UK NET ZERO CAPABILITIES

Understanding the Net Zero Technology Market

IRC Report No 032

Executive Summary

This report aims to answer the question of 'what is the UK good at, in terms of Net Zero technologies?' focusing specifically on the potential to generate economic value from Net Zero technologies. To answer this question, we explore secondary data sources, namely, patents, exports, and 'real time' investment data, using a range of analytical tools to understand the complexity of the UK Net Zero technology landscape.

We find that there are different strengths in the UK Net Zero technology landscape, with little crossover between insights generated by the different data types. For example, while the patent-based analysis suggests Tidal Stream, Offshore Wind, Carbon Capture, Utilisation and Storage (CCUS), Nuclear technologies, Smart systems and Building fabrics are strengths, the export data suggest Gas flaring emissions reduction, Environmental monitoring, analysis and assessment, Clean up/remediation of soil & water and Natural risk management is where the UK export strengths are. The real time data on the other hand, shows that a company signalling they use a particular technology in their company description does not increase their likelihood of funding.

The UK Net Zero technology landscape is characterised by a high level of diversity, complexity and remains siloed according to our industry space and technology/industry cluster analyses. However, there are energy technologies which are providing an anchor for Net Zero development, and broadly speaking, these have high level of economic activity across our measures, interacting with other industry sectors well. In addition, there is an opportunity for more diffusion of enabling technologies such as software, digital platforms and AI, as they are not reaching their full market penetration potential in the Net Zero technology landscape.

Encouraging broader integration of complex and specialised technologies across industries, and supporting firms to patent, export and see market opportunities for their technologies beyond their initial specialisms could bolster the economic benefits from Net Zero technologies in the UK. This might be achieved through targeted spinout support and accelerators programmes for Net Zero firms. Secondly encouraging a wider adoption of enabling technologies such as software, digital platforms and AI across the Net Zero landscape would further create capacity and capabilities to meet Net Zero goals.

Areas of future research that could deepen our understanding of the economic benefits of Net Zero technologies in the UK include: (1) exploring the relationship between grants and equity to better understand crowding out vs crowding in effects, (2) looking at the effect on turnover

of use of particular technologies (as defined by mentioning them in a company description) (3) deepening our analysis into unusual combinations (or outliers) in the industry space and technology cluster analysis, (4) taking a deeper dive into energy to unpack the different economic benefits of particular technologies and (5) to breakdown technologies by their technology readiness levels to understand which technologies benefit from what support at different stages of their development.

Now you have read our report we would love to know if our research has provided you with new insights, improved your processes, or inspired innovative solutions.

Please let us know how our research is making a difference by completing our short feedback form via this QR code.

Thank you

The Innovation & Research Caucus

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The IRC supports the use of robust evidence and insights in UKRI's strategies and investments, as well as undertaking a co-produced programme of research. Our members are leading academics from across the social sciences, other disciplines and sectors, who are engaged in different aspects of innovation and research system. We connect academic experts, UKRI, IUK and the ESRC, by providing research insights to inform policy and practice. Professor Tim Vorley and Professor Stephen Roper are Co-Directors. The IRC is funded by UKRI via the ESRC and IUK, grant number ES/X010759/1. The support of the funders is acknowledged. The views expressed in this piece are those of the authors and do not necessarily represent those of the funders.

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