India-UK Water Quality Research Programme

Closing Date for Notification of Intent:16:00 BST / 20.30 IST on 30 March 2017

Closing Date for Full Proposals: 16:00 BST / 20.30 IST on 26 April 2017 (only applicants who have submitted a Notification of Intent will be eligible to submit a Full Proposal)

1. Summary

India's Department of Science and Technology (DST) and the UK's Natural Environment Research Council (NERC) and Engineering and Physical Sciences Research Council (EPSRC) invite proposals to a new 3-year research programme to improve water quality by providing a better understanding of the sources and fate of different pollutants and by supporting the development of management strategies and technologies to reduce pollution levels. The UK component of the programme has a budget of £4.2m; this will be matched in terms of research effort by DST.

This collaboration is supported by the Newton-Bhabha Fund, established by the Governments of the UK and India to provide a framework for increasing research and innovation collaborations that support sustainable economic growth.

Proposals are sought for collaborative research projects involving researchers from both the UK and India. Applicants can request up to £450k (80% FEC) for the UK component of a project, and the equivalent in terms of research effort from DST for the Indian component. The maximum duration of projects is 3 years and projects are expected to start in January 2018.

The submission of a Notification of Intent is a requirement of this call. The closing date for Notifications of Intent is 16.00 BST / 20.30 IST on 30 March 2017 and the closing date for Full Proposals is 16.00 BST / 20.30 IST on 26 April 2017.

2. Background

2.1 Scientific background

The aim of this programme is to provide end users, such as policymakers, regulators, business and local communities, with information and solutions that will help them tackle India's water quality issues and secure the provision of clean water, rejuvenate rivers, and restore ecosystems. This will be achieved by supporting research to improve understanding of the sources, transport, transformation, interactions and fate of pollutants, and determine the risks they pose to both people and the environment. Importantly, the programme will also develop new management strategies and technologies to clean-up water courses and enable better monitoring of pollution levels.

The insights, new methodologies and novel technologies developed under the programme could also help address water quality issues elsewhere, including in the UK, therefore it is anticipated that the programme will help both India and the UK achieve the Clean Water &

Sanitation Global Goal targets[1] of universal and equitable access to safe and affordable drinking water for all by 2030 and improved water quality through reducing pollution and restoring water-related ecosystems by 2030.

The scope of this call reflects the outcomes of the UK-India Water Quality scoping meeting held in New Delhi in November 2016 that brought together researchers from the UK and India. For further information on the meeting, including the presentations and the report, please refer to the NERC or DST websites.

2.2 Non-scientific background

This programme is supported by the Newton-Bhabha Fund, an initiative established by the governments of the UK and India. The Fund provides a framework for promoting increased research and innovation collaboration, developing long-term, sustainable partnerships and contributing to economic growth. This activity is part of the research pillar of the Newton-Bhabha Fund, which aims to support scientifically excellent research in areas that make the maximum contribution towards jointly approved grand societal challenges. This programme will contribute to the delivery of three of the four Newton-Bhabha Grand Challenges: Energy-Water-Food Nexus, Sustainable Cities and Urbanisation, and Public Health and Well-being.

As a requirement of funding, all applications under this call must demonstrate how they will contribute towards the delivery of the Newton-Bhabha Fund objective of developing long-term, sustainable partnerships that promote societal welfare and economic growth in India.

In the UK the Newton-Bhahba is part of the Newton Fund, which intends to strengthen science and innovation partnerships between the UK and emerging knowledge economies. The Fund forms part of the UK's Official Development Assistance (ODA) commitment which is monitored by the Organisation for Economic Cooperation and Development (OECD). ODA funded activity focuses on outcomes that promote the long-term sustainable growth of a sub-set of countries on the OECD Development Assistance Committee list and is administered with the promotion of the economic development and welfare of developing countries as its main objective. As a result UK-based researchers may be required to input to specific ODA reporting requirements.

3. Programme Scope

The aim of this programme is to improve water quality in India by providing a better understanding of the sources and fate pollutants and by supporting the development of management strategies and technologies to reduce pollution levels.

To address these challenges the programme will support 8-10 projects focussing on one or more of the following research areas:

- *Improving our ability to determine the presence of pollutants in water courses*. The scope of this research area includes:
    - Development of novel sensors to detect and monitor pollutants;
    - Adaptation and modification of sensors to improve performance or to enable them to be deployed in Indian environments; and
    - The design and testing of sensor networks.
- *Understanding of the transport, transformation, interactions and fate of pollutants, including both established and emerging contaminants*. The scope of this research area includes:
    - Field and laboratory studies to ascertain the pathways and evolution of pollutants in water courses;

    - Development of new models to aid understanding and management of water quality; and
    - Determining how variables, such as land-use and rainfall patterns, influence water quality.
- *Developing novel approaches to reduce or prevent pollution at source*. The scope of this research area includes:
    - Development of novel treatment approaches and technologies, for rural and urban areas;
    - Exploring the potential for resource recovery from waste to reduce the level of pollutants reaching the environment; and
    - Understanding the impact of treatments and removal of contaminants, for example quantifying how pollution levels change and how quickly, or determining if treatments create new pollution issues.

A key goal of the programme is to develop new insights, approaches and technologies that support the needs of end-users, such as industry, farmers, local communities, and national, state and local-level policymakers and regulators. To achieve this it is essential that projects are designed in consultation with users and that the users are involved throughout the projects. Applicants should set out in their proposals which users are participating in the projects, how they will be engaged, and how the outputs and outcomes address their requirements.

Projects may focus on any pollutant type, e.g. organic waste, pharmaceuticals, fertilisers, personal care products, metals, plastics or pesticides. Projects that study a range of pollutant types and their interactions are also welcome.

Projects may explore water quality issues in rivers, aquifers or lakes in any part of India, and if applicable an analogous UK location. Given the scale of the projects, it is envisaged that most projects will be case studies that focus on water quality issues in one or two locations, but applicants should also consider how the outputs of the projects could be transferred to other river basins or aquifers to increase the impact of the project.

In all cases, Applicants should fully justify the proposed focus of the project and demonstrate how the research will contribute to the delivery of the programme objectives.

To support a range of research that enables all the aims of the programme to be achieved the Funders anticipate supporting no more than four projects on any one aspect of water quality; e.g. no more than four projects focused on one of the three research challenge areas listed above. Projects that address more than one of the research challenge areas or are studying a range of pollutants are welcome, and the scope of these projects will be taken into account by the Funders when seeking to achieve a balanced programme.

4. Programme requirements

NERC is managing the bid submission on behalf of the NERC, EPSRC and DST partnership.

Applications to the India-UK Water Quality programme must include UK-Indian partnerships – i.e. include at least one India-based Principal Investigator and one UK-based Principal Investigator. Only proposals that involve scientific collaboration between the UK and India will be considered. All proposals must have equal or proportionate participation from UK and Indian researchers.

Up to £4.2m (80% FEC) is available from the UK for this call to fund the eligible UK costs of the successful grant proposals. DST are offering an equivalent amount of funding for this programme recognising the difference cost of undertaking science in India and the way that it is accounted for. **Applicants can request up to £450k (80% FEC) for the UK component of a project, and the equivalent in terms of research effort from DST for the Indian component**.

The funds available through this call are intended to support focused, coordinated and collaborative research between India and the UK that address the scope of the call as outlined above. These grants should promote inter-institutional collaborations, both between and within India and the UK, and are also expected to enhance opportunities for interdisciplinary collaboration. Partnerships should be genuine and reciprocal, and working together must add value to that which could be achieved by individual partners working on their own. Proposals must demonstrate that research activities will either achieve more than the partners would have achieved if tackling an issue by working alone, or achieve outcomes at less cost or faster than if working alone.

For each grant application a lead Principal Investigator should be nominated from both the UK and India, and they will act as focal points for contact with the funding agency in their respective countries.

4.1 Newton-Bhabha Fund requirements

All applications should clearly outline how the proposed research will address the objectives of the Newton-Bhabha Fund by supporting the development of long-term, sustainable partnerships that promote societal welfare and economic growth in India.

Applicants should demonstrate how the main research outcomes will be specific to enabling the sustainable development in India through improving water quality. Applicants should consider how their project will:

- address water quality issues;
- address the issue identified effectively and efficiently;
- use the strengths of the UK and India to address the issue; and
- demonstrate that the research component is of an internationally excellent standard.

Applicants should address these points in both the Je-S summary and then more fully, in the Case for Support (see section 5 for more details). UK researchers should demonstrate that the research is compliant with ODA requirements and therefore eligible to receive support from the Newton Fund. Details will be communicated to UK applicants following submission of their Notification of Intent.

4.2 Eligibility

4.2.1 UK researchers

For UK researchers' normal individual eligibility applies and is in Section C of the NERC research grant and fellowships handbook. NERC research grants may be held at approved UK Higher Education Institutions (HEIs) approved Research Council Institutes (RCIs) and approved Independent Research Organisations (IROs). The Research Councils have agreed that to help remove potential barriers to interdisciplinary research, all RCIs are eligible for grant funding from all Research Councils. Full details of approved RCIs and IROs can be found on the RCUK website.

UK Investigators may be involved in no more than two proposals submitted to this call and only one of these may be as the lead Principal Investigator.

4.2.2 Indian researchers

Researchers in India should be a regular faculty in Indian academic or public funded R&D institutions. Potential Indian partners should contact DST directly if they are unsure of their eligibility to apply through this call. Please refer to the DST website.

4.3 Studentships
There are no UK associated studentships permitted as part of this call.

Indian grants can include support for research students such as JRF, SRF as per DST norms.

4.4 Reporting requirements
As with all NERC grant holders, there will be a requirement to report through the RCUK reporting system; this is required annually and continues for up to five years post grant end. These reports will be shared with DST and EPSRC.

As this is a Newton-Bhabha programme there may be additional reporting requirements, which successful applicants will be required to assist with.

Indian partners must submit the joint reports as per DST format annually with the reports submitted to NERC provided as an annex.

4.5 Capital requests
The purchase of capital by UK applicants through the Newton-Bhabha Fund is not permitted.

Indian applicants are eligible for equipment funding not exceeding 30% of the project cost. Additionally, demonstration units can also be supported up to 20% of the project cost.

4.6 Awards and extension requests
Successful grants will be funded for up to 3 years and are should start in January 2018 and conclude no later than 31 December 2021 to align with the Newton-Bhabha Fund timescales.

Due to financial restraints of the Newton Fund Programme, grant extensions will only be considered under exceptional circumstances (in line with the Equality Act 2010) and will require NERC agreement on a case-by-case basis. The Research Organisation remains responsible for compliance with the terms of the Equality Act 2010, including any subsequent amendments introduced while work is in progress, and for ensuring that the expectations set out in the RCUK statement of expectations for equality and diversity are met.

4.7 Programme meetings
There will be two programme meetings over the duration of the programme: one mid-term meeting to be held in the UK and a finale meeting in India. The costs for all travel and subsistence to attend these meetings should be costed into applications. It is envisaged that the first meeting will be science focussed including interaction with UK stakeholders and the second will include a one day science meeting followed by a second day with short, plain-language presentations designed to explain outputs to end users.

5. How to apply

5.1 Notification of Intent
A Notification of Intent to submit a proposal must be submitted for all potential applicants to the call and sent to waterquality@nerc.ac.uk, by 16:00 BST / 20:30 IST 30 March 2017.

Only one Notification of Intent form needs to be submitted per project. The notification must be on the template provided and include details on the research themes that the proposed research will address and the institutions, investigators and project partners that are expected to be involved. NERC, EPSRC and DST will use this information solely to plan the proposal assessment and the notifications will not be assessed, however it should be noted that submission of the Notification of Intent is a requirement of this call and full bids will only be accepted from those teams who submit a completed notification of intent to submit form prior to the deadline. The Notification of Intent form is available to download from the Announcement of Opportunity page on the NERC website.

NERC will acknowledge receipt of all notifications and invite eligible applicants to submit a full proposal. In parallel a PDF version of the Notification of Intent form should also be submitted to DST via email to dstwticall@gmail.com.

5.2 Full bid application process

The full bid Closing date is 16:00 BST / 20:30 IST 26 April 2017.

These are collaborative projects between the UK and India and each project should submit a collaborative proposal that sets out the research to be carried out by both the UK and Indian partners. All applications must include UK and Indian scientists. Applications must be submitted through the Research Councils' Joint Electronic Submission system (Je-S).

The UK applicant should list the Indian collaborators as Project Partners and should indicate the approximate value of the DST and other contributions in the project partner in-kind support section of the proposal form. Note the requirements below for providing full details of the DST budget requested.

The following additional attachments must be provided on the lead proposal:

- CVs for each of the named Indian collaborators (maximum 2 pages per person) should be combined into one document as attachment type 'Non-UK Components'.
- Completed DST budget form as attachment type 'Non-UK Components' which summarises details of the Indian applicants and their requested costs (see Indian Costs below).

Successful grants will have their UK costs paid through Je-S and their Indian costs paid through DST's system.

Applicants should select Proposal Type- 'Standard Proposal' and then select the scheme – 'Directed International' and the Call – 'Newton Water Quality APR17'.

Applicants should leave enough time for their application to pass through their organisation's Je-S submission route before this date. Applications not submitted before the deadline will not be received or considered. **Applicants must ensure that their application is received by NERC by 16:00 BST / 20:30 IST on the closing date, 26 April 2017**.

All attachments, with the exception of letters of support and services/facilities/equipment quotes, submitted through the Je-S system must be completed in single-spaced typescript of minimum font size 11 point (Arial or other sans serif typeface of equivalent size to Arial 11), with margins of at least 2cm. Please note that Arial narrow, Calibri and Times New Roman are not allowable font types and any proposal which has used either of these font types within their submission will be rejected. References and footnotes should also be at least 11 point font and should be in the same font type as the rest of the document. Headers and footers should not be used for references or information relating to the scientific case. Applicants referring to websites should note that referees may choose not to use them.

Applicants should ensure that their proposal conforms to all eligibility and submission rules, otherwise their proposal may be rejected without peer review. More details on NERC's submission rules can be found in the NERC research grant and fellowships handbook and in the submission rules on the NERC website.

Please note that on submission to council ALL non PDF documents are converted to PDF, the use of non-standard fonts may result in errors or font conversion, which could affect the overall length of the document.

Additionally where non-standard fonts are present, and even if the converted PDF document may look unaffected in the Je-S System, when it is imported into the Research Councils Grants System some information may be removed. We therefore recommend that where a document contains any non-standard fonts (scientific notation, diagrams etc.), the document should be converted to PDF prior to attaching it to the proposal.

Full Guidance on the application process, including details of UK eligible costs, is available in the NERC Research Grants Handbook.

The costs of the UK institutions should be submitted in to the Je-S system and will be met from the UK funds, and those for the Indian partner institutions will be met by DST and should be submitted on the pro-forma provided.

5.2.1 Proposal components

In addition to the standard Je-S pro forma, the **lead** component of each proposal should include the following documents in Je-S:

a) A joint **Case for Support**, which is comprised of three parts:

Part 1 – A common **Previous Track Record** incorporating **ALL** UK and Indian Research Organisations involved (up to **3 sides A4**). The Track Record should provide a summary of the results and conclusions of recent work in the technological/scientific area that is covered by the research proposal; Include reference to RCUK, DST and other relevant funded work. Details of any relevant past collaborative work with other beneficiaries should also be given; Indicate where your previous work has contributed to the UK or India's competitiveness or to improving the quality of life; Outline the specific expertise available for the research at the host organisation and that of any associated organisations and beneficiaries.

Part 2 – A common **Description of the Proposed Research**. (up to **8 sides A4** including all necessary tables, figures and references) and should include:

- underlying rationale and scientific issues to be addressed,
- describe why the work is strategically important,
- how users are participating in projects, how they will be engaged and how the outputs and outcomes address their requirements,
- how the application addresses the scope of this particular call,
- the key research objectives and hypotheses, and
- how these will be achieved.

Part 3 - A common **Management Plan** (up to **1 side A4**). To include management structures and plans, participant responsibilities and scheduling chart. Note the management plan should factor in the need to allocate resources to cross-project coordination and integration.

b) **UK costs:** a common **Justification of Resources**; (up to **2 sides A4**). This should be for all UK Research Organisations involved, for all Directly Incurred Costs, Investigator effort, use of pool staff resources, any access to shared facilities and equipment. Capital requests (i.e. individual items over £10k) are not permitted

through the Newton Bhabha Fund. For further information of what to include in the Justification of Resources, see section E in the NERC Research Grants Handbook.

c) **Indian costs**: justification of these resources and details of the Indian Investigators should be submitted on the separate form provided and entered into Je-S as attachment type '**Non-UK Component'**. The form is available to download from Announcement of Opportunity page on the NERC website.

d) A common **Pathways to Impact**; (up to **2 sides A4**), detailing:
- those who may benefit or make use of the research;
- how they might benefit and/or make use of the research;
- methods for disseminating data/knowledge/skills in the most effective and appropriate manner.

e) A common **Outline Data Management Plan** (up to **1 side A4**). This section includes information about how the project will manage data produced and identify data sets of long term value that should be made available to the relevant data centre for archiving and reuse at the end of the grant. Further guidance regarding NERC's Data Policy is available on the NERC Data policy webpage.

Full details of the requirements for Pathways to Impact, and a suggested template, can be found on the NERC website. The costs of knowledge exchange activities in the plan should be fully integrated into the proposal costings and justified in the Justification of Resources section.

f) **Letters of Support** from named Project Partners to confirm that support and facilities will be made available for associated collaborations and co-funding (up to **2 sides A4 each letter**).

Each **component** application (including the lead) will additionally require the following attachments:

a) A **CV** (up to **2 sides of A4**) for each named PI, Co-I, research staff post and Visiting Researcher.

b) **Technical Assessment** of the request for access to a NERC or EPSRC Facility. PIs wishing to use a NERC or EPSRC facility will need to submit a mandatory 'technical assessment' with their proposal (excluding HPC). Given the time restrictions on spend under calls supported by the Newton Fund, we are unable to accept NERC shiptime or aircraft requests as part of this call. All other NERC Services and Facilities must be fully costed within the limits of the proposal, and agreement that they can be undertaken within the timeframe of the spend must be provided by the facility. For NERC, this means a quote for the work which the facility will provide. A full list of the Facilities requiring this quote can be found here.

6. Assessment Process

The Full Proposals will be internationally peer-reviewed and final funding recommendations made by a Moderating Panel, consisting of members of the UK and Indian science communities and other independent experts. Applicants will be given the opportunity to provide a written response to peer review comments, which will be made available to the panel along with the reviewer comments.

As per DST's normal processes, Indian applicants may be invited for a face-to-face interview with Indian members of the joint Moderating Panel for information gathering purposes. Outputs of the interviews will be shared with the joint Moderating Panel.

The final funding decision will be made by NERC, EPSRC and DST based on the recommendations of the Moderating Panel. The Funders are aiming to achieve a balanced portfolio of projects across the programme that best address the overarching aims of the programme.

The assessment criteria to be used for the full proposal will be as follows:

- Research Excellence
- Fit to Scheme

Feedback will be provided to all applicants following the assessment of proposals.

7. Provisional Timetable

Date	Activity
30 March 2017	Notification of intent to submit deadline
26 April 2017	Full bid closing date
May & June 2017	Peer review assessment
Early July 2017	Principal Investigator response to reviews*
Mid July 2017	Presentation to Indian members of joint panel
Late July 2017	Moderating panel meeting in India
August 2017	Funding decisions confirmed
September 2017	Awards announced
January 2018	Grants start

*Applicants should be prepared to respond to reviewers comments in this time frame.

8. Contacts

This call is being administered by NERC in the UK on behalf of all funders. Initial enquiries should be made to:

- NERC

Dr Andy Lloyd
Tel: +44 (0) 1793 442629
Email: waterquality@nerc.ac.uk

- EPSRC

Miss Ruqaiyah Patel
Tel: + 44 (0) 1793 444029
Email: Ruqaiyah.Patel@epsrc.ac.uk

- DST

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