Increasing Resilience to Natural Hazards in Earthquake-prone and Volcanic Regions
Announcement of Opportunity

Closing date: 16:00 on 10th November 2011

1. Summary

Applications are invited for science-led research grants that will assist in increasing social and economic resilience in earthquake-prone and volcanic regions by reducing risks from multiple natural hazards. The proposed research should aim to improve hazard forecasting, risk mitigation and preparedness and recovery based upon reliable knowledge of the fundamental processes involved and underpinned by basic science. The proposed research should aim to improve the uptake of and responses to scientific advice, based upon the development of risk-based approaches to natural hazards, with full assessment of the uncertainties, and a better understanding of the context-specific communication of this knowledge, in collaboration with and understanding of the communities at risk, and with other stakeholders.

The Increasing Resilience to Natural Hazards (IRNH) Programme forms part of the Research Councils UK (RCUK) Global Uncertainties Programme. It is funded through the Natural Environment Research Council (NERC) Natural Hazards theme with partnership funding from the Economic and Social Research Council (ESRC) and will contribute to delivering the NERC's strategic goal of enhancing UK leadership in the science of natural hazards and the ESRC's strategic goal of influencing behaviour and informing interventions. This programme is also expected to contribute to the Living with Environmental Change (LWEC) Partnership, in particular the Societal Challenge theme, and to examine the effects of natural disasters on societies already under pressure. The programme is timely, as it should provide a major contribution to the United Nations Integrated Research for Disaster Reduction (UNISDR) initiative, which has called for the development of integrated natural and social sciences approaches to disaster management.

One of the principal goals of the IRNH Programme is the integration of natural and social science research across the programme to enhance the potential for impact on those affected by natural hazards, in the short and long term. To that end a *co-productive approach* to research is envisaged 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.

Under this call up to £3 million NERC and ESRC total funding (100% Full Economic Costing FEC) is available to support one interdisciplinary, co-produced research consortium in each of two research strands.

Strand 1 will focus on earthquake hazard, resilience and vulnerability, and related hazards such as landslides and tsunami.

Strand 2 will focus on volcanic hazard, resilience and vulnerability, and related hazards such as lahars.

Both strands will aim to improve assessment of the primary hazard and related hazards. In collaboration with stakeholders, both strands will aim to improve multi-hazard risk analysis, risk mitigation and understanding of uncertainties, vulnerability and the communication of reliable knowledge of these hazards in order to strengthen resilience.

£0.15 million was previously allocated to fund six IRNH Scoping Studies to build capacity findings.

Two Knowledge Exchange (KE) Fellows will be appointed in 2013 to facilitate the communication and application of the science delivered from this programme in disciplines such as health and engineering, and to a variety of users and stakeholders, including policy makers, government agencies, humanitarian

agencies, and industry and commerce, both nationally and internationally. The KE Fellows will link the common areas of the programme's two research strands, working to focus the research in the areas where the science will have the greatest impact and foster interdisciplinary working in the priority areas.

2. Background

Earthquakes, volcanoes and related hazards—such as landslides, tsunami and lahars—cause enormous human and economic losses and disruption, which continue to grow worldwide. Whereas the developed world is characterized by the relatively high resilience of societies to earthquakes, in the developing world, for example, even relatively small events may cause large death tolls that have huge social and economic impacts. At the same time, externally generated scientific expert knowledge (e.g., hazard maps) may be inappropriate for communities at risk in the developing world, with the result that such knowledge may not contribute to resilience building. Increasing societal resilience requires that the society, community, economies or system exposed to these natural hazards has the ability to resist, absorb, accommodate to 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 organizing itself both prior to and during times of need (adapted from the UNISDR definition of resilience). However, Earth is a dynamic planet. Slow forcing from the underlying mantle drives both volcanism and earthquakes. Resulting crack growth in the crust is highly non-linear, making individual events difficult to predict. Long inter-event times result in standard hazard assessments that can be grossly misleading (c.f., the 2011 Tohoku Japan earthquake and tsunami, the 2010 Haiti earthquake and Eyjafjallajökull eruption). Lack of preparedness in major urban conurbations (e.g., Teheran) makes the million-death earthquake to some seem inevitable. The sudden onset of an extreme natural event can have catastrophic, regional-scale, long-term social and economic effects. For example, there were high levels of mortality and morbidity, and economic losses that exceeded annual GDP in the case of Haiti. The societal disruption may in this case require a generation to overcome and this can be superimposed on existing poor development and health. In the post-disaster scenario, absence of prior preparation and unprepared social systems make recovery prolonged and often relief organizations begin to question the effectiveness of their response.

The direction of recent UK research into the physical processes that control the occurrence and magnitude of natural hazards in earthquake-prone and volcanic regions has the potential markedly to reduce negative impacts (e.g., loss of life and health impacts, damage to schools and hospitals, loss of livelihoods and other economic losses) by contributing to increased resilience. For instance, recent research has made significant contributions to forensic studies of earthquakes in the determination of spatial patterns of inter-seismic strain rates, on fault interactions and the subsequent migration of seismic activity, which together allow quantitative assessments of the zones of greatest earthquake hazard. Significant advances in process-based approaches to modelling volcanic behaviour have been made over the last decade including process parameterization and use of proxies, time series analyses and finite element modelling techniques which offer the potential to support near-real time volcanic hazard analysis to provide better temporal advice in volcanic crises and for risk management. A very high proportion of losses in earthquake-prone and volcanic regions are caused by related hazards of landslides, tsunami and lahars activated during earthquakes or volcanic events. Advances, particularly in their spatial characterization, have considerable potential for development within risk management. Encouragingly, the low death toll in some Tohoku coastal towns demonstrates the importance of successful mitigation measures of communication, preparedness and flexibility, even when the magnitude of the event was significantly under-predicted. However, even here, many of the long-term consequences are still to be identified.

The IRNH Programme's high-level goal is to increase economic and social resilience to earthquake, volcanic and related hazards based on reliable knowledge of the fundamental physical and social

processes involved and full understanding of prevention and mitigation of the associated risks. The programme aims actively to engage and support scientific and technical communities to inform decision-making (c.f., Global Platform for Disaster Risk Reduction). The programme should stimulate areas where science is currently internationally immature - providing the UK with the opportunity to lead research in new science areas. It will develop risk and uncertainty analyses based on observations, monitoring, experimentation and modelling in relation to earthquakes, volcanoes and related events. This will include multiple, non-linear processes, operating at many rates and over a wide range of spatial and temporal scales. Physical hazards are only one component of risk. Significant amplification of the impact of such research, including reductions in mortality rates and economic loss, will only be achieved through the broader interdisciplinary characterisation of risk and resilience. So the research must be undertaken in conjunction with social science (co-designed, produced and delivered) that will address issues relating to decision making under conditions of uncertainty, vulnerability analyses to increase resilience and translating assessment into policy, and policy into action, exploring knowledge relationships and reflective learning across disciplines and recovery management (see Annex A for more detail). Therefore the natural science aspect of the research will be developed with partners in the social and economic sciences, working together to increase resilience (a co-productive approach). The translation of science into resilience and the impact of this programme require effective exchange of knowledge between scientists and communities at risk, governments and regional organizations, including through the dissemination of scientific ideas, education, training and the building of local capacity. This would need to be undertaken in the appropriate context and in collaboration with and understanding of communities at risk, supported by partnership building with scientific organizations, government agencies, policy makers, and industry and commerce.

3. Specific Objectives

The **high-level goal** of the IRNH Programme is to increase economic and social resilience to earthquake, volcanic and related hazards based on reliable knowledge of the fundamental physical and social processes involved and full understanding of prevention and mitigation of the associated risks

The **Specific Objectives** are to:

1) Improve earthquake hazard forecasting, risk mitigation and preparedness using the fundamental understanding of earthquake processes to identify zones of greatest earthquake hazard.
2) Improve volcanic hazard forecasting, risk mitigation and preparedness using multi-parametric data, to produce better operational deterministic and probabilistic models.
3) Improve spatial, temporal and magnitude characterization of the related hazards of landslides, tsunami and lahars in earthquake-prone and volcanic regions.
4) Improve the communication of mitigation-oriented scientific advice in earthquake-prone and volcanic regions, appropriate to the specific context. This may be achieved through improved analyses of risk and vulnerability and assessment of the uncertainties, in collaboration with and understanding of communities at risk and other stakeholders.
5) Working in conjunction with, and building on the natural and physical science in objectives 1 to 4, build economically and socially viable resilience into the assessment of, planning for, and management of and long term recovery from natural hazards, with a focus on high consequence, regional-scale events in volcanic and earthquake-prone areas.

4. Research Opportunity

Research proposals in both Strand 1 and Strand 2 may each request total NERC-ESRC funding of up to £3M (100% FEC).

Research proposals may be up to 5 years in duration. The project start date should be the 1st July 2012.

Awards will be made under the usual NERC research grant terms and conditions. There will also be additional conditions included that are specific to delivery of this Programme. In particular, research consortia in Strand 1 and Strand 2 will be expected to engage with each other and to contribute to the integrated IRNH Programme, to engage proactively with the KE Fellows, and a range of partners and users and to develop knowledge exchange activities which will link with the NERC Natural Hazards Probability Uncertainty and Risk in the Environment (PURE) Network.

5. Programme Requirements

Scientific & Technical

All proposals must address the specific objectives of the IRNH Programme for increasing social and economic resilience by reducing risks from multiple natural hazards in either Strand 1, earthquake-prone regions, or Strand 2, volcanic regions (see Section 3). Proposals should show how reliable knowledge of the fundamental processes of earthquake generation and volcanic eruptions, and those of related hazards, underpinned by basic science, can be used to increase resilience. Projects should develop techniques and technologies that can be readily utilized in hazard risk mitigation. They should also aim to improve the communication and uptake of mitigation-oriented scientific advice, based upon improved analyses of risk and vulnerability and understanding of the context-specific transmission of this knowledge, and should do this in collaboration with regional partners and through understanding of the communities at risk. These efforts must be informed by social science research and evidence. They should demonstrate how to build economically and socially viable resilience into the assessment of, planning for, and management of natural hazards, with a specific focus on high consequence, regional-scale events. Research should focus on where the IRNH programme can make the greatest impact on increasing resilience.

In Strand 1, research focused on earthquake-prone areas should show how developing multidisciplinary techniques and employing multi-parametric data describing the earthquake generation process can be used to improve the identification of zones of greatest earthquake hazard. This may include current methods in crustal stress and strain characterisation integrated with geological studies of faults and forensic studies of earthquakes, or studies in near real-time forecasting of earthquake aftershocks, as two possible research examples. These should be used as the basis for multi-hazard probabilistic assessment that can inform robust methods of forecasting the spatial and magnitude distribution of earthquakes, and of related events, including landslides and tsunami, and characterize aspects of these pertinent to planning (e.g., ground-shaking, run-out and inundation). For landslides, the dynamics of multi-phase flow and the relevance of non-geological drivers (e.g., hydro-meteorological and human) may also be considered. Research should identify key elements of earthquake science appropriate to the preparedness role.

In Strand 2, research focused on volcanic areas should show how developing multidisciplinary techniques and employing multi-parametric data describing the evolution of volcanic systems can be employed to assess volcanic hazard (e.g., explosive eruptions, lavas, pyroclastic flows of different magnitude and intensity). These should be used as the basis for multi-hazard probabilistic assessment that can inform robust methods of forecasting the timing and size of volcanic events (initiation, speed of onset, duration, frequency and temporal distribution), including where appropriate triggering of lahars, and characterize aspects of these pertinent to planning (e.g., ash dispersal and run-out). For lahars, the dynamics of multi-phase flow and the relevance of non-geological drivers (e.g., hydro-meteorological) may also be considered. Research should identify key elements of volcano science appropriate to the preparedness role.

In both strands research must address the challenges of vulnerability, taking into consideration economic, political and social factors, including uneven knowledge and perception of hazards, to provide improved regional assessments of resilience and so enable the development of appropriate levels of preparedness, including the building and assessment of decision making processes and decision support tools. Proposals should show awareness of the full scope and limits of both 'indigenous' and 'local' knowledge and outside specialist knowledge in developing knowledge exchange with at risk communities, regional partners and agencies, including government. Annex A gives some more detail of the integration with the social science agenda.

In both strands proposals should aim to capitalize on on-going efforts within current observational, calibration and modelling initiatives in earthquake science and volcano science to exploit massive new global datasets that will become available over the next decade (such as from digital seismic networks, InSAR, GPS, LiDAR and satellite imagery – including new TerraSAR, COSMO and Sentinel systems) and develop approaches that allow the rapid combination and analysis (e.g. algorithm development) of data from many sources. This may involve handling large data volumes, for instance from new sensors and sensor arrays. Where relevant, working through the IRNH Programme, using the resources of the Global Earthquake Model (GEM) (for which NERC is a global partner) is encouraged.

In both strands proposals should demonstrate strong linkage with the scientific questions being addressed in the other strand of the IRNH Programme, the KE Fellows and the complementary developments mapped out in the IRNH Scoping Studies and demonstrate how they will work to maximise synergies that arise out of such linkages.

Implementation & Delivery

Consortium grants proposals must detail how they will deliver against the following requirements.

- Funded consortia must work to produce outputs that have the potential to lead to increasing resilience to natural hazards in earthquake-prone and volcanic regions.
- Funded consortia should exploit relevant existing NERC National Capability and ESRC capability in the area wherever appropriate.
- Funded consortia should seek to link to related programmes under the NERC Natural Hazards theme (such as the Probability, Uncertainty and Risk Programme), ESRC's Strategic Priorities, the RCUK Global Uncertainties Programme, and LWEC Partnership where appropriate.
- Funded consortia should seek to strengthen research capacity.
- Funded consortia should engage in international collaboration, exploit existing international programmes, engage with regional organizations and work in areas where key local actors and innovators have been identified.

To place the research within a multi-hazard 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 consortium projects.

Management plans must be completed as part of the consortium grant application (see Section 6) which will detail the methods of implementation, pathways and milestones towards delivery of the project's scientific and non-scientific objectives.

Knowledge Exchange and Pathways to Impact

All proposals are required to identify appropriate Pathways to Impact for their research and associated costs for delivery of impact activities. Proposals for research consortia are expected to demonstrate the particular relevance and potential of their proposed work, and show how they would help this to be realized. This should include a pathway to capacity building for scientists in earthquake-prone and volcanic

regions. Communication is a thread that should run through the whole IRNH Programme. Engaging with the IRNH KE Fellows should be an essential component of any funded proposal, as well as linking between the consortia. Links to other disciplines, such as health and engineering, are strongly encouraged through the KE fellows, via individual projects, or by other mechanisms. The IRNH KE Fellows, Advisory Group and Strategic Advisor may also be approached by funded consortia to facilitate engagement with international organizations such as the UNISDR.

All proposals should develop a co-productive approach to Pathways to Impact in consultation, for instance, with policy makers, government agencies, industry and commerce, as well as civil society (nationally and internationally) throughout the research consortium project, that: 1) keeps the science research focused on outputs that will contribute most to increasing resilience, but, 2) seeks to track those outputs and assess the ways in which they are adopted and assimilated, with the aim of enhancing the effectiveness of knowledge exchange between scientists and communities at risk and regional partners. This may include impacts on population heath and engineered structures and the dissemination of scientific ideas, education, training and the building of local capacity. It may also include showing how innovation in the assessment of natural hazards can be embedded and aligned with the political process to achieve reach and impact. Proposals should promote knowledge transfer to ensure lessons identified from volcanic and earthquake disasters, and in the management of these risks, are also taken into account in the management of other natural hazard risks, including multi-hazard risks.

Data Management

NERC believes that data generated from the research it funds is a valuable long-term, public-good resource. To ensure the data can be fully exploited in support of the activities that they were collected for, and to enable them to be available for effective, longer-term, post-programme exploitation, it is NERC's policy that data must be managed effectively from the time of generation onwards. NERC grant-holders in academia are also required to offer to lodge with NERC a copy of the data resulting from the supported research when it is completed, together with documentation/metadata describing these data.

All proposals that generate new data or model runs must have an appropriate Data Management Plan that complies with NERC and, where appropriate, ESRC's data policies. This should be included in the case for support. A suitable level of funding for delivery of any data management activities, including those in association with NERC Designated Data Centres and the ESRC Data Archive, must be included in the proposal if appropriate. Suggested levels of funding for this purpose are 2.5-5% of total project costs.

In developing your plans, consortia should consider:

- What data are planned for collection and which of these data are perceived of having long-term value?
- What existing data will be required? Who will supply these data and will there be a cost?
- Which is the most appropriate of the NERC data centres to provide data management support and guidance during the programme, and what level of data management support is going to be required from the data centre?
- How will data collected as part of the programme be managed during the life of the programme? Is this best done by the programme team, or should a NERC data centre be involved within programme data management?
- What specialist data and informatic skills will be required by the programme and from where will these be obtained?

Management & Governance Requirements

All PIs will be required to provide the standard NERC research grant reporting measures as per NERC terms and conditions: NERC collects annual Output and Performance Measures (OPMs) via the Research Outputs database (ROD) and a Final Report is required at the project end.

In addition to these standard requirements, the IRNH Programme grants should:

- report as required to the IRNH Programme Executive Board;
- link in, as appropriate, to the Probability Uncertainty and Risk in the Environment (PURE) Network;
- work with all other projects funded through the IRNH Programme and engage with partners' initiatives; and
- work collaboratively alongside and share information with the IRNH Programme KE Fellows.

Eligibility

This opportunity is open to individuals and organizations eligible for NERC research grant funding, i.e. applicants based in UK Higher Education Institutions (HEIs), NERC Research & Collaborative Centres, and Independent Research Organizations (IROs) approved by NERC and ESRC. Please refer to the NERC Research Grants Handbook for details. Potential applicants should contact NERC well in advance of the submission deadline if they have any queries concerning their eligibility.

Individuals may be involved in no more than two applications to this call; only one of these may be as the lead Principal Investigator (PI).

6. Application Process

Applications must be submitted using the Research Councils Joint Electronic Submission system (Je-S). To use this system, the applicant's Research Organisation must be registered as a Je-S user. Full details are available on the Je-S website. Further information can also be obtained by contacting the Je-S Helpdesk by email or by telephone on 01793 44 4164.

Please select Proposal Type - 'Standard Proposal' and then select the Scheme – 'Directed' and the Call – 'IRNH NOV11'.

Applicants must ensure that their application is received by NERC by 4pm on the closing date of 10th November 2011. Applicants should leave enough time for their application to pass through their organisation's Je-S submission route before this date. Any application that is received after the closing date, is incomplete, or does not meet NERC's eligibility criteria will be returned to the applicant and will not be considered.

The Principal Investigators must submit form Je-SRP1 (NERC), together with the Case for Support and other attachments.

The Case for Support will comprise the following sections.

Each lead application in the consortium should have the following documents attached (sections 1 to 8 below):

1. The **Case for Support** which is comprised of at least two parts:

   A – a common ***Previous Track Record*** (up to 3 sides A4 in total for all Research Organisations in the proposed consortium)

   The Previous Track Record should:

   - provide a summary of the results and conclusions of recent work in the technological/scientific area that is covered by the research proposal, include

reference to both NERC and non- NERC funded work, and give details of any relevant past collaborative work with other beneficiaries;
- indicate where your previous work has contributed to the UK's competitiveness or to improving the quality of life; and
- outline the specific expertise available for the research at the host organisation and that of any associated organisations and beneficiaries.

B – A common ***Description of the Proposed Research*.** This must not exceed **16 sides A4** (including all necessary tables, figures and references) and should address the following points.

- Underlying rationale, scientific and technological issues to be addressed
- Specific objectives of the project, including their potential relevance to UK and international research work in the field, relevance to the NERC and ESRC's missions (Annex B, NERC Research Grants Handbook), relevance to BESS programme goals and themes, and anticipated achievements and outputs, including datasets
- Methodology and approach, including consideration of interdisciplinarity
- Programme and/or plan of research
- Justification of landscape and location selection
- Management of both project and resources, identifying the training and career development opportunities for personnel working on the project
- Identification of data sets that the research will produce which will be of potential long-term value and which the NERC or ESRC data centres will need to manage and make available to enable re-use after the end of the research

2. A common **Justification of Resources** of up to 4 sides A4 for all Research Organisations involved, for all Directly Incurred Costs, Investigator effort, use of pool staff resources, any access to shared facilities and equipment and requests for capital costs between £10,000 and the OJEU threshold (currently: net of VAT £101,323, inclusive of VAT £121,588), being sought. If capital requests (i.e. individual items over £10k) are included, applicants are advised to explain the dependence of the project on this capital as well as any contingency plans that would be invoked should it not be possible to fund the capital elements of the proposal. For further information of what to include in the Justification of Resources, see sections 225-226 in the NERC Research Grants Handbook.

Capital Costs

Please note that from 1st May 2011, changes to the rules on how capital items are defined and bid for through Research Council grants came into effect. All applicants must follow the revised guidance.

All Councils will make best endeavours to meet capital requests in line with the RCUK guidance, subject to affordability within capital budgets. However, the capital provision has been reduced across all Councils and as demand is expected to exceed capital budgets, applicants are strongly encouraged to minimise project dependency on capital funding. If capital requests (i.e. individual items over £10k) are included, applicants are advised to explain the dependence of the project on this capital as well as any contingency plans that would be invoked should it not be possible to fund the capital elements of the proposal.

If capital is being applied for, for all items of equipment costing between £10,000 (including VAT) and the OJEU threshold, but excluding that to be used for instrument development, the Research Organisation will need to provide evidence of an evaluation of the use of existing relevant capital assets. The Justification of Resources should be used to:

- confirm that the piece of equipment is not readily available for use within the host institution, or any other assessable location (for instance by making reference to any asset registers consulted);
- provide evidence that all other reasonable options have been considered;
- explain, if the equipment requested will replace existing equipment, what will happen to the existing equipment;
- set out what contribution the Research Organisation will be making towards the cost of the equipment. The level of co-funding expected is 50%.

For requests for all single items of equipment costing more than the OJEU threshold - currently net of VAT £101,323, inclusive of VAT £121,588 - (excluding that to be used for instrument development) Research Organisations must complete a business case (up to 2 sides A4 per item) outlining why NERC should invest in this item of equipment. The business case will be subject to peer review and separate consideration for funding.

Further guidance regarding capital equipment costs in found in sections 226 and 227 of the NERC Grants Handbook.

All applicants intending to include a business case for equipment in a research grant application **must contact NERC** to discuss the request well in advance of any proposal submission.

3. **Price quotations** for equipment costing more than £25K (see also guidance regarding equipment under point C)

4. A detailed **Description of Proposed Management Structures** and plans (for project, resource and data management), participant responsibilities, and scheduling chart (e.g. Gantt chart). Training and career development opportunities for personnel working on the project should also be identified in this section. This should not exceed 2 sides of A4.

5. For each named PI, Co-I, research staff post and Visiting Researcher, a **CV** of up to 2 sides of A4 may be attached.

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

7. Forms for any **NERC Facility** requested.

8. A **Pathways to Impact Plan** (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.

Please refer also to Section 5 of this AO for further information about Knowledge Exchange and Pathways to Impact.

Full details of the standard requirements for Pathways to Impact, and a suggested template, can be found on the NERC website[1] 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.

9. Where support is requested for **Project Studentships**, the project studentships must be justified fully in the case for support. All costs for the student's travel and subsistence, consumables etc. must be itemised on the grant application form.

All attachments submitted through the Je-S system, including the Case for Support, must be completed in single-spaced typescript of minimum font size 11 point, Arial font with margins of at least 2cm. References can be presented in a smaller font size provided it is sufficiently clear to ensure good quality reproductions. Applicants referring to websites should note that referees may choose not to use them. Any proposal in which the Case for Support does not comply with these specifications will be rejected. Applicants should avoid the use of colour graphs or pictures, which NERC cannot guarantee will be reproduced in colour for referees.

For a summary of which attachments should be common to all Research Organisations and submitted by either the lead only, or all components, please refer to section 246 (Summary of Requirements for Consortium Grant Applications) of the Research Grants Handbook[2]

7. Assessment Process

Research grant proposals will be assessed against the following criteria:

- Research Excellence (primary),
- Fit to Scheme (primary),
- Pathways to Impact (secondary)

To meet NERC and ESRC's strategic objectives for the programme, proposals will be subject to rigorous international expert peer review. Applicants will have an opportunity to respond to the comments received. Final assessment will be by a Moderating Panel, comprised of independent experts, who will assess each proposal for scientific excellence and fit to programme requirements. Final decision on funding will be made by the IRNH Programme Executive Board. Applicants may be invited to give a presentation at the Moderating Panel. Feedback to applicants will be available on request. Full details[3] of NERC assessment criteria are available on the NERC website.

8. Timetable

Call published: August 2011

Closing date for proposals: 10 November 2011

Funding decision communicated to applicants: March 2011

Award start date: Awards must start by 1st July 2012

9. Contact information

General enquiries:

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Natural Environment Research Council
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Swindon
SN2 1EU

For queries about Je-S registration or technical submission of proposals, please contact the Je-S Helpdesk by email at JeSHelp@rcuk.ac.uk or by telephone on 01793 44 4164.

Annex A

Some details of the social science agenda

Introduction

This annex expands some of key social science challenges that we expect applicants to address.

Decision-making under uncertainty

Decision support approaches need to be developed and evaluated to: take better account of the full range of uncertainties involved; understand the interrelationship of multiple natural hazards; provide a basis for incorporating social and local knowledge; and, to make them more relevant to users. Better tools will also maximise the impact of improvements in warning technology and forecasting that this programme will support. In particular, these should address the implications of unquantifiable 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 rather than aggregated forms of risk assessment.

Vulnerability analysis to increase resilience

Understanding vulnerability is at the heart of increasing economic and social resilience, and increasing the impact of physical science advances. 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 and community risk maps.

Translating assessment into policy and policy into action

The translation of mitigation strategies into risk-reducing behaviour on the ground depends upon individual response to risk and its placement within the context of everyday life. Research is required on understanding how people perceive or experience risk to improve risk communication and in turn developing effective mitigation strategies. Furthermore, research into the threat of hazard, or the perceived threat of hazard, and how behaviour, knowledge, technology and governance can affect these is required.

It the community level, how can capacity, resilience and agency be increased whilst avoiding the imposition of a 'top-down' model of hazard assessment and risk management? Hazard-aware communities also have strong potential as monitoring tools in concert with conventional physical-science based approaches. How can links be formed or strengthened between formal establishments, planning and regulation, response management and local-level or household evolved resilience? Further knowledge is also necessary to understand governance, planning and construction systems and their influencing factors in affected areas.

Exploring knowledge relationships and reflective learning across disciplines

There is commonly a disjunction between the evolution and provision of expert knowledge and its effective utilisation. Research needs to assess how scientific knowledge and risk reduction strategies can be most effectively developed and communicated.

Recovery management

Sustained long-term recovery to shocks 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. Some key questions, for example, include: how does the relationship between shocks and stresses over time influence recovery; and, how do decisions made in the short-term, for example in terms of governance and humanitarian responses and aid, affect the building of resilient and robust societies over time?

Please contact paul.rouse@esrc.ac.uk for further information.