Firstly I would like to thank EURELECTRIC for this award, and for a very engaging and thought-provoking conference. I would also like to thank the Electricity Association of Ireland for running the national competition and ESB for their support in sponsoring me to be here. I'll now read a condensed version of my thoughts on the essay title we were given.

Electrification was one of the greatest, and often most overlooked achievements of the 20th Century. It required ambitions of national scale and led to the creation of vertically integrated state-owned utilities to provide the generation, transmission, distribution and supply of electricity. The provision of electrical energy played a key role in promoting economic prosperity, social cohesion, the liberation of women and defining the health and quality of life for the Europeans of today. It transformed the home, and energised the agricultural, industrial, manufacturing and commercial processes that are the backbone of the modern economy.

The fundamental challenge of the 21st Century is how we can maintain the same standard of living in the face of climate change. Depleting fossil fuels will eventually require a complete transformation of the transport and heating sectors, the electrification of which could easily treble current electricity demand. This energy transition becomes increasingly difficult to implement in the competitive electricity markets of the 21st Century as states no longer have direct intervention or control.

The players with the biggest role in this transition are the electricity consumers of Europe. This transition requires that we source our energy from renewable sources, whose output is extremely variable. We are moving away from the paradigm that electricity demand is an inflexible quantity that must be served at all times, towards a system where flexibility is required by both generation and demand.

The staggering speed at which technology has changed since the creation of the first transistor has led to most European consumers having a piece of technology in their pockets that has more computing power than that which helped put the first men on the moon. As a society we have barely begun to realise the potential of this technology. Coupling this with the communications breakthrough of the internet will lead to the Internet of Things, a network of sensors providing connectivity, data transfer and control to enable more intelligent use of the engineering world around us.

Designing digital strategies to maximise the potential of this technology is key to engaging customers. We already have the technology to generate power from renewable generation, to transition towards the electrification of heat and transport and to achieve the new build and retrofit that will deliver passive and more energy efficient buildings. What is lacking is the digital infrastructure to enable the data transfer, monitoring, control and interaction between the myriad of different technologies that will make up the future sustainable energy system.

In this energy transition we need to not only maintain, but improve the standard of living of the citizens of Europe. Analogous to the economic growth and productivity that accompanied electrification in the 20th Century, the transition to a sustainable integrated energy system also holds the potential to revolutionise and reimagine the economic and social model of Europe. Ultimately this transition should, can and needs be in the interest of the economy, society and the environment, and fundamentally the citizens and customers of Europe.

Killian McKenna

[2015 Student Award Winner]