



Seed Funding Round-2 New Entrants to Reef-UKC Networks Community

We're inviting applications from UK Higher Education Institutions for innovative projects. We're looking for novel applications of renewable-powered cooling systems and smart materials, particularly how they integrate with existing infrastructure. Projects should also consider their impact on the environment, cold economy, and policy development.



Abstract Submission Deadline : 7th July 2025

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Introduction

The Reef-UKC aimed to seed fund up to 10 small projects over two rounds that bring together the network members and promote the engagement of early career researchers (ECRs). During the first round, 5 projects were successful in their seed funding application. This is the launch of the 2nd round. The Reef-UKC network aims to promote transformative research within the remit of the innovative integration between the next generation of renewable energy and efficient & clean cooling technologies to meet the growing demand for cooling and support its resilience in the UK, which is otherwise powered by grid electricity and hinders grid decarbonisation and the UK's net zero goals. The Reef-UKC promotes undertaking evidence-based, holistic, and potentially interdisciplinary system-level research approach in renewable-powered cooling while addressing the challenges and opportunities presented by the UK's economic, environmental, societal, behavioural, and political contexts. Examples of these challenges and opportunities are technical feasibility of the integrated renewable-powered cooling technologies, incentives, sustainable business models, carbon footprint and other environmental impacts, social acceptance for the new systems, supporting political and regulatory frameworks to drive upgrading to new systems and the opportunities to retrofit new systems to cooling demanding sectors. Your project can address the challenges in one or multiple sectors. Examples of these sectors are food, hydrogen, data centres, domestic sector, and others. The Reef-UK network members set out the following five objectives.

1. Develop efficient renewable-powered cooling system-level solutions to meet the existing and future demand for cooling, specifically in rapidly growing sectors, e.g., hydrogen, data centres.
2. Consider environmental and social impacts and behavioural changes.
3. Contemplate Cold economy, business modelling, sustainability, and design for circularity.
4. Integrate the developed solutions with the developed cooling (and potentially heating) networks approaches by other research initiatives.
5. Develop policies and regulatory frameworks to incentivise the adoption of the technology packages and communication with the UK government and local authorities.

The fund recipients will be asked to present their work in the future network activities, e.g., workshops, webinar and meetings, which will be disseminated via the network website and other form of publications.

Round 2 may not support the following themes, as they have already been supported in the first round.

- Waste heat, thermal pollution and network mapping.
- Geothermal energy in cooling or heating.
- PV-powered compression cooling and its digital twinning.
- Social acceptability of new cooling technology.

How to apply?

A 200-word abstract will be required as an initial stage for the seed funding applications. This will allow a first screening and provide feedback.



Institutes receiving this funding will become members of the Reef-UKC, if they are not, and sign the accession agreement to the network's new consortium. Non-members applying for funding are required to demonstrate that they conduct a significant amount of research in renewable cooling technologies.



Successful abstract submissions will be asked to present their project virtually to a sounding board. The presentation should show how the research team will address the funding application following a specified template. It is an opportunity for the sounding board to provide feedback on the proposed work.

After considering the feedback from the panel, applicants can submit an application using the provided application form available to download from the website reef-ukc.net.

Please complete the Microsoft form to submit your abstract.
Link to the form is available on

reef-ukc.net/seed-funded-projects-round-2/

Time Scale

Call issue	9th June 2025
Abstract submissions by	7th July 2025
Presentation done by.....	28th July 2025
Full application submission by..	11th August 2025
Application outcome by.....	25th August 2025
Project acceptance by.....	1st September 2025
Project start date not later by....	6th October 2025
Latest project completion date...	6th April 2026
Latest cost invoice date.....	30th April 2026



Who can apply?

Applications are open for all UK academic institutions.

We promote involving early career researchers and under representative groups. Reef-UKC's members may therefore personally invite proposals from applicants whom they think might otherwise not apply.

International partners are eligible to join the application as long as the lead research within a UK University. We will be happy make introductions if required. We have funds to cover the travel cost of international partners to attend events and workshops organised by the project. This will be available on invitation only.

Non-academic partners are welcome to provide in kind or cash support to the applications, whichever promote impact. However, and given the nature of the EPSRC funding, non-academic cannot be lead applicant or receive fund.

Who can be considered an ECR?

In this funding, early career researchers could be those at the last stage of their PhD studies, who obtained their first academic role (research only or research and teaching role), and research associates who want to develop their research profile in sustainable cooling. UKRI does not consider years post-PhD or job title to be a sole marker of career progression, and neither does Reef-UKC. The project team section in the application form enables the researchers involved in the project to explain their career stage and how this funding support their career progression.

Eligible Costs

Eligible costs are as defined in the UKRI funding guide and should be justified in the application. Project awardees can invoice 80% of the full economic costs: up to the £10,000 FEC for each project.

Details about eligible costs can be found on

<https://www.ukri.org/councils/epsrc/guidance-for-applicants/costs-you-can-apply-for/directly-incurred-costs/>



Assessment Criteria



The projects will be assessed according to the following equally weighed criteria.

- Soundness of concept.
- Alignment with the Reef-UKC aims and objectives.
- Credibility of method and effectiveness of work plan.
- Innovation and progress beyond state-of-the-art.
- The potential of leading to a larger EPSRC or relevant UKRI funded project.
- Expected impacts and the engagement of ECRs.
- Projects with match funding from industry are highly welcomed.
- EDI in proposal.

Summary

The funding aims to promote transformative research to develop innovative integration between the next generation of renewable energy and efficient & clean cooling technologies to meet the growing demand for cooling and support its resilience. The seed-funded projects are encouraged to address other political, societal, and economic challenges through the collaboration. We encourage projects that support identifying renewable energy resources, identify where they are available, identify sustainable cooling and energy storage technologies and match them to develop integrated modular solutions. Examples of cooling technologies of ultra-low GWP systems are vapour adsorption/absorption refrigeration, supercritical CO₂, ammonia, air cycle refrigeration, magnetic refrigeration, hydrocarbon compression cycles, or photovoltaic electricity-driven and ejector-supplemented compression refrigeration. Thermally driven cooling technologies (adsorption/absorption) have great potential for utilising other renewable and waste heat sources (e.g., bio-heat, incineration of biomass, solar heat, or any source of waste heat), and their widespread use in the UK can be promoted if they are techno-economically optimised and consider the business modelling while they are technically studied.

Utilising shallow geothermal energy, which is widely accessible in the UK from aquifers or flooded mines, as well as energy geo-structures like piles, walls, tunnels, and slabs with integrated geothermal heat exchangers, can support space air conditioning or process pre-cooling, and data centres air conditioning because of its steady temperature throughout the year along with passive cooling measures. Thermal (heat and cooling) and electrical energy storage seem essential to enable renewable-powered cooling. How the proposed technological advancement can be integrated into (or retrofit) the existing systems is important to understand. Retrofit is becoming an essential requirement to accept new systems

Reef-UKC is keen to consider the broader environmental impact while developing the technological advancement. This includes, but not limited to, human and ecotoxicity, circular economy/recycling limitations, and challenges for designing long-term sustainable cooling. Addressing environmental concerns beyond carbon requires interdisciplinary thinking and the consideration of various pollutants, stressors, and their interactions to develop effective mitigation and conservation strategies. For example, when meeting the cooling requirements of one location, the resulting heat rejection to the ambient, lakes, lochs, etc., warms them, impacting ecosystems, biodiversity, and human health. Anthropogenic heat is becoming increasingly impactful, and better utilisation of heat to generate cooling or integrate it with other heating networks is becoming crucial.

Summary Cont.

To date, sustainable cooling has received relatively little attention or incentives at the government level. The focus has mainly been on decarbonising electricity or heat electrification, which puts a significant strain on the electricity demand and the grid. At present, cooling accounts for only 14% of the UK's energy consumption, but all studies show that there will be a significant increase in cooling demand, which will exceed 30% or even higher after the transition to the hydrogen economy and widespread of data centres and quantum computing, considering the intensive heat waves and thermal stresses. Considering business modelling and circular economy while developing the proposed technological advancement may suggest several scenarios about how to utilise cooling in the future, perhaps a new energy vectors would be considered. To close the loop, it is important to support the government in incentivising the renewable-powered cooling concept by developing regulatory frameworks, proposing policies, regulating, and sharing the cost of updating the infrastructure if needed and communicating the outcomes with the government.

We understand that considering environmental, political, economic, and societal aspects by a sole researcher/research group is challenging. Therefore, it is important to collaborate with other network members from other disciplines. Considering various aspects could be through one or multiple complementing research projects. It will eventually foster establishing long-term partnership between the network members and achieve the network objectives.



Terms & Conditions

Terms and conditions of standard UKRI grant awards apply.

All project outputs and engagement should be branded as Reef-UKC to support attracting further funding and keep the initiative.

In addition, all successful projects must engage with the Reef-UKC events and activities at least once. Collaboration agreement will be signed and clearly outline the conditions of collaboration.