

**BOOK OF
ABSTRACTS**

UCC
**GREEN
WEEK
SYMPOSIUM**

SHOWCASING UCC'S SUSTAINABILITY RESEARCH

5:30pm

13th March 2023

The Shteppe, The Hub, UCC Main Campus

Session 1

5:35pm – 5:50pm

Investigating Young Adults' Perceptions & Perceived Efficacy About the Climate Crisis in Ireland From a Socio-Ecological Perspective.

Anna Finnegan, Student in MA Applied Psychology (Positive and Coaching Psychology (MAAPPP), School of Applied Psychology. Dr. Marica Cassarino (School of Applied Psychology/ERI), Dr. James Richardson, (School of Biological, Earth, and Environmental Sciences/ERI).

Promoting climate action is a key sustainable development goal and requires understanding of the psychological and affective drives that may influence people's decisions and behaviours. There is increasing evidence of climate anxiety amongst younger generations; however, focusing on climate anxiety only can cause a narrow understanding on the multiple personal, social, and environmental factors that may drive how young people feel about the climate crisis. Using an online survey, this study aims to investigate the demographic socio-political and psychological factors driving climate concern and self-efficacy among Irish young people aged 18–32 years old. The survey is guided by socio-ecological models of sustainable behaviour, and it assesses different areas, including nature-relatedness, pro-environmental behaviour, climate concern and emotions, perceived causes of climate change, climate efficacy, peoples' and organizations' impact on climate change, and trust in people and organizations in combating the crisis.

The study is a collaboration between the School of Applied Psychology and the School of Biological, Earth and Environmental Sciences in UCC, and is part of a cross-national partnership with Universidad del Rosario, in Bogota, Colombia; this will promote cross-national comparisons. Data collection is undergoing at the time of submission and the presentation will focus on preliminary results. The findings will give an insight into the multiple factors influencing young people's affective experience of climate-related issues and sustainable behaviour in Ireland; this will enable to broaden the scope of our understanding of this topic beyond climate anxiety.

Session 1

5:50pm – 6:05pm

Community Connections & Conservation: Promoting Biodiversity & Climate Awareness in Cork City Primary School Children in UCC Green Spaces

Lydia Elliott, Research Masters' Student in the School of Biological, Earth and Environmental Sciences. Prof. Ruth Ramsay (School of Biological, Earth and Environmental Sciences), Dr. Courtney Collins (School of Biological Earth and Environmental Sciences), and Dr. Marica Cassarino (School of Applied Psychology/ERI).

We are currently in a biodiversity and climate crisis with expected increased rates of famine, drought, flooding among other deteriorations of the environment. A large amount of responsibility is put on the next generation to find solutions for our survival. It is our responsibility to provide education for children growing up in a changing climate. Educators should hope to instil sustainable behaviours, a positive attitude towards the environment, and proactive citizenship. An Educational Intervention (EI) was designed for Cork city primary schools to increase awareness of biodiversity loss and climate change. Students answered a survey before and after participating in nature-based activities on UCC green spaces, with a selection of students also completing a follow-up survey.

Results showed that after taking the EI, the proportion of student's knowledge that increased was 52.4%, that remained stable was 28%, and that decreased was 20.6%. There was highly significant influences of season, school, and DEIS variables on scores. After taking the EI student's reported increased awareness to the importance of plants and animals to biodiversity loss, while 'waste reduction, wise energy use and sustainable transport' were flagged as solutions to climate change. To conclude, the majority of students had a positive response to nature-based learning. Primary schools would highly benefit from including environmental education activities in green spaces. This study also highlights UCC's green spaces as a suitable candidate for further outdoor education opportunities.

Session 1

6:05pm – 6:20pm

The Natural World Around Me: A Qualitative Exploration of Young People's Relationship to Nature

Topaz Shrestha, PhD Researcher, School of Applied Psychology. Dr. Zelda Di Blasi (School of Applied Psychology) Dr. Sarah Foley (School of Applied Psychology) Dr. Marica Cassarino (School of Applied Psychology/ERI) Declan O' Driscoll (Youth Worker at Waterford and South Tipperary Community Youth Service WSTCYS) Tom Kent (Programme Leader BSc in Forestry, South East Technological University SETU).

Human and environmental health are deeply interconnected. Therefore, it is of significant concern that urbanisation and environmental degradation are leading to a reduction in our engagement with the natural world. Many of us seem to be both physically and psychologically disconnected from nature and this has implications, for both human and planetary well-being. Drawing from ecopsychology theory, this project explores how our intrinsic affiliation towards nature can be harnessed to enhance well-being while promoting environmental stewardship. We will qualitatively explore young people's relationship to nature and how it relates to their mental health and sentiment of pro-environmental behaviour. While multiple nature-based interventions exist, all proposing engagement with nature as a mechanism of improving mental health, there is a lack of consideration for young people's environmental perceptions when developing these interventions. This can only limit the harnessing of natural environments to promote well-being and environmental stewardship, potentially resulting in ineffective and ill-targeted interventions. At a foundational level, more research is needed to conceptualize how young people, in varying circumstances, perceive nature. A qualitative approach will help unearth the nuances of young people's environmental perceptions and provide insight into the individual and contextual factors that govern the human-nature relationship. Such research will support a more comprehensive and dynamic approach to intervention design and the development of NBIs which are sensitive to the individual and ultimately more targeted and effective. We hope that this will lead to the development of nature-based interventions which benefit both the climate and biodiversity, while simultaneously enhancing human well-being.

Session 2

6:30pm – 6:45pm

Reframing Energy Poverty: An Exploration of Social Dimensions, Definitions & Sustainability Discourses

Karla Santos Zambrano, Doctoral Researcher, Department of Sociology and Criminology.

A shift in the narrative surrounding 'energy poverty' advocates for a more actionable approach to address this concept and its problems. This research focuses on the development, application and evaluation of societal engagement methods targeting households experiencing energy poverty to explore the potential solutions for addressing vulnerability from an energy perspective, aiming to improve their energy and social resilience, as well as increasing their thermal comfort, health, and overall wellbeing.

Different definitions of energy poverty draw on different understandings of its causes, which leads to different interventions. Acknowledging the call for clarity in recognising the multiple aspects of what energy poverty entails and its equally diverse definitions, this research concentrates on the social dimension of energy poverty more than the technical aspects surrounding this complex issue. Energy poverty is a critical element for the exploration of vulnerability within energy and climate policy at all levels and thus remains a crucial factor in enabling the different approaches to address it, particularly from a sociological context, as it is linked to the notions of energy citizenship, energy justice, and energy democracy.

The exploration of the social dimensions of energy poverty contemplates a 'praxeomorphic' approach – understood as how people understand the world around them (Bauman 2012) – serving as a method for understanding the lived experience of disadvantaged groups, exploring its applicability to socio-technical research within the field of energy in connection to the way energy poverty is perceived by those experiencing it to arrive at the essence of the lived experience of this phenomenon.

Session 2

6:45pm – 7:00pm

Biodegradabili-tea? A Scientific & Law Clinic Study on Biodegradation, Greenwashing & the Lack of Due Diligence on Misleading Environmental Claims

Kristina Schröder (School of Law), Aoife Stewart (School of Law), Dr Alicia Mateos-Cárdenas, Postdoctoral Fellow, School of Biological, Earth and Environmental Sciences, Prof Owen McIntyre (School of Law).

The problem with plastic pollution is one of the most significant sustainability crises of our time. One of the roots of the problem is related to its single-use design, which transforms plastics directly into waste after use, and in doing so, it scraps any possibility of plastics to become a circular resource. In an attempt to solve this problem, some industries have switched petroleum-based plastics for plant-based bioplastics. The aim of this work focuses on the specific case of some teabags labelled as biodegradable. This work is a multidisciplinary collaboration across two UCC Schools and it involves a 2022 scientific study from the School of BEES resulting in a formal complaint submitted in February 2023 to the Competition and Consumer Protection Commission by the School of Law.

The 2022 publication tested a number of teabags commonly found in the Irish market. The scientific findings indicated that, whilst some plant-based teabags did biodegrade in less than 3.5 months, others were still completely intact after 12 months in soil, despite being labelled as biodegradable. This raised greenwashing concerns³ and a few other matters of legislative interest, which were investigated in the UCC Law Clinic module. It was concluded that these teabags did not meet any reasonable expectations on their biodegradability performance in the open environment. Also, the 'biodegradable' label contributes to consumer confusion and can potentially lead to environmental pollution. Overall, this work clearly demonstrates a serious lack of due diligence in assessing and making misleading environmental claims by a big corporation.

Session 2

7:00pm - 7:15pm

At the Frontline of Climate Activism: Exploring the Gendered Dynamics of Contemporary Climate Activism in Ireland

Edith Busteed, Applied Social Studies Department.

This research explores the gender relations of contemporary climate activism in Ireland in relation to gender differences in rates of participation, leadership roles, identity etc. The main aim of this research is to understand the motivations and experiences of those involved in contemporary climate activism through a gendered lens, exploring the impact that gender inequality and socialization can have on climate action in Ireland.

The research shall be carried out using the methods of ethnographic observations and interviews. Observations will primarily take place at the events, initiatives and protests led by environmental movements in Ireland. The goal of the observations is to aid in the understanding of how gender norms and roles can influence the dynamics and functioning of environmental activist movements, as well as to gain access to and recruit participants for interviews.

This research highlights the potential gender differences within environmental activism which must be researched, analyzed, and widely understood to create the societal and cultural shift needed to protect the planet. Existing research on the topic of environmental activism has found that gender influences the dynamics and motivations of those involved in environmental activism (Bell & Braun, 2010) (Stoddart & Tindall, 2010), however, there is a lack of research and understanding of how gender roles and norms influence contemporary climate activism. Research that explores gender differences in environmental activism can help recognize potential unequal gendered experiences of those involved in these grassroots movements, in ways that can positively inform future approaches to climate policy, research, and practice.

Session 3

7:25pm - 7:40pm

Waste to Wealth - Chemical Recycling of Plastics

Rachel Breen, PhD Researcher, School of Chemistry/ERI, *Dr Gillian Collins, Lecturer in Materials for Sustainability, School of Chemistry/ERI.*

Accumulation of waste plastic in the natural environment is occurring at an unprecedented rate due to indiscriminate use, inadequate recycling, and deposits in landfills. Mechanical recycling is currently the method used to recycle plastic, which consists of processes such as grinding and compounding plastic. The problem with mechanical recycling is that the quality of plastic is degraded, which produces a lower value product. Most recycling today can therefore be considered down-cycling from both a material property and economic perspective. One way to overcome this economic hurdle is to convert waste plastics into value-added materials or chemicals, which is called chemical recycling. Enormous opportunities exist in chemical recycling as plastics can be converted back to their original monomers that can be used to make the same plastic with no loss of quality (closed-loop recycling) or the plastic can be converted into commodity chemicals that can be used as feedstock for other industries (open-loop recycling).

Breaking down plastics is a hugely energy intensive process and requires the use of a catalyst to drive the reaction. In this talk I will give an overview of how we design and develop catalyst driven technologies for plastic deconstruction and upcycling to enable the circular economy.

Session 3

7:40pm – 7:55pm

Embedding Sustainability in Healthcare

Dr Angela Flynn, Lecturer, School of Nursing & Midwifery.

The health sector is one of the biggest contributors to the climate crisis, but also presents a prime opportunity to respond with action. My research seeks to investigate firstly, the extent to which sustainability and the wider UNSDGs feature in the current nursing curriculum in Ireland. Secondly, I will examine best practices for their embedding into undergraduate and postgraduate programmes. Nurses represent the largest group of health professionals and enjoy a very high level of trust by the public. The profession is therefore well-placed to influence climate-impacting decisions both within the health sector as well as in wider social, economic, and environmental policies.

This presentation will provide firstly a mapping of the UNSDGs in the nursing programme, using the UCC UNSDG mapping Toolkit, and secondly, will present a number of international examples of efforts to integrate climate into nursing curricula. It will finish with a brief description of a proposed new elective module that aims to enable students to gain an understanding of the UN Sustainable Development Goals (UNSDGs) and their relevance to healthcare.

The module will explore the UNSDGs as a globally accepted strategic framework, language, philosophy, and plan of action to address the environmental, social and economic dimensions of sustainable development. Students will learn to relate sustainability to healthcare needs and the impact of climate change on health; seeing the climate crisis as a health crisis) The ambition is that graduates will be health professionals who will act as climate champions, practicing climate-smart healthcare.

Session 3

7:55pm – 8:10pm

Decision Support for Sustainability

*Dr Richard O'Shea, Civil, Structural, and Environmental Engineering,
School of Engineering and Architecture (CEEES/ERI/MaREI).*

The concept of sustainability will underpin major decisions taken by individuals, organisations, and jurisdictions into the future. However, when multiple criteria across the three pillars of sustainability (environmental, economic, and social) must be considered, the ranking of sustainability projects from best to worst is difficult. The use of multicriteria decision analysis (MCDA) is growing within the field of sustainability as a means of aiding decision makers in the comparison of sustainability projects in a holistic and transparent manner. MCDA methods can consider multiple criteria and their relative degrees of importance (sometimes referred to as “weights”) when ranking alternatives which may be implemented. These methods provide an objective calculation approach which can account for subjective decision maker preference when comparing sustainability projects. MCDA methods can increase confidence in the decisions made when selecting sustainability projects to implement. An overview of some commonly used MCDA methods (weighted sum model, compromise programming, TOPSIS, and VIKOR) along with criteria weighting methods (SMART, SMARTER, and the analytical hierarchy process) will be presented. Following this, their application and some methodological developments will be demonstrated using the decarbonisation of a large facility in the food and beverage sector in Cork as an example.