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# Parliamentary and Scientific Committee

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## Net Zero and the Role of Engineering

Achieving net zero is one of our greatest challenges over the next decades. This evening we heard from three expert speakers about how engineering can help achieve a low emissions society. Stephen Shaw, Global Engineering Director at AESSEAL plc. and IMechE Yorkshire Region Hon. Treasurer, discussed the role of engineers in the context of net zero and how they can benefit businesses. Paul Jordon, Business Leader of Innovator Support & International at Energy Systems Catapult, discussed how engineers are needed to update our power grid and heating systems, which will be crucial if we wish to reach out net zero targets. Lastly, Dr Gbemi Oluleye, assistant Professor at the Centre for Environmental Policy at Imperial College London, discussed hard to abate sectors in society, where additional support will be needed to reduce emissions. The Q&A sessions at the end of talk was varied, but many questions focused on the policies needed to make the transition to net zero as smooth as possible.

The skillset of engineers will be absolutely vital for us achieving a lower emissions society. Mr Shaw explained how engineers can either lower or offset emissions in a given process. Breaking down emissions into three categories: we have scope 1 which are direct emissions from a company; scope 2 which are indirect emissions, such as emissions from electricity produced for the company; and scope 3 which are indirect emissions that stem from the supply chain. Engineers have roles to play in the reduction and offsetting of all of these emission types. For example, Mr Shaw gave the example of replacing a pumping system with a more efficient model, thus reducing a companies scope 1 emissions. Offsetting is often used to compensate scope 2 emissions, but Mr Shaw explains how planting trees isn't a very efficient way of gaining carbon credits. He emphasised that further development is needed to improve carbon capture technology, an area where engineers will

play a vital role.

Reducing our energy and heating systems' emissions will be crucial for net zero. Mr Jordan outlined the three components that must be considered here; electricity generation, hydrogen, and district heating. For all of these, Catapult has compared the clockwork path, the path taken if we follow the government's plan, with a patchwork path, an estimation of what's necessary as the energy system changes over the coming decades. For example, the clockwork path for electricity generation is predicting 550TWh by 2050 for UK energy consumption produced by nuclear and renewables. The patchwork path predicts 700TWh by 2050 mostly produced by renewables. Engineers modelling these systems and working on the necessary technology will be vital for net zero.

Not all sectors can easily transition to low emissions. These hard to abate sectors includes the aviation industry. Dr Oluleye explained how government policy is necessary to push these sectors towards low emissions, as currently there isn't a great enough demand for the market to pull the transition. Dr Oluleye outlined a case study from the UK Chemical Industry, where the subsidising of electric boilers in pushing the industry to adopt this lower emissions options over gas boilers. It's predicted that penalty charges and carbon taxes should then be implemented by around 2030 to further push for this adoption.

Achieving net zero will be difficult, and the speakers emphasised how the development of better carbon capture technology and energy storage is crucial. Such work will be one part of the large role engineers have to play in lowering emissions.

*Alfie Hoar*

*P&SC Discussion Meeting, 'Net Zero and the Role of Engineering'*

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