



Peruvian Glacial Retreat and its Impact on Water Security and Resilience to Natural Hazards

Announcement of Opportunity

Issued on: 4 June 2018

Full Proposals deadline: 4pm on 16 August 2018

1. Summary

Proposals are invited for a new collaborative Research Programme between the Natural Environment Research Council (NERC) and Consejo Nacional de Ciencia, Tecnología e Innovación Tecnológica, Perú (CONCYTEC), which aims to provide an improved understanding of the rate of glacial retreat in Peru and the impact of this on water security and natural hazards. This call is supported by the UK through the Newton-Paulet Fund which forms part of the UK governments Official Development Assistance (ODA) commitment.

Proposals are invited for collaborative research projects involving UK and Peruvian researchers. Up to £3m is available from NERC to support eligible UK based researchers, and up to S/ 9m from CONCYTEC to support Peruvian researchers. Projects can be a maximum of 34 months in duration.

A joint application should be submitted to the UK's Joint Electronic Submission System (Je-S). The closing date for applications is 16:00 BST on 16 August 2018. Applications not submitted before the deadline will not be received or considered.

The UK component of successful projects must start, as a condition of funding, no later than 4 February 2019. The Peruvian component of successful projects must start no later than March 2019.

2. Background

Peru hosts 71% of the world's tropical glaciers and relies on glacial runoff to provide water for drinking, agriculture, hydroelectricity and industry. The Peruvian coast, where about 56% of the population and most of the economic activity is situated, is vulnerable to changes in water availability due to its desert climate and low rainfall. Andean populations, though more dependent on rainfall, also depend on glacial water during the dry season. Peru is also heavily dependent on agriculture, and 50% of energy supply in the country is provided from hydroelectric power, both of which are reliant on glacial runoff water. This supply of water is

now at risk due to significant reduction in the surface area of glaciers in the Peruvian Andes (> 20% in the past 30 years). Changes in glacial runoff are also leading to increased risks from glacial outburst floods and glacial avalanches.

This collaborative programme will provide increased knowledge on glacial retreat, and the impacts that this will have on water supply in the region. The outputs will also provide further knowledge on the increased risk of natural hazards caused by glacial retreat, which can be used to inform disaster mitigation strategies.

The NERC funds for this programme have been received directly from the Department for Business, Energy & Industrial Strategy (BEIS) as part of the Newton Fund. 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 Newton Fund partner countries and is administered with the promotion of the economic development and welfare of partner countries as its main objective. Collaborations under the call will contribute to economic development and social welfare in Peru, in line with the Newton Fund's aims. All applications under this call must be compliant with these specifications.

3. Scope

3.1 Programme objectives

The overarching objective of this programme is to provide an improved understanding of the rate of glacial retreat in Peru and the impact of this on water security and natural hazards. This objective will be addressed through the delivery of five research challenges.

Challenge 1: Improved understanding of glacier processes that will control future glacier change and runoff in response to climate change and climate variability in Peru.

In addressing this Challenge, applicants could consider:

- Understanding climate variability and its future changes in complex Andean mountain environments;
- Quantifying glacier mass balance components, their spatio-temporal distribution, meltwater fluxes and their future changes in complex Andean mountain environments;
- Understanding the role of glacier characteristics in influencing glacier response to climate;
- Quantifying how ice volume and glacier runoff will change in the future.

Challenge 2: Determine how future glacial retreat will impact on the role of tropical glacier runoff providing water resources to the region.

In addressing this Challenge, applicants could consider:

- Understanding glacial retreat through the characterisation of contemporary glaciology and of past glacial dynamics over a variety of timescales, and through the numerical modelling of glacial processes;

- The role of glacial runoff through the spatial and temporal characterisation of rainfall, and the characterisation of the hydrological system (including the role of wetlands and groundwater);
- The impact on water resources by characterising the present and future water use and demand under a changing climate.

Challenge 3: How can water resources best be managed to address changing demands in response to spatio-temporal changes in water quantity and quality?

In addressing this Challenge, applicants could consider:

- Spatio-temporal changes and variability in runoff/water supply and demand;
- The sources, contributions, transport pathways and fate of sediments and contaminants;
- Socio-economic and ecological resilience to changes, with a focus on informing future water management strategies;
- Promoting an improved understanding of inter- and intra-regional variability, and the use of results to inform monitoring in other, under-studied catchments.

Challenge 4: Determining the potential for metal mobilization from rock due to changing glacier cover and hydro-meteorological forcing and impacts on water quality, pasture and agriculture land.

In addressing this Challenge, applicants could consider:

- The biogeochemical context for metal mobility (e.g. pH, Eh, nutrient and DOM) and biogeochemical export;
- Determining the role of hydro-meteorological forcing and the interaction with retreating ice cover;
- Spatial and temporal patterns;
- Progression from conceptual to numerical models;
- Solution driven approaches to the problem (e.g. wetland remediation).

Challenge 5: Understanding risk of mountain hazards, including rock slope failures, glacial outburst floods and glacier avalanches.

In addressing this Challenge, applicants could consider:

- Sensitivity and resilience of mountain cryosphere systems to future climate change;
- Past variability of mountain cryosphere systems.

Through an improved evidence base and ability to predict change in glacial runoff, which are expected outcomes of this programme, it is anticipated that strategies will be developed to improve water security in the region for people, industry and agriculture and help to reduce conflicts over water usage. Increased understanding of glacial dynamics and the processes leading to glacial outbursts, floods and glacial avalanches will support better prediction of these hazards and enable improvements in emergency response plans and mitigation strategies. Projects will be expected to work closely with end-users to ensure that government, local authorities, businesses and local communities can use the outputs.

By delivering the programme through joint projects, we expect this programme to enable the development of UK-Peruvian research partnerships that can form the basis of future long-term collaborations.

3.2 Non-scientific objective

The Newton Fund requires that the funding be awarded in a manner that fits with [ODA guidelines](#). All applications must therefore be compliant with these guidelines. Note that this applies to UK funding only, and not the partner country, however as these are collaborative projects, it's expected that the project as a whole is ODA compliant and makes clear that its primary purpose is to promote the economic development and welfare of the partner country. For further information of Newton Fund see [RCUK](#).

Applicants must demonstrate how the main research outcomes will be specific to economic development and social welfare of the partner country, rather than merely creating the conditions where these might occur. Applicants should consider how their project will:

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

It is expected that through collaboration the projects should seek to increase the skills and knowledge base at the partner institutions in this area, improving their ability to undertake and disseminate research in order to maximise the countries impact on issues of poverty and economic growth.

Any UK benefits arising as a result of the project must be secondary, as the primary purpose of the project must be to support the economic development and welfare of partner countries.

UK researchers must demonstrate that the research is compliant with ODA requirements and therefore eligible to receive support from the Newton Fund. Applicants should address these points in both the Je-S summary and then more fully, in the Case for Support. As a requirement of funding, UK researchers must also complete a separate 'ODA statement'.

3.3 Proposal requirements

Proposals must address at least one of the challenges in the call text, and are encouraged to address more than one.

Proposals should be from joint Peruvian-UK research teams, and should clearly justify how the proposed research aligns with the scope of this call and will contribute to the delivery of the programme goals. Projects should also set out how the proposed research will input into the development of strategies to improve water security in the region for people, industry and

agriculture and help to reduce conflicts over water usage and / or inform disaster mitigation strategies with respect to increased risk of natural hazards caused by glacial retreat.

It is envisaged that proposed research will include fieldwork, process studies and model development and encompass a range of environmental research disciplines, such as glaciology, hydrological processes, hydrogeology and sedimentary processes.

4. Programme requirements

NERC is managing the proposal submission on behalf of the NERC/CONCYTEC partnership.

Applications to the Peruvian Glacial Retreat and its Impact on Water Security and Resilience to Natural Hazards programme must be from UK-Peruvian partnerships – i.e. include at least one Peruvian based Principal Investigator and one UK based Principal Investigator. Only proposals that involve scientific collaboration between the UK and Peru will be considered. All proposals must have equal or proportionate participation from UK and Peruvian researchers.

NERC and CONCYTEC will be looking to fund a balanced portfolio of research across the programmes challenges.

4.1 Programme funding

Up to £3m (80% FEC) is available from the UK for this call, and up to S/ 9m from CONCYTEC supporting the Peruvian research effort. Peruvian projects will follow the format of Research Circles in Science and Technology. Applicants can request up to £500k (80% FEC) for the UK component of a project and up to S/ 1.5m for the Peruvian component.

Proposals should include funding to enable PI attendance at an induction meeting in Lima, Peru. For Peruvian applicants further guidance can be found on [FONDECYT's webpage](#).

For the UK side of the project, capital expenditure (items >£10k) is not permitted through the Newton Fund.

4.2 Implementation and delivery

The maximum duration of the projects is 34 months. The UK component of successful projects must start, as a condition of funding, no later than 4 February 2019 and are expected to finish no later than 31 December 2021. The Peruvian component of successful projects must start in March 2019.

4.4 Data Management

The [NERC Data Policy](#) must be adhered to, and an [outline data management plan](#) produced as part of proposal development. NERC will pay the data centre directly on behalf of the programme for archival and curation services, but applicants should ensure they request sufficient resource to cover preparation of data for archiving by the research team.

4.5 NERC Facilities

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 & 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.

Prior to submitting a proposal, applicants wishing to use a NERC service or facility must contact the facility to seek agreement that they could provide the service required. Applicants wishing to use most NERC facilities will need to submit a mandatory 'technical assessment' with their proposal. For NERC, this means a quote for the work that the facility will provide. A [full list](#) of the Facilities requiring this quote can be found on the NERC website. The costs for the service or facility (excluding HPC costs) must be included within the Directly Incurred Other Costs section of the Je-S form and also within the facilities section of the Je-S form. Further information on [NERC services and facilities](#) can be found on the NERC website.

4.6 Programme management

Successful applicants are expected to work together and to attend any meetings organised for the programme.

4.7 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.

Applicants should be aware that according to the Newton Fund requirements, there will be some additional terms and conditions associated with the UK grants that are awarded. Additionally, UK Investigators must assist the NERC with any additional reporting requirements requested by the Department for Business, Energy and Industrial Strategy.

CONCYTEC will require periodical financial and technical reporting through FONDECYT's SIG online system. Reporting will be required only to grant holders from CONCYTEC funding. Details about the reporting system are stated in the document "Guía de Seguimiento y Monitoreo", available at [FONDECYT's webpage](#)

5. Application process

5.1 How to apply

5.1.1 Full Proposals

Closing Date: 16 August 2018

This programme will support collaborative projects between the UK and Peru and each project should submit a single collaborative proposal that sets out the research to be carried out by both the UK and Peruvian partners. All proposals must include researchers from the UK and Peru. The UK applicant must submit the proposal through the Research Councils' Joint Electronic Submission system (Je-S).

The UK applicant should list the lead Peruvian PI's, collaborators, and Project Partners on the Je-S form. Each individual organisation should be listed as a separate Project Partner. The approximate value of the Peruvian collaborators and other contributions should be detailed in the project partner in-kind support section of the proposal form.

Full proposals must be submitted using the Research Councils' Joint Electronic Submission system (Je-S). Applicants should select Proposal Type - 'Standard Proposal' and then select the Scheme – 'Directed International' and the Call – 'Newton Peruvian Glaciers AUG18'.

Additionally and before the call deadline, the Peruvian Director, i.e. the PI from the leading Peruvian applicant institution, must complete the online register form at [FONDECYT's website](#).

This call will close on JeS at 4pm BST on 16 August 2018 and it will not be possible to submit to the call after this time. 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.

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. More details on CONCYTEC submission rules can be found at [FONDECYT's website](#).

Proposals for this call should be submitted in standard grant format following the requirements outlined in Section F of the [NERC research grant and fellowships handbook](#).

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.

For the UK components no associated studentships can be requested under this call.

The latest start date for projects funded under this Announcement of Opportunity is February 2019.

5.1.2 Full Proposal components

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

1. A **Case for Support** comprising:
 - a) a common **Previous Track Record** incorporating all Research organisations involved in this proposal (up to **2 sides of A4**)
 - b) a common **Description of the Proposed Project** (up to **8 sides of A4** including all necessary tables, references and figures) to include:
 - i) Underlying rationale and scientific issues to be addressed.
 - ii) Specific objectives of the project, including their relevance to objectives of the call.
 - iii) Methodology and approach.
 - iv) Risks and mitigation strategies.
 - v) Programme and/or plan of research, evidence of access to required facilities, data, collections.
 - vi) Management of both project and resources, identifying the training and career development opportunities for personnel working on the project.
 - vii) How the proposal addresses Official Development Assistance (ODA) guidelines, including a justification about the gains to be obtained by working in research collaboration between UK and Colombia
2. **UK Costs:** a common **Justification of Resources** (up to **2 sides of 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. For further information of what to include in the Justification of Resources, see section E in the [NERC Research Grants Handbook](#).
3. **Peruvian budget details:** budget form outlining the costs being requested by the Peruvian investigators to be submitted on the [Peruvian budget form on the FONDECYT website](#) or the [Peruvian budget form on the NERC website](#), entered into Je-S as attachment type '**Non-UK Component**'.
4. **Peruvian costs:** justification of these resources and details of the Peruvian investigators should be submitted (up to **2 sides of A4**) and entered into Je-S as attachment type '**Non-UK Component**'.
5. **Peruvian applicants CV's:** document combining the CV's of the Peruvian applicants (up to **2 sides A4 per CV**) and entered into Je-S as attachment type '**Non-UK Component**'. Peruvian applicants refer to all team members named on the proposal.
6. A common **Pathways to Impact** (up to **2 sides of A4**), detailing:
 - a) those who may benefit or make use of the research;
 - b) how they might benefit and/or make use of the research; and

- c) methods for disseminating data/knowledge/skills in the most effective and appropriate manner.

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.

7. A common **Outline Data Management Plan** (up to **1 side of 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.
8. **Project Partner Letter(s) of Support** (up to **2 sides of A4 each**). A Letter of Support is required from each named Project Partner. This letter should confirm that the support and facilities required to enable the associated collaborations will be made available. No other letters of support should be attached. Project Partner letters from the Peruvian applicants organisations should also attach a completed 'Statement of the Peruvian Applicant Organisation's legal representative' letter. A template for which is available on the [FONDECYT website](#) and on the NERC Peruvian Glacial Retreat AO webpage at '[Peruvian Statement](#)'. A combined Spanish and English version of the letter should be attached to the proposal.
9. **ODA Compliance Statement** (up to 1 side of A4)

This should be uploaded as an attachment type of '**Non-UK Components**'. All research funded through the Newton Fund will form part of the UK's Official Development Assistance (ODA) and thus it is a requirement that funding be awarded in a manner that fits with ODA guidelines. Therefore, research proposals submitted to this call should describe how the proposed project meets the Official Development Assistance requirements of this call by answering the following questions:

1. Which country/ countries on the DAC list will directly benefit from this proposal?
2. How is your proposal directly and primarily relevant to the development challenges of these countries?
3. How do you expect that the outcome of your proposed activities will promote the economic development and welfare of a country or countries on the DAC list?

Each component proposal (including the lead) will additionally require the following attachments, where applicable:

- a) A **CV** (up to **2 sides of A4**) for each named PI, Co-I, research staff post and Visiting Researcher.
- b) PIs wishing to use **NERC facilities** 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 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 on the NERC website.

5.2 Eligibility

For UK applicants normal individual eligibility applies and is in Section C of the [NERC research grant and fellowships handbook](#). Research Organisation eligibility rules are in Section C of the handbook.

NERC research and fellowship grants for all schemes may be held at approved UK Higher Education Institutions (HEIs), approved Research Council Institutes (RCIs) and approved Independent Research Organisations (IROs). Full details of [approved RCIs and IROs](#) can be found on the RCUK website.

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.

For Peruvian applicants, specific mandatory eligibility criteria are stated in the document named "Bases", available at [FONDECYT's website](#).

6. Assessment Process

Proposals will be internationally peer-reviewed and final funding recommendations made by a moderating panel consisting of independent experts and members of the NERC Peer Review College where possible. Applicants will be given the opportunity to provide a written response to peer review comments prior to the moderating panel.

The assessment criteria to be used will be as follows:

- Research Excellence
- Fit to Scheme (sees Section 3.3)

Feedback will be provided to both successful and unsuccessful applicants.

CONCYTEC encourages women and young researchers (less than or equal to 35 years of age) to take on the role of Principal Investigator and this will be positively taken account of by the Moderating Panel.

In making the final funding decisions NERC and CONCYTEC will use the recommendations of the moderating panel both based on the available budget along with the overall call requirements to address the 5 research challenges of the programme.

7. Timetable

- Announcement published: June 2018
- Deadline for submission of full proposals: 16 August 2018

- Moderating panel meets: December 2018
- Latest start date for UK projects: 4 February 2019
- Latest start date for Peruvian projects: March 2019

8. Contact

For all enquiries, please contact:

NERC

Mieke de Wit: peruglacier@nerc.ac.uk

FONDECYT/Cienciactiva:

Gabriela Lajo Morgan: convocatorias@fondecyt.gob.pe