

Response to the European Commission 2050 Strategy for long-term EU greenhouse gas emissions reductions

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About Energy UK

Energy UK is the trade association for the GB energy industry with a membership of over 100 suppliers, generators, and stakeholders with a business interest in the production and supply of electricity and gas for domestic and business consumers. Our membership covers over 90% of both UK power generation and the energy supply market for UK homes. We represent the diverse nature of the UK's energy industry – from established FTSE 100 companies right through to new, growing suppliers and generators, which now make up over half of our membership.

Our members turn renewable energy sources as well as nuclear, gas and coal into electricity for over 27 million homes and every business in Britain. Over 730,000 people in every corner of the country rely on the sector for their jobs, with many of our members providing long-term employment as well as quality apprenticeships and training for those starting their careers. The energy industry invests £12bn annually, delivers £88bn in economic activity through its supply chain and interaction with other sectors, and pays £6bn in tax to HM Treasury.

Key Messages

- Energy UK welcomes the opportunity to provide this submission to the European Commission 2050 Strategy for long-term EU greenhouse gas emissions reductions. As a strong supporter of the Paris Climate Agreement and the long-term net-zero Greenhouse Gas (GHG) emissions target, we consider this long-term strategy to be crucial in enabling Europe to lay out the pathway for a smart, energy- and cost- efficient and truly sustainable society for all citizens of Europe.
- In support of efforts toward a carbon neutral economy, the UK Government recently signed up to the Carbon Neutrality Coalition to deliver ambitious actions to achieve the Paris Agreement's aim of net-zero emissions by the second half of the century.
- Going forward, carbon neutral electricity will be the key to help decarbonise other sectors, through direct and indirect electrification and through offsetting emissions from these sectors through various carbon capture, usage and storage (CCUS) technologies which have the ability to deliver neutral or negative emissions.
- Cost-effective decarbonisation is crucial if Europe is to remain competitive in the global market place, and the power sector is committed to leading this transition. The Commission 2050 Strategy for long-term EU GHG emissions reductions must therefore give guidance on long-term pathways for economy-wide decarbonisation, considering environmental but also social sustainability. European policy must provide policy instruments which enable the development and deployment of all transition-enabling technologies. This includes a strong carbon market that delivers a meaningful price as well as channelling climate and energy financing towards cost-effective technologies.
- The power sector is a critical enabler of achieving the ambition of the Paris Agreement. We remain committed to decarbonising power generation well before 2050 and express our confidence in electricity as an enabling sector, which will play a major role in decarbonising other energy-using sectors.

- Electrification is a critical enabler to decarbonise energy-using sectors. On the road to 2050, it should be further enabled through the relevant physical infrastructure and institutional arrangements in other sectors such as electric vehicle charging infrastructure, regulatory frameworks, targeted R&D and innovation support, together with a future-proof investment environment for low-carbon technologies.
- The decarbonisation of the power sector is a tremendous challenge, but one which the UK's electricity generators have been making significant progress on over the last decade. The UK Government's Department for Business Energy and Industrial Strategy (BEIS) reported that the energy sector has more than halved its GHG emissions since 1990¹ by moving to cleaner forms of generation such as solar and wind.
- The 2050 Strategy should give clear guidance for current and future policy makers to build on the 2030 Energy and Climate Framework and achieve a cost-efficient transition, enabling the necessary investments. This must take into consideration the different starting points of European countries and commercial availability of key transitional technologies.
- Energy UK welcomes the opportunity to feed into the process of devising the 2050 Strategy. Going forward, we call on the Commission to maintain a transparent approach and enable an open dialogue on the technologies and policies needed to meet the Paris climate goals.
- Energy UK agrees that the EU should define ambitious milestones on its way to 2050: the later the efforts, the more severe the damage and the higher the final costs. In particular, the 2030 ambition should be in line with the 2050 target. In this regard, the current emissions reduction target does not appear to be sufficiently ambitious to match the conclusions of the Paris Agreement. Energy UK supports a 2030 target significantly higher than the current 40% and would urge the EU policy makers to get down to the discussions on the most appropriate target as quickly as possible.

Commitment of the power sector – Carbon neutral

The power sector is at the forefront of the European fight against climate change. Energy is an enabling sector for the decarbonisation of other activities (heating, transport, industry). Europe's ability to meet the ambitions of the Paris Agreement particularly depends on the rate of decarbonising electricity generation. Energy UK accepts this responsibility, acknowledging the urgency to address climate change, air pollution and the depletion of natural resources.

The UK energy supply sector has however already undergone a significant transformation driven by policy changes, technology, digitalisation and more active UK customers. The UK's Carbon Price Support tax, combined with the UK Government's announcement in 2015 of its intention to phase-out all unabated coal-fired power stations by October 2025, has led to a substantial decrease in the amount of power generated by coal-fired plants, supplying less than 7% of UK power in 2017². Subsidies and market mechanisms such as Contracts for Difference (CfD) have further encouraged investment in low carbon technologies, which accounted for 53% of total UK power generation capacity in 2017.³

Progress to meet this ambition is well underway. BEIS data shows how the UK power sector is making significant strides towards decarbonisation. As a key indicator, the energy supply sector reduced its CO₂ emissions by 57% between 1990 and 2017, declining by 8% between 2016-17 alone, the most of any other emitting UK sector⁴. Furthermore, between 2008 and 2017 the amount of power generated across the UK coming from low carbon sources rose from 20% to 53% respectively.

¹ [BEIS: 2017 UK Greenhouse Gas Emissions, Provisional Figures](#)

² [Carbon Brief Analysis: Low-carbon sources generated more UK electricity than fossil fuels in 2017](#)

³ [Digest of UK Energy Statistics \(DUKES\) 2017](#)

⁴ [BEIS: 2017 UK Greenhouse Gas Emissions, Provisional Figures](#)

While there is still work to do, taking on the challenge to decarbonise also comes with a clear recognition of the importance of cost-efficiency and the need to deliver secure and affordable energy while modernising our infrastructure. There also needs to be recognition of the historical imbalance in terms of the emphasis placed on the energy supply sector to achieve emissions reductions versus other polluting sectors such as transport, heat and energy intensive industries.

Transport, for instance, has taken over as the main source of GHG emissions in the UK but it is also the biggest emitter of NO_x, notably from internal combustion engine vehicles (ICEVs). These are particularly harmful in high concentrations around main roads and therefore a major concern for those living in big cities and towns.

Enabling the transition – key policy aspects for a 2050 strategy

The energy industry is already leading the way on the ambitious journey toward decarbonisation. Enabling the transition and truly unlocking the opportunities it brings is therefore the primary concern of Energy UK. There are a number of essential pillars on which this depends:

- **Ensuring cost-efficiency.** As each European country is facing different challenges and opportunities as they move towards decarbonisation, European policy must provide policy instruments which enable the development and deployment of all transition-enabling technologies. This includes a strong carbon market that delivers a meaningful price as well as channelling climate and energy financing toward the relevant technologies.
- **Delivering efficient electrification.** The decarbonisation of the power sector has a key role to play in allowing other, fossil-fuel dependent sectors to decarbonise, including transport and heat. Cutting emissions in transport has been particularly challenging to date but electric vehicles now offer the opportunity to leverage the progress made in power. Ambitious, high level targets, such as the UK Government's target to end the sale of conventionally fuelled vehicles by 2040 have been important in providing certainty and confidence to industry. Strong ambition from the European Commission is equally important.
- **Unlocking the benefits of digitalisation.** Over the past decade, utilities and energy businesses have introduced digital innovation to optimise processes while new technologies and services continue to disrupt and transform the traditional power sector value chain. The digital future of the electricity system will require Europe to make smart grids a reality so as to integrate centralised and decentralised technologies, and promote customer participation in a secure, flexible and cost-effective manner. Long-term decarbonisation will not be possible without digitalisation. Digital technologies are essential to integrate distributed energy resources such as renewables, storage and demand response and to help them interact optimally and efficiently. It is therefore key to address existing challenges such as the dynamic development of regulatory frameworks, appropriate investment strategies and a sectoral approach to innovation and digitalisation.
- **Ensure a well-functioning, fully integrated power market.** The power sector transition will require significant investments over the next decades. Giving the right signals to investors must therefore be a priority for policy makers. While the Clean Energy Package is shaping up to be a step in the right direction, major challenges remain. If Europe is to unlock the investments needed, the 2050 Strategy must foresee the true implementation of a sustainable market design that values energy, flexibility and the contribution of assets to system adequacy and security of supply. Open access to energy system data could help optimise energy production and consumption and reduce associated emissions.
- **Enabling a fair transition.** The commitment and ambition expressed in our vision are challenging, especially for regions which depend on high carbon value chains. When looking toward 2050, the European Commission must consider potential negative impacts on business,

employment and living conditions. This social sustainability dimension requires close cooperation between regional and local governments, Social Partners, as well as industry. It must also go hand in hand with the adaptation of education systems and the creation of new jobs.

- **Developing a Carbon Capture Utilisation and Storage (CCUS) industry.** To meet the aim of providing carbon neutral, or indeed, carbon negative, electricity and assisting other sectors in their decarbonisation efforts it is more than likely that a robust CCUS industry will need to be developed with sufficient transportation and storage infrastructure. Given that gas-fired generation will be important in providing capacity and balancing services, and electricity generation with CCUS can provide an ‘anchor project’ to allow industrial clusters to decarbonise using the nearby CCUS transportation infrastructure, it is clear that this technology will play an important role in allowing European countries, and the power sector itself, to decarbonise in the most cost-effective way.

Electricity as a key enabler - Paris ambitions require a 60% electrification of EU economy in 2050

With the ambition to remove GHG emissions from transport, heating and cooling and industry, electrification is set to play an important role in decarbonising these sectors of the economy.

There are no silver bullets in decarbonising the EU economy – Europe is diverse and the challenges differ considerably from country to country. Efficient electrification is expected to play an important role in reaching the decarbonisation objectives alongside a diverse mix of low carbon technologies and energy vectors. A Eurelectric study finds that in a heavily decarbonised Europe in 2050⁵:

- Electricity will play a leading role in **transport** where up to 63% of total final energy consumption will be electric in the most ambitious Eurelectric scenario. With major car manufacturers switching to electric fleets (see BMW, Volvo, VW etc.) the shift toward electrification of road transport is already initiated and EVs are approaching cost parity with Internal Combustion Engine vehicles. Energy UK members are strongly supportive of the rollout of electric vehicles and want to see a high level of ambition from both the UK Government and the European Commission. The user experience must be central to the transition from internal combustion engine vehicles to electric vehicles. Widespread adoption of smart charging, in particular to avoid adding to peak demand, will be critical to ensuring the most cost-effective integration of electric vehicles into the electricity system. As smart charging standards are taken forward in the UK and other European markets, it will be important that they are based around promoting customer choice and compelling offerings.
- In **buildings**, energy efficiency is a key driver of emission reductions and Energy UK has long called for energy efficiency to be taken forward as a national infrastructure priority alongside the introduction of net-zero carbon new build standards. A range of options are possible decarbonise heat in the UK, including electric heat pumps, hybrid heat pumps and low carbon gases such as hydrogen. However, clear policy and regulatory signals are required longer term to drive consumer use. Developing a comprehensive evidence base on how different solutions work in practice through large scale trials is vital in the short term. Further, it is important to recognise that heat has an important role to play as part of a smart, flexible energy system. Heat resources represent a valuable source of flexibility that could reduce the upfront cost of low carbon heating systems and enable heat to be decarbonised at least cost.
- A series of **industrial processes** can technically be electrified with up to 50% direct electrification in 2050 and the relative competitiveness of electricity against other carbon-neutral fuels will be the critical driver for this shift. In the short-term heat optimisation is the biggest potential for energy efficiency. This can be achieved by developing process integration and

⁵ ‘Decarbonisation Pathways’, June 2018 – available at www.eurelectric.org

systemic approaches, alongside greater use of heat recovery equipment. For example, heat exchangers or high temperature heat pumps, which upgrade low grade waste heat and reuse it within the process. Hydrogen and other carbon-neutral alternatives will also play a role and drive indirect electrification. The offsetting of emissions by achieving negative emissions through the use of bioenergy carbon capture and storage (BECCS), or the direct application of CCUS on industrial plants is frequently cited as one of the cheapest methods of decarbonisation for industrial processes and should be recognised as such.

Expectations from the Commission Roadmap and transparent cooperation

The Commission 2050 Strategy will be an essential guide for current and future policy makers to put Europe on the track to meeting the Paris Agreement ambition. Energy UK welcomes the Commission's scope of its 2050 Strategy to include all relevant dimensions of the energy sector as well the transport, heat and industrial sectors. Political focus on shaping a fair transition and leaving room for regional and technological nuances will be key to successful delivery and a critical element for the credibility of the Strategy.

A critical element for the credibility of the Commission 2050 Strategy will be basing it on fact-based, nuanced technology assumptions as an input to modelling of decarbonisation pathways. Although UK Government signalled support for delivering net-zero emissions by 2050 by joining the Carbon Neutrality Coalition in September 2018⁶, before committing to long-term objectives such as these, the energy industry will need to establish strong evidence behind them and have a deliverable set of technology pathways able to take us to the desired destination point.

The power sector is a critical enabler in terms of achieving the ambition of the Paris Agreement. We remain committed to decarbonising power generation well before 2050 and express our confidence in electricity as an enabling sector, which will play a major role in decarbonising other energy-using sectors. The Commission 2050 Strategy represents an important and timely exercise, and will mark the next iteration of a debate on policy pathways beyond 2030 – in the energy sector and beyond. Energy UK will remain engaged closely in this debate and looks forward to continued cooperation with all relevant stakeholders.

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⁶ <https://www.edie.net/news/11/UK-commits-to-Carbon-Neutrality-Coalition-to-deliver-net-zero-emissions/>