Increasing Resilience to Natural Hazards in Earthquake Prone Regions in China (IRNHiC) a UK-China collaboration

Announcement of Opportunity (AO)

Closing date for Expressions of Interest (via e-mail): 09.00hrs UK (GMT+1) /16.00 China (CST) on 9th June 2015

Closing date for invited full proposals via JeS: 16.00hrs UK GMT+1 20th August 2015

1. SUMMARY

The Natural Environment Research Council (NERC), the Economic and Social Research Council (ESRC) and the National Natural Science Foundation of China (NSFC) are inviting research proposals under a new strategic, science-led research programme, Increasing Resilience to Natural Hazards in Earthquake Prone Regions in China (IRNHiC), which aims to increase social and economic resilience in earthquake-prone regions of China by reducing risks from multiple natural hazards. This will be delivered by a research partnership between UK and Chinese scientists. This call is supported in the UK through the Newton Fund which forms part of the UK governments Official Development Assistance (ODA) commitment and is only open to Joint UK-China applications.

The economic and social costs of disasters resulting from earthquakes, and associated hazards (e.g. landslides and mudflows) are immense, through damage to local or regional economies, impacts on long-term health, well-being, business, housing and education. This programme aims to combine and build on the strengths of natural and social sciences and has the potential to reduce losses over time, help preparation and post-event management, and minimise vulnerability and long-term damage.

The high level goals of the programme are to promote economic development and welfare in China by increasing social and economic resilience through reducing risks from multiple natural hazards; integrate natural and social science approaches across the programme to enhance the potential for impact on the welfare of those at risk; build on existing strengths in the UK and China, fostering stronger China-UK collaboration involving transferable research, protocols and approaches that can apply to both countries.

The specific aims of this programme are (i) to improve hazard forecasting, risk mitigation and preparedness based upon reliable knowledge of the fundamental processes involved and underpinned by basic science and, (ii) to improve the uptake of and responses to scientific advice, by developing risk-based approaches to natural hazards in collaboration with the communities at risk. One of the programme's principal goals is to integrate natural and social science research to increase the benefits for those affected by natural hazards. To that end a co-productive approach to research is expected, involving a framework for sharing knowledge and values between natural and social scientists and consultation with policy makers, civil society and other stakeholders.

The IRNHiC programme will be delivered in this one substantive research call for collaborative projects. NERC and ESRC have made available a budget of £2.5m (80% fEC) to fund eligible UK

researchers, with matched equivalent funding from NSFC. NERC/ESRC funds will specifically be used to support UK researchers, while NSFC funds will support Chinese researchers.

It is expected that up to six separate but interlinked research projects will be funded, spanning two or more of the five key IRNHiC research themes listed below. Projects will be up to three years in duration and must start, as a condition of funding, no later than 1st January 2016. These inter-disciplinary research projects, co-produced by natural and social scientists and by UK and Chinese scientists, will each address at least two of the specific themes of the programme. Applications are invited for research projects which aim to improve:

1. **the understanding of the fundamental mechanisms and processes (both physical and social) through the hazard chain that can lead to disaster,**
2. **hazard monitoring, forecasting and warning,**
3. **risk mitigation, management and preparedness,**
4. **context-specific hazard risk communication,**
5. **resilience, recovery and reconstruction, in earthquake-prone regions in China, in collaboration with individuals and communities at risk and other stakeholders (in the light of their vulnerabilities and the uncertainties involved)**

Project funding will also facilitate integration of the programme and the communication and application of the science delivered, in order to increase the skills and knowledge base at the partners institutions in China.

All applications must be collaborations between UK and Chinese researchers. Applications to this call must be in English.

The call for applications will be undertaken as a three stage process:

1) An Expression of interest (EoI) must be submitted via e-mail by the **9th June 2015** deadline. EoI's will be sifted based on remit and strategic requirement to ensure the programmes objectives are met. Successful applicants will be invited to submit full proposals.

2) Full proposals will be submitted via JeS by the deadline 20th August (tbc). Full proposals will go through external peer review and then to a moderating panel.

3) Leading members of the successful full proposal teams will then attend an integration workshop in December 2015 where they will identify integrative and coordination activities between the different grants and themes and develop a detailed implementation plan.

2. BACKGROUND

2.1 Science background

Natural hazards cause enormous human and economic losses and disruption, which continue to grow worldwide. The sudden onset of an extreme natural event can have catastrophic, regional-scale, social and economic effects. Earthquake hazards represent one of the most devastating hazard types in terms of human suffering and economic damage, accounting for the loss of millions of lives, and at a cost of huge economic losses.

An example is the 2008 Wenchuan earthquake in Sichuan Province in China, which led to over 69,000 deaths, 18,000 missing and 374,000 injured. Here, as is the case in many disasters, the

primary agent was the earthquake, but a major cause of casualties (one third), infrastructural damage and economic loss, was the secondary hazard of landslides, while the potential for outburst flooding posed a risk in the immediate aftermath to search and rescue operations and to the recovery and reconstruction processes. In order to understand the hazard risks, it is necessary to understand the hazard chain leading to disaster. The Earth is a dynamic planet. Slow forcing from the underlying mantle drives earthquakes. Resulting crack growth in the crust is highly non-linear, making individual earthquake events difficult to predict, while long inter-event times, particularly for continental earthquakes, and uncertainty in magnitude estimation can result in standard hazard assessments that can be grossly misleading. Therefore hazard risk assessment needs to be undertaken in the understanding of the uncertainties involved. Decision support approaches need to be developed and evaluated to: take better account of the full range of these uncertainties; understand the hazard chain; provide a basis for incorporating social and local knowledge; make them more relevant to users.

The physical and social aspects in the hazard chain are co-dependent. Building codes and assessment of critical infrastructure can address to some extent the primary agent of earthquake hazard risk, but the secondary hazard risk, building resilience and enhancing recovery are highly dependent upon developing and understanding vulnerability. Understanding vulnerability is at the heart of increasing economic and social resilience, and increasing the impact of physical science advances. Research needs to assess how scientific knowledge and risk reduction strategies can be most effectively developed and communicated as there is commonly a disjunction between the evolution and provision of expert knowledge and its effective utilisation in resilience building and post-disaster reconstruction.

The inter-connectedness of world trade means that the UK economy is dependent upon supply lines that stretch back to China. So the UK has a direct interest in the level of resilience in China to natural hazards. On the other hand, the experience of understanding communities' vulnerabilities and building resilience transcends both the specific hazard and the local cultural context, and lessons and knowledge can be shared in the UK and China. Promoting economic and welfare development is central to building resilience and supporting recovery, while local income generation is important to reconstruction following a disaster. So focusing on resilience, recovery and reconstruction will open up the potential for further UK-China collaboration in the economic sphere. The programme is timely, as it should provide a major contribution to actions arising out of the United Nations Integrated Research for Disaster Reduction (UNISDR), World Conference on Disaster Risk Reduction in 2015.

Increasing societal resilience requires that the society, community, economies or system exposed to the natural hazards has the ability to resist, absorb, accommodate and recover from their effects in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions, determined by the degree to which the society has the necessary resources and is capable of organising itself both prior to and during times of need (adapted from the UNISDR definition of resilience). Sustained long-term recovery to disasters lies at the heart of resilience and gives rise to a broad research agenda ranging from effective sustainable waste management to developing long term economic recovery. Institutional vulnerability can be social, economic, technical and infrastructural, and understanding vulnerability historically can help inform approaches to each of these areas. Components of vulnerability that require research include well-being, self and social protection, governance, the strength of livelihoods, resolve to survive, modelling techniques and methods which use social and

spatial data to develop indices of vulnerability. While understanding vulnerabilities arising from natural hazards is necessary in order to address increasing resilience.

2.2 Programme background

Increasing Resilience to Natural Hazards in China (IRNHiC) is a strategic research programme jointly supported by the UK's Natural Environment Research Council (NERC) and Economic and Social Research Council (ESRC) and the National Natural Science Foundation of China (NSFC). This programme will be delivered by a research partnership between UK and Chinese scientists. NERC and ESRC have jointly made available £2.5m for this programme (with support from the Newton Fund) and NSFC have agreed equivalent funding. As an initial step to help build partnerships and facilitate collaboration, NERC, ESRC and NSFC held a joint workshop in Chengdu in November 2014. The aim of the workshop was to discuss the key science challenges, research effort needed and how best to address these within the proposed new call. The workshop also facilitated networking and discussion to enable researchers to share ideas on key research questions relevant to the call. The workshop's outcomes have been used to shape the scope of this call for research proposals and a summary is available in the resources section of the IRNH programme page. **All potential applicants are encouraged to read the information about this workshop in order to be fully informed before submitting an application to this call.**

2.3 Investments to build on

This programme builds on previous Natural Hazards science investments that NERC and ESRC have jointly made as part of the Increasing Resilience to Natural Hazards Programme (IRNH) which funds the Earthquakes without Frontiers (EwF) consortium project. EwF aims to improve knowledge of the primary and secondary earthquake hazards in continental interiors and brings together natural and social scientists and collaborators in China, Kazakhstan, Kyrgyzstan, India, Italy, Greece, Turkey, Iran and Nepal.

NERC also funds PURE (Probability, Uncertainty and Risk in the Environment), a knowledge exchange network and research programme that brings together researchers, industrialists, and policy-makers in uncertainty and risk for natural hazards. The aim of the PURE programme is to improve the assessment and quantification of uncertainty and risk in natural hazards by developing new methods and demonstrating their applicability to enhance the uptake of natural hazards science. The aim of the PURE network is to stimulate good practice guidance and standardisation of the assessment and quantification of uncertainty and risk across the natural hazards community.

SHEAR (Science for Humanitarian Emergencies and Resilience) is a new international research programme jointly funded by the UK's Department for International Development and NERC and involving ESRC. The programme focuses on four areas: disaster risk assessment (mapping and analyses), sub-seasonal to seasonal forecasting, disaster risk monitoring, and the integration of these into practical decision making. The programme is targeting lower to middle income countries across sub-Saharan Africa and south Asia, focusing on the co-production of knowledge using a multi-disciplinary and problem-centred approach.

2.4 The Funding Partnership

NERC - the Natural Environment Research Council - is the leading funder of independent research, training and innovation in environmental science in the UK. NERC invests public money in world-leading science, designed to help to sustain and benefit from natural resources, predict and respond to natural hazards and understand environmental change. Working closely with

policymakers and industry to ensure this knowledge can support sustainable economic growth and wellbeing in the UK and around the world. NERC is supported by the Department for Business, Innovation and Skills (BIS). NERC's strategy "The Business of the Environment" identifies three strategic priority areas for research to meet society's needs: 1) benefiting from natural resources; 2) resilience to environmental hazards; and 3) managing environmental change. This programme directly addresses the second of these strategic areas and has relevance to the third.

ESRC – Economic and Social Research Council - is the UK's largest funder of research on economic and societal issues. ESRC's mission is to: promote and support, by any means, high-quality basic, strategic and applied research and related postgraduate training in the social sciences; to advance knowledge and provide trained social scientists who meet the needs of users and beneficiaries, thereby contributing to the economic competitiveness of the UK, the effectiveness of public services and policy, and the quality of life; and to provide advice on, disseminate knowledge and promote public understanding of, the social sciences.

NSFC - National Natural Science Foundation of China - is supported under the jurisdiction of the State Council to administrate the National Natural Science Fund. In accordance with the Government's strategies and plans for developing science and technology, NSFC is responsible for directing, coordinating and making effective use of the national science fund to support basic research and stimulate free exploration, identity and foster scientific talents, as well as to promote progress in science and technology and harmonious socioeconomic development for the nation.

2.5 Newton Fund

NERC and ESRC funds have been received directly from the Department for Business, Innovation & Skills (BIS) as part of the Newton Fund[1]. The Newton Fund 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)[2]. 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[3] and is administered with the promotion of the economic development and welfare of developing countries as its main objective. The fund covers three broad categories of activity: i) people: improving science and innovation expertise (known as "capacity building"), student and researcher fellowships, mobility schemes and joint centres; ii) programmes: research collaborations on development topics; and iii) translation: innovation partnerships and challenge funds to develop innovative solutions on development topics. This programme primarily relates to the first and second of these activities. Collaborations under the call will contribute to economic development and social welfare in China, in line with the Newton Fund's aims. All applications under this call must be compliant with these specifications (see this point under section 3.2.4).

3. PROGRAMME REQUIREMENTS

3.1 Scientific and Technical Requirements

The high level goals of the programme are to promote economic development and welfare by increasing social and economic resilience through reducing risks from multiple natural hazards in

[1] https://www.gov.uk/government/publications/newton-fund-building-science-and-innovation-capacity-in-developing-countries/newton-fund-building-science-and-innovation-capacity-in-developing-countries
[2] http://www.oecd.org/
[3] http://www.oecd.org/dac/stats/documentupload/DAC%20List%20used%20for%202012%20and%202013%20flows.pdf

earthquake-prone regions in China; integrate natural and social science approaches across the programme to enhance the potential for impact on the welfare of those at risk; build on existing strengths in the UK and China, fostering stronger China-UK collaboration involving transferable research, protocols and approaches that can apply to both countries.

The **Specific Themes** of this call are to:

1) Improve the understanding of the fundamental mechanisms and processes (both physical and social) through the hazard chain that can lead to disaster
2) Understand how knowledge of both physical and social processes in the hazard chain can lead to improved hazard monitoring, forecasting and warning
3) Improve risk mitigation, risk management and preparedness
4) Improve context-specific hazard risk communication
5) Enhance resilience and recovery for post-disaster reconstruction.

The IRNHiC programme will address these specific themes for the priority primary earthquake hazard, earthquake triggered secondary hazards such as landslides and cascading hazard events such as debris flows and outburst floods. But understanding of the multiple hazard risks in earthquake-prone regions may include research in landscape evolution and slope instability processes, and other mechanisms and triggering events (e.g. hydro-meteorological) for comprehending regional hazard risks.

Any earthquake-prone region of China may be chosen for research. However, it is expected that projects will seek complementary field laboratories with other projects in order to maximise effectiveness of the investment.

It is expected that although individual projects will cover 2 or more themes, all projects funded will work together to deliver the IRNHiC programme. The themes should address:

3.1.1 Theme 1: to improve the understanding of the fundamental mechanisms and processes (both physical and social) through the hazard chain that can lead to disaster.

Proposals should show how understanding the fundamental mechanisms and processes (both physical and social) through the hazard chain can increase resilience. Proposals may address the underlying mechanics, feedbacks within and between systems, understanding of past events, including dating, and improved modelling. They should consider upscaling requirements to go from site to regional models and where possible, field laboratories should be linked to existing case histories where vulnerable communities have been affected. Proposals should show how a better understanding of the system components will lead to improved characterisation of the hazard and evaluation of particular vulnerabilities and societal resilience; a combination of hazard and vulnerability then leads to a better understanding of risk and the feedbacks between natural and social systems.

3.1.2 Theme 2: to understand how knowledge of both physical and social processes in the hazard chain can lead to improved hazard monitoring, forecasting and warning.

Proposals should show how knowledge of both physical and social processes in the hazard chain can lead to improved hazard monitoring, forecasting and warning, in terms of identifying potential hazard sites, joining local and expert knowledge, ascertaining data requirements and developing monitoring and measurement techniques, both through ground monitoring and remote sensing. Proposals may address the spatial and temporal distributions of hazards, such as where are the fault or potential sites of mass movement, using a combination of techniques

such as geological mapping, satellite imagery and local knowledge, and what are the rates of strain accumulation across faults or deformation over landslides/debris flows using a combination of techniques such as geological mapping and dating, terrestrial LIDAR and geodesy, and measurement of meteorological parameters where relevant. Assessing the techniques and different data sets that are available will clarify potential synergies derived from collaboration between UK-China at key geographical areas/field laboratories, while the identification of long time series and case studies will bring added benefits. The development of novel sensors and instruments appropriate for the social context in relation to early warning systems, and communication of warning, may be involved. For warning systems, a key question is threshold determination to trigger the warning, which needs to be made in the understanding of the mechanisms and physical processes involved, in the knowledge of the potential vulnerabilities and how warnings can be effectively communicated,

3.1.3 Theme 3*:* to improve risk mitigation, risk management and preparedness.

Proposals should show how to improve risk mitigation, risk management and preparedness such that decision support approaches can be developed to take better account of the full range of uncertainties involved; address the interrelationship of multiple natural hazards; provide a basis for incorporating social and local knowledge; link physical models to probabilistic models; and make better use of statistical methods, building on investments from the NERC PURE programme. In particular, proposals should address the implications of uncertainty and of the social and institutional dynamics of expert communities concerned with the appraisal of natural hazards – for instance through a focus on sensitivity, scenario and interval analysis. The aim is to deliver prioritised options for risk management (e.g., early warning systems, land-use regulations, enforcement of building codes and communication strategies) in target regions, based on analysis of multiple scenarios and community analysis of options (e.g., using Bayesian belief, or other approaches, as appropriate).

3.1.4 Theme 4: to improve context-specific hazard risk communication.

For improving context-specific hazard risk communication, proposals should aim to improve the communication and uptake of mitigation-oriented scientific advice, based upon improved analyses of risk, vulnerability and the transmission of this knowledge, and should do this in collaboration with local, regional and national partners and through understanding of the communities at risk. There is commonly a disjunction between the evolution and provision of expert knowledge and its effective utilisation. Research projects need to assess how scientific knowledge and risk reduction strategies can be most effectively developed and communicated.

3.1.5 Theme 5: to enhance resilience and recovery for post-disaster reconstruction.

Projects should aim to understand how to build community resilience to cascading crises and engineer resilience sympathetic with the environment, in a co-produced approach with the natural sciences. In order to enhance resilience and recovery for post-disaster reconstruction, proposed projects should seek to understand communities as differentiated entities in relation to income, generational, migrant/ settled, urban/rural and educational status; who are the key players; and the role that women play in the recovery process. Projects should interrogate the role of the voluntary sector (e.g., NGOs) and the private sector (e.g., the insurance industry) versus that of national/regional/local government in building resilience and assess how culture impacts upon perceptions of hazard, risk management and responses. Projects should interrogate what constitutes 'good' reconstruction from the user viewpoint and question how decisions made in the short-term, in terms of governance and humanitarian responses and aid, affect the building of resilient and robust societies over time.

The specific themes should each be achieved in collaboration with individuals and communities at risk and other stakeholders, and in the light of their vulnerabilities, deleterious impacts and the uncertainties involved.

3.2 Non Scientific Requirements

There are a number of non-scientific objectives that applicants are expected to address:

3.2.1. Expressions of Interest must include a UK lead and a Chinese lead and therefore there needs to be at least one UK and at least one Chinese researcher on every application. Furthermore, it is expected that the collaborations represent genuine and meaningful partnerships between the UK and China.

3.2.2. All proposals must demonstrate how their project links across to other projects in the IRNHiC Programme. This should include some funds set aside for integration, coordination, joint knowledge exchange, etc. and may be through shared research personnel, project partners, resources and field locations. The costs for these mechanisms and activities should be included in the application, but the applicants should remember to incorporate flexibility into their application budget in order to fit in with the final plan for integration and coordination which will not take place until after the successful full proposals are decided (see section 4.4).

3.2.3. Proposals should address how to promote better practice, in conjunction with the overall Programme, in relation to how does scientific knowledge and evidence get used to shape policy and practice; how does scientific knowledge and evidence interact with local/indigenous knowledges and learn from that interaction. Links to other disciplines, such as health and engineering, are strongly encouraged, via individual projects, or by other mechanisms.

3.2.4. NERC and ESRC funds are from the Newton Fund and thus it is a requirement that 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 Chinese, but as these are collaborative projects, it is expected that the project as a whole is ODA compliant and it should be made clear that its primary purpose is to promote the economic development and welfare of China.

Applicants must demonstrate how the main research outcomes will be specific to welfare and development in China, rather than merely creating the conditions where development 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; and
- demonstrate that the research component is of an internationally excellent standard.

UK applicants should address ODA compliance (economic development and welfare of China) in their Expression of Interest.

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 benefit to the UK has to be the secondary consideration and should not lead to a project being funded if it does not primarily deliver the development objective.

3.2.5. To place the research within a multidisciplinary context and have global reach will necessitate multi-partner interdisciplinary teams. To this end a co-productive approach is required

involving a framework for the sharing in parallel of knowledge and values between natural and social scientists and by consultation with policy makers, civil society and other stakeholders throughout the research programme.

4. PROCESS AND ASSESSMENT

4.1. Research opportunity

Up to £2.5m (80% fEC) is available from NERC and ESRC to support eligible UK researchers with matched equivalent funding from NSFC to support Chinese researchers. For UK applicants, the maximum budget available per proposal is £500,000. Chinese applicants should speak to NSFC regarding their budget allocation.

Research proposals should cover at least two specific themes of the IRNHiC Programme and may be up to three years in duration. The project start date should be the 1st January 2016. It is anticipated that up to six research grants will be funded.

Applicants do not need to request equal amounts from China and the UK, but the amounts should reflect the difference in covered costs and local prices. The funders also expect the costs on each side to accurately reflect the research effort to be carried out. What is expected is that the research effort for both UK and China is comparable and the projects demonstrate a true joint partnership.

Awards will be made under standard NERC research grant terms and conditions but must also fulfill the Newton Fund requirements as part of the UK's ODA Commitment (see 3.2.4).There will be additional conditions included that are specific to delivery of this Programme. In particular, the funded projects will be expected to adopt a collaborative approach, engage proactively with a range of partners and users and to contribute to the integrated IRNHiC Programme.

Applicants should incorporate some flexibility into their application budget in order to carry out activities for integration and coordination at the programme level (i.e. between different grants and programme themes) which will not be decided until after the decision on the successful full proposals (see section 4.4). There will be no additional funds for these activities. The final award of grants will not be finalised until the funders are satisfied with the proposal for integration and coordination.

Programme integration, coordination and knowledge exchange will be expected in order to link the common areas of the programme, working to focus the research in the areas where the science will have the greatest impact and foster interdisciplinary working in the context of UK-China collaboration.

A key element will be the communication and application of the science delivered across the programme in core disciplines such as health and engineering, as well as to a variety of users and stakeholders. These would include, policy makers, government agencies, humanitarian agencies, industry and commerce, both in China and internationally. The IRNHiC Programme is intended to support capacity building, education and training (eg studentships), research staff and student exchange, regular meetings such as a summer school for early career researchers, joint field investigations, open forum discussions, joint sessions at international conferences, and translations into both English and Chinese.

4.2 Expression of Interest stage

This Expression of Interest stage will be used to identify research projects that will be invited to submit a Full Proposal. **Only applicants successful at the Expression of Interest stage will be eligible to submit Full Proposals.**

One Expression of Interest is required for each proposed project, giving information about both the UK and the Chinese applicants. Applicants must complete an Expression of Interest form, following the given specifications. The Expression of Interest form can be downloaded from http://www.nerc.ac.uk/research/funded/programmes/resilience/news/ao/ .

Expression of Interest forms must be submitted via email as a word document both to NERC at IRNHNWT@nerc.ac.uk by 09.00hrs(GMT+1) and NSFC at xoc@nsfc.gov.cn by 16.00 CST on 9th June 2015. Applications received after this date and time will not be accepted.

Any Expression of Interest which does not use the template provided, comply with these specifications or exceeds the stated limits will be rejected. Applicants must fill in the specified boxes in the Expression of Interest form.

Expressions of Interest will be sifted by the funders based on their fit to the call specifications. On the NSFC side there will be a panel organised to review and rank the Expressions of Interest. Applicants will be given brief feedback summarising the reasons why the application was successful/unsuccessful. No further feedback will be available.

Applicants will be informed in June 2015 if they are to be invited to proceed to the Full Proposal stage.

The funders reserve the right not to fund up to the limit allocated to the call. The funders reserve the right to make changes to the budgetary limits of the grants, and to the process of commissioning grants if deemed necessary following the submission of Expressions of Interest.

4.3 Full Proposal stage

Only applicants for research projects successful at the Expression of Interest stage will be invited to proceed to the Full Proposal stage.

Details on the submission and assessment procedures for full proposals will be provided to the Principal Investigators (PIs) of successful Expressions of Interest in due course. It is expected that the call for full proposals will be open from 24th June 2015 and the closing date for applications will be 20th August 2015.

As an indication of expectations for this stage, UK applicants will be required to submit through JeS in a similar format to NERC Discovery Science Standard Grants. There will be some additional sections to the JeS application relating to the Newton Fund. UK applicants will be expected to submit their associated costs in JeS and Chinese applicants will be expected to submit through NSFC's system with their associated costs. Each project will have the same Case for Support document which will be attached in both JeS and NSFC's system.

It is expected that proposals will evolve between the Expression of Interest and the full proposal stage. Teams may wish to expand their partnerships and this will be acceptable, although it is expected that the UK PI and the Chinese PI remain the same. It is also expected that projects may wish to change the resources requested and this is acceptable providing they remain within the upper limits set by the call. If there are significant changes from the Expression of Interest or any doubt then applicants should get in touch with NERC/NSFC to discuss.

The full proposals will go out to external peer review, before going to a Moderating Panel. The primary assessment criteria will be Excellence and Fit to Scheme (both Scientific and Non-Scientific objectives).

4.4 Integration workshop

The successful lead investigators will be required to attend an integration workshop in the UK in December 2015. It is obligatory that successful projects (at least two UK and two Chinese attendees per proposal) attend this workshop. The aim of this workshop is for project teams to come together and work with other successful proposals to form an integrated programme. The workshop will explore opportunities for project teams to network, learn from each other and develop collaborative work that could add value to the initial investments. This integration might include various mechanisms such as: project integration (joint initiatives, meetings, regular communication, etc.); linking project plans/timelines/data dependencies/data flows; and possible exchange of staff. These follow-on activities are not intended to re-shape existing strategies but to help refine and adapt where there is value and to build in additional research activities that could not be delivered by a single award alone. It will also allow for important agreements to be put in place (eg regarding data sharing and access) between the UK and China.

Following this workshop, a proposal of these activities will be prepared and then assessed. The final award of grants will not go ahead until the funders are satisfied with the proposal for this integration and coordination. Applicants should be aware that there will be no funds for these activities added to grants and therefore a degree of flexibility should be incorporated within the original application budget in order to allow for this integration and coordination.

4.5 Management and Governance Requirements

UK-China collaboration should proceed on the basis of shared values, shared principles and joint mechanisms.

- Values: Equality between participants; transparency; respecting differences in views, opinions, expertise and cultures; contingent confidentiality.
- Principles: Sharing data and knowledge; acknowledging strengths and gaps; reciprocated learning; joint publication.
- Mechanisms: Frequent interactions, including discussions with instant messaging and video conferencing; agreed project coordination and management structures; capacity building such as PhD student and research fellow exchange; education and training (including community based disaster risk reduction); regular meetings such as a summer school for early career researchers, joint field investigations, open forum discussions, joint sessions at international conferences and support for translations into both English and Chinese (which may have different solutions, e.g., volunteers, students projects, bilingual PDRAs, researchers and investigators); the communication and application of the science delivered, taking account of cultural context, income, sex, generational, migrant/ settled, urban/rural and educational status.

At a programme level, there will be agreed coordination and management structures between the UK and China.

4.6 Eligibility

For the UK partners, eligibility for this call is restricted to UK-based researchers normally eligible for funding from NERC and ESRC. Further information on NERC eligibility can be found on the NERC website and in the NERC Research Grants Handbook. Individual researchers may be named on a maximum of two different proposals, but on only one as the lead Principal Investigator. Associated studentships should follow the RCUK harmonised postgraduate training terms and conditions, which can be found at http://www.rcuk.ac.uk/funding/grantstcs/

For Chinese partners, eligibility rules follow the standard for NSFC but applicants who are not clear on these should contact NSFC to discuss. UK partners should ensure that Chinese partners have established their eligibility. Full Proposals which include Chinese applicants who are ineligible will be rejected.

4.7 UK specifications

The following section is relevant only for UK applicants. For Chinese applicants, specifications will be those standard for NSFC.

These specifications will be expanded on in the guidance for Full Proposals, but applicants for the Expression of Interest stage should note:

- As per Newton Fund specifications, requests for capital will only be considered if the proposed equipment is to remain in China for use after the project is completed.
- UK applicants will not receive funding for any publication costs associated with peer-reviewed journal articles and conference papers but costs associated with research outputs other than journal articles/conference papers (books, monographs, critical editions, catalogues etc.) can be included.
- At the full proposal stage applicants will be required to submit an outline Data Management Plan (ODMP) to identify the data sets likely to be available to NERC Data Centres. Proposals should not include any charges to the project for a NERC Data Centre to accept and manage the data sets but any in-project data management activities should be costed and included.

Applicants for NERC grants may also apply to NERC for access to any of the NERC services and facilities. Further information on NERC services and facilities can be found at: http://www.nerc.ac.uk/research/sites/facilities/. There is no need to contact the service/facility at the Expression of Interest stage but this will be required at the full proposal stage

5. TIMETABLE

Date	Event
21st April 2015	Call for Expression of Interest
9th June 2015 UK 09.00 (GMT+1) /China 16.00(CST)	Expression of Interest call closes
24th June 2015	Full Proposal call opens in JeS and NSFC system
20th August 2015	Full Proposal call closes (tbc)
24th August 2015 – Nov 2015	External peer review
By 6th November 2015	PI response stage due (UK applicants only)

w/c 17 November 2015	Full Proposal Moderating Panel in London, UK
Late November 2015	Successful applicants informed
Early December 2015	Integration workshop (UK)
January 2016	Grants start
January 2019	Grants end

1.http://www.nerc.ac.uk/funding/application/howtoapply/pathwaystoimpact/
2.http://www.nerc.ac.uk/funding/application/howtoapply/forms/grantshandbook.pdf
3.http://www.nerc.ac.uk/funding/application/assessment/assesscriteria/

6. POST AWARD

Applicants should be aware that according to the Newton Fund requirements, there will be some additional terms and conditions associated with the UK grants which are awarded. This will include additional reporting requirements which will be confirmed in due course.

7. CONTACTS

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