

A modern Industrial Strategy

1. How should the UK government identify the most important subsectors for delivering our objectives?

As the Industrial Strategy Green Paper objectives identify, there is a need for subsectors to:

1. “Deliver sustainable growth for sectors with the greatest growth potential that deliver the Clean Energy Mission and Net Zero;
2. Deliver regional growth that considers where clusters can drive growth [and];
3. Deliver economic security that reduces supply chain vulnerabilities in growth driving sectors.”

Given the potential breadth of subsectors which could be prioritised, we view that the most important subsectors should be able to deliver against *all* of those objectives. But we also think that it is important that the productivity of a sector should be additionally assessed to identify those which are more important.

The fuels sector – which encompasses manufacturing of fuels and other vital products to everyday life in refineries, as well as their movement across the country and to the consumer – is able to deliver against *all three* of the Green Paper’s objectives:

How the fuels sector delivers objective 1: Sustainable growth for sectors with the greatest growth potential that deliver the Clean Energy Mission and Net Zero

The Committee on Climate Change (CCC) has consistently emphasised the importance of Carbon Capture, Utilization, and Storage (CCUS), hydrogen, and low-carbon fuels in achieving the UK’s net-zero goals, with all three identified in their 2019 report [“Net Zero – The UK’s contribution to stopping global warming”](#).

CCUS

The fuels sector is vital to delivery of CCUS with the first two UK projects of scale in the Track 1 CCUS process having key involvement from companies involved in the fuels sector in [bp \(East of England Cluster\)](#) and [the Stanlow Refinery operated by EET Fuels \(HyNet\)](#) and fuel companies active in Track 2 projects such as the Viking Cluster including Phillips66 and bp.

Hydrogen

Similarly, the sector is both the largest producer and consumer of hydrogen in the UK. While that hydrogen is generally fossil-derived for now, Fuels Industry UK members are also involved in many of the early at-scale low carbon hydrogen production projects

across the UK. ([Shell is working with UNIPER on Humber H2ub with Phillips 66 an offtaker for that project](#), [bp's green hydrogen project on Teesside](#) and the Aberdeen Hydrogen Hub, [Exolum to construct a green hydrogen production plant and refuelling station in the Tees Valley](#)).

Lower-carbon fuels

The lower-carbon fuels produced by our sector are also essential to decarbonising the UK economy, particularly aviation, shipping, and heavy industry. There are well developed lower-carbon fuels already available in the UK, with 3.3 billion litres of fuels delivered under the Renewable Transport Fuels Obligation in 2023. Yet there is considerable further opportunity too with carbon-neutral synthetic fuels identified by the CCC as one of the biggest additional abatement opportunities from their Speculative Options 2050 scenarios (chapter 5 of the aforementioned report).

We can also see clear growth opportunities for this subsector:

- Overall volumes of lower carbon liquid fuels' global consumption [are expected by the IEA](#) to grow from 2% to 7% by 2030. With this large growth rate varying by usage:
- Sustainable Aviation Fuels (SAFs) are [forecast by the International Energy Agency](#) to grow from less than 5% of global aviation demand in 2025 to around 20% by 2040.
- International shipping shows just 0.1% of fuels in 2022 are low carbon but are [forecast](#) to see an increase to 13% low emissions fuels, of which 0.6 TJ is biofuels, by 2030.

How the fuels sector delivers objective 2: Regional growth that considers where clusters can drive growth

In terms of supporting regional growth, the fuels sector in its current form as well as in terms of future impact, is vital right across the UK. In a 2019 [study by Oxford Economics](#) for Fuels Industry UK (then UKPIA) assessing the economic impact of the downstream sector, the analysis suggested "a fairly consistent degree of reliance on refined petroleum products across regions, ranging from 2.0 percent in London to 2.7 percent in Yorkshire and the Humber." At least 2% of every UK region, and therefore of the whole economy, was reliant on the sector's input and can therefore be a large contributor to all regions' growth.

The fuels sector is also essential to delivery of the UK's industrial clusters. The UK's 6 refineries are among the largest industrial sites in the UK. Without our scale and technical and project expertise, the cluster model is less likely to succeed and will be slower and more costly. Our response to Q3 has a case study on the importance of the Stanlow refinery within the HyNet cluster.

How the fuels sector delivers objective 3: Economic Security that reduces supply chain vulnerabilities in growth driving sectors

Against the economic security objective, the refining sector also makes a considerable contribution. Having a domestic fuel manufacturing capability and supply chain offers greater flexibility in how we supply which is a protection against shocks from sometimes volatile international markets which can negatively impact the consumer.

Globally, we have seen such shocks within our own sector such as with the 1970s oil crises, however, it is notable that energy markets were able to readjust in the wake of the more recent volatility caused by the Russian invasion of Ukraine and subsequent sanctions of Russian exported fuels to the UK. As the UK looked to shift away from Russian oils, we saw an increase in 2022 of the inland deliveries of UK refineries, as well as benefits from the manufacturing capability of allies such as the USA, from which we imported diesel which had previously been sourced from Russia. Historically, our imports have originated from Russia (before sanctions), India, Saudi Arabia, Kuwait, UAE, the US, The Netherlands and Belgium. There are geo-political considerations if the UK becomes an import only economy as well as the fact of lengthened supply chains with the inherent greater risks over domestic supply.

The [announcement this year](#) that the Grangemouth refinery will close in 2025 brings into sharp focus the reality that losses of manufacturing capability will mean the UK relies more on imports as a result. The [Scottish Government funded study by PWC](#), also showed that the refinery supported over £400m of economic activity in 2023, with strong GVA (2.25x) and jobs multipliers (5.30x) where the refinery's presence support the wider economy.

How the fuels sector delivers our additional suggested objective: productivity

As well as the existing objectives and given the focus on addressing growth, government should also assess productivity to identify subsectors. Growth can result from the size of an industry increasing but can also result from the UK doing more with its existing assets. As noted by [The Productivity Institute](#) "the UK faces a tough productivity challenge. Slow productivity growth threatens the much-needed revival of economic growth and improvements in living standards and wellbeing. ...If the current trend in productivity growth continues for the next two decades, it will not be possible to maintain current living standards, let alone deliver sustainability and improved wellbeing"

The refining sector performs well on this indicator too, with [ONS data](#) showing that despite a long term decline in output of the UK's manufacturing sector (1970 Labour Hours fell from 276 to 92 in 2022 against a 2019 baseline of 100 – see table A2 in the above link), that the GVA productivity measure has continued to improve over time

(from 54 in 1970 to 97 against the 2019 baseline – see table A1 at the above link). It should be noted the fall in labour hours over the period represents the deindustrialisation of the UK as manufacturing capacity has fallen, however, that productivity has continued to rise during the same time does indicate that there is growth potential. The ONS data for [Labour productivity](#) also shows that (in 2020) the output per job across the UK's manufacturing subsections is second highest for the Manufacture of Coke and Refiner Petroleum Product, with only chemicals having a higher output.

More granular assessments of productivity and the impact on local economies for the sector also emphasise the importance of fuels companies to UK productivity. A 2024 [economic contribution assessment for the Scottish Government](#) estimated the Grangemouth Refinery provided £404 million in total GVA, of which £179 million is direct, meaning that the GVA contribution to the economy of the 518 workers on the site was £345,559 (against the UK manufacturing figure [ONS 2022 of £73,034](#) across 2.692million workers).

2. How should the UK government account for emerging sectors and technologies for which conventional data sources are less appropriate?

Fuels Industry UK does not have a view on this question.

3. How should the UK government incorporate foundational sectors and value chains into this analysis?

The Green Paper identified foundational sectors as: “the sectors which provide critical inputs and infrastructure to our growth-driving sectors”. To support a successful industrial strategy, the Government needs an understanding as to how sectors are enabled and supported by one another. Failure to take a sufficiently comprehensive view of industrial development by disregarding vital interdependencies, risks undermining the performance of the Government's selected sectors from the outset.

The fuels sector is truly a foundational sector of the economy, both in terms of its providing over 90% of transport energy, vital for personal and business movement of people, but also of the many non-fuel products vital for any modern-day economy.

The [ONS input/output data](#) allows us to map interdependencies of sectors across the economy. As such it is possible to indicate the hidden (i.e. not direct GDP) value of foundational sectors, such as the fuels manufacture and supply chain. For the Manufacture Of Coke And Refined Petroleum Products sector, this shows considerable value across many other sectors:

Industry	Manufacture Of Coke And Refined Petroleum Products Input (M£)
Wholesale Trade, Except Of Motor Vehicles And Motorcycles	1,325
Construction	1,148
Manufacture Of Coke And Refined Petroleum Products	729
Crop And Animal Production, Hunting And Related Service Activities	534
Retail Trade, Except Of Motor Vehicles And Motorcycles	492
Education	366
Water Transport	334
Postal And Courier Activities	291
Manufacture of petrochemicals	250
Human Health Activities	242
Other Industry	2,825
Total	8,535

Much of the input/output links in for the fuels sector are as a result of use of transport fuels by other sectors, however, considering the future UK economy it is important to consider the range of products that are manufactured in refineries alongside the transport fuels which currently make up around 75% of output as these are expected to be of growing importance to the sector and the economy.

Simply listed these other product and uses include (but are not limited to):

- Plastic pre-cursors
- Petrochemicals
- Lubricants
- Medical goods (including in aspirin)
- Clothing
- Carbon fibres
- Cosmetics
- Fire retardants
- Synthetic rubber
- Detergents
- Fertiliser
- Bitumen used in waterproofing and roadbuilding

- Synthetic graphite used as anodes in smartphones and electric vehicles
- Home heating fuels such as LPG and heating oil

These other dependencies outside of the fuels traditionally associated with oil refineries, are areas which are likely to see growth even as fuel demand is expected to fall in the UK. For example, [a modern light vehicle is currently 50% plastic by volume](#) but less than 10% by mass, with automotive sector demand accounting for over 10% of petrochemicals industry sales.

Petroleum products and the sector's infrastructure will play a pivotal role across the eight growth-driving sectors identified in the Industrial Strategy Green Paper due to their versatility and utility in energy, materials, and manufacturing processes:

1. **Advanced Manufacturing:** Petroleum-derived materials like plastics, lubricants, and solvents are essential for machinery, components, and processes, ensuring efficiency and durability in manufacturing systems.
2. **Clean Energy Industries:** As well as manufacture and delivery of lower carbon fuels including hydrogen, petroleum products are also used in producing solar panels, wind turbine blades and lubricants, and batteries, often involving plastics, adhesives, and specialized chemicals.
3. **Creative Industries:** From paints, inks, and dyes to film and packaging materials, petroleum-based products are integral to artistic creation, media production, and entertainment technologies, as well as being essential to transport (NB likely difficult to decarbonise such as heavy good vehicles) for a highly mobile touring sector for events.
4. **Defence:** Petroleum fuels and materials are critical for transportation, advanced weaponry, and protective gear. Polymers and synthetic fibres derived from petroleum enhance durability and performance in military applications. NATO also requires kerosene fuels for interoperability of vehicles.
5. **Digital and Technologies:** Plastics and components are essential for semiconductors, circuit boards, and electronic casings, enabling advancements in technology.
6. **Financial Services:** Petroleum's influence on the global economy impacts financial systems through energy markets, investment in energy infrastructure, and trade.
7. **Life Sciences:** Medical equipment, pharmaceuticals, and packaging often rely on petroleum products for materials such as plastics, [synthetic rubber such as that manufactured at the Fawley refinery for vials for the COVID vaccine](#) due to the strength, sterility, and durability to maintain vaccine integrity.
8. **Professional and Business Services:** Products in computing devices, furnishings, and operational logistics.

Petroleum's ubiquity underpins innovations and infrastructure, enabling growth and functionality across these critical sectors.

Case Study – Importance of Stanlow Refinery to cluster decarbonisation plans

The [HyNet project](#) is a critical initiative aimed at decarbonising the North West of England and North Wales through the deployment of hydrogen production, carbon capture and storage (CCS), and other low-carbon technologies. The refinery aspect of HyNet plays a central role in this endeavour:

- **Hydrogen Production:** The refinery is integral to hydrogen production, leveraging existing infrastructure and industrial capabilities to produce low-carbon hydrogen at scale. This hydrogen will replace natural gas in industrial processes and heating, reducing emissions.
- **CCS Integration:** The refinery facilitates the capture of carbon emissions from hydrogen production processes. These emissions are then transported and stored in depleted gas fields in Liverpool Bay.
- **Financial input:** The overall HyNet project is expected to cost several billion pounds, with the refinery being one of the cornerstone investments and EET providing [\\$3 billion investment in the coming years](#).
- **Emissions Reduction:** The refinery is pivotal in cutting emissions for hard-to-abate industrial sectors. HyNet aims to reduce up to 10 million tonnes of CO₂ per year by 2030, and the refinery is a major contributor to this goal with the refinery expecting to produce over 3 TWh of low carbon (blue) hydrogen while capturing [1 million tonnes of CO₂ pa from the refinery](#) once operational in 2028.

To deliver growth, it is essential that foundational sectors remain competitive and are integrated into plans for new, clean energy industries – with targeted support to upgrade infrastructure and enable cross-sectoral collaboration.

Our growth driving sectors

4. What are the most important subsectors and technologies that the UK government should focus on and why?

As noted in our response to Q1, we view that subsectors and technologies that can meet all the objectives of the industrial strategy will be key, with CCUS, hydrogen and lower carbon fuels being three of the most important given their potential to meet those objectives.

It is also important to note that all three subsectors are of importance to the UK's industrial base, which the strategy must look to support given those technologies are the most viable means to decarbonise hard to abate sectors of the UK to meet net zero (industry – CCUS and hydrogen, transport – hydrogen and lower carbon fuels, domestic heating – hydrogen and lower carbon fuels).

As such, supporting these sectors will also help future-proof the UK's industrial base. Each of these subsectors we have identified are activities that are currently underway or are planned to take place within or close to the UK's 6 remaining refineries, which are central to the industrial decarbonisation plans of the clusters identified by government given the often-unique assets they offer including:

- Existing experience of the technologies key to decarbonisation – in terms of production, use and safe handling of hydrogen which has been on refining sites for decades, or of amine treatment which is key to many CCUS projects and which is already used in the business for sulphur removal from fuels.
- Unique scale that enables refineries to be ideal first offtakers of low carbon hydrogen production or inputters of scale to CCUS projects (see case study on EET Fuels in Q3).
- Existing integrations with useful infrastructure, whether utilities, connections to pipelines, or ports.

5. What are the UK's strengths and capabilities in these subsectors?

Carbon Capture Utilisation and Storage

The UK offers advantages in terms of transition to Net Zero which could make it a world leader, with good geology for CCUS and in particular strong understanding and management of our potential storage locations for captured carbon in the well-understood UK Continental Shelf. There is considerable expertise from both upstream and downstream fuels sectors to support key technologies such as hydrogen, carbon capture and lower carbon fuels.

Hydrogen

There is considerable engineering expertise especially in hydrogen, with the UK's refineries alone having more than 60 years of experience in processing, handling and using the gas within the sites. The positive endowments the UK has on CCUS are also a positive for hydrogen given it enables blue hydrogen production at scale as the market grows.

Lower Carbon Fuels

Having existing refineries means we are well-positioned to transition into lower-carbon fuel and industrial decarbonisation hubs. Existing infrastructure can be used to deliver lower carbon fuels with little to no change needed in operations or plant, while the expertise in fuel refineries is exactly that needed for manufacture of lower carbon fuels given the changes needed are around changing the feedstocks used.

Trading position

The UK's access to trade infrastructure / trading hubs is a strength as we have strong access to both European and other Atlantic basin markets – in 2022 the UK exported

£12,698m of its products, the 8th highest industry for exports (out of 100 listed by the [ONS UK trade in goods by industry](#)). There is also considerable trade expertise in the UK in terms of being a global hub financial and for commodities trade.

6. What are the key enablers and barriers to growth in these subsectors and how could the UK government address them?

Key Enablers:

1. A strong regulatory framework (also barrier, see below) can be a positive enabler for growth in subsectors. There are clear and well understood product standards for low carbon fuels which can enable their mass adoption if the UK is able to secure investment.
2. Engineering and technology are key enablers for growth subsectors – with lower carbon fuels typically at a Technology Readiness Level of 6 or higher (see Fuels Industry UK [Transition, Transformation, and Innovation Report](#), p49) meaning that are already at demonstration level or ready for deployment. With the existing highly skilled engineers in the UK's incumbent fuels supply chain, deployment could be rapid with the correct policy support.
3. The UK fuels supply chain has significant built infrastructure – 6 refineries, 60 fuel terminals and storage locations, over 3,000 miles of onshore pipelines and 2000+ fuel delivery tankers – which can with very minimal (if any) change be used to supply higher volumes of lower carbon fuels than the 3.3 billion litres supplied in 2023 ([Renewable fuel statistics 2022 final report](#)).
4. The UK as identified in the Carbon Capture Cluster Sequencing work (and earlier) has a number of large industrial clusters, which offer potential benefits in terms of efficient decarbonisation of collocated industries as they can benefit from economies of scale in delivery of large(r) carbon capture and other decarbonisation and growth-driving projects. While it is important that the government not forget about the challenges faced in reducing net carbon emissions from businesses outside those clusters, they can and should be used as an enabler of industrial emissions reduction. As the recent announcement of the successful Track 1 CCUS clusters shows, progress in this regard is already being made, and there may be future opportunities to build on such opportunities such as by enabling clusters to benefit their businesses in other ways such as by supporting skills, planning and others existing barriers at the regional level. It is now essential that this momentum be built upon by moving forward quickly with access to CCUS infrastructure for those who sit outside of the Track 1 process, both for those with who would access pipeline transport but also those who will require shipping access.

Key Barriers:

1. The UK's high carbon and energy costs discourage investors. We must address global differences in carbon and energy costs. See more information in our response to Q7
2. Old models of regulation are slowing down the net zero transition. We need a simple and stable business environment with enabling regulation by the competent authorities. We also need to ensure that regulators are supported with the necessary capacity and technical capability that allows them to i) assess and regulate new technologies as they are being introduced to the UK which may require new forms of regulation, and ii) ensure that where investment is secured, that planning and permitting are not causes of delays in their delivery as there are sufficient officials in place in anticipation of the large transition to come. See more information in our response to Q20.
3. The UK is restricting its net zero transition by not considering full lifecycle emissions, particularly in the transport sector where there is almost sole focus on tailpipe emissions where lower carbon fuels could significantly reduce lifecycle emissions of the cars on the road today without behavioural change from consumers in their refuelling needs, nor having to bring forward purchases of electric vehicles.
4. We do not have the workforce skills to deliver net zero. Reforms to education and better access to workers are urgently required. See more information in our response to Q8.

Creating a pro business environment

7. What are the most significant barriers to investment? Do they vary across the growth-driving sectors? What evidence can you share to illustrate this?

High Energy and Carbon Costs:

The carbon costs associated with the UK Emissions Trading Scheme have been consistently higher than comparable schemes in competitor regions, including outstripping the European price for much of the past two years. This is likely to be a concern for all sectors captured under the UK ETS (most major industrial manufacturers).

The operating cost for the UK refinery sector each year is more than one-tenth higher than if it operated at the same scale in Europe and more than four times higher than in the US. This is due to the costs of taxation, the UK Emissions Trading Scheme and energy (which itself is an unstable price with the potential for spikes given the UK ETS is a relatively small market vs the EU ETS and other schemes), with the highest proportion of that disadvantage due to the high industrial electricity and gas prices in the UK.

Lifecycle emissions:

This is likely to be a barrier mainly for the fuels industry, however it is a significant one and impacts on the UK's ability to secure investment for the CCUS, hydrogen, lower

carbon fuels (including SAF) subsectors we identified in Q4. UK transport decarbonisation policies are not currently technology neutral, which they could be if using a lifecycle approach. That means evaluating the entire environmental impact of a product – from extraction and processing of raw materials, through manufacturing, distribution, use and final disposal. At present decarbonisation of the vehicle fleet is focussed on tailpipe emissions with more stringent carbon emissions regulations on vehicles as well as the ban on use of internal combustion engines completely for light vehicles.

A lifecycle approach and policy which sets overall carbon reduction objectives could make the UK a more attractive place to invest for all lower carbon fuels technologies (whether biogenic or other waste feedstocks, or e-fuels).

People and Skills

8. Where you identified barriers in response to Question 7 which relate to people and skills (including issues such as delivery of employment support, careers, and skills provision), what UK government policy solutions could best address these?

Delivery of long-term policy clarity and stability:

It is critical to continue to prioritise Government funding and policy decisions that enable the sectors and individual projects, that will make up the future UK economy, to invest and deploy/grow. This strategic imperative, coupled with increased awareness of skills shortages and funding opportunities available, will ultimately help to provide confidence in the geographic spread and makeup of jobs demand. In turn, this can enable more efficient collaboration between employers, education providers, and sectors to respond in a manner which meets the urgency of the challenges, while maximising the potential opportunity for the UK (see our response to Q8 for an example of this). The skills that will be needed in the UK economy can only be delivered through concerted collaborative action between industry, UK and devolved governments, trades unions, academia, and training providers. Government needs to provide the national strategic direction, which will enable industry and external stakeholders to deliver on local and regional need through new entrant provision, reskilling and upskilling initiatives.

Address prestige of trades jobs and Vocational Education Training: (VET):

The importance of vocational education and training cannot be overstated. Enhancing productivity and the prestige associated with such education, as well as roles like those identified above is a clear challenge. VET in the UK continues to be stigmatised and suffer from underfunding when compared to traditional academic pathways. We urge the Government to work with us to elevate the status of vocational education across the UK through a concerted and collaborative campaign offering additional funding, improved training for teachers and incentives for education providers to improve retention for T-levels and their equivalents.

Reform of Apprenticeships:

While the Apprenticeship Levy was introduced with the intention of increasing investment in apprenticeship programs, its implementation has been fraught with challenges and generally the opposite outcome has been seen. Small and medium-sized enterprises (SMEs) find the Levy overly complex and bureaucratic, leading to underutilization of funds, while large businesses find themselves paying double the amount they used to for the same or fewer apprentices on site. There is also inconsistency of approach across the United Kingdom, as businesses in devolved administrations are unable to access Levy funding via the voucher scheme that is available to employers in England. Given the fact that apprenticeships are a principal route for new entrants and can be key to reskilling workers, the intent to introduce the Growth and Skills Levy is welcome, and it is important the new system is more flexible, transparent, and accessible to employers of all sizes and across all nations and would wish to work with government on such reform.

Promote Equality, Diversity, and Inclusion:

Studies into STEM trade and technical roles reveal a lack of diversity across the workforce, with a particular issue being the age profile of the pool of tradespersons and engineers in the UK, with many approaching traditional retirement ages. There are also low numbers of women and employees from ethnic minorities within this employment cohort. All stakeholders need to work to address this lack of diversity, both to mitigate further strains on the existing labour pool as current employees retire, and also to generate a more inclusive and sustainable workforce in these enduringly important sectors.

Deliver a fit for purpose immigration system:

UK businesses will continue to prefer to use UK workers first when they are available, however, given this cannot always be the case, it is vital that companies can readily access the skills they require through other routes. Otherwise, the UK risks falling further behind its growth targets and particularly its net zero targets. Where known and provable shortages can be evidenced, temporary visas must again be an available solution for businesses.

9. What more could be done to achieve a step change in employer investment in training in the growth-driving sectors?

Greater confidence in the economic outlook for UK as well as policy certainty identified currently as a barrier in our answer to Q7 are likely to be powerful drivers behind any future increases in employer investment in training. Currently confidence in the UK labour market is weak ([“UK’s weak economy is taking a toll on its labour market”](#), [Guardian, May 2024](#), and [“Bosses sound alarm on Reeves’s Budget as confidence evaporates”](#), [Daily Telegraph, November 2024](#)), which impacts on both jobs offered, but

also in terms of spend on training. The intent of the Industrial Strategy to offer a long-term plan and greater confidence for industry in the UK is welcome.

Case Study: CATCH example of joint investment

In the Humber region, industry along with skills funding bodies have come together to invest significantly in the CATCH training centre, [opening a Welding and Pipefitting Hub at its Skills and Apprenticeships Centre in September 2024](#).

The expansion was made possible by a £1.5 million funding investment from CATCH's sponsors in the region, including Viking CCS members Phillips 66 Limited, Harbour Energy, DRAX and ABP. Plus Air Products and Uniper, alongside funding from the ECITB and Humber Freeport.

The opening has been made possible as there is agreement and commitment to fostering the skills needed for the energy transition whilst helping to deliver economic growth locally in the Humber, Lincolnshire and Yorkshire regions.

The Humber Skills Plan aims to increase training output tenfold by 2029, and CATCH is developing a new £60 million National Net Zero Training Centre by that same year.

Innovation

10. Where you identified barriers in response to Question 7 which relate to RDI and technology adoption and diffusion, what UK government policy solutions could best address these?

Fuels Industry UK does not have a view on this question.

11. What are the barriers to R&D commercialisation that the UK government should be considering?

Fuels Industry UK does not have a view on this question.

Data in the Industrial Strategy

12. How can the UK government best use data to support the delivery of the Industrial Strategy?

Government already holds a considerable amount of data - making better use of existing data collected by Government and thereby reducing burdensome reporting requirements on companies would be an improvement.

In the fuels sector, suppliers have a wide range of reporting responsibilities as part of operating in the UK. Many reporting requirements, such as reporting for safety or environmental compliance, are necessary. However, there is also an increasing number of reporting requirements which are duplicative and risk becoming a burden on the sector that is not proportionate. Our analysis has identified at least 37 distinct reporting requirements with 14 of them assessed by the sector as very large reporting requirements due to the combination of their: frequency, volume of data, or need for verification.

13. What challenges or barriers to sharing or accessing data could the UK government remove to help improve business operations and decision making?

As noted in our response to Q12, there is already a high data reporting expectation on industry in the UK, while it is also the case that data privacy laws can make sharing or accessing of the data more complex for companies and/or government. Recent pieces of guidance such as the Competition and Market Authority's [Guidance on environmental sustainability agreements](#) are potentially of use in terms of allowing sharing of data between entities jointly involved in green projects, however, we have noted regarding the guidance that existing commercial structures such as joint ventures were able to achieve the same, and the guidance does not offer guarantees that data can more easily be shared, with its advice to check with the regulator first, re-emphasising the difficulty.

Government is requested to ensure that data requests of businesses are truly proportionate to their objectives. In the fuels sector itself over the past year two new reporting requirements (for the [Fuel Finder scheme](#) on fuel pricing, and on [Core Fuels incident reporting](#)) have been announced that will be significant reporting requirements on companies, and in both instances, Fuels Industry UK has raised in consultations that we are not convinced that the additional reporting is proportionate (nor likely to make a significant difference) to the problems they are seeking to resolve – given this experience, we would also encourage meaningful consultations from across government.

Energy and Infrastructure

14. Where you identified barriers in response to Question 7 which relate to planning, infrastructure, and transport, what UK government policy solutions could best address these in addition to existing reforms? How can this best support regional growth? Streamlining planning processes for strategic infrastructure (which could include foundational industries) is vital where it is currently a barrier. As we have seen with the USA's Inflation Reduction Act, other countries appear to have taken an attitude to invest huge sums now in order to build competitive advantage over other countries in growth areas. A similarly ambitious and speedy delivery in the UK could be transformative.

It is also important that timelines for planning are adhered to as companies will attempt to project plan as tightly as possible and repeated delays may risk the project – this is particularly the case given that there is limited capital available to invest so delays for one project may mean a different (often overseas) project gets to Final Investment Decision (FID) first, meaning there is insufficient funding for a UK project.

With regard to regional growth and support for investments, it will be important that all devolved powers are aligned to the Industrial Strategy – planning is devolved in Wales,

Scotland and Northern Ireland for example, but planning is also implemented at local level so it is important to have maximum UK benefit that all these powers are aligned – central government signalling where a project is viewed as critical (for economic, growth, jobs or other reasons) is important as is improved communication between the many agencies involved in the planning and delivery of a projects and new investment.

15. How can investment into infrastructure support the Industrial Strategy? What can the UK government do to better support this and facilitate co-investment? How does this differ across infrastructure classes?

There has been positive progress in recent years in the UK in the development of business models for industrial CCUS and hydrogen production which are both good examples of shared risk for First of a Kind (FOAK) investments, however, now that the Track 1 CCUS clusters are agreed, there is a very urgent need for clarity on how we move to other investments now – not just the proposed “Track 2” but a longer term pathway which offers greater certainty for companies to work out if and when they wish to make such investments.

The UK has a number of vital strategic infrastructure, including many sites in the fuels sector which it classifies and Critical National Infrastructure (CNI) – essential for national security and keeping the country running. As has been acknowledged in the Energy Act 2023, in particular the Core Fuels Spending Power (part 12), there may be instances where it is appropriate for government co-investment in CNI in order to maintain or improve infrastructure which may not be in the pure commercial interest of a business but could have wider public interest. Care must be taken in such instances that competition within the UK is not negatively impacted, however, as the Green Paper makes clear, foundation industries do have clear benefits beyond their own direct interests.

There may be new strategic infrastructure that would appear to be a case for co-investment to benefit both the industry co-investor and government by enabling other companies to access infrastructure that otherwise would not have been available to it. One such example we raised in [our response to the Non-Pipeline Transport of carbon consultation in 2024](#) may be aggregator hubs for captured carbon, where CO₂ can be aggregated from rail and road tanker solutions, before being shipped to the final storage reservoirs. This would minimise costs for participants looking to store CO₂ and minimise market distortions between UK regions. There is a potential role for large CO₂ sources such as refineries to act as aggregators in this scenario, subject to the development of appropriate support to enable final investment decisions to be made.

Energy

16. What are the barriers to competitive industrial activity and increased electrification, beyond those set out in response to the UK government's recent Call for Evidence on industrial electrification?

As widely acknowledged, electricity prices for UK Energy Intensive Industries (EII) are amongst the highest in Europe. The majority of UK industries therefore face higher electricity costs than most countries in the EU-27 and the rest of the world, leading to competitive distortions and increased risk of carbon leakage.

The UK should continue to consider use of a full set of policies (including electricity pricing policy) to manage the risk of carbon leakage and loss of competitiveness. At the same time, longer term policies are required to support early investment in EII decarbonisation projects, many of which may increase electricity consumption. Many UK policies are currently under review (including free allocation of allowances under the UK ETS, the possible introduction of a carbon border adjustment mechanism and introduction of mandatory product standards); this creates policy uncertainty which may delay investment decisions.

The UK has sought to address some of these price concerns for EIIs with the introduction of the Supercharger, however, the design of the policy is such that it has proven difficult for all EIIs to benefit due to the complex electricity supply arrangements e.g. some refineries supply their own electricity, others are supplied from partners over private networks, with connections to the grid for resilience purposes.

17. What examples of international best practice to support businesses on energy, for example Purchase Power Agreements, would you recommend to increase investment and growth?

Germany's Power Purchase Agreement (PPA) market has expanded, largely driven by the European Union's renewable energy and sustainability targets, which compel companies to adopt more renewable energy sources. In recent years, Germany has become one of the largest PPA markets in Europe, with corporations increasingly committing to long-term renewable energy procurement to manage costs and reduce emissions.

A similar concept which could support decarbonisation of hard to decarbonise sectors such as heavy goods vehicles while stimulating investment in low carbon fuels has been explored in the Malins study [Truckin' on: Using the heavy duty CO2 standard to drive investment in fuel decarbonisation](#). The study considers haulage companies entering into long-term agreements with lower carbon fuel providers in order to meet CO₂ emissions standards for trucks without having to purchase new trucks, but by reducing the lifecycle carbon emissions of the fuels they use instead.

Regulatory Environment

18. Where you identified barriers in response to Question 7 which relate to competition, what evidence can you share to illustrate their impact and what solutions could best address them?

For UK companies the central concern on competition is competition within the global economy, not the UK.

Carbon costs

UK businesses need to be given a level playing field where possible on regulations. A key example of concern to the UK's refineries is around carbon pricing, where UK refineries currently face an aggregated (and after free allowances are allocated) carbon cost in the hundreds of millions of pounds. Fuels Industry UK estimates this at around just under £400m per year across the 6 UK refineries based on 2022 figures. Competitor refineries in the USA, Africa, Middle East, and beyond face no carbon price for their manufacture. The UK free allowance allocations are expected to drop in coming years with the price expected to rise so this additional cost for UK producers will rise against its competitors. As such as we have sought to be included in the proposed Carbon Border Adjustment Mechanism due to be introduced in the UK in 2027, which if well designed should be able to more effectively address the carbon leakage risk than the current free allocation mechanism.

It is also important that policies align. In the UK we have support for low carbon technologies in industry such as for CCUS and hydrogen in industry, however, their deployment timelines do not line up with planned reductions to the Free Allowance Allocations under the UK ETS. This increases the risk of carbon leakage where UK industry is closed and imports from less regulated countries increase.

Regulator costs

The UK's Health and Safety Executive (HSE) charges businesses an hourly regulatory cost through its "Fee for Intervention" (FFI) program. As of 2024, the rate is £174 per hour, which applies when inspectors identify and address a "material breach" of health and safety law. This cost covers the time spent on inspections, investigations, and enforcement actions to address any safety violations found during site visits.

It is absolutely vital to have high quality regulation which does come with a cost, however, compared internationally, the HSE's per-hour rate is relatively high, as many countries do not directly charge businesses for regulatory inspections unless serious violations are uncovered. For instance, while the U.S. Occupational Safety and Health Administration (OSHA) imposes penalties for safety violations, it generally does not impose direct inspection fees. Similarly, EU countries may fund regulatory inspections through general taxation rather than charging businesses directly at a high hourly rate. While the transparency in the UK's model is positive, there are examples in the UK where

we have seen long engagement with regulators on technologies and permit variations which become costly engagements due to the UK's charging model.

19. How can regulatory and competition institutions best drive market dynamism to boost economic activity and growth?

Businesses need consistency, capability, and agility from the regulator – consistency is an existing strength but capability for regulators means maintaining and building their competence in innovative technologies as companies come forward with them. Similarly agility to be able to respond to new technologies is key, but the ability to regulate them in an agile way can be helped by setting clear criteria (for emissions, pollutants, sustainability metrics etc) and accepting that there may be equivalent ways to achieve those criteria rather than just using known technologies or processes (such as those identified in Best Available Techniques BAT documents used today).

At present there are a number of investigations by the Trade Remedies Authority into potential dumping of biofuels to the UK market. It is important that there be a strong commitment from the UK and other governments for transparent trade and confidence for either UK producers or those importing to the UK, particularly when trying to meet the government's ambitious transport decarbonisation policies such as the RTFO.

Regulation

20. Do you have suggestions on where regulation can be reformed or introduced to encourage growth and innovation, including addressing any barriers you identified in Question 7?

Streamlining regulatory approval processes for new projects would encourage investment. While acknowledging the difficulties for regulatory bodies in regulating new technologies, there needs to be a flexible approach to regulating those new technologies as companies will have to deliver fundamentally new ways of producing and supplying their products.

Case Study: Phillips 66 Humber Refinery carbon capture project permitting

- Environment Agency (EA) Best Available Techniques (BAT) guidance for carbon capture plants includes a minimum CO₂ capture rate of 95% whereas the DESNZ Industrial Carbon Capture Business Model requires 85%. Inclusion of a minimum capture rate in the permit is duplication and unnecessary as high capture rates will be driven by economics under the business model.
- The EA has requested full disclosure of solvent composition such that any emissions to atmosphere or water can be measured. This will discourage use of proprietary solvents with improved performance compared to first generation amine technologies.
- The regulators are attempting to manage and mitigate all additional risks and impacts to zero – this is disproportionate and increases project costs e.g. The EA

has a preference that air cooling (vs water) be used due to constraints on water supply, but this would increase noise levels due to use of electric fan drives (project is 1-3dB increase at conservative assessment) but this will increase costs to abate. They are also reviewing whole refinery noise performance as part of the application, even though existing refinery operations are covered by the current permit.

- Use of a wet gas scrubber for removing SO_x and particulates will increase the level of sulphates in effluent. Attempts to completely mitigate this impact will increase project costs by £25-50m. The EA and Natural England are adopting a conservative approach, even though sulphate is not a heavily regulated parameter (it is not covered by the Water Framework Directive)
- Detailed information has been requested on new bund and drainage design i.e. location, dimensions, detailed drawings. This information is typically not available at this stage of design.

Case Study: Approvals for development fuels

- An example where the UK fuels sector has had difficulties in recent years due to regulatory restrictions is in the approval and therefore delivery of development fuels under the Renewable Transport Fuels Obligation (RTFO) where companies have come forward with proposals for development fuels to the DfT but a significant number have been rejected on various grounds such as the renewable feedstock type not meeting the DFT requirement or the development fuel not meeting minimum blend thresholds into petrol or diesel (typically 25% minimum). As the supply of qualifying development fuels has been much lower than the accompanying sub-target, companies have had to pay the buyout for the policy as they cannot physically deliver the development fuels. This represents a specific policy failure in the UK and has not led to investment in development fuel manufacturing plants. The EU regulation in the same space has been considerably better with 'Schedule 7' in the Renewable Energy Directive (II) which set out the sustainability and greenhouse gas (GHG) savings criteria that biofuels, bioliquids, and biomass fuels must meet to qualify as renewable energy sources.
- Bio feedstock trials proposed by the Valero Pembroke Refinery were delayed by insufficient resources to efficiently process applications
- Waste and renewable feedstock trials - The Renewable Transport Fuels Association (RTFA) have been attempting to work with the Environment Agency (EA) on the development of a Resource Framework for Tyre Pyrolysis Oil since 2022. This has been undertaken by the EA Resources from Waste Team, with costs of £40k+ charged out to the RTFA and the process likely to take another 12 months or more.

Crowding in Investment

21. What are the main factors that influence businesses' investment decisions? Do these differ for the growth-driving sectors and based on the nature of the investment (e.g. buildings, machinery & equipment, vehicles, software, RDI, workforce skills) and types of firms (large, small, domestic, international, across different regions)?

Long-term confidence and certainty, as identified in the Green Paper, is key to investor confidence. However the UK has a poor recent past of such stability – the Energy (Oil and Gas) Profits Levy or 'windfall tax' while not linked to the UK downstream fuels sector has diminished confidence in UK fiscal regime's stability, as have quick U-turns to policies such as the regular changes seen to the Internal Combustion Engine ban which has had 3 different proposed deadlines (2040, 2030 and 2035) since 2020.

The lack of certainty has been a direct influence in projects not being taken forward within our sector with ExxonMobil, which operates the UK's largest refinery in Fawley, announcing it had pulled out of a carbon capture project in October 2024 citing *"Our major investment decisions are informed by several factors including the policy, fiscal and market environment. Over the past three years, we have made sustained efforts with UK government to secure this certainty and enable the large-scale investment required and will maintain collaboration to address the necessary factors."* (<https://www.bbc.co.uk/news/articles/c4glw4dyw8no>)

Specifically in the fuels sector, international firms compete for capital across national lines, so UK has to be competitive to attract investment within companies or from international investors. The DESNZ (then DECC) report from 2015 [Industrial Decarbonisation & Energy Efficiency Roadmaps to 2050](#), considered this barrier, noting *"In the oil refining sector the vast majority of the refiners operating in the UK are headquartered overseas. One industry source stated that UK refinery managers may not have the authority to make investment decisions or may not have their projects approved if ROI is significantly better in other countries, in the upstream sector, or in other sectors."*

Mobilising Capital

22. What are the main barriers faced by companies who are seeking finance to scale up in the UK or by investors who are seeking to deploy capital, and do those barriers vary for the growth-driving sectors? How can addressing these barriers enable more global players in the UK?

The principal barriers for companies to secure finance to scale in the UK are the same as those we noted in Q6 as our member companies already compete for investment

against global projects regardless of their ownership or source of funding. Those barriers in summary are:

1. The UK's high carbon and energy costs discourage investors.
2. Old models of regulation are slowing down the net zero transition with overcomplications and lack of resource for regulators.
3. Policy needing to consider full lifecycle emissions, particularly to enable in lower carbon transport fuels.
4. A shortage of essential workforce skills to deliver net zero.

23. The UK government currently seeks to support growth through a range of financial instruments including grants, loans, guarantees and equity. Are there additional instruments of which you have experience in other jurisdictions, which could encourage strategic investment?

Our members with interests in the USA would note that one advantage of the Inflation Reduction Act was its relative simplicity versus the UK and EU's range of potential supports. The [Brugel Institute](#) has also noted "IRA clean-tech subsidies are simpler and less fragmented, and they focus mainly on mass deployment of green technologies rather than innovation", given the industrial strategy ambition for UK-wide growth, this ability to deploy at scale is highly desirable and something our members are very able to support as noted on the importance of the EET Fuels Stanlow refinery in the HyNet cluster noted in our response to Q3.

International Partnerships and Trade

24. How can international partnerships (government-to-government or government-to-business) support the Industrial Strategy?

Fuels Industry UK does not have a view on this question.

25. Which international markets do you see as the greatest opportunity for the growth-driving sectors and how does it differ by sector?

As noted in our response to Q1, we agree with international (IEA) and UK bodies' (CCC) views that Lower Carbon Fuels, CCUS and Hydrogen are likely to be significant growth area for all markets as well as their forecast growth in the UK. These are all directly linked to the decarbonisation of the refining and the fuels supply sector both in terms of decarbonising our processes (hydrogen and CCUS) as well as our energy products (lower carbon fuels including hydrogen).

As well as growth in those areas, we also expect significant international growth of non-fuel products from the refining business. As noted in response to Q3, a large proportion of hydrocarbons are used for non-combustion products such as lubricants, chemicals, or bitumen.

Given 50% by volume of a modern electric vehicle is from hydrocarbons, the forecast growth of car (EV) demand globally is relevant to our sector as well as the motor

manufacturers. [S&P Global research](#) indicating global growth of light vehicle sales in coming years in all regions (except potential falls in Japan and USA in 2024 only).

Place

26. Do you agree with this characterisation of clusters? Are there any additional characteristics or dimensions of cluster definition and strength we should consider, such as the difference between services clusters and manufacturing clusters?

Agree with broad definitions. The manufacturing clusters our members are already in vary in shape and span; have strong concentration of skills/productivity. There are no strong suggestions on additional characteristics/differences between types of non-manufacturing clusters.

27. What public and private sector interventions are needed to make strategic industrial sites 'investment-ready'? How should we determine which sites across the UK are most critical for unlocking this investment?

There are already examples where public and private interventions are making sites investment ready. Humber Energy Board has published "Delivering the Vision" (https://humberenergyboard.org/wp-content/uploads/2024/10/Humber_Energy_Vision_1024.pdf) which shows a pathway for decarbonisation of that region and identified the foundations particularly in skills for delivery of the growth areas it has identified in the area (hydrogen, offshore wind and CCUS), which can be a good template for others to use.

Skills development

With a potential for 23,000 jobs created in the area, multi-agency work has begun on skills to ensure the needs of the region are met. Existing education collaborations are being linked with four Councils and skills providers, industrial partners paying in a levy for engineering and construction (additional to the apprenticeship levy) to ensure that the skills training provision is ready for new jobs.

The work of the Humber Energy Board also helps identify a useful means for Government to identify relevant sites, which is to take a "Whole system approach". In this example there is a very clear link between projects in the Humber region, which clearly identifies interdependencies across traditional sector / business boundaries, and identifies where both inputs (energy generation) and outputs (energy use) from them will be used in the region.

Attracting workers to the projects

The Hinkley Point C project also offers good examples of interventions to ensure successful delivery of large industry investment, both with the work they have done with

local skills providers, but also in terms of the other supporting infrastructure which can deliver the worker they need during the construction phase, such as with the HOST programme (<https://www.host-somerset.co.uk/about-us>) which “operates purpose built campus accommodation sites for the teams working on the construction of the ... project” as well as facilities such as gyms, bars, restaurants and sports pitches. Given the vital role of construction and trades workers in the industrial transition the UK needs, making the experience of those people is an important item to get right to make the work attractive.

Strategic alignment between national and local level

For the biggest investments, there needs to be support at both national and local level. For many sites which are already designated Critical National Infrastructure (or will be), it is important that they are also supported in terms of the planning processes and other essential delivery requirements at the local level (this could be licensing, permits, access to roads which together are helpful enablers) given their strategic significance.

28. How should the Industrial Strategy accelerate growth in city regions and clusters of growth sectors across the UK through Local Growth Plans and other policy mechanisms?

Local Growth Plans should align with regional strengths, such as focusing on energy technology clusters in areas with significant industrial activity. Incentives and infrastructure investment may help boost growth in these regions, where there are suitable powers in place, however, it is likely that for growth at the national level, it may be more important to ensure the wider political and support framework is in place to attract investment, with local leadership offering a strong means of coordinating local interests and identifying emerging areas in need of support (such as working with new investors and local colleges to address potential skills shortages where new investment is secure – see response to Q27).

29. How should the Industrial Strategy align with devolved government economic strategies and support the sectoral strengths of Scotland, Wales, and Northern Ireland? Fuels Industry UK does not have a view on this question.

Partnerships and institutions

30. How can the Industrial Strategy Council best support the UK government to deliver and monitor the Industrial Strategy?

A process which delivers regular feedback on government policies is needed to ensure there some accountability from government that policies are consistent with the industrial strategy. A similar reporting mechanism to that which the Committee on Climate Change has where it regularly reports to Parliament on progress made by government could be adopted to ensure policies under the industrial strategy align

with the needs of industry. As the CCC delivers, specific addition assessments could be delivered that could be sector(s)-specific, or cluster(s)-specific reports on progress.

31. How should the Industrial Strategy Council interact with key non-government institutions and organisations?

Given the focus on the industrial offer, capability and ongoing changes of UK, the Industrial Strategy Council should engage regularly with industry bodies (business), universities (technologies, innovation, skills), trade unions (skills and people), and local leaders (place) to ensure a wide range of inputs into policy decisions and continuing strong understanding of changes ongoing in UK industry.

32. How can the UK government improve the interface between the Industrial Strategy Council and government, business, local leaders and trade unions?

A clarification of governance structures and roles and responsibilities for all entities may be helpful, particularly where arms' length bodies (relevant entities for the Industrial Strategy would include such as those on Committee Climate Change or the National Infrastructure Commission) including or local leaders such as metropolitan mayors, have delivery functions for example.

Theory of Change:

33. How could the analytical framework (e.g. identifying intermediate outcomes) for the Industrial Strategy be strengthened?

We view that the planned framework as set out is clear between outcomes, intermediate outcomes as well as outputs and inputs.

One improvement could be in delivering a baseline of existing UK /regional /sector performance and barriers (from Q7) that could better enable assessment against intermediate outcomes.

34. What are the key risks and assumptions we should embed in the logical model underpinning the Theory of Change?

Fuels Industry UK does not have a view on this question.

35. How would you monitor and evaluate the Industrial Strategy, including metrics?

Both sector and cluster-level plans seem to be an expected output in the green paper, so should also be expected to show clear metrics and key performance indicators (KPIs) against which to evaluate. These would need to be agreed once the full intent of the strategy and its subsectors is known but could include: energy production carbon intensity, technology adoption, job availability/apprentices taken on and economic growth.