

Innovative Monitoring Approaches



Guidance for submitting a full proposal

Full proposal closing date: 4pm, 28th September 2017

Please note the closing date for the submission of outline proposals has now passed. Successful applicants at the outline stage have been invited to submit full proposals. Only applicants successful at the outline stage are eligible to submit full proposals.

NERC is investing up to £3.5m in innovation projects focused on developing innovative monitoring approaches. Projects should be challenge-led, focusing on the application of **existing environmental science** monitoring capabilities and expertise (e.g. technologies, techniques and tools for measuring and modelling, deployment and interpretation). Projects should tackle industry, policy, regulator or other relevant end-user [hereafter collectively referred to as 'end-user'] defined challenges and opportunities within the infrastructure, oil and gas and offshore renewable energy sectors. Challenges and opportunities within these sectors are often similar however different sectors may use different approaches or techniques. Proposals which address challenges across these sectoral boundaries, or which transfer approaches across sectors, are encouraged. All proposals must involve a relevant 'end-user' project partner(s).

Contents

1. Dates and deadlines	2
2. Background	2
3. Scope of call	2
4. Project partners	5
5. Funding and project details	5
6. Eligibility	5
7. Assessment	6
8. Application	7
9. Contact Details	8

Annex 1: Challenges and opportunities for industry sectors

Annex 2: Guidance for project partners

Annex 3: Full Proposal submission – Je-S guidance for applicants

Annex 4: Full Proposal submission – Case for Support template

1. Dates and deadlines

Outline Proposal Deadline	15 June 2017
Successful applicants invited to submit to Full Proposals	7 August 2017
Full Proposal Submission Deadline	28 September 2017
Full Proposal Assessment Panel	Mid-November 2017
Funding Announcement	December 2017
Successful Projects Start	01 January 2018

2. Background

Advances in science and technology present a step-change in possibilities for monitoring approaches, enabling long term data acquisition and management of an ever increasing array of environmental factors in new more efficient and cost effective ways. Monitoring is carried out at all stages of a project's life cycle to underpin understanding of the environmental risks to, and impacts from, assets and operations. This is particularly true for a number of priority sectors for NERC Innovation including: infrastructure, oil and gas and offshore renewable energy.

Across these sectors, there is the opportunity to utilise the latest technologies, techniques and tools, to more accurately monitor the environment and its interactions with assets and operations. In turn, enabling industry and 'end-users' to meet drivers related to:

- reducing costs and personnel time;
- enabling operation in extreme and challenging environments where it is unsafe/not possible for human workers to do so (such as sub-surface, sub-sea, disaster response areas);
- minimising disruption to operation of assets;
- gaining greater time and spatial resolution information to enable more informed decisions;
- monitoring of prospective, operational and/or decommissioned sites for consenting or regulatory requirements; and
- informing design standards of assets and how they are operated.

3. Scope of call

3.1 Aims

A key aim of this call is to enable 'end-user' project partners to find and/or collect information in a way not done before, to create a step-change in monitoring approaches, and to place environmental science at the forefront of the development of environmental monitoring.

Projects should identify opportunities to transfer and apply monitoring capabilities and expertise which exist in the academic research base but are not currently used by 'end-users'. **In all cases projects should demonstrate significant novelty to the industry sector, and potential for impact to the 'end-user'.**

3.2 Scope

This call is for challenge-led projects related to monitoring the environment and its interactions with the assets and operations of the infrastructure, oil and gas and offshore renewable energy sectors.

Proposals must be primarily focused on the application of **existing environmental science capabilities and expertise** to challenges faced and defined by an 'end-user' project partner(s).

Projects can address 'end-user' challenges and opportunities throughout the "pipeline" of the monitoring processes, for example:

- developing environmental monitoring 'strategy' (i.e. protocols and standardisation, experimental design, what and how we need to measure, frequency and duration etc.), through to;
- the instruments and platforms used, and how they are deployed; and
- methods of data analysis, management, transfer, integration¹, visualisation and interpretation, and combining data sources from different sensors/sources for decision making*.

*Note that emphasis of projects should be on innovative monitoring approaches, rather than solely data analysis, data storage and data management.

Proposals within scope include, *inter alia*:

- Testing and validation of new approaches *in situ***.
- Issues related to adoption of new monitoring approaches e.g. data calibration and consistency, uncertainty.
- Development of 'intelligent monitoring systems' that know when to collect or change a data collection regime in response to trigger (such as changes to environment or condition of infrastructure).
- Development of more efficient systems to deliver data from collection through processing, analysis and interpretation into a form from which decision can be taken.
- Integration of different sensors or data sources (e.g. satellite, real-time sensors) to tell us more, or more accurately about the environment, its interactions with assets and the impact on asset performance.
- Testing and validating the utility of data from innovative approaches.
- Improving the use of current techniques to obtain the relevant information so that existent/historic data can be used to increase understanding.

****Large scale new data collection and analysis (i.e. new research) is not permitted under this call, although small scale data collection to validate a monitoring approach is acceptable.**

Proposals must be within NERC [remit](#).

Proposals which benefit and address challenges in Official Development Assistance (ODA) countries are welcomed.

3.3 Sector challenges and opportunities

Example challenges and opportunities for the infrastructure, oil and gas and offshore renewable energy sectors of interest to NERC Innovation Programme members (and potential programme

¹ For example, how duplicate readings with different sensors might be compared, goal based data, data transmission, chain of custody, legal acceptance etc.

members) are outlined in **Annex 1²**. Challenges within these sectors are often similar; however different sectors may use different approaches or techniques. Proposals which address challenges across these sectoral boundaries, or which transfer approaches across sectors, are encouraged.

Example cross-sectoral challenge: Scour

Offshore operators interested in scour to fixed installations e.g. wind turbines, oil and gas installations. Transport operators interested in scour to bridges across rivers.

Is there an alternative to e.g. regular visual inspections by divers which may be qualitative/opinion-based? Is there an opportunity for a low-cost, real-time monitoring system which allows observation of structural health and/or changes in sediment/bathymetry on a more frequent basis?

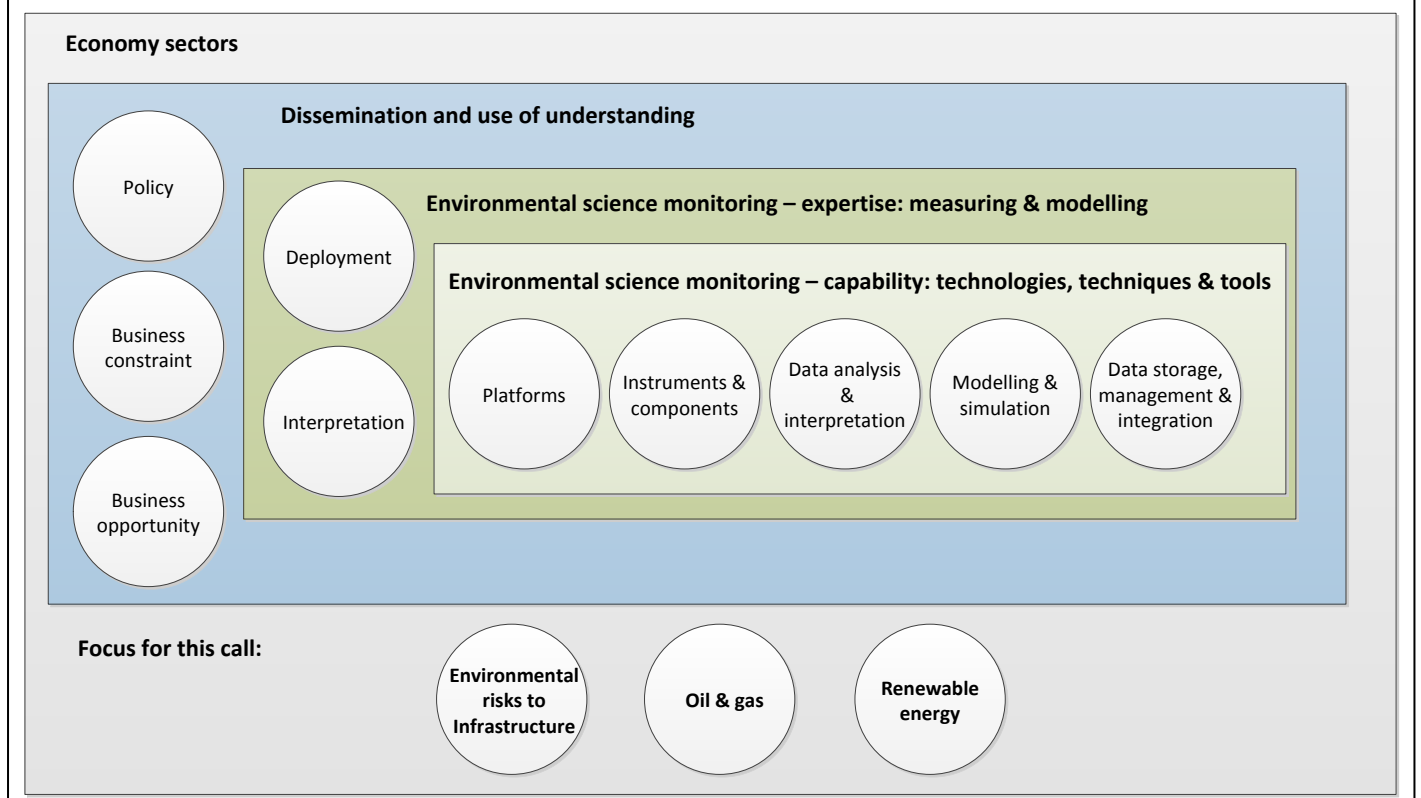
3.4 Existing environmental science monitoring capability and expertise

It is envisaged that project proposals will draw upon the extensive capability and expertise for monitoring within the environmental science community, as outlined in Figure 1.

Capability includes technologies, techniques, tools and facilities to model and measure. These comprise platforms (such as robotic autonomous systems (RAS), drones, satellites); instruments (and their component technologies (e.g. sensors); modelling and simulation; data analysis, data storage and data management.

Expertise for deployment involves measuring and modelling through the application of the capabilities described above. This is essential for generating information that leads to the understanding of the environment or an asset.

Figure 1: Environmental science monitoring capability and expertise in the context of dissemination and use by the wider economy



4. Project partners

All proposals **must involve an eligible 'end-user' project partner(s)**, from industry, policy or regulation, who have a stake in the proposed work. Section 6 provides more information about who are eligible project partners.

Since the strength of the relationship between 'end-users' and researchers is often what underpins the success of any innovation activity, it is **essential** that project partners are clearly involved in both the development and delivery of proposals.

At the end of the project, all projects will be expected to produce a case study that clearly states the project partner's problem, how science has been applied to develop a 'solution' and the (quantified) impact of the project on their organisation, i.e. how the project has had a 'disruptive' or transformative influence on the project partner.

Project partners do not receive funding directly from the project, but will have an integral role in the proposed work and will have been involved in formulating the proposal. Further guidance for partners is included as an annex to this AO.

5. Funding and project details

NERC is investing up to £3.5m in this call which is run as part of the NERC [Environmental Risks to Infrastructure Programme \(ERIIP\)](#), the [Innovation Programme in Oil and Gas \(IPOG\)](#) and pump-priming for a potential future innovation programme in offshore renewable energy (ORE)³.

NERC anticipates funding a portfolio of projects across sectors and challenges, and proposals are welcomed which cross-cut different sectors.

Projects may be feasibility studies (up to 6 months) or longer innovation projects (up to 18 months).

All costs will be funded at 80% Full Economic Cost (FEC). Projects may apply for up to £350k (this is the value at 80% FEC). NERC expects applicants to justify project resources and funding requested.

Joint proposals are not permitted. This does not mean that NERC will not accept proposals involving the participation of more than one Research Organisation, but the costs from all participating organisations must be included in one proposal.

Any applicant to this call may submit no more than two proposals as an investigator, and only one of these may be as the lead Principal Investigator.

Projects are expected to start on 01 January 2018.

6. Eligibility

6.1 Who should apply?

Standard RCUK eligibility rules for NERC funding apply to this call. [Full Guidance on eligibility](#) is available on the NERC website. For further information on approved UK Higher Education

³ NERC Innovation Programmes are five-year, £5m initiatives which brings together academia with industry, regulators and policy-makers to enable access to data, knowledge and expertise in the UK environmental science research base. The Programmes operate according to the following general principles: Industry-challenge led; open competition; translation-focused and impact driven.

Institutions (HEIs), approved Research Institutes (RIs) and approved Independent Research Organisations (IROs) visit the [RCUK website](#).

6.2 Eligible 'end-user' project partners

Eligible 'end-user' project partners may be private, public or third sector organisations or institutions, private industry, public bodies (such as government departments, local government, regulatory authorities, etc.), non-government organisations or charities. Research Council Institutes and HEIs are **not** eligible as *end-user project partners*.

There is no limit to the number of project partners involved in each project.

Do not include academic collaborators as Project partners. If part of the collaboration and receiving funding from the grant, they should be a Co-I. If no funding is coming from the grant, their role can be mentioned in the case for support and a letter of support included.

6.3 Eligible activities

This call for innovation projects is intended to be flexible to encourage applicants to be innovative in their approach. The following are not eligible as final outcomes in their own right and are only eligible as pathways to, and methods of, creating impact:

- Secondments and placements;
- Creation and running of networks;
- Development of websites, events and publications;
- Running of dissemination events, such as workshops;
- Production of dissemination literature;
- Drafting reports.

Eligible final outcomes from the project could include, for example:

- Innovative products, for example tools and models such as software and decision making tools, that are adopted by non-academic users;
- Direct embedment of new knowledge in user organisations to deliver improvements, e.g. in process, service provision etc.

The following are **ineligible**:

- Projects focused solely on delivering training;
- Academics acting as consultants for commercial third parties (however, a small proportion of the funding may be used to buy in consultancy services from third *parties* in order to progress the project);
- Activity between only different sections of the academic research base or between the research base and the general public;
- Commercialisation activities (Projects focused upon generating outputs with a likely commercial return to the academic applicants' organisation should be directed to the NERC's [Innovation Follow-on call](#));
- Collaborative Research / Research (These types of proposals should be made to NERC's [discovery science](#) (responsive mode) funding stream)

7. Assessment

Proposals will be assessed by an Assessment Panel made up of academic and industry representatives. It is expected that any proposal awarded funding through this call will

demonstrate clear relevance to the infrastructure, oil and gas and/or offshore renewable energy sector(s), whilst utilising excellent science and robust and appropriate scientific methods.

Proposals will be assessed against the following criteria:

- **Innovation and Impact Potential** – I.e. fit to scope of call; relevance to end-users; How the project will change “business as usual” within the project partner, or be transformative to the sector as a whole; strength of engagement from project partner/s.

A high score against this criterion will indicate a project that is well aligned with the needs of the sector, and which will lead to a step change in how the sector as a whole is able to address challenges related to decommissioning and its environmental management. The proposal should show strong evidence of project partners being deeply involved in the development of the proposals and of their commitment throughout the project. There is a clear route for the project outputs to be utilised by the project partner and the benefits to the partner are well defined, including success measures.

- **Mechanisms for delivery** – I.e. Appropriateness of science to answer project partners’ questions including the novelty of the science being applied or the approach proposed; Expertise and achievability; Value for money.

A high score against this criterion will indicate a project which is supported by excellent underpinning science of the highest international standards. The science being utilised may be being applied in a new context or the project may bring together novel combinations of academic data or expertise which has the potential to deliver exciting and transformative outcomes for the oil and gas sector. The project team has relevant skills; the project plan has clear milestones, outputs and outcomes and is achievable. The project represents good value for money.

8. Application

This call has a two stage application process. The closing date for the submission of outline proposals was 15th June 2017. Applicants successful at the outline stage have now been invited to submit full proposals.

Please note only applicants successful at the outline stage are eligible to submit full proposals. There is no guarantee of funding if invited to submit a full proposal.

Full proposals must be submitted through the Joint Electronic Submission (Je-S) system along with a completed ‘Case for Support’ document (the template for which is included as an annex to this document).

The deadline for the submission of full proposals is 16:00 on 28 September 2017 (at which point the Je-S portal closes). Applicants should leave enough time for their proposal to pass through their organisation’s Je-S submission route before this date. Any proposal that is incomplete, or does not meet NERC’s eligibility criteria or follow NERC’s submission rules (see [NERC Grants Handbook](#)), will be office rejected and will not be considered. Applications that do not use the ‘Case for Support’ template provided, or comply with these specifications or exceed stated page limits will not be accepted.

It is expected that proposals will evolve between the outline stage and the full stage. The involvement and contribution of project partners may evolve or projects may wish to expand their partnerships. It is also expected that projects may wish to change the resources requested and this is acceptable providing they remain within the upper limits set by the call. Applicants should contact NERC if there is any doubt over significant changes to requested resources/personnel.

9. Contact Details

For further information, advice or queries related to this call please contact in the first instance:

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