



Science for Humanitarian Emergencies & Resilience (SHEAR) **Catalyst grants**

Invited applications to the full proposal stage: 10 April 2018 at 16:00 BST/UTC+1

Information about your application, including the personal information provided on the forms, will be processed and stored electronically by the SHEAR Secretariat and representatives of SHEAR's Funders (NERC and DFID). The Information contained in your application may be passed on to external reviewers in confidence. Reviewers will be asked to destroy information after the review and selection process is complete.

Your application and personal information will be stored by the SHEAR programme for management purposes but will not be shared with other organisations outside the SHEAR partnership. We will use details provided in the application for correspondence about the call and may also use this information for future analyses of the performance of the programme.

By submitting your application to the SHEAR Programme you have indicated your acceptance of these data protection terms and conditions.

1. Summary

This is the Announcement of Opportunity for the invited full proposals to the Science for Humanitarian Emergencies and Resilience (SHEAR) catalyst grant research call. SHEAR is a five-year interdisciplinary programme funded by the Natural Environment Research Council (NERC) and the Department for International Development (DFID) to improve understanding and monitoring of disaster risk and generate more reliable natural hazard prediction across South Asia and Sub-Saharan Africa.

This call aims to support small projects with a maximum project cost to NERC of £250k; this is made up of UK institutions eligible for standard 80% FEC with the usual exceptions paid at 100% and non-UK organisations eligible for 100% direct project costs. The total available budget for this call is £2.5M and it is anticipated that 10-12 projects will be funded. It is expected that projects will start between September and November 2018 and have a maximum duration of two years.

Projects must focus on weather-related hazards such as floods and droughts, heatwaves and the events weather can trigger, such as landslides - and improving peoples' resilience to these, in Sub-Saharan Africa or South Asia. The Catalyst grants should not duplicate already funded research, including current SHEAR grants, but will compliment ongoing activities. They should be coherent activities to address the SHEAR goals. Projects that include an interdisciplinary approach are welcome.

The pull through of research into use is a key goal of the SHEAR programme. Projects should be orientated towards real world challenges and decision-makers, and demonstrate a clear pathway to impact. The funders encourage a co-production and co-exploration approach to working with stakeholders and proposals should outline how stakeholders will be involved throughout the project. Projects are also encouraged to make use of existing data, knowledge, tools and technologies to meet the project goals.

All projects are required to have a Principal Investigator based in a UK Research Organisation eligible for NERC funding. Projects with co-investigators and researchers based in other organisations, particularly in low and middle-income countries¹, are strongly encouraged, but will receive funding through the lead UK Principal Investigator's research organisation. **The lead Principal Investigator should not change from the Outline bid to the full proposal stage.**

This is a call for full proposals and is only open to those applicants who were invited to submit following submission of a successful Outline Bid application. Any other applications received will be rejected and not assessed.

Invited full proposals must be submitted via the UK Research Councils' Joint Electronic Submission (Je-S) system before 10 April 2018 at 16:00 BST/UTC+1.

2. Background

2.1 Programme background

Science for Humanitarian Emergencies and Resilience (SHEAR) is a five-year interdisciplinary research programme funded by DFID and NERC to improve understanding and monitoring of disaster risk and generate more reliable prediction across South Asia and Sub-Saharan Africa. It has four main scientific objectives:

- Improving risk assessment and prediction of drought and flooding.
- Enhancing multi-hazard risk assessment and monitoring across South Asia, with a focus on the interaction of 'cascading' hazards such as landslides.
- Strengthening understanding of the underlying drivers of risk toward more integrated, multi-hazard risk monitoring and warning systems.
- Getting the right information, to the right people in the right ways – research to enhance the uptake and use of risk information in practice.

SHEAR also had the following cross-cutting themes:

- Real-time monitoring of vulnerability and risk, including through novel applications of satellite and remote sensing data, social media, socioeconomic data, big data and others.
- Economics and social science of the communication and use of risk information in disaster resilience, preparedness and response
- Assessing and improving the reliability of forecasts for application in multi-hazard early warning systems and disaster resilience.

SHEAR aims to work with users to co-produce demand-led, people-centred science and solutions to improve risk assessment, preparedness and resilience to natural hazards. For SHEAR, it is equally important that projects deliver development impact as well as world-leading science.

2.2 SHEAR programme vision

The vision of the programme combines research excellence with development impact and as such the programme is guided by the following principles:

- 2.2.1 *Research excellence*: Internationally recognised and competitive natural and social science evidenced by publications in high impact journals, which represent world-leading standards in terms of quality, independence, significance and scientific impact.

¹ See [DAC list of ODA Recipients](#) of low and middle income countries

- 2.2.2 *Development impact:* All research should be able to demonstrate its potential to contribute to development challenges in Sub-Saharan Africa and South Asia and its contribution to delivering the overall impact of this programme, to contribute to saving lives and reducing the impact of natural hazards on livelihoods, poverty levels and economic development.
- 2.2.3 *Creation of meaningful partnerships:* Research projects will be expected to demonstrate capacity building of partner institutions.
- 2.2.4 *Co-production Approach:* Stakeholder engagement will be central to SHEAR to ensure its outputs are relevant and useful to decision makers. The SHEAR programme will support a co-production approach, where users are involved at each stage of the research process to design and test outputs.
- 2.2.5 *Impact and Value for Money:* Proposals must include clear evaluation components in all research. A strategy for developing an innovative value for money approach that enables costs and benefits to be tracked and evidence of research impact to be captured is also expected. To ensure value for money, the cost of projects and the benefit of potential outcomes will be assessed with on-going assurance of appropriate expenditure required throughout.
- 2.2.6 *Research translation for impact:* There is a considerable body of existing data and knowledge, which can be harnessed to improve risk assessment and support decision making. This might exist in academic or user communities but not be fully utilized, perhaps due to issues of access or format. The SHEAR programme will support the use and adaptation of existing knowledge, including its combination with new research, to develop innovative tools and products, which enable decision-makers to reduce risk and increase resilience.

2.3 Overseas Development Assistance (ODA)

SHEAR 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 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 requirement of funding, the application under this call must demonstrate how the research will focus on outcomes that promote the long-term sustainable growth, economic development and welfare of a developing country as its main objective.**

This SHEAR catalyst call is co-funded by NERC and DFID and as a result research in Sub-Saharan Africa and South Asia DFID priority countries² is encouraged.

Guidance for research applicants on ODA compliance is available on [the RCUK website](#).

2.4 SHEAR Consortia call

The aim of the SHEAR Research Consortia Grants is to undertake large-scale, complex and interdisciplinary research targeted at improving knowledge and providing tools to support decision making and reduce the impacts of natural disasters in Sub-Saharan Africa and South Asia.

The Research Consortia Grants call had two main research themes:

² [DFID priority countries](#)

- World-leading research into hydrological controls on landslide hazard in South Asia as part of multi-hazard risk assessment and toward warning systems
- Flood and drought risk assessment, modelling and forecasting in Sub-Saharan Africa; including better understanding the multifaceted and complex drivers of risk and building toward more risk-based monitoring and warning systems.

The [NERC SHEAR programme website](#) has more detail on the Consortia call.

Four Consortia were funded, two on floods and droughts in Sub-Saharan Africa and two on landslides in South Asia.

The information below details the title, lead PI and broad scope of the existing projects.

Sub-Saharan Africa

- [Toward Forecast-based Preparedness Action \(ForPAC\): Probabilistic forecast information for defensible preparedness decision-making and action](#) - Kenya / Greater Horn of Africa (GHA) (Lead PI: Professor Martin Todd, University of Sussex)
- [FATHUM: Forecasts for Anticipatory Humanitarian Action](#) - Mozambique, Uganda (Lead PI: Dr Elisabeth Stephens, University of Reading)

South Asia

- [Landslide Multi-Hazard Risk Assessment, Preparedness & Early Warning in South Asia: Integrating Metrology, Landscape and Society \(LANDSLIP\)](#) – India (Lead PIs: Professor Bruce Malamud, King's College and Dr Helen Reeves, British Geological Survey)
- [Citizen science for landslide risk reduction and disaster resilience building in mountain regions](#) - Nepal (Lead PI: Dr Wouter Buytaert, Imperial College, London)

[NERC Grants on the Web](#) and Annex A provides further details on the funded projects.

The funded SHEAR Consortia PIs form a Consortium Coordination Team (CCT), which has responsibility for ensuring that there is coordination and integration scientifically across the four consortia projects.

2.5 SHEAR Studentships Cohort

The funded SHEAR Consortia project teams are leading a focused cohort of doctoral training students in SHEAR related research. The cohort has been awarded and the research and the research projects are still to be defined. The studentships will start in 2017/18 academic year.

2.6 SHEAR Knowledge Broker

SHEAR has a dedicated Knowledge Broker activity, led by Practical Action and Red Cross Climate Centre (RCCC). The Knowledge Broker team is tasked with maximising the impact of SHEAR by connecting and communicating with users, undertaking meta-analysis and other studies, and ensuring coherence across the projects including shared story lines.

Projects supported under this call, will be expected to work closely with the SHEAR Knowledge Broker whose responsibility is to facilitate the uptake of the outputs of the research.

2.7 Wider SHEAR programme links

The SHEAR programme also works with the World Bank Global Facility for Disaster Reduction and Recovery (GFDRR) to deliver an innovative toolkit of new open data and

tools to support preparedness and resilience through a competitive challenge fund. For an overview of the Challenge Fund and projects and institutions supported, see the [GFDRR website](#). This partnership leverages GFDRR's on-the-ground expertise and networks to ensure that the outputs are demand-led and deliver value for money through building upon existing projects and delivering private sector contributions. Potential applicants may wish to build on this.

DFID also commissions selected research through the SHEAR programme, for example monthly medium-term weather/climate forecasts, to warn of potential near-term extremes of relevance to the humanitarian community, to inform emergency preparedness and response activities.

The NERC, DFID and the Economic and Social Research Council (ESRC) co-fund the '[Building resilience to natural disasters using financial instruments](#)' programme, which aims to strengthen the design, development and evaluation of pre-arranged disaster risk financing instruments in developing countries. Through a series of collaborative projects between academia and disaster risk financing actors, the programme is exploring how to

- Improve the robustness and enhance the use of assessments of disaster risk.
- Widen the types of hazards, geographical regions and situations in which disaster risk financing instruments can be offered and ensure they are contextualised to local need.
- Improve and validate indices and determine appropriate triggers for response, which minimise basis risk.

More information on the projects funded will shortly be available on the NERC website.

3. Scope of Catalyst grant round

3.1 Programme objectives

Projects must clearly specify how they will focus on weather-related hazards such as floods, droughts, heatwaves and the events weather can trigger, such as landslides - and improving peoples' resilience to these, in Sub-Saharan Africa or South Asia and will be expected to address one or more of the following research challenges:

- Improved understanding of the hydrological, geological and hydro-meteorological factors that determine the occurrence, duration and impact of the hazard/s and how they impact on local communities;
- Improved understanding of how governance, political interventions and societal factors influence the impact of the hazards and can contribute to better preparedness and resilience;
- Development of techniques for multi-hazard risk assessments by building on multi-hazard modelling to include cascading hazards³ and concurrent hazards⁴;
- Development of improved impact models which take into account the vulnerability, exposure and capacity of the affected community;
- Development of integrated, multi-hazard risk monitoring and early warning systems;

³ For instance generation of debris flows and downstream flooding, or flooding following valley blockage

⁴ For instance wind and rain: storm surge and pluvial flooding

- Improved understanding of how social and behavioural factors affect the communication, uptake and use of risk-based information and how this can be taken into account when designing effective monitoring and warning systems; and
- Expanding on existing ongoing research, in particular to scale-up to the regional/national level or to transfer approaches and methodologies to a different area.

The funded Catalyst grants should not duplicate the already funded work, including other SHEAR projects, will complement and where appropriate build on these activities. The Catalyst projects should be coherent activities to address some/all of the SHEAR goals. An interdisciplinary approach is welcomed to deliver the knowledge, which will have demonstrable application in the real world.

The funders will seek to ensure that a balanced portfolio of projects in Sub-Saharan Africa and South Asia (and across different countries within those regions) are supported that ensure the SHEAR programme objectives are fully addressed. To reflect DFID's priorities at least half the available budget will be spent on research focused on low and middle-income countries⁵ in these regions. Similarly, work in any relevant research discipline is eligible, but to align with NERC's priorities projects must include novel, innovative environmental science.

3.2 Proposal requirements

In order to achieve development impact, SHEAR welcomes interdisciplinary teams of researchers working with users through a co-design/co-production approach. Risk/hazard information end-users should have a role in defining the research questions and make a commitment to working as part of the projects to bring research into use to reduce the impacts of disasters.

There is a considerable body of existing data, models, knowledge and technologies, which can be harnessed to improve risk assessment and increase preparedness and resilience to natural hazards. However this valuable resource is often not readily accessible, is not in a form to enable it to be readily used, or requires further development or fusion with other (e.g. local) knowledge. Proposals are expected to incorporate an element of knowledge translation to develop and apply this existing information.

The expected outcome of the programme is improved research and innovation capacity and new collaborative partnerships in the UK, Sub-Saharan Africa and South Asia that will position the research community to respond to future calls, for example from the [Global Challenges Research Fund](#) and [Newton Fund](#).

4. Programme Requirements

4.1 Programme Funding

This is an open call for proposals, which aims to support 10-12 small projects rather than large research projects. The total available budget for this call is £2.5M. The maximum project size is £250k cost to NERC (with UK institutions eligible for 80% FEC with the usual exceptions paid at 100% and overseas organisations eligible for 100% direct project costs). Projects will start between September and November 2018 and have a maximum duration of two years.

⁵ See [DAC list of ODA Recipients](#) of low and middle income countries

Awards will be made under the standard NERC research grant terms and conditions.

This is the call for applicants that were successful at the Outline Bid stage and have been invited to submit a full proposal.

4.2 Eligible Research Organisations

The lead PI on the approved Outline bid should not change following approval to submit a full proposal.

The lead Principal Investigator should be based in a UK Research Organisation eligible to hold NERC grants; i.e. be at an approved UK Higher Education Institution (HEI), approved Research Council Institute (RCI) or an approved Independent Research Organisation (IRO). Full details of approved RCIs and IROs can be found on the [Research Council UK \(RCUK\) website](#).

Non-UK organisations and other UK organisations not currently eligible⁶ to receive RCUK funding will receive funding through the lead UK Principal Investigator's research organisation.

It is important to highlight that the UK Research Organisation awarded the grant is responsible for the conduct and administration of the grant. It is accountable for the effective use of public funds, and must therefore ensure that all grant monies are subject to proper financial management processes. It is the Research Organisation's responsibility to ensure that expenditure on collaborations in the UK and abroad is subject to robust controls to ensure value for money and propriety and that all costs should be fully vouched and maintained for possible inspection and checks by, or on behalf of, the funding organisations (NERC and DFID).

If any of the Research Organisations that receive funding from NERC wishes to sub-contract research to an overseas research organisation or include a Co-Investigator at an overseas research organisation then **the UK Research Organisation must undertake or have recently undertaken due diligence checks to ensure that the funding will be appropriately used before funding is released to the overseas organisation.**

Non-UK organisations and other UK organisations not currently eligible to receive RCUK funding (RCUK funding eligibility detailed above) that are Co-Investigators or named researchers on applications will only be eligible to apply if their organisation meets the following criteria:

- The organisation must be a legal entity;
- The organisation must be able to demonstrate an independent in-house capability to undertake and lead research and training in the field or discipline in which it wishes to be funded. This would normally involve employment of at least three permanent or long term staff, each of whom have 4-6 years post-doctoral research experience or

⁶ Research Organisations normally ineligible to receive funding from RCUK may be eligible under this call for proposals. Note that funding for these organisations will come from DFID and not the Research Councils. These organisations will not be eligible for any other RCUK funding, unless specifically stated by an individual Council.

equivalent⁷ and recognised research publications at national and at international level; they must also be capable of leading innovative research projects, directing post-doctoral researchers, and providing the necessary supervision at this level. Note that it is not essential to have post- doctoral experience, equivalent research experience, such as demonstrated long term professional and specialist experience will also be recognised; and

- The organisation must meet the accountability and audit requirements of the lead Principal Investigators institution.

CGIAR⁸ organisations are eligible to be involved as part of an application with an eligible UK Principal Investigator. However, under DFID funding rules they should not apply as developing country partners since they have competitive international terms and conditions and are able to recruit internationally. Full cost recovery should be based on the CGIAR system wide guidance on cost (set out in [Financial Guidance No5](#), and it is expected that the 2% system wide cost levy is to be absorbed within all their projects). It is also expected that a clear position with regards to alignment of all research projects with the 15 CGIAR Research Programmes (the CRPs) is provided, since the Fund Council expect all CGIAR research to fall within the CRPs in due course regardless of funding modality.

4.3 Research Roles and Eligibility

Normal individual eligibility applies to those UK applicants eligible to hold a NERC grant. Full information on individual eligibility and role descriptions can be found under Section C of the [NERC Grants Handbook](#).

With the exception of project partners and ‘staff’ such as researchers and technicians, **individuals may be named on a maximum of two proposals submitted, and may be named as a lead Principal Investigator (PI) on only one**. The total time commitment across the applications with which they are involved should not exceed 100%. If individuals are named on more than two submitted proposals then additional proposals will be rejected, which may be to the detriment of both the individual and projects concerned.

Applicants not eligible for RCUK funding and will be involved in proposals may be named as:

- Co-Investigator - if a collaborator on the project and receiving funding through the grant
- Project Partner - if providing significant cash or in kind contributions to the project
- Sub-contractor - if purely providing a service, with no intellectual property, author or other rights.

Non-UK based Co-Investigators and Co-Investigators from organisations not normally eligible for RCUK funding should meet the following criteria:

- have at least three years of relevant post-doctoral experience, or an appropriate equivalent level of research experience⁹;
- be employed—at the time of application—by an eligible recognised organisation , or if not employed (i) have an existing formal arrangement with the organisation that enables him or her to carry out research there and receive all necessary management and infrastructure support from the organisation or (ii) be scheduled to move to the recognised organisation before the proposed start date of the grant in such a way that would ensure that the criterion stated above is met by the time the grant starts;

⁷ Equivalent experience which may take a number of forms, such as good track record of long term in depth professional experience in a relevant field of work.

⁸ [CGIAR organisations](#)

⁹ Equivalent experience which may take a number of forms, such as a good track record of long term in depth professional experience in a relevant field of work.

- have an assurance from the recognised organisation—at the time of application—that, if the proposal is successful, the contract of employment, or formal commitment to provide support if not employed, will extend at least three months beyond the end date of the grant.

4.4 Associated Studentships on a Proposal

Associated studentships (either Masters or PhD studentships) cannot be included on proposals submitted to this programme.

4.3 Services and Facilities

Proposals should include formal requests and access costs for any NERC Service and Facilities where relevant. The costs for the service or facility must be included within the proposal budget cap as detailed in section 5 below.

4.4 Data management

NERC requires that research programmes implement a data management scheme which covers practical arrangements during the programme and subsequent long-term availability of the data set. In line with the [NERC data policy](#), data from the programme will be lodged with the appropriate NERC designated Data Centre (in this case the [Environmental Information Data Centre - EIDC](#)). NERC puts an obligation upon PIs to ensure that data management is undertaken in a suitable way. The funded UK PIs will be required to work with [the relevant NERC data centre](#) to produce fully costed data management plans, within three to six months of the start date of the grant.

4.5 Programme Level Coordination and Integration

Representatives from all the funded projects will be expected to attend a programme kick-off meeting anticipated in November 2018 (date and venue tbc) the costs for travel to this meeting should be requested at the time of application. This meeting will provide an opportunity for the Catalyst grant project teams to meet each other, the funded Consortia projects and the Knowledge Broker and to gain an overview of the broader SHEAR funded research.

SHEAR will be a strongly integrated Programme and the expectation is that PIs of funded projects will work together, with the existing PIs of the Research Consortium Consortia Coordination Team (CCT), the SHEAR Knowledge Broker and NERC and DFID as required. This includes participating in Programme-wide activities such as one-day cross-SHEAR workshops.

Each project is expected to feed into the SHEAR programme level reporting requirements. This includes feeding into the Knowledge Broker on progress periodically for the NERC biannual programme reporting and the DFID Annual Review. Projects may be required to respond to other ad hoc queries for information from NERC and DFID.

5 How to apply

5.1 Full proposal stage

The invited full proposal closing date is 10 April 2018 at 16:00 BST/UTC+1

Only applicants successful at the Outline Bid stage that have been invited to proceed to the Full proposal stage can submit a proposal to the full proposal closing date.

It is expected that proposals will evolve between the Outline Bid and the Full proposal stage (including personnel and partnerships), but the major science elements are expected to remain broadly the same, within the confines of any feedback from the Outline Bid stage.

Applicants considering any significant changes in the scope of a project should agree these with NERC prior to submitting their Full Proposals, otherwise the proposal may not be considered.

All applications must be submitted in English and costed in pounds sterling (£/GBP) through the [Research Councils' Joint Electronic Submission system](#) (JeS) as a single Je-S application. **Joint applications are not allowed for this call.** This call will award funds to the lead institution named on each application, which will then be responsible for disbursing funds to other institutions/organisations named on that application.

The person submitting a proposal must have created an individual Je-S account. This should be done well in advance of the application deadline, as there may be some delay in the approval of an individual Je-S account.

It is a requirement for the Full proposal stage that any individuals receiving SHEAR funding and named on the application (with the exception of Project Partners and sub-contractors) must have an individual Je-S account or will need to create an account in order to be added to an application. It is also necessary for an individual's organisation to have been registered before they can register themselves. Guidance on how to register an organisation and how to create an individual Je-S account can be found [here](#).

In order to prepare a Je-S full proposal submission it is best practice that the person preparing the proposal should create a new proposal. The process for this is as follows:

- On logging into Je-S select the Research Council – NERC
- Select the Proposal type - 'Standard Proposal'
- Select Scheme - 'Directed International'
- Select call - 'SHEAR Catalyst Full Bids April 2018'

This call will close on JeS at **16:00 BST/UTC+1** on the closing date **10 April 2018** and it will not be possible to submit to the call after this time. Applicants should leave enough time for their application to pass through their organisation's Je-S submission route before this date.

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 Grants 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 eligible costs, is available in the [NERC Research Grants Handbook](#).

5.1.1 Proposal components

In addition to the standard Je-S pro forma, the proposal should include the following documents in JeS:

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

Part 1 – A Previous Track Record incorporating **ALL** Organisations involved (up to 2 **sides A4**). The Track Record should provide a summary of results and conclusions of recent relevant work in the technological/scientific area that is covered by the research proposal. Include reference to both NERC and non-NERC funded work and details of any relevant past collaborations; specific expertise available for the research at the host organisation and that of any associated organisations and project partners; an indication of how previous work has achieved significant academic or socio-economic impact including collaborations with users.

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

- Objectives and anticipated outputs, demonstrating how the outputs will contribute to the delivery of the SHEAR programme objectives; and
- Outline of research proposed and how it fits the scope and addresses the scientific objectives of the call.
- Summary of potential impact including how the research will contribute to better preparedness and improved resilience

Part 3 - A 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) A **Justification of Resources**; (up to 2 **sides A4**). This should be for all Research Organisations involved, it should include justification for all Directly Incurred Costs, Investigator effort, use of pool staff resources and any access to shared facilities and equipment being sought. No justification for Directly Allocated Estates and Indirect Costs is required. If resources are not fully justified, they will be subject to reduction.

The threshold for individual items to be classed as equipment is £10,000 (inclusive of VAT). For items of equipment costing between £10,000 and the OJEU threshold value additional information is required in the justification of resources, including evidence of an evaluation of the use of existing relevant capital assets. Proposals requesting single items of equipment costing more than the OJEU threshold value must be accompanied by a business case (up to 2 **sides of A4** outlining the strategic need for the equipment).

c) A **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.

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.

- d) An **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](#).
- e) **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**).
- f) An **Official Development Assistance (ODA) statement** (up to **1 side A4**). Applicants are requested to submit an ODA statement (up to **1 page**) as the attachment type '**Non-UK component**'. This should describe how the proposal will focus on outcomes that promote the long-term sustainable growth, economic development and welfare of a developing country. The following questions should be answered:
 1. How will Sub-Saharan Africa or South Asia directly benefit from this SHEAR catalyst proposal?
 2. How is your SHEAR catalyst proposal directly and primarily relevant to the development challenges of Sub-Saharan Africa or South Asia?
 3. How do you expect that the outcome of your proposed activities will promote the economic development and welfare in Sub-Saharan Africa or South Asia?
 4. How will you communicate your research findings to local, relevant decision-makers?
- g) A **CV** (up to **2 sides of A4**) for each named PI, Co-I, named research staff post and Visiting Researcher.
- h) **Technical Assessment** of the request for access to a NERC Facility. PIs wishing to use a [NERC](#) facility will need to submit a mandatory 'technical assessment' with their proposal (excluding HPC). All 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 project must be provided by the facility. For NERC, this means a quote for the work which the facility will provide.

5.2 Project Finances

All applicants are advised to consult their institutional finance officers when completing the financial parts of the application.

Details of eligible costs are given in the [NERC Research Grants Handbook](#). All costs should be in pounds sterling (£/GBP).

The maximum project cost to NERC is £250k. This is made up of UK institutions eligible for standard 80% FEC with the usual exceptions paid at 100% and non-UK organisations eligible for 100% direct project costs. The budget limit of £250k per project refers to the total (100%) financial cost incurred to undertake the project (including overheads and any NERC facility costs). Any applications, which go over the budget of £250k will be rejected.

As per normal NERC rules NERC will not provide additional funding to cover fluctuations in exchange rates.

UK and non-UK organisational budget is indicated below:

UK Organisational Budgets:

- UK organisations will receive 80% of the full economic cost of the project, as per standard Research Council funding rules. UK universities are required to calculate the FEC using the “TRAC” (Transparent Approach to Costing) methodology.
- Other eligible UK organisations use an equivalent methodology, which has been validated by the Research Councils.
- Overseas travel and expenses costs incurred by members of UK institutions will be paid at 80% and must be included as costs related to that UK institution.

Non-UK Organisation Budgets:

- Non-UK organisations are expected to be able to comply with full and transparent costing for budget elements.
- Non UK organisations will be supported at 100% of the Directly Incurred costs of the research (e.g. staff, Travel, consumables).
- In addition indirect costs (including estates costs) maybe charged on staff salary and other staff-related costs (i.e. statutory contributions analogous to UK National Insurance or Superannuation contributions).
- Overheads may not be charged on non-staff related direct costs, for example, equipment, travel and subsistence, consultancies, conferences, etc.
- The following rates for indirect costs should be applied: - for applicants from low and middle-income countries, the rate is 50%; for applicants from high-income countries and CGIAR institutes the rate is 20%.
- For further guidance on what overhead budgets can be used please see [NERC Research Grants Handbook](#)
- Non-UK organisations should not enter any costs in the ‘Estates’ section of Je-S. All overheads should be entered as an ‘Other Directly Incurred Cost’ of Je-S.
- Non-UK organisations should identify all costs as an ‘Exception’ on Je-S, using the exceptions tick boxes, for the full (100%) cost to be paid.
- Costs from UK and Non-UK organisations should be entered as separate items. For example T&S costs for field work should be entered as two separate lines i.e. that related to UK organisations payable at 80% and that related to non-UK organisations payable at 100%, by using the Exception tick box.

6 Assessment Process

The Full Proposals will be independently assessed at an Assessment Panel meeting.

The final funding decision will be made by NERC and DFID based on the recommendations of the Assessment Panel. In determining which projects to fund, NERC and DFID take into account the need for a balanced portfolio of projects that together 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 Timetable

- Full proposals Invited by 22 January 2018
- Full proposal closing date 10 April 2018
- Assessment Panel May 2018
- Grants start date 1 September – 1 November 2018*
- Kick-off workshop November 2018

* Please note the timetable has been amended from the Outline Bid to Full proposal stage to allow time for successful award holders to undertake due diligence checks and get ethical approval.

8 Contacts

All queries should be directed to the SHEAR programme secretariat:

Daniel Knight

Email: shear@nerc.ac.uk

Telephone: +44 (0) 7928 668935

Annex A – Funded Consortia projects objectives

➤ **Sub-Saharan Africa**

[Toward Forecast-based Preparedness Action \(ForPac\): Probabilistic forecast information for defensible preparedness decision-making and action](#) - Kenya / Greater Horn of Africa (GHA)
(Lead PI: Professor Martin Todd, University of Sussex)

- **Abstract:** Drought and flood events remain a major threat to lives and livelihoods in sub-Saharan Africa, with significant impacts on long term development, due to the high exposure and vulnerability of populations. Existing early warning systems (EWS) whilst improving remain insufficient to protect vulnerable populations. Too often agencies and communities are only able to respond after a disaster has occurred rather than in advance, for a number of complex reasons. This project will address two of the primary limitations of EWS that hinder effective action in the face of hazard risks by; 1. Increasing the credibility and pertinence of hazard forecasts, by developing improved weather-climate forecasts and associated livelihood impacts over a range of 'seamless' lead times from days to seasons. 2. Overcoming barriers to preparedness action in advance of hazard events through the development and trialling of systematic and defensible approaches based on forecast information. Our project consortium brings together research institutes in the UK and East Africa with expertise in forecasting science, hazard impacts and vulnerability, with agencies responsible for EWS and humanitarian action. By building on these partnerships we will ensure effective collaboration, co-production and integration of research directly into practical application. Our project focuses on a set of existing EWS for flood and drought in Kenya, providing a platform for operationalizing and rapid uptake of results, new approaches and tools. The EWS case studies include both urban and rural contexts and are characteristic of hazard and development situations across much of Africa. We hope to share the benefits and lessons with similar systems across Africa . Our scientific advances will include development and evaluation of state-of-the-art weather-climate risk forecasts expressed in a probabilistic form. The physical basis of forecast skill will be established. These products will be linked to decision-relevant impacts on agricultural and pastoralist livelihoods. These products will be co-developed together with those agencies who operate EWS and plan for preparedness actions to ensure the pertinence and credibility of forecast products making them more suitable for uptake. We will incorporate these new forecast products into leading on-line hazard risk portals. Successful uptake into EWS will be facilitated through novel methodologies and practical tools of Forecast based Action that, by linking forecasts' attributes to risk reduction actions in well-defined action plans, which we hope will overcome institutional and technical barriers to preparedness action.

[FATHUM: Forecasts for Anticipatory Humanitarian Action](#) - Mozambique, Uganda
(Lead PI: Dr Elisabeth Stephens, University of Reading - Professor Hannah Cloke covering whilst Dr Stephens is on maternity leave)

- **Abstract:** Disaster managers and development planners from around the world have realized that their skills and expertise could be put into action well before an extreme event happens, to enormously reduce suffering and avoid catastrophe. While this type of action was historically not possible, new "Forecast-based Financing" systems are now being piloted in more than 15 countries. These pilots automatically trigger preparedness actions based on a forecast of an extreme event, providing financing before a potential disaster actually happens. However, in many flood-prone locations in sub Saharan Africa, the dynamics of flooding are not well understood, nor is there clarity on what should be done if certain types of flooding are forecasted. What is

driving the flooding, and the flood forecasts? What preparedness actions build resilience, and which ones undermine local capacities? The FATHUM team proposes to bring together a group of interdisciplinary researchers who will work with the existing pilots to analyze and research how this new type of Forecast-based Financing system can quickly respond to forecasts of extreme events, while still contributing to long-term resilience goals and reducing the need for disaster response. The first group of researchers will tackle flooding itself. A mixed group of hydrologists and climate scientists will explore the causes of different types of floods, and identify what atmospheric patterns could allow the most important types of floods to be predicted. Opening two positions for "Applied Forecasting Impact Fellows", much of the research will be carried out by scientists from the African regions that are being studied, and will culminate in recommendations and maps for predictability in other regions that could also implement such Forecast-based Financing systems. The second group of researchers, will explore further the "why" of flooding. They will investigate the reasons behind the fact that certain floods are more impactful than others, and identify patterns of resilience stemming from local and indigenous knowledge. This will be grounded in an understanding of the rapidly changing environment in sub-Saharan Africa, ultimately helping identify what forecast-based actions can contribute to long-term meaningful change. While there is a good deal of research on both resilience building and disaster response, disaster managers in the existing 15 pilots are struggling to understand what types of action can meaningfully fit in this "forecast-based" middle ground. FATHUM researchers will work directly with the practitioners to explore these answers. The third research group builds on the first two, examining more concretely how humanitarian systems are currently structured, and where Forecast-based Financing can fit in. Why do humanitarians not already make use of the many types of flood forecasts around the world? FATHUM will map the science-policy-practice interface to identify what promotes or inhibits the use of forecast information, and what "successful" use of such information really looks like. Lastly, the fourth research stream is an interdisciplinary group of researchers that will explore the potential and constraints for scaling up the concept of Forecast-based Financing. Integration with existing systems, such as safety nets and risk insurance schemes, will be explored collaboratively with the existing pilot projects. Ultimately, FATHUM is a novel combination: expertise from academia that is integrated seamlessly into existing disaster risk management projects, allowing practitioners to work with scientists to self-examine and reflect on a game-changing new way of working in the humanitarian sector. Critical scrutiny of the hydrometeorological aspects as well as the socioeconomic implications of taking action based on a forecast will provide a foundation for humanitarians and development practitioners worldwide to build on in their own applications of this concept.

➤ **South Asia**

[Landslide Multi-Hazard Risk Assessment, Preparedness & Early Warning in South Asia: Integrating Metrology, Landscape and Society \(LANDSLIP\)](#) – India

(Lead PIs: Professor Bruce Malamud, King's College and Dr Helen Reeves, British Geological Survey)

- **Abstract:** About 13% of Indian land mass is prone to landslides, with the Himalaya and Western Ghats regions particularly prone due to climate, geomorphology &

geology. Rainfall and earthquakes are the main triggers of these landslides, coupled with poor land management practices and increased development. The impact of landslides on people, business, culture and heritage can be considerable and wide-ranging, including fatalities, loss of agricultural land and infrastructure, and damage to ecosystems. LANDSLIP is a four-year grant (starting 11/2016) that brings together 36 physical and social scientists from three academic (KCL, Newcastle, Amrita), four government (BGS, CNR-IRPI, GSI, MetOffice) and two non-governmental organisations (Practical Action UK/India) in India, the UK and Italy. LANDSLIP's overall objectives are the following: (i) To enhance risk assessment and monitoring for hydrologically controlled landslides and related hazards in two main Indian study regions (Nilgiris; Darjeeling/East Sikkim), with a focus on *weather regimes, landslide domains and thresholds, societal factors and the interaction of 'cascading' hazards*. (ii) To develop methodologies on a *regional to catchment* spatial scale and a *seasonal to daily* temporal scale. (iii) To strengthen understanding of the underlying drivers of risk toward more integrated, multi-hazard landslide risk monitoring and warning systems. (iv) To get the right landslide information to the right people in the right ways (e.g., early warning systems, mobile networks, web-based gathering and dissemination of information to national/regional/local stakeholders including the public) including research to enhance the uptake and use of risk information in practice. LANDSLIP will explore replicability of methodologies developed in LANDSLIP for other landslide prone regions such as Uttarakhand, India and disseminate LANDSLIP project knowledge to the wider region of Southeast Asia (in particular, Afghanistan). Through advances in interdisciplinary science and application in practise, the collective ambition of this consortium is to contribute to better landslide risk assessment and early warning in a multi-hazard framework, and, by working with communities, better preparedness for hydrologically controlled landslides and related hazards on a slope to regional spatial scale and daily to seasonal temporal scale.

[Citizen science for landslide risk reduction and disaster resilience building in mountain regions](#) - Nepal

(Lead PI: *Dr Wouter Buytaert, Imperial College, London*)

- **Abstract:** Mountains are hotspot of natural disasters, in particular those related to landslides. At the same time, scientific understanding about the natural processes that cause these disasters is lagging behind, because of the complexity of the physical environment and the difficulties facing data collection. The impact of these disasters on society is very high, especially because mountain regions often host less developed infrastructure and vulnerable populations. As a result, there is an urgent need to improve our understanding about how natural disasters in mountain regions occur, how they can be mitigated, and how people at risk can be made more resilient. This proposal will leverage recent technological and conceptual breakthroughs in environmental data collection, processing and communication to leapfrog resilience building in data-scarce and poor mountain communities in South Asia. In particular, we identify three convergent evolutions that hold great promise. First, technological developments in sensor networks and data management allow for participatory and grass-roots data collection and citizen science. Second, web- and cloud based ICT makes it possible to build more powerful analysis and prediction systems, assimilating heterogeneous data sources and tracking uncertainties. Lastly,

this enables a more tailored and targeted flow of information for knowledge co-creation and decision-making. These evolutions are part of a trend towards more bottom-up and participatory approaches to the generation of scientific evidence that supports decision making on environmental processes, which is often referred to as "citizen science". We believe that a citizen science approach is particularly promising in remote mountain environments, because improving resilience and humanitarian response in these regions are inherently polycentric activities: a wide range of actors is involved in generating relevant information and scientific evidence, in decision-making and policy building, and in implementing actions both during a hazard and before and after. It is therefore paramount to strengthen the flow of information between these centres of activity, to make best use of existing knowledge, to identify the major knowledge gaps, and to allocate resources to eliminate these gaps. We will use the Karnali basin in Western Nepal as a pilot study. The Karnali basin is a remote and understudied basin that suffers from a complex interplay of natural hazards, including hydrologically-induced landslides and cascading hazards such as flooding. Over the last years, these hazards have caused serious damage to local infrastructure (e.g., roads, irrigation canals, houses, bridges) and affected livelihoods (e.g., 34760 families in the August 2014 floods). Using cost-effective sensor technologies, we will implement grass-roots monitoring of precipitation, river flow, soil moisture, and geomorphology. We will use those data to analyse meteorological extremes, and their impact on spatiotemporal patterns of landslide risk. By merging these data with other data sources such as satellite imagery, we aim to generate landslide risk maps at unprecedented resolution. At the same time, our participatory citizen science approach will enable us to design and implement a framework for bottom-up and polycentric community disaster resilience, based upon knowledge co-generation and sharing. Lastly, we will build upon the existing community-based flood early warning system implemented by our partner Practical Action Nepal, to create a comprehensive multi-hazard early warning system and knowledge exchange platform. For this, we will leverage recent developments in open-standards based, decentralized data processing and knowledge dissemination, such as mobile phones and web-interfaces.