Committee on Climate Change

Independent advice to government on building a low-carbon economy and preparing for climate change

The Sixth Carbon Budget and Welsh emissions targets – Call for Evidence

Background to the UK's sixth carbon budget

The UK Government and Parliament have adopted the Committee on Climate Change's (CCC) recommendation to target net-zero emissions of greenhouse gases (GHGs) in the UK by 2050 (i.e. at least a 100% reduction in emissions from 1990).

The Climate Change Act (2008, 'the Act') requires the Committee to provide advice to the Government about the appropriate level for each carbon budget (sequential five-year caps on GHGs) on the path to the long-term target. To date, in line with advice from the Committee, five carbon budgets have been legislated covering the period out to 2032.

The Committee must provide advice on the level of the sixth carbon budget (covering the period from 2033-37) before the end of 2020. The Committee intends to publish its advice early, in September 2020. This advice will set the path to net-zero GHG emissions for the UK, as the first time a carbon budget is set in law following that commitment.

Both the 2050 target and the carbon budgets guide the setting of policies to cut emissions across the economy (for example, as set out most recently in the 2017 Clean Growth Strategy).

The Act also specifies other factors the Committee must consider in our advice on carbon budgets – the advice should be based on the path to the UK's long-term target objective, consistent with international commitments and take into account considerations such as social circumstances (including fuel poverty), competitiveness, energy security and the Government's fiscal position.

The CCC will advise based on these considerations and a thorough assessment of the relevant evidence. This Call for Evidence will contribute to that advice.

Background to the Welsh third carbon budget and interim targets

Under the Environment (Wales) Act 2016, there is a duty on Welsh Ministers to set a maximum total amount for net Welsh greenhouse gas emissions (Welsh carbon budgets). The first budgetary period is 2016-20, and the remaining budgetary periods are each succeeding period of five years, ending with 2046-50.

The Committee is due to provide advice to the Welsh Government on the level of the third Welsh carbon budget (covering 2026-30) in 2020, and to provide updated advice on the levels of the second carbon budget (2021-25) and the interim targets for 2030 and 2040. Section D of this Call for Evidence (covering questions on Scotland, Wales and Northern Ireland) includes a set of questions to inform the Committee's advice to the Welsh Government.

Question and answer form

When responding, please provide answers that are as specific and evidence-based as possible, providing data and references to the extent possible.

Please limit your answers to <u>400 words</u> per question and provide supporting evidence (e.g. academic literature, market assessments, policy reports, etc.) along with your responses.

1. The Society of Motor Manufacturers and Traders (SMMT) is one of the largest and most influential trade associations in the UK. It supports the interests of the UK automotive industry at home and abroad, promoting the industry to government, stakeholders and the media. The automotive industry is a vital part of the UK economy accounting for some £82 billion turnover and £18.6 billion value added. With some 168,000 people employed directly in manufacturing and 823,000 across the wider automotive industry, it accounts for 14.4% of total UK exports with over 160 countries importing UK produced vehicles. 30 manufacturers build in excess of 70 models of vehicle in the UK supported by more than 2,500 component providers and some of the world's most skilled engineers.
2. SMMT welcomes the opportunity to respond to the call for evidence on the Sixth Carbon Budget and Welsh emissions targets. The automotive industry is firmly committed to a zero emission future and is investing significantly into future technologies and production processes that will deliver smart and sustainable mobility on the pathway to 2040, and beyond.
3. Full responses to the questions where SMMT has evidence and expertise can be found below. All our responses relate solely to the automotive industry. We would be happy to provide any further information as needed.

A. Climate science and international circumstances

Question 1: The climate science considered in the CCC's 2019 Net Zero report, based on the IPCC Special Report on Global Warming of 1.5°C, will form the basis of this advice. What additional evidence on climate science, aside from the most recent IPCC Special Reports on Land and the Oceans and Cryosphere, should the CCC consider in setting the level of the sixth carbon budget?

ANSWER: n/a

Question 2: How relevant are estimates of the remaining global cumulative CO_2 budgets (consistent with the Paris Agreement long-term temperature goal) for constraining UK cumulative emissions on the pathway to reaching net-zero GHGs by 2050?

ANSWER: n/a

Question 3: How should emerging updated international commitments to reduce emissions by 2030 impact on the level of the sixth carbon budget for the UK? Are there other actions the UK should be taking alongside setting the sixth carbon budget, and taking the actions necessary to meet it, to support the global effort to implement the Paris Agreement?

ANSWER: n/a

Question 4: What is the international signalling value of a revised and strengthened UK NDC (for the period around 2030) as part of a package of action which includes setting the level of the sixth carbon budget?

ANSWER: n/a

B. The path to the 2050 target

Question 5: How big a role can consumer, individual or household behaviour play in delivering emissions reductions? How can this be credibly assessed and incentivised?

ANSWER:

- The consumer journey is essential to delivering emissions reductions - consumers need to be confident in choosing the right vehicle for the right journey.
- This will drive fleet renewal and reductions in emissions now, as well in the medium and long-term.

Experience from the automotive industry demonstrates people's behaviours and decisions can change over time in a way that will reduce emissions but strong policy signals and incentives are needed to drive this behavioural change. Changing behaviour is the strongest way to change vehicle selection and utilisation, and associated emissions. This will drive fleet renewal, which will help deliver CO2 reductions and also reduce air pollution.

The consumer journey is critical to achieving this. Central to this is ensuring all technology options - internal combustion engine (ICE), hybrid (HEV), plug-in hybrid (PHEV), battery electric (BEV) and fuel cell (FCEV) -remain available for consumers so they can choose the right vehicle for their journey needs. Different technologies are able to deliver solutions for different users and vehicle types, and consumers should be enabled to choose the appropriate type of vehicle and technology for their journey needs.

It is important to recognise that we are embarking on a transition to zero emission vehicles and that during this transition period, the newest, cleanest ICE vehicles will continue to play a vital role for all vehicle segments in meeting current and future carbon budgets. Fleet renewal remains the quickest way to lower emissions, with old, more polluting vehicles being replaced by vehicles, which have significantly lower emissions. SMMT data shows, for example, that significant investment by manufacturers into advanced powertrains, lightweight materials and aerodynamics means that new cars now emit, on average, some 29.3% less CO2 than models produced in 2000.[1]

The automotive industry is bringing new ultra-low and zero emission cars and vans to market, but high purchase prices (due to the , compared with traditional technologies, are still cited as a key barrier[2] to ULEV adoption by consumers, together with concerns around infrastructure provision. To address these barriers and help drive consumers to lower emitting technologies, SMMT believes there needs to be a comprehensive fiscal package to help reduce the upfront purchase price of ULEVs for consumers and amortise them over the vehicle's life, including maintaining the Plug-in Grants and removing VAT and other taxes from these types of vehicles. This needs to be coupled with a truly accessible,

[1] https://www.smmt.co.uk/2020/01/record-year-for-zero-emission-cars-fails-to-reboot-uk-market-as-sector-calls-for-supportive-policies-to-boost-uptake/
[2] T&E Consumer attitudes to low and zero emission cars, Oct 2018

ubiquitous, interoperable nationwide network of electric charging and hydrogen refuelling points that satisfies the needs of all road users. We discuss these in more detail below. For public transport and the broader road transport sector, there is an even more significant challenge to reduce emissions and therefore, in order to enable operators to switch to the lowest emitting technologies, a comprehensive fiscal package, alongside the required infrastructure, must be delivered. There is also a vital need for clear, long-term regulatory certainty for manufacturers and operators. This is explored further in our responses below.

Question 6: What are the most important uncertainties that policy needs to take into account in thinking about achieving Net Zero? How can government develop a strategy that helps to retain robustness to those uncertainties, for example low-regrets options and approaches that maintain optionality?

ANSWER:

- There are many unknowns for automotive and these all need to be taken into account when seeking to achieve net zero in automotive, e.g. demand levels, pace of technology change and future battery production.
- Government has a critical role in facilitating and supporting the development and adoption of new technologies, and setting the long-term policies to help address these uncertainties.

For automotive, there are many unknowns that need to be taken into account when thinking about achieving net zero. From a vehicle perspective, technologies are evolving at a rapid rate as manufacturers seek to lower emissions and adapt to consumer demands (such as increased range for battery electric vehicles). There are also uncertainties around the costs of new technologies and when cost parity may be reached with traditional technologies, as well as issues around capacity for building batteries needed for electrified vehicles.[3] There is already some evidence of delay in battery supply affecting vehicle production across automotive industry. A rapid increase in demand for EVs could potentially exaggerate this issue, which in turn could impact upon future vehicle supply. It is also important to recognise the limitations of an automotive development cycle and commercial agreements that will be in place. For example, the current cost of EV batteries may have dropped in cost but a manufacturer may only be able to access the lower cost when they refresh their architecture. Architecture cycles (chassis and powertrain) need to be long enough in order for manufacturers to achieve their return on investment.

At present, although infrastructure for electrified cars and vans is growing, it is uncertain if this can move quickly enough to enable the market to grow in line with government ambitions. There are also uncertainties over the future of government fiscal support and other policy levers to help drive the market for lower emitting technologies and how further changes could either drive or stall such an early market for ULEVs. For larger vehicles, whether that is HGVs, buses, coaches, larger vans or passenger cars, uncertainties remain around what technologies are viable and if the required infrastructure for some technologies can be delivered. There are also very long product cycles for some of these types of vehicles (up to 25 years) so there must be real clarity for the industry on future targets and incentives to drive change. For these reasons, it is imperative that the government maintains a technology neutral approach to allow the market to develop sustainably and to recognise the role all technologies will play during the transition to zero

[3] https://www.concawe.eu/publication/impact-analysis-of-mass-ev-adoption-and-low-carbon-intensity-fuels-scenarios/

emission technologies. Government also has a crucial role in facilitating and supporting the development and adoption of new technologies, through the R&D funding, incentives and ensuring the right business and consumer environment for these technologies to thrive.

The Automotive Council has produced roadmaps[4] for different parts of the industry, which we would recommend the Committee examine as part of its thinking. These roadmaps have been informed by consensus amongst a wide range of industry and academic experts in order to maintain the roadmaps' relevance and to identify research challenges arising from future industry demands.

From a manufacturing perspective, to reach zero emissions, a radical move is needed. This may mean a switch to sustainable hydrogen as fuel or switching to electric processes (assuming electricity becomes decarbonised, and this is the most efficient option). However, at present the technologies to do this, especially on a commercial and industrial scale, do not exist, are unproven or are not cost effective. There are also areas of production that will be particularly hard to decarbonise. An example would be paint shops, which need to operate at very high temperatures. Government needs to encourage and support research and development in these challenging areas to help ensure decarbonisation is achieved.

More details on the industry's work in this area can be found in our 2019 Sustainability Report.[5]

Question 7: The fourth and fifth carbon budgets (covering the periods of 2023-27 and 2028-32 respectively) have been set on the basis of the previous long-term target (at least 80% reduction in GHGs by 2050, relative to 1990 levels). Should the CCC revisit the level of these budgets in light of the net-zero target?

ANSWER:

- Achieving significant progress in the short to medium term will be crucial to meeting net zero.

SMMT would support a review of the likely achievement of the fourth and fifth carbon budgets to ensure the right policy levers can be put in place in the short to medium term. This is essential as significant progress must be made in the next ten years if the current 2050 legislative target.

Focus must then be given to continuing the right policy levers, decisions and incentives are in place to drive the long-term change. To ensure that the UK automotive industry remains globally competitive but also to encourage appropriate research into next generation alternative energy sources and economic levers to encourage continued investment in, and roll out of, renewable energy and self-generation, including carbon capture.

[4] https://www.automotivecouncil.co.uk/technology-group-2/automotive-technology-roadmaps/
[5] https://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-Sustainability-Report-2019.pdf

Question 8: What evidence do you have of the co-benefits of acting on climate change compatible with achieving Net Zero by 2050? What do these co-benefits mean for which emissions abatement should be prioritised and why?

ANSWER: n/a

C. Delivering carbon budgets

Question 9: Carbon targets are only credible if they are accompanied by policy action. We set out a range of delivery challenges/priorities for the 2050 net-zero target in our Net Zero advice. What else is important for the period out to 2030/2035?

ANSWER:

- SMMT fully supports the Committee's assertion that carbon budgets are only credible if accompanied by policy action.
- Automotive needs the right consumer incentives and policies, as well as the right business environment to achieve net zero.

Automotive is focussed on a achieving a zero emission future. To achieve this, there need to be the right policies and incentives for consumers and industry: fiscal incentives to drive change, clear direction and policies to support the entire transport system to decarbonise in a realistic timescale, the right infrastructure is in place and consumers feel confident in purchasing the lowest emitting vehicle for their needs in order to drive fleet renewal. Without fleet renewal, older, more polluting vehicles will stay on our roads for longer, meaning higher emissions for longer.

Furthermore, the right business environment and supporting strategies must be in place to ensure the UK is in a sustainable position to design and manufacture ULEVs. This will be vital for the future of UK manufacturing, its supply chains and the health of the UK economy. Industrial Strategy policy across successive governments has played a vital role in signalling to international headquarters the UK's ambition to develop and further its industrial base.

As we look forward, the importance in having an Industrial Strategy is only going to increase as we look to ensure that automotive and government maintain this strong partnership to deliver on shared ambitions in the years to come, including reducing emissions and achieving net zero. These points are explored more fully below.
There are also some additional issues for our sector, namely:

- Investment in sufficient energy and a resilient network to accelerate the roll out of public charging infrastructure - we suggest looking at the Electric Vehicle Energy Task Force report for more detail[6];
- Revision of national planning policy that removes current barriers to installation of wind turbines and other renewable energy sources - infrastructure investment in green technologies must be aligned with taxation to avoid additional cost and incentivise investment in low carbon technologies;
- Acceleration of research into alternative decarbonised solutions for heating with a particular industry based focus on paint technologies which currently rely on natural gas to bake & cure paint at high temperatures to the necessary quality;

[6] https://www.lowcvp.org.uk/projects/electric-vehicle-energy-taskforce.htm

- Due consideration as to whether a hydrogen/methane alternative or a yet unpublished alternative exists and can work with existing gas infrastructure;
- Incentives could be provided to reduce overall energy demand for building climate control, including advanced heat pumps or building efficiency technologies.

Question 10: How should the Committee take into account targets/ambitions of UK local areas, cities, etc. in its advice on the sixth carbon budget?

ANSWER:

- Consistent policies and action are essential to avoid consumer confusion.

To deliver on our shared responsibilities, SMMT strongly supports the importance of local decision making and the desire to set local targets. However, from an automotive and consumer perspective, it is important that there is still a defined, uniform and enforceable national standard or framework to prevent confusion as differing local standards can mean individual consumers, fleets or operators are left confused on where they are able to drive their vehicle and where this is not possible without incurring a charge. The uncertainty around local emissions reduction strategies has led to consumers deferring their new vehicle purchase; this in turn has stalled fleet renewal and can lead to a regression in environmental improvements. There should therefore be more support for specialist air quality teams within local authorities so that there is a solid understanding of air quality issues at a local level.

Question 11: Can impacts on competitiveness, the fiscal balance, fuel poverty and security of supply be managed regardless of the level of a budget, depending on how policy is designed and funded? What are the critical elements of policy design (including funding and delivery) which can help to manage these impacts?

ANSWER: n/a

Question 12: How can a just transition to Net Zero be delivered that fairly shares the costs and benefits between different income groups, industries and parts of the UK, and protects vulnerable workers and consumers?

ANSWER:

- Ambition must be matched by a strong Industrial Strategy and clear supporting policies to ensure a just transition for the UK automotive industry, workers and consumers.

Achieving a just transition to Net Zero will be essential to maintaining the health of UK automotive, protecting the 823,000 jobs it supports across the sector. Automotive manufacturing and its supply chain are a key contributor to the UK's economic prosperity, accounting for £82 billion turnover and £18.6 billion value added annually. Automotive accounts for 14.4% of total UK exports to over 160 countries. 168,000 people are directly employed in automotive manufacturing, although the wider automotive sector accounts for 823,000 jobs. More than 30 manufacturers build in excess of 70 vehicle models in the UK, supported by around 2,500 component providers and some of the world's most skilled

engineers. Sustaining the UK supply chain and providing support during the transition to new technologies in products and processes is essential to the UK and critical to the competitiveness of the UK.

However, large sections of the UK automotive industry are currently geared towards producing internal combustion engines and ICE vehicles. Of the 1.3 million cars that are built in the UK last year, a record 15% were alternatively fuelled vehicles and only 3.4% are BEVs, whereas all 78,000 commercial vehicles built in the UK were conventionally fuelled. UK Automotive takes great pride in its skilled workforce and their ability to produce 2.52 million engines in 2019 for use across the globe.

The industry and successive governments have worked very hard over decades to make the UK a location of choice for automotive investment and production. These efforts have resulted in the creation of a competitive supply chain, world-class R&D and engineering, and a strong skills base in traditional powertrains. It cannot be taken for granted that the UK will remain an attractive location for vehicle manufacturers to invest in the research, design, engineering and production of low and ultra-low emission vehicles. Currently the UK is home to the manufacture of hybrid, plug-in hybrid and battery electric vehicles, as well as ICE vehicles. Investment in new technologies and in retooling existing production facilities is based on a strong business case that revolves around, among other factors, the availability of a substantially different supply chain and skills within the workforce.

A just transition is key to continued success for UK automotive and our shared ambitions for future technology and the environment. For automotive this means not hampering fleet renewal, retaining and expanding our UK manufacturing base, upskilling the workforce, gigafactory investment, supporting fledgling EV supply chain and targeted strategic R&D investment. A just transition is pivotal to ensuring the future viability of the UK automotive industry and, by extension, the UK economic prosperity. This will aid government's Industrial Strategy and ensure manufacturing in the UK continues, whilst still achieving economic prosperity, net zero carbon targets by 2050 and providing security for the workforce.

Employees within the sector must also face a just transition - upskilling is a significant focus for UK automotive and must be supported through government policies. The Automotive Council estimates that at least 14% of the automotive industry workforce will need significant upskilling or reskilling due to the switch to electrification. The Faraday Institution[7] notes that the switch to the production of EVs puts jobs in the UK automotive industry at risk. Government efforts should focus on providing the necessary funding and mechanism by which to upskill and reskill the existing automotive workforce alongside the development of the training infrastructure and curriculum for future technologies.
The transition to more costly ultra-low emission vehicles could also restrict some social groups from the market and so curtail their mobility choices. Ambitious government announcements on long-term future policy can create unintended consumer confusion over which technologies to buy today. Industry is concerned with any slowdown in fleet renewal, keeping people in their older vehicles for longer, adversely impacts the environmental profile of the fleet, reduces supply of new technologies to the used vehicle market and restricts automotive's ability to invest in, and market, future technologies.

D. Scotland, Wales and Northern Ireland

[7] https://faraday.ac.uk/wp-content/uploads/2019/06/Exec-Summary-Report_May2019_FINAL.pdf

Question 13: What specific circumstances need to be considered when recommending an emissions pathway or emissions reduction targets for Scotland, Wales and/or Northern Ireland, and how could these be reflected in our advice on the UK-wide sixth carbon budget?

ANSWER: n/a

Question 14: The Environment (Wales) Act 2016 includes a requirement that its targets and carbon budgets are set with regard to:

- The most recent report under section 8 on the State of Natural Resources in relation to Wales;
- The most recent Future Trends report under section 11 of the Well-Being of Future Generations (Wales) Act 2015;
- The most recent report (if any) under section 23 of that Act (Future Generations report).

a) What evidence should the Committee draw on in assessing impacts on sustainable management of natural resources, as assessed in the state of natural resources report?

b) What evidence do you have of the impact of acting on climate change on well-being? What are the opportunities to improve people's well-being, or potential risks, associated with activities to reduce emissions in Wales?

c) What evidence regarding future trends as identified and analysed in the future trends report should the Committee draw on in assessing the impacts of the targets?

d) Question 12 asks how a just transition to Net Zero can be achieved across the UK. Do you have any evidence on how delivery mechanisms to help meet the UK and Welsh targets may affect workers and consumers in Wales, and how to ensure the costs and benefits of this transition are fairly distributed?

ANSWER: n/a

Question 15: Do you have any further evidence on the appropriate level of Wales' third carbon budget (2026-30) and interim targets for 2030 and 2040, on the path to a reduction of at least 95% by 2050?

ANSWER: n/a

Question 16: Do you have any evidence on the appropriate level of Scotland's interim emissions reduction targets in 2030 and 2040?

ANSWER: n/a

Question 17: In what particular respects do devolved and UK decision making need to be coordinated? How can devolved and UK decision making be coordinated effectively to achieve the best outcomes for the UK as a whole?

ANSWER:

- Consistent policies and action are essential to avoid consumer confusion.

Although devolved decision making is of crucial importance, to achieve the best outcomes in automotive, co-ordinated UK decision making is likely to have the biggest impact through ensuring consistent messaging and avoiding national companies needing to comply with different policies in different nations. Co-ordinated action also has the advantage of avoiding consumer confusion on vehicle technologies. There should therefore be more support for specialist air quality teams within local authorities so that there is a solid understanding of air quality issues at a local level.

E. Sector-specific questions

Question 18 (Surface transport): As laid out in Chapter 5 of the Net Zero Technical Report (see page 149), the CCC's Further Ambition scenario for transport assumed 10% of car miles could be shifted to walking, cycling and public transport by 2050 (corresponding to over 30% of trips in total):

a) What percentage of trips nationwide could be avoided (e.g. through car sharing, working from home etc.) or shifted to walking, cycling (including e-bikes) and public transport by 2030/35 and by 2050? What proportion of total UK car mileage does this correspond to?

b) What policies, measures or investment could incentivise this transition?

ANSWER:

a) Shared mobility has an important role to play but individual car access will continue to be valued for its flexibility and convenience.

People's behaviours and decisions can change over time in a way that will reduce emissions but strong policy signals and incentives are needed to drive this behavioural change. In recent years, a clear shift from traditional vehicle ownership to usership has emerged. Individual vehicle ownership is still currently the preferred option for most people, however, an increasing number opt for long-term vehicle rental (a form of leasing) or avoid car ownership altogether by using pay-as-you-go schemes such as car clubs or on-demand mobility services, such as the bus and ride-hailing.

The shift has the potential to generate environmental and congestion benefits. According to the International Transport Forum[8], replacing half of all private car trips with rides in shared vehicles (buses & ride sharing) would deliver a 20% reduction in CO2 emissions and reduce congestion by 17%. If one in five private car trips was taken over by shared mobility services, CO2 emissions would still be reduced by 15% and congestion reduced by 8%.

Individual car access is still highly valued for its flexibility and convenience. So although some modal shift away from single occupancy private car use is feasible, people's travel

[8] https://www.itf-oecd.org/sites/default/files/docs/shared-mobility-simulations-auckland.pdf

patterns are not fixed over time. For example, people now have on average seven different jobs over their working life, compared with three 20 years ago. Therefore how, when and why people travel and by what mode will change. This needs to be considered in any policies around modal shift.

The UK leads the world in the provision of public transport vehicles. SMMT believes there is the opportunity to make the UK bus industry a key component of future strategies to reduce congestion and improve urban and inter-urban transport. Greater or more effective use of incentives such as the Low Carbon Emitting Bus BSOG scheme and a more comprehensive and effective bus service (and wider public transport system) will be key to reducing people's reliance on the private car. SMMT believes government should come forward urgently with a clear bus strategy to help deliver more efficient use of bus services. Investment in public transport must be focussed on city centres, semi-rural and rural areas - one must not come at the expense of another. As well as the impact on individuals, this would have a negative impact on employers who are located outside city centres, and for which access to skilled people is essential. As such, it is vital that private car and shared mobility, and enabling infrastructure, have a key role in a holistic and fully integrated transport network strategy.

Question 19 (Surface transport): What could the potential impact of autonomous vehicles be on transport demand?

ANSWER:

- Mobility as a Service (MaaS) may have a bigger impact on transport demand.

Currently, the impact of Autonomous Vehicles (AVs) on transport demand is very uncertain, so it is difficult to determine the potential impact AVs may have on transport demand. The greater influence on transport demand may, in fact, be the degree to which MaaS is available and becomes accessible and affordable to the mass market - some MaaS offerings will be operated by human drivers and others, by AVs. An SMMT and Frost & Sullivan report[9] on Connected and Autonomous Vehicles, noted that the expansion of urban boundaries will make MaaS accessible to more people in the UK.

Question 20 (Surface transport): The CCC recommended in our Net Zero advice that the phase out of conventional car sales should occur by 2035 at the latest. What are the barriers to phasing out sales of conventional vehicles by 2030? How could these be addressed? Are the supply chains well placed to scale up? What might be the adverse consequences of a phase-out of conventional vehicles by 2030 and how could these be mitigated?

ANSWER:

- The market for ultra-low emission vehicles is growing but it is still a very small part of the overall new car and van market.
- Phasing out the sale of ICE vehicles presents a significant challenge and will involve a transitional period where all technologies will continue to play a vital role. Consumers should be able to choose the right vehicle for the right journey.

[9] https://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-CONNECTED-REPORT-2019.pdf

- A suite of policies and actions must be delivered by government in order for industry to reach the current 2040 ambitions. For an earlier phase out date, these policies would have to go much further and faster in order for consumers to adopt ultra-low emission vehicles quicker.
- Government should maintain a technology neutral approach that acknowledges the vital role that hybrids and plug-in hybrids play in reducing emissions and facilitating consumer moves from conventionally fuelled vehicles to ULEVs.
- Given long product cycles and other challenges, it would still be incredibly difficult for industry to deliver a date significantly before 2040.

The automotive industry is firmly committed to a zero emission future and fully recognises the important role it must play in reaching net zero by 2050. As such, the industry continues to invest significantly into future technologies that will deliver smart and sustainable mobility, ensuring the current transition to zero emission capable cars and vans can be fully achieved by 2040. For other types of vehicles, particularly heavy commercial trucks, a longer timeline is needed due to the role and use of these vehicles, and the limited zero emission capable technology available for heavy vehicles, as recognised in the Committee's net zero report.

When considering the phase out date for conventional vehicles, it is firstly important to recognise this is a significant challenge and reaching that point requires a transitional period where consumers are able to gradually switch to alternatively fuelled vehicles. Currently, the market for ultra-low emission cars is growing but it is still a very small part of the overall car market.

Overall, battery electric, plug-in hybrid and hybrid cars accounted for 7.4% of new registrations in the UK in 2019[10] (1.6% BEV, 1.5% PHEV, 4.2% Hybrid). This illustrates that a significant increase will still be needed to reach current government ambition levels of uptake (50-70%) by 2030, and to reach 100% of registrations by 2040. For vans, 0.9% of the new registrations in 2019 were alternatively fuelled (BEVs and PHEVs).
During the transitional phase, internal combustion engines will continue to play an important role, as consumers need to pick the right type of vehicle for their journeys. Ensuring consumers have the confidence to pick the newest, cleanest diesel or petrol vehicles where this is most appropriate, is essential to drive fleet renewal. This is the quickest way to drive down emissions and improve air quality, particularly when significant barriers still exist for the uptake of ULEVs.

These barriers already pose a significant risk to achieving the current ambition levels set out in Road to Zero and therefore, even more of a barrier to achieve an end of sale date significantly prior to 2040, and doing so could have severe adverse consequences for the automotive industry.

Although new products are coming to market at a rapid rate, high purchase prices, compared with traditional technologies, are still cited as a key barrier to ULEV adoption, together with concerns around infrastructure. Without rapidly addressing these barriers to ULEVs, mass market adoption will not take place.

Therefore, to deliver our shared responsibilities, there needs to be a comprehensive package of long-term incentives to bolster consumer confidence during the transition period. These measures should be commensurate with the level of ambition. Government should also maintain a technology neutral approach that acknowledges the vital role that

[10] https://www.smmt.co.uk/2020/01/record-year-for-zero-emission-cars-fails-to-reboot-uk-market-as-sector-calls-for-supportive-policies-to-boost-uptake/

hybrids and plug-in hybrids play in reducing emissions and facilitating consumer moves from conventionally fuelled vehicles to ULEVs. For the van market, hybrid technologies will play a particularly important role given the utility nature of vans. With an increasing proportion of road traffic being vans, particularly in cities, hybrid technologies provide an important step to allowing more electric miles to be driven by customers who are not always able to move to a full zero emission van based on their usage cycles.

Below we outline a suite of policies and actions that must be delivered in order for industry to reach the 2040 ambitions. For an earlier phase out date, these policies would have to go much further and faster in order for consumers to adopt these vehicles quicker and despite this, given the long product cycles, it would be incredibly difficult for industry to deliver a date significantly before 2040. As noted above, there are practical supply questions around manufacturing the required batteries in sufficient numbers at present, if adoption were to suddenly increase rapidly - there would therefore need to be significant investment in the supply chain.

Achieving the ambitions set out in the Road to Zero Strategy already must not come at the expense of the UK automotive industry given large sections of the UK automotive industry is currently geared towards producing ICE and hybrid vehicles. This is due to the industry and successive governments working very hard over decades to make the UK a location of choice for automotive investment and production. Therefore, government ambition must be supported by clear industrial strategy - transitioning the structure of the industry to one that is well equipped to produce ULEVs in the UK must be a policy priority and be considered alongside calls for an earlier end of sale date for ICEs.

It is important to consider that manufacturers will have already made financial commitments to product development covering the first half of the 2030s. To change the timeline after the capital investment has already been made presents a significant risk to any return on investment and any ability to raise future capital. The health and future of UK automotive must be considered as part of the wider picture around end-of-sale dates.

Following the government announcement on its consultation to move the end of sale date forward, Mike Hawes, SMMT CEO said: *"It's extremely concerning that government has seemingly moved the goalposts for consumers and industry on such a critical issue. Manufacturers are fully invested in a zero emissions future, with some 60 plug-in models now on the market and 34 more coming in 2020. However, with current demand for this still expensive technology still just a fraction of sales, it's clear that accelerating an already very challenging ambition will take more than industry investment. This is about market transformation, yet the UK still does not have clarity on the future of the plug-in car grant - the most significant driver of EV uptake - which ends in just 60 days' time, while the UK's charging network is still woefully inadequate.*

"If the UK is to lead the global zero emissions agenda, we need a competitive marketplace and a competitive business environment to encourage manufacturers to sell and build here. A date without a plan will merely destroy value today. So we therefore need to hear how government plans to fulfil its ambitions in a sustainable way, one that safeguards industry and jobs, allows people from all income groups and regions to adapt and benefit, and, crucially, does not undermine sales of today's low emission technologies, including popular hybrids, all of which are essential to deliver air quality and climate change goals now."

It is vital that extensive engagement on the impact of bringing forward the date and including hybrids happens constructively with industry, looking at all the evidence, and that government considers the Committee's recommendations on the policies and

infrastructure needed to deliver such a change. Further information on the barriers, policy recommendations and issues around the supply chains in the UK can be found in the SMMT papers attached to this submission.

Fiscal incentives support for ULEVs
To maximise uptake of ULEVs SMMT would call for them to become tax-free. We would call for:

- Government to provide long-term certainty on the future of the Plug-in Car Grant (PiCG) for ULEVs. This means maintaining the grant for battery electric vehicles (BEVs) and fuel cell electric vehicles (FCEVs), and re-introducing it for plug-in hybrid electric vehicles (PHEVs). This reintroduction will require increased funds to ensure maximum potential ULEV uptake and should be additional to available BEV/FCEVs funds;
- ULEVs should pay no VAT;
- ULEVs should pay no VED – including the VED premium on cars over £40,000;
- ULEVs should be subject to 0% CCT;
- ULEVs should be exempt from the insurance premium tax.

Of the above, the VAT exemption will make the most difference to the private motorist, alongside keeping the PiCG. Motorists currently pay some £48 billion to the Exchequer each year, £28 billion in fuel duty alone. Directing some revenue to help increase the uptake of ULEVs would bring positive environmental and social benefits. Revisions to existing taxes could also be considered to help further pay for these measures.
Many of the above proposals could also apply to the van market. Of most importance however, is:

- Long-term certainty on the future of the Plug-in Van Grant (PiVG);
- Ultra-low emission vans should pay no VAT;
- Ultra-low emission vans should pay no VED.

Industry shares government's ambition to move to zero-emission technologies, but this cannot happen overnight and we want to see the full array of capable technologies utilised to support this transition. Although current incentives are focussed on vehicles that are fully zero emission at the tailpipe, for many consumers, other technologies may be the most appropriate option for them. Plug-in hybrids and hybrids are zero-emission capable, offering an important and quick step to decarbonising the vehicle fleet, alongside other lower emission technologies. Taking a technology neutral approach and ensuring consumer choice is the quickest way to drive the uptake of ULEVs, provided all consumer barriers are addressed.

Fleet renewal must also remain a priority as all the newest, cleanest technologies have a role to play in the near, medium and long-term. Diesel and petrol will remain important technologies for a range of consumers and vehicle types, and fleet renewal must not be slowed as this keeps older, more polluting vehicles on the road. All new technologies will play a role in achieving future carbon budgets.

<u>Electric Charging and Hydrogen Refuelling Infrastructure</u>

SMMT has outlined our recommendations to improve the current electric charging and hydrogen refuelling infrastructure:

- A truly accessible, ubiquitous, interoperable nationwide network of multi-standard electric charging and hydrogen refuelling points that satisfies the needs of all road users is required to ensure a smooth transition to electrified vehicles. To help achieve this, financial support and technical guidance for local authorities, including

on planning permission and technical standards, with a requirement to adhere to national standards is required;

- The design and installation of electric charging and hydrogen refuelling infrastructure must be considered holistically, alongside wider energy and infrastructure provision plans and local authority regeneration and place-making policies;
- All infrastructure work in the UK must be conceived and planned to deliver the best user experience. It must be more convenient to charge a vehicle than pulling up at a forecourt to refill with petrol or diesel. All public chargepoints, whether they're newly installed or existing, including rapid and ultra-rapid types, must be available for all users with contactless access and/or network roaming;
- Government should create a nationally accessible, open source database providing live information on the location and availability of chargepoints including the current state (available/unavailable);
- The provision of rapid and ultra-rapid electric vehicle charging hubs and hydrogen refuelling infrastructure across the strategic road and motorway network should be planned and delivered based on the high levels of ambition set out in the Road to Zero strategy;
- Government must commit to support and invest in the delivery of a national network of hydrogen refuelling stations based initially on a clustering strategy that has been developed jointly with industry via UK H2Mobility;
- A national, strategic plan to be delivered locally should be developed to uplift the number of chargepoints and to ensure the right type of chargers are in the right places. Additional government support for rural areas should be provided after adequate assessment;
- Current funding for the installation of chargepoints is only committed until April 2020. A clear commitment to achieving the aims of the Road to Zero strategy should be demonstrated by government through continued funding for chargepoint installation beyond this date. Funding provision should be reviewed to ensure the Road to Zero strategy ambitions remain on target.

Question 21 (Surface transport): In our Net Zero advice, the CCC identified three potential options to switch to zero emission HGVs – hydrogen, electrification with very fast chargers and electrification with overhead wires on motorways. What evidence and steps would be required to enable an operator to switch their fleets to one of these options? How could this transition be facilitated?

ANSWER:

- Heavy commercial vehicles face unique challenges and the viability of different solutions must be carefully assessed.

Heavy commercial vehicles face unique challenges in reaching zero emissions due to the purpose of the vehicles, which is to efficiently transport goods of all weights and sizes. As such, the market and technical development of ultra-low and zero emission trucks is at a much earlier stage than cars and vans.

As commercial vehicles are purchased for business use, operators are typically far more cost sensitive than public buyers, with concerns over vehicle range and payload being compromised (for example, due to the size and weight of batteries) providing additional barriers. Innovative products are now coming to market but at a higher cost, so financial

incentives to drive consumer behaviour are essential. However, proven experience with a technology remains the single greatest influence on buying behaviour.

Significant investment will also be needed to develop the required infrastructure for ultra-low emission trucks. This will be needed before operators will be able to invest in these technologies, particularly for those used for long-haul journeys. Manufacturers are currently developing lower emission technologies for heavy commercial vehicles in order to achieve CO2 reductions, as set out in legislation.

Serious consideration must be undertaken by government, industry and all relevant stakeholders in order to assess the viability of the different technologies. Electrification with overhead wires would require substantial investment and would cause significant disruption in order to install the required infrastructure, for example. For hydrogen technology, viability will be dependent on overcoming the current challenges around Well to Wheel (WTW) impact of hydrogen production, and the lack of a national supply infrastructure.

International co-operation will be also be vital as trucks will not be manufactured or used specifically for the UK market. ACEA have produced a useful report on the current availability of truck-specific charging and refuelling infrastructure in the EU[11], which illustrates how limited this currently is and therefore, how much needs to be delivered in this area. As with cars, a technological neutral approach must be pursued by government to ensure a range of products become available and fleet renewal is not undermined.

Low carbon alternative fuels are already available today for operators - including gas (particularly biogas), CH4 (methane) and renewable diesel fuels such as Hydrotreated Vegetable Oil (HVO). SMMT believes these alternative fuels should be incentivised now as they offer immediate lower emissions and for some, do not require any additional infrastructure. This would be very beneficial in the short to medium term as a way of reducing emissions from heavy commercial vehicles, while other technologies are developed. In the medium to longer term, hybridisation and alternative fuel technologies (such as hydrogen fuel cells), may provide more viable solutions for trucks. Increased support for research and development in heavy battery technology will be required to deliver efficient battery-electric and hydrogen fuel cell truck technology.

Question 22 (Industry): What policy mechanisms should be implemented to support decarbonisation of the sectors below? Please provide evidence to support this over alternative mechanisms.

a) Manufacturing sectors at risk of carbon leakage

b) Manufacturing sectors not at risk of carbon leakage

c) Fossil fuel production sectors

d) Off-road mobile machinery

ANSWER:

a) Significant emissions reductions have already been achieved but stronger, longer-term policies and incentives are needed to deliver more.

[11] https://www.acea.be/uploads/press_releases_files/Infrastructure_alternatively-powered_trucks_January_2019.pdf

Manufacturers are already working hard to reduce the resources they use and their production-related emissions, but significant challenges exist to enable further reductions. Offsetting is currently a popular choice to negate direct emissions but other cost-effective solutions are needed. The industry has invested heavily in reducing energy consumption over the years – with energy per vehicle produced down 53.6% over the past 20 years[12], delivering a 23% reduction in target period 3 of the Climate Change Agreements and a 19% reduction in EU ETS emissions in phase 3.

Grid decarbonisation is an important part of the UK meeting its carbon budgets. Many manufacturing sites already have renewables on site, such as solar and wind turbines, but are restricted by space to go much further. To reach zero emissions, a radical move is needed, for example, switching to use sustainable hydrogen as fuel, mini-nuclear or electrify heating when electricity becomes decarbonised. However, at present the technologies to do this, especially on a commercial and industrial scale, do not exist, are unproven or not currently cost effective.

Whilst in Phase 4 EU ETS we will be removed from carbon leakage list, as not energy intensive, we do have very high trade intensity ratio and believe this makes us in reality very much subject to carbon leakage – especially given the globally competitive nature of the automotive sector. To note over 80% of what we produced is exported (half of which to the EU) and almost 90% of what is first registered (i.e. sold) here is imported (almost 70% of which from the EU).

Significant tax breaks or incentives that go beyond the current Industrial Energy Transformation Fund, are therefore required to incentivise the huge investments that are needed to decarbonise the manufacturing processes. For example, early estimates suggest a switch from gas to hydrogen maybe in the region of £50 million per site. Consideration should be given to other possible options, such as biofuels, which are widely used in other countries.

Whilst the Climate Change Levy is in place we believe Climate Change Agreement's should continue to operate and we would call for confirmation of this as soon as possible.

d) Financial support is needed to deploy alternative fuels infrastructure for Non-Road Mobile Machinery (NRMM).

NRMM is not a 'sector' in the same manner as, for example, the transport sector, and it does not fulfil a single function, unlike road transport that always moves passengers or goods from point A to point B. Instead, the NRMM industry provides a variety of technical solutions for use in a wide range different industrial processes (applications).
A feasibility study should be made on the supply and deployment of energy sources other than diesel fuel to a diverse range of NRMM operating sites, and on the suitability of their use for those sites. Such a study could be a catalyst for further government and industry investment.

There is a need for a drop-in low CO2 liquid fuel for NRMM. It is already apparent that hydrogen will not be suitable for all NRMM applications. Research is required to develop such liquid fuels and to evaluate the balance of competing consumers to ensure that fuel is available for these NRMM applications.

[12] https://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-Sustainability-Report-2019.pdf

Financial support is needed to deploy alternative fuels infrastructure for NRMM – such as hydrogen clusters - for those sites and NRMM applications with the highest potential to use that fuel.

Grants and subsidies may offset the higher upfront cost to the end-user of lower emission NRMM technologies and help enable the setting up of necessary and affordable alternative fuels infrastructure. This could be similar to grants that have been made available to enhance electric recharging infrastructure and encourage uptake of ultra-low emission vehicles.

Continued research and development in battery technology will be required to deliver on future ambitions for battery-electric and hydrogen fuel cell technology; this needs to include requirements of NRMM applications and not be limited to road vehicles. Maintaining a strong re-sale value for older NRMM is essential to enable operators to trade-up to newer, lower emission, NRMM. Schemes that de-value the entire population of existing in-service machines should be avoided as conversely it may reduce the ability of an operator to purchase newer lower emission machines.

Question 23 (Industry): What would you highlight as international examples of good policy/practice on decarbonisation of manufacturing and fossil fuel supply emissions? Is there evidence to suggest that these policies or practices created economic opportunities (e.g. increased market shares, job creation) for the manufacturing and fossil fuel supply sectors?

ANSWER: n/a

Question 24 (Industry): How can the UK achieve a just transition in the fossil fuel supply sectors?

ANSWER: n/a

Question 25 (Industry): In our Net Zero advice, the CCC identified a range of resource efficiency measures that can reduce emissions (see Chapter 4 of the Net Zero Technical Report, page 115), but found little evidence relating to the costs/savings of these measures. What evidence is there on the costs/savings of these and other resource efficiency measures (ideally on a £/tCO2e basis)?

ANSWER: n/a

Question 26 (Buildings): For the majority of the housing stock in the CCC's Net Zero Further Ambition scenario, 2050 is assumed to be a realistic timeframe for full roll-out of energy efficiency and low-carbon heating.

a) What evidence can you point to about the potential for decarbonising heat in buildings more quickly?

b) What evidence do you have about the role behaviour change could play in driving forward more extensive decarbonisation of the building stock more

quickly? What are the costs/levels of abatement that might be associated with a behaviour-led transition?

ANSWER: n/a

Question 27 (Buildings): Do we currently have the right skills in place to enable widespread retrofit and build of low-carbon buildings? If not, where are skills lacking and what are the gaps in the current training framework? To what extent are existing skill sets readily transferable to low-carbon skills requirements?

ANSWER: n/a

Question 28 (Buildings): How can local/regional and national decision making be coordinated effectively to achieve the best outcomes for the UK as a whole? Can you point to any case studies which illustrate successful local or regional governance models for decision making in heat decarbonisation?

ANSWER: n/a

Question 29 (Power): Think of a possible future power system without Government backed Contracts-for-Difference. What business models and/or policy instruments could be used to continue to decarbonise UK power emissions to close to zero by 2050, whilst minimising costs?

ANSWER: n/a

Question 30 (Power): In Chapter 2 of the Net Zero Technical Report we presented an illustrative power scenario for 2050 (see pages 40-41 in particular):

a) Which low-carbon technologies could play a greater/lesser role in the 2050 generation mix? What about in a generation mix in 2030/35?

b) Power from weather-dependent renewables is highly variable on both daily and seasonal scales. Modelling by Imperial College which informed the illustrative 2050 scenario suggested an important role for interconnection, battery storage and flexible demand in a future low-carbon power system:

   i. What other technologies could play a role here?

   ii. What evidence do you have for how much demand side flexibility might be realised?

ANSWER: n/a

Question 31 (Hydrogen): The Committee has recommended the Government support the delivery of at least one large-scale low-carbon hydrogen production facility in the 2020s. Beyond this initial facility, what mechanisms can be used to efficiently incentivise the production and use of low-carbon hydrogen? What are the most likely early applications for hydrogen?

ANSWER:

- Costs for hydrogen are significant and these need to be addressed.

Automotive is looking at hydrogen for heat (replacing gas use), but the costs are significant and will be very disruptive to retrofit a plant – given the miles of pipework – to be able to use hydrogen. Further, hydrogen does create more moisture, which is an issue for use in paint-shops, where the quality of the paint-finish is key. Tax relief, including on fuels and equipment, will be therefore be required alongside incentives or guaranteeing loans, to encourage the production and then use of hydrogen.

Industry notes that at present, hydrogen currently appears to be used for balancing the grid purposes primarily and still needs significant time and resource to develop it for use in manufacturing processes. One operator has installed a hydrogen refuelling facility, offering access to the local community. Solar panels provide part of the power supply but there are no other similar facilities in the vicinity.

Question 32 (Aviation and Shipping): In September 2019 the Committee published advice to Government on international aviation and shipping and Net Zero. The Committee recognises that the primary policy approach for reducing emissions in these sectors should be set at the international level (e.g. through the International Civil Aviation Organisation and International Maritime Organisation). However, there is still a role for supplementary domestic policies to complement the international approach, provided these do not lead to concerns about competitiveness or carbon leakage. What are the domestic measures the UK could take to reduce aviation and shipping emissions over the period to 2030/35 and longer-term to 2050, which would not create significant competitiveness or carbon leakage risks? How much could these reduce emissions?

ANSWER: n/a

Question 33 (Agriculture and Land use): In Chapter 7 of the Net Zero Technical Report we presented our Further Ambition scenario for agriculture and land use (see page 199). The scenario requires measures to release land currently used for food production for other uses, whilst maintaining current per-capita food production. This is achieved through:

- A 20% reduction in consumption of red meat and dairy
- A 20% reduction in food waste by 2025
- Moving 10% of horticulture indoors
- An increase in agriculture productivity:
  - Crop yields rising from the current average of 8 tonnes/hectare for wheat (and equivalent rates for other crops) to 10 tonnes/hectare
  - Livestock stocking density increasing from just over 1 livestock unit (LU)/hectare to 1.5 LU/hectare

Can this increase in productivity be delivered in a sustainable manner?

Do you agree that these are the right measures and with the broad level of ambition indicated? Are there additional measures you would suggest?

ANSWER: n/a

Question 34 (Agriculture and Land use): Land spared through the measures set out in question 33 is used in our Further Ambition scenario for: afforestation (30,000 hectares/year), bioenergy crops (23,000 hectares/year), agro-forestry and hedgerows (~10% of agricultural land) and peatland restoration (50% of upland peat, 25% lowland peat). We also assume the take-up of low-carbon farming practices for soils and livestock. Do you agree that these are the key measures and with the broad level of ambition of each? Are there additional measures you would suggest?

ANSWER: n/a

Question 35 (Greenhouse gas removals): What relevant evidence exists regarding constraints on the rate at which the deployment of engineered GHG removals in the UK (such as bioenergy with carbon capture and storage or direct air capture) could scale-up by 2035?

ANSWER: n/a

Question 36 (Greenhouse gas removals): Is there evidence regarding near-term expected learning curves for the cost of engineered GHG removal through technologies such as bioenergy with carbon capture and storage or direct air capture of CO_2?

ANSWER: n/a

Question 37 (Infrastructure): What will be the key factors that will determine whether decarbonisation of heat in a particular area will require investment in the electricity distribution network, the gas distribution network or a heat network?

ANSWER: n/a

Question 38 (Infrastructure): What scale of carbon capture and storage development is needed and what does that mean for development of CO_2 transport and storage infrastructure over the period to 2030?

ANSWER: n/a