



[REDACTED]

9 May 2024

Dear [REDACTED],

Freedom of Information request: FOI2024/00310

Thank you for your Freedom of Information requests received on the 10 April in which you requested the following:

Your request:

I am writing to submit a request under the Freedom of Information Act 2000 (FOIA) to the Natural Environment Research Council (NERC) [and Science and Technology Facilities Council (STFC)], which operates under UK Research and Innovation (UKRI).

My inquiry pertains to geo-engineering activities within the United Kingdom, with a specific focus on the following aspects:

- *Funding: Please provide details of any government funding allocated to support research, development, or implementation of geo-engineering projects or initiatives within the UK over the past five years. This includes grants, contracts, or other financial support provided to NERC/[STFC] or any associated agencies for geo-engineering-related activities.*
- *Public Awareness and Consent: I kindly request information regarding any efforts made by NERC/[STFC] or UKRI to engage the public in discussions or consultations regarding geo-engineering activities. This encompasses any public awareness campaigns, consultations, or engagement initiatives conducted by NERC/[STFC], UKRI, or their affiliates concerning geo-engineering. Additionally, I am interested in summaries of public feedback received and responses provided.*
- *Involvement of Airlines: Please disclose any collaboration or involvement with commercial airlines or aviation companies in geo-engineering research, experimentation, or implementation within the UK. This includes partnerships, agreements, or projects involving airlines or aviation-related entities, as well as any regulatory oversight or coordination by NERC/[STFC] or UKRI in this context.*
- *Oversight by Independent Bodies: I request details of any oversight mechanisms or regulatory frameworks in place at NERC/[STFC] or UKRI to monitor geo-engineering activities within the UK. Specifically, I am interested in learning about any independent bodies, committees, or expert panels responsible for assessing the environmental, ethical, and safety implications of geo-engineering projects and providing recommendations or guidance to NERC/[STFC] or UKRI.*
- *Research Projects and Publications: Please provide a list of ongoing or completed geo-engineering research projects conducted or supported by NERC/[STFC] or UKRI, along with any associated publications, reports, or findings.*
- *International Collaborations: I kindly request details of any collaborations, partnerships, or cooperative initiatives with international organizations, research institutions, or foreign governments in the field of geo-engineering. Understanding international collaboration efforts can provide insights into global trends and best practices in geo-engineering research and development.*
- *Risk Assessment and Mitigation Strategies: I am interested in learning about any risk assessments conducted for geo-engineering projects by NERC/[STFC] or UKRI, as well as strategies or protocols in place for mitigating potential risks or unintended consequences. This encompasses environmental, social, and geopolitical risks associated with geo-engineering interventions.*

- *Stakeholder Engagement: Please provide information on stakeholder engagement efforts related to geo-engineering activities at NERC/[STFC], UKRI, or their affiliates, including consultations with academic experts, industry representatives, environmental organizations, and community groups. Understanding stakeholder perspectives and involvement is essential for ensuring transparent and inclusive governance of geo-engineering initiatives.*
- *Policy Development and Regulation: I request details on any involvement or contributions by NERC/[STFC], UKRI, or their affiliates to the development of policy frameworks or regulations governing geo-engineering activities in the UK. This includes any recommendations or guidance provided to government bodies or regulatory agencies on geo-engineering-related matters.*

I kindly request that the information be provided in electronic format where feasible. If any of the requested information is exempt from disclosure under the FOIA, please specify the exemption(s) relied upon and provide reasoning for withholding the information.

Our response:

I can confirm that UK Research and Innovation (UKRI) holds some information relevant to your request. Please see the information below.

We note that you sent the same request to both the Natural Environment Research Council (NERC) and the Science and Technology Facilities Council (STFC). All the research councils, Innovate UK and Research England have been brought together under UKRI. As this is the case, both of your requests have been handled as a single request from UKRI.

Funding

Under Section 21 of the FOIA, information already reasonably accessible, information on UKRI's funding of research relating to geoenengineering is already available in the public domain via [UKRI's Gateway to Research](#)¹.

Recommended searches to view funded projects related to this topic include:

- [Geoengineering](#)²
- [Solar Radiation Management](#)³
- [Earth Radiation Management](#)⁴
- [Greenhouse Gas Removal](#)⁵
- [Carbon Dioxide Removal](#)⁶

Section 21 is an absolute exemption which means that there is no requirement to conduct a public interest test.

In addition, we would like to highlight the following investments that UKRI have been involved in funding in this area, which may be of interest:

- [Greenhouse Gas Removal \(GGR\) from the Atmosphere research programme](#)⁷ (now ended) – NERC-led collaboration with EPSRC, ESRC and BEIS
- [Greenhouse Gas Removal Demonstrators \(GGR-D\) Strategic Priorities Fund](#)⁸ – NERC-led collaboration with AHRC, BBSRC, ESRC and EPSRC
- [Accelerating CCUS Technologies \(ACT\) second call](#)⁹ – co-funded by EPSRC, NERC and BEIS
- [CO2 Storage Research Facility scoping study](#)¹⁰ – funded by NERC

¹ <https://gtr.ukri.org/>

² <https://gtr.ukri.org/search/project?term=geoengineering>

³ <https://gtr.ukri.org/search/project?term=solar+AND+radiation+AND+management>

⁴ <https://gtr.ukri.org/search/project?term=earth+AND+radiation+AND+management>

⁵ <https://gtr.ukri.org/search/project?term=greenhouse+AND+gas+AND+removal>

⁶ <https://gtr.ukri.org/search/project?term=carbon+AND+dioxide+AND+removal>

⁷ <https://www.ggrprogramme.org.uk/>

⁸ <https://www.ukri.org/news/uk-invests-over-30m-in-large-scale-greenhouse-gas-removal/>

⁹ <http://www.act-ccs.eu/projects>

¹⁰ <https://www.bgs.ac.uk/news/co2-storage-testbed/>

- The [Stratospheric Particle Injection for Climate Engineering \(SPICE\) project](http://www.spice.ac.uk/)¹¹ (now ended) – EPSRC-led with NERC and STFC co-funding
- [Integrated Assessment of Geoengineering Proposals \(IGAP\) project](http://www.iagp.ac.uk/index.html)¹² (now ended) – EPSRC-led with NERC co-funding

More recently, NERC have announced an intention to fund a research programme on modelling the [impacts of solar radiation management](https://www.ukri.org/news/research-programme-to-model-impact-of-solar-radiation-management/)¹³ (SRM) on the climate. A call for research has not yet been released for this programme and therefore no research has yet occurred.

Public Awareness and Consent

NERC conducted a [public dialogue on geoengineering](https://www.ukri.org/opportunity/jet-zero-aviations-non-co2-impacts-on-the-climate/)¹⁴ in 2011.

The research funded through the Greenhouse Gas Removal Demonstrators programme includes elements of public engagement and research. This programme supports a [programme hub](https://www.ukri.org/opportunity/jet-zero-aviations-non-co2-impacts-on-the-climate/)¹⁵ and five demonstrator projects¹⁶, which each include some degree of this work.

The new NERC research programme on modelling the impacts of SRM recognises the importance of the public voice in this topic, therefore NERC are planning a public dialogue. This will be delivered in collaboration with the research funded through the programme and these strands of activity will come together to provide a broad evidence-base of both the climatic impacts of SRM, and public views and considerations on the social and ethical issues bound up with research and potential deployment.

Involvement of Airlines

NERC and STFC are not directly involved in any geoengineering research with airlines.

NERC, with co-funding from the Department for Transport (DfT) and Department for Business and Trade (DBT), and in collaboration with the Aerospace Technology Institute (ATI), is investing in a research programme [Jet zero: aviation's non-CO2 impacts on the climate](https://www.ukri.org/opportunity/jet-zero-aviations-non-co2-impacts-on-the-climate/)¹⁷, about the impacts of non-CO2 emissions from aviation, however we do not consider this to be research related to geoengineering.

NERC operate a number of large research infrastructure, including the [Facility for Airborne Atmospheric Measurements](https://www.ukri.org/opportunity/jet-zero-aviations-non-co2-impacts-on-the-climate/)¹⁸ (FAAM), a specially adapted research aircraft managed by the National Centre for Atmospheric Science which provides a complete package of support for the scientific community. While not involved in experimentation or implementation of geoengineering activities, this aircraft is used to conduct research into atmospheric science.

Oversight of Independent Bodies

NERC and STFC do not monitor geoengineering activities in the UK.

We operate according to the policies, standards and guidance set out in our [good research resource hub](https://www.ukri.org/manage-your-award/good-research-resource-hub/)¹⁹, as well as NERC's [responsible business statement](https://www.ukri.org/wp-content/uploads/2020/07/NERC-110123-NEERCResponsibleBusinessStatement.pdf)²⁰, and have standard processes in place for the assessment of research proposals. Any research proposals that are submitted to NERC or STFC are assessed by a panel of independent experts, as part of the peer review process, who then provide funding recommendations.

¹¹ <http://www.spice.ac.uk/>

¹² <http://www.iagp.ac.uk/index.html>

¹³ <https://www.ukri.org/news/research-programme-to-model-impact-of-solar-radiation-management/>

¹⁴ <https://web.archive.nationalarchives.gov.uk/ukgwa/20170110120841/http://www.sciencewise-erc.org.uk/cms/geoengineering/>

¹⁵ <https://co2re.org/>

¹⁶ <https://www.ukri.org/wp-content/uploads/2021/05/NERC-240521-GreenhouseGasRemovalDemonstratorProjects.pdf>, <https://www.ggrpeat.org/>,

<https://www.sheffield.ac.uk/uk-enhanced-weathering>, <https://biochardemonstrator.ac.uk/>, <https://netzeroplus.ac.uk/>, <https://pbc4ggr.org.uk/>

¹⁷ <https://www.ukri.org/opportunity/jet-zero-aviations-non-co2-impacts-on-the-climate/>

¹⁸ <https://www.faam.ac.uk/>

¹⁹ <https://www.ukri.org/manage-your-award/good-research-resource-hub/>

²⁰ <https://www.ukri.org/wp-content/uploads/2020/07/NERC-110123-NEERCResponsibleBusinessStatement.pdf>

As part of this process, it is considered that appropriate ethical approval from a host institute is in place where required and feasibility considerations of research proposals can also use information provided on environmental and safety implications.

Research Projects and Publications

Please see the response provided above, under the 'Funding' section.

In addition, STFC's Central Laser Facility (CLF) conducted work with collaborators that has been published in a peer reviewed paper on [Mie scattering from optically levitated mixed sulfuric acid–silica core–shell aerosols](#)²¹.

International Collaborations

NERC and STFC are not directly collaborating with any international organisations on the topic of geoengineering.

Individual projects funded by NERC or STFC may have wider collaborations, although all funding is in accordance with [normal eligibility criteria](#)²².

Risk Assessment and Mitigation Strategies

Research grants are awarded according to [UKRI terms and conditions](#)²³, which state that it is the responsibility of the grant holder to ensure that all necessary permissions are in place for their research and that health and safety risk assessments are carried out where appropriate.

NERC and STFC are committed to embedding effective risk management in all areas of our activity ensuring that the risk management approach is appropriate and proportionate to operations and culture. Where appropriate, this can consider research investments which require additional controls.

Where research had been funded in geoengineering, part of our remit is to understand risks and unintended consequences. See above investments for more information.

Stakeholder Engagement

NERC and STFC do not carry out any geoengineering activity.

Funding is provided to the research community to undertake research of Earth system response to increasing greenhouse gas emissions, nature-based mitigation of such process, and now modelling the impact of proposed future solar radiation management that we understand may happen in the next decades.

In this, both NERC and STFC value appropriate stakeholder engagement, both directly and within the research we fund. Please see information above relating to individual investments.

Policy Development and Regulation

UKRI, through its various Research Councils, is committed to funding research which can contribute to policy and regulation, where appropriate. We work directly with policy and regulator partners to help them access relevant research findings from our investments, as well as supporting research investments which work directly with policy and regulators. Please see information above relating to individual investments.

If you have any queries regarding our response or you are unhappy with the outcome of your request and wish to seek an internal review of the decision, please contact within the next 40 working days:

Head of Information Governance

Email: foi@ukri.org

²¹ <https://pubs.rsc.org/en/content/articlelanding/2022/cp/d1cp04068e>

²² <https://www.ukri.org/apply-for-funding/how-to-apply/check-if-you-are-eligible-for-research-and-innovation-funding/>

²³ <https://www.ukri.org/wp-content/uploads/2024/04/UKRI-020424-FECGrantTermsConditionsApril2024.pdf>

Please quote the reference number above in any future communications.

If you are still not content with the outcome of the internal review, you may apply to refer the matter to the Information Commissioner for a decision. Generally, the ICO cannot make a decision unless you have exhausted the review procedure provided by UKRI. The Information Commissioner can be contacted at: www.ico.org.uk.

If you wish to raise a complaint regarding the service you have received or the conduct of any UKRI staff in relation to your request, please see UKRI's complaints policy: <https://www.ukri.org/about-us/policies-and-standards/complaints-policy/>

Yours sincerely,

Information Governance
Information Rights Team
UK Research and Innovation
foi@ukri.org | dataprotection@ukri.org