UNIVERSITY of STRATHCLYDE
CENTRE FOR ENERGY POLICY
A decade of shaping energy policy

Invest 2035: the UK's modern industrial strategy
Evidence submitted by the Centre for Energy Policy, University of Strathclyde

ABOUT THE CENTRE FOR ENERGY POLICY

The University of Strathclyde's Centre for Energy Policy (CEP) works with research, government and industry partners to understand and address the pressing public policy challenge of ensuring transitions to mid-century Net Zero targets deliver sustainable and more equitable prosperity. Officially launched in 2015, CEP has an established track record of independent, rigorous, multidisciplinary research and timely and responsive knowledge exchange and policy engagement on energy and climate issues in a wider public policy context. Focused on achieving real-world impacts, the Centre has helped shape UK and Scottish Government policy in areas including energy efficiency, industrial decarbonisation, heat decarbonisation and low carbon transport.
https://www.strath.ac.uk/humanities/centreforenergypolicy/

RESPONSE

CEP's response focuses on questions 1, 4, 6, 8, 9, and 13. It is based on our peer-reviewed evidence across the net zero space, including residential heat decarbonisation, industrial decarbonisation and energy efficiency.

Sector Methodology (pages 16-20)

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

Driving economic growth, supporting the creation and maintenance of good jobs, unlocking investment, and improving living standards across the country, as contained in the Industrial Strategy, will be linked to sustainable growth and achieving net zero objectives. This will inevitably require building strong domestic industries, including strong local supply chains and the associated jobs, to support the development of all the economic sectors.

For instance, CEP's research[i] suggests that achieving the UK government targets set in the Carbon Capture Use and Storage (CCUS) Vision will require understanding the potential 'congestion effects' driven by competition for resources associated with rolling out multiple CCUS-related projects simultaneously against the wider backdrop of persistent worker and skills shortages and other net zero activity taking place. Our analyses simultaneously simulated the staged introduction of all four Track 1 and Track 2 CO_2 T&S systems alongside analyses that simulate the introduction of each system individually and then sum the results. The simultaneous approach allowed us to capture the dynamic nature and impacts of potential congestion effects in the supply-constrained UK economy. For example, the anticipated transitory annual peaks in demand for construction jobs associated with the Track 1 T&S systems rollout equates to circa 11,000 FTE jobs and around 4,200 FTE jobs with Track 2 T&S systems deployment. This compares to 7,730 and 6,700 based on individual analyses. These higher levels of employment demand where labour supply is constrained could lead to heightened competition for resources or congestion effects, which in turn could drive up wage costs and possibly limit economic gains and job creation.

Our research shows that these congestion impacts will likely be time-limited and ease over time in the CO_2 T&S sector. However, it is worth noting that the sector represents a relatively small-scale investment and net zero activity, which we have analysed in isolation from the full range of other net zero activities likely to happen simultaneously (e.g., offshore wind, nuclear, and electricity network upgrades). Critically, the broader implementation of net zero

activities within the same and/or similar timeframes could further increase and compound potential congestion effects, mainly if worker and skills shortages are not addressed.

Understanding and planning for these variations within the broader decarbonisation landscape is essential. Addressing these bottlenecks requires a concerted effort and collaboration between governments, industries, and academic partners to inform project sequencing and mitigate risks in workforce planning. Our research also suggests that delivering the objectives and economic strategies requires using a consistent methodology that allows for a better analysis. For instance, in our research[ii] investigating how a new Scottish CO2 Transport and Storage sector would influence the UK economy, we used a consistent methodology to assess comparable impacts for all four regional T&S sectors, responding to concerns over a lack of standardised methodologies stated by the UK's Industrial Decarbonisation Challenge, IDC[iii] (Recommendation 5 in a 2023 IDC report). Using a consistent methodology allowed fair comparisons, identifying where the greater positive outcomes could be delivered as well as the best value for money from the interventions.

It is also important to use methods/tools that go beyond the purely technical and account for wider economic and social impacts. For example, macroeconomic modelling (such as Computable General Equilibrium (CGE) modelling[iv] [v] [vi]) can help shed light on the jobs or GDP impacts. Social science methods and public attitudes research can also be valuable in identifying the full range of potential issues that impact specific subsectors[vii].

Sectors (page 21-26)

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

As previously explained in question 1, Identifying individually important subsectors and technologies presents challenges related to potentially overlapping supply chains. Our research[viii] on residential heat decarbonisation, looking at the benefits of heat pump rollout for residential heating, has shown its potential to ease some negative pressures on the UK economy and the importance of understanding the overlap of sectors. Our research[ix] on energy efficiency looked at the deployment of heat pumps in the UK to mitigate the negative impacts of high electricity and gas prices. It shows that upgrading the electricity network and developing a UK heat pump manufacturing and installation sector, including the workforce, will be essential for the heat pump rollout and to generate positive economic impacts. Developing the manufacturing and installation sectors can stimulate the economy even when a part of the spending on this project includes importing heat humps or equipment. Our findings show that maximising economy-wide benefits from the rollout of heat pumps requires the establishment of a robust domestic supply chain, which has the potential to ensure that a larger share of the spending and investment required to facilitate the transition to net zero stays and creates added value and employment within the UK.

Regarding the clean energy sector, the UK has made steady progress. The IPPR[x] has published a report on offshore wind capacity showing that the UK still has work to do on wind deployment as some issues, such as slow planning, management and skills shortages or struggling grid infrastructure, persist. The report supports the argument of developing the UK's manufacturing and installation potential to maximise the economic benefits of clean energy industries. Taking action would mean that both the decarbonisation and economic benefits, including jobs, would remain within the UK. This links to our research on residential heat decarbonisation[xi], which has pointed out that focusing on individual subsectors might lose the scope of the potential complementarities between different sectors.

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

The country's plans to meet its legally enshrined ambitions to transition to net zero will significantly shape the UK industrial strategy. Meeting these ambitions and decarbonising the economy will require that the UK Government focus efforts and resources on addressing the persistent worker and skills shortages faced by the country, which could have significant impacts on the potential economic gains that could be derived from the net zero transition, as well as its delivery more generally. Our research suggests that it is essential that the industrial strategy also includes or is built alongside a comprehensive long-term workforce strategy. Accordingly, coordination and planning across sectors and activities are key to creating agile and flexible skill development programmes, managing labour demand peaks, supporting the transitions from sectors such as oil and gas, and creating reliable career paths for new entrants to the workforce[xii]. If left unaddressed, this skills challenge could have implications for the availability of a skilled workforce, the wages required to staff net zero development projects properly and ultimately, an increase to the total project development cost.

Evidence generated through our research across the net zero space, including residential heat decarbonisation[xiii], industrial decarbonisation[xiv] [xv] and energy efficiency[xvi], consistently highlights the job opportunities that could be supported by net zero as well as labour market pressures and supply constraints acting as determinants and drivers of the wider economy outcomes of net zero actions and investments.[xvii]

For example, our research[xviii] on the deployment of Carbon Capture Utilisation and Storage (CCUS), in line with the UK Government's CCUS vision[xix], found that by 2035, an operational T&S industry could support around 4,000 full-time equivalent (FTE) jobs while also enabling GDP gains of almost £900M. The research also suggests there could be peaks in demand for jobs in the construction sector. This is a common finding across our other research areas, such as residential heat decarbonisation[xx]. Effective workforce and skills planning and consideration of the timing of net zero projects will be critical, as well as an understanding of the labour demand that will inform them.

An enabler for implementing such a strategy is the provision of clear signposting and clear milestone targets from the government regarding where the focus lies in supporting sectoral growth. Our research[xxi] on effective workforce planning and project sequencing shows that signposting is essential for financial actors and investors to identify a pathway by which investments will be delivered and the timeframes they should expect to see returns on their investments. It is also essential for education and workplace training providers to plan the development of appropriate courses and attract attendees. In the absence of strong signposting, there will always be a level of uncertainty over decision-making, meaning that actions from the different sectors may be deferred into the future at a point where there is reduced uncertainty.

<u>Business Environment- People and Skills (pages 28-31)</u>

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?**

As highlighted in our response to question 6, our research[xxii] emphasises the need for a comprehensive workforce strategy to go alongside and support the development of a UK industrial strategy. Clear and firm government signposting can be instrumental in addressing the labour and investment-related barriers to growth. It is welcomed that the consultation document recognises the importance of labour in the successful delivery of an industrial strategy.

Our research suggests that the government could drive a more consistent assessment of employment requirements across net zero and other projects, which will be critical to identifying skills gaps and needs and appropriate responses. Our analysis[xxiii], alongside analysis from UK Research and Innovation (UKRI)[xxiv] highlights that assessment of employment requirements and economic impacts in the net zero space currently vary widely. This research also underscores the importance of modelling and understanding the wider economy impacts of multiple net zero and other infrastructure projects taking place in similar timeframes and the demands that will be placed on labour and skills. Modelling employment requirements for projects and sectors in isolation means the dynamic nature and impacts of potential congestion effects in the supply-constrained UK economy are not always captured accurately.[xxv]

Another issue presented in the consultation document refers to how the industrial strategy could rely, to some extent, on a flexible labour force. Although this skill-based approach may suit some professions and demographics better, it should not be taken as a given across the board. Our research[xxvi] on the decarbonisation of UK industrial clusters via the development of CCUS networks and supply chains shows that only a small fraction of the working population may be able to move across the country to secure employment, especially if they are expected to work in a certain area for a relatively short timeframe before moving to a completely different location. Assuming full flexibility might lead to an underperforming workplace strategy and undersubscribed training programmes. The former also relates to diversity and inclusivity challenges, where, for example, those with caring responsibilities may find it difficult to reskill, upskill and move geographically[xxvii].

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

Our research on industrial decarbonisation[xxviii] shows that businesses understand the need to develop a skilled workforce that can power the net zero transition. In conversations with business and industry stakeholders from the CCUS industrial clusters, concerns were raised about the size of the investment they often had to bear in order to provide a skilled workforce. They have the capacity to act as co-designers and training providers with the government, delivering certainty around the return on investment and project development where appropriate, especially in those nascent sectors, such as CCUS, where the government provides subsidies to develop markets. Businesses also highlighted that more work needs to be done to incentivise those retiring from key sectors and industries to take up roles in further education to train and upskill new and existing workers.

Business Environment- Data (pages 33-34)

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

An issue identified by UKRI in the Carbon Capture and Storage space[xxix] is that a large range of approaches are used to inform the policy space, varying in terms of scope and assumptions and, ultimately, with limited comparability between the analyses. Similarly, in

the most recent round of business plan development for the next price control period in the electricity transmission network, Ofgem provides little information regarding the methodologies that need to be used or how certain items related to its growth duty are defined. This opens the possibility for different interpretations by the parties involved in the process, negatively affecting the potential to evaluate the business plans presented.

It is, therefore, essential for the government to establish detailed guidance on the analytical approaches that can be used to inform policy and the criteria they need to fulfil. This does not have to be a limited list, but setting out specific characteristics allows us to root out analyses that could potentially skew the perceptions over the potential impacts of proposed policies. Effectively, this could constitute an equivalent of the Green Book for parties wishing to inform the policy community.

It will also support the ONS in acquiring and publishing the data that are seen as necessary to inform the aforementioned analytical approaches. At this stage, many analyses are impossible or must be conducted at a much higher level because there is insufficient publicly available information to inform more detailed analyses. This limited availability is difficult to change if a handful of analysts require some specific information. However, when an established wider requirement is supported by the government's guidelines, acquiring and publishing relevant information can be expedited.

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[i] https://doi.org/10.17868/strath.00088667
[ii] https://doi.org/10.17868/strath.00088173
[iii] https://www.ukri.org/wp-content/uploads/2023/11/UKRI-141123-EnablingNetZeroPlanUKIndustrialClusterDecarbonisation.pdf
[iv] https://doi.org/10.1016/j.jclepro.2023.140084
[v] https://doi.org/10.1002/eet.2124
[vi] https://doi.org/10.1016/j.esr.2024.101518
[vii] https://doi.org/10.1038/s41560-024-01506-w
[viii] https://doi.org/10.1016/j.esr.2024.101518
[ix] https://doi.org/10.1016/j.esr.2024.101518
[x] https://ippr-org.files.svdcdn.com/production/Downloads/A_second_wind_May24.pdf
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[xii] https://doi.org/10.17868/strath.00088667
[xiii] https://doi.org/10.17868/strath.00086820
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[xxiv] https://www.ukri.org/publications/enabling-net-zero-a-plan-for-uk-industrial-decarbonisation/
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