

iCRAG Statement on Climate Action Plan

July 2019

iCRAG, the SFI Centre for Research in Applied Geosciences, funded by Science Foundation Ireland, the European Regional Development Fund, Geological Survey Ireland and industry partners welcomes the ambitious vision set out in the Climate Action Plan and strongly supports the Government's aim to place climate action and decarbonisation at the heart of policy-making.

As Ireland's applied geoscience research centre, comprising more than 150 researchers across eight Irish universities and institutions, iCRAG is actively contributing to the government's goals of reducing emissions and minimizing climate disruption.

Understanding the Earth system is an essential component in addressing the climate challenge. iCRAG's research findings on how and why the Earth system changes through time, the distribution and characteristics of Earth resources needed for clean energy technologies, and the interactions between people and the Earth system all support evidence-based policy options and decision making. Our research is helping to address climate change and associated mitigation and adaptation actions across both European and global communities, and will aid in Ireland's contribution to the UN Sustainable Development Goals.

The following sections highlight some of the ways iCRAG research links directly to Actions in the government's Climate Action Plan 2019.

Climate Action 1 - Evaluate in detail the changes required to adopt a more ambitious commitment of net zero greenhouse gas emissions by 2050, as part of finalising Ireland's long-term climate strategy by the end of 2019 as per the advice of the Intergovernmental Panel on Climate Change and the recommendation of the Joint Oireachtas Committee on Climate Action

The renewable energy technologies necessary to achieve a zero-carbon energy system require a fair and sustainable supply of minerals and metals. iCRAG is a world leader in developing geochemical and geological models of critical metal deposits that can help guide mineral exploration by industry. iCRAG's work in raw materials research is helping to ensure Ireland maintains high-paying, rural jobs in the mining sector.

Climate Action 14 - Strengthen our delivery of public funding for basic and applied research to underpin government policy, meet our decarbonisation objectives, and open up new economic activities.

Since its establishment in 2015, iCRAG has delivered scientific, economic and societal impact for Ireland across our areas of expertise in earth resources, earth system change, and public understanding of geosciences. Continued funding of both basic and applied research will allow iCRAG to contribute to Ireland's decarbonisation objectives including through our work on finding the metals and materials that will allow for the creation of green energy sources.

Climate Action 25 - Facilitate the development of Offshore Wind, including the connection of at least 3.5 GW of offshore wind, based on competitive auctions, to the grid by 2030.

iCRAG is currently undertaking research with industrial and state partners to identify the primary geological and geotechnical challenges to economically developing Ireland's offshore wind resources. iCRAG research provides baseline data on the seabed to de-risk turbine construction and cable routing for industry and support critical decision making by government in terms of seabed zonation.

Action 26: Support the ocean energy research, development and demonstration pathway for emerging marine technologies (wave, tidal, floating wind) and associated test infrastructure.

To de-risk these technologies it is critical that we have a fundamental understanding of conditions for anchoring the needed equipment to the seabed. Research to provide this understanding is presently being carried out at iCRAG. iCRAG is also undertaking studies utilizing innovative and novel technologies to safeguard Ireland's geomarine environment.

Climate Action 33 - Establishment of a Steering Group to examine and oversee the feasibility of the utilisation of CCS in Ireland, and report to the Standing Committee on Climate Action as appropriate.

Carbon capture and storage (CCS) may be feasible in Ireland. iCRAG is examining a number of possible geological reservoirs. It appears that offshore reservoirs and depleted offshore natural gas fields may provide the most geologically suitable sites for carbon sequestration. iCRAG is currently exploring work with Ervia to evaluate the Kinsale Head gas field in this regard.

Climate Actions 43-46 - Built Environment - Consolidating the Evidence Base and Driving Demand.

iCRAG is working with industry to ensure Ireland has the raw materials necessary to economically retrofit and rebuild infrastructure. Our work on the subsurface using geological and geophysical technologies allows smarter, cheaper, and faster construction. Our work helps to protect groundwater as the required development is accomplished.

Climate Action 71 - Set a target for the level of energy to be supplied by biomethane injection in 2030 (Examine potential of Geothermal to contribute to District Heating in Ireland and develop Roadmap)

iCRAG is working with Geological Survey Ireland to critically analyse subsurface data to identify potential geothermal energy resources that could meet industrial and/or district heating and cooling needs.

Climate Action 72 - Develop the EV charging network necessary to support the growth of EVs to at least 800,000 by 2030 and set a target for the supply of infrastructure to stay sufficiently ahead of demand.

iCRAG is developing new geological models for how to find new deposits of cobalt. Cobalt is required for high-efficiency EV batteries and is currently a limiting factor for construction of a robust EV fleet worldwide.

Climate Action 133 - Assess and implement mitigation options on post-production peat extraction sites.

iCRAG has considerable expertise on peatlands both in terms of carbon capture, nutrient flux and hydrogeology. iCRAG also works with the mining and quarrying industry in resources exploration and assessment. We are currently focused on developing new methodologies and technologies to undertake assessments for potential raw material and groundwater resources that may be located beneath these former peat production sites.

Climate Action 138: Support the development of eco-design and circular economy opportunities for Irish enterprises to reduce waste over the full lifecycle of products.

iCRAG is utilizing its significant analytical facilities to better characterize waste streams in the country and determine if there is potential for recycling of critical materials.

Climate Action 145: *Develop a strategy to achieve at least a 30% reduction in CO₂eq. emissions by 2030 and a 50% improvement in public sector energy efficiency.*

iCRAG's work with industry to discover and develop additional natural gas resources can be a key part of this strategy. Natural gas will be a vital source of energy in Europe for decades before a full transition to a zero-carbon energy system is technically and economically viable. Increased use of Irish natural gas for electricity generation by 2030 can help significantly to reduce CO₂ emissions.

Climate Action 178 - *Science Foundation Ireland, with engagement of DCCA, will create national awareness amongst the Irish public of key actions that need to be taken at an individual and national level to ensure Climate Action adaptation and mitigation*

As stated in the Climate Action Plan, tackling the climate emergency is the greatest challenge facing humanity. This challenge will require both individual and collective change, and empowering citizens to make informed decisions about natural resource development and earth system change is a key component of the research programme within iCRAG. Through our Public Perception and Understanding of the geosciences research programme we bring together earth scientists and social scientists to better understand how society can find the resources it needs for both present and future generations and how it can develop such resources in a sustainable way for all as part of the Just Transition. As a Science Foundation Ireland Research Centre, iCRAG's public engagement programme is working closely with teachers, school children, artists and citizens to enhance understanding of complex resource and climate issues, and how individual actions and choices can contribute to wider change.