Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Impact Case Study

National and Global Affairs

New green future solutions

As the urgency of climate action intensifies, Ireland's universities are responding in new ways. They continue to research the causes and effects of climate change, and to adapt their own internal practices to be more sustainable organisations. Universities also, however, act as incubators for the skills, leadership and innovation needed to navigate an uncertain future.

The work of Professor Quentin Crowley exemplifies this much needed approach. A geoscientist by training, Professor Crowley has expanded his remit far beyond the lecture theatre. He applies his expertise to the intersecting challenges of environmental risk, community resilience, entrepreneurship and leadership opportunities.

His work spans mapping radon exposure across the country to pioneering new models of climate education, designed to empower professionals and local communities alike. At the heart of his approach is collaboration between the university, industry, government and civil society. All of this is anchored in the belief that systemic change is both urgent and achievable. Against this backdrop, Professor Crowley's activities in climate education have placed him at the forefront of Ireland's sustainability transition.

This work showcases how Trinity is innovating in the development of critical thinking skills that are needed to engage with the uncertain environment of climate change.

Prepared by Trinity Civic Engagement for Societal Impact, September 2025

Professor Quentin Crowley

SCHOOL
Geology, School of Natural Sciences

PARTNER AGENCIES
Environmental Protection Agency ֍ Geological Survey Ireland ֍ An Taisce ֍ iCRAG ֍ Royal Irish Academy ֍ Geological Society of London ֍ European Radon Association ֍ Society for Environmental Geochemistry and Health ֍ International Agency for Research on Cancer ֍ World Health Organization

FUNDERS:
Higher Education Authority ֍ Irish Research Council / Science Foundation Ireland / Research Ireland ֍ iCRAG ֍ Environmental Protection Agency ֍ Geological Survey Ireland ֍ Climate-KIC ֍ EIT Raw Materials ֍ European Open Science Cloud

SUBJECT AREAS
Environmental Geoscience ֍ Earth Sciences for Climate Research ֍ Environmental Indicators, Monitoring & Risk Assessment ֍ Environmental Planning and Sustainable Development ֍ Radioactivity ֍ Environmental Exposures and Human Health ֍ Innovation in Higher and Further Education

Climate Education: At Home and Beyond

Professor Crowley integrated climate action and sustainability into courses he teaches in Geoscience and Environmental Science at Trinity College Dublin. This led to him establishing two new post-graduate courses: Climate Entrepreneurship and Climate Leadership Development. The former is a postgraduate certificate, and the latter a postgraduate micro-credential. Both courses, which are underpinned by systems thinking and challenge-based learning approaches, are widely recognised as the first of their kind in Ireland.

The Climate Entrepreneurship Course equips professionals from diverse backgrounds with entrepreneurial skills to tackle climate challenges. The Climate Leadership Development micro-credential empowers professionals with the skills they need to place climate action at the centre of decision making within organisations.

Professor Crowley has also co-created a Community-Based Climate Innovation course. Funded through the Higher Education Authority (HEA) Human Capital Initiative (Pillar 3), the course is a collaboration with Munster Technological University and is currently being offered through the Local Authorities of Kerry, Waterford, Wicklow, South Dublin and Meath. It takes place over three months and has 180 learners in the September 2025 intake. Rather than learners coming to Trinity, the course takes place within communities whereby participants will develop and communicate their ideas to tackle local climate challenges.

A National Centre for Systems Transformation

These courses sprang from the establishment of the IKC3 consortium (Ireland's Knowledge Centre for Carbon and Climate), designed to foster systemic adaptation to a decarbonised economy and promote sustainable living. Professor Crowley is the Trinity lead for IKC3.

Funded by the HEA and aligned with the European Institute of Innovation and Technology and Climate-KIC, it delivers learning through continuing professional development, micro-credentials, summer schools, experiential and community-based education. Deploying a systems approach and a participatory development model, IKC3 brings together academia, industry, government, civic groups and communities to tackle Ireland's Net Zero challenge.

Professor Crowley's work in this area was honoured with the 2024 iCRAG Industry and Entrepreneurship Award for his unwavering dedication to industry collaboration and entrepreneurship.

Highlighting the Risks of Radon Exposure

Professor Crowley's research in 2017 developed a high-resolution radon map of Ireland using logistic regression that combined indoor radon data with geological variables such as bedrock, Quaternary deposits, soil properties, and aquifer types. This work revealed that roughly 10 percent of the population in Ireland lives in areas exceeding the national radon reference level. The work helped to draft the Healthy Homes Bill in 2019, although this did not progress at the time due to the dissolution of the Dáil.

In a 2022 collaboration with the Environmental Protection Agency and Geological Survey Ireland, Professor Crowley's methodology informed an updated national radon map, improving detail and helping to protect the public from the harmful effects of ionising radiation. Subsequently, Professor Crowley collaborated with the World Health Organization to update the European Code Against Cancer (ECAC5) which is due to be published shortly and will inform the World Code Against Cancer Framework.

Outputs

How Irish entrepreneurs can take on climate change (2022)


Professor Quentin Crowley: How Irish entrepreneurs can take on climate change

The global climate crisis poses many existential questions for society, but also offers green economic opportunities, not least for Ireland and its abundant offshore wind energy resources.

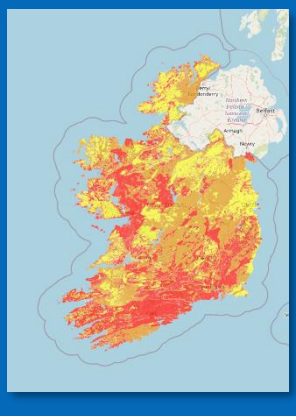
This article by Professor Crowley in the Irish Examiner highlights the needs to react, adapt and adjust to climate change as things like flooding hit close to home, but it also to encourages consideration of the opportunities to do things in new ways when the old ways may no longer provide the kind of security and certainty that they once did.

"Through my research and teaching at Trinity, I strive to address geo-environmental risks and foster innovation in climate action—protecting both people and the environment, while ensuring our societal response to climate change is informed and impactful."

Professor Quentin Crowley, September 2025

EPA Radon Risk Map of Ireland (2022)

Radon is a naturally occurring radioactive gas which causes about 350 cases of lung cancer in Ireland each year. Certain parts of the country are deemed high-radon areas. This map, developed with the Environmental Protection Agency and Geological Survey Ireland, is a searchable resource for homes and businesses to ascertain their risk of exposure to radon.



The European Code Against Cancer (2022-26)

The European Code Against Cancer (ECAC) is a set of evidence-based recommendations from the European Commission, designed to inform the public about actions they can take to reduce their risk of cancer. The latest edition of the European Code Against Cancer (ECAC5) is supported by the EU4health program and the Horizon Europe Cancer Mission.

IARC/WHO

Professor Quentin Crowley's research explores Earth System change from the early evolution of our planet to contemporary environmental challenges, focusing on interactions between the atmosphere, hydrosphere, biosphere, and geosphere across varied timescales.

His pioneering work in environmental geoscience highlights terrestrial radioactivity, demonstrating that radon gas causes around 350 lung cancer cases annually in Ireland. He collaborates widely to lead efforts to protect public health and the environment.

Additionally, Professor Crowley drives innovation in climate education through IKC3, developing transformative approaches that bridge scientific research with public engagement and effective climate action.

For More Information

Professor Quentin Crowley

Professor in Geology, Discipline of Geology, School of Natural Sciences

crowleyq@tcd.ie

https://www.tcd.ie/research/profiles/?profile=crowleyq

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