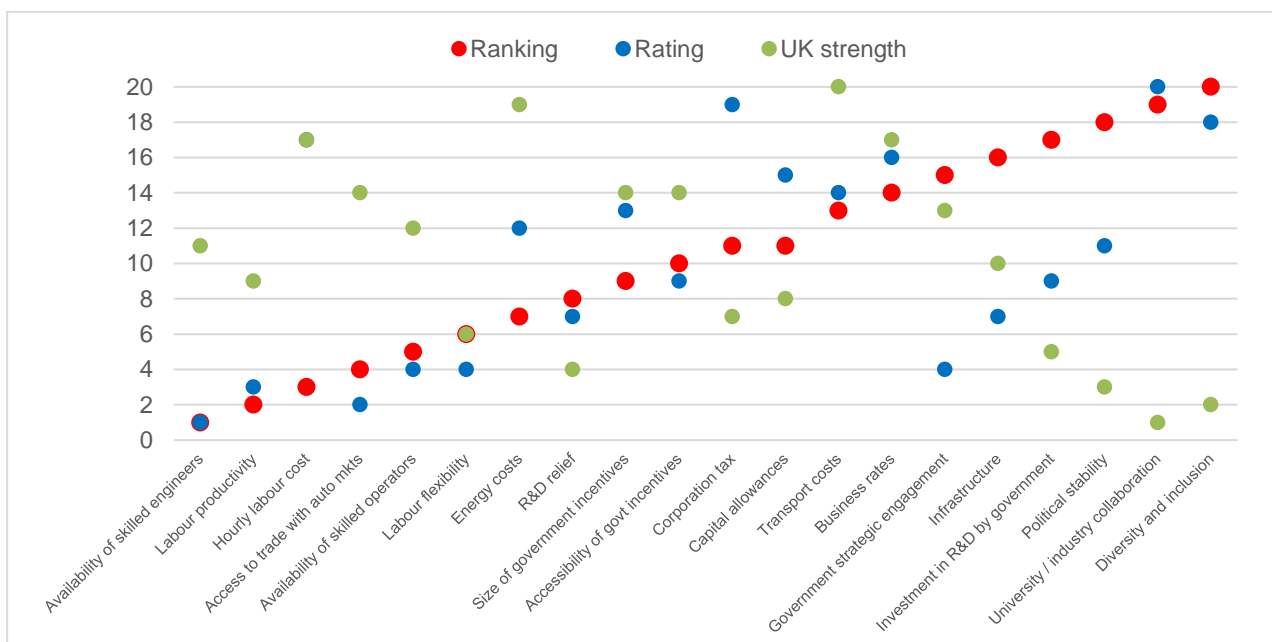
Some 50 companies responded to the UKIC survey in the second half of 2021 and early 2022, including all of Britain's volume vehicle manufacturers. The survey asked respondents to rate and rank 20 key metrics on their importance to influence investment decisions, and also asked about their perception of the UK's performance to those indicators. Note ratings and UK's perceived strength scores are then ranked.

The results are presented in Table 1 and Chart 1, in rankings and ratings from 1 to 20, below.

Table 1 – ranking of factors influencing investment decisions

	Ranking	Rating	Perception of UK strength
Availability of skilled engineers	1	1	11
Labour productivity	2	3	9
Hourly labour cost	3	17	17
Access to trade with auto markets	4	2	14
Availability of skilled operators	5	4	12
Labour flexibility	6	4	6
Energy costs	7	12	19
R&D relief	8	7	4
Size of government incentives	9	13	14
Accessibility of govt incentives	10	9	14
Corporation tax	11	19	7
Capital allowances	11	15	8
Transport costs	13	14	20
Business rates	14	16	17
Government strategic engagement	15	4	13
Infrastructure	16	7	10
Investment in R&D by government	17	9	5
Political stability	18	11	3
University / industry collaboration	19	20	1
Diversity and inclusion	20	18	2

Chart 1 - Ranking key competitiveness drivers



Key Performance Indicators

Based on the key findings of the survey and the Automotive Council's work to date, the following list of eight KPIs has been selected. This is based on the methodology outlined in Appendix A and validated by industry members of the Automotive Council as critical for investment decisions in the UK automotive sector.

These eight KPIs are those which were most highly rated as 'important' in influencing potential investment;

- 1 Productivity
- 2 Labour flexibility
- 3 Hourly labour costs
- 4 Availability of skilled engineers
- 5 Availability of skilled operators and technicians
- 6 Access to trade with other markets
- 7 Government incentives/R&D tax credits
- 8 Energy costs

A full list of the KPIs considered – including the eight above and the more than 30 competitiveness drivers – are listed in Table 2 (with detailed excel file accompanying this report).

Table 2 – KPI – international comparisons over time

	KPI	EU rating	Global rating	2022 rpt	2018 rpt	2015 rpt
Private R&D	Uni/Ind	G	A	63.7 (6/25)	74.5 (2/25)	77.8 (2/25)
	GERD	A	A	1.2 (8/24)	1.1 (8/23)	1.1 (8/23)
Govt support	R&D incentives – large co	R	R	12% (15/21)	11% (14/21)	9% (13/21)
	R&D incentives – small co	A	A	27% (7/20)	27% (7/20)	28% (5/20)
	GERD by Govt	R	R	0.11% (15/18)	0.12% (20/24)	0.14% (18/24)
Skills – engineers	Tertiary ed enrolment	R	A	61.4 (12/24)	56.5 (15/25)	59.8 (13/24)
	Grads in science & eng	G	A	26.9 (7/24)	25.2 (7/24)	26.9 (7/24)
Operators	PISA scales maths/science	G	A	503.5 (6/23)	503.5 (6/23)	503.5 (6/23)
	Secondary ed enrolment	G	G	127.8 (3/22)	127.8 (3/22)	127.8 (3/22)
	% NVQ2+	R	R	73.0% (6/10)	73.0% (7/11)	73.0% (7/11)
Flexibility	Labour-employer relations	G	G	5.0 (5/25)	5.3 (4/25)	5.2 (3/25)
	Labour flexibility	G	A	5.4 (6/25)	5.5 (2/25)	5.4 (2/25)
Labour cost	Hourly labour cost	R	R	127.40 (7/11)	126.7 (8/11)	122.3 (7/16)
	GDP/hour worked	A	A	61.27 (5/18)	52.7 (6/16)	49.2 (7/17)
	GVA/pp	G	G	125.5 (2/12)	125.5 (2/12)	121.7 (2/16)
Investment costs	Corporation tax	G	G	19.0% (3/25)	20% (5/25)	20% (6/25)
	Business rates	R	R	3.1% (12/15)	3.1 (14/15)	3.2% (14/14)
	Capital allowances P&M	R	R	(12/14)	(14/22)	-
	Cap allow – buildings	R	R	(11/13)	(23/23)	3/23
Transport costs	Diesel fuel costs	R	R	2.02 (25/25)	1.49 (25/25)	2.27 (24/25)
Energy costs	Gas prices	A	R	0.05 (6/12)	0.02 (1/11)	0.03 (6/11)
	Electricity price	R	R	0.23 (24/25)	0.09 (5/11)	0.14 (11/11)
Political stability	Country risk	A	A	0.59% (7/25)	0.57% (5/25)	0.60% (5/25)
	Governance	G	A	1.44 (5/25)	1.40 (4/25)	1.47 (4/25)
	Corruption perception	G	G	77 (3/25)	81 (2/25)	78 (4/25)
Globalisation	Globalization index	G	G	90.0 (2/25)	82 (6/25)	83 (5/25)
Infrastructure	Infrastructure rating	A	A	5.7 (11/25)	5.7 (6/25)	5.7 (11/25)
Regulation	Burden of Govt reg	G	G	4.3 (4/25)	4	3.9
Trade	Number of RTAs	A	A	38 (11/25)	-	-
Manufacturing health	Production growth	R	R	1.38 (16/24)	1.82 (13/23)	1.60 (14/23)
	Manufacturing GVA	A	A	243 (8/22)	226 (26/26)	247 (16/26)

- Full details of this table can be found at <https://www.automotivecouncil.co.uk/wp-content/uploads/sites/13/2022/09/KPIs-populated-with-auto-ranking-2022-report.pdf> (including metrics for all the figures). Sources for data are listed in Appendix B.
- Data is 2019 – latest available in most cases and avoids distortions from Covid.
- G (green) = top 30% in EU / top 20% globally, A (amber) = above average, R (red) = below average.

In general, Britain's performance has been fairly static over time, scoring highly in some areas, but with significant challenges in areas such as energy cost. The UK scored very highly on items such as GVA/per person, globalisation, regulation and R&D incentives for small companies, while there is scope for improvement on investment, transport and energy costs. Major changes in performance also include cost fronts, which have increased significantly (and more recent data would likely show further rises too). Although some of these are evident globally, the UK's ranking has generally slipped.

KPI 1: Productivity

Productivity in automotive OEMs has been a strength of the UK industry since our first report in 2015 – indeed, it can be seen as a potential key driver across the wider economy. In automotive, the UK shows a GVA per person second only to Germany among our comparator nations and the GDP/hour worked ranking has improved since the last report in 2018, up from 6th to 5th position. Further support for productivity improvements across the supply chain will position the industry to benefit from the shift to zero emissions over the coming years.

- UK automotive productivity remains strong, even amid recent challenges of Covid lockdowns and supply chain disruption, in contrast with the wider British economy, which has arguably suffered from a “productivity puzzle” for an extended time.
- Part of the roots of this success lie in the introduction of a strong foundation of lean manufacturing during the rebirth of the industry in the 1980s and 1990s. This benefitted hugely from strong industry associations aimed at spreading productivity throughout the industry as a whole, but over the subsequent decades the need for OEMs to win competitive business from globally based manufacturers has bred a strong culture of productivity across the industry in the UK.
- That said, the industry faces challenges as we head towards a more electrified future. Productivity-driven competitiveness on current vehicles is a prerequisite for future business; further investment in digitalisation is vital to retain competitiveness, along with increasing investment both in the skills and technology required to transition to making ultra-low and zero emission vehicles.
- Furthermore, although OEMs and suppliers have benefitted from the fiercely competitive global environment, the supply chain faces significant challenges to increase cost competitiveness, delivery and quality alongside investment in the production technology required to benefit from the shift to zero carbon whilst continuing to supply to UK OEMs.

A coordinated government / automotive activity to push productivity practices into the supply chain must be a priority – learning from the experience of the recently wound up National Manufacturing Competitiveness Levels (NMCL).

GDP / Hour Worked (\$)

US	74.2
France	67.6
Netherlands	67.0
Germany	66.9
UK	61.3
Canada	56.6
Italy	54.8
Spain	52.3
Turkey	48.5
Japan	48.1
Slovakia	45.7
Czech Republic	42.5
South Korea	41.8
Poland	41.0
Hungary	39.3
Romania	33.1
Russia	27.7
Mexico	20.3

Auto GVA PP (€)

Germany	135.5
UK	125.5
Netherlands	119.3
France	97.2
Italy	90.0
Spain	79.5
Hungary	50.8
Czech Republic	50.6
Slovakia	48.7
Poland	38.4
Romania	25.8

KPI 2: Labour Flexibility

High labour flexibility is a competitive advantage for the UK, enabling companies to grasp opportunities while mitigating risk. Equally, automotive firms value long-term employment and the sector has strong retention rates. Proactive coordination between industry and government to maintain employment in automotive manufacturing will be critical during the structural changes expected over the coming years. While still a strength, the UK has slipped relative to the strongest competitor countries since 2018, ranked 6th from 2nd on labour flexibility, and 5th from 4th on labour-employer relations.

- The UK has demonstrated a high level of flexibility, looking to maintain staffing levels wherever possible, including retraining and even the relocation of staff rather than losing workers.
- Labour flexibility enables companies to grasp opportunities, with flexibility to produce additional volume and additional business quickly and mitigating risk.
- The flipside of high labour flexibility is that there needs to be strong activity to preserve employment and the skills and experience of members of companies where there is an adverse situation.
- UK automotive provides a strong model for flexibility whereby both volume up risk is reduced while volume down impact is mitigated, preserving the skills and experience which will be needed – with industry taking action to transition employees to new opportunities through retraining.
- However, the challenge that industry will face over the coming years is significant. As the market moves increasingly to ultra-low emission and zero emission vehicles, we will see major disruption and risk. For example, the UK typically makes more than two million of internal combustion engines annually (more than 1.5 times the number of vehicles produced per annum) and there is an urgent need to prepare for the shift to new technologies, including battery electric and fuel cell propulsion.
- With a low turnover and high skill, these employees represent a hugely valuable asset to the industry and the country. With a coordinated and proactive response, the opportunity is to use the skills of automotive engineers and operators to drive the industry's successful transition to zero emission vehicles and drivetrains, built in high productivity digitised manufacturing facilities.

Industry and government should work to put in place the tools to support industry resilience, enabling those affected by market transition to stay in the industry – allowing transfer to other OEMs or the supply chain, and by systematic opportunities for retraining.

Labour flexibility

Japan	5.8
Czech Republic	5.7
Russia	5.7
US	5.7
Poland	5.5
UK	5.4
Morocco	5.4
Turkey	5.3
Canada	5.3
Romania	5.2
Mexico	5.2
Spain	5.1
France	5.0
Slovakia	5.0
India	4.8
South Korea	4.8
Indonesia	4.8
Hungary	4.7
Germany	4.6
China	4.6
Thailand	4.4
Brazil	4.3
Netherlands	4.1
South Africa	3.5
Italy	3.3

Lab / employee relations

Netherlands	5.8
Japan	5.8
US	5.2
Canada	5.1
UK	5.0
Germany	5.0
Thailand	4.9
Czech Republic	4.7
China	4.6
India	4.5
Indonesia	4.5
Mexico	4.5
Spain	4.4
Russia	4.4
Poland	4.3
Romania	4.3
France	4.2
Slovakia	4.2
Hungary	4.2
Morocco	4.1
Italy	4.0
Turkey	3.8
South Korea	3.6
Brazil	3.6
South Africa	3.2

KPI 3: Hourly labour costs

The UK automotive industry offers well rewarded, high value jobs across the UK. To maintain this in the face of fierce global competition, industry and government must work together to quicken the pace of productivity improvement. Since 2018, the UK has moved up the rankings from 8th to 7th on hourly labour cost, from 6th to 5th on GDP/hour worked and stayed at second on GVA/pp.

- The UK is not a low wage economy and indeed one of the significant merits of the automotive industry is its ability to pay a healthy salary to people in areas away from the financial sectors. Simply put, automotive can be one of the major contributors to supporting growth in the regions of the UK. Indeed, the sector offers salaries typically 14% above that of the average worker¹ – as is often the case in automotive industries across Europe and globally. The sector demands high skill and is a route to high value, well rewarded employment across the country.
- It is impossible to ignore, however, that investment decisions made on a global basis will ultimately mean that cost of production and therefore hourly wage costs become a greater factor than before – especially now the UK has greater aspirations to become a global trader than when it was a member of the EU. The competition in automotive is fierce, and the ability to supply both finished vehicle and component parts requires an exceptional level of cost competitiveness. For companies in the UK, this means benchmark competitiveness.
- For the UK industry to continue to compete on the global stage over the coming decades, it is essential to create an environment that enables investment in high productivity and high value added manufacturing.

Key interventions should be funding for productivity increase, not just “job creation”. Fundamental investment in technology is required to safeguard jobs now to benefit from a healthy industry in the future.

Hourly Labour Cost (€)

Romania	7.7	
Hungary	9.9	
Poland	10.7	
Slovakia	12.5	
Czech Republic	13.5	
Spain	21.8	
UK	27.4	
Italy	28.8	
Germany	35.6	
Netherlands	36.4	
France	36.6	

¹ <https://www.smmmt.co.uk/wp-content/uploads/sites/2/SMMT-Sustainability-Report-2022.pdf> (page 9)

Skills

The automotive industry is already providing employment in high skill, high value jobs across the UK. With a presence in every region of the UK, it has the capability to go even further.

Developing the workforce in OEMs and throughout the supply chain to possess the right skills to support a renaissance in the transitioning sector is a significant challenge for the automotive sector – not least as it is necessary to maintain the production of current vehicles and components while developing the skills, expertise and engineering infrastructure required to create new vehicles and zero emission powertrains.

KPI 4: Availability of skilled engineers

- **The transition to connected vehicles and a range of electrified propulsion systems means that systematic reskilling and upskilling is urgent. Increasingly connected vehicles will require skills which have previously been seen as more relevant for high-tech information systems careers. Since 2018, the UK improved its ranking on tertiary education enrolment from 15th to 12th, while that for graduates in science and engineering remained stable in 7th.**
- For electrification it will become ever more critical to have access to a workforce that is capable of working in areas such as high voltage and hydrogen systems, as well as with lightweight materials – and to transition high skill engineers who have specialised in areas that will face technology change. For example, the UK has an exceptional level of expertise in engineering and production of the internal combustion engine.
- At the same time, it is essential to ensure a pipeline of the core skills that will enable manufacturers and supply chains to service today's market, targeting the existing workforce as well as future engineers.
- A critical challenge is the move towards digitalisation in manufacturing. This is necessary to unlock further gains in productivity across the industry and will require access to skills in high level data analysis and new, connected manufacturing technologies.
- Industry and government clearly recognise the urgency to drive digitalisation in manufacturing in order to enhance productivity and underpin every element of UK manufacturing's transformation, but the priority is spread across multiple departments – DfE, BEIS, DCMS, and even more recently DfT. Breaking down these silos will allow a more joined-up, proactive approach.

Working with industry, government should develop a cross-departmental strategy to increase skills and capability in manufacturing digitalisation – working at the level of OEM and throughout the supply chain.

Gross tertiary education enrollment

Turkey	113.2
South Korea	95.9
Spain	91.1
US	88.3
Netherlands	87.1
Russia	84.6
Germany	70.3
Canada	70.1
France	67.6
Italy	64.3
Czech Republic	63.8
UK	61.4
China	53.8
Brazil	53.3
Romania	53.2
Poland	51.0
Hungary	50.3
Thailand	49.3
Slovakia	45.4
Mexico	41.5
Morocco	38.5
Indonesia	36.3
India	28.6
South Africa	23.8

Graduates in Engineering

Germany	35.3
India	32.2
Russia	31.1
South Korea	29.3
Romania	28.1
Thailand	27.9
UK	26.9
Czech Republic	26.1
Mexico	26.0
France	25.4
Italy	24.2
Hungary	22.5
Canada	22.4
Spain	22.3
Slovakia	22.1
Poland	21.7
Japan	19.7
Turkey	19.4
Indonesia	19.4
US	19.0
Morocco	19.0
Brazil	18.4
South Africa	18.3
Netherlands	17.5

Case study - Investing in apprentices key to sustainable luxury at Bentley

Part of Bentley's Beyond100 strategy is to ensure the skills and talents needed to drive the future of sustainable automotive luxury are developed through its progressive apprenticeship programme. The long-running initiative has developed over 1,000 apprentices, with 118 currently advancing their careers at Bentley, and in 2021 the firm was recognised for its strong commitment to apprentices achieving silver status accreditation by the Investors in People "We invest in apprentices" programme.

Sam Smith, Bentley's Apprentice of the Year 2021, said, "It's inspiring to see that so many of our managers and senior managers have also come through the programme – we're frequently told we're not just apprentices; we're the future of the company." Bentley's strong engagement with the local community was also applauded alongside a demonstrable commitment to diversity and inclusion.



KPI 5: Availability of skilled operators and technicians

- **UK Automotive has potential to remain a highly productive, high value sector employing people across the country in highly skilled, well rewarded jobs. The coming years will be critical: to develop the right tools to maintain the skills we need for a healthy supply chain, while developing the new capabilities required to transition to the next generation of connected, automated and zero emission vehicles. Since the last survey in 2018, the UK maintained its ranking of 6th for PISA scaled and 3rd for secondary education enrolment.**
- The UK's huge potential for creativity and innovation can be a driver for productivity improvement, global export ambitions, and for supporting growth. Across the country there is access to world leading R&D, but without the skills to realise innovation in manufacturing – across the supply chain – it is likely that this will benefit manufacturers based elsewhere in the world and hamper UK competitiveness. The industry faces severe shortages, from semi-skilled Level 2 – Level 3 operators (an area heightened by the recent pandemic and departure from the EU), such as tool and die specialists, through to more future-leaning skills.
- Development of an automotive skills strategy has historically been a success and is rightly viewed as a benchmark among industrial sectors in the UK, but we cannot rest on our laurels. The Skills Foresighting Programme developed by the Automotive Council, High Value Manufacturing Catapult and Engenuity requires ongoing support to fully realise its potential.
- Furthermore, our industry has a huge opportunity precisely because it faces huge change – but at present none of government's skills initiatives – the Digital Skills Bootcamps, the National Retraining Scheme, traineeships or the Kickstart Scheme – address the challenge of upskilling large cohorts of the existing workforce.
- Apprenticeships are a trusted and well respected tool for bringing talent into the industry and, while the sector is supportive of the principle of an apprenticeship levy, the ability for businesses to successfully utilise their levy pots is a mixed picture. Automotive would therefore support a much more flexible approach to the use of employer levy pots.
- Given the rapid change in the industry in workforce competencies required by employers to remain globally competitive, it is necessary to review engineering and manufacturing apprenticeship standards. This will take place in 2022 and it is essential that apprenticeships receive funding at the same cap as current. A downward revision of automotive apprenticeship funding bands would have severe consequences, including imposing further restrictions on employment opportunities for young people – damaging the opportunities the industry provides for growth.

It is essential to conduct a review of apprenticeship standards which addresses the dual challenge of delivering the skills required now which will enable the transition to the next generation of zero emission vehicles and powertrains, and which maintains the current level of funding.

PISA scales

China	579.0
Japan	520.0
South Korea	519.7
Canada	516.7
Poland	512.8
UK	503.5
Netherlands	502.5
Germany	500.4
Czech Republic	495.5
US	495.3
France	493.7
Spain	482.3
Russia	481.3
Hungary	479.3
Italy	477.0
Slovakia	469.4
Turkey	462.5
Romania	427.8
Mexico	416.2
Thailand	412.4
Brazil	400.0
Indonesia	381.9
Morocco	367.9

Gross secondary ed enrollment

Spain	129.8
Thailand	129.0
UK	127.8
France	110.6
Canada	109.9
Poland	108.1
Czech Republic	105.6
Russia	104.5
Italy	102.9
Germany	102.7
Turkey	102.5
Japan	101.8
Brazil	99.7
South Korea	98.9
South Africa	98.8
US	97.6
China	94.3
Slovakia	92.5
Romania	92.3
Mexico	90.5
Indonesia	85.8
India	74.0

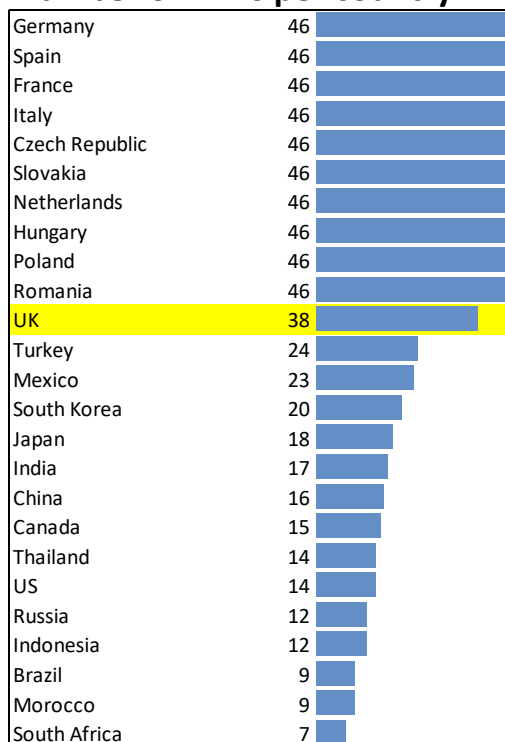
KPI 6: Access to Trade with Other Markets

Automotive is the UK's largest sector for exported goods. The EU is our largest market representing a share of around 55% of car exports, and while leaving the bloc has brought challenges over the last five years, the conclusion of negotiations and signing of the EU-UK TCA can bring opportunities.

- The trade deal with the EU was very welcome. The EU remains the UK's largest trading partner, and this will continue. Given the complexity and integration of automotive supply chains, it was, and is, critical to maintain as open and simple a trading relationship as possible.
- While there are inevitably costs associated with the UK's position outside the single market, the agreement on trade has helped unlock a hiatus on investment in UK Automotive.
- In the 18 months following the signing of the TCA, publicly announced investment decisions totalled more than £8 billion² – the highest total since 2013. Combined with the shift to ZEVs there is the possibility to attract fresh opportunities for all-new businesses to locate in UK.
- Industry is already a global exporter – especially for premium brands – but the opportunity to increase global export is welcome. To facilitate this, it is essential that government continues to pursue the “Global Britain” agenda – seeking trade agreements, and critically putting automotive at the heart of any trade deals reached, and that existing trade deals can be implemented in a way which enables smooth exports and imports.
- While the number of regional trade agreements (RTAs) is used as a proxy for access to trade, the quality of those trade deals for automotive will be key. It is complex to review every trade deal, but we are starting from a reasonable place – not as good as we had, but with opportunity to improve. Many of the trade agreements are carry-overs and will need to be reviewed and ideally enhanced.

Government's push to conclude global trade deals is welcome. It is important that automotive is put at heart of any trade deals - supporting exports and reducing barriers to entry. At the same time, it is important to ensure that trade deals already in place, including the critical EU-UK TCA, are secure and working in practice, especially ahead of key rules of origin commitments. It will be critical to prioritise those deals which can see most benefit. Deals should also consider the impact on the UK's remanufacturing sector, including tariff and waste classifications.

Number of RTAs per country



² <https://www.smm.co.uk/2022/01/dismal-year-for-uk-car-output-but-investment-recovery-and-electrified-charge-brighten-outlook/> and <https://www.smm.co.uk/2022/07/uk-car-production-down-a-fifth-in-first-half-but-shortages-beginning-to-ease/>

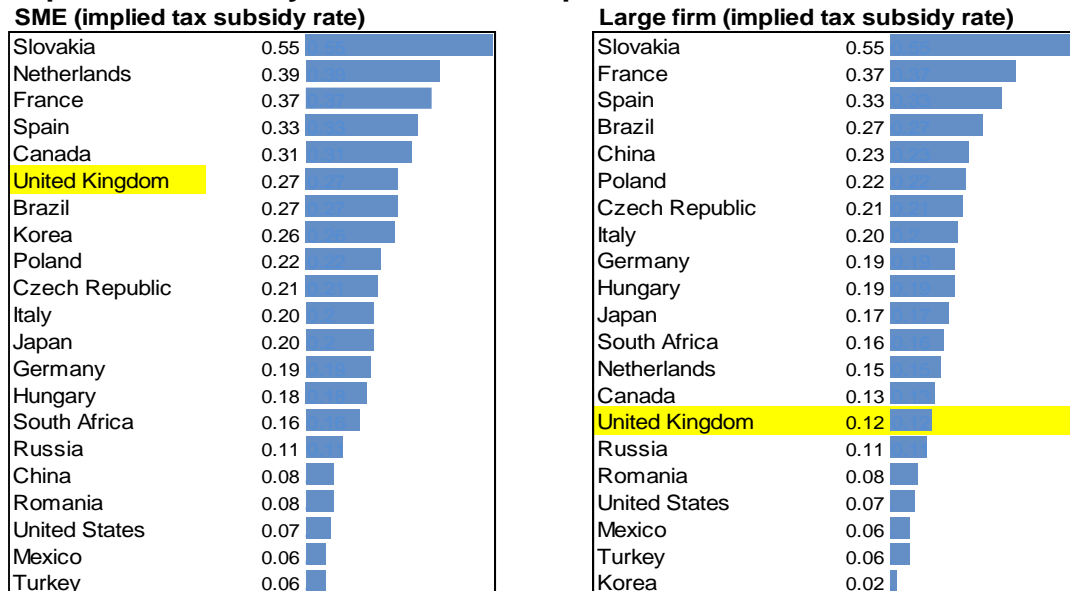
KPI 7: R&D Tax Credits / Government incentives

All countries with a significant automotive and manufacturing sector have state aid regimes which are both flexible and generous. To compete, the UK will need to continue to innovate in this area. Key will be speed, flexibility and a supportive approach.

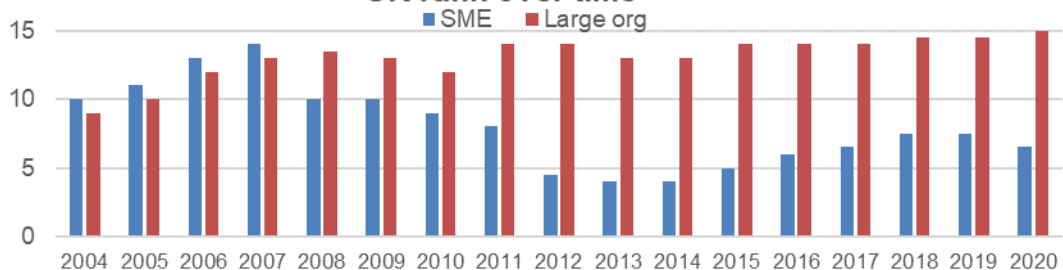
- All countries are working to attract the next generation of mobility to their manufacturing sites and in some respects – following on from half a decade of low investment – the UK comes from a position behind its competitors, but with the opportunity to become much more fleet of foot.
- Initiatives like the Advanced Propulsion Centre, the Automotive Transformation Fund and R&D Tax Credits (RDEC scheme) have been greatly appreciated by industry. Indeed, it is striking that the vast majority of significant investments in automotive over the past year have received some form of state aid. This is very much in line with investments being made in competitor countries.
- It is therefore very welcome that the government has undertaken a comprehensive review of state aid. This can be a key dividend of Brexit.
- The opportunity to tailor a regime, which will allow a highly competitive environment for the UK to transition to zero emission vehicles, requires open, reliable access to funding for a transition to zero emissions technologies, as well as productivity improvement across the supply chain.
- UK Automotive has benefitted over the past years from the RDEC scheme, enabling reliable and predictable funding for innovation.
- We utilise a new, more publicly accessible, KPI study in this report, which suggests implied subsidy rates for SMEs are quite competitive, but less so for large firms. Government is consulting on capital allowance regimes and longer lasting attractive measures which would be very desirable.

A dedicated fund to support both productivity enhancement and transition to ZEVs, with the ability to make rapid response to opportunities would allow the industry to transition to the high productivity, digitised model which will enable success in the new world of mobility. In parallel, R&D tax credits are effective as a method of incentivising R&D. The UK should consider expanding the generosity of the scheme.

Implied tax subsidy rates on R&D expenditures



UK rank over time

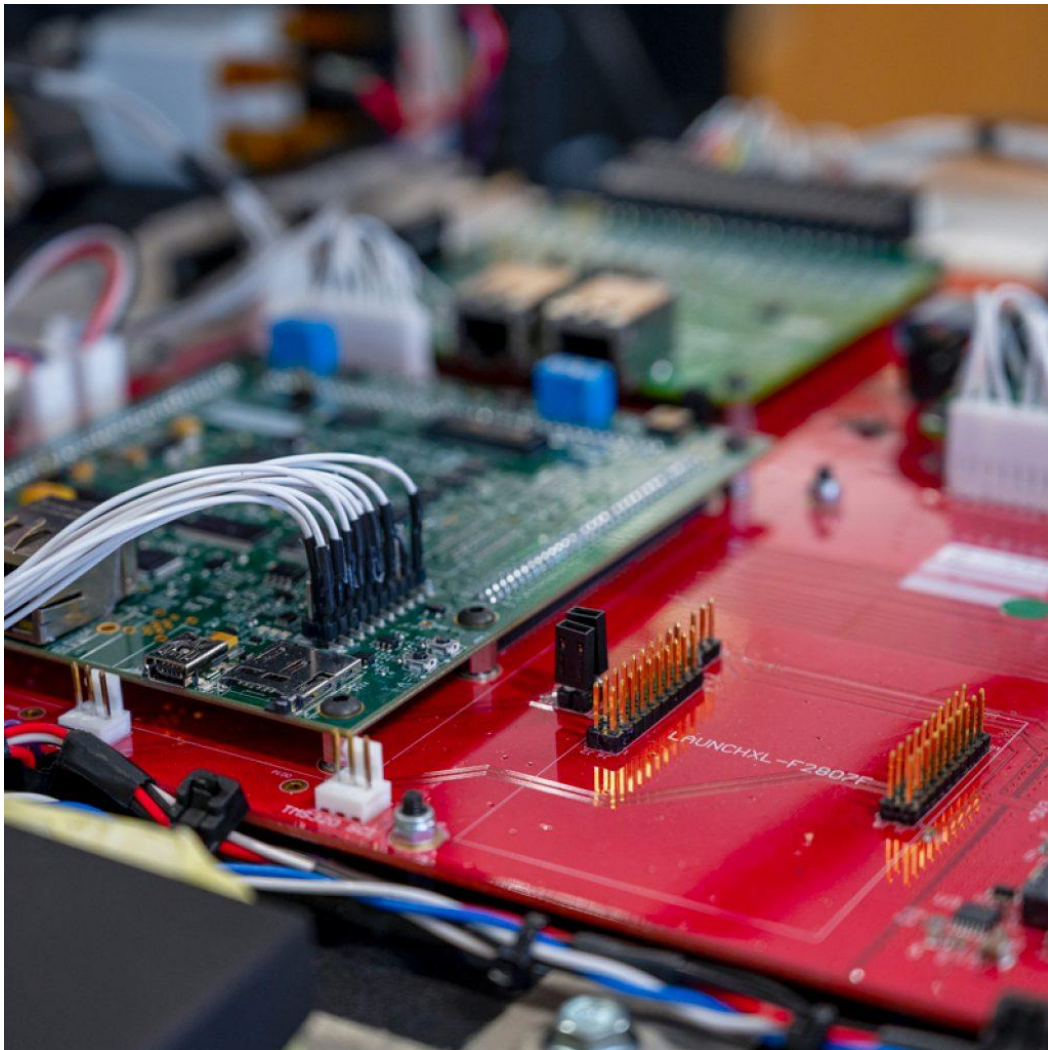


Case study - Demonstrating close collaboration between the UK automotive sector and government

Almost £92 million of combined government and industry funding has been committed to four innovative projects aiming to tackle range anxiety and find solutions to decarbonise commercial and heavy-duty transport.

Part of the Advanced Propulsion Centre's (APC) 18th funding competition (aimed at developing the UK's low carbon automotive capability), together these four projects, led by BMW, REE, Cummins and Sprint Power, are estimated to prevent creation of nearly 32 million tonnes of CO₂, which is equivalent to the lifetime tailpipe emissions of 1.3 million cars and will help safeguard or create more than 2,700 jobs.

Ian Constance, APC Chief Executive, said, "By investing in this innovation we're taking these technologies closer to the point where they are commercially viable, which will strengthen the UK's automotive supply chain, safeguard or create jobs and reduce harmful greenhouse emissions."



KPI 8: Energy Costs

The cost of energy has become a significant concern for investment in UK Automotive. Advantages in labour productivity and flexibility ultimately cannot offset the huge increases to cost which energy prices are causing – and therefore it is imperative that action is taken. Since 2018 the UK’s ranking on gas costs has slipped from second to sixth, and on electricity costs from fifth to 24th, or second bottom.

- The industry has aspirations to become a leader in carbon reduction, producing zero carbon capable vehicles, in zero carbon factories, with a zero carbon supply chain.
- Already UK plants are working towards this goal by reducing their energy usage. Key will be to ensure the provision of zero CO₂ energy to plants – something the industry cannot achieve itself.
- The UK has huge potential to be a beacon for zero CO₂ manufacture of zero CO₂ vehicles and it is encouraging to see the ambitious plans set out in the UK’s Net Zero strategy to decarbonise heavy industry. We would like to see these challenging plans also support strategically important advanced manufacturing sectors like automotive, with development of joint government and industry led sectoral decarbonisation roadmap.
- Clearly this will require infrastructure investment – in power generation, carbon capture and storage, energy storage, as well hydrogen, in addition to innovative processes developed by industry.
- The cost of energy is a key competitiveness indicator for investment in automotive. High energy costs could be a deterrent to more energy-intensive EV and battery manufacturing in Britain. BEIS data shows the UK has the highest electricity costs in Europe and Eurostat data shows it has the second highest of all the countries studied in this report. It is therefore very welcome that battery manufacturing has now been classed an Energy Intensive Industry – as industry has called for - and so can potentially access compensation for the costs of some energy regimes.
- Uncompetitive energy prices, however, remain a risk, limiting investment in the sector precisely at the time that the industry has potential to become a beacon for transition to net zero.
- Since the survey was undertaken, energy costs have risen significantly and helped create a cost of living crisis for consumers, and a cost of doing business crisis for industry. Such increases are difficult to pass on, especially in such a globally competitive market as automotive. Industry and government need to work together to develop ways of supporting industry through this crisis, while at the same time ensuring that ambitions to decarbonise the energy supply industry, and support for wider industry to decarbonise their manufacturing processes, are not diluted.

Industry welcomes the offer to work with government on measures to offset the UK’s high energy costs. As a sector whose energy intensity will only increase with the move to ZEV and battery manufacturing, and one which values the opportunity to become a beacon for green industry, we will work at speed to develop proposals to support this.

Gas cost (€)

Turkey	0.02
Hungary	0.03
Romania	0.03
Poland	0.04
Slovakia	0.04
UK	0.05
Germany	0.05
Czech Republic	0.05
France	0.08
Italy	0.09
Netherlands	0.09
Spain	0.10

Electricity cost (€)

Russia	0.06	56
India	0.07	7
Turkey	0.07	1
Mexico	0.07	2
China	0.07	4
Indonesia	0.09	
South Korea	0.09	
Canada	0.10	
Thailand	0.10	
Hungary	0.10	
Brazil	0.11	
Morocco	0.11	
South Africa	0.13	
US	0.13	
Romania	0.14	
Netherlands	0.16	
Poland	0.17	
Slovakia	0.17	
France	0.18	
Czech Republic	0.21	
Spain	0.21	
Japan	0.21	
Italy	0.22	
UK	0.23	
Germany	0.32	

Case study – Driving down the use of energy

Toyota's engine plant in Deeside - on the site of the former British Steel plant at Shotton - exports hybrid engines across the world. The plant is a key anchor for manufacturing in Wales, providing 600 jobs directly and many more indirectly in the local economy.

Casting aluminium engine blocks is an energy-intensive part of an industry where utility costs need to be kept to a minimum. New furnaces will cut both CO₂ emissions and bills at a time of rising costs.

Both of Toyota's UK plants operate their own solar arrays and Deeside is involved in a future project to use gas from domestic waste. Both Deeside and the vehicle assembly plant at Burnaston near Derby are regarded as two of Toyota's most environmentally sustainable manufacturing plants globally.



Summary of Recommendations

1. Productivity

A coordinated government / automotive activity to push productivity practices into the supply chain must be a priority – learning from the experience of the recently wound-up National Manufacturing Competitiveness Levels (NMCL).

2. Labour flexibility

Industry and government should work to put in place the tools to support industry resilience, enabling those affected by market transition to stay in the industry – enabling transfer to other OEMs or the supply chain, and by systematic opportunities for retraining.

3. Hourly labour costs

Key interventions should be funding for productivity increase, not just “job creation” – fundamental investment in technology is required to safeguard jobs now to benefit from a healthy industry in the future.

4. Availability of skilled engineers

Working with industry, the government should develop a cross-departmental strategy to increase skills and capability in manufacturing digitalisation – working at the level of OEM and throughout the supply chain.

5. Availability of skilled operators and technicians

It is essential to conduct a review of apprenticeship standards which addresses the dual challenge of delivering the skills required now which will enable the transition to the next generation of zero emission vehicles and powertrains, and which maintains the current level of funding.

6. Access to trade with other countries

Government’s push to conclude global trade deals is welcome. It is important that automotive is put at heart of any trade deals - supporting exports and reducing barriers to entry. At the same time, it is important to ensure that trade deals already in place, including the critical EU-UK TCA, are secure and working in practice, especially ahead of key rules of origin commitments. It will be critical to prioritise those deals which can see most benefit. Deals should also consider the impact on the UK’s remanufacturing sector, including tariff and waste classifications.

7. Government incentives / R&D tax credits

A dedicated fund to support both productivity enhancement and transition to ZEVs, with the ability to make rapid response to opportunities would allow the industry to transition to the high productivity, digitised model which will enable success in the new world of mobility. In parallel, R&D tax credits are effective as a method of incentivising R&D. The UK should consider expanding the generosity of the scheme.

8. Energy costs

Industry welcomes the offer to work with government on measures to offset the UK’s high energy costs. As a sector whose energy intensity will only increase with the move to ZEV and battery manufacturing, and one which values the opportunity to become a beacon for green industry, we will work at speed to develop proposals to support this.

Appendix A: Methodology

While many reports into the international competitiveness of the UK focused on general macro- and micro-economic factors that influence the overall health of the system, our approach has been to consider investment decisions made in the boardrooms of automotive companies – which will typically be based on a more focused (and sometimes idiosyncratic) set of drivers. It is vital that the UK works to maintain and improve its competitiveness in these areas to continue the strong record of investment in R&D, supply chain and vehicle manufacture that we have seen in recent years.

As in the previous International Competitiveness reports, we have focused on investigating the key priorities for taking investment decisions from the view of business people working in the automotive sector. This report is based on the views of the industry members of the Automotive Council and does not reflect government policy.

Research conducted for the report comprised three elements:

- 1) A list of comparator countries was agreed based on the strength or potential of their automotive sector – with the understanding that as the global economy evolves, this list will evolve with it.

The countries are as follows:

Brazil	Indonesia	Slovakia
Canada	Italy	South Africa
China	Japan	South Korea
Czech Republic	Mexico	Spain
France	Morocco	Thailand
Germany	Netherlands	Turkey
Hungary	Poland	USA
India	Russia	

- 2) A long-list of KPIs to those factors which were felt to be of greatest relevance was developed. For each of these, an ideal data source was identified.

Key criteria for inclusion in the list are:

- Credibility of source.
- Timeliness and frequency of data update.
- Range of comparator countries for which the data is available.

In certain cases, where a more comprehensive data source was identified between the publication of the previous International Competitiveness report and this one, the KPI used has been updated.

Our goal is to be among the best in Europe and to compete with the best in the world. Therefore, for each KPI, the UK's performance is rated two-fold using a traffic light system: against other countries in the EU Customs Union, and against countries worldwide.

- Green – where the UK is in the top 30% (broadly top three) compared to countries in the EU Customs Union / top 20% (top five) globally;
- Amber – where it is above average; and
- Red – where the UK's performance is below average – so requiring urgent action where possible

- 3) A survey of companies in the automotive sector to generate a short list of (8) KPIs from the longlist of identified indicators, based on priority in influencing investment.

This approach allowed us to identify the top KPIs affecting global investment decisions, and therefore the UK's position against them, together with a longer list of critical factors to maintain the UK as a competitive candidate for investment.

The survey results are based on detailed responses from some 50 automotive companies active in the UK, including all the major vehicle manufacturers as well as players in the supply chain, companies engaged in significant R&D, and a selection of other automotive related businesses.

Appendix B: Sources of data

Wherever possible, data has been gathered from readily available sources.

A Damodaran, Stern school of Business

http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html

- Country Risk Premium

Ernst and Young Global Tax Guide

<http://www.ey.com/GL/en/Services/Tax/Worldwide-Corporate-Tax-Guide---Country-list>

- Capital allowances

Eurostat (European Commission) <http://ec.europa.eu/eurostat>

- Hourly labour cost
- Productivity in automotive
- Gas price
- Electricity price
- Qualifications in industrial workers

Global Innovation Index (Cornell University, INSEAD, World Intellectual Property Organisation)

<https://www.globalinnovationindex.org>

- University/industry research collaboration
- GERD performed by business
- Information and communications infrastructure

Global Competitiveness Report (World Economic Forum) <http://www.weforum.org/reports/global-competitiveness-report-2014-2015>

- Cooperation in labour – employee relations
- Labour flexibility
- Infrastructure (roads, railroad, ports, electricity supply, quality of electricity supply)
- Burden of government regulation

KOF Swiss Economic Institute <http://globalization.kof.ethz.ch/>

- Index of Globalisation

KPMG tax tools and resources

<http://www.kpmg.com/global/en/services/tax/tax-tools-and-resources/pages/corporate-tax-rates-table.aspx> 26

- Corporation tax rates

OECD <http://stats.oecd.org/>

- GDP/hour worked
- Business rates (4100 recurrent taxes on immovable property)
- Implied tax subsidy rates on R&D expenditures
- PISA scales in reading, maths and science

OICA (Organisation Internationale des Constructeurs d'Automobiles)

<http://www.oica.net/category/production-statistics/>

- Production volume
- Production growth (calculated based on 2010 production volume)

Transparency International <http://www.transparency.org/research/cpi/overview>

- Corruption Perceptions Index

UNESCO Institute for Statistics <http://www.uis.unesco.org/>

- Graduates in Science and Engineering
- Graduates in Engineering, Manufacturing and Construction
- Gross secondary education enrolment
- Gross tertiary education enrolment
- GERD performed by government

World Bank <http://data.worldbank.org/>

- Diesel cost
- Manufacturing value added
- Worldwide governance indicators (www.govindicators.org)

World Trade Organisation <http://wto.org/>

- Regional Trade Agreements

Where different currencies are used in the report, these are as used in the source data – no additional exchange assumptions have been made.

All information correct as taken from source at the time of writing.