

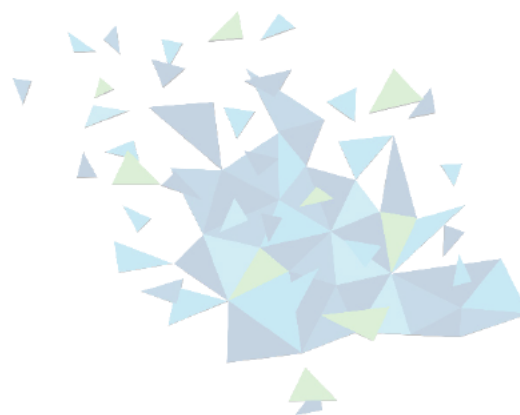
iCRAG, The SFI Research Centre in Applied Geosciences Response to “Consultation on the Draft Policy Statement on Geothermal Energy for a Circular Economy”

Submitted to: Department of Environment, Climate and Communications

Submitted by: iCRAG, the SFI Research Centre in Applied Geosciences

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iCRAG



About iCRAG

iCRAG is the SFI Research Centre for Applied Geosciences. We are a team of researchers creating solutions for a sustainable society.

We develop innovative science and technologies to better understand the Earth's past, present, and future and how people are connected to it.

We drive research in areas that are critical to society and the economy, including:

- Sustainable discovery of energy resources and raw materials required for decarbonisation.
- Securing and protecting groundwater and marine resources.
- Protecting society from Earth's hazards such as floods and landslides.

iCRAG, the world leading SFI Research Centre in applied geosciences hosted by UCD, comprises 150 researchers across eight universities and institutions. iCRAG is supported by Science Foundation Ireland, Geological Survey Ireland and industry partners.

www.icrag-centre.org

iCRAG, the SFI Centre for Research in Applied Geosciences, funded by Science Foundation Ireland, Geological Survey Ireland and industry partners welcomes this opportunity to contribute to the development of policies for geothermal energy in Ireland.

Geothermal energy can provide renewable energy to Irish homes and businesses and contribute towards the decarbonisation of Ireland's economy. As our understanding of the geothermal potential of Ireland increases, opportunities to explore geothermal power across the country will become more apparent. As Ireland's applied geoscience research centre, comprising more than 150 researchers across eight Irish universities and institutions, iCRAG is actively contributing to geothermal research activities in Ireland.

Hosted by University College Dublin, iCRAG's broad research community focuses on three interrelated Challenges—Earth System Change, Earth Resources, and Earth Science in Society. Established in 2015 iCRAG has established a network of industry partners in the geothermal sector and has strong relationships with several government bodies and agencies.



COMMENTS AND OBSERVATIONS:

iCRAG considers that the Draft Policy Statement provides an important foundation for a regulatory framework for geothermal energy in Ireland. We are pleased to note that it recognises the important role of public engagement and technical information in the development of an Irish geothermal sector. Geothermal policy formulation in Ireland is still at a relatively early stage and, in addition to confirming regulatory details that are outlined in this draft policy statement, additional consideration should be given to the economic, social, and workforce aspects of the geothermal sector. iCRAG notes that the concurrent development of geothermal energy and district heating policies by the Department of Environment, Climate and Communications (DECC) provides an excellent opportunity to design seamless and effective policy and regulatory procedures where these sectors intersect.

iCRAG welcomes the consultations that the Department is undertaking with stakeholders and would be pleased to share its expertise as part of the ongoing policy development process.

Comments on specific parts of the Draft Policy Statement are provided below.

4.1 GEOTHERMAL ENERGY ADVISORY GROUP

iCRAG welcomes the establishment of a Geothermal Energy Advisory Group that includes diverse stakeholders and experts. iCRAG would be pleased to share its academic expertise and research findings with the advisory group as appropriate.

4.2 INFORMATION RESOURCES FOR THE PUBLIC

Public understanding of the science, technologies, risks, and benefits of geothermal energy is an essential component of informed decision making by all stakeholders. iCRAG welcomes the initiative to provide unbiased information to the public, while noting that “the public” comprises a very diverse set of “publics” that may be best served by different information resources that are delivered by a range of sources, including sources within and beyond government bodies.

Social acceptance of geothermal projects is an important component of the energy transition. People make complex choices based on their values and beliefs yet a gap in knowledge exists on which values are prioritised in the context of geothermal energy. As research emerges to fill this gap, DECC’s geothermal communication strategy should reflect not just how geothermal technologies work and Ireland’s potential to utilise this important national resource, but also how people think and feel about geothermal energy, with communication strategies tailored accordingly. Community and local groups should be consulted when developing the strategy.

5. GEOTHERMAL ENERGY EXPLAINED

The colour scheme in Figure 3.1, Possible applications for geothermal energy in Ireland, may be confusing for some viewers. People usually associate blue with cold and red with hot, but yellow is used for hot in the “thermometer” and blue is used for Electricity Generation in the chart when this requires higher temperature sources than Heating Buildings, which is shown in red.

6. OUTLINE REGULATORY FRAMEWORK FOR GEOTHERMAL ENERGY

The proposed regulatory framework focuses on heat extraction. It may be necessary to give more consideration to the balance of heat extraction, heat injection, and thermal storage, all of which affect the long-term sustainability of the geothermal resource.

6.4. THRESHOLDS

Setting regulatory thresholds for geothermal energy is challenging and the current proposals may benefit from additional input from stakeholders. Exempting small-scale geothermal installations from licensing does remove a barrier to individual adoption of geothermal energy, however, even installations producing less than 25 kW should be registered in a national database. A comprehensive database would support holistic management of national geothermal resources and it would provide key information on the deployment of renewable energy in Ireland.

6.6.1 GEOTHERMAL ENERGY EXPLORATION LICENCE (GEEL)

Efforts should be made to coordinate and streamline, to the extent possible, the regulatory processes across the various agencies that have jurisdiction over geothermal energy exploration activities (Fig 5.1). Because many regulators are unfamiliar with geothermal energy, the information programme proposed for the public should be expanded to provide information resources specifically designed to meet the needs of decision makers at all levels throughout the consent and permitting process. Proactively developing the expertise and skillsets needed to assess geothermal projects will support the timely development of the geothermal sector in Ireland.

6.6.2 GEOTHERMAL ENERGY CAPTURE LEASE (GECL)

Geothermal energy could play a particularly significant role in decarbonising the heat sector in Ireland. Irish heat policy is also being developed and this provides an ideal opportunity to ensure that geothermal energy and district heating policies align as seamlessly as possible. To recognise the importance of the heating sector for geothermal energy development, “heat network connections” should be added to “well drilling, plant construction, grid connection” on p. 28. In Figure 5.2, the column headed “Energy” should be changed to

“Electricity” and an additional column for “Heat” should be added, even if the entries under that heading are provisional.

6.6.3 DATA REPORTING

iCRAG welcomes the requirement that comprehensive data will be provided promptly to the GSRO and to Geological Survey Ireland. Data on geothermal systems should be collected throughout the year to mitigate any seasonal or short-term influences on the resource. The confidentiality period for geoscientific data should be short to ensure that it can be leveraged to produce additional value for multiple government, academic, and industry purposes. iCRAG researchers make frequent use of publicly available geological information to understand the characteristics and mineral, water, and energy resources of Ireland. iCRAG would be pleased to participate in the consultative exercise to determine data requirements and to ensure findability, accessibility, interoperability, and reusability of the data that lease holders provide.

7. DATA, KNOWLEDGE GAPS AND RESEARCH AREAS

iCRAG strongly endorses the commitment to geological and geophysical research, data collection, analysis, and the public sharing of data generated from geothermal activities. In the interest of clarity, we suggest that the phrase “a program of geological data gathering ...” should be changed to “a program of geoscientific data gathering ...” to ensure that geophysical, geochemical, and geological data are included in such a programme.

The existing heat flow data in Ireland were collected between 1984 and 1989 where a total of 22 values were compiled across Ireland, with a scarcity of boreholes in the southern part of the island. Hence, deep-research boreholes (>2km depth) would be essential to assess the deep geothermal resource potential in Ireland. The proposed deep drilling and deep geophysics programme will greatly increase our understanding of many facets of the subsurface of Ireland. Before launching the major data acquisition programme, DECC might consider convening a review group to ensure maximum national benefit from this significant investment. Adding some extra data collection capabilities to the programme beyond the immediately identified needs for geothermal studies, which would cost relatively little compared to the cost of the deep drillholes, may yield important information for multiple research and applied purposes and greatly increase the return on investment in the programme.

iCRAG is actively involved in geological, geochemical, and geophysical research and relies heavily on publicly available data sources, including Geological Survey Ireland’s databases, which are a vital national asset. iCRAG would be pleased to contribute to discussions

regarding the selection, siting, collection, curation, and dissemination of subsurface and other data as appropriate.

Introducing geothermal energy on a large scale in Ireland is not solely a technical challenge; social factors strongly influence public attitudes towards renewable energy technologies. A more human-centred approach is required if geothermal energy projects are to achieve environmental-socio-economic viability. There are large research, data, and knowledge gaps in our understanding of the social acceptance of geothermal energy. Research is needed to evaluate the values, trade-offs and beliefs that play a role in decision making about geothermal energy, allied to the contested choices associated with climate action measures. Further research on ensuring good communication and the transparent flow of information between all parties is also essential. iCRAG is actively involved in such research and believes that significantly more research is required and that such studies must include community engagement and involvement.

ADDITIONAL POINTS

A skilled geothermal energy workforce is critical to establishing the sector. Training in geothermal energy and geothermal technologies will provide pathways to skilled jobs in Ireland and worldwide, and Irish-based geothermal SMEs and other companies can benefit Ireland's economy. In particular, emphasis should be placed on equipping geologists, engineers, architects, planners, and social scientists at third level with the necessary skills and expertise needed in geothermal energy if the country is to achieve net climate neutrality by 2050. iCRAG is playing a pivotal role in building such capacity through the Centre's Research Challenges, in particular its Earth Resources Challenge which has a significant focus on geothermal energy. The Centre uniquely combines the three main groups of collaborators necessary for both the performance and implementation of world-leading research (universities, industry, and government) across eight partner institutions, providing the necessary support and structure for scientists, engineers, and social scientists to perform large-scale multi-disciplinary research projects. iCRAG's interdisciplinary and diverse team continues to develop a pipeline of experienced researchers focused on the development of innovative renewable energy sources with a lower impact on the social and physical environment.

Further information on the above points can be sought from [REDACTED] iCRAG Director, [REDACTED], [REDACTED] and, iCRAG Geoscience Policy, Communications and Public Affairs Specialist, [REDACTED] or [REDACTED] [REDACTED] iCRAG Communications Manager, [REDACTED]