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## Impact Objectives

- Develop understanding of the public's awareness, perceptions, behaviour and attitudes to energy-relevant technologies
- Identify current levels of awareness, perceptions, behaviour and attitudes to transition pathways to a low carbon society of actors in the energy system
- Engage the public in the transformation process to a more efficient, low carbon energy system

# The human factor of energy systems

*Niall Dunphy is Coordinator of a project adopting an innovative multidisciplinary and interdisciplinary approach to understand human aspects of the energy system. He reveals why such research is necessary for effectively transitioning to a low-carbon energy society*



### What are the drivers for the ENTRUST (Energy System Transition Through Stakeholder Activation, Education and Skills Development) project?

The principal driver for ENTRUST is the necessity to transition to a low carbon paradigm, as acknowledged in the ambitious goals set by the EU. However, such a transition will not succeed if it is overly focused on technology, as the required transition is not just about technological innovation but requires substantial changes in the way people live their lives and their relationships with energy and the energy system. This presents a significant challenge, as the ways in which people relate to the energy system and consume energy are shaped by existing technologies, infrastructure, practices, social conventions, values, attitudes and perceptions. Thus, understanding this human factor is a prerequisite to strategically promoting energy transition

through the mobilisation of social actors, change in energy practices, and behaviour that progress socially acceptable energy solutions. The concept for ENTRUST emerged from a series of interdisciplinary discussions, which sought to consider how the human dimension of the energy system might be best explored.

### Do you have a clear pathway to ENTRUST's impact?

The ENTRUST project is developing a suite of innovative management approaches to support the transition to a low carbon energy system at community level, novel business models that will assist technological innovations in gaining in-depth market penetration, and policy toolkits for legislators at both National and European levels. These approaches will be integrated into an interactive web platform accessible to both professionals and the public, and promoted using gamified approaches and community-based social networking.

### How are you working to make this research more open?

A range of approaches are being applied to provide updates on the progress of the project and will be provided as it develops, including the project website, brochures, press releases, social media updates, etc. A key part of the dissemination strategy involves presenting this research in Europe-

wide peer-reviewed journals and at relevant conferences. ENTRUST is committed to providing open access to these publications through both gold open access (there is a dedicated budget to provide for open access publication costs) and green open access through institutional repositories. A knowledge and communication platform is being developed in the project – this will be a significant tool to inform and empower the wider public and facilitate dialogue on the future of their energy system.

### Now over one year into the project, are there any challenges that you have faced and how have you overcome these?

Like any European project of this size and scope we have had to adapt to a number of challenges. Engaging with six different communities has been challenging at times, given the differences in language and cultural norms that are expected to be adhered to in each country. I can say, however, that this challenge has been one that we have actually enjoyed at times. As researchers, we enjoy the process of learning and creating new knowledge from both an intellectual and interpersonal perspective. In fact, the interpersonal dimension has been essential to our community engagement and we cannot express enough the importance of working with a strong consortium of partners to help achieve this project's goals. We have been very fortunate in this regard.



# Power to the people

*ENTRUST is a three-year project exploring energy-related human behaviours and attitudes and how these are shaped by numerous factors, including age, gender and socioeconomic status. Through this in-depth analysis, the research team hopes to advance the transition to a low carbon energy society*

Traditionally, energy has been seen primarily as a commodity – a marketable product produced and sold by companies with the principal motivation of financial return. In this perspective, citizens are conceived as consumers whose only legitimate mode of interaction with the energy system is through their purchasing choices and consumption practices. However, consumption only represents one element of the human interaction with the energy system and such a restrictive view has led to poor policy decisions being made, resulting in, for example, bottom-up resistance to energy infrastructure and the design of less than effective initiatives aimed at changing energy behaviour and practices.

In a time when the energy system is undergoing a rapid transformation, understanding the human dimensions of energy is more important than ever. The EU has set targets to reduce greenhouse gas emissions by at least 40 per cent from 1990 levels, and to have a minimum of 27 per cent of energy produced by renewables, as well as a 27 per cent improvement in energy efficiency. In order to achieve this transition

to a low carbon energy paradigm efficiently and effectively, the way in which energy is viewed needs to be re-evaluated.

## ENERGY CITIZENSHIP

Energy citizenship is a theory that seeks to move beyond the narrow view of energy as a commodity and seeks to integrate the public as active stakeholders in the energy system. While this is an emergent (and to a degree contested) concept, a key feature of energy citizenship is that it should involve not only the responsibility to change behaviours and practices, but also include the right of citizens to be involved in energy-related decision making processes.

ENTRUST (Energy System Transition Through Stakeholder Activation, Education and Skills Development) is a project that has adopted this theory as a conceptual framework for investigating the human factors of the energy system. Commenced in May 2015, and coordinated by University College Cork (UCC), Ireland, this Horizon 2020-funded project seeks to gain an in-depth understanding of people's awareness and perceptions of the energy system,

their attitudes towards various energy technologies, and their energy consumption behaviours and practices. This analysis particularly explores how sociodemographic factors (especially gender, age and socioeconomic status) impact and shape these attitudes and practices. Building on this understanding, the project additionally aims to engage the public in the current energy transition and develop effective tools for creating public interest in European energy policy and innovation. It is hoped that researching and understanding this human dimension will both help to build an energy infrastructure that is acceptable to communities, and that supports the successful transition to a low carbon society.

## A MULTIDISCIPLINARY APPROACH

What is particularly important about ENTRUST is its multidisciplinary and interdisciplinary approach to its research on the energy system. A wide range of disciplines – including engineering, sociology, political science, psychology, gender theory and human geography – are

integral to the effective exploration of the sociodemographic factors at play. To obtain expertise in such a diverse array of fields, a number of organisations – Liverpool John Moores University and Integrated Environmental Solutions Ltd (UK), LGI Consulting (France), Redinn S.r.l. and STAM S.r.l. (Italy), and Enerbyte Smart Energy Solutions SL (Spain) – are partners with UCC on the project.

The ENTRUST team sees the roles of gender, age and socioeconomic status in moulding a person's identity as crucial to understanding their associated impacts on our energy infrastructures. As Project Coordinator Niall Dunphy explains: 'We recognise that every person's identity is complex and multifaceted, and that gender, age and socioeconomic status all play a role in shaping – both positively and negatively – people's attitudes and practices when it comes to energy. We should also recognise that these indicators also shape people's experiences of oppression and privilege to varying degrees throughout their lives.'

To gain an enhanced understanding of individuals' actions and behaviours in relation to energy, ENTRUST has adopted an integrated, mixed-methods approach. It will evaluate the extent to which one's social environment impacts on behaviour and practices. Furthermore, the role of gender (in particular) will be assessed via intersectional analyses to gain a deep insight on how multiple sociodemographic factors of a person's identity can influence their energy-related attitudes and practices. Through this investigation, the ENTRUST team is endeavouring to integrate new knowledge within a practical framework that can help shape future energy innovations, improve stakeholder understanding and, ultimately, overcome the shortcomings of the current energy transition. 'By helping to give local people a voice in policy making we hope to contribute towards short-circuiting the potential for repeating some of the pitfalls that hindered previous phases of the energy transition,' states Dunphy.

#### THE IMPORTANCE OF COMMUNITY ENGAGEMENT

Since energy citizenship lies at the core of ENTRUST's framework, empowering communities is a crucial focus of the project. The team is collaborating with six different communities across Europe, which will have the opportunity to co-design their own energy transition. 'We are working with these communities to, firstly, understand both their awareness, perceptions, behaviour and attitudes to energy-relevant technologies,

and, secondly, to facilitate them to envision, and to re-imagine their own energy transition,' Dunphy elaborates.

One interesting approach being adopted by the project to help community empowerment is Participatory Action Research, the emphasis of which is on participation and action among community members. By enabling individuals and communities to work collaboratively and thoughtfully towards making positive change happen, ENTRUST is encouraging the development of bespoke energy systems that involve an efficient, low carbon framework.

The project is engaging the public by conducting in-depth face-to-face interviews, focus groups and mini-publics (the assembling of randomly selected citizens that represent a microcosm of the public to discuss a particular topic). A particular emphasis is on ensuring inclusivity. For example, with regard to gender, timing, location and provision of support services (such as crèches) are considered important to enable both female and male participation.

In terms of wider public engagement, Dunphy and his colleagues are setting up a communication and knowledge platform that will inform and update citizens on the developments of their community's future bespoke energy system. Not only this, but the platform will encourage discussion and participation among individuals – no matter what their gender, age or socioeconomic status – giving them an active say in the shaping of their energy system.

#### ENTRUSTING COMMUNITIES WITH THE ENERGY OF THE FUTURE

Just one year into the project good progress has already been achieved, with the completion of numerous analyses on, for example, policy and regulation, energy technologies and market-based policy tools. Now, activities are really ramping up, as the multidisciplinary team gets to work on stakeholder engagement and sociodemographic analyses. 'The next 12 months are an exciting time for the ENTRUST project,' Dunphy notes. 'We will continue our intensive and rich engagement with the six communities of interest, which will result in intersectional analyses of their perceptions and attitudes towards energy, and of their perceptions and attitudes towards energy technologies.' Once these findings have been obtained, they will, along with the aforementioned analyses, be able to significantly inform the future of our energy system.

*By helping to give local people a voice in policy making we hope to contribute towards short-circuiting the potential for repeating some of the pitfalls that hindered previous phases of the energy transition*

## Project Insights

### FUNDING

European Union Horizon 2020 Programme for Research and Innovation

### PARTNERS

University College Cork • Liverpool John Moores University • Redinn S.r.l. • LGI Consulting • STAM S.r.l. • Integrated Environmental Solutions Ltd • Enerbyte Smart Energy Solutions SL

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### PROJECT COORDINATOR BIO

**Niall Dunphy** is the Director of the Cleaner Production Promotion Unit, a research group within the School of Engineering at University College Cork, Ireland. The group operates at the intersection of the social sciences with science and engineering, conducting research on the sustainability of socio-technical systems, with a particular focus on the human aspects of the built environment and energy. Dunphy has over 20 years' experience in multidisciplinary research and leads a team encompassing a diverse range of disciplines including sociology, geography, psychology, political science, architecture, environmental science and engineering. He has been Principal Investigator of numerous EU- and national-funded research, demonstration and training projects.

