



Atmospheric Pollution and Human Health in a Chinese Megacity: adding value and increasing impact

Announcement of Opportunity(AO) – Call for Full Proposals

Issued on: 05 January 2018

Full Proposals deadline: 4pm on 25 April 2018

1. Summary

The Natural Environment Research Council (NERC), the Medical Research Council (MRC) and the National Natural Science Foundation of China (NSFC) currently jointly support a £5.5m/30m RMB research programme on Atmospheric Pollution and Human Health in China (APHH China), with contributions from the Newton Fund in the UK. This programme is focussed on Beijing and aims to increase understanding of sources, emissions and processes affecting urban atmospheric pollution, exposure and health impacts, and to develop potential interventions and solutions to reduce the health impacts of atmospheric pollution.

This call launches a second phase to add value to the programme, in which NERC and MRC have a budget of £1.1m (from the Newton Fund) to support UK researchers to work with Chinese collaborators to deliver additional targeted research to exploit and enhance the measurements collected through the programme, and with stakeholders to ensure better and wider utility and impact of the research.

Only current participants of the APHH China programme are eligible to submit applications to this call as the lead PI. UK funds will specifically be used to support UK researchers, with the expectation that Chinese project partners will bring in-kind support at the equivalent level of effort.

All applications must be collaborations between UK and Chinese researchers, and be submitted to NERC via JeS in English.

The call has a total budget of £1.1m (80% FEC) to support UK based researchers. It is expected that between three and five proposals may be supported.

Successful projects must start, as a condition of funding in January 2019, and must finish by 31 March 2021.

2. Background

2.1 Scientific Background

In China, urban air pollution is a severe problem with occurrence of haze increasing in severity and frequency between the 1950s and 2000s, caused by the particular weather conditions and increasing pollution. Five hundred million people in 86 cities are thought to be affected by haze in China. As a consequence, there is an increased prevalence of asthma and other respiratory problems in children. China is faced with one of the highest particulate matter concentrations, and in particular PM_{2.5} concentrations, which regularly exceed World Health Organisation (WHO) air quality guidelines in Beijing, Shanghai and Guangzhou. This has been linked to higher health risks to the cardiovascular system, cerebrovascular system and an increase in the probability of cancer and premature death. The Chinese government has acknowledged the problems and made strong responses to improve air quality, but further improvements and research to anticipate emerging issues are still needed.

Huge progress has been made in improving air quality in the developed western world and there is a strong temptation to assume that the approaches taken to improve air quality in the developed world will also be those most appropriate to improvement of air quality in the cities of China. Such a view is, however, naive as the causes of pollution are likely to be different from those in the UK of the 1950s and 1960s when air quality policies first became established. Furthermore, it would be very difficult to transfer mitigation strategies of sources acting in isolation in other countries where the co-presence of different sources and interactions of different pollutants will result in a very different situation in China. Additionally, the specific weather and climate of China, and the physical structure of these megacities (e.g. numerous very tall buildings) make for a very different situation.

While it is assumed that the exposure-response functions for air pollutants determined through epidemiological studies in the western world are applicable to the situation in China, there have been rather few studies to cast light on this question. It is likely that important differences exist, especially for particulate matter, as the sources and chemical composition are likely to be very different to the mix which prevails in western cities. In addition, diets and genetic predisposition to certain health outcomes will likely be very different in other regions of the world, affecting the susceptibility of the population to air pollution related health effects. Recent medical advances in systems biology, toxicology and monitoring of human population environmental exposures could allow strong interdisciplinary links to be made between research in air pollution and human health, for example in vulnerable groups such as children and the elderly.

Consequently, studies are needed in Chinese megacities in order to: understand the sources and emissions of urban air pollution; understand the chemical and physical processes affecting air pollutants; explore associations between air pollutant exposure and disease; provide predictive capability for the impact of mitigation measures; and create sustainable monitoring and compliance technologies. This needs to then feed into feasible solutions both in technology and policy for the benefit of the population.

2.2 Programme Background

Atmospheric Pollution and Human Health in a Chinese Megacity is a strategic research programme jointly supported by the UK's Natural Environment Research Council (NERC) and the Medical Research Council (MRC) and the National Natural Science Foundation of China (NSFC). The programme has already committed research funding totalling £5.5m

(£3m from the Newton Fund) and 30m RMB for joint UK/China collaborations. Phase one of the programme funded [five projects](#) across the following four themes:

- sources and emissions of urban atmospheric pollution;
- processes affecting urban atmospheric pollution;
- exposure science and impacts on health; and
- interventions and solutions.

In support of a second phase of the programme, the UK funders NERC and MRC have a further £1.1m of Newton funding for this programme to support UK researchers to work with Chinese collaborators to deliver additional targeted research to exploit and enhance the measurements collected through the programme, and with stakeholders to ensure better and wider utility and impact of the research.

2.3 The Newton Fund

UK funds for this programme have been received directly from the Department for Business, Energy & Industrial Strategy (BEIS) as part of the Newton Fund. The Fund forms part of the UK's Official Development Assistance (ODA) commitment which is monitored by the Organisation for Economic Cooperation and Development (OECD). ODA funded activity focuses on outcomes that promote the long-term sustainable growth of Newton Fund partner countries and is administered with the promotion of the economic development and welfare of partner countries as its main objective. Collaborations under the call will contribute to economic development and social welfare in China, in line with the Newton Fund's aims. All applications under this call must be compliant with these specifications.

3. Scope

3.1 Programme objectives

This second phase of the APHH China programme aims to build on the first phase through supporting:

- additional targeted research to add value to the APHH China programme by exploiting and enhancing measurements collected through the programme; and
- work with stakeholders to develop tools to increase utility and impact of the research programme and potentially transfer this learning to other developing cities in China.

Proposals may address either or both objectives and applicants should state how the activities proposed will add value to the existing programme of work. The following activities came out of a programme stakeholder workshop held in Beijing in June 2017 and are examples of the kinds of activity that may be undertaken. However other activities are also welcome:

Targeted research exploiting and enhancing the measurements collected through the APHH China programme

- Targeted additional data analysis and modelling of particles in the boundary layer could significantly improve understanding of haze-meteorology enhancement and interactions.
- Focussed source apportionment work could determine whether combustion processes not yet captured through the programme, such as urban domestic heating or cooking,

which have implications for human exposure and links to disease, are contributors to the patterns observed in the atmospheric measurements.

- Consideration of campaign data in the context of the Beijing network data could provide insights from the increased spatial and temporal scale.
- Extending personal exposure measurements could be used to assess the impact of planned Government interventions to provide electric to rural villages, in terms of decreased exposure to pollution and associated health outcomes.
- Focussed measurements could quantify the impact of commercial air purifiers on air quality and determine the health benefits as an additional simple intervention.

Stakeholder engagement to ensure better and wider utility of APHH China results

- Through discussion with stakeholders, new policy interventions could be developed on the basis of new data and process understanding generated by the APHH China programme.
- New data on air purifier effectiveness and programme data on personal exposure and protection from masks could be used to generate guidance on health benefits of cost-effective and simple interventions.
- APHH-China best practice on air pollution measurements and source apportionment (Chinese and English) could be developed for use by local Environmental Protection Bureau technical staff and academics.

3.2 Proposal requirements

Proposals must be led by a PI or Col named on one of the existing five UK awards (Annex B) from phase one, and be a collaboration between UK and Chinese researchers.

Although proposals must be led by an existing programme researcher they may draw in additional contributions and collaborations from individuals currently not funded through the existing awards, where additional expertise is required to deliver the objectives that may be absent from the current programme membership.

Proposals should give consideration to how they may link to other existing and potential new projects, to continue the programme's integration objectives. This may be important to consider where there are common stakeholders, in order to maximise their involvement in the programme.

3.3 Non-scientific objectives

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

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

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

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

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

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

4. Programme requirements

4.1 Programme funding

NERC and MRC have a budget of £1.1m (80% FEC) to support UK researchers. It is expected that three to five proposals may be supported.

UK effort must be matched by in-kind support from Chinese project partners at the equivalent level of effort. NSFC and CAS are both supportive of the second phase of the programme, but will not be able to provide co-funding at the programme level. However there are a number of routes by which Chinese partners may seek support in order to meet the matched level of effort in the partnership, including:

- NSFC workshop competition (for universities and CAS Institutes)
- CAS internal funding (for CAS Institutes)
- University internal funding
- Funding from other Ministries or other sources as relevant

NERC and MRC may be able to provide letters of support for these applications if required but Chinese funding decisions will be made independently.

Please note, in order to comply with the Newton Fund, awards will not be made until there is confirmed matched support from the Chinese partners. Confirmation will need to be received by 1st September at the latest for any award to go ahead.

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

4.2 Implementation and delivery

Proposals must be led by a UK PI or Col on one of the existing APHH China awards, and will build on the work already done within the programme of awards. Proposals may cut across more than one of the current awards as best applies to the research or other activities proposed.

Projects must start in January 2019. Projects may be between 24-27 months duration and must complete no later than 31 March 2021.

As with the first phase, projects will be expected to interact and collaborate with other funded projects in the programme in order to deliver an integrated programme of work.

4.3 Knowledge Exchange and Impact

Knowledge exchange (KE) is vital to ensure that environmental research has wide benefits for society, and should be an integral part of any research.

All applicants must consider how they will or might achieve impact outside the scientific community and submit this with their application as a [Pathways to Impact](#) statement, with associated delivery costs where relevant. Pathways to Impact activities do not have to be cost-incurring; it is not a requirement to include funded activities. Any funds required to carry out any proposed, outcome-driven activities identified within the Pathways to Impact **must** be fully justified within the Justification of Resources statement.

The Pathways to Impact will identify those who may benefit from or make use of the research, how they might benefit or make use of the research, and methods for disseminating data, knowledge and skills in the most effective and appropriate manner.

An acceptable Pathways to Impact is a condition of funding. Grants will not be allowed to start unless unacceptable Pathways to Impact are enhanced to an acceptable level within 2 months of notification of the panel outcome.

All funded projects should state how they plan to engage with programme-wide KE activities, funding for which has already been provided by the programme.

4.4 Data Management

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

4.5 NERC Facilities

Prior to submitting a proposal, applicants wishing to use a NERC service or facility must contact the facility to seek agreement that they could provide the service required.

Applicants wishing to use most NERC facilities will need to submit a mandatory 'technical assessment' with their proposal. This technical assessment is required for aircraft but not for NERC Marine Facilities (NMF – Shiptime and/or marine equipment) and HPC. For NERC, this means a quote for the work which the facility will provide. A [full list](#) of the Facilities requiring this quote can be found on the NERC website. The costs for the service or facility (excluding NMF and HPC costs) must be included within the Directly Incurred Other Costs section of the Je-S form and also within the facilities section of the Je-S form. Further information on [NERC services and facilities](#) can be found on the NERC website.

Given the time restrictions on spend under Calls supported by the Newton Fund, we are unable to accept NERC shiptime or aircraft requests as part of this Call. All other NERC Services & Facilities must be fully costed within the limits of the proposal, and agreement that they can be undertaken within the timeframe of the spend must be provided by the facility.

4.6 Reporting requirements

As with all NERC grant holders, there will be a requirement to report through the RCUK reporting system; this is required annually and continues for up to five years post grant end. Applicants should be aware that according to the Newton Fund requirements, there will be some additional terms and conditions associated with the UK grants which are awarded. Additionally, UK Investigators must assist the NERC with any additional reporting requirements requested by the Department for Business, Energy and Industrial Strategy. Projects will be expected to continue joint 6-monthly programme-level reporting for the duration of the second phase, and should make allowances within the proposals to enable this.

4. Application process

5.1 How to apply

Closing Date: 25 April 2018

Full proposal must be submitted using the Research Councils' Joint Electronic Submission system (Je-S). Applicants should select Proposal Type - 'Standard Proposal' and then select the Scheme – 'Directed International' and the Call – 'Newton:APHH China Phase 2'.

This call will close on JeS at 4pm GMT on the closing date and it will not be possible to submit to the call after this time. Applicants should leave enough time for their proposal to pass through their organisation's Je-S submission route before this date. Any proposal that is incomplete, or does not meet NERC's eligibility criteria or follow NERC's submission rules (see [NERC Grants Handbook](#)), will be office rejected and will not be considered.

All attachments, with the exception of letters of support and services/facilities/equipment quotes, submitted through the Je-S system must be completed in single-spaced typescript of minimum font size 11 point (Arial or other sans serif typeface of equivalent size to Arial 11), with margins of at least 2cm. Please note that Arial narrow, Calibri and Times New Roman

are not allowable font types and any proposal which has used either of these font types within their submission will be rejected. References and footnotes should also be at least 11 point font and should be in the same font type as the rest of the document. Headers and footers should not be used for references or information relating to the scientific case. Applicants referring to websites should note that referees may choose not to use them.

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

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

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

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

The UK applicant should list the Chinese collaborators as Project Partners and should indicate the approximate value of the in-kind support and funding received from the Chinese source of funding in the project partner in-kind support section of the proposal form.

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

- **CVs for each of the named Chinese collaborators** (maximum 2 pages per person) should be combined into one document as attachment type 'Non-UK Components'.
- **Institutional endorsement:** An institutional acknowledgement of the submission must be a signed letter of support from an authorized institutional representative from the Chinese partners' institution, and include confirmation of financial support for the project where applicable. This must be uploaded as the compulsory attachment of "Project Partner Letter of Support" one letter per partner.
- **Financial support:** evidence of matched funding from the Chinese partners. This may be confirmed support from their institution or evidence or where support may be sought and decision timelines if not confirmed yet. This should be uploaded as attachment type 'Non-UK Component'. Confirmation of funding will need to be provided by 1st September at the latest for any award to go ahead.
- In addition to the usual requirements for standard grants a **statement of ODA compliance** of up to 1 side of A4 should be submitted. This should be uploaded as an attachment type of 'Non-UK Components'. All research funded through this call will form part of the UK's Official Development Assistance (ODA) and thus it is a requirement that funding be awarded in a manner that fits with ODA guidelines. Therefore, research proposals submitted to this call should describe how the

proposed project meets the Official Development Assistance requirements of this call by answering the following questions:

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

Guidance on ODA compliance is provided in Annex A

No associated studentships can be requested under this call.

The expected start date for projects funded under this Announcement of Opportunity is January 2019.

5.2 Eligibility

This call is only open to APHH China Grant holders named as PI or Co-I on the existing grants, to be the lead PI on submitted proposals. Other individuals eligible for Research Council funding may be included where additional expertise is needed.

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

5. Assessment Process

Proposals will be reviewed by an Assessment Panel of experts. The primary assessment criteria will be Excellence and Fit to Scheme (both Scientific and Non-scientific objectives). Feedback will be provided to both successful and unsuccessful applicants.

The UK funders will use the recommendations of the Assessment Panel along with the overall call requirements and the available budget in making the final funding decisions.

No awards will be made without confirmed matched funding from the Chinese partners. Confirmation will need to be received by 1st September at the latest for any award to go ahead.

6. Timetable

- Announcement published: 05 January 2018
- Deadline for submission of full proposals: 25 April 2018
- Assessment panel meets: June 2018
- Project start date: January 2019

7. Contacts

For queries about this programme and call please contact:

NERC: Lisa Hole

Email: atmospheric@nerc.ac.uk

Tel: (+44) 7738 121171

MRC: Tim Cullingford

Email: Tim.Cullingford@headoffice.mrc.ac.uk

Annex A - Guidance on ODA eligibility

This interpretation has been developed from two documents, which should be viewed in parallel: i) DFID, “What is ODA?” document; ii) OECD “[Is it ODA?](#)”

General ODA eligibility guidance

When assessing whether an activity is eligible as ODA or not, delivery partners will consider whether projects and programmes satisfy OECD criteria on eligibility by whether or not they:

- a. aim to promote the welfare and economic development of a country or countries on the [DAC list of ODA recipients](#);
- b. are designed to address a development need; and
- c. focus on problems in developing countries.

Spending on research projects which benefit DAC countries in broader ways than just poverty reduction can be eligible according to the criteria above, although poverty reduction is a very good indicator of an activity being ODA eligible.

Research

The above criteria are supplemented in the OECD guidance, which notes the following in relation to the eligibility of research to be classified as ODA.

*“Only research **directly** and **primarily relevant** to the problems of developing countries may be counted as ODA. This includes research into tropical diseases and developing crops designed for developing country conditions. The costs may still be counted as ODA if the research is carried out in a developed country.”*

BIS and delivery partners will use a literal interpretation of “primarily relevant”. Research funded through BIS’s research budget remains focussed on funding research excellence, which ensures that value for money is maximised. With ODA-eligible research this will remain the case and so “primarily relevant” will be interpreted as follows:

- a. Research should have an intent to investigate a specific problem or seek a specific outcome which will have an impact on a developing country or countries on the DAC list in the immediate or longer-term. Evidence should be available if required to justify that the issue is a developing country problem.
- b. Research does not need to be *solely* relevant to developing countries, therefore there may be other beneficiaries¹ to a piece of Government ODA research, although countries on the DAC list should be the **primary beneficiary** of this research; i.e. if a problem occurs in both the developed and developing countries, the research should be focused on problems which are more prevalent in developing countries – and that this focus on developing country problems is clear.
- c. For example:
 - i. Research conducted into malaria at a UK institution counts as ODA (Malaria infection is a major contributor to morbidity and mortality in developing countries and the intention of the research is to tackle this disease)
 - ii. Research conducted at a developing country institution into cancer can count as ODA if this is a particular cancer priority in that developing country and/or it is building technical capacity in the developing country.

¹ However if a project examines both a developed and a developing country (maybe some sort of comparative analysis) where there are benefits for both countries, only the developing country-relevant proportion of the spend would be counted.

- iii. Research into diseases of broader relevance e.g. HIV, TB, flu, may be counted if the nature of the specific research question being addressed by the study is relevant to problems specific to that developing country (e.g. where the intention is to research the disease because it is most prevalent in the developing world or where the research is into an intervention tailored to developing countries e.g. DAC countries' difficulties in keeping vaccines cool, where developing thermo-resilient vaccines could be a justifiable use of ODA spend).
- iv. Including research and innovation capacity building activities, to e.g. increase the skills and knowledge base and support the development of research infrastructure (within a developing country) both at country-level and for specific sectors important for welfare enhancement and economic growth. It should be aimed at improving developing countries' ability to undertake and disseminate research to promote the welfare and economic development of a DAC country / countries.

Questions you may wish to consider when writing your proposal regarding ODA eligibility include:

- Is the project addressing the economic development and welfare of an ODA eligible country?
- Is there a development need that my project or activity is addressing?
- Are the countries involved on the [DAC List of ODA Recipients](#) (the Development Assistant Committee of the OECD) or will countries on the DAC list directly benefit from the research?
- Is my activity credible or is there evidence of the need?
- Would this project or activity be applied in an ODA eligible country – when, how and with whom?
- What would the impact of my project or activity be, and who would benefit?
- How does my project or activity contribute to sustainable development?
- What would success for this activity look like?
- How would success or impact be measured?

Annex B – current APHH China award holders

NERC Reference	Award Title	Investigator	Investigator Institution	Co-Investigator(s)
NE/N007182/1	Air Pollution Impacts on Cardiopulmonary Disease in Beijing: An integrated study of Exposure Science, Toxicogenomics and Environmental Epidemiology	Dr M Loh	Institute of Occupational Medicine, Research	Mr JF Hurley - Institute of Medicine, UNLISTED Professor P Wilkinson - London Sch of Hygiene and Health and Policy Dr S Reis - NERC Centre for Ecology and Hydrology and Effects Professor J Cherrie - Institute of Occupational Medicine
NE/N006887/1	Air Pollution Impacts on Cardiopulmonary Disease in Beijing: An integrated study of Exposure Science, Toxicogenomics and Environmental Epidemiology	Dr MR Miller	University of Edinburgh, Centre for Cardiovascular Science	Professor R Doherty - University of Edinburgh, School of Chemistry Dr M Heal - University of Edinburgh, School of Chemistry Dr J Langrish - University of Edinburgh, Centre for Environmental and Health Sciences
NE/N007115/1	An Integrated Study of AIR Pollution PROCesses in Beijing (AIRPRO)	Professor A Lewis	University of York, Chemistry	Dr AR Rickard - University of York, Chemistry Dr DC Carslaw - University of York, Chemistry
NE/N00695X/1	An Integrated Study of AIR Pollution PROCesses in Beijing (AIRPRO)	Professor H Coe	The University of Manchester, Earth Atmospheric and Env Sciences	Dr JD Allan - The University of Manchester, Earth Atmospheric and Env Sciences Professor GB McFiggans - The University of Manchester, Earth Atmospheric and Env Sciences
NE/N006895/1	An Integrated Study of AIR Pollution PROCesses in Beijing (AIRPRO)	Professor DE Heard	University of Leeds, Sch of Chemistry	Dr L Whalley - University of Leeds, School of Chemistry Dr G Mann - University of Leeds, School of Earth and Atmospheric Sciences Dr D Spracklen - University of Leeds, School of Earth and Atmospheric Sciences
NE/N00700X/1	An Integrated Study of AIR Pollution PROCesses in Beijing (AIRPRO)	Professor CSB Grimmond	University of Reading, Meteorology	Professor J Barlow - University of Reading, Meteorology

NE/N006909/1	An Integrated Study of AIR Pollution PROCesses in Beijing (AIRPRO)	Professor C Reeves	University of East Anglia, Environmental Sciences	
NE/N006941/1	An Integrated Study of AIR Pollution PROCesses in Beijing (AIRPRO)	Professor PS Monks	University of Leicester, Chemistry	Professor R Doherty - University of Edinburgh, Sch Professor R Leigh - University of Leicester, Physics Professor D Stevenson - University of Edinburgh, S
NE/N007093/1	An Integrated Study of AIR Pollution PROCesses in Beijing (AIRPRO)	Professor R Jones	University of Cambridge, Chemistry	
NE/N006925/1	An Integrated Study of AIR Pollution PROCesses in Beijing (AIRPRO)	Professor J Wild	Lancaster University, Lancaster Environment Centre	
NE/N007077/1	An Integrated Study of Air Pollution Processes in Beijing	Professor W Bloss	University of Birmingham, Sch of Geography, Earth & Env Sciences	
NE/N007018/1	Effects of air pollution on cardiopulmonary disease in urban and peri-urban residents in Beijing	Professor FJ Kelly	King's College London, Analytical & Environmental Sciences	
NE/N007085/1	Effects of Air Pollution on Cardiopulmonary Disease in Urban and Peri-Urban Residents in Beijing	Professor R Jones	University of Cambridge, Chemistry	

NE/N007204/1	Effects of air pollution on cardiopulmonary disease in urban and peri-urban residents in Beijing	Professor P Elliott	Imperial College London, School of Public Health	Professor M Ezzati - Imperial College London, School of Public Health
NE/N00714X/1	Integrated assessment of the emission-health-socioeconomics nexus and air pollution mitigation solutions and interventions in Beijing (INHANCE)	Professor D Guan	University of East Anglia, International Development	Professor P Brimblecombe - University of East Anglia, Environmental Sciences Dr B Reid - University of East Anglia, Environmental Sciences Professor S Dorling - University of East Anglia, Environmental Sciences
NE/N007190/1	Sources and Emissions of Air Pollutants in Beijing (AIRPOLL-Beijing)	Professor R Harrison	University of Birmingham, School of Geography, Earth & Environmental Sciences	Dr Z Shi - University of Birmingham, School of Geography, Earth & Environmental Sciences Professor W Bloss - University of Birmingham, School of Geography, Earth & Environmental Sciences
NE/N006917/1	Sources and Emissions of Air Pollutants in Beijing	Professor JD Lee	University of York, Chemistry	Dr J Hamilton - University of York, Chemistry
NE/N007158/1	Sources and Emissions of Air Pollutants in Beijing	Professor M Kalberer	University of Cambridge, Chemistry	
NE/N006992/1	Sources and Emissions of Air Pollutants in Beijing (AIRPOLL-Beijing)	Dr E Nemitz	NERC Centre for Ecology and Hydrology, Atmospheric Chemistry and Effects	Dr B Langford - NERC Centre for Ecology and Hydrology, Atmospheric Chemistry and Effects
NE/N006976/1	Sources and Emissions of Air Pollutants in Beijing (AIRPOLL-Beijing)	Professor CN Hewitt	Lancaster University, Lancaster Environment Centre	Professor J Wild - Lancaster University, Lancaster Environment Centre

NE/N007123/1	Sources and Emissions of Air Pollutants in Beijing (Manchester)	Dr JD Allan	The University of Manchester, Earth Atmospheric and Env Sciences	Professor CJ Percival - The University of Manchester, Earth Atmospheric and Env Sciences Professor GB McFiggans - The University of Manchester, Earth Atmospheric and Env Sciences Professor H Coe - The University of Manchester, Earth Atmospheric and Env Sciences
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