

## Research Student Information

<b>Name</b>	(photo) Mr Scott KELLY
<b>PhD Title</b>	Critical path decarbonisation of energy demand and supply using complex large interconnected systems methodologies
<b>Project information</b>	<p>Never before has society required solutions for anthropogenic effects on such a global scale as we now face with climate change. The Stern review showed that the benefits of strong early action far outweigh the costs of not acting (Stern 2006), how this is to achieved remains contentious and subjective. It follows therefore that research is required to research, model and analyse what areas of action will give the most benefit for the limited time and resources available, alternatively, what technologies, policies and solutions will give the most impact for the minimum cost. This research aims to take a complex systems approach to the energy sector in order to understand and optimise carbon abatement opportunities for climate change mitigation.</p> <p>The energy sector in the UK is a large and complex system, incorporating many interrelated and dynamic elements connected through processes, feedbacks and delays through the environment the economy and engineering. By using a CLIOS approach (Complex, Large, Integrated, Open-ended System) the inter-connections between a physical quantitative frame-work can be modelled within a qualitative soft systems policy domain. Furthermore, using this methodology an understanding for the complex nature of CO2 mitigation within the power sector through both supply and demand can be understood and solutions optimised to realise the emergent behaviours of the system as whole which will result. The model will thus incorporate many different carbon mitigation measures, including the effects of the built environment (demand side) and the integrated effects of alternative energy technologies in the electricity market (supply side). It will also allow the analysis of various policy levers and their intended and actual effects on carbon abatement to be understood.</p>
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<b>Website</b>	