

## **Smart Sustainability: the link between renewable intelligent systems and renewable energy**

The need to reduce the rate at which the earth's resources are being consumed as a result of human activities, and alleviate the quantity of greenhouse gases that are being added to the atmosphere, constitutes an urgent and well-recognised problem for humankind. There is a need to satisfy the current need for energy and other resources without jeopardising the existence of future inhabitants of the planet. The intelligent systems research area is not often regarded as an obvious contributor to the solution to this problem. However, smart systems can provide accurate measurement, control, modelling and optimisation functions which can be applied beneficially to renewable energy and similar sustainability-orientated application areas. This is the area referred to as Smart Sustainability. This talk briefly presents examples of the way that smart technology can be applied to energy systems at the grid level, and also the local level through improved control of micro-generation and photo-voltaics. A project will be described where the aim is to devise a modelling and simulation software package for multi-source hybrid renewable energy systems. Ultimately this can lead to better design and optimisation of renewable energy systems.