HM Government

Industrial Decarbonisation Strategy

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TOGETHER FOR OUR PLANET

Executive summary

The UK is a world leader in the fight against climate change. In 2019 we became the first major economy in the world to pass laws to end its contribution to global warming by 2050. Reaching this target will require extensive, systematic change across all sectors, including industry. We must get this change right as the products made by industry are vital to life in the UK, and the sector supports local economies across the country.

This strategy covers the full range of UK industry sectors: metals and minerals, chemicals, food and drink, paper and pulp, ceramics, glass, oil refineries and less energy-intensive manufacturing[1]. These businesses account for around one sixth of UK emissions, and transformation of their manufacturing processes is key if we are to meet our emissions targets over the coming decades (BEIS, *Final UK greenhouse gas emissions from national statistics: 1990 to 2018: Supplementary tables,* 2020).

The aim of this strategy is to show how the UK can have a thriving industrial sector aligned with the net zero target, without pushing emissions and business abroad, and how government will act to support this. An indicative roadmap to net zero for UK industry based on the content in this strategy is set out at the end of this summary. This strategy is part of a series of publications from government, which combined show how the net zero transition will take place across the whole UK economy.

Part 1: Foundations to deliver net zero for industry

Chapter 1: Why we need a strategy and our approach

We want to provide a clear signal to industry, setting out how we expect decarbonisation will happen through the sector, and the role government will take in supporting and enabling this transition. By doing so, we will support industrial development decisions, improve investor confidence, and provide the greater certainty needed to enable industrial businesses to begin the journey to net zero.

This chapter sets out:

- our ambition for decarbonising industry in line with net zero: our expectation is emissions will need to reduce by at least two-thirds by 2035 and by at least 90% by 2050, with 3 $MtCO_2$[2] captured through Carbon Capture, Usage and Storage (CCUS) and around 20 TWh switching to low carbon fuels by 2030

1 Less energy-intensive manufacturing includes the manufacturing of vehicles, wood products, pharmaceuticals and electronics, among other industries.

2 Throughout this strategy we use carbon equivalent emissions (CO_2e) except when specifically referring to CCUS/CO_2 capture as these figures have been calculated on the basis of CO_2 only

- our policy principles to drive industrial decarbonisation via addressing barriers, mitigating carbon leakage risks, and playing a key role in the delivery of large infrastructure projects
- our priorities in the 2020s, which focus on aligning existing policy with net zero and putting in place new incentives to fill any policy gaps
- the policy framework that will be used to drive decarbonisation through the 2030s and 2040s, combining incentives to reduce emissions, carbon leakage mitigation, and supporting policy frameworks to address outstanding barriers to decarbonisation
- how we will position ourselves as a climate leader whilst ensuring UK industry retains its competitive advantage, by working with industry to enable decarbonisation utilising a range of policy approaches, and mitigating against the risk of carbon leakage through levers that grow the market for low carbon products and reduce differences in climate policy between trading partners

Chapter 2: Getting investors to choose low carbon

We want to support existing industry to decarbonise, and encourage the growth of new, low carbon sectors in the UK. In the long run we believe that markets will be best placed to determine the most cost-effective pathways to decarbonisation. Throughout the next decade government will need to help overcome the barriers that currently prevent industry from securing investment to start the low carbon transition.

This chapter sets out how we will:

- use carbon pricing as a tool to send a clear market signal, providing certainty over our net zero ambition for industrial sectors
- put in place funding mechanisms to support deployment and use of CCUS and low carbon hydrogen infrastructure
- establish the right policy framework to ensure uptake of fuel switching
- take initial steps to create a market for negative emissions technologies
- establish a targeted approach to mitigating carbon leakage
- work with stakeholders to understand how an EU Carbon Border Adjustment Mechanism (CBAM) could affect the UK

Chapter 3: Getting consumers to choose low carbon

Without a clear demand for low carbon industrial products, industry risk being undercut by cheaper, high carbon alternatives after decarbonising. Government can take action to support low carbon manufacturers by creating demand and developing the market for low carbon industrial products, without significantly impacting end-consumers financially.

This chapter sets out how we will:

- develop proposals to improve data transparency

- develop proposals for new product standards
- develop proposals for product labelling
- use public procurement to drive change
- support businesses to make greener choices

Part 2: Transforming industrial processes

Chapter 4: Adopting low-regret technologies and building infrastructure

The diversity of industry means that decarbonisation of the sector will be achieved through a combination of different technologies and measures. We will use our industrial decarbonisation pathways modelling to focus on low-regret deployment of key technologies such hydrogen and CCUS, which is robust to future uncertainties such as industrial demand, technical challenges and fuel prices.

This chapter sets out how we will:

- support deployment of CCUS on industrial sites in clusters to capture and store around 3 $MtCO_2$ per year by 2030
- support increasing amounts of fuel switching to low carbon hydrogen during the 2020s
- support low-regret fuel switching to electrification in industry during the 2020s
- review the most appropriate use of bioenergy in industry to provide evidence for the *Bioenergy Strategy* (2022)
- consider the implications of the recommendation of the Climate Change Committee to set targets for ore-based steelmaking to reach near-zero emissions by 2035
- work with industry to understand what is required to make sites retrofit-ready
- work with the cement sector to explore options to decarbonise sites in dispersed locations
- review policies to address specific barriers faced by less energy-intensive, dispersed industrial sites
- use Project Speed to ensure the land planning regime is fit for building low carbon infrastructure
- improve co-ordination between decarbonisation and environmental policies to meet a common sustainability agenda

Chapter 5: Improving efficiency

Energy and resource efficiency measures, which reduce the level of energy and materials used in producing industrial goods, will be crucial to getting industry to net zero. Improvements in energy and resource efficiency will play a particularly significant role in reducing industrial emissions in the 2020s, leading the way in widespread emissions reductions while infrastructure for the deep decarbonisation options is built up throughout the decade.

This chapter sets out how we will:

- support sites to install energy management systems
- improve heat recovery and reuse across sites, particularly in sites with high operational temperatures
- help less energy-intensive, dispersed industrial sites improve energy efficiency through the adoption of technologies available in the market with low payback times
- develop a communications plan to make industry aware of the support that is already available to increase energy efficiency
- support increased resource efficiency and material substitution within industry, by driving the transition towards a circular economy model and increasing reuse, repair and remanufacturing

Chapter 6: Accelerating innovation of low carbon technologies

The low carbon technologies that are needed to decarbonise industry are at various stages of development. We need to continue to innovate and develop a broad range of low carbon technologies to put us in the best position to reduce the cost of decarbonisation and maintain the competitiveness of industry throughout the net zero transition.

This chapter sets out how we will:

- support innovation in fuel switching technologies, including low carbon electricity, biomass and hydrogen
- support first-of-a-kind demonstration of carbon capture utilisation and storage from a range of industrial sources
- support the development of industrial digital technologies to maximise efficiency improvements
- support research into advanced technologies
- support advancements in product innovation

Part 3: Maximising the UK's potential

Chapter 7: Net zero in a global market

Decarbonising industry is a global challenge. Industrial products are bought and sold in every country in the world, and the sector accounts for around 24% of global carbon dioxide emissions (IEA, *Tracking Industry 2020*, 2018). By leading and advocating for stronger international collaboration with others, we will develop new technologies faster, increase production, and bring down the costs of industrial decarbonisation more quickly.

This chapter sets out how we will:

- work with our partners to create a coalition of countries committed to shared approaches to developing the market for low carbon products
- lead global innovation efforts, through the UK's leading role in Mission Innovation, to reduce the costs of supplying low carbon industrial products
- support industrial decarbonisation through trade policy
- capitalise on the export opportunities of having a world-leading net zero industry
- continue to work with key international organisations, countries and initiatives to encourage industrial decarbonisation in developing countries

Chapter 8: Levelling up

The manufacturing sector is a crucial part of local economies across the UK, often providing well-paid jobs in areas where salaries fall below the UK average, and it is vital that this sector thrives now and in the future. We will use the opportunity of net zero to transform the UK's industrial regions, attracting inward investment, future proofing businesses and securing the long-term viability of jobs.

This chapter sets out how we will:

- unlock new job opportunities through deployment of low carbon infrastructure in industrial areas
- support the skills transition so that the current and future workforce benefit from the creation of new jobs
- create incentives for new industrial sectors to base themselves in the UK's industrial hubs and promote opportunities to attract foreign investment
- work with devolved governments across England, Scotland, Wales and Northern Ireland to unlock barriers to decarbonisation

Chapter 9: Tracking progress

Industrial decarbonisation is a complex process and it is imperative that we take action now to reach our 2050 goals. In this strategy, we are setting out new ambitions for a thriving low carbon industrial sector, and we need new indicators to measure our progress. For example, we need to track the deployment of new infrastructure that will enable widespread capture and storage of carbon dioxide, as well as monitoring the growth of green jobs in industry.

This chapter sets out how we will:

- take a strategic, effective, proportionate, flexible and responsive approach to track our progress on meeting our strategy goals
- use government's annual response to the Climate Change Committee's progress report on decarbonising the UK economy to inform the public on progress in delivering the strategy, and undertake a full review of strategy actions every five years
- use a range of metrics to update on our progress, including UK industry emissions and volume of carbon dioxide captured and stored, and hydrogen used in industry